DeltaWing Simulations

ATR 72-600

FMS / MCDU USER'S MANUAL

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Revision 03 · Issue date: 10 NOV 2026

Data Module	Reason for Update
FMS UM.PRI OPERATIONAL PRINCIPLES	
PRI.4.7 Managed Speed ALL	- Managed speed inputs: the speed constraints of the flight plan
PRI.4.7 Managed Speed ALL	- Speed constraints propagated to the next waypoints in cruise, descent and approach

Revision 02 · Issue date: 10 NOV 2026

Data Module	Reason for Update
FMS UM.PRI OPERATIONAL PRINCIPLES	
PRI.4.7 Managed Speed ALL	- Climb speed: limited by the lowest speed constraint up to the top of climb
FMS UM.PGE MCDU PAGES DESCRIPTION	
PGE.6.5 RMS Principles ALL	- NAV page follows the RMS connected
PGE.6.10 NAV Page ALL	- NAV page title
FMS UM.FPH FLIGHT PHASE PROCEDURES	
FPH.4.1 Descent Initiation ALL	- Descent before the TOD (VNAV pb in cruise)

Revision 01 · Issue date: 01 NOV 2026

Data Module	Reason for Update
ALL	First issue: general, operational principles, MCDU interface and page descriptions, flight phase and multi phase procedures, FMS alerts, database maintenance, simulation features.

Note

The product changelog (manuals/Changelog.txt) lists every software change. This record lists changes to the manual only.

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GEN.1 SCOPE

GEN.1.1 This Manual

Ident.: GEN.1.1 — 01 NOV 2026
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This manual describes the flight management system (FMS) of the ATR 72-600 and the way the crew operates it through the MCDU. It is the full reference; the FCOM keeps a short pilot's guide to the FMS.

PART	CONTENT
GENERAL	System overview, interfaces, navigation modes, conventions, abbreviations
OPERATIONAL PRINCIPLES	Definitions and concepts: flight areas, flight phases, flight plans, lateral and vertical guidance, managed speed
PILOT INTERFACE	The MCDU: screen, keys, data entry, messages, page hierarchy
MCDU PAGES DESCRIPTION	Every MCDU page, line by line
FLIGHT PHASE PROCEDURES	FMS tasks from preflight to the end of the flight
MULTI PHASE PROCEDURES	Tasks that are not tied to one flight phase (lateral and vertical revisions, radio navigation, databases)
ABNORMAL PROCEDURES	FMS alerts and operational checks
DATABASE MAINTENANCE	Navigation database, company routes, pilot data
SIMULATION FEATURES	Simulator-only functions

The PILOT INTERFACE and MCDU PAGES parts give every detail of the pages. The procedure parts give what is needed to operate the FMS in flight.

GEN.1.2 System Overview

Ident.: GEN.1.2 — 01 NOV 2026
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The aircraft has two flight management computers, FMS 1 and FMS 2, and two MCDUs. Each FMS runs in the integrated avionics of its side and computes everything by itself. The two FMS exchange the crew data through a cross-talk link (see PRI.2).

The FMS provides:

- multi-sensor localization: the aircraft position from the GPS and the radio navaids,
- flight planning: the active, temporary and secondary flight plans,
- lateral (LNAV) and vertical (VNAV) guidance to the AFCS,
- database management: standard, company and pilot data,
- radio navigation: automatic tuning of the VOR, DME and ADF receivers,
- performance: take-off and approach speeds, managed speed, cruise and one-engine-out ceilings,
- predictions: time, fuel and altitude at each waypoint, top of climb and top of descent, non return point, GPS integrity (PRAIM).

FMS 1 is normally shown on MCDU 1 and FMS 2 on MCDU 2. The MCDU MENU page connects an MCDU to the other FMS or to the radio management system (RMS).

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Operational domain

The FMS computes in the WGS 84 datum: the standard and pilot data are taken to be WGS 84 positions.

GEN.1.3 Interfaces

Ident.: GEN.1.3 — 01 NOV 2026
ALL

Dual architecture

Each FMS has its own MCDU and its own side displays, air data and attitude-heading sources; the GPS and the radio navigation receivers are shared. The FMS coupled to the autopilot is the **master** FMS (see PRI.2.5). Only the master FMS tunes the radio navigation receivers and couples LNAV and VNAV to the AFCS.

Air data

The FMS uses the air data (indicated airspeed, barometric altitude, air temperature) of its own side ADC. When a parameter is invalid there, the FMS takes it from the other ADC. When a parameter is invalid on both ADCs, the AIR alert is raised and the crew can insert backup values on the AIR/RA page.

Attitude and heading

The FMS uses the heading and attitude of the AHRS. When the heading of both AHRS is invalid, the HDG alert is raised and the crew can insert a heading on the HDG/ATT page.

SIMULATOR NOTE

The cockpit reversion selectors for the air data and attitude-heading sources do not change the FMS source. The FMS always takes its own side first, then the other side.

GPS

One GPS receiver (GPS 1) is fitted. Both FMS use it. The FMS uses the GPS position only when the receiver is in NAV or ALT mode. With the SBAS option, the GPS also gives the LPV and LP approach guidance.

Radio navigation

The FMS uses two VOR receivers, one DME with three channels and two ADF receivers. The VOR and DME are used for the radio position; the ADF is tuned but is not used for the position.

In AUTO, the master FMS tunes:

- NAV 1 and NAV 2 on the navaids recommended by the procedure being flown, or else on the pair of receivable navaids that gives the best position geometry,
- DME channel 3 on a third DME station that improves the geometry,
- ADF 1 and ADF 2 on the reference NDB of an NDB approach.

ILS and localizer frequencies are never tuned automatically. A manual tuning on the RMS sets the receiver to MAN. See PGE.6.

Outputs

SYSTEM	FMS DATA
AFCS	LNAV roll command, VNAV vertical speed and altitude targets, managed speed target, LPV / LP deviations
ND	Flight plan route, TO waypoint with bearing, distance and ETA, pseudo-waypoints (TOC, TOD, level points), holds, navigation mode or FMS message field, FMS INDEPENDENT flag
PFD	FMS speed target and bugs, FMS altitude target, VDEV, FMS lateral deviation, LPV / LP deviations, flight mode annunciations of the FMS modes

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SYSTEM	FMS DATA
EWD	GPS INTEG and UNABLE RNP cautions

GEN.1.4 Navigation Modes

Ident.: GEN.1.4 — 01 NOV 2026
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Position fixing modes

The FMS computes two positions all the time:

BCP — Best computed position, from every sensor selected on the BCP NAV page (GPS and radio navigation). Default mode.

GPS — The GPS position only.

The crew selects the mode on PROG 3/3 (see PGE.3). There is no automatic change of mode: when the position of the selected mode is lost, the POS alert asks the crew to change it.

Localization modes

In BCP, the FMS position comes from the best sensor available, in this order:

MODE	SOURCE	COLOUR ON MCDU
GPS	GPS position	green (cyan in the GPS fixing mode)
D-D	Two DME distances	green
V-D	VOR bearing and DME distance	green when VOR and DME are co-located, else amber
V-V	Two VOR bearings	amber
D-R	Dead reckoning	amber

- A radio pair is used only when both stations are received (within their range and line of sight) and the angle between the two lines of position is between 30° and 150°.
- Amber means that the sensors are not compliant with precision RNAV.
- When the FMS changes source, the position moves smoothly to the new source.
- D-R is the back-up when there is no GPS and no radio position. The FMS then uses the true airspeed, the heading and the last computed wind; the crew can insert the wind on the BCP NAV page. The estimated position error grows with the time in D-R.

The title line of every MCDU page shows the localization mode and the EPE, for example `GPS .01` or `D-D .35`. With no mode, it shows `---`.

SIMULATOR NOTE

The radio position uses a published error model of the DME and VOR receivers: each station has a small fixed bias, so the radio position differs slightly from the true position, and the EPE depends on the station geometry. The BCP takes the best single source (GPS, else the best radio pair); it does not blend sources.

Navigation data in every mode

Each mode gives the position (latitude and longitude), the ground speed, the track and the wind. The wind is computed only when the true airspeed is 30 kt or more and the mode is not D-R.

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GEN.1.5 Conventions

Ident.: GEN.1.5 — 01 NOV 2026
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Procedures

WRITTEN AS	MEANING
► ITEM ..... ACTION	A crew action. The item is named as on the MCDU or the panel.
Grey box under an action	Amplification: what the FMS does, what the crew checks.
■ If .../■ When ...	A condition: the actions that follow apply only if it is met, or once it is met.

Notes, cautions and sim boxes

Note

Additional information on the step or the function.

CAUTION

The consequence of a wrong action.

SIMULATOR NOTE

How to do it in the simulator (mouse, keyboard, X-Plane, EFB), or how the simulation differs.

MCDU names

- Keys and prompts are written in capitals, as on the MCDU: EXEC, CLR, <RETURN, TMPY>.
- The line select keys are named 1L to 6L and 1R to 6R from top to bottom, for example INIT> (6R).
- Fields are named by their label on the screen: CRZ ALT, ALT SEL, TGT IAS.
- Display text in colour is written in its colour, for example □□□□ or **KRDM**.
- MCDU colours and symbols are described in MCDU.1.

Terminology

- **Waypoint** means any point of the flight plan: a database fix, but also a pseudo-waypoint computed by the FMS (T-P, TOC, TOD, level points, abeam points, intercept points).
- **Leg** means a path and its termination, coded in the database with the ARINC 424 leg types (TF, CF, DF, …; see GEN.2).
- **FMS** means one flight management computer; **both FMS** means FMS 1 and FMS 2.
- Altitudes are in feet, distances in nautical miles, speeds in knots (IAS) unless stated.

CAUTION

The MCDU figures of this manual come from a simulated flight. Some values may differ from the values of a real flight.

GEN.2 ABBREVIATIONS

GEN.2.1 Abbreviations and Acronyms

Ident.: GEN.2.1 — 01 NOV 2026
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ABBREVIATION	MEANING
1EO CEIL	One-engine-out ceiling
A/C	Aircraft
ACS	Autopilot coupled side
ACT	Active
ADC	Air data computer
ADF	Automatic direction finder
ADU	Air data unit
AFCS	Automatic flight control system
AHRS	Attitude and heading reference system
ALT	Altitude
ALT SEL	Selected altitude (FGCP)
ALTN	Alternate
ANP	Actual navigation performance
AP	Autopilot
APP	Approach
APT	Airport
AWY	Airway
BARO	Barometric setting
BCP	Best computed position
BITE	Built-in test equipment
BRG	Bearing
CAS	Calibrated airspeed
CG	Centre of gravity
CHL	Channel
CLB	Climb
CLR	Clear
CNSTR	Constraint
CO-ROUTE, CO-RTE	Company route
COMP ALT	Temperature-compensated altitude
CONF DATA	Configuration data
CRC	Cyclic redundancy check
CRS	Course
CRZ	Cruise

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ABBREVIATION	MEANING
CTK	Cross talk
D-D	DME/DME localization mode
D-R	Dead-reckoning localization mode
DECEL	Deceleration point
DECLN	Station declination
DEPT	Departure
DEST	Destination
DFLT	Default
DIST	Distance
DME	Distance measuring equipment
DSPL	Display
DTK	Desired track
DTO	Direct to
EFB	Electronic flight bag
EFOB	Estimated fuel on board
EPE	Estimated position error
ETA	Estimated time of arrival
ETE	Estimated time en route
EWD	Engine and warning display
EXEC	Execute
EXP DATE	Expiry date
FAF	Final approach fix
FDE	Fault detection and exclusion
FF	Fuel flow
FGCP	Flight guidance control panel
FL	Flight level
FMA	Flight mode annunciator
FMS	Flight management system
FOB	Fuel on board
FOM	Figure of merit
FPA	Flight path angle
FPLN	Flight plan
FREQ, FRQ	Frequency
FROM	Last waypoint passed
FTE	Flight technical error
GA	Go-around
GPS	Global positioning system
GS	Ground speed
GW	Gross weight

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ABBREVIATION	MEANING
HDG	Heading
HDOP	Horizontal dilution of precision
HIL	Horizontal integrity limit
IAS	Indicated airspeed
IDENT	Identifier
ILS	Instrument landing system
INBND CRS	Inbound course
INIT	Initialization
INTCP, INTCPT	Intercept
ISA	International standard atmosphere
LAT / LONG	Latitude / longitude
LDG	Landing
LNAV	Lateral navigation
LNG	Length
LOC	Localizer
LP	Localizer performance (SBAS approach, lateral only)
LPV	Localizer performance with vertical guidance (SBAS approach)
LRC	Long range cruise
LSK	Line select key
LTRL REV	Lateral revision
MAG VAR	Magnetic variation
MAP	Missed approach point
MCDU	Multipurpose control and display unit
MCT	Maximum continuous power
MKR SENS	Marker beacon sensitivity
MKnnn	Mark waypoint
MRK	Mark
MSG	Message
NAV	Navigation
NAVAID	Navigation aid
ND	Navigation display
NDB	Non-directional beacon
NM	Nautical mile
NRP	Non return point
OFST	Offset
PERF	Performance
PFD	Primary flight display
PLT	Pilot (database)
POS	Position

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ABBREVIATION	MEANING
PPOS	Present position
PRAIM	Predictive RAIM
PRNAV	Precision area navigation
PROG	Progress
QNH	Altimeter setting for altitude above sea level
RA	Radio altimeter
RAIM	Receiver autonomous integrity monitoring
RMS	Radio management system
RNAV	Area navigation
RNP	Required navigation performance
RTA	Required time of arrival
RWY	Runway
SAT	Static air temperature
SBAS	Satellite-based augmentation system
SEC	Secondary flight plan
SID	Standard instrument departure
SPD	Speed
SQL	Squelch
STAR	Standard terminal arrival route
STD	Standard (database)
STS	Status
T-P	Turning point (origin of a DIRECT TO)
T/O	Take-off
TAS	True airspeed
TAT	Total air temperature
TCAS	Traffic collision avoidance system
TGT	Target
TK	Track
TKE	Track angle error
TMPY	Temporary flight plan
TO	Waypoint the aircraft is flying to
TOC	Top of climb
TOD	Top of descent
TRANS	Transition
TRANS ALT	Transition altitude
TRU	True (reference)
TTG	Time to go
UTC	Coordinated universal time
V-D	VOR/DME localization mode

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ABBREVIATION	MEANING
V-V	VOR/VOR localization mode
V1, VR, V2	Take-off decision, rotation and take-off safety speeds
VAPP	Approach speed
VDEV	Vertical deviation
VERT REV	Vertical revision
VFE	Maximum flaps extended speed
VFTO	Final take-off speed
VHF	Very high frequency (radio)
VMCA	Minimum control speed in the air
VMCL	Minimum control speed in landing configuration
VmHB	Minimum manoeuvre speed, high bank
VmLB	Minimum manoeuvre speed, low bank
VNAV	Vertical navigation
VOR	VHF omnidirectional range
VS	Vertical speed
VTA	Vertical track alert
WPT	Waypoint
XPDR	Transponder
XTK	Cross-track error
ZC	Barometric-corrected altitude
ZFW	Zero fuel weight

GEN.2.2 Approach Types

Ident.: GEN.2.2 — 01 NOV 2026
ALL

The first three letters of an approach name give its type (see PRI.1.7).

TYPE	APPROACH
FMS	Flight management system approach
GLS	GNSS landing system
GPS	GPS approach
IGS	Instrument guidance system
ILS	Instrument landing system
LBC	Localizer back course
LDA	Localizer-type directional aid
LOC	Localizer only
MLS	Microwave landing system
NDB	NDB approach
NDM	NDB with DME
RNV	Area navigation (RNAV)

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TYPE	APPROACH
SDF	Simplified directional facility
TAC	TACAN
VDM	VOR with DME
VOR	VOR (also VOR/DME or VORTAC used as VOR)

GEN.2.3 ARINC 424 Leg Types

Ident.: GEN.2.3 — 01 NOV 2026
ALL

The flight plan legs are coded with the ARINC 424 path and termination. The FMS flies the following leg types.

LEG	PATH AND TERMINATION
AF	DME arc to a fix
CA	Course to an altitude
CD	Course to a DME distance
CF	Course to a fix
CI	Course to an intercept of the next leg
CR	Course to a radial
DF	Direct to a fix
FA	From a fix, course to an altitude
FC	From a fix, course for a distance
FD	From a fix, course to a DME distance
FM	From a fix, course to a manual termination
HA	Holding pattern, exit at an altitude
HF	Holding pattern, exit after one circuit at the fix
HM	Holding pattern, manual exit
IF	Initial fix
PI	Procedure turn to intercept the next leg
RF	Constant radius arc to a fix
TF	Track between two fixes
VA	Heading to an altitude
VD	Heading to a DME distance
VI	Heading to an intercept of the next leg
VM	Heading to a manual termination
VR	Heading to a radial

PRI.1 DEFINITIONS

PRI.1.1 Flight Area

Ident.: PRI.1.1 01 NOV 2026
ALL

The FMS divides the flight into three flight areas. The flight area sets the default RNP (PRI.1.14), the LNAV capture zone (PRI.5.1) and the full scale of the FMS lateral deviation.

AREA	WHERE
ENROUTE	Away from the departure and destination airports
TERMINAL	Near the departure or the destination airport, at low altitude
APPROACH	On the final approach, from 2 NM before the FAF

Transitions

ENROUTE → TERMINAL — The aircraft is within 30 NM of the departure or of the destination, and below 15 000 ft.

TERMINAL → ENROUTE — The aircraft is 31 NM or more from both the departure and the destination, or at 16 000 ft or above. Also when the flight plan has neither departure nor destination.

TERMINAL → APPROACH — All these conditions together:

- the flight plan has a final approach fix (FAF) from the approach procedure, and the aircraft is less than 2 NM from it,
- the cross-track error is less than 0.3 NM and the track angle error less than 90°,
- the GPS position is valid.

APPROACH → TERMINAL — The missed approach is activated.

The 1 NM and 1 000 ft difference between the entry and exit values avoids a flicker of the area at the boundary. APPROACH is entered only from TERMINAL. At power-up the area is ENROUTE; on the ground at the departure airport it becomes TERMINAL at once.

PRI.1.2 Flight Phase

Ident.: PRI.1.2 01 NOV 2026
ALL

The FMS manages seven flight phases: GROUND, TAKE OFF, CLIMB, CRUISE, DESCENT, APPROACH and GO AROUND. The phase selects the PERF page shown first, the managed speed laws, the VNAV direction and several page rules.

PHASE	ENTERED WHEN
GROUND	The aircraft is on its wheels
TAKE OFF	Lift-off (from GROUND)
CLIMB	More than 1 500 ft above the departure airport elevation (from TAKE OFF)
CRUISE	The aircraft passes the top of climb (TOC) along the flight plan (from CLIMB)
DESCENT	The aircraft passes the top of descent (TOD) along the flight plan (from CRUISE)
APPROACH	See below
GO AROUND	The AFCS GA mode is engaged

The phase moves forward only, in the order of the table. The exceptions are:

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- **GO AROUND** is set whenever the GA mode is engaged, in any phase. After a go-around the phase returns to CLIMB when the aircraft climbs at more than 500 ft/min and is more than 1 500 ft above the departure airport elevation.
- **GROUND** is set whenever the aircraft is on its wheels.
- **APPROACH** from CLIMB, CRUISE or DESCENT: the aircraft is less than 10 NM from the destination **and** the active leg belongs to the approach procedure or the TO waypoint is the destination airport.
- **CRUISE** is set when a DIRECT TO a missed approach waypoint, selected in the DIRECT TO list, is performed (the missed approach is then active, FPH.6.2). A go-around in progress keeps the GO AROUND phase.

At power-up, the phase is GROUND on the ground and CRUISE in flight. When the departure airport elevation is not known, the 1 500 ft is counted above the ground.

Without a top of climb (no flight plan), the aircraft is in CRUISE when it is within 500 ft of the cruise altitude with a vertical speed below 300 ft/min.

PRI.1.3 VNAV Sections

Ident.: PRI.1.3 — 01 NOV 2026
ALL

The vertical profile along the flight plan is divided into sections. The section the aircraft is in sets the vertical targets and the reference of VDEV (PRI.4.5).

SECTION	WHERE
CLIMB	From the departure to the TOC
CRUISE	From the TOC to the TOD, with the aircraft at the cruise altitude
CRUISE CLIMB	Between TOC and TOD, aircraft more than 300 ft below the cruise altitude
CRUISE DESCENT	Between TOC and TOD, aircraft more than 300 ft above the cruise altitude
DESCENT	From the TOD to the destination

CRUISE CLIMB and CRUISE DESCENT end when the aircraft is back within 100 ft of the cruise altitude (the level interception).

In cruise, the cruise altitude is normally the selected altitude (ALT SEL), so an ALT SEL change starts a cruise climb or a cruise descent. Step altitudes entered on VERT REV also start them at the step waypoint (PRI.4.4).

PRI.1.4 Departure Procedure

Ident.: PRI.1.4 — 01 NOV 2026
ALL

A departure is built from three elements, selected on the DEPARTURE page:

- the runway (RWY),
- the standard instrument departure (SID),
- the en-route transition (TRANS), which joins the SID to the route.

The FMS strings the elements together: when the last fix of one element is the first fix of the next one, the two are joined at that common waypoint. Otherwise a FPLN DISCONTINUITY is inserted between them. A SID inserted ahead of a route that already contains its exit fix is joined at that fix.

CAUTION

Before clearing a discontinuity, check the legs on each side of it. Clearing it joins the two legs directly, which can give a path that turns back on itself.

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PRI.1.5 Arrival Procedure

Ident.: PRI.1.5 — 01 NOV 2026 — ALL

An arrival is built from four elements, selected on the ARRIVAL page:

- the approach (APP),
- the approach transition (VIA), between the STAR and the approach,
- the standard terminal arrival route (STAR),
- the en-route transition (TRANS), which joins the route to the STAR.

The stringing rule is the same as for the departure: a common waypoint joins two elements, otherwise a FPLN DISCONTINUITY is inserted. The missed approach procedure is part of the approach. It is shown after the destination runway and is flown only after a go-around (PRI.4.2).

PRI.1.6 Airways

Ident.: PRI.1.6 — 01 NOV 2026 — ALL

An airway segment is a series of database legs along one airway, from an entry fix to an exit fix. It is inserted from the LTRL REV page of a flight plan waypoint (PGE.2):

- the entry (FROM) fix is the revised waypoint. It must be on the airway,
- the exit (TO) fix is a fix of the same airway, chosen by the crew.

Up to five airways can be chained, each one starting at the exit fix of the previous one. The waypoints of the airway are inserted after the entry fix. The exit fix of the last airway can be a waypoint that is already in the flight plan or a waypoint that is not:

- exit fix already in the flight plan (not in the missed approach): the airway joins it, and the waypoints between the entry fix and that waypoint are deleted,
- exit fix not in the flight plan: a FPLN DISCONTINUITY is inserted after it, and the waypoints that followed the entry fix are kept after the discontinuity.

The airway list can be filtered by level: HIGH (high and both-level airways), LOW (low and both-level airways) or HIGH+LOW.

PRI.1.7 Approach Identification

Ident.: PRI.1.7 — 01 NOV 2026 — ALL

An approach name has up to seven characters:

- three letters for the approach type (see GEN.2.2),
- the runway: its number and, if any, L, C or R,
- the multiple indicator: Z, Y or none.

Examples: `ILS23` (ILS runway 23), `RNV08LZ` (RNAV (GPS) Z runway 8L), `VDM18R` (VOR/DME runway 18R).

On the ROUTE SEL, pilot route and company route pages the name is shortened to six characters: when there is a multiple indicator, the type keeps only its first two letters (`RN08LZ`).

Approaches whose database name does not follow this format (circling approaches such as `VOR-A`, or several approaches of one type to one runway) are shown as stored in the database.

An RNAV approach that the database publishes with an SBAS level of service is flown as an LPV or LP approach when the SBAS option is fitted. The ARRIVAL page then offers the choice between LPV (or LP) and LNAV minima.

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PRI.1.8 Direct To

Ident.: PRI.1.8 — 01 NOV 2026 — ALL

DIRECT TO builds a path from the present position to a chosen waypoint. The waypoint can be in the flight plan, in a database, or defined by the crew (latitude/longitude, place/bearing/distance, place-bearing/place-bearing). The present position becomes the turning point T-P, the FROM waypoint of the new active leg.

DIRECT TO needs a valid aircraft position, track and ground speed.

Trajectory

The FMS chooses one of three paths, with a turn radius from the ground speed and the bank limit:

Segment	The waypoint is inside the turn circle and lies less than 60° from the present track: a straight line from the aircraft to the waypoint.
Delayed turn	The waypoint is inside the turn circle but more than 60° off the track: the aircraft continues on its track until a turn can end on the waypoint, then turns onto it.
Direct turn	Otherwise: a turn from the present track onto the line to the waypoint, then a straight line.

Variants

DIRECT TO	The legs between the aircraft and the waypoint are removed. A DIRECT TO a missed approach waypoint selected in the DIRECT TO list activates the missed approach (FPH.6.2).
DIRECT TO ABEAM	The flight plan waypoints between the aircraft and the chosen waypoint are projected onto the direct path and kept as abeam points, named AB + the waypoint ident (for example ABWHAMY). Their altitude, speed and time constraints are lost; their wind profiles are kept.
DIRECT TO with INBND CRS	The chosen waypoint is reached on the inbound course entered by the crew (a course-to-fix leg). With an INTCP DIST, the FMS also inserts an intercept point that far before the waypoint on the inbound course.
DIRECT TO a moving waypoint	The waypoint is a pilot waypoint with a speed vector. The FMS computes a rallying point, named with the ident followed by *, where an aircraft flying at 130 kt TAS meets the moving waypoint in the present wind, and refreshes it continuously. When no interception is possible (or above 89° latitude), the TO waypoint is the moving waypoint itself. Only one moving waypoint can be in the flight plan, and an inbound course cannot be used with it.

See PGE.4 for the pages.

PRI.1.9 Holding Pattern

Ident.: PRI.1.9 — 01 NOV 2026 — ALL

The FMS flies the holding patterns of the departure, arrival and missed approach procedures, and holds inserted by the crew on the HOLD page. A hold inserted by the crew uses the default hold data of the FMS, not the data of the procedure.

Exit

HOLD LEG	EXIT
HA	At the hold fix, once the hold altitude is reached (at the first fix crossing if it is already reached)
HF	At the hold fix after the entry and one circuit
HM	Only when the crew orders the exit; the aircraft then leaves at the next fix crossing

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Entry

The entry is chosen from the track on which the aircraft arrives at the fix, compared with the inbound course (sectors for a right-hand hold; mirrored for a left-hand hold):

ENTRY	ARRIVAL TRACK RELATIVE TO THE INBOUND COURSE
DIRECT	From 70° to the left to 110° to the right
TEARDROP	More than 110° to the right
PARALLEL	More than 70° to the left

- **Teardrop**: from the fix, outbound on a track 30° off the outbound course toward the holding side, then a turn in the hold direction back to the fix.
- **Parallel**: from the fix, outbound along the outbound course on the non-holding side, then a turn against the hold direction back to the fix.

The entry path is drawn dashed on the ND.

Laps

Each lap follows the same ground racetrack: two parallel legs and two half circles. The turn radius is sized for the true airspeed plus the wind, at the standard rate of turn but with a bank at least 3° below the bank limit (22° with the 25° limit), so that the turn can be held on its arc with the wind behind. The outbound leg length is set by the leg time or the leg distance of the hold.

PRI.1.10 Offset

Ident.: PRI.1.10 — 01 NOV 2026
ALL

The lateral offset makes the aircraft fly parallel to the flight plan, to the left or right, up to 20 NM. The flight plan itself is not changed. It is entered on the LTRL REV page of the present position and confirmed with EXEC.

- The offset is allowed only on a TF or CF leg that is not part of an approach and does not end at a runway, with LNAV engaged. It is not allowed when the next leg is a discontinuity, or when the course changes by more than 90° at the end of the active leg (NOT ALLOWED).
- The aircraft joins the offset track with a 45° intercept. When it cannot reach the offset track 2 NM before the end of the active leg, the offset starts on the next leg (OFFSET DELAYED).
- The offset is cancelled automatically before a leg where it is not allowed (OFFSET CANCELLED).
- While the offset is active, the green OFST annunciator is lit on the MCDU.

See MPH.1 for the procedure.

PRI.1.11 Required Time of Arrival

Ident.: PRI.1.11 — 01 NOV 2026
ALL

An RTA is a time constraint on a flight plan waypoint, entered on the VERT REV page. Only one RTA can exist in the flight plan (DELETE OTHER RTA ?).

With an RTA ahead, the FMS computes an IAS target that brings the aircraft to the waypoint at the RTA. This RTA speed is used for the cruise, cruise descent and descent sections up to the RTA waypoint: it is the managed speed at ALT SEL and in descent (flaps 0, both engines), it is shown as TGT IAS on VNAV 1/2 and PROG 2/3, and the predictions up to the RTA waypoint are computed with it. The climb and cruise climb sections keep their normal speeds. An "at or before" RTA that the normal speeds already meet (or an "at or after" RTA that they already respect) needs no RTA speed: the normal managed speed is kept.

The RTA speed stays between:

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- a minimum, the higher of the minimum operating speed flaps 0 (VmLB flaps 0) and the speed that keeps the wind limitations: drift less than 45°, headwind less than half the TAS, tailwind less than twice the TAS. The minimum can therefore be higher than the minimum operating speed;
- a maximum, the maximum cruise speed at the cruise altitude, never above VMO.

The VERT REV page shows the difference between the predicted ETA and the RTA (green, amber when the RTA cannot be met). When the RTA cannot be met within these limits, the RTA is declared missed (RTA MISSED in the scratchpad, ETA amber) and the RTA speed stays at the limit that comes closest to it. In a climb section no RTA speed is computed: the RTA is only checked against the normal prediction.

PRI.1.12 Non Return Point (NRP)

Ident.: PRI.1.12 — 01 NOV 2026
ALL

The NRP is the point of the active flight plan beyond which the fuel predicted at the alternate airport (EFOB at ALTN) would be less than the RESERVE entered on the WEIGHT page. The FMS computes it, with its ETA (PROG 1/3), when the fuel on board, the reserve and an alternate are known. The alternate is the one entered on the CRUISE page, else the departure airport.

The NRP ALERT (FAL) is raised one minute before the aircraft reaches the NRP.

PRI.1.13 Mark

Ident.: PRI.1.13 — 01 NOV 2026
ALL

The MRK key marks the present position: it stores it as a pilot waypoint named MKnnn and displays the MARK page.

On the MARK page the crew can also update the FMS position. The new position is entered as a database ident, a latitude/longitude, or a place/bearing/distance. The BCP position then restarts from this position. See PGE.8.

PRI.1.14 Required Navigation Performance (RNP)

Ident.: PRI.1.14 — 01 NOV 2026
ALL

The RNP is the navigation accuracy required in the present airspace. The FMS compares it with its own navigation performance.

Default RNP

The RNP depends on the flight area and on the sensor used:

FLIGHT AREA	GPS USED	GPS NOT USED
ENROUTE	5 NM	5 NM
TERMINAL	1 NM	2 NM
APPROACH	0.3 NM (HIL 0.3 NM or less), else 0.7 NM	0.7 NM

"GPS used" means that the localization mode is GPS.

- When the active leg (SID, STAR or approach) carries an RNP in the database, the RNP is the smaller of the default value and the database value. Airway legs use the default value.
- The crew can insert an RNP on PROG 2/3. It replaces the computed value until it is cleared. An inserted RNP larger than the computed value raises the RNP alert (AIRSPACE INCONSISTENCY).
- After a long power interruption the inserted RNP is lost.

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Navigation performance terms

EPE	Estimated position error. The radius of the circle that contains the true position with 95 % probability. Shown in the MCDU title line.
FTE	Flight technical error. The distance from the FMS position to the defined path.
ANP	Actual navigation performance: the quadratic sum of EPE and FTE.
HIL	Horizontal integrity limit of the GPS. The radius of the circle that contains the GPS position with 99.9 % probability, computed from the satellite geometry by RAIM.

Monitoring

CHECK	ALERT
ANP larger than the RNP (or, GPS not used, EPE larger than 3.8 NM)	RNP — NAVIGATION ACCURACY DEGRADED; UNABLE RNP on the ND and the EWD
GPS integrity lost, or HIL larger than twice the RNP	AIM / HIL; GPS INTEG on the ND and the EWD
Radio position EPE larger than the radio RNP of the area	R/N

The predicted integrity (PRAIM) at the destination and along the flight plan is described in PRI.3.6. The alerts are described in ABN.1.

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PRI.2 MODES OF OPERATION

PRI.2.1 General

Ident.: PRI.2.1 — 01 NOV 2026
ALL

The two FMS work in one of three modes:

MODE	WHEN	DATA
DUAL	Normal: both FMS running and synchronized	Crew entries made on one FMS are sent to the other
INDEPENDENT	Both FMS running, cross talk lost or not yet synchronized	Each FMS keeps the entries of its own MCDU only
SINGLE	One FMS lost	Both MCDUs are used on the remaining FMS

In every mode each FMS computes its own position, guidance and predictions.

PRI.2.2 Dual Mode

Ident.: PRI.2.2 — 01 NOV 2026
ALL

Dual mode is the normal mode. Each FMS computes by itself, and the cross talk keeps the crew data of the two FMS identical:

- the flight plans: FPLN, TMPY and SEC, and the >UNDO plan,
- the initialization, weight and performance data, the units, the winds,
- the lateral offset,
- the deselected navaids,
- the pilot database,
- the timers.

An entry made on one MCDU is sent to the other FMS within a few seconds. The latest entry wins: two crew members should not modify the same data at the same time on their MCDUs.

The positions, sensor data, guidance and predictions are not sent: each FMS computes its own. The position difference between the two FMS is shown on PROG 3/3. Each FMS keeps its own FMS alerts: an alert cleared on one MCDU is not cleared on the other.

The FMS not coupled to the autopilot follows the waypoint sequencing of the master FMS, so that both FMS always show the same TO waypoint.

Cross talk initialization

When the FMS are powered up, a CROSS TALK INIT harmonizes their data. The scratchpad shows CROSSTALK INIT while it runs.

- When both FMS start within 5 seconds of each other, the data are sent from FMS 1 to FMS 2.
- Otherwise the data are sent from the FMS powered up first to the FMS powered up last.
- In flight, an FMS that comes back after a long power interruption stays independent until the crew confirms the transfer: the CTK alert CROSS TALK INIT / PRESS CTK TO CONFIRM is shown on that FMS (CONFIRM ON THE OTHER FMS on the other one). Pressing CTK on its MSG page loads the data of the other FMS.

A power interruption of 5 seconds or less is transparent: nothing is redone.

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Resynchronization

The crew can resynchronize the two FMS with >CTK INIT on the FMS BITE page of the FMS not coupled to the autopilot, then EXEC. That FMS restarts and receives the data of the other FMS. See ABN.2.

During a crew-commanded transfer, the scratchpad of the receiving MCDU shows XFER DATA IN PROGRESS and its keyboard is locked until the transfer ends.

PRI.2.3 Independent Mode

Ident.: PRI.2.3 — 01 NOV 2026
ALL

Independent mode is a degraded mode. The two FMS run, but no data are exchanged: each FMS takes into account only the entries of its own MCDU.

The FMS go to independent mode when:

- there is no cross-talk communication for more than 15 seconds (CTK — CROSS TALK FAILURE NO COMMUNICATION FMS1/2),
- an FMS restarted in flight and waits for the crew confirmation (CTK — CROSS TALK INIT),
- a CROSS TALK INIT is in progress.

The amber flag FMS INDEPENDENT is shown on the ND.

After a communication failure the FMS stay independent, even when the link comes back, until a CROSS TALK INIT is made. A short loss of the link during a CROSS TALK INIT cancels it: a new one must be commanded.

CAUTION

In independent mode the two FMS can hold different flight plans and data. Make the same entries on both MCDUs, or resynchronize the FMS.

PRI.2.4 Single Mode

Ident.: PRI.2.4 — 01 NOV 2026
ALL

Single mode is the degraded mode after the loss of one FMS. An FMS is lost when it has been without power for more than 5 seconds.

- The MCDU connected to the lost FMS displays the MCDU MENU page, where the lost FMS is marked <OFF>.
- Select the remaining FMS on that MCDU (MENU key, then <FMS 1 or <FMS 2). Both MCDUs then work on the same FMS.
- The remaining FMS is the master FMS: it guides the aircraft and tunes the radios.

When the lost FMS comes back, a CROSS TALK INIT brings it back to dual mode (automatically on the ground, after crew confirmation in flight).

PRI.2.5 Master FMS

Ident.: PRI.2.5 — 01 NOV 2026
ALL

One FMS is the master: the FMS coupled to the AFCS. Only the master:

- couples LNAV and VNAV to the autopilot and flight director,
- tunes the radio navigation receivers,
- gives the aircraft position used by the other systems (terrain awareness, for example).

The master is chosen as follows:

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1. the FMS selected as NAV SOURCE on the coupled side (CPL selection on the FGCP),
2. if the NAV SOURCE of the coupled side is V/ILS: FMS 1 when the captain side is coupled, FMS 2 when the first officer side is coupled,
3. if the coupled side is not known: FMS 2.

A lost FMS is never the master while the other one runs.

Each ND and PFD shows the data of the FMS selected as NAV SOURCE on its side (its own side FMS on V/ILS). The ND shows FMS1 or FMS2 in amber when a pilot uses the other side's FMS.

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PRI.3 FLIGHT MANAGEMENT

PRI.3.1 Databases

Ident.: PRI.3.1 01 NOV 2026
ALL

The FMS holds three navigation databases and a magnetic variation model.

DATABASE	CONTENT	CREW ACTION
Standard (STD DATA)	Airports (with runways and procedures), navaids, waypoints, NDBs, airways	Read only
Company routes (CO-RTE DATA)	Stored routes from one airport to another	Created and modified on the DATA pages
Pilot (PILOT DATA)	Pilot airports, navaids, waypoints and routes	Created, modified and deleted on the DATA pages

The standard database has a cycle and an expiry date, shown on the power-up page and on NAV DATA. The expiry date is amber when the database has expired.

The pilot database holds up to:

TYPE	CAPACITY
Airports	100
Navaids	100
Waypoints	300
Routes	100

A full database gives the MEMORY FULL message.

Changes to the pilot data, the company routes and the secondary flight plan are kept only after a data save (DATA MENU SAVE<). Until then the DTA alert (NAV DATA MODIFIED / SAVE DATA) reminds the crew. In dual mode the save is made on both FMS.

See MNT.1 to MNT.3 for database maintenance.

SIMULATOR NOTE

The standard database is built from the X-Plane navigation data. When Navigraph data is installed in `Custom Data`, it is used first and the default X-Plane data fills the gaps. Only one standard database is loaded: the additional standard database of the aircraft FMS (a second AIRAC cycle selected by the crew) is not simulated.

PRI.3.2 Flight Plans

Ident.: PRI.3.2 01 NOV 2026
ALL

A flight plan is a series of legs (a path and its termination) from the departure airport to the destination, with any discontinuities. It is built from the databases: airports and runways, departure and arrival procedures, airways, waypoints and navaids, pilot data, company and pilot routes.

The FMS manages three flight plans:

PLAN	USE	COLOUR
FPLN	Active flight plan. The only one used for guidance.	**green** (active leg **magenta**)

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PLAN	USE	COLOUR
TMPY	Temporary flight plan: a copy of the FPLN with the crew revisions, before EXEC	**yellow**
SEC	Secondary flight plan: prepared, not flown	**white**

Each plan holds up to 100 legs. Discontinuities and the legs already flown are not counted. A revision that would exceed this is refused with FPLN FULL (SEC FULL on the SEC).

PRI.3.3 Active Flight Plan

Ident.: PRI.3.3 — 01 NOV 2026
ALL

The aircraft is always guided along the FPLN, even while a TMPY exists or the SEC is being prepared. The crew never revises the FPLN directly: every revision goes through a TMPY.

The FPLN is cleared automatically at the end of the flight cycle, when the aircraft has been on the ground for more than 30 seconds after a flight. The TMPY and the SEC are cleared at the same time; a SEC saved with DATA SAVE is recovered at the next power-up.

PRI.3.4 Temporary Flight Plan

Ident.: PRI.3.4 — 01 NOV 2026
ALL

The first revision of the FPLN creates the TMPY, a copy of the FPLN with that revision. Further revisions are made on the TMPY. The TMPY is created by:

- a departure or arrival procedure, a new destination,
- a waypoint inserted (NEXT WPT or at a discontinuity), an airway,
- a DIRECT TO,
- a hold inserted or modified,
- a leg or a discontinuity deleted, a discontinuity inserted,
- an offset, an overfly change,
- a vertical revision: altitude, speed or FPA constraint, step altitude or step mode, RTA,
- a wind profile change,
- >UNDO (the TMPY then holds the previous flight plan).

While a TMPY exists:

- the FPLN pages show the TMPY in yellow, the title becomes TMPY, and the EXEC light is on,
- EXEC, from any page, makes the TMPY the new FPLN,
- >CLR TMPY (or a FPLN initialization, a FPLN cancellation, a DATA ERASE) deletes it without activating it,
- when the aircraft sequences a waypoint that is also the first leg of the TMPY, the TMPY is sequenced too.

When the FROM waypoint of the TMPY is the DIRECT TO turning point (T-P), EXEC is refused (NOT ALLOWED) unless the position, track, ground speed and true airspeed are valid.

For one minute after an EXEC, >UNDO on the FPLN page brings back the flight plan as it was before.

CAUTION

Check the TMPY on the FPLN pages (and on the ND) before pressing EXEC.

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PRI.3.5 Secondary Flight Plan

Ident.: PRI.3.5 01 NOV 2026
ALL

The SEC is used to prepare an alternate route, a return flight or the next flight, or to keep a copy of the FPLN. It is reached with a second press of the FPLN key.

On the SEC the crew can:

- initialize it (FROM/TO, route selection), or copy the FPLN into it (COPY FPLN),
- revise it laterally (except DIRECT TO, hold at present position and offset) and vertically,
- ACTIVATE it: the SEC replaces the FPLN,
- SWAP it with the FPLN,
- delete it.

SEC revisions apply directly: there is no temporary SEC. ACTIVATE and SWAP need EXEC, and are refused while a TMPY exists (TMPY EXIST). After a SEC activation the WGT alert (SEC FPLN ACTIVATED — CHECK WEIGHT) asks the crew to check the weights.

SEC copied from the FPLN

When the SEC is a copy of the FPLN, the FPLN revisions are also made on the SEC, on the part common to the two plans. The last common waypoint before the first difference is the alternate waypoint: revisions made before it on the FPLN are reported on the SEC, those after it are not. This continues after a SWAP. A SEC that is a copy of the FPLN is not saved by DATA SAVE.

Relations between the flight plans

FROM	ACTION	TO
FPLN	Any revision, >UNDO	TMPY
TMPY	EXEC	FPLN
TMPY	>CLR TMPY	(deleted)
FPLN	COPY FPLN	SEC
SEC	ACTIVATE + EXEC	FPLN
SEC	SWAP + EXEC	FPLN, and the FPLN becomes the SEC
SEC	Any revision	SEC

PRI.3.6 Predictions

Ident.: PRI.3.6 01 NOV 2026
ALL

The FMS computes predictions along the FPLN, the TMPY and the SEC, and updates them during the flight:

- the pseudo-waypoints: top of climb (TOC), top of descent (TOD), level interception points, deceleration point,
- at each waypoint and at the destination: estimated time of arrival (ETA), time en route (ETE), estimated fuel on board (EFOB), predicted altitude,
- the gross weight at the destination and the alternate,
- the non return point (NRP) and its ETA,
- whether each altitude, speed and time constraint will be met.

A holding pattern not yet flown counts as one pattern (its next exit) at the hold IAS and level; the hold being flown counts as the rest of the current pattern. The waypoints after a hold are predicted from that exit.

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The predictions use the weights, the cruise altitude and mode, the performance factors and the wind model below. The times come from the predicted ground speed: the true airspeed at the predicted altitude, with the wind. The fuel predictions need the WEIGHT page entries.

Wind model

In flight, the predictions for the active leg use the present wind measured by the FMS. For the rest of the flight plan, the FMS uses one of two models:

Simplified model — from the cruise mean wind (CRUISE page MEANWIND) and the destination wind (APPROACH page GND WIND):

AIRCRAFT IN	CLIMB SECTION	CRUISE SECTION	DESCENT SECTION
Ground, cruise	Half the mean wind	Mean wind	Average of mean wind and destination wind
Climb	Average of present wind and mean wind	Mean wind	Average of mean wind and destination wind
Descent, approach	—	—	Average of present wind and destination wind

A wind not entered is replaced by the present wind.

Detailed model — as soon as the crew enters a vertical wind profile on the WIND page of a waypoint, it replaces the simplified model:

- a profile holds up to four wind groups (direction, speed, flight level),
- the first profile of the flight plan applies to the waypoints before it and after it, up to the next profile; each following profile applies downstream,
- at each waypoint the wind is interpolated in its profile at the predicted altitude,
- when a revision deletes a waypoint that carried a profile, the profile moves to the next waypoint downstream.

See PGE.2 for the WIND page.

GPS integrity prediction (PRAIM)

The FMS predicts the availability of the GPS integrity monitoring (RAIM) from the satellite almanac:

- at the destination or at any fix, at its ETA and every 5 minutes from 15 minutes before to 15 minutes after it (PRAIM 1/2),
- along the whole flight plan, at points every 5 minutes of flight, each checked over its ETA ± 15 minutes, against the criterion selected by the crew (PRAIM 2/2).

CRITERION	AVAILABLE WHEN
RNAV 10 OCEANIC	FDE is never unavailable for more than 5 consecutive points
RNP 4 OCEANIC	FDE is never unavailable for more than 4 consecutive points, and HIL below 8 NM at every point
RNAV 5-2-1	RAIM available at every point
RNP 1	HIL below 2 NM at every point

The prediction along the flight plan is limited to flight plans of less than 23 h 55 min. See PGE.3.

PRI.4 FLIGHT GUIDANCE

PRI.4.1 Lateral Navigation Parameters

Ident.: PRI.4.1 — 01 NOV 2026
ALL

The FMS computes the lateral navigation parameters from its own position along the active leg. They are shown on the PROG pages and the ND.

TO	The waypoint the aircraft is flying to (end of the active leg).
DTK	Desired track: the course of the active leg, from the FROM waypoint to the TO waypoint.
BRG	Bearing from the FMS position to the TO waypoint.
DIST	Direct distance from the FMS position to the TO waypoint.
TK	Track of the aircraft.
GS / TAS	Ground speed / true airspeed.
DRIFT	Drift angle.
XTK	Cross-track error: the distance from the aircraft to the active leg, positive to the right.
TKE	Track angle error: the difference between DTK and TK.

PRI.4.2 LNAV: Leg Sequencing

Ident.: PRI.4.2 — 01 NOV 2026
ALL

The FMS sequences the active leg (the TO waypoint becomes the FROM waypoint) when its termination is reached.

Fly-by waypoints

At a normal (fly-by) waypoint the turn starts before the waypoint, so that the aircraft rolls out on the next leg. The anticipation distance is:

- the turn radius at the present ground speed and the bank limit (PRI.5.3), times the tangent of half the track change,
- plus the distance flown during half the time needed to roll in at 3°/s,
- limited to 6 NM.

There is no anticipation for track changes of 135° or more: the aircraft flies over the waypoint and then turns.

The leg is also sequenced when the aircraft is within 0.5 NM of the waypoint (0.3 NM on the missed approach), or when it has passed abeam the waypoint.

Fly-over waypoints and conditional terminations

A fly-over waypoint (shown with △ on the FPLN page) is sequenced over the waypoint (within 0.1 NM, or passed abeam). The turn starts there. The same applies to the legs that end at a DME distance or a radial (CD, FD, VD, CR, VR).

Other terminations

LEG	SEQUENCED WHEN
CA, FA, VA	The altitude of the leg is reached
FC	The distance of the leg from its fix is flown
CI, VI, PI	The next leg is intercepted

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LEG	SEQUENCED WHEN
FM, VM	Never: the crew ends the leg (DIRECT TO, or a new revision)
HA, HF, HM	See PRI.1.9

Discontinuity and end of flight plan

The FMS does not anticipate the turn into a discontinuity. At the discontinuity, LNAV disengages (PRI.5.2).

Sequencing without LNAV

When LNAV is not engaged (for example on an ILS flown with the localizer), the flight plan is still sequenced at waypoints and at altitude, DME and radial terminations, provided that the aircraft is within the capture zone of the leg (PRI.5.1), its track is within 90° of the leg course, and the ground speed is 40 kt or more. Manual terminations, intercepts and holds are not sequenced without LNAV.

Missed approach

The missed approach legs are flown only once the missed approach is activated: by a go-around initiated in the DESCENT or APPROACH phase, or by a DIRECT TO one of its waypoints selected in the DIRECT TO list. The flight area then becomes TERMINAL and LNAV continues along the missed approach. After a go-around, the approach is strung again after the missed approach for a new approach.

Waypoint alert

With LNAV engaged, the TO waypoint ident flashes on the ND:

- 10 seconds before the aircraft sequences the active leg (or starts the turn),
- 60 seconds before a discontinuity or the end of the flight plan, where LNAV will disengage.

PRI.4.3 VNAV: Vertical Profile

Ident.: PRI.4.3 — 01 NOV 2026
ALL

The FMS builds a vertical profile along the flight plan from the departure to the destination:

- **Climb**: from the departure to the top of climb (TOC), where the aircraft reaches the cruise altitude. The climb respects the altitude constraints of the flight plan.
- **Cruise**: at the cruise altitude, from the TOC to the top of descent (TOD), with the cruise climbs and cruise descents of the step altitudes.
- **Descent**: from the TOD to the destination. The descent path follows the altitude constraints of the arrival and the flight path angles (FPA) entered by the crew. Between constraints, and from the TOD to the first constraint, the path has the default FPA of the PERF INIT page (DFLT FPA, 3° by default).

The TOD is placed so that the descent at the default FPA meets every altitude constraint at or below which the aircraft must be: AT, AT OR BELOW, and the upper altitude of a WINDOW constraint. It is never less than 10 NM after the TOC.

Cruise altitude

PHASE	CRUISE ALTITUDE USED BY THE FMS
Ground, take-off, climb	The CRZ ALT entry, or ALT SEL if higher. With no entry, the present altitude, or ALT SEL if higher.
Cruise	ALT SEL (else the CRZ ALT entry, else the present altitude)
Cruise, profile frozen; descent and later	The value held when the profile was frozen

A CRZ ALT entry is limited to the computed ceiling plus 5 000 ft. Above the ceiling of the day the predictions are dashed.

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Profile freeze

The cruise altitude and the descent profile freeze 5 minutes before the TOD (released if the TOD moves back to more than 6 minutes). With an approach that has a FAF, they also freeze up to 10 minutes before the TOD when ALT SEL is set at or below the FAF altitude minus 100 ft. From the freeze, an ALT SEL change no longer changes the cruise altitude, and the vertical DIRECT TO (VERT DTO) is available on the VERT REV page.

Pseudo-waypoints

The ND and the FPLN show the TOC, the TOD, the step level interception points and the deceleration point. In descent, the ND also shows where the present vertical path meets the descent profile and where the aircraft will reach ALT SEL.

Vertical profile errors

MESSAGE	MEANING
VERTICAL PROFILE ERROR	The climb at the cruise altitude cannot end before the descent starts (cruise altitude too high for the route), or, on the ground, the TOD would be behind the aircraft. Check the cruise altitude and the constraints on VNAV 1/2. Not shown while the flight plan has a discontinuity, and not after an ALT SEL increase within 20 NM of the destination.
ADJUST DESCENT	An altitude constraint needs a descent that would have to start right after the TOC.
TOO STEEP PATH AHEAD	In descent or approach with VNAV engaged, the next altitude constraint (AT, AT OR BELOW, or the top of a window) cannot be made within 250 ft, even with a 5.5° path from the aircraft. CLR removes it.

Vertical track alert (VTA)

With VNAV engaged, the ALT SEL indication on the PFD flashes to ask the crew to change the selected altitude: one minute before the TOD, and for one minute when a step is about to start. The alert stops as soon as ALT SEL is changed.

PRI.4.4 VNAV: Steps

Ident.: PRI.4.4 — 01 NOV 2026
ALL

A step altitude entered on the VERT REV page of a cruise waypoint (STEP TO) starts a cruise climb or a cruise descent at that waypoint. VNAV 1/2 shows the first two steps with their level interception points. Each step is computed from the level of the previous one.

PRI.4.5 VNAV: Targets and VDEV

Ident.: PRI.4.5 — 01 NOV 2026
ALL

The VNAV 1/2 page shows the vertical targets of the present VNAV section (PRI.1.3):

SECTION	TGT IAS	TGT VS	VDEV REFERENCE
CLIMB	Managed speed	—	The lower of ALT SEL and the next altitude constraint
CRUISE	Managed speed	—	The cruise altitude
CRUISE CLIMB	Managed speed	—	The lower of ALT SEL and the next altitude constraint
CRUISE DESCENT	Managed speed	Along the default FPA from the aircraft	The cruise altitude
DESCENT	Managed speed	Along the descent profile	The descent profile

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VDEV is positive when the aircraft is above its reference. The TGT VS is limited to 2 000 ft/min up and 2 500 ft/min down.

CAUTION

In descent, VDEV is measured against the FPA of the leg being flown. When a waypoint with a different FPA is sequenced, VDEV can jump.

PRI.4.6 Altitude References

Ident.: PRI.4.6 — 01 NOV 2026
ALL

TRANS ALT	The transition altitudes of the departure and of the destination come from the database. The crew can change them on the TAKE OFF page (departure) and on the APPROACH or VNAV 2/2 page (destination). An entry belongs to its airport: it is dropped when the departure or destination changes.
QNH	The destination QNH entered on the APPROACH or VNAV 2/2 page. It cannot be entered in descent below the transition altitude.
CRZ ALT	Used for the TOC, the TOD and the cruise predictions (see PRI.4.3).
TEMP COMP	With temperature compensation ON (VNAV 2/2), the approach and missed approach altitude constraints are corrected for the destination temperature.

PRI.4.7 Managed Speed

Ident.: PRI.4.7 — 13 NOV 2026
ALL

The FMS computes a managed speed for the present conditions. It is the speed target of the AFCS when the speed mode is AUTO, the TGT IAS on VNAV 1/2 and PROG, and the magenta speed target on the PFD.

Inputs

- the managed speed phase (below), ground or flight,
- the AFCS modes (ALT, LOC, GA),
- the flap lever (0, 15, FULL), the landing gear,
- one engine out or not,
- the power management selection (TO, MCT, CLB, CRZ),
- the icing conditions, the degraded performance flag of the aircraft performance monitoring (APM),
- the position of the aircraft relative to ALT SEL: **AT** (ALT mode and within 50 ft; left beyond 300 ft), **ABOVE** or **BELOW**,
- the speed constraints of the flight plan (see the speed constraints below), a hold (from 4 NM before its entry), the cruise mode, the weight.

The minimum manoeuvre and operating speeds come from the per-weight QRH tables.

Managed speed phases

PHASE	ACTIVE
T/O	On the ground. In flight, until CLB or CRZ is selected on the PWR MGT, the flaps are set to FULL, or 10 minutes after lift-off (then STD).
STD	Climb, cruise and descent
APP	From the moment LOC is armed or engaged, the landing gear is put down, or the flight phase becomes APPROACH (LOC and gear: only if the aircraft is not below ALT SEL, or descends at more than 300 ft/min). Also activated by APP SPD >ACTIVATE on the APPROACH page. Left for STD with >DESELECT or when the destination changes.

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PHASE	ACTIVE
GA	AFCS GA mode engaged in flight. Left for STD when PWR MGT is no longer TO and the GA mode is off, with two engines (with one engine out: flaps 0 or ALT mode).

Managed speed values

PHASE	CONDITION	MANAGED SPEED
T/O on ground	PWR MGT TO, flaps 15, below ALT SEL, not in ALT	V2 + 5 kt (else no managed speed)
T/O in flight, 2 engines, below ALT SEL, not ALT	TO, flaps 15 / flaps 0	V2 + 5 kt / VmHB flaps 0
	MCT, flaps 15	VmHB flaps 0 (icing: VFTO flaps 15)
	MCT, flaps 0	VmHB flaps 0
T/O in flight, 1 engine out, below ALT SEL, not ALT	Flaps 15: TO / MCT	V2 + 5 kt / VFTO flaps 0 (icing: VFTO flaps 15)
	Flaps 0	VFTO flaps 0 (icing: VmLB flaps 0)
T/O, other cases		Climb speed
STD, 2 engines, flaps 0	Below ALT SEL, PWR MGT TO or MCT	VmHB flaps 0 (+10 kt with APM degraded)
	Below ALT SEL, CLB or CRZ	Climb speed
	Above ALT SEL	Descent speed (the RTA speed when an RTA applies), limited to the maximum cruise speed at ALT SEL
	At ALT SEL	The RTA speed when an RTA applies, else the cruise speed of the CRZ MODE: LONG RANGE, MAX CRUISE − 5 kt, or the IAS entered
STD, 2 engines, flaps 15		Climb speed
STD, 1 engine out, flaps 0	At ALT SEL / else	VmHB flaps 0 icing + 10 kt / VmLB flaps 0
STD, 1 engine out, flaps 15	At ALT SEL / else	VmHB flaps 0 icing / VmHB flaps 15 (icing: drift-down speed flaps 15)
STD, flaps FULL		VFE − 10 kt
APP, flaps 0	Above 1 000 ft RA / below	The higher of 170 kt and VmHB + 5 kt / VmHB + 5 kt + wind factor
APP, flaps 15	Above 1 000 ft RA / below	140 kt / VmHB flaps 15 + wind factor
APP, flaps FULL		VmHB flaps FULL (VAPP) + wind factor
GA, flaps 0		VmLB flaps 0 (+10 kt with APM degraded, 2 engines)
GA, flaps 15 or FULL		The highest of (VmHB at go-around + 5 kt), 1.1 VMCA and V2 min (icing: drift-down speed flaps 15), plus 10 kt

- **Climb speed** is 170 kt, limited by the lowest speed constraint of the flight plan up to the top of climb: a constraint limits the speed from the start of the climb, not only on the leg to its waypoint. From 4 NM before a hold, and in the hold, it is the hold IAS entered on the HOLD page (else 170 kt or the constraint, whichever is lower). The same hold rule applies in descent and cruise.
- **Speed constraints** limit the managed speed (AT OR BELOW). The constraint of the TO waypoint limits it. In climb, the lowest constraint up to the top of climb limits it (see the climb speed above). In cruise, descent and approach, a speed constraint is propagated to the next waypoints: it keeps limiting the speed after its waypoint is sequenced, until a

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waypoint with another speed constraint, a flight plan discontinuity, or the TOD (for a constraint in the cruise). A climb constraint is not carried into the cruise, and no constraint is carried into the missed approach.

- **RTA speed**: the IAS computed to meet the RTA of the flight plan (PRI.1.11).
- **Wind factor** = one third of the headwind component of the APPROACH page GND WIND on the final approach course, or the gust increment if higher, limited to 15 kt.
- The managed speed is never below the minimum operating speed and never above the maximum speed of the configuration (VMO 250 kt, VFE 185 kt flaps 15, 150 kt flaps FULL, VLE 185 kt gear down).

Note

On the ground the managed speed is invalid (dashes) except in the take-off case above.

PRI.5 FLIGHT CONTROL

The FMS guides the aircraft through the AFCS: the AFCS modes are selected on the FGCP and described in the FCOM. This section gives the FMS conditions for the LNAV and VNAV modes.

PRI.5.1 LNAV Engagement

Ident.: PRI.5.1 — 01 NOV 2026
ALL

LNAV is armed with the NAV pb on the FGCP when the NAV SOURCE of the coupled side is an FMS. LNAV becomes active (captured) when the active flight plan has a leg to fly and the aircraft is inside the capture zone of the active leg:

ACTIVE LEG	CAPTURE ZONE
Heading legs (VA, VD, VI, VM, VR), course legs except CF (CA, CD, CI, CR), FC, FD, holds (HA, HF, HM), TF	Anywhere: LNAV can be engaged at any time
Other legs (CF, DF, AF, RF, FA, FM, PI, IF)	Cross-track distance to the leg of 2 NM or less in the TERMINAL and APPROACH areas, 4 NM or less in the ENROUTE area

When the aircraft is outside the capture zone, LNAV stays armed and is captured as soon as the aircraft comes inside it. A leg whose start point is not known (first leg, or a leg after a discontinuity or a DIRECT TO) is always inside the zone.

On the ground, LNAV can only be armed. It becomes active after lift-off. When LNAV is engaged, the departure airport and the departure runway are sequenced, and the first leg of the SID (or of the route) becomes the active leg.

Note

The NAV SOURCE selects which FMS is coupled: see PRI.2.5.

PRI.5.2 LNAV Disengagement

Ident.: PRI.5.2 — 01 NOV 2026
ALL

LNAV disengages when:

- the ground speed is below 20 kt,
- the active leg is a discontinuity: the aircraft has reached the last waypoint before a FPLN DISCONTINUITY,
- the end of the flight plan is reached (the last waypoint is sequenced and the missed approach is not activated),
- the aircraft leaves the capture zone of the active leg:

ACTIVE LEG	DISENGAGED WHEN THE CROSS-TRACK DISTANCE EXCEEDS
Heading legs (VA, VD, VI, VM, VR), course legs except CF (CA, CD, CI, CR)	2 NM (TERMINAL, APPROACH) or 4 NM (ENROUTE)
Holds (HA, HF, HM), arcs (AF, RF), CF, DF, TF, FA, FM, PI, FC, FD, IF	45 NM

When LNAV disengages, the AFCS lateral mode reverts to HDG HOLD on the present heading. At the end of the flight plan the VNAV modes also revert to the basic pitch mode. The waypoint alert warns the crew 60 seconds before a discontinuity or the end of the flight plan (PRI.4.2).

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PRI.5.3 Turn Limitations

Ident.: PRI.5.3 — 01 NOV 2026
ALL

The FMS roll command is limited to ±25°, with a roll rate of 3°/s at most. It is also limited by the bank limit of the AFCS:

AFCS BANK LIMIT	FMS ROLL COMMAND LIMIT
Low bank (15°): IAS below VmHB, or below 1 000 ft RA	15°
High bank (27°)	25°

The FMS uses the same limit to compute the turns it predicts: the turn anticipation of fly-by waypoints, the DIRECT TO path and the ND drawing. In holds, the bank is the standard rate of turn, limited as above (PRI.1.9).

PRI.5.4 VNAV Engagement

Ident.: PRI.5.4 — 01 NOV 2026
ALL

VNAV is selected with the VNAV pb on the FGCP. It needs LNAV engaged (on the ground: LNAV armed); otherwise SELECT LNAV is shown on the FMA and nothing is armed.

The AFCS VNAV mode depends on the position of ALT SEL:

ALT SEL	VNAV MODE
Above the aircraft (climb)	VNAV IAS: climb at the managed speed (AUTO) or the selected speed (MAN). Armed on the ground, active after lift-off.
Below the aircraft, more than 5 minutes before the TOD	VNAV VS: descent at −1 500 ft/min
Below the aircraft, 5 minutes or less before the TOD (or after it)	VNAV PATH: descent along the FMS descent profile, at the FMS target vertical speed
At the aircraft altitude	VNAV ALT armed

VNAV is refused (CHECK ALT SEL on the FMA) when ALT SEL is below the aircraft in the TAKE OFF or CLIMB phase, above the aircraft in the DESCENT or APPROACH phase, or during an altitude capture. The vertical modes always stop at ALT SEL.

CAUTION

The FMS vertical guidance is advisory for the approach: on an RNAV approach to LNAV minima, cross-check VDEV against the altimeters.

MCDU.1 MCDU

MCDU.1.1 General

Ident.: MCDU.1.1 — 01 NOV 2026
ALL

The crew talks to the FMS through two Multipurpose Control and Display Units (MCDU), one on each side of the pedestal. Each MCDU has a colour flat-panel screen, a keyboard, line select keys, function keys and annunciators. Normally MCDU 1 works with FMS 1 and MCDU 2 with FMS 2.

The MCDU also gives access to the radio management system (RMS). The RMS pages are not managed by the FMS: they are described in PGE.6.



MCDU — front panel

(1) Screen — 14 lines of 24 characters: title line, six label / data line pairs, scratchpad. See MCDU.1.4.

(2) Line select keys — Six keys on each side of the screen (1L to 6L, 1R to 6R).

(3) Function keys — FPLN, DTO, PERF, MSG, PROG, DATA, VNAV, MRK, RMS: access to the FMS functions.

(4) Alphanumeric keys — Letters, digits, `.`, `/`, SP (space) and `+/-`.

(5) CLR key — Clears the scratchpad or a field. See MCDU.1.9.

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(6) EXEC key — Confirms a pending command.

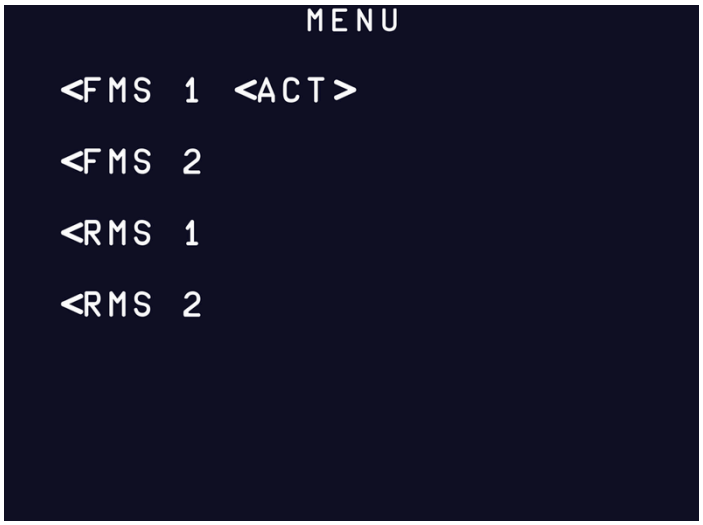
(7) Annunciators — FAIL, MSG, POS, OFST, MENU and EXEC lights.

(8) BRT keys — Screen and annunciator brightness.

Access keys MENU, PREV and NEXT are on the left of the function keys.

MCDU.1.2 MENU Page

Ident.: MCDU.1.2 — 01 NOV 2026
ALL



MENU page — MCDU 1 connected to FMS 1

The MENU page lists the systems the MCDU can be connected to. Only one system at a time manages the MCDU display (the active system).

The MENU page is displayed:

- when the MENU key is pressed,
- when the FMS that manages the MCDU is lost (its power is cut for more than a short interruption, or it has failed),
- after an FMS BITE re-initialization that leaves the MCDU with no active system (PGE.10.5).

After power-up, the MCDU shows the FMS power-up page of its own FMS (PGE.1.1), not the MENU page.

<FMS 1 (1L) — Connects the MCDU to FMS 1 and displays its power-up page.

<FMS 2 (2L) — Connects the MCDU to FMS 2 and displays its power-up page.

<RMS 1 (3L) / <RMS 2 (4L) — Connects the MCDU to the radio management system and displays the COMMUNICATION page.

A tag follows the name of each system:

TAG	MEANING
<ACT>	Active system: it manages this MCDU display
<OFF>	System lost. A lost FMS cannot be selected (NO ACTION DEFINED)
<REQ>	System requesting attention (MENU annunciator lit)
(blank)	System available, not active

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The title line of the MENU page shows MENU only (no heading reference, alert code or navigation mode).

SIMULATOR NOTE

- The ACMS entry of the aircraft MENU page is not simulated and is not shown.
- No simulated system raises a request: the <REQ> tag and the MENU annunciator are not used.

MCDU.1.3 Keys and Annunciators

Ident.: MCDU.1.3 — 01 NOV 2026
ALL

Line select keys

A line select key (LSK) acts on the line beside it:

- with data in the scratchpad: inserts the data into the field,
- with CLEAR ? in the scratchpad: clears the field (MCDU.1.9),
- beside a prompt: performs the prompt action.

Prompt symbols:

<XXX / XXX>	The arrow points outwards: displays another page.
>XXX / XXX<	The arrow points towards the screen centre: performs a command or changes a selection.

A key beside an empty line, or beside data that cannot be modified, gives NO ACTION DEFINED when the scratchpad is empty.

Function keys

FPLN	Active flight plan (FPLN). Pressed again on the FPLN page: SEC FPLN. Pressed on the SEC FPLN page: FPLN.
DTO	DIRECT TO page. Pressed again on the DIRECT TO list: DTO ABEAM.
PERF	The PERF page of the flight phase: TAKE OFF on the ground and in take-off, CRUISE in climb and cruise, APPROACH in descent, approach and go-around. Pressed on a PERF page: next PERF page (TAKE OFF → CRUISE → APPROACH → TAKE OFF).
MSG	MESSAGE page.
PROG	PROG 1/3. Pressed again: PROG 2/3, then PROG 3/3.
DATA	DATA MENU. Pressed again on the DATA MENU: DATA LIST.
VNAV	VNAV 1/2. Pressed again: VNAV 2/2.
MRK	MARK page (position marked as a pilot waypoint).
RMS	Radio management COMMUNICATION page.

Access keys

MENU	MENU page.
PREV / NEXT	Previous / next page of a multi-page function, in a loop (for example PROG 1/3 → 2/3 → 3/3 → 1/3). On pages with one page, no effect unless stated in the page description.
EXEC	When the EXEC light is on, confirms the pending command or the temporary flight plan. With the light off, no effect.

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A key held for more than one second counts as two presses (except CLR, see MCDU.1.9).

The FMS takes a short moment to act on a key. When the key changes the page, the screen is blank for a short time before the new page appears.

Annunciators

FAIL	MCDU major failure. The screen is blank and the MCDU ignores every key.
MSG	At least one FMS alert is pending on the MSG page of this MCDU.
POS	A position alert (POS or INI) is pending.
OFST	A lateral offset is active in the flight plan.
MENU	A system not displayed on this MCDU requests to be selected.
EXEC	A command waits for EXEC.

The annunciators are lit only when the MCDU is powered and has completed its power-up test. EXEC, MSG, POS and OFST are driven by the FMS: while the RMS is active on the MCDU, they keep their last state. FAIL is lit at full brightness; the other lights follow the BRT setting.

Brightness keys

BRT (up) and DIM (down) set the brightness of the screen and of the annunciators of that MCDU.

Alphanumeric keys

- Digits 0 to 9 and .
- +/−: the first press types −; each further press changes the sign (− ↔ +).
- /: separator between two data of one field (MCDU.1.8).
- SP: space.
- Letters A to Z.

The scratchpad holds 24 characters. Typed characters are shown in yellow until they are inserted.

SIMULATOR NOTE

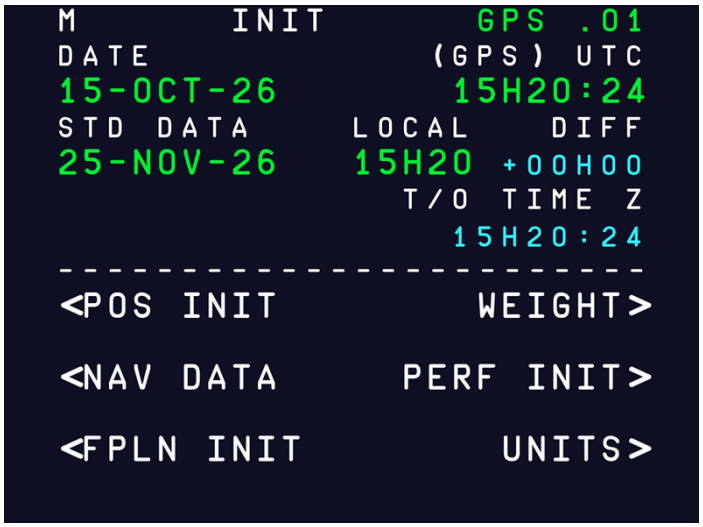
- Click the keys in the 3D cockpit or on the MCDU pop-up. The pop-up keys press the same keys as the cockpit; a key held from the pop-up may count as one press only.
- Click the scratchpad to type with the computer keyboard: letters, digits, ., /, space and +/− type as the MCDU keys; BACKSPACE = CLR (one character); DELETE = CLR held (whole line). ENTER has no effect: insert with an LSK. ESC, or 30 s without a key, ends the keyboard capture.
- The MCDU 1 and MCDU 2 failures are in the EFB FAILURES app.

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MCDU.1.4 Display Layout

Ident.: MCDU.1.4 — 01 NOV 2026
ALL



MCDU display — INIT page

The screen has 14 lines of 24 characters:

- line 1: title line,
- lines 2 to 13: six pairs of lines (a small label line above a data line); each data line is beside one left and one right LSK,
- line 14: scratchpad.

Title line

From left to right:

Heading reference	M (magnetic) or T (true), as set on the UNITS page (PGE.1.9). White.
Alert code	Three-letter code of the highest-priority pending FMS alert, black on an amber background (for example **FAL**). See ABN.1.
Page title	Page name and, for a multi-page function, the page number `n/m`. White; yellow while the page shows a temporary flight plan.
Navigation mode	Sensor used by the active navigation mode (see table).
EPE	Estimated position error of the FMS position, in NM, rounded up to 0.01 NM and shown without a leading zero below 1 NM (for example `GPS .01`, `D-D 1.20`). `-.--` when not available.

INDICATION	MEANING
GPS (green)	BCP mode, position mainly computed from the GPS
D-D	BCP mode, radio position from two DMEs
V-D	BCP mode, radio position from a VOR and a DME
V-V	BCP mode, radio position from two VORs
D-R	BCP mode, dead reckoning (air data)
GPS	GPS mode selected on PROG 3/3 (PGE.3.3)
---	No navigation mode

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The navigation mode and EPE are green, cyan in GPS mode, and **amber** when the sensors used are not compliant with P-RNAV (V-D with non co-located stations, V-V, D-R).

The power-up page and the MENU page have no five-field title line: they show only a centred title.

Page area

Each data line has a small label above it. Prompts are on the data lines, beside their LSK. Dashed separator lines divide the page into areas.

Scratchpad

The scratchpad line shows the characters typed on the keyboard. The FMS also uses it for messages (MCDU.1.7). The content of the scratchpad is kept when the page changes, so an entry can be typed on one page and inserted on another.

MCDU.1.5 Colours

Ident.: MCDU.1.5 — 01 NOV 2026
ALL

COLOUR	USE
WHITE	Page titles, labels, prompts, units, flight plan leg lines (procedure, course, distance), separator lines, the < and > symbols, the CLEAR ? token and protected-command prompts
CYAN	Data the crew can modify or select, brackets of optional fields, missed approach waypoints not yet active, inactive items of a selection (for example MAG/TRU)
GREEN	Data computed by the FMS and not modifiable, active items of a selection, primary flight plan waypoints (except the TO waypoint), constraints predicted met
AMBER	Mandatory data (boxes), alert codes, missed constraints, values beyond a limit (EFOB below RESERVE, HIL above limit), refused-entry messages
MAGENTA	Targets (TGT IAS, TGT VS, ALT SEL), the TO waypoint and active leg data
YELLOW	Temporary flight plan and temporary data before EXEC, scratchpad entries not yet inserted

MCDU.1.6 Character Attributes and Field Symbols

Ident.: MCDU.1.6 — 01 NOV 2026
ALL

ATTRIBUTE	USE
Small font	Labels, units, default values (computed by the FMS, not yet entered), flight plan leg lines, inactive items of a selection
Large font	Title line, scratchpad, data entered by the crew, active item of a selection, prompts
Reverse video	Alert code in the title line, scratchpad messages, protected command prompts waiting for EXEC, the MANUAL SPEEDS flag on TAKE OFF, procedures and airways on the route pages
Underline	ETA of a waypoint with a time constraint (RTA)

Reverse video and underline are never used together.

A field that takes several values, such as a selection, shows the active value large green and the others small cyan, separated by a small cyan /: for example >ACT/SEC or YES/NO<.

Field symbols:

□□□□□ Amber boxes: mandatory entry. The FMS needs this value.

----- Amber dashes: value missing that is needed for the predictions (for example the weights, CRZ ALT).

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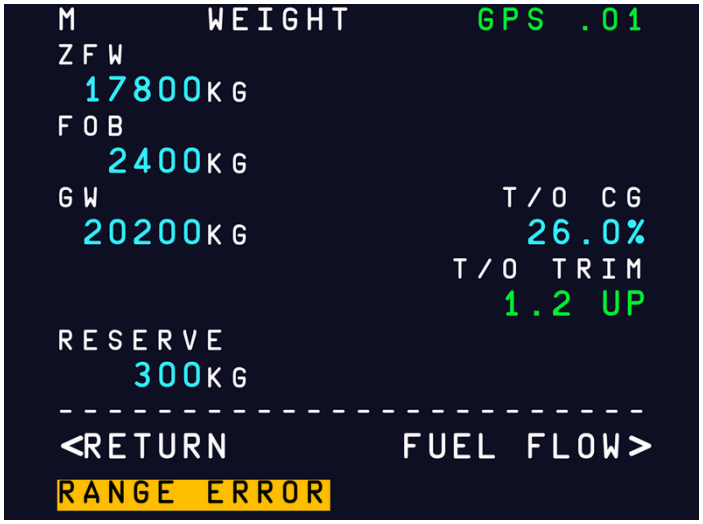
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[ ] Cyan brackets: optional entry.

----- / ----- Dashes in another colour: value not available (not computed, sensor invalid).

MCDU.1.7 Scratchpad Messages

Ident.: MCDU.1.7 — 01 NOV 2026
ALL



Refused entry — RANGE ERROR

When an entry or a command is refused, or while a command runs, the FMS clears the scratchpad and shows a message in reverse video:

- refusals and advisories: black on amber,
- command prompts (PRESS EXEC TO CONFIRM, FPLN WILL BE DELETED) and END OF COUNTDOWN TIMER: black on white.

A refused entry is not lost: CLR removes the message and puts the entry back in the scratchpad, where it can be corrected. Typing a key also removes a clearable message (the entry is then not restored).

Messages marked NO in the CLR column below cannot be cleared: until the command ends, every key except BRT and MENU is ignored.

Messages that the FMS posts by itself (for example RTA MISSED) wait until the scratchpad is free: they are not shown over another message, over CLEAR ?, or over an armed command prompt. They are then shown one at a time, oldest first.

MESSAGE	CLR	MEANING
CLEAR ?	YES	CLR pressed with an empty scratchpad. The next LSK clears the field beside it
FORMAT ERROR	YES	The entry has a wrong format
RANGE ERROR	YES	The entry is outside the allowed range
NO ACTION DEFINED	YES	The LSK or key has no function here
NOT ALLOWED	YES	The entry or command is forbidden now (also any refusal without a specific message)
NOT IN DATABASE	YES	The ident is not in the standard or pilot database
OFFSET CANCELLED	YES	The offset of the active leg is removed
OFFSET DELAYED	YES	The offset of the active leg is moved to the next leg

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MESSAGE	CLR	MEANING
FPLN FULL	YES	The flight plan is full
SEC FULL	YES	The secondary flight plan is full
MEMORY FULL	YES	The pilot or company route database is full
IDENT ALREADY USED	YES	The ident already exists in the database
ALREADY DESELECTED	YES	The navaid, or the PRAIM satellite, is already deselected
ERASING DATA	NO	The user data are being erased
XFER DATA IN PROGRESS	NO	The user data are being saved, or a cross talk initialization commanded by the crew is running
XFER FAIL	YES	The save or erase of the user data failed
INCONSISTENT NAV DB	YES	A pilot or company route contains a fix or airway that is not in the standard database
CROSSTALK INIT	YES	The two FMS are harmonizing their data
FPLN WILL BE DELETED	YES	EXEC will delete the active flight plan
PRESS EXEC TO CONFIRM	YES	EXEC will execute the armed command
TMPY EXIST	YES	A SEC activation, copy or swap, or a new flight plan, is refused while a temporary flight plan exists
VERTICAL PROFILE ERROR	YES	The vertical profile cannot be computed
ADJUST DESCENT	YES	A descent level point lies after the top of descent
TOO STEEP PATH AHEAD	YES	In descent or approach with VNAV engaged, the next altitude constraint cannot be made (250 ft tolerance), even with a 5.5° path
RTA MISSED	YES	The time constraint cannot be met
DELETE OTHER RTA ?	YES	An RTA already exists; EXEC deletes it
CHANGE ALT CNSTR FIRST	YES	A vertical DIRECT TO is refused on an ignored altitude constraint
INCORRECT PASSWORD	YES	Wrong password for the company route edition
NO VALID INTERSECTION	YES	No intersection between the flight plan and the entered latitude or longitude
END OF COUNTDOWN TIMER	YES	The TIMERS countdown has reached zero (PGE.1.10)

MCDU.1.8 Data Entry

Ident.: MCDU.1.8 — 01 NOV 2026
ALL

1. Type the data in the scratchpad.
2. Press the LSK beside the field.
3. The data goes into the field and the scratchpad clears. If the entry is refused, a message is shown (MCDU.1.7).

Fields with several data

When one field holds several data, they are separated by /. Data can be left out; the slashes keep the position of the following data:

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ENTRY	CHANGES
DDDD	first data only
/DDDD	second data only
//DDDD	third data only
DDDD/DDDD	first and second data
/DDDD/DDDD	second and third data
DDDD//DDDD	first and third data

The data not entered keep their value.

Formats

The entry has the format of the display without its unit and without the separators of the display (H, :, °). A sign is needed only for a negative value; the decimal point only for a decimal value. Values are in the units set on the UNITS page (PGE.1.9).

DATA	ENTRY	RESULT
Altitude	13000 / FL130 / 130	13000 / FL130 / FL130 (a number of 1 to 3 digits is a flight level)
Latitude	N4512.3 / 4512.3N / S502 / 502N	N45°12.30 / N45°12.30 / S05°02.00 / N05°02.00
Longitude	W12234.5 / E502	W122°34.50 / E005°02.00
Position	N4512.3/W12234.5	latitude / longitude
Wind	270/25 / 270 / /25	270°/25 kt / direction only / speed only
Ground wind / gust	250/10/20 / //25	250°/10/20 kt / gust only
Time	122423 / 1050 / 12	12H24:23 / 10H50:00 / 00H12:00
Time difference	-0400 / +0530	-04H00 / +05H30
Date	16SEP26	16-SEP-26
Temperature	-20 / 40	-20° / +40°
QNH	1013 (HPA) / 29.92 (INHG)	in the BARO SET unit
Angle	2.5	2.5°

The hemisphere letter of a latitude or longitude can begin or end the value. The last two digits before the decimal point are the minutes; leading zeros can be left out.

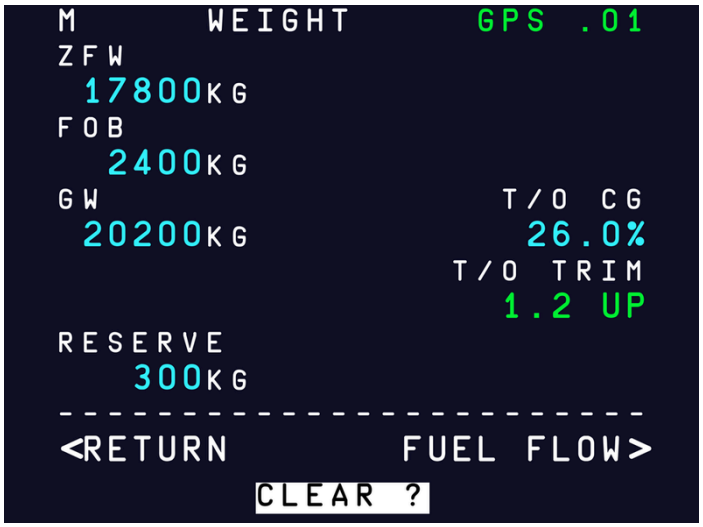
With the ALTITUDE unit set to M, a number without FL is in metres: a flight level must then be entered with FL.

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MCDU.1.9 Clearing Data

Ident.: MCDU.1.9 — 01 NOV 2026
ALL



CLEAR ? in the scratchpad

Scratchpad

CLR short press	Deletes the last character of the scratchpad. With a message shown, removes the message and restores the entry.
CLR held (more than 1 s)	Clears the whole scratchpad line.

Field

1. With an empty scratchpad, press CLR: CLEAR ? is shown in reverse video (black on white).
2. Press the LSK of the field to clear.

The result depends on the field:

- a crew entry over a default value returns to the default value (small font),
- a field without a default value cannot be cleared, only overwritten: the action is refused (NOT ALLOWED) or has no effect,
- clearing a value that is already the default has no effect,
- an LSK beside a line with no data: NO ACTION DEFINED.

A second CLR press removes CLEAR ?. Typing a character replaces CLEAR ? with that character.

The page descriptions (PGE.1 to PGE.10) give the CLR effect of each field.

MCDU.2 PAGES HIERARCHY

MCDU.2.1 General Organisation

Ident.: MCDU.2.1 — 01 NOV 2026
ALL

The MCDU pages are grouped in volumes. Each volume is opened by a function key, and its pages are linked by prompts (<XXX, XXX>), by the LSKs beside the data, and by PREV / NEXT.

VOLUME	FUNCTION	ACCESS	DESCRIPTION
INITIALIZATION	Pre-flight initialization: time, position, weights, performance, units	Power-up page, DATA MENU	PGE.1
FLIGHT PLAN	Active, temporary and secondary flight plans, revisions	FPLN key	PGE.2.1 to PGE.2.10
PROGRESS	Flight progress, navigation modes, GPS integrity, vertical navigation	PROG, VNAV keys	PGE.3
DIRECT TO	Direct to a waypoint, abeam, nearest airports	DTO key	PGE.4
PERFORMANCE	Take-off, cruise and approach data and predictions	PERF key	PGE.5
RADIO NAVIGATION	Navaids tuned and deselected; radio management (RMS)	DATA MENU; RMS key	PGE.6
MESSAGE	FMS alerts	MSG key	PGE.7
MARK	Position marking and position update	MRK key	PGE.8
DATA	Standard, pilot and company route databases, data save / erase	DATA key	PGE.9.1 to PGE.9.3
STATUS	FMS inputs, built-in test, configuration	DATA MENU	PGE.10

Conventions in the trees below:

- → gives the page displayed.
- (nL) / (nR) is the LSK used; "LSK beside" means the key on that side of the line concerned.
- "(empty)" means the LSK is pressed with an empty scratchpad.
- <RETURN on each page displays the page from which it was called (MCDU.1.3); it is not repeated in the trees.

The MENU key displays the MENU page (MCDU.1.2) from any page.

MCDU.2.2 Initialization

Ident.: MCDU.2.2 — 01 NOV 2026
ALL

- Power-up of the FMS, or <FMS 1 / <FMS 2 on the MENU page → **FMS POWER UP** (PGE.1.1)
  - INIT> (6R), tests OK → **INIT** (PGE.1.2)
    - <POS INIT (4L) → **POS INIT** (PGE.1.3)
      - WPT (4L), (empty) → **DATA LIST** (PGE.9.1)
      - SENSORS STS> (6R) → **SENSOR STS** (PGE.1.4)
    - <NAV DATA (5L) → **NAV DATA** (PGE.1.5)
    - <FPLN INIT (6L) → **FPLN INIT** (PGE.1.6)
      - <ROUTE (1L) → **ROUTE SEL** (PGE.2.3)
      - <SEC INIT (2L) → **SEC INIT** (PGE.2.4)

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- WEIGHT> (4R) → **WEIGHT** (PGE.1.7)
  - FUEL FLOW> (6R) → **FUEL FLOW** (PGE.10.4)
- PERF INIT> (5R) → **PERF INIT** (PGE.1.8)
  - ALTN/CRZ ALT (5R), (empty) → **DATA LIST** of airports (PGE.9.1)
  - WEIGHT> (6R) → **WEIGHT**
- UNITS> (6R) → **UNITS** (PGE.1.9)

o FMS BITE> (6R), a test FAIL → **FMS BITE** (PGE.10.5)

- DATA key → **DATA MENU**
  - o <INIT (1L) → **INIT**
  - o <UNITS (3L) → **UNITS**
  - o <TIMERS (4L) → **TIMERS** (PGE.1.10)
  - o NAV DATA> (2R) → **NAV DATA**

MCDU.2.3 Flight Plan

Ident.: MCDU.2.3 — 01 NOV 2026 — ALL

- FPLN key → **FPLN** (active flight plan, or TMPY while a revision is open) (PGE.2.1)
  - o LSK beside a waypoint, left → **LTRL REV** (PGE.2.5)
    - <DEPARTURE / <ARRIVAL → **DEPARTURE** / **ARRIVAL** (procedure waypoints, PGE.2.7)
    - <HOLDING → **HOLDING AT** (PGE.2.10)
    - AIRWAY (4R), airway ident → **AIRWAYS**; (empty) → **AIRWAY LIST** → **AIRWAY TO** list (PGE.2.8)
    - NEXT WPT / NEW DEST, (empty) → **DATA LIST**
    - NEW FPLN> (6R) → **FPLN INIT**
  - o LSK beside the departure airport or runway, left (on the ground) → **DEPARTURE**
  - o LSK beside the destination airport or runway, left → **ARRIVAL**
  - o LSK beside the FROM, left (in flight) → **LTRL REV** at the present position
  - o LSK beside a waypoint, right → **VERT REV** (PGE.2.6)
    - <WIND (5L) → **WIND** (PGE.2.9)
    - VERT DTO> → vertical direct to (stays on VERT REV)
  - o LSK beside the FROM, right → **WIND**
  - o <NEW FPLN (6L) → **FPLN INIT** (refused while a TMPY exists)
    - <ROUTE (1L) → **ROUTE SEL** → company route list
  - o TMPY> / EXEC / >CLR TMPY / >UNDO: commands on the plan (stay on FPLN)
  - o FPLN key again → **SEC FPLN** (PGE.2.4)
    - LSK beside a waypoint → **LTRL REV** / **VERT REV** of the SEC
    - <NEW FPLN → **SEC INIT**
      - <ROUTE (1L) → **ROUTE SEL** for the SEC
      - SEC PERF> (5R) → **SEC PERF** (PGE.5.5)
    - FPLN key → **FPLN**

The revision pages (DEPARTURE, ARRIVAL, HOLDING AT, AIRWAYS, VERT REV, WIND) return to the FPLN page with TMPY> or <RETURN.

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MCDU.2.4 Progress

Ident.: MCDU.2.4 — 01 NOV 2026 — ALL

- PROG key → **PROG 1/3** (PGE.3.1)
  - <PRAIM (5L) → **PRAIM 2/2** on the ground, **PRAIM 1/2** in flight
  - PROG again or NEXT → **PROG 2/3** (PGE.3.2)
    - PROG again or NEXT → **PROG 3/3** (PGE.3.3)
      - <BCP (2L) → **BCP NAV** (PGE.3.4)
      - <GPS (3L) → **GPS NAV** (PGE.3.5)
        - PRAIM> (5R) → **PRAIM 1/2**
- **PRAIM 1/2** (PGE.3.6) ⇄ PREV / NEXT ⇄ **PRAIM 2/2** (PGE.3.7)
  - <RESULT (4L), result FAIL → **RESULT** (PGE.3.8)
- VNAV key → **VNAV 1/2** (PGE.3.9)
  - VNAV again, PREV or NEXT → **VNAV 2/2** (PGE.3.10)

PROG 1/3, 2/3 and 3/3 follow each other in a loop with PREV / NEXT.

MCDU.2.5 Direct To

Ident.: MCDU.2.5 — 01 NOV 2026 — ALL

- DTO key → **DIRECT TO** list (flight plan waypoints) (PGE.4)
  - Prompt (1R): ABEAM> / AIRPORTS> / FPLN WPTS> → the list of that type
  - LSK beside a listed point, or an ident entered → **DIRECT TO** (selected point) → TMPY>
  - IDENT, (empty) → **DATA LIST**
  - Moving waypoint → **DIRECT TO** (moving WPT)
  - DTO key again → **DTO ABEAM**

MCDU.2.6 Performance

Ident.: MCDU.2.6 — 01 NOV 2026 — ALL

- PERF key → page of the flight phase: **TAKE OFF**, **CRUISE** or **APPROACH** (PGE.5)
  - PERF again or NEXT: **TAKE OFF** → **CRUISE** → **APPROACH** → **TAKE OFF** (PREV in the other direction)
  - PERF INIT> (6R) on each page → **PERF INIT** (PGE.1.8)
    - WEIGHT> (6R) → **WEIGHT** (PGE.1.7)
  - CRUISE ALTN (1R), (empty) → **DATA LIST** of airports
- SEC INIT, SEC PERF> (5R) → **SEC PERF** (PGE.5.5)

MCDU.2.7 Radio Navigation

Ident.: MCDU.2.7 — 01 NOV 2026 — ALL

- DATA key → **DATA MENU** → NAV FRQ> (3R) → **NAV FRQ** (PGE.6)
  - <NEAREST (6L) → **NEAREST** navaids (VHF / NDB lists)
  - DESELECT> (6R) → **DESELECTED NAVAIDS** → **DATA LIST**
- RMS key, or <RMS 1 / <RMS 2 on the MENU page → **COMMUNICATION** (PGE.6)
  - VHF1 (1L) / VHF2 (1R), (empty) → **VHF 1** / **VHF 2** → PRESET> → VHF **PRESET**

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- XPDR (4L), (empty) → **XPDR**
- TCAS (5L), (empty) → **TCAS**
- NAV> (6R) → **NAV 1** → PRESET> → NAV **PRESET**
  - <ADF (4L) → **ADF** → PRESET> → ADF **PRESET**

The RMS pages are not managed by the FMS; while they are displayed, the FMS annunciators keep their last state.

MCDU.2.8 Message

Ident.: MCDU.2.8 — 01 NOV 2026
ALL

- MSG key → **MSG** (PGE.7)
  - Action prompt of an alert → the page concerned (for example POS INIT, PROG 3/3)
  - MSG RECALL< (6R) → recalls the cleared alerts (stays on MSG)

MCDU.2.9 Mark

Ident.: MCDU.2.9 — 01 NOV 2026
ALL

- MRK key → **MARK** (PGE.8): the present position is stored as a MKnnn pilot waypoint
  - Update ident, (empty) → **DATA LIST**

MCDU.2.10 Data

Ident.: MCDU.2.10 — 01 NOV 2026
ALL

- DATA key → **DATA MENU** (PGE.9.1)
  - DATA again → **DATA LIST** (standard and pilot data)
  - DATABASE> (1R) → **DATABASE**
    - Standard database (PGE.9.2): <AIRPORT (1L), <NAVAID (2L), <WAYPOINT (3L), <NDB (4L) → **STD AIRPORT** / **STD NAVAID** / **STD WAYPOINT** / **STD NDB**
    - <CO-ROUTE (5L) → **COMPANY ROUTE** list → company route edition (password)
    - Pilot database (PGE.9.3): AIRPORT> (1R), NAVAID> (2R), WAYPOINT> (3R), ROUTE> (4R) → **PILOT DATA** list of that type
      - LSK beside an item, or NEW> → **PLT APT** / **PLT NAVAID** / **PLT WPT** / **PLT ROUTE**
  - NAV DATA> (2R) → **NAV DATA** (PGE.1.5)
  - NAV FRQ> (3R) → **NAV FRQ** (PGE.6)
  - <INIT (1L), <UNITS (3L), <TIMERS (4L) → initialization pages (PGE.1)
  - <STATUS (2L) → **STATUS** (PGE.10.1)
  - >ERASE (6L) / SAVE< (6R) → user data erase / save (stay on DATA MENU)

MCDU.2.11 Status

Ident.: MCDU.2.11 — 01 NOV 2026
ALL

- DATA key → **DATA MENU** → <STATUS (2L) → **STATUS** (PGE.10.1)
  - <AIR/RA (1L) → **AIR/RA** (PGE.10.2)
  - <HDG/ATT (2L) → **HDG/ATT** (PGE.10.3)
  - <FUEL FLOW (3L) → **FUEL FLOW** (PGE.10.4)
  - FMS BITE> (1R) → **FMS BITE** (PGE.10.5)
    - >CTK INIT → cross talk initialization (EXEC), then **MENU**

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- SENSOR STS> (2R) → **SENSOR STS** (PGE.1.4)
- DISCRETES> (3R) → **DISCRETES** (PGE.10.7)
- CONF DATA> (6R) → **CONF DATA** (PGE.10.8)

PAGE

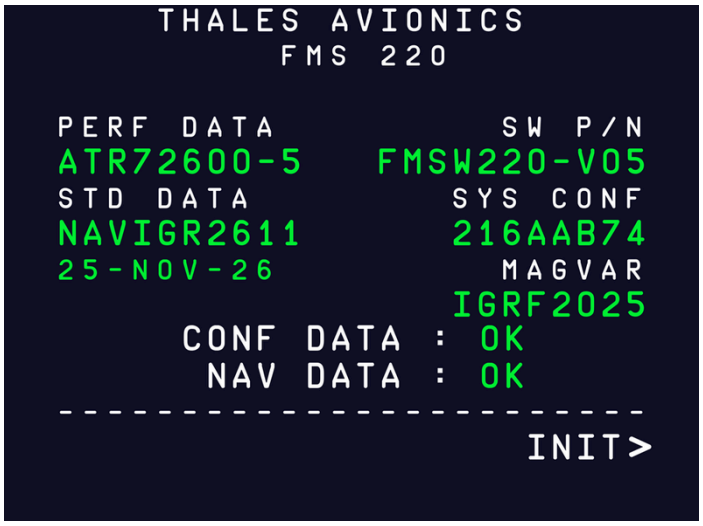
INTENTIONALLY

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PGE.1 INITIALIZATION

PGE.1.1 FMS POWER UP Page

Ident.: PGE.1.1 — 01 NOV 2026
ALL



FMS power-up page

The power-up page is displayed automatically on the MCDU(s) of an FMS:

- when the FMS starts after power on,
- after a long FMS power interruption (more than 5 s).

It stays until the crew leaves it (INIT>, or any function key). It is also displayed when the crew selects an FMS on the MENU page (MCDU.1.2).

The title line shows the manufacturer name (THALES AVIONICS) and the next line the product name (FMS 220).

PERF DATA	Identification of the performance database (green).
STD DATA	Identification of the standard navigation database in use and, below, its expiration date. The date is **amber** when the database has expired. Green dashes when no standard database is loaded.
SW P/N	Software part number.
SYS CONF	CRC of the system configuration table.
MAGVAR	Identification of the magnetic variation model.
CONF DATA	Result of the integrity test of the configuration data (system configuration, performance and magnetic variation databases): **OK** or **FAIL**.
NAV DATA	Result of the integrity and consistency test of the navigation data (standard, company route and pilot databases): **OK** or **FAIL**. Blank while the test runs.
INIT> (6R)	Shown when both tests are OK. Displays the INIT page.
FMS BITE> (6R)	Shown instead of INIT> when at least one test is FAIL. Displays the FMS BITE page (PGE.10.5).

No prompt is shown while the NAV DATA test runs.

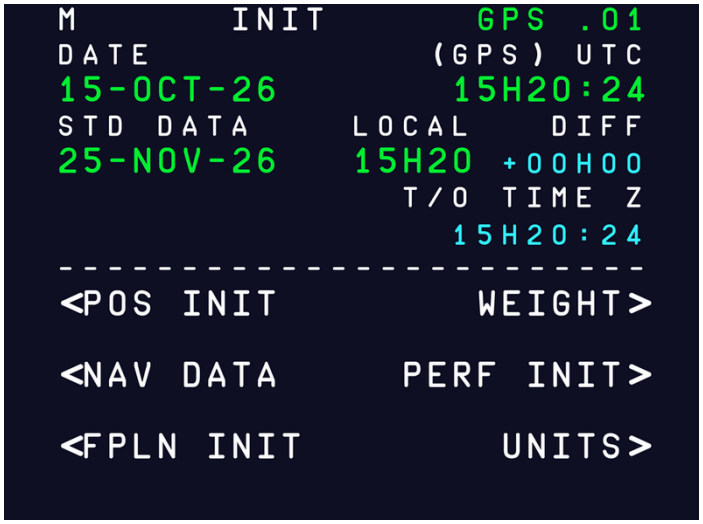
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The consistency test checks the pilot and company routes against the standard database in use. If a route refers to a fix or an airway that is not in that database, NAV DATA is FAIL and INCONSISTENT NAV DB is shown in the scratchpad. The element concerned is shown in amber when the route is edited, and is replaced by a discontinuity when the route is loaded into a flight plan.

PGE.1.2 INIT Page

Ident.: PGE.1.2 — 01 NOV 2026
ALL



INIT page

Reached by INIT> on the power-up page, or by <INIT on the DATA MENU.

DATE (1L) — Date of the FMS (UTC), `DD-MON-YY`.

UTC (1R) — UTC time of the FMS, `HHhMM:SS`. The label shows the source. (GPS): date and time come from the GPS, in green; they cannot be modified (NOT ALLOWED). (FMS): they come from the FMS internal clock, in cyan, and can be overwritten: date `DDMONYY` (for example `16SEP26`), time `HHMMSS`, `HHMM` or `MM`.

STD DATA (2L) — Expiration date of the standard database. Green; **amber** when expired; amber dashes when no database is loaded.

LOCAL (2R) — Local time (UTC + DIFF), green.

DIFF (2R) — Difference between local time and UTC, cyan. Default `+00H00` (small). Enter `-0700` or `+0530` (sign + hours + minutes; maximum 14 h, minutes 00 to 59). CLR restores +00H00.

T/O TIME L / T/O TIME Z (3R) — Shown on the ground only. Scheduled take-off time, used as the start time of the predictions and of the predictive RAIM along the flight plan. By default it shows the present local time (small cyan). Enter the time as `HHMM` (large cyan, shown `HHhMM:00`). The label ends with L when DIFF is not zero (local time), Z otherwise. CLR returns to the present time. The entry is refused (NOT ALLOWED) while a PRAIM prediction along the flight plan runs.

<POS INIT (4L) — Displays POS INIT.

<NAV DATA (5L) — Displays NAV DATA.

<FPLN INIT (6L) — Displays FPLN INIT.

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WEIGHT> (4R)	Displays WEIGHT.
PERF INIT> (5R)	Displays PERF INIT.
UNITS> (6R)	Displays UNITS.

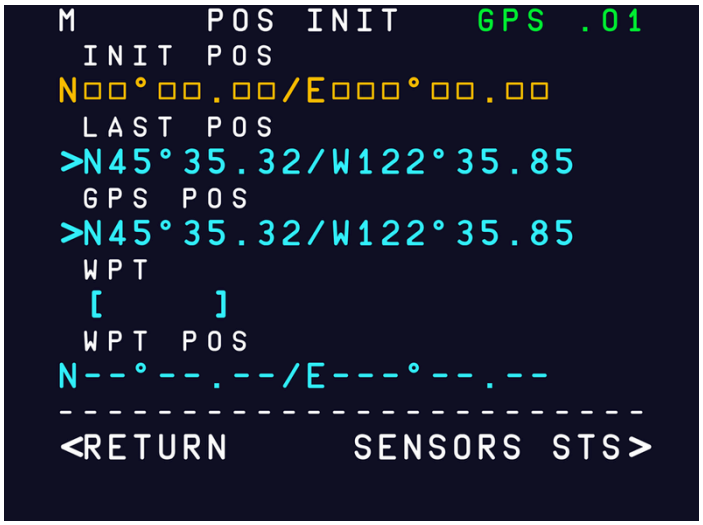
When DIFF is not zero, the times on the MCDU are local times (L), except where marked Z.

CAUTION

An expired standard database can still be used, but its use should be avoided.

PGE.1.3 POS INIT Page

Ident.: PGE.1.3 — 01 NOV 2026 — ALL



POS INIT page on the ground

Reached by <POS INIT on the INIT page.

The FMS computes its position continuously (Best Computed Position, BCP) from the GPS and the radio navaids. No crew action is needed in normal operation. A manual initialization sets the BCP and the GPS receiver to a chosen position; it is normally needed only with the INI alert (CHECK INITIAL POSITION AND INIT SENSORS, see ABN.1).

Every initialization action is possible on the ground only. In flight, an INIT POS entry is refused (NOT ALLOWED), the copy keys (LAST POS, GPS POS, WPT POS) give NO ACTION DEFINED and SENSORS INIT< is not shown.

INIT POS (1L)	Position used for the initialization. Amber boxes until a position is selected; yellow once selected (waiting for SENSORS INIT<); green after SENSORS INIT<. A position can be typed (`N4535.3/W12235.9`, see MCDU.1.8) or copied with the prompts below. CLR: NOT ALLOWED.
>LAST POS (2L)	Last position memorized by the FMS at its last power-down (cyan). Copies it into INIT POS. Dashed when not available.
>GPS POS (3L)	Present GPS position (cyan). Copies it into INIT POS. Dashed when the GPS position is not valid or its EPE is 0.1 NM or more: check the GPS EPE on PROG 3/3 (PGE.3.3).
WPT (4L)	Cyan brackets. Enter the ident of a waypoint, navaid or airport of the standard or pilot database: its position is shown in WPT POS. NOT IN DATABASE if unknown; when several fixes have the ident, the DATA LIST is shown for the choice. With an empty scratchpad, displays the DATA LIST (filter ALL).

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>WPT POS (5L) Position of the WPT (cyan). Copies it into INIT POS.

<RETURN (6L) Displays the previous page.

SENSORS INIT< (6R) Shown on the ground when INIT POS has been selected and not yet used. Initializes the BCP and the GPS receiver position on INIT POS. The prompt then becomes SENSORS STS>.

SENSORS STS> (6R) Shown otherwise. Displays the SENSOR STS page (PGE.1.4).

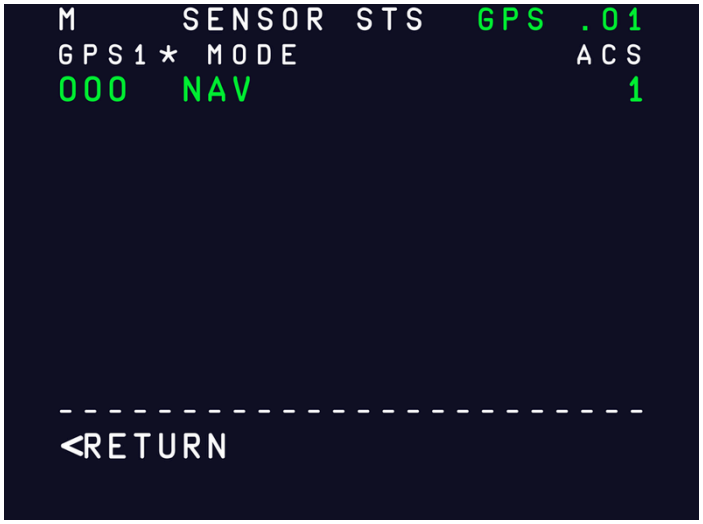
The > before a position (LAST POS, GPS POS, WPT POS) is shown on the ground only.

SIMULATOR NOTE

The EFB READY TO TAXI preset does the position initialization for the crew (GPS POS, then SENSORS INIT<).

PGE.1.4 SENSOR STS Page

Ident.: PGE.1.4 01 NOV 2026
ALL



SENSOR STS page

Reached by SENSORS STS> on POS INIT, or by SENSOR STS> on the STATUS page (see also PGE.10.6). Used during POS INIT to check that the GPS receiver works.

GPS1 MODE (1L) Status code of the receiver (000 normal) and its mode. A * after GPS1 shows that the GPS is used by the FMS. Dashes when the receiver is not powered.

ACS (1R) AFCS side coupled (1 or 2).

<RETURN (6L) Displays the previous page.

GPS modes:

MODE	MEANING
TEST	Self test after power-up
INIT	Initialization of time and position
ACQ	Acquisition: the receiver searches and tracks satellites, no position yet
NAV	Navigation: 3D position and time available

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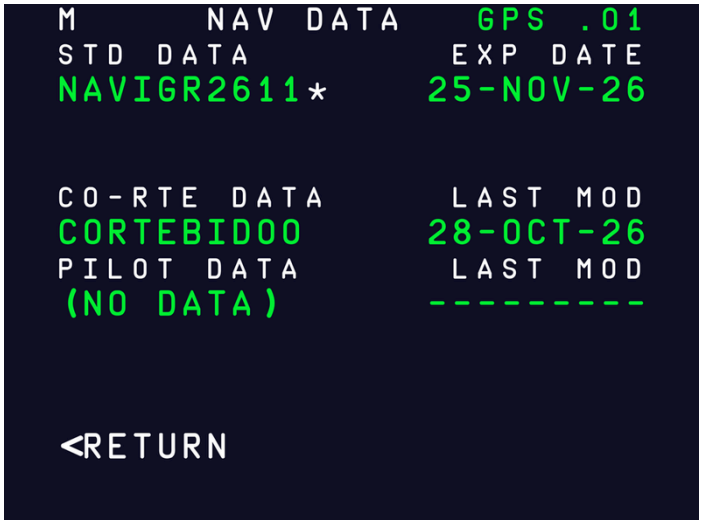
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MODE	MEANING
ALT	Altitude / clock aiding: position with three satellites; RAIM not available
AIDED	The receiver uses external speed to update its position until enough satellites are received
FAULT	GPS failure

The FMS uses the GPS position only in the NAV and ALT modes.

PGE.1.5 NAV DATA Page

Ident.: PGE.1.5 — 01 NOV 2026
ALL



NAV DATA page

Reached by <NAV DATA on the INIT page, or NAV DATA> on the DATA MENU. Read-only.

STD DATA / EXP DATE (1L / 1R) — Identifier of the standard database in use (green, followed by a white `*`) and its expiration date (**amber** when expired). When a second cycle is loaded, it is shown below in small font with its own date. (NO DATA) when no standard database is loaded.

CO-RTE DATA / LAST MOD (3L / 3R) — Company route database identifier and the date of its last modification.

PILOT DATA / LAST MOD (4L / 4R) — Pilot database identifier and the date of its last save. (NO DATA) and dashes when it has never been saved.

<RETURN (6L) — Displays the previous page.

SIMULATOR NOTE

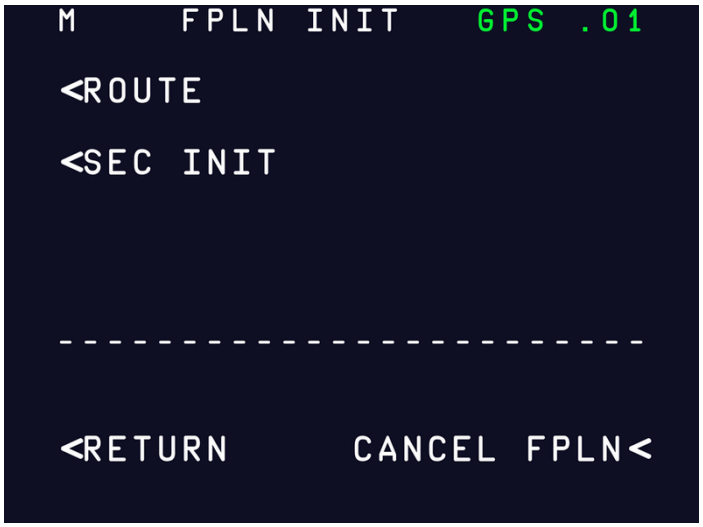
The standard database is built from the X-Plane navigation data. When Navigraph data is installed in `Custom Data`, it is used first (identifier NAVIGR followed by the AIRAC cycle); otherwise the default X-Plane data is used (identifier DEFFAL followed by the cycle).

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PGE.1.6 FPLN INIT Page

Ident.: PGE.1.6 — 01 NOV 2026
ALL



FPLN INIT page

Reached by <FPLN INIT on the INIT page, or <NEW FPLN on the FPLN page.

<ROUTE (1L) Displays ROUTE SEL to initialize the active flight plan from a stored route or a city pair (PGE.2.3).

<SEC INIT (2L) Displays SEC INIT (secondary flight plan, PGE.2.4).

<RETURN (6L) Displays the previous page.

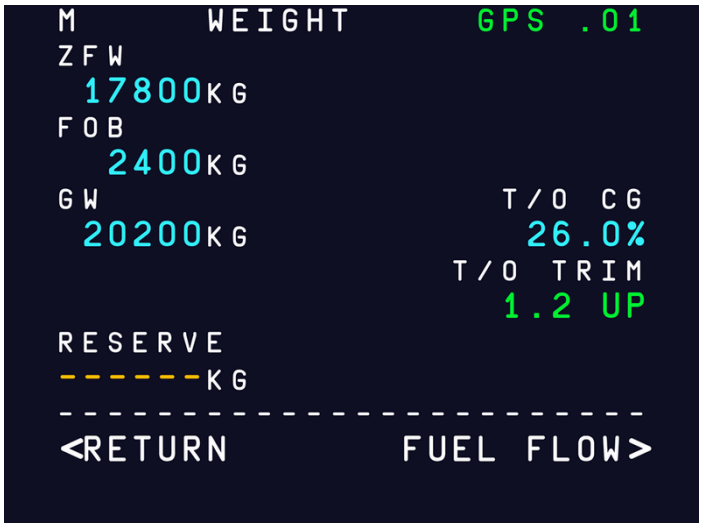
CANCEL FPLN< (6R) Deletes the active flight plan. First press: the prompt is shown in reverse video, the EXEC light comes on and FPLN WILL BE DELETED is shown in the scratchpad. EXEC deletes the flight plan. A second press of CANCEL FPLN< (or any other LSK) cancels the command. NOT ALLOWED when there is no active flight plan.

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PGE.1.7 WEIGHT Page

Ident.: PGE.1.7 — 01 NOV 2026
ALL



WEIGHT page — RESERVE not entered

Reached by WEIGHT> on the INIT page or on PERF INIT.

The weights are used by all the performance computations: take-off speeds, fuel and time predictions, ceilings. They are in kilograms.

ZFW (1L) — Zero fuel weight: empty aircraft, equipment, crew, passengers and cargo. Amber dashes until entered or computed.

FOB (2L) — Fuel on board. Amber dashes until entered or computed. The FMS does not take the fuel quantity from the gauges: once entered, the FOB is decreased by the fuel used measured by the engine fuel flow meters. A refuel or defuel needs a new entry.

GW (3L) — Gross weight. GW = ZFW + FOB. It can also be entered; ZFW is then computed as GW − FOB.

T/O CG (3R) — Take-off centre of gravity, in % MAC. Amber dashes until entered.

T/O TRIM (4R) — Take-off pitch trim objective computed from the T/O CG (`n.n UP`, green), also used on the cockpit displays. Dashed without T/O CG.

RESERVE (5L) — Fuel reserve. Amber dashes until entered; at power-up it takes the value memorized at the last power-down. Can be overwritten.

<RETURN (6L) — Displays the previous page.

FUEL FLOW> (6R) — Displays the FUEL FLOW page (PGE.10.4).

ZFW, FOB, GW and RESERVE are cyan, large, whether entered or computed.

Ranges:

FIELD	RANGE
ZFW	12 000 to 21 000 kg
FOB	0 to 5 100 kg
GW	12 000 to 25 000 kg

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FIELD	RANGE
T/O CG	14 to 37 %
RESERVE	0 to 5 100 kg

Entry rules:

- Enter whole kilograms. A letter or wrong format gives FORMAT ERROR, a value out of range RANGE ERROR.
- Any two of ZFW, FOB and GW give the third. When an entry makes a computed value leave its range, the entry is refused (RANGE ERROR).
- An entry of ZFW, FOB or GW, or of T/O CG, cancels the take-off speeds entered by the crew: the FMS computes them again (PGE.5.2).
- These fields have no default value: they can only be overwritten (CLR has no effect).

When the EFOB at the destination is below the RESERVE, it is shown in amber on the FPLN, PROG and CRUISE pages and the FAL alert is raised.

CAUTION

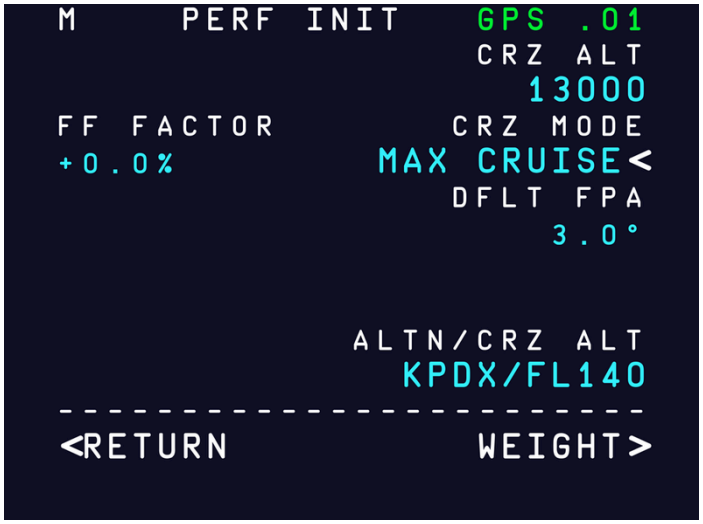
Check the weights carefully: they are used by every performance computation. Without them, the FMS cannot compute the take-off speeds or the fuel predictions.

SIMULATOR NOTE

The EFB loadsheet can send the ZFW and the FOB to the FMS (EFB SETTINGS, LOADSHEET TO FMS). See the SIM part of this manual.

PGE.1.8 PERF INIT Page

Ident.: PGE.1.8 — 01 NOV 2026
ALL



PERF INIT page

Reached by PERF INIT> on the INIT page or on each PERF page.

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CRZ ALT (1R)	Cruise altitude used for the predictions and the vertical profile. Same field as on CRUISE and VNAV 1/2. On the ground, in take-off and in climb, the FMS flies the crew entry, or the FGCP selected altitude when it is higher. Without an entry it uses the present aircraft altitude, or the selected altitude when higher. In cruise it follows the selected altitude. The value is large cyan when it is the crew entry, small cyan when computed. Amber dashes when no cruise altitude is known. Enter `13000`, `FL130` or `130`. Range: from the selected altitude (at least 1 000 ft) to the computed ceiling + 5 000 ft; RANGE ERROR outside. Insertable on the ground, in take-off and in climb. In cruise it cannot be changed (large green, NOT ALLOWED), unless the selected altitude is not valid. CLR returns to the computed value.
FF FACTOR (2L)	Fuel flow factor in %, applied to the fuel predictions only (not to the FOB). Default `+0.0` small; entry `+2.5`, `-1` (range −50 to +50 %), large. CLR restores +0.0.
CRZ MODE (2R)	Cruise speed law. MAX CRUISE (default) or LONG RANGE: press the LSK with an empty scratchpad to change. Enter a speed (150 to 250 kt) to fly a constant IAS cruise: the field shows the speed with KT. CLR restores MAX CRUISE.
DFLT FPA (3R)	Default flight path angle of the descent profile and descent predictions. Default `3.0°` small; entry 1.0 to 9.9, large. CLR restores 3.0°.
ALTN/CRZ ALT (5R)	Alternate airport and its cruise level, cyan. The alternate is by default the departure airport of the flight plan (small). Enter an airport of the standard or pilot database (large); NOT IN DATABASE if unknown. Cyan brackets when no flight plan is defined. The alternate cruise level is by default FL100 (small). Enter it after a `/`. Entries: `KRDM/FL140`, `KRDM`, `/FL140`. With an empty scratchpad, the LSK displays the DATA LIST of the standard and pilot airports. CLR restores both defaults.
<RETURN (6L)	Displays the previous page.
WEIGHT> (6R)	Displays WEIGHT.

The CRZ MODE is applied when the aircraft reaches the CRZ ALT. The alternate predictions always use the LONG RANGE law.

CAUTION

If the CRZ ALT is above the ceiling computed with the ZFW, the FMS cannot compute the predictions: ETA, ETE and EFOB are dashed.

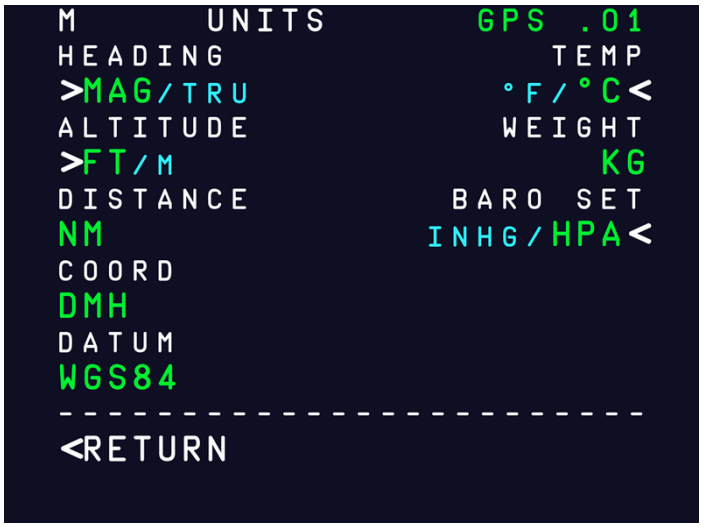
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FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

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PGE.1.9 UNITS Page

Ident.: PGE.1.9 — 01 NOV 2026
ALL



UNITS page

Reached by UNITS> on the INIT page or <UNITS on the DATA MENU.

A selectable unit shows both values: the selected one large green, the other small cyan. Press the LSK to change.

HEADING (1L)	MAG / TRU. Reference of the courses, tracks and bearings on the MCDU (M or T in the title line).
ALTITUDE (2L)	FT / M. Altitudes and altitude entries in feet or metres. Flight levels stay in FL.
DISTANCE (3L)	NM. Not changeable.
COORD (4L)	DMH (degrees, minutes, hundredths of minute). Not changeable.
DATUM (5L)	WGS84. Not changeable.
TEMP (1R)	°F / °C.
WEIGHT (2R)	KG. Not changeable.
BARO SET (3R)	INHG / HPA. Unit of the QNH fields.
<RETURN (6L)	Displays the previous page.

The default units are MAG, FT, °C and HPA. They are set when the aircraft is loaded; a power interruption does not change the selection.

SIMULATOR NOTE

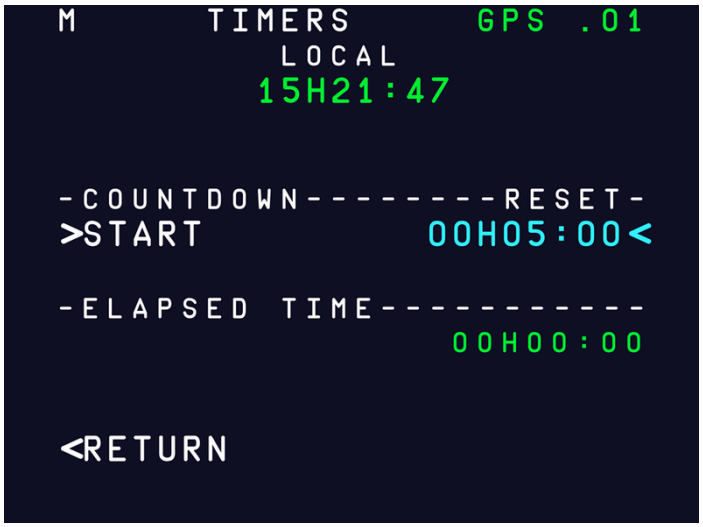
The geodetic DATUM and GEO DATUM pages (selection of another datum or a user spheroid) are not simulated: the FMS always works in WGS84.

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PGE.1.10 TIMERS Page

Ident.: PGE.1.10 — 01 NOV 2026 — ALL



TIMERS page — countdown set to 5 min

Reached by <TIMERS on the DATA MENU.

LOCAL — Local time (UTC + DIFF), green.

COUNTDOWN (3R) — Countdown time, cyan, `HHhMM:SS`. Followed by < once a time is set; RESET is then shown in the label line. Enter the time as `M.SS` (`2.50` = 2 min 50 s) or `M` (`5` = 5 min); seconds 00 to 59. Maximum 99 h 59 min 59 s. With an empty scratchpad, the LSK resets the countdown to the time set and stops it. CLR sets 00H00:00 (no countdown).

>START / >PAUSE (3L) — Shown once a time is set. Starts or stops the countdown.

ELAPSED TIME (4R) — Elapsed time, green, `HHhMM:SS`. It runs while the ELAPS TM pushbutton (First Officer side) is ON. RESET and < are shown once it is not zero. With an empty scratchpad or CLR, the LSK resets it. Stopped: reset at once. Running: 00H00:00 is shown in yellow and EXEC lights; EXEC confirms, the counter restarts from zero and keeps running. A second press cancels. ELAPS TM pushbutton: a press starts or stops the counter. Stopped for less than 1 min, it continues from the last value; stopped for more than 1 min, it starts over.

<RETURN (6L) — Displays the previous page.

At zero, the countdown stops, END OF COUNTDOWN TIMER is shown in the scratchpad (black on white) and the TMR alert is raised (ABN.1).

PGE.1.11 Reset of the Initialization Data

Ident.: PGE.1.11 — 01 NOV 2026 — ALL

After each flight (end of flight cycle)

The flight cycle ends when the aircraft, after a flight, has been on the ground for more than 30 s. The FMS then:

- invalidates ZFW, FOB, GW, T/O CG and T/O TRIM (WEIGHT page),
- cancels the take-off speeds entered by the crew (the computed speeds come back),

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- returns DFLT FPA (3.0°), CRZ MODE (MAX CRUISE) and FF FACTOR (+0.0 %) to their defaults,
- cancels the backup fuel flows entered on the FUEL FLOW page,
- clears the active, temporary and secondary flight plans (FPH.7).

The RESERVE is kept.

After a long power interruption

After an FMS power interruption of more than 5 s:

- the power-up page is displayed,
- DFLT FPA, CRZ MODE and FF FACTOR return to their defaults,
- T/O TIME returns to the present time,
- the crew RNP entry is cancelled,
- the PRAIM 2/2 selections return to ACT and RNAV 10 OCEANIC,
- GPS and R/NAV are selected again on BCP NAV,
- the backup fuel flows are cancelled,
- the flight plans are cleared (a SEC FPLN saved with DATA SAVE is recovered), and unsaved pilot data are lost.

LAST POS and RESERVE are memorized at power-down and come back at the next power-up.

SIMULATOR NOTE

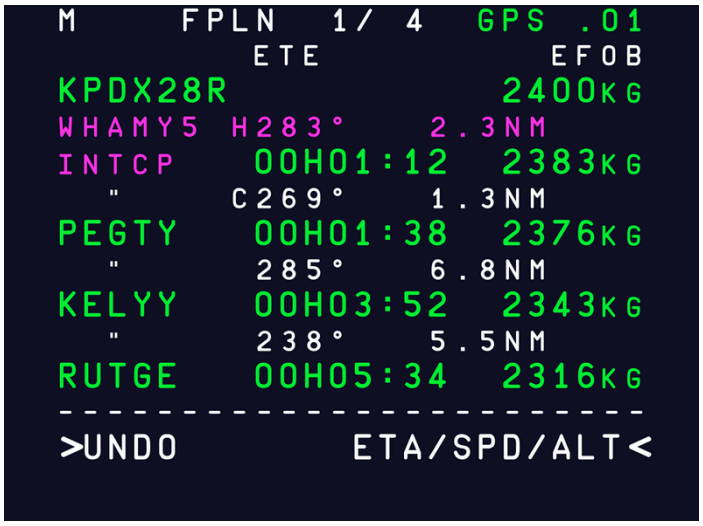
The EFB COLD & DARK and TURNAROUND ground presets also end the flight cycle.

FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

PGE.2.1 FLIGHT PLAN - FPLN PAGE

PGE.2.1.1 Access and General Layout

Ident.: PGE.2.1.1 — 01 NOV 2026
ALL



FPLN page 1/4 on the ground, ETE/EFOB format

The FPLN page is displayed with the FPLN key. It shows every leg of the active flight plan, with the leg course and distance, the constraints and the predictions, and gives access to the lateral and vertical revisions.

The title reads:

FPLN n/m	Active flight plan.
TMPY n/m	Temporary flight plan, in **yellow** (see PGE.2.2).
FPLN PLAN / TMPY PLAN	The on-side ND is in PLAN mode (no page counter, see PGE.2.1.7).

Each page shows five waypoints. Each waypoint takes one pair of lines:

- the **label line** (small font) describes the leg that ends at the waypoint: procedure name, leg path, leg length and flight path angle;
- the **data line** (large font) holds the leg termination (the waypoint ident and an indicator) on the left, and the predictions and constraints on the right.

On page 1 the label line of the first waypoint carries the column header (`ETE` / `EFOB`, or `ETA Z SPD ALT`). The sixth pair holds a dashed separator and the prompts (6L) and (6R).

PGE.2.1.2 FROM and TO Waypoints

Ident.: PGE.2.1.2 — 01 NOV 2026
ALL

The top of page 1 is the active leg, between the FROM waypoint and the TO waypoint.

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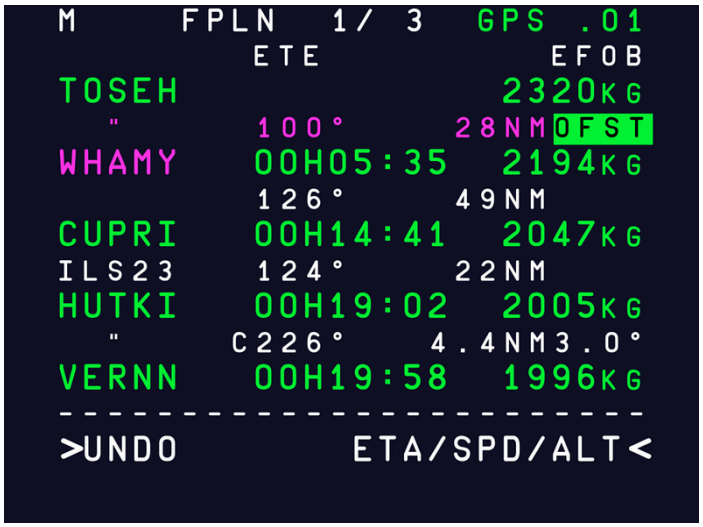
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FROM (first data line of page 1) — On the ground: the departure airport, or the departure runway once one is selected (for example `KPDX28R`). In flight: the last waypoint sequenced, or `T-P` (turning point) / `IN-BND` after a DIRECT TO. Shown **green**. Its right-hand data are the values recorded when it was sequenced: time (ETA format) and fuel on board, no ETE. Legs flown before the FROM are no longer shown.

PPOS — Shown in place of the FROM when the TO is preceded by a discontinuity in flight (FROM waypoint not specified): `PPOS` (present position), then `---FPLN DISCONTINUITY---`, then the TO.

TO — The waypoint the aircraft is flying to. Its ident, its label line and its altitude constraint are **magenta**.

On the active leg, the label line shows the bearing to go (for a plain `XXX°` leg path) and the distance to go along the path, both updated continuously. Course and heading legs (`C` / `H`) keep their published course.



FPLN page in flight: FROM TOSEH, TO WHAMY, lateral offset active

PGE.2.1.3 Label Line

Ident.: PGE.2.1.3 — 01 NOV 2026
ALL

The label line of a waypoint has four fixed columns. An empty field leaves a blank; the other fields do not move.

Procedure name

Procedure ident — The SID, STAR or approach (for example `WHAMY5`, `ILS23`) the leg belongs to.

" (ditto) — The leg belongs to the same procedure (or airway) as the previous one.

Airway ident — The leg is part of an airway (for example `V25`).

HOLD ← / HOLD → — Holding pattern, left or right turns (PGE.2.1.5).

TURN ← / TURN → — Procedure turn, left or right.

The procedure and airway idents are written in plain characters on the FPLN page. Reverse video for airways and procedures is used on the route pages only (see PGE.2.3).

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Leg path

XXX°	Course from the start to the end of the leg, measured at the start. On the active leg: bearing to go.
CXXX°	Constant course (track) to the leg termination.
HXXX°	Constant heading to the leg termination.
ARC XX	Arc of XX NM around a fix.
XXNAV	Arc of XX NM around a navaid (`NAV` = the first three letters of the navaid ident).

Courses are magnetic, or true when the north reference is TRUE (UNITS or HDG/ATT page). A `T` after the degree sign marks a true value shown while the reference is MAG, for a leg whose magnetic variation is not defined.

Leg length

Active leg	Distance to go to the TO, along the path.
Other legs	Distance of the leg, from one leg transition to the next. `NN.N` below 100 NM, `NNN` above.

Flight path angle

The FPA of the leg when one is defined on the VERT REV page (see PGE.2.6), for example `3.0°`. On the active leg with a lateral offset in force, this column shows `OFST` in reverse video.

PGE.2.1.4 Data Line

Ident.: PGE.2.1.4 — 01 NOV 2026
ALL

Leg termination (left)

Ident (large)	The waypoint where the leg ends, for example `PEGTY`, `RW23`.
INTCP (small)	The leg ends when it intercepts the next leg.
HHHHH (small)	Altitude termination, in feet, five digits (for example `03700`).
NAV/DD (small)	The leg ends at DD NM from the DME `NAV`.
NAVZZZ (small)	The leg ends on radial ZZZ of the navaid `NAV`.
MANUAL (small)	Manual termination: the crew ends the leg.

The column after the ident is the indicator:

Δ	Overfly waypoint (set on the LTRL REV page).
← / →	Turn direction into the next leg, when the procedure defines one. The turn direction of a holding pattern is shown on its `HOLD` line and on its entry line, not on the waypoint before the hold.
* (part of the ident)	Rallying waypoint of a DIRECT TO to a moving waypoint (see PGE.4.4).

Predictions and constraints (right)

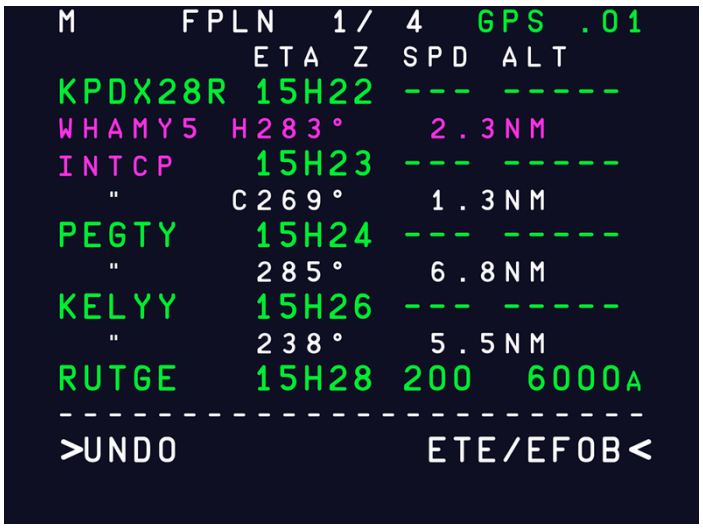
The right part has two formats. (6R) changes from one to the other; the choice is kept when the page is left and displayed again.

ETE/EFOB (default)	Estimated time en route (`HHhMM:SS`) and estimated fuel on board at the waypoint, in the WEIGHT unit of the UNITS page. EFOB **amber** when it is below the RESERVE (WEIGHT page), else **green**.

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ETA/SPD/ALT — Estimated time of arrival (HHhMM, L or Z time as set on the INIT page), speed constraint and altitude constraint.



FPLN page 1/4, ETA/SPD/ALT format, with the constraints entered at RUTGE

In the ETA/SPD/ALT format:

- SPD is the speed constraint (IAS) of the leg, or ---. It is **green**.
- ALT is the altitude constraint, or -----. Feet below the transition altitude, FL and the level above it. A small A follows an AT OR ABOVE constraint, a small B an AT OR BELOW constraint, nothing an AT constraint. A window constraint shows WINDOW. A small C before the value, underlined: the value has been corrected by the cold temperature compensation (VNAV 2/2 page).
- ALT colour: **amber** when the constraint is predicted missed, **magenta** at the TO waypoint, white when the constraint is ignored, **green** otherwise.
- An RTA defined at a waypoint underlines its ETA (and its ETE in the other format). The ETA is **amber** when the RTA is declared missed.

The constraints are entered and cleared on the VERT REV page only (see PGE.2.6). Dashes replace a prediction the FMS cannot compute.

PGE.2.1.5 Special Lines

Ident.: PGE.2.1.5 — 01 NOV 2026
ALL

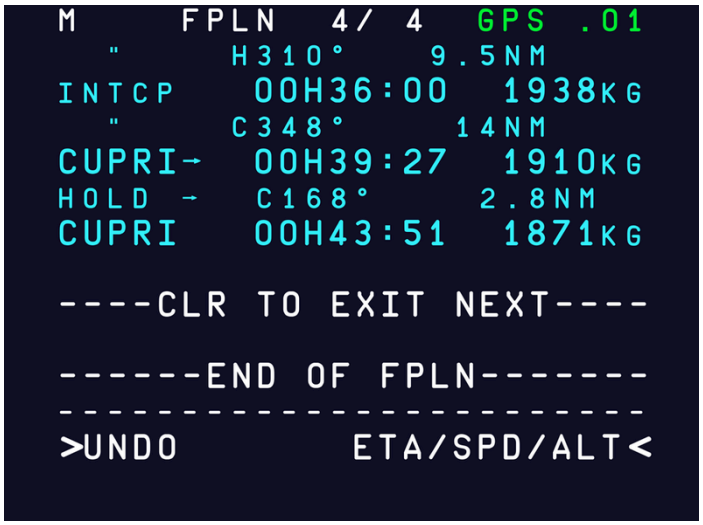
---FPLN DISCONTINUITY--- — The plan is not continuous at this point. When the aircraft reaches it, the FPL alert is raised (see ABN.1).

Holding pattern — Three pairs of lines: the hold fix with the turn arrow (entry, predictions at the entry), the hold leg (label HOLD ← or HOLD →, inbound course, leg length) with the hold fix again (predictions at the next exit, one pattern after the entry; the waypoints after the hold are predicted from it), then ----CLR TO EXIT NEXT----. A hold over the fix of the previous leg uses that leg's line as its entry. A hold is never split over two pages.

------END OF FPLN------- — After the last leg of the plan.

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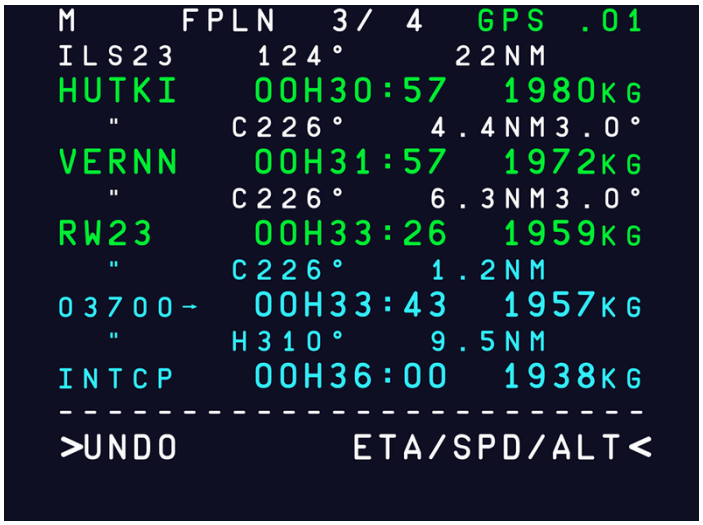


FPLN 4/4: missed approach hold at CUPRI and END OF FPLN

The last leg of the plan is not necessarily the destination. Once an approach is inserted, the destination is its runway (for example `RW23`), and the missed approach legs follow it up to END OF FPLN.

Missed approach

The legs of the missed approach are **cyan** (ident, label line and right-hand data) until the missed approach is activated (go-around, see FPH.6). They then become normal legs of the active plan. Before activation, the runway (MAP) stays the TO waypoint after it is passed.



FPLN 3/4: the approach to RW23 and the start of the missed approach in cyan

PGE.2.1.6 Colours

Ident.: PGE.2.1.6 — 01 NOV 2026
ALL

ITEM	ACTIVE FPLN	TMPY
FROM waypoint and its data	green	yellow
TO waypoint, active leg label line, TO altitude constraint	magenta	yellow

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ITEM	ACTIVE FPLN	TMPY
Other waypoints and their data	green	yellow
Missed approach (not activated)	cyan	yellow
Label lines of the other legs, special lines, prompts	white	white
Constraint predicted missed / EFOB below reserve / RTA missed	amber	yellow

The title is white for the FPLN and yellow for the TMPY.

PGE.2.1.7 Scrolling

Ident.: PGE.2.1.7 — 01 NOV 2026
ALL

ND in ARC or ROSE mode

NEXT and PREV display the next and previous pages. Two pages share one waypoint: the last waypoint of a page is the first of the next page. The pages loop: NEXT on the last page displays page 1, PREV on page 1 the last page.

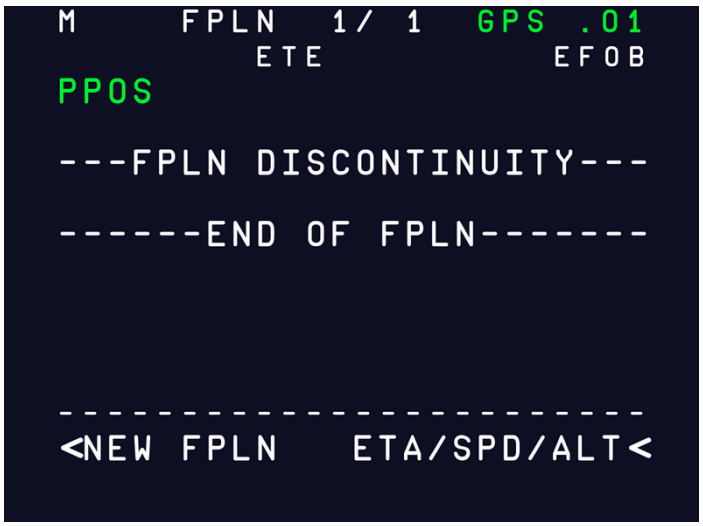
The page follows the aircraft: when a waypoint is sequenced, the page that contains the active leg is displayed again. After NEXT or PREV, the page stays where the crew left it, so the plan can be read ahead. The automatic following starts again when the FPLN page is called again from another page.

ND in PLAN mode

The title becomes FPLN PLAN (TMPY PLAN). On the side MCDU, NEXT and PREV move one waypoint at a time (discontinuities are skipped), and the ND PLAN display is centred on that waypoint. The centred waypoint is kept on the third line of the page where possible. The scroll also loops from the end of the plan to its start. When the ND leaves PLAN mode, page 1 is displayed.

PGE.2.1.8 Empty Flight Plan

Ident.: PGE.2.1.8 — 01 NOV 2026
ALL



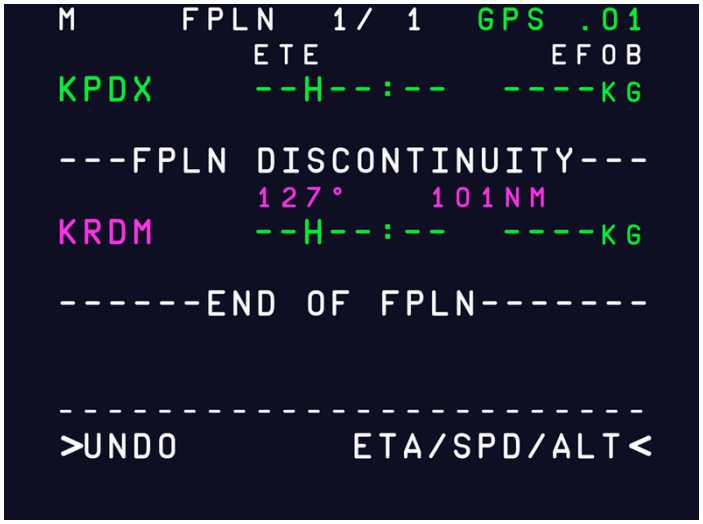
FPLN page with no flight plan

Without a flight plan the page shows `PPOS`, `---FPLN DISCONTINUITY---` and `------END OF FPLN-------`. <NEW FPLN (6L) displays the FPLN INIT page (see PGE.1).

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After a FROM/TO entry without a route, the plan holds the departure airport, a discontinuity and the destination. On the ground the departure airport stays the FROM; the destination is the TO.



FPLN after a city pair initialization: KPDX, discontinuity, KRDM

PAGE

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PGE.2.2 FLIGHT PLAN - FPLN REVISIONS

PGE.2.2.1 Line Select Keys of the FPLN Page

Ident.: PGE.2.2.1 — 01 NOV 2026
ALL

Left keys (waypoint lines)

SCRATCHPAD	LINE	RESULT
empty	Departure airport or runway, on the ground	DEPARTURE page (see PGE.2.7)
empty	Destination airport, or landing runway	ARRIVAL page (see PGE.2.7)
empty	FROM waypoint in flight, or PPOS line	LTRL REV page at PPOS (see PGE.2.5)
empty	Any other waypoint	LTRL REV page of the waypoint (see PGE.2.5)
empty	Discontinuity	NO ACTION DEFINED
waypoint entry	Waypoint	The new waypoint is inserted **before** it, followed by a discontinuity
waypoint entry	Discontinuity	The new waypoint is inserted in front of the discontinuity
waypoint entry	Discontinuity after a manual termination (FM, VM, HM) leg	NOT ALLOWED: enter the waypoint on the next line, where it goes after the discontinuity
waypoint entry	PPOS line	PPOS is kept: the new waypoint goes after the discontinuity, followed by a discontinuity before the TO
/	Waypoint or discontinuity	A discontinuity is inserted before it
CLEAR ?	Waypoint	Deleted (see PGE.2.2.3)
CLEAR ?	Discontinuity	Deleted: the waypoints on each side are joined
CLEAR ?	Hold lines	The hold is deleted
CLEAR ?	----CLR TO EXIT NEXT----	The aircraft leaves the hold at the next pass over the fix

A waypoint entry is an ident, a place/bearing/distance, a place-bearing/place-bearing, a latitude/longitude, a latitude or longitude crossing (/N4500.0) or an along-track offset (/12.3, from the waypoint beside the key). The formats and the names given to the computed points are described in MPH.1. An ident found more than once opens the DATA LIST page to choose; an unknown ident opens the NEW DATA page (see PGE.9).

Waypoint insertion is not allowed (NOT ALLOWED):

- before the departure (first line),
- at the FROM waypoint,
- at the TO waypoint while the FMS is coupled to the autopilot,
- on an abeam point of a DIRECT TO ABEAM (see PGE.4.2).

Right keys

Waypoint — VERT REV page of the waypoint (see PGE.2.6).

FROM waypoint — WIND page (see PGE.2.9).

CLEAR ? — NOT ALLOWED. The right-hand fields (ETE, EFOB, ETA, SPD, ALT) are changed on the VERT REV page.

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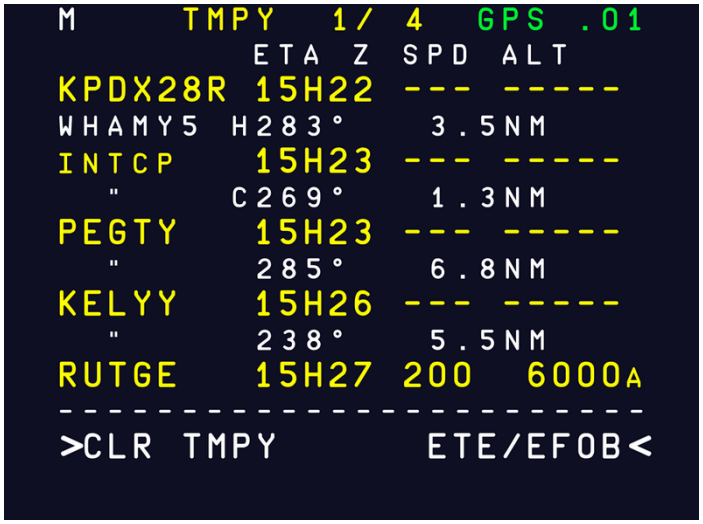
Prompts

<NEW FPLN (6L)	Displays the FPLN INIT page (see PGE.1). The active plan is not changed by this key.
>CLR TMPY (6L)	Shown instead of <NEW FPLN while a TMPY exists. Deletes the TMPY; the active plan is unchanged.
>UNDO (6L)	Shown instead of <NEW FPLN during one minute after a change of the active plan (see PGE.2.2.5).
ETA/SPD/ALT< / ETE/EFOB< (6R)	Changes the format of the right-hand data (see PGE.2.1.4).

The rallying waypoint of a DIRECT TO to a moving waypoint, the abeam points and the waypoint of a DIRECT TO ABEAM cannot be revised: their keys give NOT ALLOWED.

PGE.2.2.2 Temporary Flight Plan (TMPY)

Ident.: PGE.2.2.2 — 01 NOV 2026
ALL



TMPY after the constraints at RUTGE, ETA/SPD/ALT format

Every revision of the active plan is first made on a temporary copy, the TMPY:

- departure, arrival, airway, NEW DEST, waypoint insertion or deletion, discontinuity insertion or deletion,
- overfly, hold, lateral offset,
- altitude, speed, RTA and FPA constraints, step, wind profile,
- DIRECT TO, DIRECT TO ABEAM, VERT DTO.

With a TMPY:

- the page title is TMPY and the data are **yellow**; the TMPY is drawn in yellow on the ND;
- more revisions can be added to the TMPY;
- the FMS keeps sequencing the TMPY while the aircraft flies, and it computes its own predictions;
- the EXEC light is on.

EXEC	Activates the TMPY: it becomes the active FPLN. EXEC can be pressed on the FPLN page or on the revision page itself.
>CLR TMPY (6L)	Deletes the TMPY.

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A TMPY whose FROM is the T-P of a DIRECT TO is activated only if the aircraft position, track, ground speed and TAS are valid; otherwise EXEC gives NOT ALLOWED and the TMPY is kept.

While a TMPY exists, <NEW FPLN and the SEC FPLN activation, swap and copy are refused (TMPY EXIST). The SEC FPLN has no TMPY: its revisions are applied at once (see PGE.2.4).

PGE.2.2.3 Deleting a Waypoint or a Discontinuity

Ident.: PGE.2.2.3 — 01 NOV 2026
ALL

1. Press CLR with an empty scratchpad: CLEAR ? is shown.
2. Press the left key of the waypoint, the discontinuity or the hold.
3. Check the TMPY and press EXEC.

A deleted waypoint is replaced by a discontinuity, except when it is next to a discontinuity already (two discontinuities never follow each other) and for a hold or a procedure turn, which are removed without one. A wind profile defined at the deleted waypoint goes to the next waypoint.

Deleting a discontinuity joins the legs before and after it. When the same waypoint is found on both sides, only one is kept.

The FMS refuses (NOT ALLOWED) to delete:

- the departure airport (or runway) and the destination airport,
- the FROM waypoint,
- the TO waypoint while the FMS is coupled to the autopilot,
- a waypoint before or after a curved (RF) leg,
- the discontinuity between PPOS and the TO in flight (make a DIRECT TO the TO waypoint instead),
- a discontinuity after a manual termination (VM, FM) leg that is not the active leg.

Deleting the discontinuity after a hold with manual termination makes the aircraft leave that hold at the next pass over its fix.

PGE.2.2.4 Activation and Page Return

Ident.: PGE.2.2.4 — 01 NOV 2026
ALL

EXEC activates the TMPY from any page. The revision pages (LTRL REV, VERT REV, DEPARTURE, ARRIVAL, AIRWAY, AIRWAYS, TO, WIND) then return to the FPLN page by themselves.

These pages also return to the FPLN page when the plan they revise changes under them:

LTRL REV, VERT REV, DEPARTURE, ARRIVAL	At any leg sequencing or modification of the active plan: the FPLN page that contains the active leg is displayed.
AIRWAY, AIRWAYS, TO, WIND	When the revised waypoint (or the FROM fix of the airway) is sequenced, or the active plan is modified: the FPLN page displayed before is displayed again.

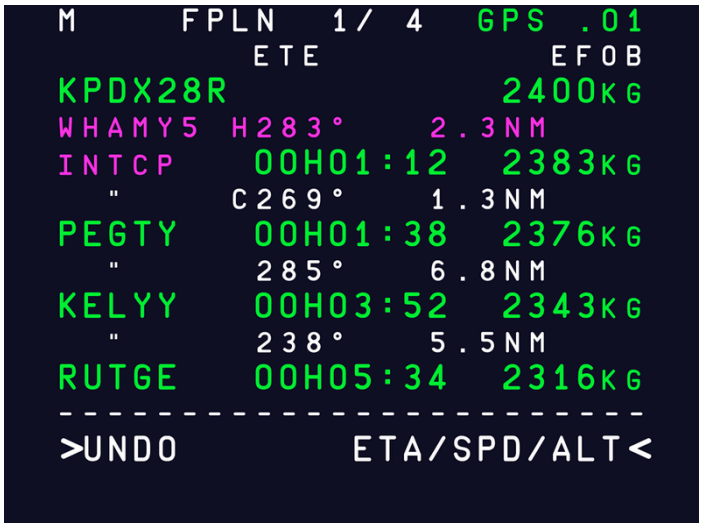
These rules do not apply to the SEC FPLN revision pages.

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PGE.2.2.5 UNDO

Ident.: PGE.2.2.5 — 01 NOV 2026
ALL



FPLN page 1/4 with the >UNDO prompt after an EXEC

After the active plan is changed (EXEC of a TMPY, activation of a route, activation or swap of the SEC FPLN, CANCEL FPLN), >UNDO (6L) is shown for one minute.

► UNDO puts the plan as it was before the change into the TMPY and displays it. Then:

- EXEC makes it the active plan again, or
- >CLR TMPY keeps the plan as it is now.

UNDO can be used once per change. A new revision removes the >UNDO prompt.

PGE.2.3 FLIGHT PLAN - ROUTE SEL PAGE

PGE.2.3.1 Access

Ident.: PGE.2.3.1 — 01 NOV 2026
ALL



ROUTE SEL page after a FROM/TO entry: direct route KPDX-KRDM, target FPLN

The ROUTE SEL page initializes a flight plan from a stored route (company route or pilot route) or from a city pair. It is reached by:

- <ROUTE (1L) on the FPLN INIT page (see PGE.1), itself reached by <NEW FPLN on the FPLN page or NEW FPLN> on the LTRL REV page;
- <ROUTE (1L) on the SEC INIT page: the target (6R) is then preset to SEC< (see PGE.2.4);
- ROUTE SELECT> on the company route list or on a company route, and on a pilot route (see PGE.9): the route is shown already selected.

Before a route is selected, the page shows the route of the plan the target (6R) would initialize.

PGE.2.3.2 Fields

Ident.: PGE.2.3.2 — 01 NOV 2026
ALL

IDENT (1L)

Route identifier. Empty: cyan brackets.

Ident entered	The route is searched in the company routes and in the pilot routes. When both hold a route with that ident, the company route is shown first; NEXT / PREV shows the other. Unknown ident: NOT IN DATABASE.
Empty scratchpad	Displays the company route list (STD DATA, CO-ROUTE), where a company route can be selected.
`n/ N` (label)	Shown beside IDENT when the search found more than one route: number of the route shown / number of routes. NEXT / PREV shows the next / previous route, in a loop.

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FLT ID (1R)

Flight number, up to 8 letters and digits. It can be entered only when the target is FPLN< (otherwise NOT ALLOWED). It has no default value: CLR is NOT ALLOWED, a new entry replaces it.

FROM/TO (2L)

Departure and destination airports, `KPDX/KRDM`. `KPDX` alone sets the departure, `/KRDM` alone the destination; the search starts when both are known. Each airport must be in the standard or the pilot database (otherwise NOT IN DATABASE). An ident found in both opens the DUPLICATE page.

The FMS then lists, in this order:

1. the company routes from FROM to TO,
2. the company routes from TO to FROM without departure or arrival procedure (shown reversed),
3. the same two groups of pilot routes,
4. the direct route FROM-TO, last, with an empty IDENT.

REVERSE< (2R)

Reverses the route shown: the waypoints are listed in the opposite order and the two airports are swapped. A second press restores it. Not shown for a route with a SID, a STAR or an approach.

When the route shown is reversed compared to the stored route, `REVERSED` is shown in reverse video in the separator line under FROM/TO.

CAUTION

A route that contains a waypoint no longer in the standard database can be reversed, but the result may not be consistent. Check it before activation.

Route content (lines 3 to 5)

The route is listed in two columns, down the left column then down the right one:

- the departure airport (with its runway when the route has one, for example `KPDX28R`),
- the SID, then each airway, the STAR and the approach (`VIA/APPROACH`), in reverse video,
- the waypoints: for an airway, only its entry and exit fixes are listed,
- the destination airport.

When the route does not fit, `----->` (5R) shows the next part and `<-----` (3L) the previous part.

The selected route is **yellow**. The separator line (line 6) reads `PLT ROUTE` for a pilot route, `CO-ROUTE` for a company route, and plain dashes for the direct route.

Target (6R)

FPLN<	The active flight plan.
SEC<	The secondary flight plan.
TMPY<	The temporary flight plan.

Each press changes the target (FPLN, SEC, TMPY, then FPLN again). The prompt is in reverse video once a route is selected: EXEC then initializes the target.

<RETURN (6L) Back to the previous page.

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PGE.2.3.3 Initialization (EXEC)

Ident.: PGE.2.3.3 — 01 NOV 2026
ALL

With a route selected, the EXEC light is on. EXEC:

Target FPLN	The route replaces the active flight plan (through the TMPY, activated at once) and the FPLN page is displayed. >UNDO is available for one minute.
Target TMPY	The route is built in the TMPY and the FPLN page shows it in yellow. A second EXEC activates it.
Target SEC	The route replaces the SEC FPLN and the SEC FPLN page is displayed.

The airways and the procedures of the route are inserted as legs. A waypoint, an airway or a procedure that is no longer in the standard database is replaced by a discontinuity. If the plan cannot hold the whole route, the initialization is stopped, the target plan is kept as it was and FPLN FULL (SEC FULL) is shown.

The plan is built from the departure airport through the route to the destination. With the direct route, a discontinuity separates the two airports (see PGE.2.1.8).

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PGE.2.4 FLIGHT PLAN - SECONDARY FLIGHT PLAN

PGE.2.4.1 Principle

Ident.: PGE.2.4.1 — 01 NOV 2026
ALL

The secondary flight plan (SEC FPLN) is a second plan that is not flown: for example the route to the alternate, or the next leg of the day. It is not shown on the ND.

- The SEC FPLN is revised like the active plan, with the same pages. Their titles start with SEC (SEC LTRL REV, SEC VERT REV, SEC HOLDING AT, SEC DEPARTURE, SEC ARRIVAL, SEC AIRWAYS, SEC WIND).
- There is no temporary plan for the SEC: each revision is written into the SEC at once, without EXEC, and there is no UNDO.
- The SEC can be activated (it replaces the active plan) or swapped with the active plan.

SEC initialized as a copy

A SEC made with >COPY FPLN stays linked to the active plan:

- while the first leg of the SEC is the active leg, the SEC is sequenced with the active plan;
- a revision of the active plan is also made on the SEC, on the part common to both plans, before the point where they differ.

The link stays after a swap (it then follows the new SEC). It ends when the SEC is initialized again (ROUTE, CANCEL) or activated. Cancelling the active plan does not change a SEC made as a copy.

PGE.2.4.2 SEC FPLN Page

Ident.: PGE.2.4.2 — 01 NOV 2026
ALL



SEC FPLN page 1/4: copy of the active plan

Displayed with the FPLN key pressed while the FPLN page is shown. The FPLN key pressed on the SEC FPLN page displays the FPLN page again. The title is SEC n/m.

The layout, the fields and the keys are those of the FPLN page (see PGE.2.1 and PGE.2.2), with these differences:

- the data shown **green** on the FPLN page are white;

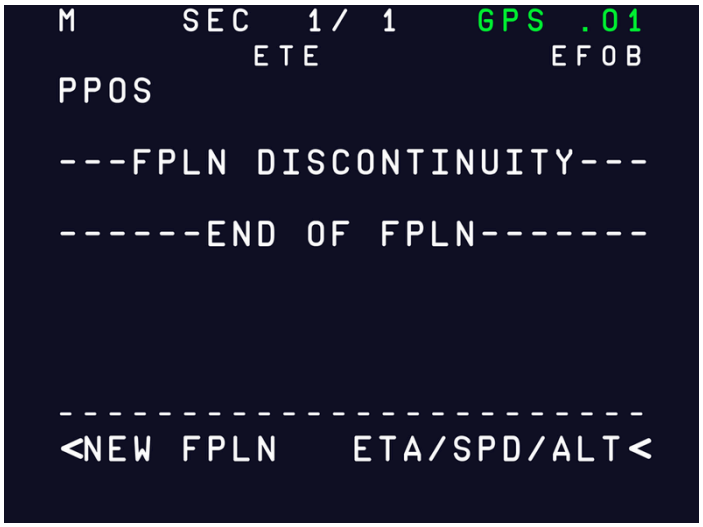
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- the TO waypoint of the SEC, its label line and its altitude constraint stay **magenta**; a constraint predicted missed, an RTA missed and an EFOB below the reserve stay **amber**; the missed approach stays **cyan**;
- a waypoint insertion, a deletion or a hold applies directly to the SEC;
- (6L) is always <NEW FPLN: it displays the SEC INIT page.

The ETA, ETE and EFOB of the SEC are predicted: on the part common with the active plan they are the active plan predictions; beyond it the FMS continues them with the SEC PERF values. Dashes are shown where nothing can be predicted.

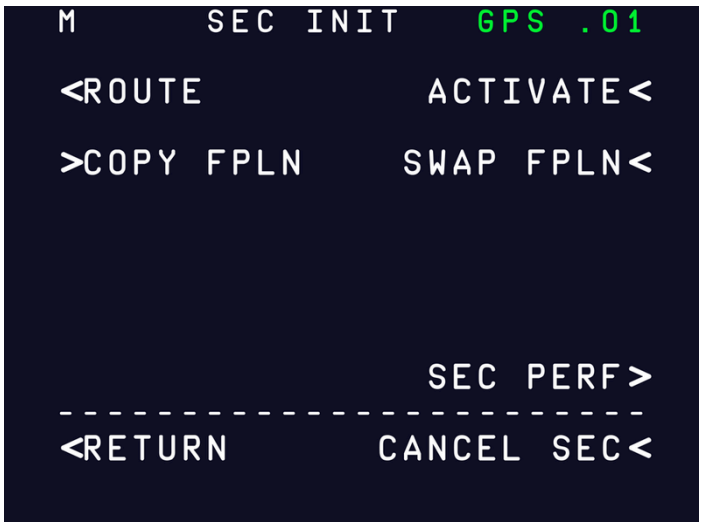
Only the departure airport is protected on the SEC: the FROM / TO and autopilot coupling rules of the active plan do not apply. A latitude / longitude crossing or an along-track offset cannot be inserted in the SEC (NOT ALLOWED).



SEC FPLN page with no secondary flight plan

PGE.2.4.3 SEC INIT Page

Ident.: PGE.2.4.3 — 01 NOV 2026
ALL



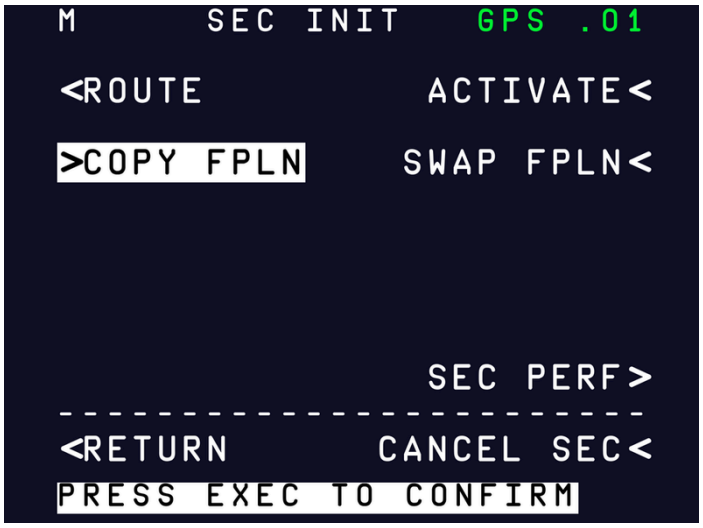
SEC INIT page

Reached by <SEC INIT on the FPLN INIT page, or by <NEW FPLN (6L) on the SEC FPLN page.

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<ROUTE (1L)	ROUTE SEL page with the target set to SEC< (see PGE.2.3).
>COPY FPLN (2L)	Copies the active plan into the SEC (see below). The previous SEC is deleted.
ACTIVATE< (1R)	Makes the SEC the active flight plan (see below).
SWAP FPLN< (2R)	Exchanges the SEC and the active flight plan (see below).
SEC PERF> (5R)	SEC PERF page (PGE.2.4.4).
<RETURN (6L)	Back to the previous page.
CANCEL SEC< (6R)	Deletes the SEC (see below).



SEC INIT: >COPY FPLN armed, waiting for EXEC

COPY FPLN and CANCEL SEC

1. Press the key. The prompt goes to reverse video, `PRESS EXEC TO CONFIRM` is shown in the scratchpad and the EXEC light comes on.
2. Press EXEC: the SEC is copied (or deleted). The SEC INIT page stays displayed.

Pressing the same key again, or another key of the page, cancels the request.

ACTIVATE and SWAP

1. Press the key. The SEC FPLN page is displayed with `PRESS EXEC TO CONFIRM`. The SEC can be checked with NEXT / PREV.
2. Press EXEC: the SEC becomes the active plan (ACTIVATE), or the two plans are exchanged (SWAP). The FPLN page is displayed and >UNDO is available for one minute (see PGE.2.2.5).

Any line select key on the SEC FPLN page cancels the request. After ACTIVATE, the SEC FPLN is empty.

The SEC PERF values go with the plan. When a take-off weight of the SEC PERF page (ZFW, FOB) replaces an active weight, the WGT alert (SEC FPLN ACTIVATED - CHECK WEIGHT) is raised; it goes when the WEIGHT page is displayed (see ABN.1).

Refusals

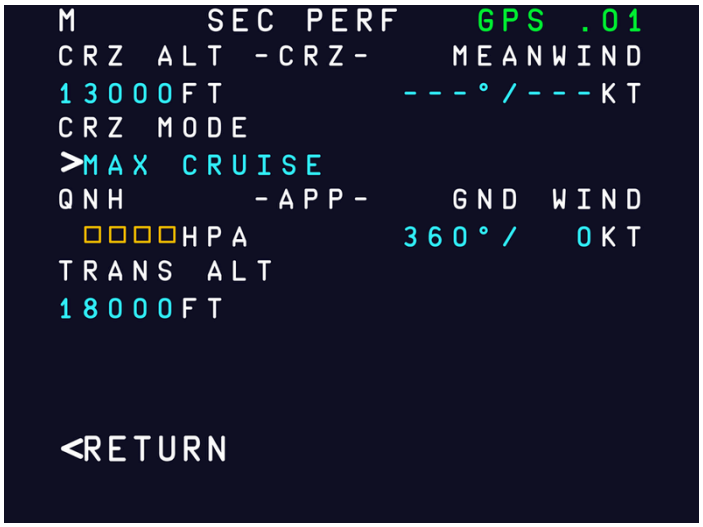
- COPY FPLN, ACTIVATE and SWAP are refused while a TMPY exists: TMPY EXIST. Activate or delete the TMPY first.
- ACTIVATE and SWAP without a SEC FPLN: NOT ALLOWED.

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PGE.2.4.4 SEC PERF Page

Ident.: PGE.2.4.4 — 01 NOV 2026
ALL



SEC PERF page of a SEC made as a copy (no take-off block)

Reached by SEC PERF> (5R) on the SEC INIT page. The values are those the FMS uses for the SEC predictions. They have the same meaning, format and range as the matching fields of the active plan pages (see PGE.5).

CRZ ALT (1L)	Cruise altitude of the SEC (PERF INIT format and range).
MEANWIND (1R)	Mean cruise wind, `direction/speed` (CRUISE page format).
CRZ MODE (2L)	Press to change LONG RANGE / MAX CRUISE; enter an IAS (150 to 250 kt) for a constant IAS cruise.
QNH (3L)	Destination QNH, in the UNITS baro unit. Amber boxes when empty.
GND WIND (3R)	Destination ground wind.
TRANS ALT (4L)	Destination transition altitude (1000 to 18000 ft). Dashed, and not insertable, when the SEC destination is not an airport.
ZFW (5L) / FOB (5R)	Take-off weights (WEIGHT page ranges). Shown only when the SEC has not been made as a copy of the active plan.
<RETURN (6L)	Back to SEC INIT.

A field without an entry shows its default value in small font: the present value of the active plan. The FOB default is the present fuel on board, or the fuel predicted at the active destination when the SEC departs from that airport. An entry is large. CLR on an entry restores the default; CLR on a default has no effect.

PGE.2.5 FLIGHT PLAN - LTRL REV PAGES

PGE.2.5.1 Access

Ident.: PGE.2.5.1 — 01 NOV 2026 — ALL

The lateral revision page (LTRL REV) is displayed by the left key of a waypoint on the FPLN page. It has two forms:

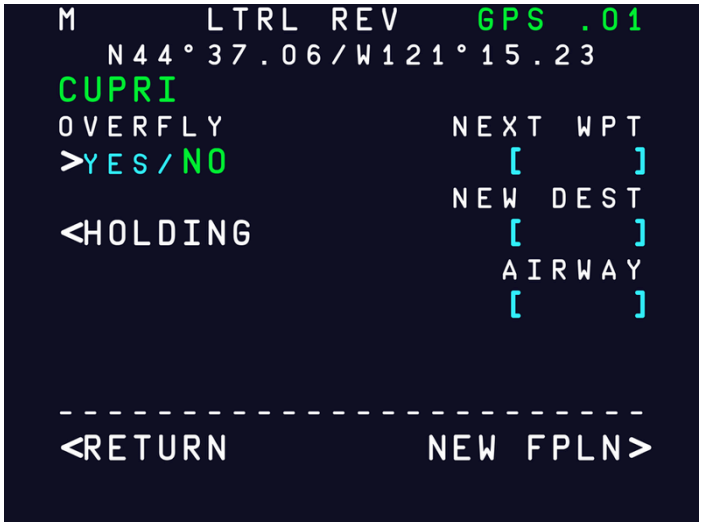
LTRL REV at PPOS — Left key of the FROM waypoint in flight, or of the PPOS line. Revisions made at the present position.

LTRL REV at WPT — Left key of any other waypoint, except the departure airport on the ground (DEPARTURE page) and the destination (ARRIVAL page).

NEXT / PREV display the LTRL REV page of the next / previous waypoint of the plan. The FPLN key displays the FPLN page. A leg sequencing or a change of the active plan returns to the FPLN page (see PGE.2.2.4).

PGE.2.5.2 LTRL REV at WPT

Ident.: PGE.2.5.2 — 01 NOV 2026 — ALL



LTRL REV at CUPRI, a waypoint on airways

Position (label of line 1) — Latitude and longitude of the revised waypoint.

Ident (1L) — Revised waypoint (**green**), with △ when it is an overfly waypoint. Press to display its database page (standard or pilot). A point computed by the FMS (place/bearing/distance, crossing, along-track offset) is in no database: NOT IN DATABASE.

OVERFLY (2L) — >YES/NO. The status in force is large **green**, the other small **cyan**. Each press changes the status; the change is made in the TMPY (in **yellow** until EXEC). An overfly waypoint is flown over before the turn to the next leg.

<HOLDING (3L) — HOLDING AT page for a hold at this waypoint (see PGE.2.10).

<DEPARTURE / <ARRIVAL (5L) — Shown when the waypoint belongs to the SID (DEPARTURE), or to the STAR or the approach (ARRIVAL). Displays that page (see PGE.2.7).

NEXT WPT (2R) — Inserts a waypoint after the revised one (see below).

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NEW DEST (3R)	Enters a new destination after the revised waypoint (see below).
AIRWAY (4R)	Inserts an airway from the revised waypoint (see below).
<RETURN (6L)	Back to the previous page.
NEW FPLN> (6R)	FPLN INIT page (see PGE.1). Refused while a TMPY exists (TMPY EXIST).

OVERFLY and <HOLDING are not shown where they cannot be used: on a leg the FMS ends by itself (intercept, altitude, DME distance, radial or manual termination) and on a point without a position.



LTRL REV at WHAMY, last waypoint of the SID

NEXT WPT (2R)

1. Type the waypoint and press (2R). Accepted entries: ident, place/bearing/distance, place-bearing/place-bearing, latitude/longitude (see MPH.1). Also accepted here: a latitude or longitude alone (`N45`, `W121`) for the point where the plan crosses it, and `PLACE/12.3` (`PLACE/-12.3`) for an along-track offset from a waypoint of the plan.
2. An ident found more than once: choose it on the DATA LIST page. An unknown ident: NEW DATA page.
3. The waypoint is inserted after the revised waypoint, followed by a discontinuity, in the TMPY. The FPLN page shows the TMPY: check it, then EXEC.

With an empty scratchpad, (2R) displays the DATA LIST page (filter ALL): the waypoint picked there is inserted.

NEXT WPT is not shown after a manual termination leg. It is refused (NOT ALLOWED) after the FROM waypoint while the FMS is coupled to the autopilot.

NEW DEST (3R)

1. Type the airport ident (standard or pilot database) and press (3R).
2. Every leg after the revised waypoint (old destination, arrival, missed approach) is removed. A discontinuity and the new destination follow the revised waypoint, in the TMPY.
3. Check the TMPY on the FPLN page, then EXEC.

An ident that is not an airport of either database: NOT IN DATABASE. With an empty scratchpad, (3R) displays the DATA LIST page of airports.

NEW DEST is not shown on the destination, on a manual termination leg or on a discontinuity. When the TO waypoint is the destination, change the destination with a DIRECT TO an airport (see PGE.4).

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FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

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AIRWAY (4R)

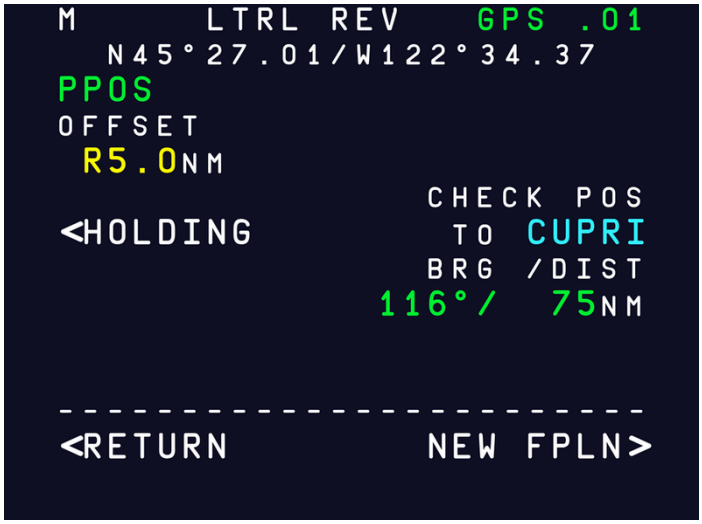
Shown only when the revised waypoint belongs to at least one airway of the standard database.

Airway ident + (4R) — Displays the AIRWAYS page with this airway (see PGE.2.8). An airway that does not contain the revised waypoint: NOT IN DATABASE.

Empty scratchpad + (4R) — Displays the AIRWAY page: list of the airways through the waypoint.

PGE.2.5.3 LTRL REV at PPOS

Ident.: PGE.2.5.3 — 01 NOV 2026 — ALL



LTRL REV at PPOS: offset R5 entered (TMPY), CHECK POS TO CUPRI

Position (label of line 1) — Present position of the FMS, updated every second.

PPOS (1L) — Revision point: the present position.

OFFSET (2L) — Lateral offset (see below).

<HOLDING (3L) — HOLDING AT page for a hold at the present position (see PGE.2.10).

CHECK POS TO (3R) — Type a waypoint, navaid or airport ident and press (3R): its bearing and distance from the aircraft are shown under BRG /DIST (4R) and kept up to date. With an empty scratchpad, (3R) displays the DATA LIST page (filter ALL). A moving waypoint is refused (NOT ALLOWED). The bearing follows the heading reference (MAG / TRUE).

BRG /DIST (4R) — `---°/----NM` until a CHECK POS TO ident is entered. **green**.

<RETURN (6L) — Back to the previous page.

NEW FPLN> (6R) — FPLN INIT page.

OFFSET (2L)

The value shown is the offset: **cyan** `R0.0NM` without offset, **yellow** while an entry waits in the TMPY, **cyan** once active.

Entry — Side and distance: `R5`, `L12.5` (or `5R`). Up to 20 NM (beyond: RANGE ERROR).

L0 / R0, or CLEAR ? — Cancels the offset.

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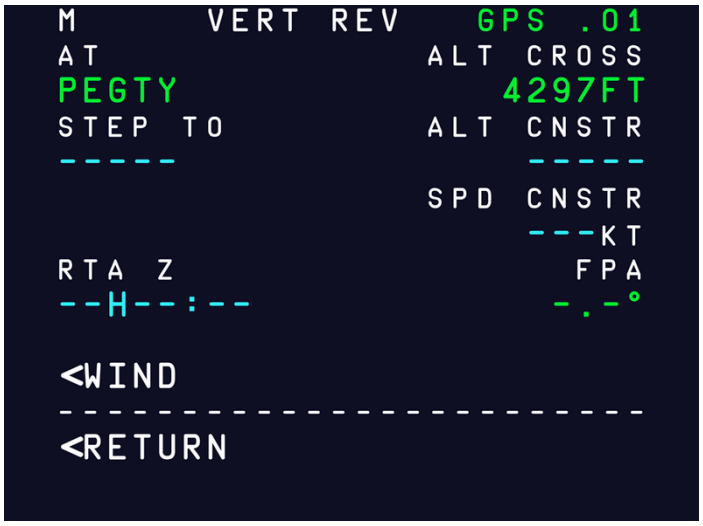
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The entry is made in the TMPY. RETURN shows the TMPY; EXEC activates it: the OFST annunciator comes on and `OFST` (reverse video) is shown on the active leg of the FPLN page. If the offset cannot start at once, OFFSET DELAYED is shown: it starts at the next leg. The conditions and the offset guidance are described in MPH.1.

PGE.2.6 FLIGHT PLAN - VERT REV PAGE

PGE.2.6.1 Access and Layout

Ident.: PGE.2.6.1 — 01 NOV 2026
ALL



VERT REV page of PEGTY, no constraint

The vertical revision page (VERT REV) shows the vertical data of a waypoint and is used to enter its constraints and its step. It is displayed by the right key of any waypoint on the FPLN page, except the FROM (which displays the WIND page).

NEXT / PREV display the VERT REV page of the next / previous waypoint. The FPLN key displays the FPLN page. A leg sequencing or a change of the active plan returns to the FPLN page (see PGE.2.2.4).

Every entry is made in the TMPY: the title and all the crew fields, empty dashes included, become **yellow**. The AT ident stays green. EXEC activates the revision (see PGE.2.2.2). From the SEC FPLN the entries are written directly into the SEC.



VERT REV page of RUTGE: ALT CNSTR 6000A and SPD CNSTR 200 kt entered, in the TMPY

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PGE.2.6.2 Fields

Ident.: PGE.2.6.2 — 01 NOV 2026
ALL

AT (1L)

Revised waypoint (green), with △ when it is an overfly waypoint. Press with an empty scratchpad to display its database page.

ALT CROSS (1R)

Predicted altitude of the aircraft at the waypoint (read only: NO ACTION DEFINED). green when the altitude constraint is predicted met, amber when it is predicted missed, white when the constraint is ignored. Dashes when there is no prediction.

STEP TO (2L)

Altitude of a cruise step starting at the waypoint. Enter FL110, 110 or 11000. The highest accepted value is the maximum cruise altitude (FL250); RANGE ERROR beyond. CLEAR ? deletes the step. Cyan dashes when there is no step.

STEP MODE (3L)

Shown with a STEP TO only. Speed mode used for the step: >MAX CRUISE (default) or >LONG RANGE, changed at each press. Enter an IAS (150 to 250 kt) for a constant IAS step (shown 185KT). CLEAR ? restores MAX CRUISE.

ALT CNSTR (2R)

Altitude constraint at the waypoint.

ENTRY	CONSTRAINT	SHOWN
5000 or FL150	AT	5000, FL150
5000A	AT OR ABOVE	5000A
5000B	AT OR BELOW	5000B
9000/FL110	WINDOW (between the two values)	9000-FL110

A value of 10000 ft or more, in hundreds of feet, is shown as a flight level. Highest value 45000 ft (FL450). CLEAR ? deletes the constraint. A small c in front of the value: the constraint is corrected by the cold temperature compensation. A constraint entered while the temperature compensation is selected is taken as already corrected: it is shown with the c and is not corrected again.

When the altitude constraint of a leg with an altitude termination is changed, the leg keeps its termination as published.

SPD CNSTR (3R)

Speed constraint (IAS) at the waypoint, flown as an AT OR BELOW speed. Range 60 to 399 kt. CLEAR ? deletes it. Shown ---KT when there is none.

RTA (4L)

Required time of arrival at the waypoint. The label reads RTA L or RTA Z, the time base of the INIT page (L when a local time difference is set).

ENTRY	MEANING
1556 or 155630	AT 15:56:00 (15:56:30)
A1556	AFTER 15:56
B1556	BEFORE 15:56

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With an RTA, the field shows the time (`HHhMM:SS`, small `A` / `B` in front) and, after it, `/±MM:SS`: the predicted ETA minus the RTA. This difference is **green**, or **amber** when the RTA is declared missed (RTA MISSED message). The ETA of the waypoint is underlined on the FPLN page.

In cruise and descent the managed speed follows the RTA, and the difference converges to zero while the RTA can be met (PRI.1.11).

Only one RTA can be defined in a flight plan. An RTA entered while another waypoint has one gives DELETE OTHER RTA ?: EXEC deletes the old RTA, inserts the new one and activates the TMPY; any other key cancels. No RTA can be set on a moving waypoint (NOT ALLOWED). CLEAR ? deletes the RTA.

FPA (4R)

Flight path angle of the descent segment ending at the waypoint, 1° to 9° (`3.5`). **cyan** when the crew can enter or clear it (a waypoint of the descent part, or a waypoint that already has an FPA), **green** otherwise; an entry on a green FPA is NOT ALLOWED. CLEAR ? deletes the FPA.

When a VERT DTO ends at the waypoint, the field shows the VERT DTO angle. A new value reshapes that segment; CLEAR ? restores the angle computed by the VERT DTO.

Prompts

<WIND (5L)	WIND page of the waypoint (see PGE.2.9). Not shown on the last waypoint of the plan and on the missed approach.
VERT DTO> (5R)	Vertical direct to the waypoint (see below).
<RETURN (6L)	Back to the previous page.
TMPY> (6R)	Shown while a TMPY exists: displays the TMPY on the FPLN page.

PGE.2.6.3 VERT DTO

Ident.: PGE.2.6.3 — 01 NOV 2026
ALL

VERT DTO> is shown when the vertical profile is frozen (from about five minutes before the top of descent) and the waypoint is ahead of the aircraft. It is not available on the SEC FPLN.

1. Press VERT DTO> (5R). The FMS computes a descent path from the present position to the waypoint at its altitude constraint, and puts it in the TMPY.
2. Check the FPA (4R). Change it if needed.
3. Press TMPY> and EXEC.

The VERT DTO is refused when:

- the altitude constraint of the waypoint is already ignored for another reason: CHANGE ALT CNSTR FIRST;
- the waypoint is not below the aircraft, or the path would be steeper than 5.5°: NOT ALLOWED.

The VERT DTO prompt is not shown again on the waypoint until the TMPY is activated. After EXEC, a new VERT DTO can be made (for example to a previous waypoint). The use of VERT DTO in descent is described in FPH.4.

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PGE.2.7 FLIGHT PLAN - DEPARTURE AND ARRIVAL

PGE.2.7.1 Common Principles

Ident.: PGE.2.7.1 — 01 NOV 2026
ALL

The DEPARTURE and ARRIVAL pages select the procedures of the departure and destination airports. Both pages have the same layout:

- lines 1 and 2: the selected items, cyan before any revision, **yellow** in the TMPY; `(NONE)` when nothing is selected; the airport **green**;
- lines 3 to 5: a list of the items that can be selected, in **cyan**, under a header `----xxx LIST n/ m----`. The list fills the left column, then the right column. A left item reads `>ITEM` and is selected with its left key; a right item reads `ITEM<` and is selected with its right key. NEXT / PREV show the next / previous part of the list, in a loop. Every list except the runway list starts with `(NONE)`;
- line 6: <RETURN (6L), and TMPY> (6R) once the TMPY exists.

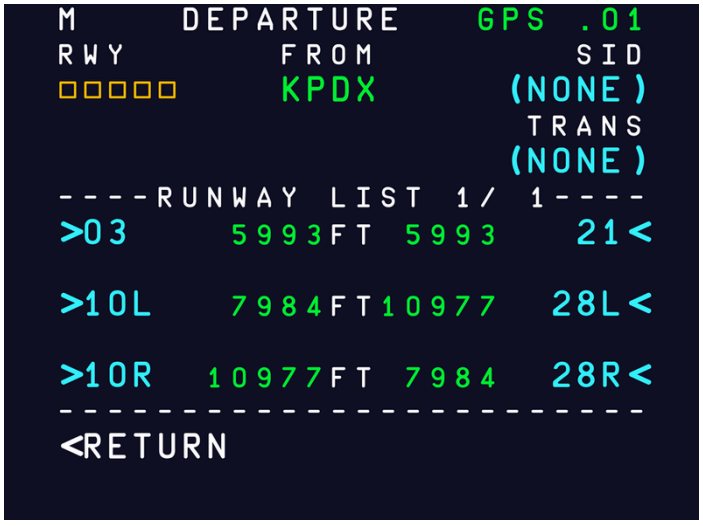
After each selection the next list is shown, and the fields after the one selected are reset (the next list contains only the items compatible with the selection). When all fields are filled, no list is shown. Pressing the key beside a field displays its list again, to change it.

On the active plan, each selection revises the TMPY. EXEC (on this page or on the FPLN page) activates the procedures, even when not all the fields are filled, and the FPLN page is displayed. TMPY> displays the TMPY to check it first.

From the SEC FPLN the selections are written directly into the SEC. From a stored route (see PGE.9) they are written into the route and <RETURN goes back to the route page.

PGE.2.7.2 DEPARTURE Page

Ident.: PGE.2.7.2 — 01 NOV 2026
ALL



DEPARTURE page, runway list

Displayed by the left key of the departure airport (or runway) on the FPLN page, on the ground, or by <DEPARTURE on the LTRL REV page of a SID waypoint. The page opens with the current selections.

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RWY (1L)	Departure runway. **Amber** boxes until a runway is selected. Press to display the RUNWAY LIST: each runway end of the airport with its length in feet (small **green**). The runway can be selected or changed on the ground only (NOT ALLOWED in flight).
FROM	Departure airport (**green**).
SID (1R)	Standard instrument departure. Press to display the SID LIST of the selected runway. NOT ALLOWED without a runway.
TRANS (2R)	SID transition (en-route transition). Press to display the TRANS LIST of the selected SID. NOT ALLOWED without a SID.

The order is runway, SID, transition.



DEPARTURE page: runway 28R and SID WHAMY5 selected, TRANS LIST

When only a runway is selected (no SID, or SID `(NONE)`), the FMS inserts after the runway a point on the runway axis, 1500 ft above the airport elevation.

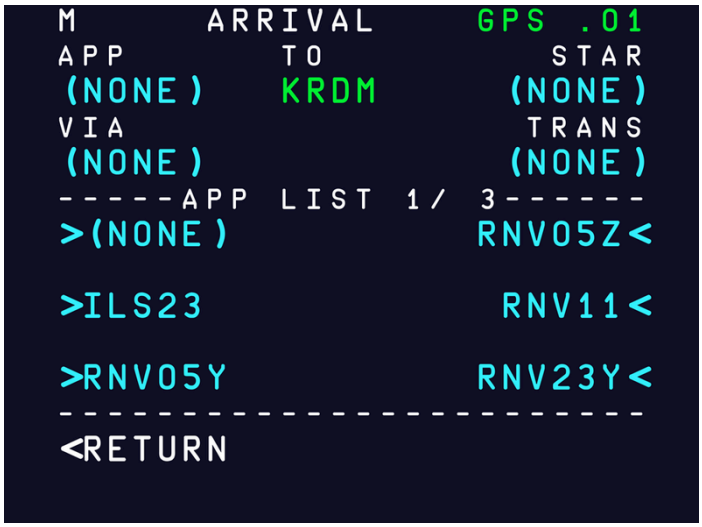
A change of the departure cancels the confirmation of the take-off data: confirm them again on the TAKE OFF page (see PGE.5).

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PGE.2.7.3 ARRIVAL Page

Ident.: PGE.2.7.3 — 01 NOV 2026
ALL



ARRIVAL page, approach list

Displayed by the left key of the destination airport, or of the landing runway once an approach is inserted, on the FPLN page; or by <ARRIVAL on the LTRL REV page of a STAR or approach waypoint. The page opens with the current selections.

APP (1L)	Approach, named as in PRI.1 (for example `ILS23`). Press to display the APP LIST.
TO	Destination airport (**green**).
STAR (1R)	Standard arrival. Press to display the STAR LIST: once an approach is selected, only the STARs that serve its runway.
VIA (2L)	Approach transition, between the end of the STAR and the approach. Press to display the VIA LIST of the approach. Once a STAR is selected, the list shows only the transitions that start where the STAR ends, so that the STAR, the VIA and the approach join without a discontinuity; when none does, only `(NONE)` is listed. With no STAR, every transition of the approach is listed. NOT ALLOWED without an approach.
Recommended navaid (line 2, centre)	Ident (label line) and frequency of the recommended navaid of the selected approach: the one of the final approach fix, else the one of the first leg of the approach. Blank when the approach has none.
TRANS (2R)	STAR transition, between the en-route part and the STAR. Press to display the TRANS LIST (en-route transitions of the STAR). NOT ALLOWED without a STAR.

The order is approach, STAR, VIA, transition. A new approach keeps the STAR already selected (and its transition) when that STAR serves the new runway; otherwise the STAR is reset. The VIA is always reset.

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ARRIVAL page: ILS23 selected, recommended navaid IRDM 109.10, STAR LIST

The STAR is always placed before the approach in the plan. Linking the arrival to the en-route part may leave a FPLN DISCONTINUITY: check all the FPLN pages and clear it if the route is continuous (see PGE.2.2.3).

With LNAV engaged, a selection in a list (APP, STAR, VIA, TRANS) or a TYPE change is refused (NOT ALLOWED) when the destination airport is the TO waypoint, or when the active leg is part of the STAR or of the approach (missed approach excluded). Disengage LNAV first (see MPH.1.2).

Procedure type reminder and TYPE

RNP AR (line 2, centre) **yellow**, reverse video: the approach is an RNP AR procedure. Replaces the recommended navaid.

LPV / LP (line 2, centre) **cyan**, reverse video: the approach has an LPV or LP level of service and is flown as LPV or LP.

TYPE (4L) Shown when no list is displayed, for an LPV or LP approach that also has LNAV minima: `>LPV/LNAV` (or `>LP/LNAV`). The type in force is large **green**, the other small **cyan**. Press to change it (in the TMPY). LPV or LP is the default; a new approach brings it back.

With LPV, the APP pushbutton arms L-LOC and L-GS; with LP, it arms L-LOC only (an LP approach has no vertical guidance). With LNAV, the approach is flown like an RNAV approach: the APP pushbutton arms V-FP, not L-LOC and L-GS. A change of the approach in the flight plan, or of its TYPE, disarms V-FP, or ends it when it is engaged. The LPV approach is described in FPH.5.

SIMULATOR NOTE

The LPV / LP level of service is shown only when the SBAS option is fitted (EFB settings). The path identification of the final approach segment is not shown: the X-Plane navigation data has no final approach segment data block.

PGE.2.8 FLIGHT PLAN - AIRWAY PAGES

PGE.2.8.1 Airway Insertion

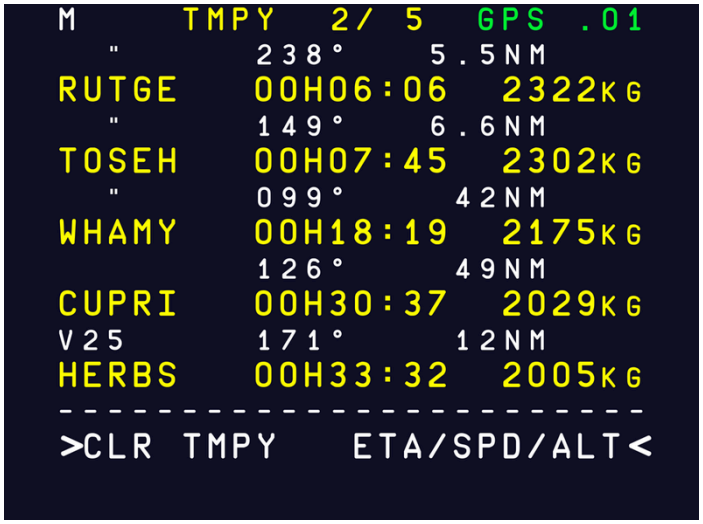
Ident.: PGE.2.8.1 — 01 NOV 2026
ALL

An airway segment is inserted after a waypoint of the plan from the AIRWAY field (4R) of its LTRL REV page (see PGE.2.5.2). Three pages are used:

AIRWAY	List of the airways through a fix.
AIRWAYS	The airway segments to insert: VIA (airway), FROM and TO fixes. Up to five segments can be chained.
TO	List of the fixes of an airway, to choose the TO fix.

Typical sequence:

1. LTRL REV of the entry waypoint: type the airway and press AIRWAY (4R), or press (4R) with an empty scratchpad and pick the airway on the AIRWAY page.
2. AIRWAYS page: type the exit fix and press the key beside the amber boxes, or press it with an empty scratchpad and pick the fix on the TO page.
3. Chain the next airway in the same way on the next line, if needed.
4. Press TMPY> to check the TMPY on the FPLN page, then EXEC. EXEC can also be pressed on the AIRWAYS page.



TMPY after the insertion of V25 from CUPRI to DSD

The fixes of the airway between FROM and TO are inserted as legs; their label line shows the airway ident (then a ditto). When the last TO fix is already in the plan, the airway joins it and the waypoints between are deleted; otherwise a ---FPLN DISCONTINUITY--- follows the TO fix, with the rest of the plan after it (PRI.1.6). On the SEC FPLN, SEC> replaces TMPY> and the segments are written directly into the SEC.

To insert more than five segments, activate the first five, then add the others from the last fix.

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PGE.2.8.2 AIRWAY Page

Ident.: PGE.2.8.2 — 01 NOV 2026
ALL



AIRWAY page: airways through CUPRI

Displayed by AIRWAY (4R) on the LTRL REV page with an empty scratchpad, or by the key beside an empty VIA field of the AIRWAYS page with an empty scratchpad. The title is AIRWAY n/m.

Airway list (1L to 5L, 1R to 5R) — The airways that contain the fix, in alphanumeric order, in **cyan**: `<IDENT` in the left column, then `IDENT>` in the right column, ten per page. NEXT / PREV show the other pages. Press the key beside an airway to select it: the AIRWAYS page is displayed with it.

LEVEL (6R) — Level filter, **cyan**. Each press changes it: `HIGH+LOW<` (all airways), `HIGH<` (high and both-level airways), `LOW<` (low and both-level airways). CLEAR ? restores HIGH+LOW. The filter is kept; it returns to HIGH+LOW after a long power interruption.

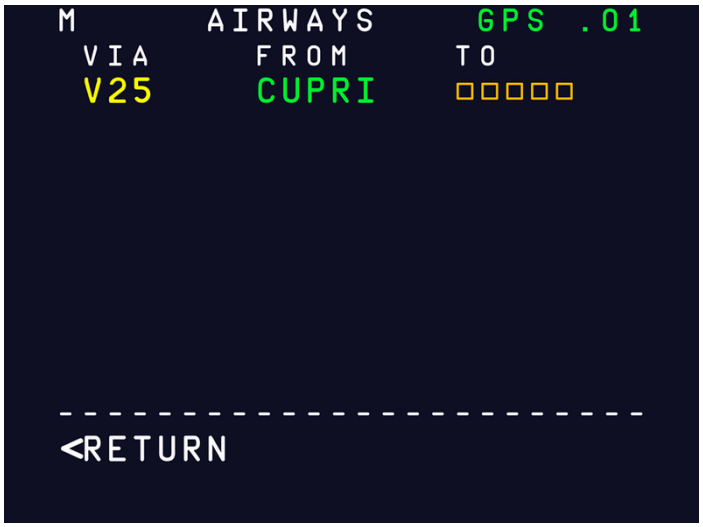
<RETURN (6L) — Back to the LTRL REV page.

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PGE.2.8.3 AIRWAYS Page

Ident.: PGE.2.8.3 — 01 NOV 2026
ALL



AIRWAYS page: V25 from CUPRI, TO not yet entered

Each line is one airway segment, with three columns:

VIA (left key)	Airway ident, **yellow**. An empty next line shows **yellow** brackets `[ ]`: type an airway and press, or press with an empty scratchpad to display the AIRWAY page of the FROM fix. An airway that does not contain the FROM fix: NOT IN DATABASE.
FROM	Entry fix of the segment, **green**: the revised waypoint for the first line, the TO fix of the line above for the next ones. Not modifiable.
TO (right key)	Exit fix. **Amber** boxes until it is entered, then **yellow**. Type the fix and press, or press with an empty scratchpad to display the TO page. A fix that is not on the airway, or the FROM fix itself: NOT IN DATABASE. An ident found more than once on the airway displays the TO page. A fix that cannot be reached from the FROM fix (one-way airway): NOT ALLOWED.

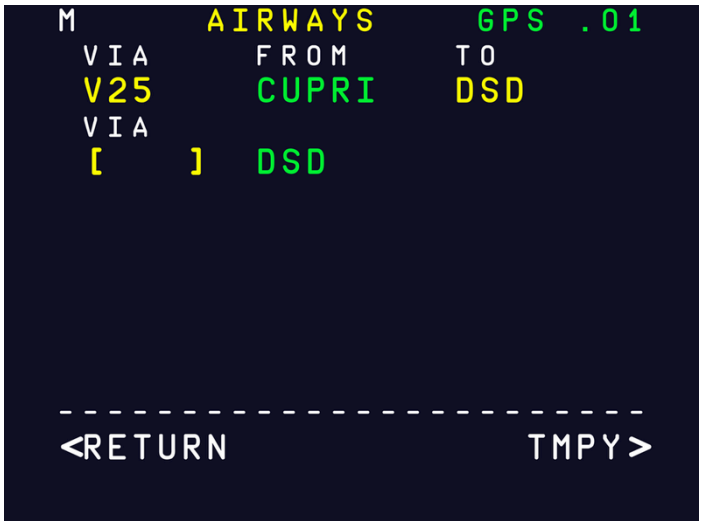
Once its TO fix is entered, a line can no longer be changed or deleted. The next line then shows the empty VIA brackets (up to five lines).

<RETURN (6L)	Cancels the whole airway selection and returns to the LTRL REV page.
TMPY> (6R)	Shown when at least one segment is complete. Inserts the complete segments in the TMPY and displays it. SEC> on the SEC FPLN.

VIA and TO have no default value: CLEAR ? is NOT ALLOWED; a new entry replaces the value.

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AIRWAYS page: V25 CUPRI-DSD complete, next VIA from DSD

PGE.2.8.4 TO Page

Ident.: PGE.2.8.4 — 01 NOV 2026
ALL



TO page 2/7: fixes of V25, the FROM fix CUPRI in green

Displayed by the key beside the TO field of the AIRWAYS page with an empty scratchpad, or when the TO ident is found more than once on the airway. The title is TO n/m.

Fix list (1L to 5L, 1R to 5R) — All the fixes of the airway, in their order along the airway: down the left column, then down the right column. Each fix shows its ICAO region (small). The fixes are **cyan** with < (left) or > (right). The FROM fix is **green**, without prompt: its key gives NO ACTION DEFINED. NEXT / PREV show the other pages, in a loop.

Select a fix — Its key returns to the AIRWAYS page with the fix as TO. A fix that cannot be reached from the FROM fix: NOT ALLOWED.

<RETURN (6L) — Back to the AIRWAYS page without a selection.

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PGE.2.8.5 Return to the FPLN Page

Ident.: PGE.2.8.5 — 01 NOV 2026
ALL

If the FROM fix of the first segment (the revised waypoint) is sequenced, or the active plan is modified, while the AIRWAY, AIRWAYS or TO page is displayed, the FPLN page displayed before is shown again.

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PGE.2.9 FLIGHT PLAN - WIND PAGE

PGE.2.9.1 Access and Layout

Ident.: PGE.2.9.1 — 01 NOV 2026
ALL



WIND page of PEGTY: no wind profile entered

The WIND page shows and modifies the vertical wind profile of a waypoint: up to four wind groups (true direction, speed, altitude). The FMS uses the profiles for its predictions. It is displayed by:

- <WIND (5L) on the VERT REV page (see PGE.2.6),
- the right key of the FROM waypoint on the FPLN page: the profile in use now.

There is no WIND page for the last waypoint of the plan, nor in the missed approach. NEXT / PREV display the profile of the next / previous leg.

FROM (1L)	Waypoint from which the profile applies (**green**).
TO (1R)	Next waypoint of the plan that has its own profile, or the destination. When a > is shown beside it, (1R) displays the profile of that waypoint.
TRUE WIND / ALT (2L to 5L)	The wind groups, `DDD°/SSSKT/FLnnn`, highest first. With fewer than four groups, (2L) shows empty brackets for a new group and the groups follow from (3L).
<RETURN (6L)	Back to the previous page.
TMPY> (6R)	Shown while a TMPY exists: displays the TMPY.

PGE.2.9.2 Display

Ident.: PGE.2.9.2 — 01 NOV 2026
ALL

Large font	The profile is defined at this waypoint.
Small font	The profile is carried over (propagated) from another waypoint (see PRI.3).
Cyan	Values and brackets that can be modified, on the active plan.

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Yellow Once a wind entry has opened the TMPY. The title is yellow too.

Small **green**, no brackets The leg does not end at a fix (heading, course to altitude, intercept legs...): the profile is shown but cannot be changed.



WIND page of WHAMY: two groups entered, in the TMPY

PGE.2.9.3 Entries

Ident.: PGE.2.9.3 01 NOV 2026
ALL

New group Type `direction/speed/altitude` and press the key of the brackets. Example: `270/45/FL120` (or `270/45/120`) for 270°, 45 kt at FL120.

Change a group Type the new value(s) and press the key of the group. Leave out the values that do not change: `/50` changes the speed only, `//150` the level only.

CLEAR ? + key of a group Deletes the group.

VALUE	RANGE
Direction (true)	0 to 360°
Speed	0 to 155 kt
Altitude	FL0 to FL400

- An entry out of range, or a group not more than FL5 above or below another group: RANGE ERROR.
- A fifth group: NOT ALLOWED.
- An entry on a propagated profile makes it the profile of this waypoint, with the new group added.
- When the last group of the waypoint's own profile is deleted, the profile is filled again from the neighbouring profiles. The last group of a propagated profile cannot be deleted (NOT ALLOWED).
- Any entry or deletion on a leg that does not end at a fix: NOT ALLOWED.

The entry is made in the TMPY. EXEC activates it and displays the FPLN page. From the SEC FPLN the profile is written directly into the SEC.

If the revised leg is sequenced, or the active plan is modified, while the page is shown, the FPLN page displayed before is shown again.

PGE.2.10 FLIGHT PLAN - HOLDING AT PAGE

PGE.2.10.1 Access

Ident.: PGE.2.10.1 — 01 NOV 2026
ALL



HOLDING AT CUPRI, default values

The HOLDING AT page defines a holding pattern, or changes an existing one. It is displayed by <HOLDING (3L) on the LTRL REV page (see PGE.2.5):

- of a waypoint of the active plan: hold at that waypoint;
- at PPOS: hold at the present position. Its entry point is the aircraft position at the moment the hold is activated (EXEC).

A hold at PPOS is not allowed (NOT ALLOWED) when the aircraft position, track, ground speed or TAS is not valid, or when the FROM waypoint is the departure airport: in that case make first a DIRECT TO the TO waypoint, then the hold at PPOS.

The title is **yellow**: the hold is temporary data until it is activated. From the SEC FPLN the page is titled SEC HOLDING AT and writes the hold directly into the SEC.

PGE.2.10.2 Fields

Ident.: PGE.2.10.2 — 01 NOV 2026
ALL

Default values are in small font; values entered by the crew are in large font. CLEAR ? on an entered value restores its default.

Hold fix (1L)	Ident of the holding waypoint (**green**); `PPOS` for a hold at the present position.
INBND CRS (2L)	Inbound course, **yellow**. Default: the present track for a hold at PPOS or after a discontinuity, else the course of the leg that arrives at the fix. Enter `NNN` (no leading zero needed). **Amber** dashes when no default can be computed: a course must then be entered.
TURN (3L)	`>RIGHT` (default) or `>LEFT`, **yellow**. Each press changes the turn direction.

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TIME/DIST (2R)	Length of the inbound leg, as a time (`1.0'`, minutes) and a distance (`2.8NM`). Enter `N.N` for a time (0.1 to 10 min) or `/NN.N` for a distance (0.5 to 20 NM): the other value is computed with the hold IAS. Default: 1 minute.
IAS (3R)	Hold speed. Default: the FMS target speed, at most 170 kt and at most the next speed constraint (the hold leg's own constraint included), not below the minimum operating speed. A crew value must lie between the minimum operating speed and 250 kt (RANGE ERROR). Not modifiable for a hold at PPOS, nor for the hold being flown (NOT ALLOWED).
NEXT EXIT ETA / EFOB	Predicted time and fuel on board at the next exit of the hold (green): one pattern after the fix, flown at the hold IAS. For the hold being flown: at the next pass over the fix, updated at the start of each pattern. The values follow the entries on the page before the hold is inserted.
<RETURN (6L)	Back to the LTRL REV page. The hold is not inserted.
TMPY> (6R)	Inserts the hold in the TMPY and displays it, to check it before EXEC.



HOLDING AT CUPRI: left turns and a 5 NM leg entered by the crew

The EXEC light is on while the page is shown: EXEC inserts the hold in the active plan at once and displays the FPLN page.

A hold that cannot be inserted (for example at a leg termination that has no fixed position) is refused with NOT ALLOWED; the page stays displayed.

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PGE.2.10.3 Hold on the FPLN Page

Ident.: PGE.2.10.3 — 01 NOV 2026
ALL



TMPY with the hold at CUPRI

The hold takes three pairs of lines (see PGE.2.1.5):

1. the hold fix with the turn arrow, and the predictions at the entry;
2. `HOLD ←` or `HOLD →`, the inbound course (`C126°`) and the leg length, then the hold fix again with the predictions at the next exit (one pattern after the entry);
3. `----CLR TO EXIT NEXT----`.

A hold at PPOS is named `PPOS`.

The waypoints after the hold are predicted from its next exit: one pattern is included in their ETA, ETE and EFOB. Once the hold is flown, the next exit is the next pass over the fix. When the exit is armed (`----CLR TO EXIT NEXT----` cleared), no pattern is added.

Leaving the hold

1. Press CLR: CLEAR ? is shown.
2. Press the left key of `----CLR TO EXIT NEXT----`.
3. Press EXEC.

The aircraft leaves the hold at the next pass over the fix and continues the plan.

Deleting the hold

CLEAR ? and the left key of one of the two hold fix lines deletes the hold (TMPY, then EXEC). No discontinuity is left in its place.

PAGE

INTENTIONALLY

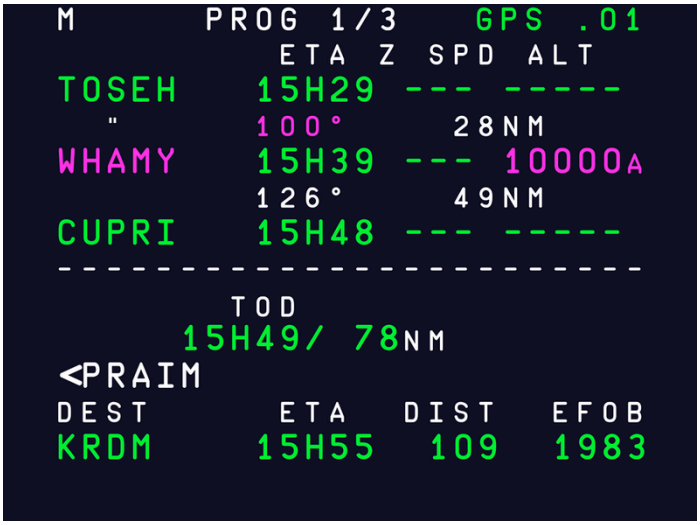
LEFT BLANK

FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

PGE.3 PROGRESS

PGE.3.1 PROG 1/3 Page

Ident.: PGE.3.1 — 01 NOV 2026
ALL



PROG 1/3 page in cruise — TOD next

Displayed with the PROG key. PROG pressed again, or NEXT, displays PROG 2/3; PREV displays PROG 3/3.

The page shows the beginning of the active flight plan, the next vertical point and the destination predictions.

FROM / TO / NEXT (1L to 3L) — The first three waypoints of the active flight plan, as on the FPLN page in ETA/SPD/ALT format: ident, ETA, speed constraint, altitude (constraint or prediction). The FROM is green with the time it was sequenced. The TO ident and the course of the active leg are **magenta**. The lines between them show the leg: procedure, course and distance (to go, for the active leg), FPA. Missed approach waypoints are cyan until the missed approach is active. `---FPLN DISCONTINUITY---` shows a discontinuity.

OFST — Shown in reverse video beside the active leg when a lateral offset is active.

Next vertical point (4L) — The next vertical event ahead of the aircraft, with its ETA and distance: `↑13000` top of climb at the cruise altitude, `↑nnnnn` / `↓nnnnn` interception of the selected altitude, of an FMS altitude or of a step level, or `TOD` top of descent. Blank when there is none.

NRP (4R) — ETA at the non-return point, when it is computed.

<PRAIM (5L) — Displays PRAIM 2/2 on the ground, PRAIM 1/2 in flight.

DEST (6L) — Destination airport (ENDFPLN when the flight plan has no destination airport), its ETA, the distance along the flight plan to the arrival runway (missed approach not included) and the EFOB at the destination. EFOB is **amber** when below the RESERVE.

ETA label: `ETA L` (local time, INIT DIFF not zero) or `ETA Z`.

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PGE.3.2 PROG 2/3 Page

Ident.: PGE.3.2 — 01 NOV 2026
ALL



PROG 2/3 page in flight

Displayed with PROG pressed twice, or NEXT from PROG 1/3. Navigation parameters, refreshed every second. Bearings and tracks are in the UNITS HEADING reference.

TO (1L)	TO waypoint (**magenta**).
WIND (1R)	Wind direction and speed computed by the selected navigation mode. Dashed when no wind is computed: true airspeed below 30 kt (for example on the ground), or dead reckoning, unless a wind is entered on the BCP NAV page.
DTK (2L)	Desired track of the active leg (**magenta**).
TTG (2R)	Time to go to the TO waypoint at the present ground speed, `HHhMM:SS`. Dashed at 8 kt ground speed or below.
BRG / DIST (3L)	Bearing and direct distance from the FMS position to the TO waypoint.
FOB (3R)	Fuel on board (FMS value, PGE.1.7).
TK / GS (4L)	Track and ground speed. Track dashed at 8 kt ground speed or below.
TGT/IAS (4R)	FMS target speed (**magenta**) / present IAS (green).
DRIFT / XTK (5L)	Drift angle (L or R) and cross-track error from the active leg (L or R, NM).
TKE (5R)	Track angle error (L or R).
RNP (6L)	Required navigation performance, cyan. The default value (small) is computed by the FMS for the flight area. The crew can enter a value (large): range 0.2 to 20 NM, 0.2 to 0.3 NM in the approach area; up to two decimals. CLR returns to the default.
ANP (6L)	Actual navigation performance (green).
OFFSET (6R)	Present lateral offset, 0.0NM without offset.

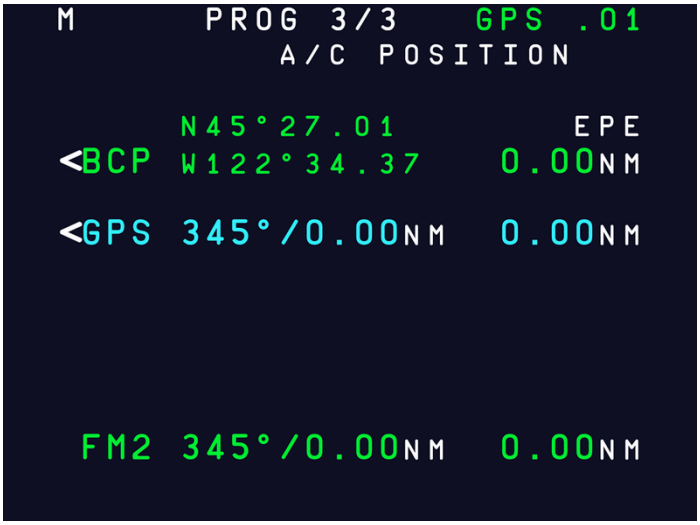
The other LSKs give NO ACTION DEFINED.

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PGE.3.3 PROG 3/3 Page

Ident.: PGE.3.3 — 01 NOV 2026 — ALL



PROG 3/3 page — BCP selected

Displayed with PROG pressed three times, or PREV from PROG 1/3. Title A/C POSITION.

The FMS has two navigation modes:

- BCP (best computed position): GPS and radio navaids mixed, with dead reckoning as back-up. Normal mode.
- GPS: the position of the GPS receiver alone.

<BCP (2L)	BCP mode. Displays the BCP NAV page (PGE.3.4).
<GPS (3L)	GPS mode. Displays the GPS NAV page (PGE.3.5).
EPE (2R, 3R)	Estimated position error of each mode, NM.
FM2 / FM1 (6L)	Bearing and distance from the FMS position to the position of the opposite FMS, and its EPE (6R). Dashed when the cross talk is lost or the other FMS has failed.

The selected mode is green and shows its position (latitude above, longitude beside the mode name). The other mode is cyan and shows the bearing and distance from the FMS position to its position.

A mode is selected with SELECT< on its NAV page. The selected mode is shown in the title line of every page (MCDU.1.4): cyan GPS in GPS mode.

Note

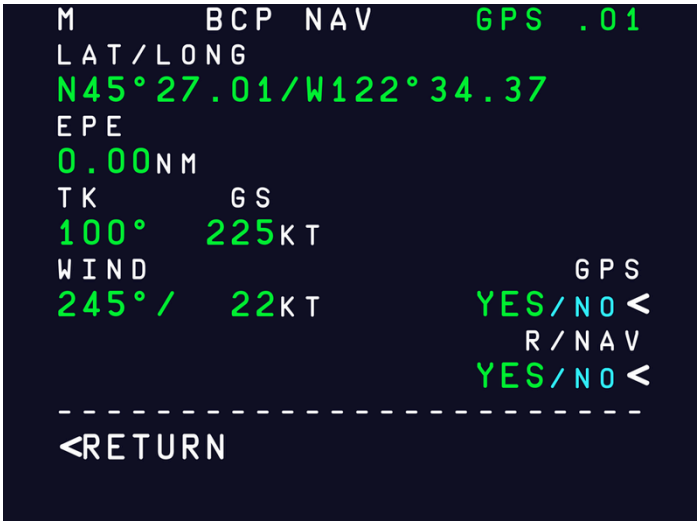
There is no automatic change of mode. If the position of the selected mode becomes invalid, the POS alert asks the crew to change the mode (ABN.1).

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PGE.3.4 BCP NAV Page

Ident.: PGE.3.4 — 01 NOV 2026 — ALL



BCP NAV page

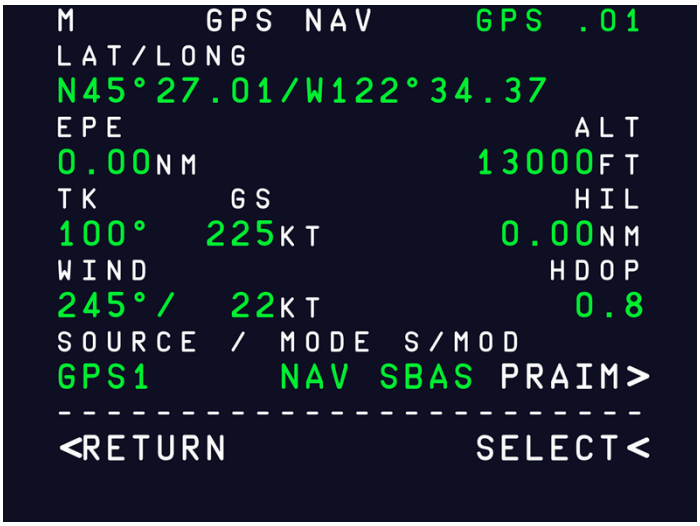
Displayed with <BCP on PROG 3/3. Parameters computed by the BCP function.

LAT/LONG (1L)	BCP position.
EPE (2L)	Estimated position error of the BCP.
TK / GS (3L)	Track and ground speed. White dashes in dead reckoning.
WIND (4L)	Wind computed by the BCP (green). In dead reckoning, or when the TAS is below 30 kt, a wind can be entered: `270/25` (direction 0 to 360°, speed up to 155 kt). The crew wind is cyan and is used by the BCP until CLR. NOT ALLOWED otherwise. Without a crew wind, the field is dashed in these conditions.
GPS (4R)	YES / NO: GPS used in the BCP computation. Press to change.
R/NAV (5R)	YES / NO: radio navaids used in the BCP computation. Press to change.
<RETURN (6L)	Displays the previous page (PROG 3/3).
SELECT< (6R)	Shown when the GPS mode is selected. Selects the BCP mode and displays the previous page.

GPS and R/NAV are selected again (YES) after a long FMS power interruption.

PGE.3.5 GPS NAV Page

Ident.: PGE.3.5 — 01 NOV 2026 — ALL



GPS NAV page

Displayed with <GPS on PROG 3/3. Parameters given by the GPS receiver and monitored by the FMS. White dashes when the GPS position is not valid.

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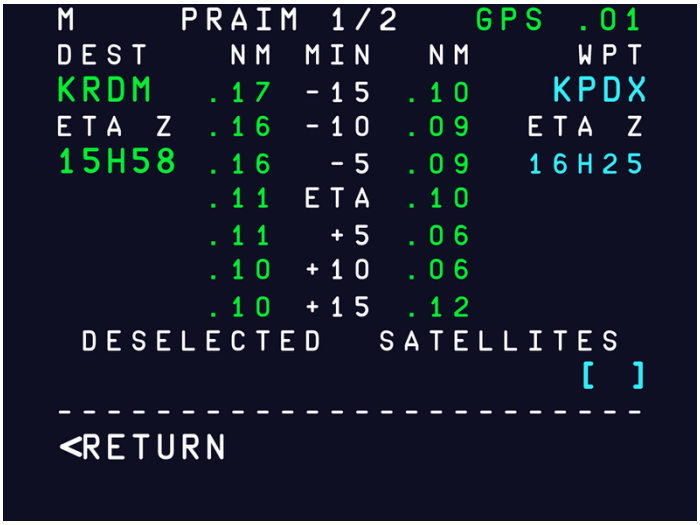
LAT/LONG (1L)	GPS position.
EPE (2L)	Estimated position error of the GPS.
ALT (2R)	GPS altitude (MSL).
TK / GS (3L)	Track and ground speed.
HIL (3R)	Horizontal integrity limit. **Amber** when above the limit of the present flight area.
WIND (4L)	Wind computed by the FMS. Dashed below 30 kt true airspeed, unless a wind is entered on the BCP NAV page.
HDOP (4R)	Horizontal dilution of precision. **Amber** above 10.
SOURCE / MODE (5L)	Monitored receiver (GPS1) and its mode (see PGE.1.4). With SBAS, a sub-mode is added: SBAS, or APPR when an LPV / LP approach is selected and the aircraft is within 100 NM.
PRAIM> (5R)	Displays PRAIM 1/2.
<RETURN (6L)	Displays the previous page.
SELECT< (6R)	Shown when the BCP mode is selected. Selects the GPS mode and displays the previous page.

SIMULATOR NOTE

The aircraft has one GPS receiver (GPS1).

PGE.3.6 PRAIM 1/2 Page

Ident.: PGE.3.6 — 01 NOV 2026
ALL



PRAIM 1/2 page in flight

Displayed with <PRAIM on PROG 1/3 in flight, PRAIM> on GPS NAV, or PREV / NEXT from PRAIM 2/2. Title PRAIM 1/2.

The page gives the predicted GPS integrity (HIL, NM) at the destination and at one other point, at the ETA and at ETA −15, −10, −5, +5, +10 and +15 min (MIN column).

DEST (1L)	Destination (green), its ETA (L or Z) and the predicted HIL column.
WPT (1R)	Point of the second prediction, cyan. By default the alternate airport (small). Enter the ident of a waypoint, navaid or airport (large). NOT IN DATABASE if unknown. CLR returns to the alternate.
ETA (2R)	ETA at the WPT. By default computed (small cyan). Enter a time `HHMM` (large) to predict at another time. CLR returns to the computed ETA.
DESELECTED SATELLITES (5L / 5R)	Satellites (PRN) not used by the predictions, cyan. Enter a PRN (1 to 32) at the brackets (5R) to deselect it; up to two satellites. ALREADY DESELECTED if it is in the list. CLR on a deselected satellite selects it again.
<RETURN (6L)	Displays the previous page.

HIL colours: green up to 0.3 NM, **amber** above; amber dashes when the prediction is not available or the HIL exceeds 15 NM.

The WPT predictions are computed again when the WPT or its ETA changes; all predictions are computed again when the deselected satellites change. While a prediction along the flight plan runs (PRAIM 2/2), the HIL values are blank and the deselection is not allowed.

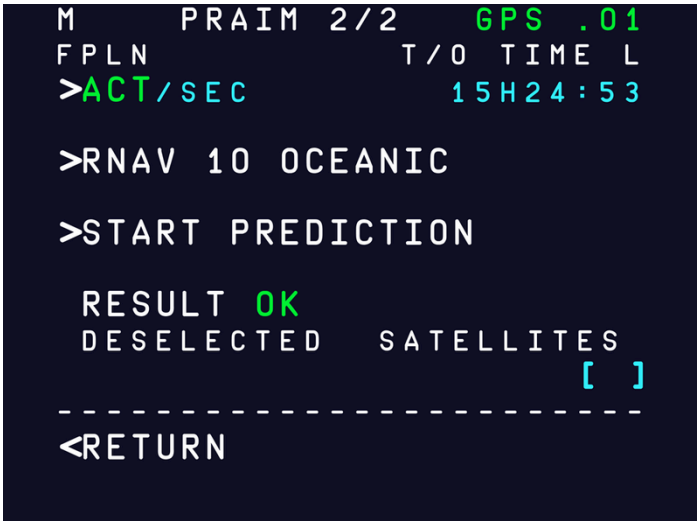
When the alternate is changed on another page, a WPT or ETA entered here is cancelled: the page returns to the alternate.

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PGE.3.7 PRAIM 2/2 Page

Ident.: PGE.3.7 — 01 NOV 2026 — ALL



PRAIM 2/2 page — prediction completed

Displayed with <PRAIM on PROG 1/3 on the ground, or PREV / NEXT from PRAIM 1/2. Checks the GPS integrity along a flight plan against an RNAV / RNP criterion.

FPLN >ACT/SEC (1L)	Flight plan to check, the selected one large green. Press to change. NOT ALLOWED while a prediction runs.
T/O TIME L (1R)	Shown on the ground. Same field as on the INIT page (PGE.1.2): present local time (small cyan) or the scheduled take-off time entered `HHMM` (large cyan). NOT ALLOWED while a prediction runs.
Criterion (2L)	RNAV 10 OCEANIC, RNAV 5-2-1, RNP 4 OCEANIC or RNP 1. Each press selects the next one. NOT ALLOWED while a prediction runs.
>START PREDICTION (3L)	Arms the prediction: the prompt is shown in reverse video and PRESS EXEC TO CONFIRM in the scratchpad. EXEC starts it. The prediction is possible on the ground only, with a flight plan of at least two waypoints (NOT ALLOWED otherwise).
>CANCEL PREDICTION (3L)	Shown while the prediction runs, with its progress in % (3R). Arms the cancellation; EXEC confirms.
RESULT (4L)	Result of the last prediction: OK, or `<RESULT` FAIL which displays the RESULT page (PGE.3.8).
DESELECTED SATELLITES (5L / 5R)	As on PRAIM 1/2.
<RETURN (6L)	Displays the previous page.

Any other key cancels an armed START or CANCEL.

The prediction checks points every 5 min along the flight plan, from the T/O TIME, at ETA −15 to +15 min. The flight plan must last less than 23H55.

After a long power interruption the selection returns to ACT and RNAV 10 OCEANIC.

PGE.3.8 RESULT Page

Ident.: PGE.3.8 — 01 NOV 2026 — ALL

Displayed with <RESULT on PRAIM 2/2 when the result is FAIL. Title RESULT, header OUTAGE AT.

Each line gives the ETA of a point where the criterion is not met, with the reason:

CRITERION	POINTS SHOWN
RNAV 10 OCEANIC	FDE not available at one of the ETA ± 15 min times (FDE)
RNAV 5-2-1	RAIM not available: HIL invalid at one of the ETA ± 15 min times (RAIM)
RNP 4 OCEANIC	FDE not available (FDE) and / or HIL above 8 NM (RAIM, with the maximum HIL)
RNP 1	HIL above 2 NM (RAIM, with the maximum HIL)

The page shows up to nine points. When there are more, the first eight are shown and the ninth line shows . . . .

<RETURN (6L) Displays PRAIM 2/2.

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PGE.3.9 VNAV 1/2 Page

Ident.: PGE.3.9 — 01 NOV 2026 — ALL



VNAV 1/2 page at the cruise level

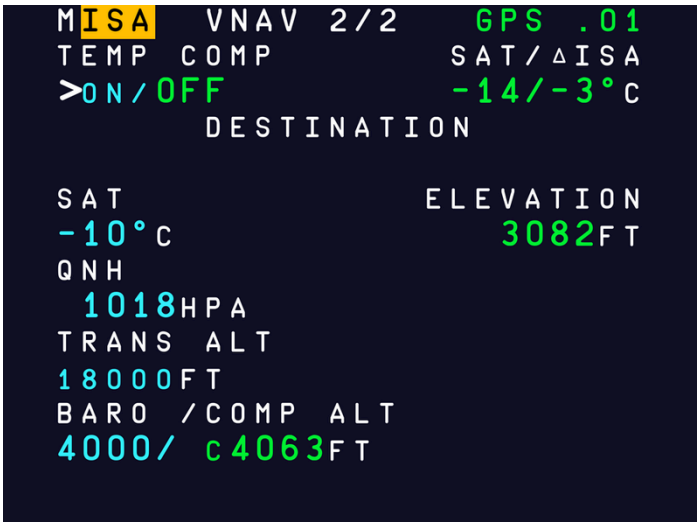
Displayed with the VNAV key.

Level point (1L)	When a level interception is ahead: ↑nnnnn or ↓nnnnn with its ETA (in climb, the top of climb at the cruise altitude).
STEP (2L, 3L)	Up to two step waypoints ahead: ident and step level (label), ETA at the waypoint and ETA at the level interception.
TOD / DEST (4L)	ETA at the top of descent (not shown in descent) and at the destination.
CRZ ALT (5L)	Cruise altitude, same field as PERF INIT (PGE.1.8). A > precedes a crew entry while it can still be changed. Large green when not insertable.
ALT SEL (1R)	FGCP selected altitude (**magenta**).
TGT IAS (2R)	FMS target speed (**magenta**).
TGT VS (3R)	FMS target vertical speed, signed, ft/min (**magenta**). Dashes when the FMS has no vertical speed target.
VDEV (4R)	Vertical deviation from the FMS vertical profile: positive when the aircraft is above the target altitude, negative below. +---- when not valid.

VNAV pressed again, or PREV / NEXT, displays VNAV 2/2.

PGE.3.10 VNAV 2/2 Page

Ident.: PGE.3.10 — 01 NOV 2026 — ALL



VNAV 2/2 page — destination SAT entered

Temperature compensation and destination data.

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TEMP COMP (1L)	► ON/OFF: temperature compensation of the approach altitude constraints (window constraints excepted). Press to change. With ON and the destination SAT entered, the
SAT/ΔISA (1R)	Present static air temperature and ISA deviation (green).
SAT (3L)	Destination ground temperature. Amber boxes until entered. Entry in the TEMP unit, −100 to +60 °C. Needed for the compensation. Cannot be cleared.
ELEVATION (3R)	Destination elevation from the database (green).
QNH (4L)	Destination QNH. Same field as on APPROACH (PGE.5.4).
TRANS ALT (5L)	Destination transition altitude. Same field as on APPROACH.
BARO / COMP ALT (6L)	Shown once the destination SAT is entered. Altitude calculator: enter a barometric altitude (for example the minimum altitude of the approach); the compensated altitude is shown beside it in green with a small c.

The correction is computed for cold and hot temperatures: below ISA the compensated altitude is higher than the barometric one, above ISA lower.

VNAV, PREV or NEXT displays VNAV 1/2.

Note

The ISA alert (TEMP COMPENSATION RECOMMENDED) is computed from the destination SAT (ABN.1).

FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

PGE.4 DIRECT TO

PGE.4.1 DIRECT TO Page (List)

Ident.: PGE.4.1 — 01 NOV 2026
ALL



DIRECT TO page, list of the FPLN waypoints

Displayed with the DTO key. The title is DIRECT TO.

IDENT (1L) — **Amber** boxes. Type the "TO" point and press (1L) (see PGE.4.3). With an empty scratchpad, (1L) displays the DATA LIST page (filter ALL) to choose it.

ABEAM> (1R) — Displays the DTO ABEAM page (PGE.4.2).

FPLN WPT list (2L to 6L) — The waypoints of the flight plan from the TO waypoint on, with their bearing and direct distance (whole NM) from the aircraft. Standard, pilot and temporary waypoints are listed; discontinuities and vertical pseudo waypoints are not. The TO is **magenta**, the missed approach waypoints **cyan**, the others **green**. The separator line above the list shows its page, `FPLN WPT n/ m`; NEXT / PREV show the other pages, in a loop.

Pressing the key of a waypoint displays the DIRECT TO page with that waypoint (PGE.4.3). A missed approach waypoint selected this way activates the missed approach when the DIRECT TO is executed (FPH.6.2); entered in IDENT, it does not. The bearings and distances are updated every second. The bearing follows the heading reference (MAG / TRUE).

IDENT entries

ENTRY	EXAMPLE
Ident of a waypoint, navaid or airport (standard or pilot database)	`CUPRI`
Latitude / longitude	`N4512.3W12234.5`
Place / bearing / distance	`PDX/090/12`
Place-bearing / place-bearing	`PDX/090/UBG/180`
Rallying waypoint of a moving waypoint	`SHIP1*`

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An ident that is in the flight plan gives a DIRECT TO its first occurrence in the plan. An ident found more than once in the databases opens the DATA LIST page; an unknown ident opens the NEW DATA page (see PGE.9). A latitude / longitude crossing or an along-track offset entry gives FORMAT ERROR.

AIRPORTS list



DIRECT TO page, list of the nearest airports

Displayed with AIRPORTS> (1R) of the DTO ABEAM page. The 20 nearest airports of the standard and pilot databases within 240 NM, by increasing distance, with their bearing, distance and longest runway (feet). The separator reads `-AIRPORTS n/m---MAX RWY-`. FPLN WPTS> (1R) displays the FPLN WPT list again. Pressing the key of an airport displays the DIRECT TO page with that airport: the direct to an airport off the plan is the way to divert, for example when the TO waypoint is the destination.

Note

DIRECT TO is not allowed (NOT ALLOWED) when the aircraft position, track or ground speed is not valid.

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PGE.4.2 DTO ABEAM Page

Ident.: PGE.4.2 — 01 NOV 2026
ALL



DTO ABEAM page

Displayed with the DTO key pressed twice (DTO pressed while the DIRECT TO list is shown), or with ABEAM> (1R) of the DIRECT TO page. The title is DTO ABEAM. The list is the FPLN WPT list of PGE.4.1; AIRPORTS> (1R) displays the nearest airports.

1. Press the key of a waypoint of the plan.
2. The FMS builds a direct to that waypoint and projects the waypoints skipped onto the new track: the abeam points, named `AB` and the waypoint ident (seven characters at most, for example `ABCUPRI`). The FPLN page shows the TMPY.
3. Check the TMPY and press EXEC.



TMPY after a DTO ABEAM HUTKI: abeam points of WHAMY and CUPRI

No abeam point is computed for:

- an existing abeam point, an along-track offset point, a latitude / longitude crossing point, a moving waypoint;

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- a leg that does not end at a fix (course or heading to an altitude, a DME distance, an intercept or a manual termination), a procedure turn, a holding pattern.

No abeam point is inserted when it would be less than 2 NM from the previous abeam point, behind a previous abeam point, or inside a turn (or less than 0.5 NM after its end).

In the TMPY, the abeam points and the DIRECT TO waypoint cannot be revised: no lateral or vertical revision, no insertion, no deletion, no DIRECT TO or DTO ABEAM (NOT ALLOWED).

An IDENT entry that is not in the plan gives a normal DIRECT TO, without abeam points (PGE.4.3).

PGE.4.3 DIRECT TO Page

Ident.: PGE.4.3 — 01 NOV 2026
ALL



DIRECT TO page, CUPRI selected from the list

Displayed when a "TO" point is selected on the list or entered in IDENT. As soon as the page is displayed, the DIRECT TO is built in the TMPY; it is built again at each change of a field. The title is **yellow** while the TMPY exists.

IDENT (1L)	The "TO" point, **yellow**. Type another point and press (1L) to change it (same entries as on the list); with an empty scratchpad, (1L) displays the DATA LIST page (filter ALL).
BRG/DIST (1R)	Bearing and direct distance from the aircraft to the point (**green**, `116°/75.0NM`), updated every second.
LAT/LONG (2R, 3R)	Position of the point (**green**).
INBND CRS (2L)	Optional inbound course to the point. **Cyan** dashes, **yellow** once entered. Enter `NNN` (magnetic, or true when the heading reference is TRUE). The aircraft then intercepts this course to the point.
INTCP DIST (3L)	Optional distance before the point where the inbound course is intercepted, 1 to 50 NM. Accepted only with an INBND CRS (NOT ALLOWED otherwise).
ALT CNSTR (4L)	Optional AT altitude constraint at the point, up to 45000 ft. A small `C` in front: entered while the cold temperature compensation is selected (taken as already corrected).
TMPY> (6R)	Displays the TMPY on the FPLN page.

INBND CRS, INTCP DIST and ALT CNSTR have no default value: CLEAR ? is NOT ALLOWED, a new entry replaces the value.

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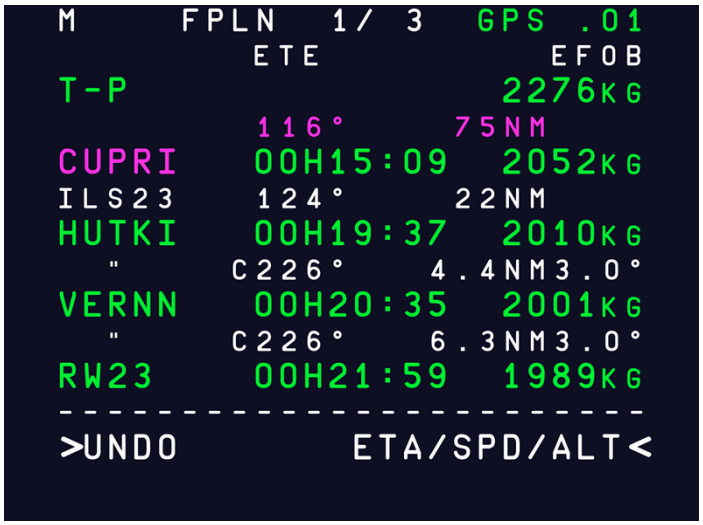
DIRECT TO CUPRI with INBND CRS 090, INTCP DIST 10 NM and ALT CNSTR 9000 ft

Activation

EXEC builds the DIRECT TO again from the aircraft position at that moment, activates it and displays the FPLN page. The activation needs a valid position, track, ground speed and TAS (NOT ALLOWED otherwise).

In the new plan:

- the FROM is `T-P` (turning point, the aircraft position at EXEC), or `IN-BND` when an INBND CRS is entered;
- a point in the plan: the legs before it are deleted, the plan continues after it;
- a point off the plan: it becomes the TO, and a discontinuity separates it from the rest of the plan;
- with an INTCP DIST, an intercept point named with the first three letters of the point and `-02` (for example `CUP-02`) is placed at that distance before the point, on the inbound course. It becomes the TO; the point follows on the inbound course (`C090°`).



FPLN after the DIRECT TO CUPRI (EXEC)

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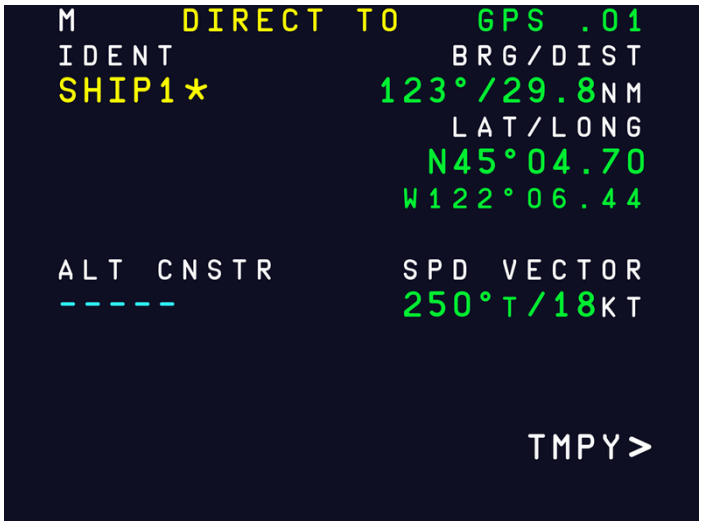
TMPY of the DIRECT TO CUPRI with intercept: IN-BND, CUP-02, CUPRI

Pilot runway

A pilot airport with a runway (RWY AXIS filled on the PLT APT page) is a pilot runway. A DIRECT TO it makes it the new destination: it becomes the TO and the last point of the plan. Its runway axis is the default INBND CRS, in small font; the crew can change it, and CLEAR ? restores the axis.

PGE.4.4 DIRECT TO Page (Moving WPT)

Ident.: PGE.4.4 — 01 NOV 2026
ALL



DIRECT TO a moving waypoint: rallying waypoint SHIP1*

A moving waypoint is a pilot waypoint with a speed vector (SPD VECTOR on the PLT WPT page, see PGE.9). It can be put in the plan only by a DIRECT TO. Selecting it on the DIRECT TO pages (or entering its ident followed by `*`) displays this page.

The FMS computes where the aircraft meets the moving waypoint: the rallying waypoint, named with the ident and *(for example `SHIP1`*). It becomes the TO in the TMPY, after a T-P, followed by a discontinuity. When no interception is possible, the moving waypoint itself is the TO.

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IDENT (1L)	Rallying waypoint (**yellow**). Enter another point to change the DIRECT TO.
BRG/DIST (1R)	Bearing and distance to the rallying waypoint, updated every second.
LAT/LONG (2R, 3R)	Position of the rallying waypoint.
ALT CNSTR (4L)	Optional AT altitude constraint, as on the DIRECT TO page.
SPD VECTOR (4R)	True track and speed of the moving waypoint (`250°T/18KT`), **green**. Read only; it is changed on the PLT WPT page.
TMPY> (6R)	Displays the TMPY.

EXEC builds the DIRECT TO again from the present position and activates it. On the FPLN page the rallying waypoint carries the overfly symbol (`SHIP1*Δ`).

Restrictions:

- only one moving waypoint in a flight plan: a DIRECT TO another moving waypoint is refused (NOT ALLOWED);
- the rallying waypoint cannot be revised (no LTRL REV or VERT REV, no RTA);
- CHECK POS TO and NEXT WPT do not accept a moving waypoint.

PAGE

INTENTIONALLY

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PGE.5 PERFORMANCE

PGE.5.1 PERF Pages

Ident.: PGE.5.1 — 01 NOV 2026 — ALL

The PERF key displays the PERF page of the present flight phase:

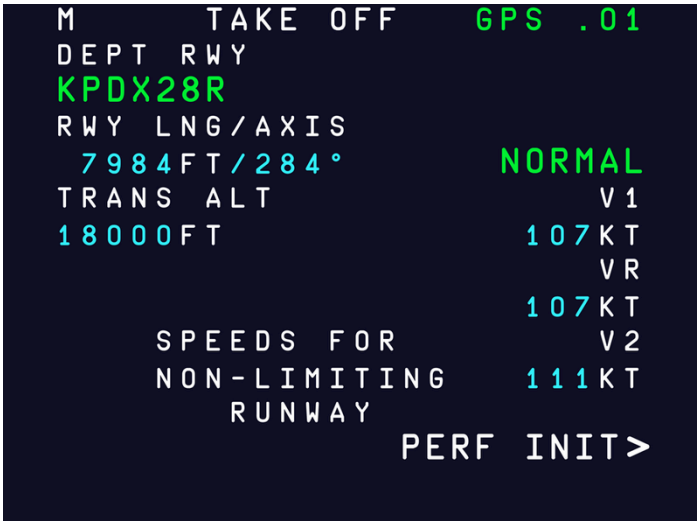
FLIGHT PHASE	PAGE
Ground, take-off	TAKE OFF
Climb, cruise	CRUISE
Descent, approach, go-around	APPROACH

On a PERF page, PERF or NEXT displays the next page (TAKE OFF → CRUISE → APPROACH → TAKE OFF); PREV the previous one.

Each PERF page has PERF INIT> at 6R (PGE.1.8). The weights are entered on the WEIGHT page (PGE.1.7).

PGE.5.2 TAKE OFF Page

Ident.: PGE.5.2 — 01 NOV 2026 — ALL



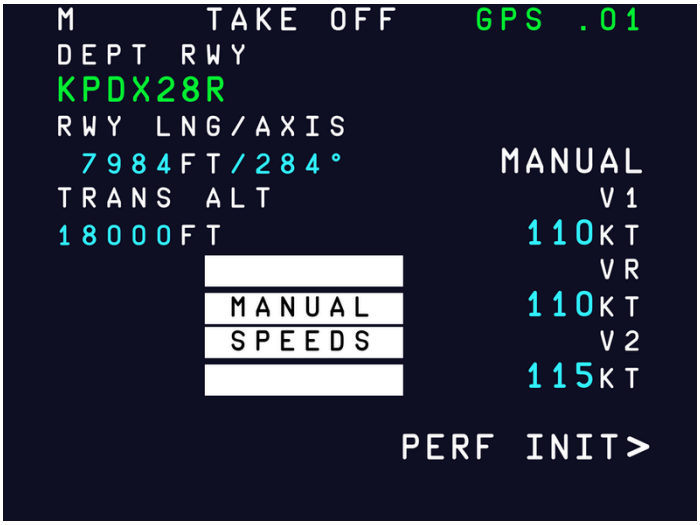
TAKE OFF page — computed speeds

DEPT RWY (1L)	Departure airport and runway of the active flight plan (green).
RWY LNG/AXIS (2L)	Length and axis of the departure runway, cyan: from the database (small) or entered (large). Enter `LLLL/AAA`, `LLLL` or `/AAA`: length 1 000 to 15 000 ft (in the ALTITUDE unit), axis 0 to 360°. The axis is shown in the HEADING reference of the UNITS page. CLR returns to the database values. Entries are cancelled when the departure runway changes and after a power interruption.
TRANS ALT (3L)	Transition altitude of the departure airport, cyan: from the database (small) or entered (large). Amber boxes when not known. Range 1 000 to 18 000 ft. CLR returns to the database value.
Status (2R)	Computation mode of the take-off speeds: **NORMAL**: no icing. **ICING**: speeds for icing conditions. Set when the crew selects the take-off icing conditions; after lift-off, also when the ice detector detects icing. **MANUAL**: at least one speed entered by the crew.
V1 (3R) / VR (4R) / V2 (5R)	Take-off speeds, in kt, cyan. Computed by the FMS: small. Entered: large. Amber boxes when missing.
Left area	SPEEDS FOR NON-LIMITING RUNWAY with computed speeds; MANUAL SPEEDS in reverse video when a speed was entered.
PERF INIT> (6R)	Displays PERF INIT.

The FMS computes speeds for a non-limiting runway, from the take-off weight (WEIGHT page) and the icing selection. Without the weights the speeds are not computed.

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TAKE OFF page — crew speeds

Crew speeds

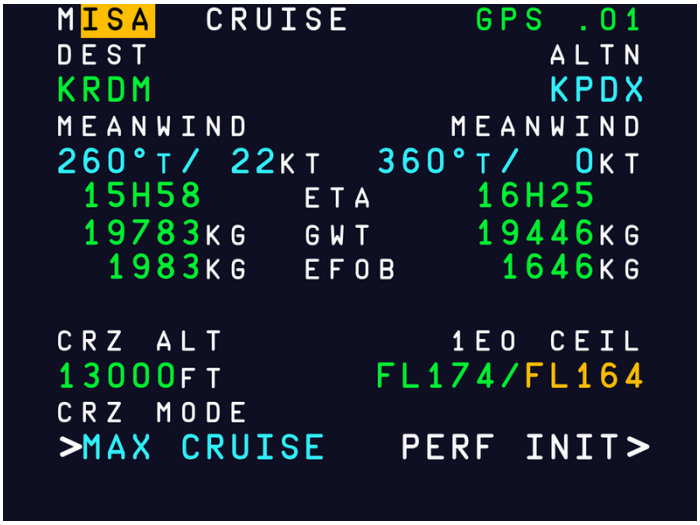
- Range 70 to 160 kt.
- At the first entry the two other computed speeds are deleted: enter all three.
- Once a speed has been entered, each entry must keep V1 ≤ VR, VR < V2 and V1 < V2, else RANGE ERROR.
- CLR acts only on an entered speed and cancels it. When no entered speed remains, the mode returns to NORMAL or ICING and the computed speeds come back.

Entered speeds are cancelled:

- by any entry that changes the weight (ZFW, FOB, GW) or by a T/O CG entry,
- in flight, when the power management selector leaves TO,
- at the end of the flight cycle and after a power interruption.

PGE.5.3 CRUISE Page

Ident.: PGE.5.3 — 01 NOV 2026 — ALL



CRUISE page in cruise

Predictions at the destination and at the alternate.

DEST (1L) — Destination: the arrival airport of the active flight plan, or its last waypoint (green).

ALTN (1R) — Alternate airport, cyan. By default the departure airport (small). Enter an airport of the standard or pilot database (large); NOT IN DATABASE if unknown. With an empty scratchpad, displays the DATA LIST of the airports. CLR returns to the default. Same alternate as on PERF INIT.

MEANWIND (2L) — Mean wind from the departure to the destination at the cruise altitude, true direction / speed, cyan. Default: the present wind of the FMS (dashes when not available). Used by the simplified wind model only.

MEANWIND (2R) — Mean wind to the alternate, cyan. Default 360°/0 kt. Entry for both: `270/25`, `270` or `/25` (direction 0 to 360°, speed up to 155 kt). CLR returns to the default.

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ETA (3L / 3R)	Predicted time of arrival at the destination / at the alternate (green).
GWT (4L / 4R)	Predicted gross weight at the destination / at the alternate (green).
EFOB (5L / 5R)	Predicted fuel on board at the destination / at the alternate (green). The destination EFOB is amber below the RESERVE (FAL alert).
CRZ ALT (5L)	Cruise altitude. Same field as PERF INIT (PGE.1.8).
1EO CEIL (5R)	One-engine-out ceilings in flight level: normal conditions (green) / icing conditions (amber). 1EO CEIL BST when the engine boost is ON.
CRZ MODE (6L)	► LONG RANGE or >MAX CRUISE: press to change. Enter a speed (150 to 250 kt) for a constant IAS cruise. CLR returns to LONG RANGE. Same field as PERF INIT.
PERF INIT> (6R)	Displays PERF INIT.

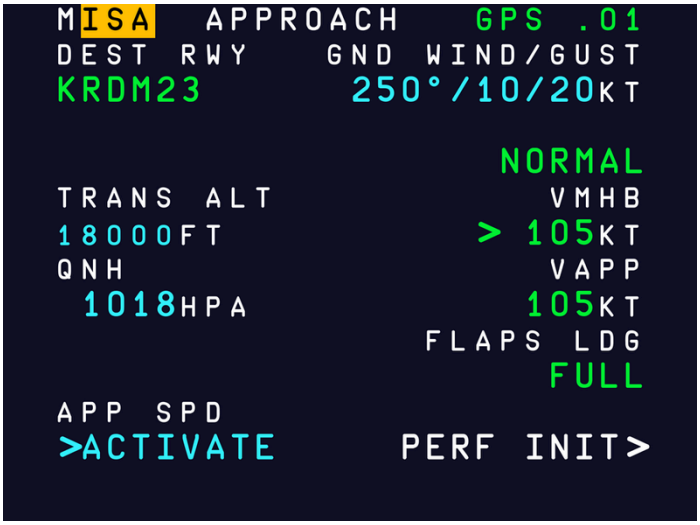
The alternate predictions use the LONG RANGE law.

CAUTION

If the EFOB at the destination is below the RESERVE, it is shown in amber and the FAL alert is raised.

PGE.5.4 APPROACH Page

Ident.: PGE.5.4 — 01 NOV 2026 — ALL



APPROACH page — ground wind and QNH entered

DEST RWY (1L)	Destination airport and the runway of the selected approach (green). `---` in place of the runway when no approach is selected.
GND WIND/GUST (1R)	Mean ground wind and gust at the destination, cyan: default `360°/ 0/--` (small), entered values large. Entry `250/10/20`, `250`, `/10` or `//20` (direction 0 to 360°, speeds up to 155 kt). The gust cannot be lower than the mean wind: such an entry is refused (RANGE ERROR), and a gust left lower than a new mean wind is deleted. Used for the VAPP computation and the simplified wind model. CLR returns to the default.
Status (2R)	NORMAL, or ICING when the ice detector detects icing. Sets the approach speeds.
TRANS ALT (3L)	Transition altitude of the destination, cyan: from the database (small) or entered (large). Amber boxes when not known; green dashes when the arrival point of the flight plan is not an airport (no entry possible). Range 1 000 to 18 000 ft. CLR returns to the database value. Same field as VNAV 2/2.
QNH (4L)	Destination QNH, in the BARO SET unit of the UNITS page. Amber boxes until entered; cyan when entered. Entry 800 to 1 100 hPa or 28.00 to 31.00 inHg. Same field as VNAV 2/2. Needed to compute the destination transition level for the baro-setting alerts. In descent below the transition level, the QNH cannot be entered any more (NOT ALLOWED): it shows the present baro setting in large green. Cannot be cleared.
VMHB (3R)	Minimum manoeuvring speed, high bank (green).
VAPP (4R)	Approach speed (green).
FLAPS LDG (5R)	Landing flap setting used by the approach computations: FULL.
APP SPD (6L)	► ACTIVATE activates the approach phase of the managed speed: ACT (green) is shown after APP SPD and the prompt becomes >DESELECT. >DESELECT returns to th
PERF INIT> (6R)	Displays PERF INIT.

The approach phase of the managed speed also activates by itself: at the LOC capture, at gear extension, or when the FMS enters the approach phase. It ends when the crew deselects it or when the destination changes.

PGE.5.5 SEC PERF Page

Ident.: PGE.5.5 — 01 NOV 2026 — ALL

Displayed with SEC PERF> on the SEC INIT page (PGE.2.4). Performance parameters of the secondary flight plan, used by the SEC predictions.

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CRZ ALT (1L) / MEANWIND (1R)	Cruise data (-CRZ-).
CRZ MODE (2L)	LONG RANGE / MAX CRUISE, or a constant IAS.
QNH (3L) / GND WIND (3R)	Approach data (-APP-).
TRANS ALT (4L)	Destination transition altitude.
ZFW (5L) / FOB (5R)	Take-off data (-T/O-). Shown only when the SEC FPLN was not initialized as a copy of the active flight plan.
<RETURN (6L)	Displays the previous page.

Each field shows, by default, the value of the active flight plan (small cyan), except FOB: when the SEC departure is the active destination, the default FOB is the EFOB at the active destination. An entry (large cyan) applies to the SEC only; CLR returns to the default. Formats and ranges are those of the active pages (PERF INIT, CRUISE, APPROACH, WEIGHT).

When the SEC is activated or swapped, its entries go with it.

PGE.6 RADIO NAVIGATION AND RMS

PGE.6.1 General

Ident.: PGE.6.1 — 01 NOV 2026
ALL

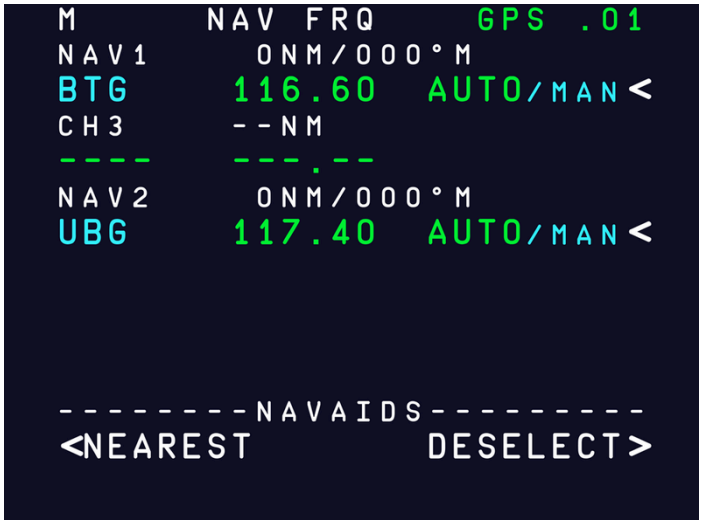
The aircraft has two VOR / ILS receivers (NAV 1, NAV 2) and a DME with three channels. Channels 1 and 2 follow NAV 1 and NAV 2; channel 3 is used by the FMS only.

The FMS can tune NAV 1 and NAV 2 itself (autotuning) to keep a good radio position. The NAV FRQ pages show what is tuned, let the crew choose between automatic and manual tuning, list the nearest navaids and hold the list of deselected navaids.

The radios themselves (VHF COM, transponder, TCAS, VOR / ILS, ADF) are set on the RMS pages, reached with the RMS key (see PGE.6.6).

PGE.6.2 NAV FRQ Page

Ident.: PGE.6.2 — 01 NOV 2026
ALL



NAV FRQ page

Reached by NAV FRQ> (3R) on the DATA MENU. The page is refreshed every second.

NAV1 (1L) / NAV2 (3L) Label line: distance and bearing (°M) of the station received, from the DME and VOR raw data. An H in reverse video after NAV1 / NAV2 shows that the DME channel is held on another frequency than the VOR / ILS receiver (DME HOLD on the NAV page). Data line: identifier (cyan) and frequency of the navaid tuned.

- The identifier is the one of the nearest navaid whose frequency matches the VOR frequency, or else the DME frequency. It is dashed when no tuned frequency matches a nearby navaid, or when the navaid is deselected.
- The frequency is green. It is amber in AUTO when the VOR / ILS frequency is not valid or differs from the DME channel frequency.
- Frequency + LSK: tunes the receiver (108.00 to 117.95 MHz) and selects MAN.
- Empty scratchpad + LSK: displays the NAV1 TUNE / NAV2 TUNE page (see PGE.6.3).

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CH3 (2L) Navaid on DME channel 3: identifier and frequency (green, always tuned by the FMS) and distance in the label line. Read-only. Dashed when no suitable navaid is in range.

AUTO/MAN< (1R / 3R) Tuning mode of NAV 1 / NAV 2. The active mode is green large, the other cyan small; each press selects the other mode.

- AUTO: the FMS tunes the receiver. Default mode at power-up.
- MAN: the crew tunes the receiver (RMS NAV page, VCP, or this page).

<NEAREST (6L) Displays the NEAREST page (see PGE.6.3).

DESELECT> (6R) Displays the DESELECTED NAVAIDS page (see PGE.6.4).

The tuning mode is common to this page, the RMS NAV page (TUNE MODE) and the VCP. A change made on one is seen on the others.

The FMS selects MAN by itself when:

- the crew tunes the receiver (FMS, RMS or VCP),
- the receiver is selected as V/L nav source on the FGCP: AUTO is then refused (NOT ALLOWED),
- in AUTO, the DME frequency returned does not agree with the frequency commanded by the FMS. If the receiver does not return the commanded frequency, the R/N alert RADIO NAV AUTOTUNING FAILURE is also raised (see ABN.1).

Autotuning

In AUTO, the FMS selects the navaids among the 20 nearest VHF navaids (standard and pilot data) that are received and not deselected:

- when the active leg belongs to a procedure with a recommended VOR, that VOR has priority. On an approach whose reference navaid is a VOR, both receivers are tuned to it with the approach course; on an NDB approach, the ADF is tuned to the NDB once, then left to the crew,
- otherwise the free receivers are tuned to the pair of stations giving the best position geometry, and channel 3 to a third DME-capable station,
- a station is kept while it remains usable. The selection is reviewed every 10 seconds, and at once when a receiver returns to AUTO or the procedure navaid changes.

ILS and localizer frequencies are never tuned automatically.

CAUTION

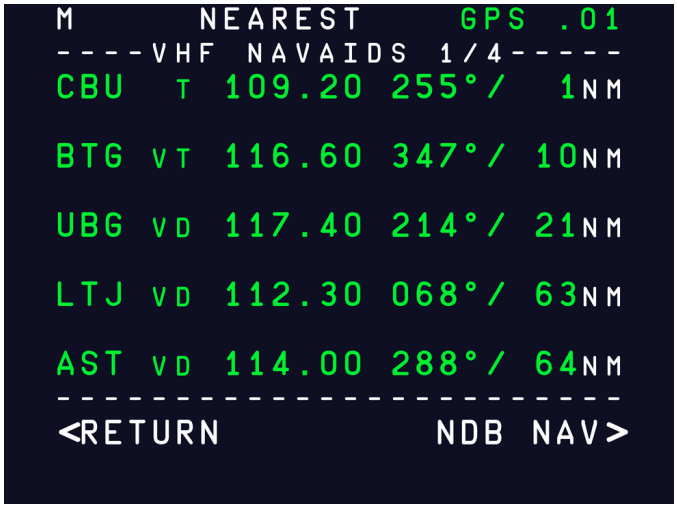
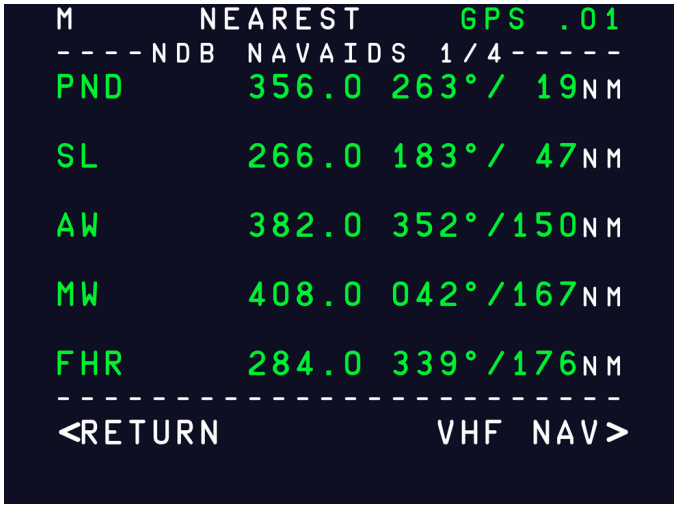
Autotuning is made by the FMS coupled with the autopilot only. After a change of active FMS, check on NAV FRQ that the tuning mode is still AUTO.

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PGE.6.3 NEAREST Pages

Ident.: PGE.6.3 — 01 NOV 2026
ALL

VHF NAVAIDS	NDB NAVAIDS
	
NEAREST VHF NAVAIDS	NEAREST NDB NAVAIDS

Reached by <NEAREST (6L) on NAV FRQ. The sub-title shows the list (VHF NAVAIDS or NDB NAVAIDS) and the page number. NEXT / PREV scroll the list (5 navaids per page, circular).

- VHF NAVAIDS: the 20 nearest VHF navaids of the standard and pilot databases.
- NDB NAVAIDS: the 20 nearest NDBs of the standard database.

Each line gives the identifier, the type (VHF list only, small), the frequency and the bearing / distance from the FMS position. Bearings follow the heading reference (MAG or TRU). The list is sorted by distance when the page is displayed; bearing and distance are refreshed every second, the order is not.

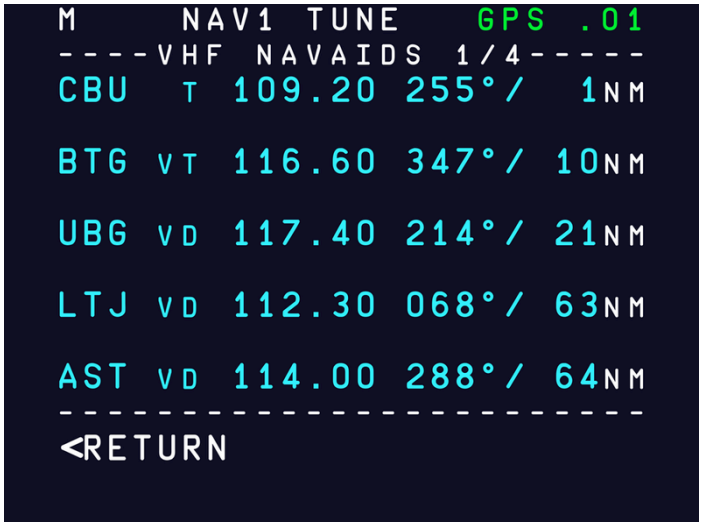
TYPE	NAVAID
V	VOR
VD	VOR/DME
VT	VORTAC
D	DME
T	TACAN
LD	LOC/DME
ID	ILS/DME
IT	ILS/TACAN

Navaid (1L to 5L)	Copies the frequency of the navaid into the scratchpad.
NDB NAV> / VHF NAV> (6R)	Displays the other list.
<RETURN (6L)	Back to the previous page.

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NAV1 TUNE / NAV2 TUNE



NAV1 TUNE page

Displayed when the NAV1 (1L) or NAV2 (3L) key of NAV FRQ is pressed with an empty scratchpad. It is the VHF list in cyan, with no NDB NAV> prompt. Pressing the LSK beside a navaid tunes it on the receiver, selects MAN and returns to NAV FRQ.

PGE.6.4 DESELECTED NAVAIDS Page

Ident.: PGE.6.4 — 01 NOV 2026
ALL



DESELECTED NAVAIDS page with one navaid

Reached by DESELECT> (6R) on NAV FRQ. A deselected navaid is not used for the radio position (BCP) or by the autotuning. It stays in the NEAREST list and can still be tuned by hand, but its identifier is dashed on NAV FRQ.

Navaid list (1L to 5L, 1R to 5R) Up to 10 navaids (cyan), left column first. A [ ] field follows the last one.

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[ ]	Identifier + LSK: deselects the navaid. If the identifier belongs to several navaids, the DUPLICATE page is displayed to choose (see PGE.9.1.3). Empty scratchpad + LSK: displays the DATA LIST with the VHF navaids of the standard and pilot databases.
CLR + navaid LSK	Reselects the navaid (removes it from the list).
<RETURN (6L)	Back to NAV FRQ.

Scratchpad messages: ALREADY DESELECTED (navaid already in the list), NOT ALLOWED (an NDB, which cannot be deselected), NOT IN DATABASE.

The list is deleted at a power-up on the ground and when the standard database changes.

PGE.6.5 RMS Principles

Ident.: PGE.6.5 — 10 NOV 2026
ALL

The RMS key, or <RMS 1 / <RMS 2 on the MCDU MENU page, connects the MCDU to the radio management system and displays the COMMUNICATION page. Any FMS page key (FPLN, DATA, PROG…) or the MCDU MENU page returns to the FMS pages.

- VHF 1 and VHF 2 pages: always VHF 1 and VHF 2, from either MCDU.
- NAV page: the NAV receiver of the RMS connected on the MCDU MENU page (<RMS 1: NAV 1, <RMS 2: NAV 2). With no RMS chosen there: NAV 1 on MCDU 1, NAV 2 on MCDU 2.
- XPDR fields: the transponder in use (XPDR SEL), common to both MCDUs and the VCP.
- TCAS: one setting for the aircraft.
- ADF: the aircraft has one ADF.

On the RMS pages, a two-state or three-state field shows the active state in green large and the others in cyan small; pressing its LSK selects the next state. Frequencies and codes are cyan with a white < or > beside the LSK. All settings are shared with the VCP.

Entry	Format	Range	Message when refused
VHF COM	MHz, e.g. `118.3` or `121.725`	118.000 to 136.975 (8.33 / 25 kHz channels)	VHF 118.000-136.975
VOR / ILS	MHz	108.00 to 117.95, 50 kHz steps	range message (VOR … or ILS …)
ADF	kHz	190.0 to 1799.5, 0.5 kHz steps	ADF 190.0-1799.5 KHZ
XPDR code	4 digits 0 to 7	0000 to 7777	RANGE: 0000-7777

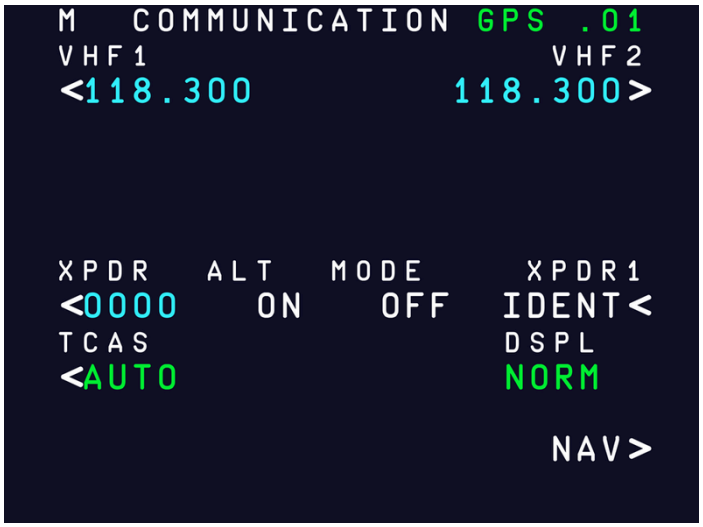
A non-numeric frequency gives FORMAT: MHZ (FORMAT: KHZ for the ADF).

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PGE.6.6 COMMUNICATION Page

Ident.: PGE.6.6 — 01 NOV 2026
ALL



COMMUNICATION page

VHF1 (1L) / VHF2 (1R)	Active frequency. Frequency + LSK: tunes it as active. Empty scratchpad + LSK: displays the VHF 1 / VHF 2 page. TX (green) after VHF1, or before VHF2, while that VHF transmits.
XPDR (4L)	Code of the transponder in use, then ALT (altitude reporting ON / OFF) and MODE (ON when the transponder replies, OFF in standby). Code + LSK: sets the code. Empty scratchpad + LSK: displays the XPDR page.
XPDRn IDENT< (4R)	The label shows the transponder in use. Press: IDENT (18 seconds).
TCAS (5L)	TCAS mode (AUTO, TA ONLY, STBY). Press: displays the TCAS page.
DSPL (5R)	TCAS display band. Each press: NORM, BLW, ABV.
NAV> (6R)	Displays the NAV page.

The aircraft has no HF: lines 2 and 3 are blank.

SIMULATOR NOTE

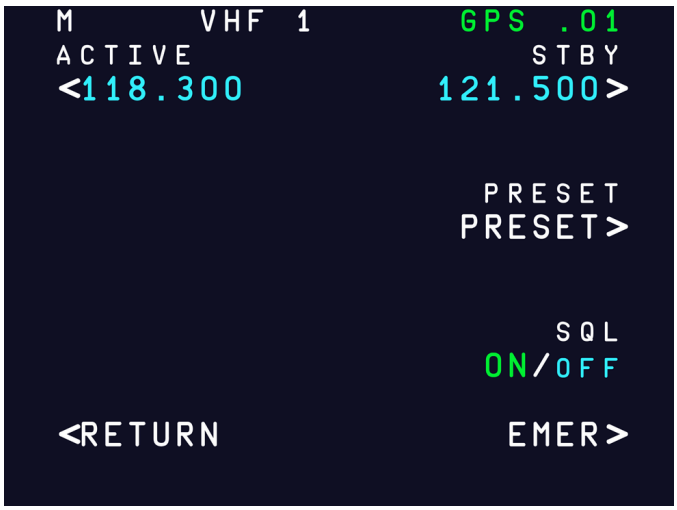
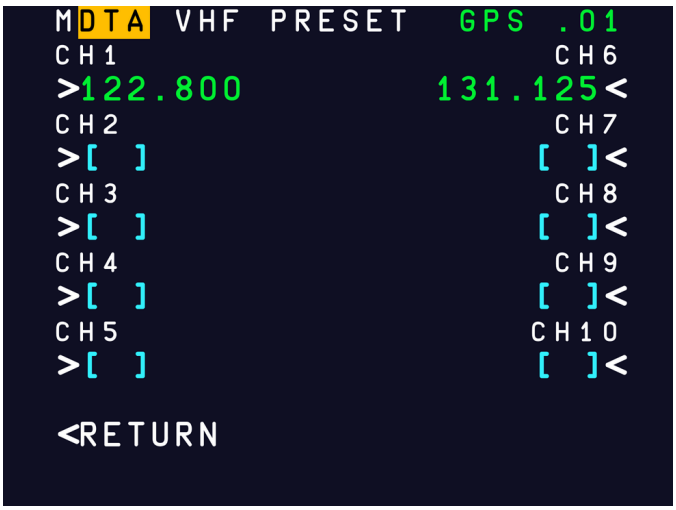
TX comes on with the yoke push-to-talk at RADIO (VHF transmission key selected on the audio control panel), with X-Plane's own push-to-talk, and with the xPilot (VATSIM) push-to-talk on the COM selected for transmission.

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PGE.6.7 VHF 1 / VHF 2 and VHF PRESET Pages

Ident.: PGE.6.7 — 01 NOV 2026
ALL

VHF 1	VHF PRESET
	
VHF 1 page	VHF PRESET page, two channels stored

ACTIVE (1L)	Active frequency. Frequency + LSK: tunes it. TX (green) after ACTIVE while this VHF transmits.
STBY (1R)	Standby frequency. Frequency + LSK: sets it.
PRESET> (3R)	Displays the VHF PRESET page of this radio.
SQL (5R)	Squelch ON / OFF. ON by default.
EMER> (6R)	Tunes 121.500 MHz as active frequency.
<RETURN (6L)	Back to COMMUNICATION.

VHF PRESET

Ten channels, CH1 to CH5 (1L to 5L) and CH6 to CH10 (1R to 5R). A stored frequency is green; an empty channel shows [ ] in cyan.

- Frequency + LSK: stores the frequency in the channel (118.000 to 136.975 MHz, else RANGE: 118.000-136.975).
- Empty scratchpad + LSK: tunes the stored frequency as active. EMPTY SLOT if the channel is empty.
- CLR + LSK: empties the channel.

SIMULATOR NOTE

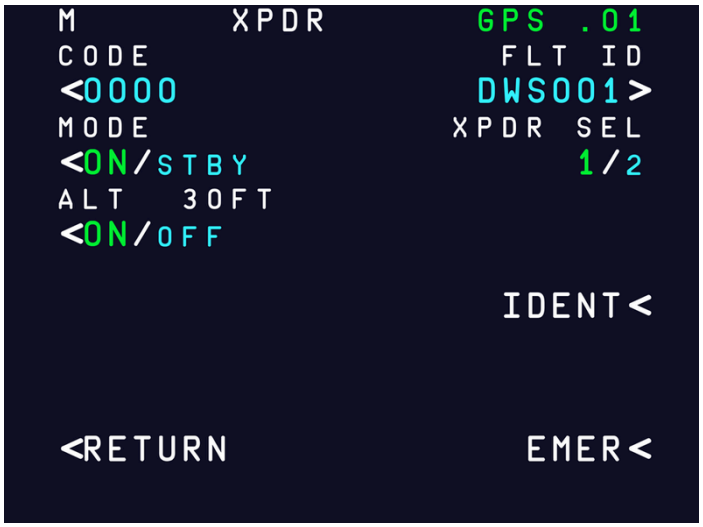
Preset channels (VHF, NAV and ADF) are kept for the session only. They are empty at the next aircraft load.

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PGE.6.8 XPDR Page

Ident.: PGE.6.8 01 NOV 2026
ALL



XPDR page

The fields act on the transponder in use.

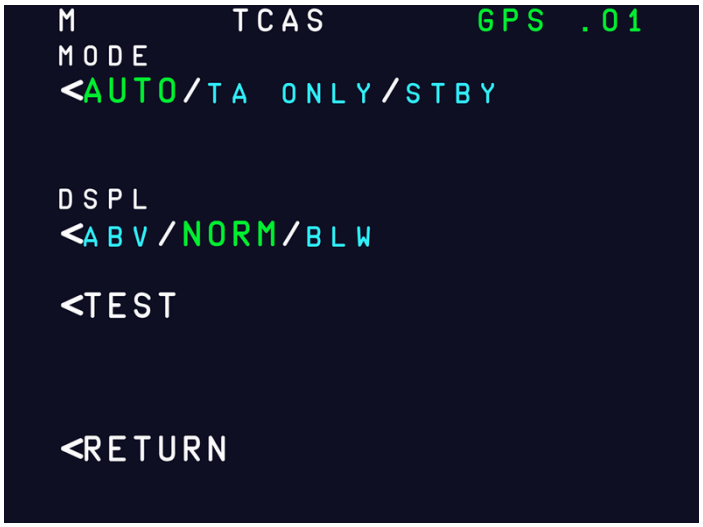
CODE (1L)	Transponder code. Code + LSK: sets it.
FLT ID (1R)	Flight identification, 1 to 8 letters or digits (else FORMAT: 1-8 CHARS). It is the flight number of the FMS (FPLN INIT).
MODE (2L)	ON / STBY.
XPDR SEL (2R)	Transponder in use, 1 / 2.
ALT (3L)	Altitude reporting ON / OFF. The label gives the present altitude.
IDENT< (4R)	IDENT (18 seconds).
EMER< (6R)	First press arms code 7700: the prompt goes to reverse video, PRESS EXEC TO CONFIRM is shown and the EXEC annunciator lights. EXEC sets 7700. A second press of EMER< disarms.
<RETURN (6L)	Back to COMMUNICATION.

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PGE.6.9 TCAS Page

Ident.: PGE.6.9 — 01 NOV 2026
ALL

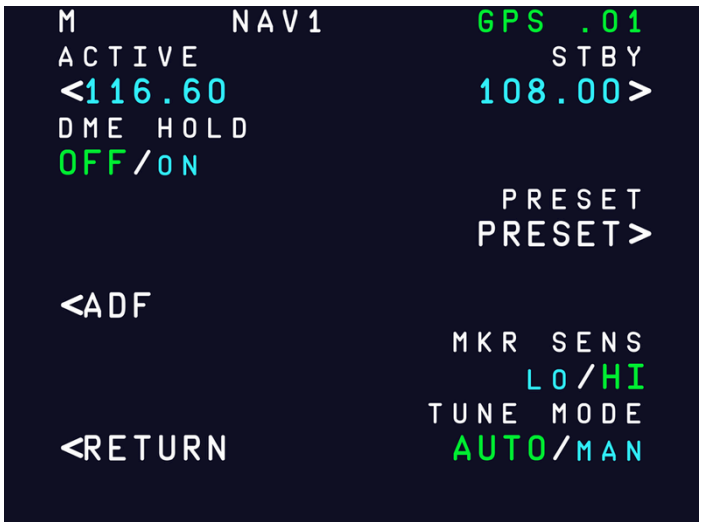


TCAS page

MODE (1L)	AUTO / TA ONLY / STBY. Each press selects the next mode.
DSPL (3L)	Display band ABV / NORM / BLW. Each press selects the next band.
<TEST (4L)	Starts the TCAS self-test (TCAS TEST on the PFD and ND).
<RETURN (6L)	Back to COMMUNICATION.

PGE.6.10 NAV Page

Ident.: PGE.6.10 — 10 NOV 2026
ALL



NAV1 page

Reached by NAV> (6R) on COMMUNICATION. Title NAV1 or NAV2: the receiver of the RMS connected (see PGE.6.5).

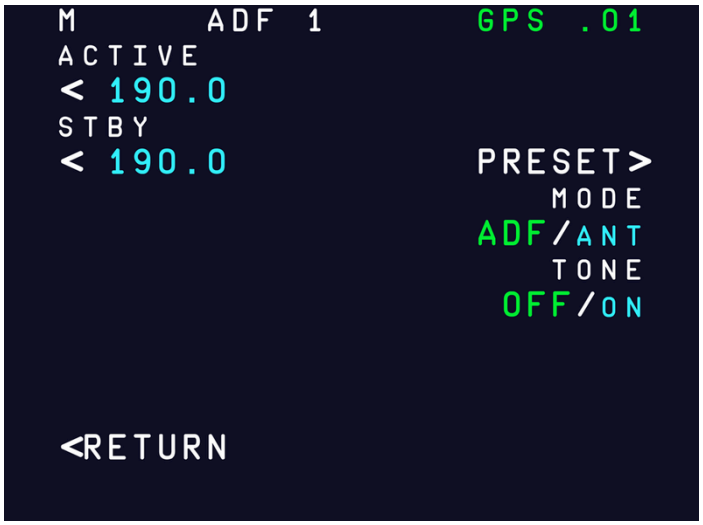
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ACTIVE (1L)	VOR / ILS active frequency. Frequency + LSK: tunes it and selects MAN.
STBY (1R)	Standby frequency. Frequency + LSK: sets it.
DME HOLD (2L)	OFF / ON. With ON, the DME channel stays on its present frequency when the VOR / ILS frequency changes (H on NAV FRQ).
PRESET> (3R)	Displays the NAV PRESET page.
<ADF (4L)	Displays the ADF page.
MKR SENS (5R)	Marker sensitivity LO / HI. HI by default.
TUNE MODE (6R)	AUTO / MAN, the same mode as AUTO/MAN on NAV FRQ (see PGE.6.2). AUTO is refused (NOT ALLOWED) while the receiver is the FGCP nav source.
<RETURN (6L)	Back to COMMUNICATION.

PGE.6.11 ADF Page

Ident.: PGE.6.11 — 01 NOV 2026
ALL



ADF 1 page

Reached by <ADF (4L) on the NAV page.

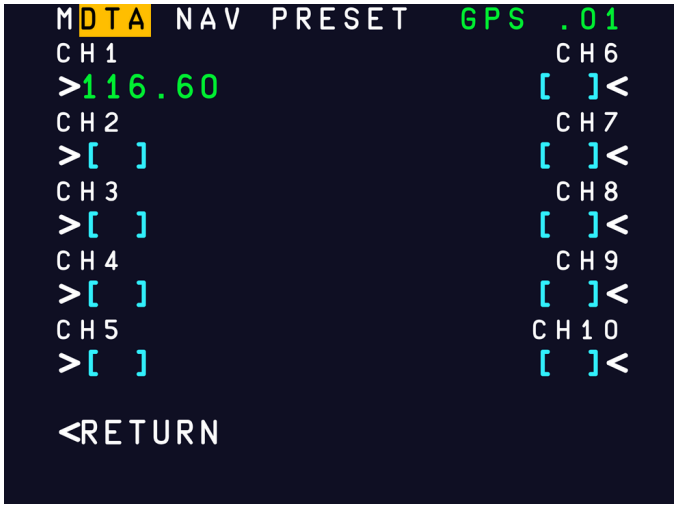
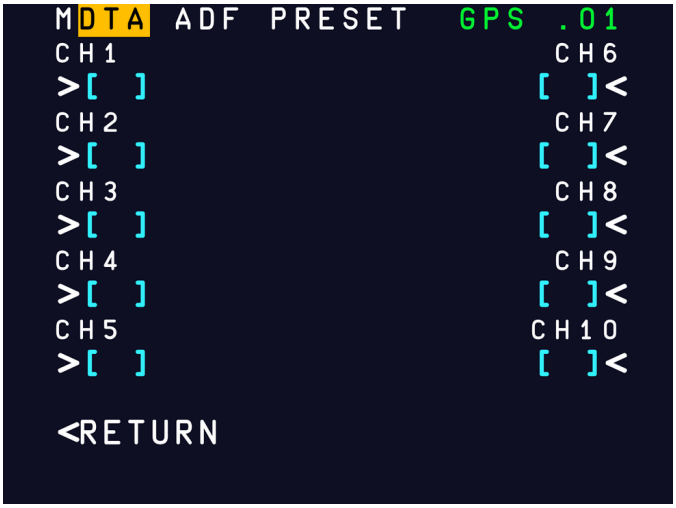
ACTIVE (1L)	Active frequency in kHz. Frequency + LSK: tunes it.
STBY (2L)	Standby frequency. Frequency + LSK: sets it.
PRESET> (2R)	Displays the ADF PRESET page.
MODE (3R)	ADF / ANT.
TONE (4R)	OFF / ON (identification tone).
<RETURN (6L)	Back to the NAV page.

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PGE.6.12 NAV PRESET and ADF PRESET Pages

Ident.: PGE.6.12 — 01 NOV 2026
ALL

NAV PRESET	ADF PRESET
	
NAV PRESET page, CH1 stored	ADF PRESET page

Same layout and keys as VHF PRESET: ten channels, frequency + LSK stores, CLR + LSK empties, EMPTY SLOT on an empty channel. Recalling a channel (empty scratchpad + LSK) sets its frequency as the STANDBY frequency of the receiver, not the active one.

Page	Reached by	Range
NAV PRESET	PRESET> (3R) on the NAV page	108.00 to 117.95 MHz, 50 kHz steps
ADF PRESET	PRESET> (2R) on the ADF page	190.0 to 1799.5 kHz, 0.5 kHz steps

PAGE

INTENTIONALLY

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PGE.7 MESSAGE

PGE.7.1 FMS Alerts on the MCDU

Ident.: PGE.7.1 — 01 NOV 2026 — ALL

When at least one FMS alert is pending:

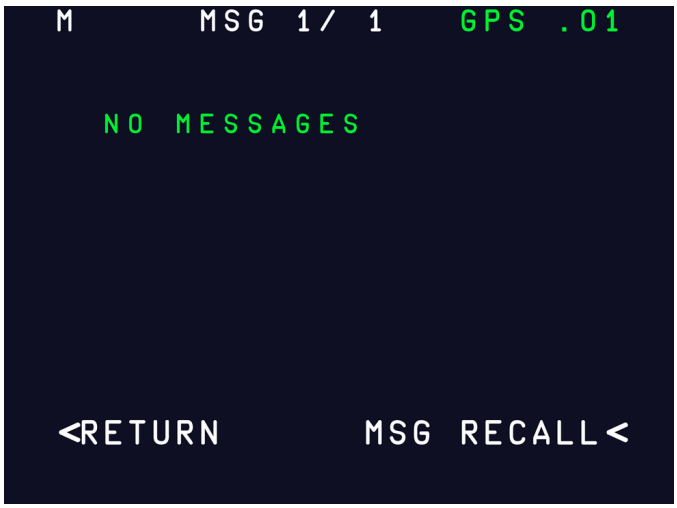
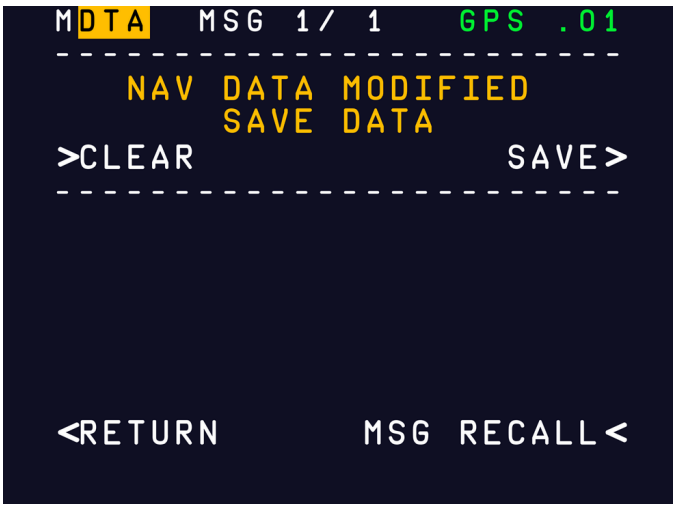
- the MSG annunciator of the MCDU is lit,
- the code of the highest-priority alert (for example `DTA`) is shown in reverse video in the title line of every FMS page.

The code in the title line is always up to date. The alerts themselves are read on the MESSAGE page. Each MCDU keeps its own cleared and masked alerts: an alert cleared on one MCDU stays displayed on the other.

The list of the alerts, their meaning and the crew action are in ABN.1.

PGE.7.2 MESSAGE Page

Ident.: PGE.7.2 — 01 NOV 2026 — ALL

No alert	One alert
	
MESSAGE page, no alert	MESSAGE page, DTA alert

Displayed with the MSG key. Title MSG, with the page number when there are more than two alerts.

The alerts are listed by priority, two per page; NEXT / PREV show the other pages (circular). Each alert is framed by dashed lines; its text is amber, centred on one or two lines. With no alert, NO MESSAGES is shown in green.

>CLEAR (2L / 4L)	Clears or masks the alert beside it, on this MCDU only. Not shown for an alert that leaves only when its cause has gone (NO ACTION DEFINED if pressed).
Action prompt (2R / 4R)	CHECK>, INSERT>, UPDATE>, CHANGE>, SAVE> or CTK>: displays the page where the alert can be checked or acted on. For example SAVE> displays the DATA MENU. When the action itself ends the alert (WGT, CTK INIT), the alert is removed.
<RETURN (6L)	Back to the previous page.
MSG RECALL< (6R)	Brings back all the alerts masked on this MCDU, in their priority order.

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Note

The list is not refreshed while the MESSAGE page is displayed. An alert raised or removed meanwhile appears or disappears when the page is displayed again. The code in the title line is refreshed.

PGE.7.3 Clear, Mask and Automatic Removal

Ident.: PGE.7.3 — 01 NOV 2026
ALL

Every alert has one of three behaviours:

Behaviour	>CLEAR	MSG RECALL<
Mask	The alert is hidden on this MCDU	Brings it back if the cause is still present
Clear	The alert is removed for good on this MCDU	No effect
No clear	No >CLEAR prompt	No effect

An alert whose cause has gone is removed by the FMS on both MCDUs, whether it was displayed or masked; it cannot be recalled. Alerts that report a single event (for example a radio autotuning failure or a non-return point) stay until the crew clears them.

The behaviour of each alert is given in ABN.1.

PGE.7.4 Priority Order

Ident.: PGE.7.4 — 01 NOV 2026
ALL

From the highest priority:

CFG WGT CTK CMD INI AIR HDG POS FAL FFF DTA VAR FPL GPS LAB R/N AIM HIL APP RNP FMS ISA ALN TMR

PGE.8 MARK

PGE.8.1 Marking the Present Position

Ident.: PGE.8.1 — 01 NOV 2026 — ALL

Pressing the MRK key:

- freezes the present FMS position and the time,
- stores this position as a new pilot waypoint named `MKnnn`: the first free number from MK001 to MK999,
- displays the MARK page.

When the pilot database has no free waypoint slot, MEMORY FULL is shown in the scratchpad. The position is frozen all the same, with no MK identifier.

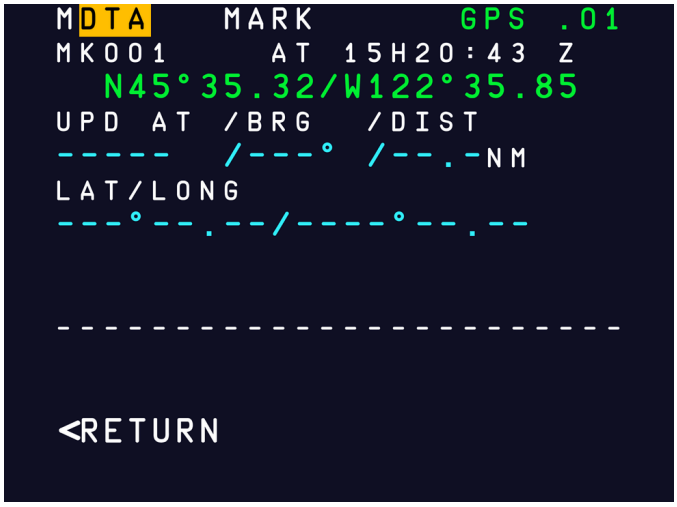
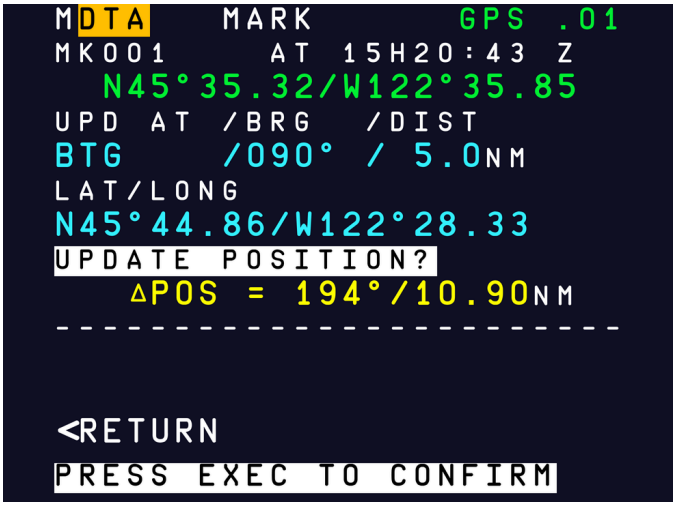
An MK waypoint is used like any pilot waypoint (FPLN, DIRECT TO, PLT WPT page). Creating it changes the pilot database, so the DTA alert is raised.

Note

MK waypoints are kept after a long power interruption, or the next session, only if they are saved: SAVE< on the DATA MENU (see PGE.9.1).

PGE.8.2 MARK Page

Ident.: PGE.8.2 — 01 NOV 2026 — ALL

After MRK	Update point entered
	
MARK page	MARK page, update staged

MKnnn AT time (label line 1) — Identifier of the MK waypoint and time of the mark, for example `15H20:43 Z` (UTC), or `L` (local time) when a time difference is set on the INIT page.

Frozen position (line 1, green) — Position at the MRK press.

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UPD AT / BRG / DIST (2L)	Point actually overflown at the mark time, to update the FMS position. Enter `IDENT` or `IDENT/BRG/DIST` (bearing 0 to 360°, distance up to 99.9 NM), for example `BTG/090/5`. If the identifier exists more than once, the DUPLICATE page is displayed. Empty scratchpad + LSK: displays the DATA LIST (all data).
LAT/LONG (3L)	Position of the update point. Enter it directly, or read the position resolved from UPD AT.
UPDATE POSITION? (line 4)	Shown in reverse video once an update point is defined, with ΔPOS (yellow): bearing and distance from the update point to the frozen position. PRESS EXEC TO CONFIRM is shown and the EXEC annunciator lights.
<RETURN (6L)	Back to the previous page. Cancels an update not confirmed.

An update point more than 100 NM from the frozen position is refused (RANGE ERROR).

PGE.8.3 Position Update

Ident.: PGE.8.3 — 01 NOV 2026
ALL

EXEC confirms the update. The FMS position is moved by ΔPOS: the crew states that the aircraft was over the update point when MRK was pressed. The update applies to all navigation sources, whatever the selected mode:

Navigation source	Effect
BCP	The BCP position is reinitialized
GPS	A position initialization is sent to the GPS

CAUTION

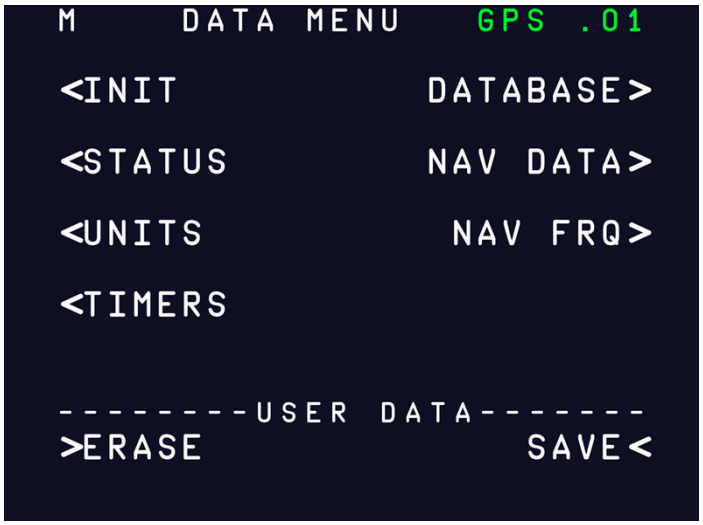
The update cannot be undone. Check ΔPOS carefully before EXEC.

With GPS or radio updating available, the position returns to the sensor solution after the update. The update is mainly useful when the FMS navigates without them (dead reckoning).

PGE.9.1 DATA - MENU AND DATA LISTS

PGE.9.1.1 DATA MENU Page

Ident.: PGE.9.1.1 — 01 NOV 2026
ALL



DATA MENU page

Displayed with the DATA key. A second press of DATA displays the DATA LIST (see PGE.9.1.2).

<INIT (1L)	INIT page (see PGE.1).
<STATUS (2L)	STATUS page (see PGE.10).
<UNITS (3L)	UNITS page (see PGE.1).
<TIMERS (4L)	TIMERS page (see PGE.1).
DATABASE> (1R)	DATABASE page: standard and pilot databases (see PGE.9.2, PGE.9.3).
NAV DATA> (2R)	NAV DATA page: databases in use and their dates (see PGE.1).
NAV FRQ> (3R)	NAV FRQ page (see PGE.6.2).
>ERASE (6L)	Erases the user data. First press arms: the prompt goes to reverse video, PRESS EXEC TO CONFIRM is shown and the EXEC annunciator lights. EXEC erases; a second press of >ERASE disarms.
SAVE< (6R)	Saves the user data. One press, no confirmation. Amber while user data are modified and not saved, white otherwise.

SAVE

SAVE< writes the pilot database (including MK waypoints), the company routes modified by the authorized user and the secondary flight plan, so that they are recovered after a long power interruption. XFER DATA IN PROGRESS is shown in reverse video during the save; the keyboard is locked until it ends. With two FMS in DUAL, both take the saved data. A failed save gives XFER FAIL.

The secondary flight plan is not saved while it is a copy of the active flight plan.

After a save, the DTA alert goes and SAVE< turns white.

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ERASE

The >ERASE prompt deletes, on both FMS:

- the pilot database (waypoints, airports, navaids, routes) and its saved copy,
- the saved secondary flight plan.

To allow the deletion, the active, temporary and secondary flight plans are cancelled, and the UNDO of the last flight plan change is no longer possible. ERASING DATA is shown during the erase (keyboard locked); XFER FAIL if it fails.

CAUTION

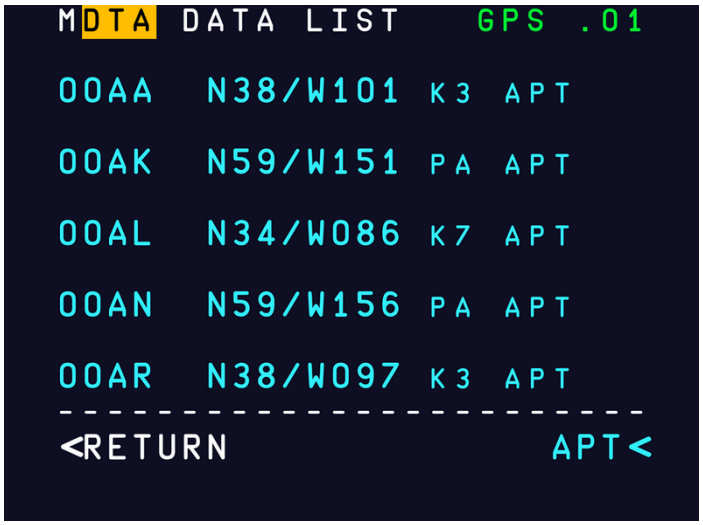
ERASE cannot be undone. It does not delete the company routes.

SIMULATOR NOTE

The user data are saved in the aircraft folder (`plugins/ATR_Series_SASL/data/output/DWSim_Data/`) and loaded at the next session. See MNT.3.

PGE.9.1.2 DATA LIST Page

Ident.: PGE.9.1.2 — 01 NOV 2026 — ALL



DATA LIST page, airport filter

The DATA LIST shows the data of the standard and pilot databases in alphanumeric order, five per page. It is displayed:

- by pressing DATA twice, starting at the scratchpad entry,
- by pressing, with an empty scratchpad, a field that takes an identifier (for example UPD AT on the MARK page, the `[ ]` of DESELECTED NAVAIDS, IDENT on a STD page). A filter suited to the field is then applied and may be locked.

Each item shows, when the data has one, its name (small white), then its identifier, its position rounded to the degree (`N45/W122`), its country code and its type (cyan).

Type	Data
WPT / TWPT	En-route / terminal waypoint
APT	Airport
NDB / TNDB	En-route / terminal NDB

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Type	Data
VOR, VORDME, VORTAC, DME, TACAN, ILS, ILSDME, ILSTAC, LOC, LOCDME	VHF navaid

ILS includes the localizer-type installations (IGS, LDA, SDF).

Item, left LSK (1L to 5L) — When the DATA LIST was called from a field, selects the item for that field and returns to the calling page.

Item, right LSK (1R to 5R) — Displays the standard or pilot database page of the item.

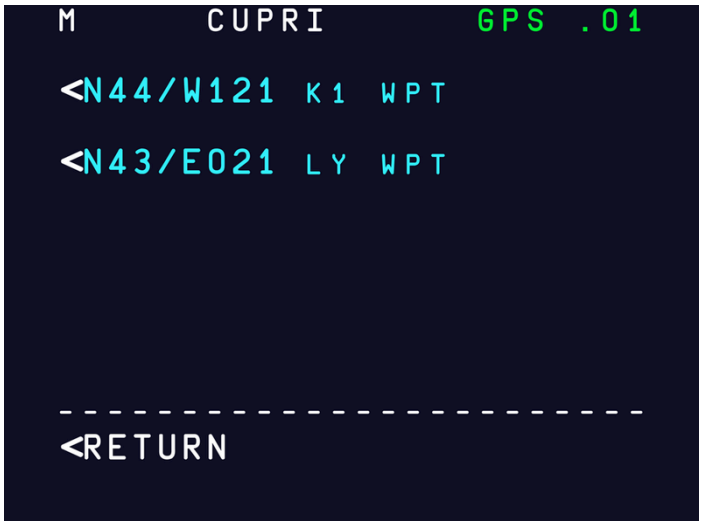
Filter (6R) — Cyan. Each press selects the next filter: ALL (all data), APT (airports), VHF NAV (VHF navaids), WPT (waypoints), NDB NAV (standard NDBs). Not shown when the filter is locked.

<RETURN (6L) — Back to the previous page.

Typing the first letters of an identifier moves the list to the first matching item at once. NEXT / PREV scroll the list.

PGE.9.1.3 DUPLICATE Page

Ident.: PGE.9.1.3 — 01 NOV 2026
ALL



DUPLICATE page for the identifier CUPRI

Displayed when an identifier entered in any field belongs to several data. The title is the identifier. The page lists up to 20 data, by increasing distance from the FMS position, five per page (NEXT / PREV). For each one:

- its position abbreviated to the degree (large cyan), country code and type (WPT, TWPT, APT, NAV, NDB, TNDB or ILS),
- for a VHF navaid or an ILS, its precise type (white) and its frequency at the right.

<Data (1L to 5L) — Selects this data. The calling page goes on with it.

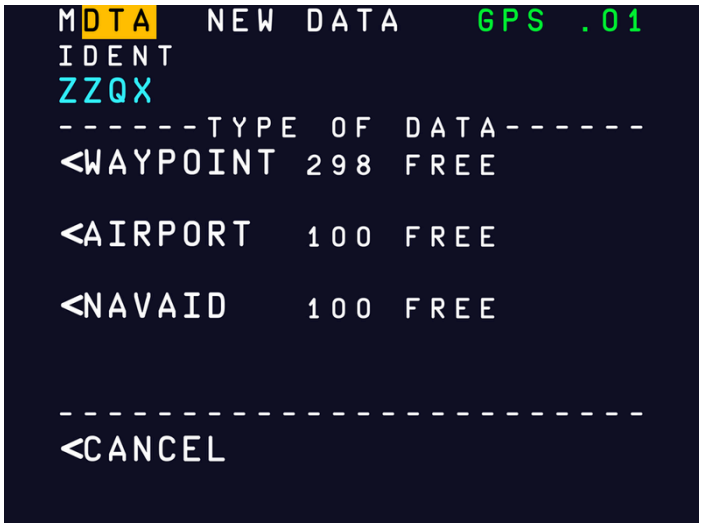
<RETURN (6L) — Back without selection.

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PGE.9.1.4 NEW DATA Page

Ident.: PGE.9.1.4 — 01 NOV 2026
ALL



NEW DATA page

Displayed when an identifier entered in a flight plan, a pilot route or DIRECT TO is found in neither the standard nor the pilot database. It allows the creation of the data in the pilot database.

IDENT (1L)	The unknown identifier (cyan).
<WAYPOINT (2L) / <AIRPORT (3L) / <NAVAID (4L)	With the number of free slots of each type. Displays the PLT WPT, PLT APT or PLT NAVAID page with the identifier already entered (see PGE.9.3).
<CANCEL (6L)	Back without creation.

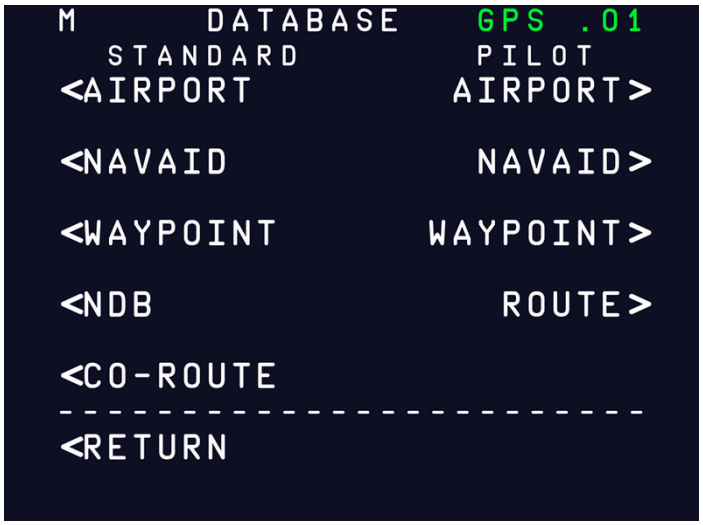
When the new data has been created and the crew returns from its PLT page, the data is inserted where the identifier was entered.

- An airport or navaid identifier is 4 characters at most (FORMAT ERROR); a waypoint identifier 5.
- An unknown 5-character identifier can only be a waypoint: the PLT WPT page is displayed directly, without NEW DATA.
- An identifier cannot begin with - (FORMAT ERROR): - is used to rename data.
- MEMORY FULL when the type has no free slot.

PGE.9.2 DATA - STANDARD DATABASE

PGE.9.2.1 DATABASE Page

Ident.: PGE.9.2.1 — 01 NOV 2026 — ALL



DATABASE page

Reached by DATABASE> (1R) on the DATA MENU. The left column gives the standard database, the right column the pilot database (see PGE.9.3).

<AIRPORT (1L)	STD APT page.
<NAVAID (2L)	STD NAVAID page.
<WAYPOINT (3L)	STD WPT page.
<NDB (4L)	STD NDB page.
<CO-ROUTE (5L)	STD DATA page (company routes).
AIRPORT> (1R) / NAVAID> (2R) / WAYPOINT> (3R) / ROUTE> (4R)	PILOT DATA page of that type.
<RETURN (6L)	Back to the DATA MENU.

PGE.9.2.2 Consulting a Standard Data

Ident.: PGE.9.2.2 — 01 NOV 2026 — ALL

The four STD pages are read-only. They work the same way:

- Enter the identifier at IDENT (1L). An identifier unknown for this type gives NOT IN DATABASE and the page keeps its content. When the identifier belongs to several data of this type, the DUPLICATE page is displayed to choose (see PGE.9.1.3).
- IDENT (1L) with an empty scratchpad displays the DATA LIST, filtered on the type of the page and on the standard database (see PGE.9.1.2).
- The identifier is cyan, followed by its country code (small green). The other data are green. Elevations and lengths follow the UNITS ALTITUDE unit.

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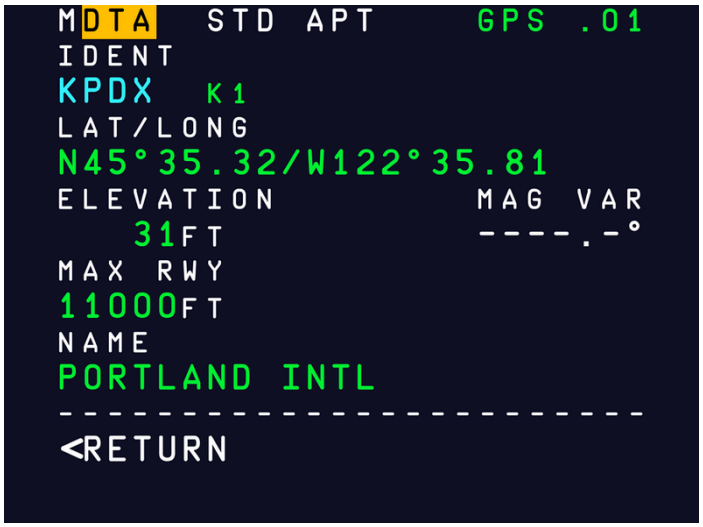
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- <RETURN (6L) returns to the previous page.

These pages are also displayed from a flight plan or route element, and from the DATA LIST (right LSK).

PGE.9.2.3 STD APT Page

Ident.: PGE.9.2.3 — 01 NOV 2026
ALL



STD APT page

IDENT (1L)	Airport ICAO identifier and country code.
LAT/LONG (2L)	Airport reference point.
ELEVATION (3L)	Airport elevation.
MAG VAR (3R)	Magnetic variation at the airport (E / W).
MAX RWY (4L)	Length of the longest runway.
NAME (5L)	Airport name, 15 characters at most.

SIMULATOR NOTE

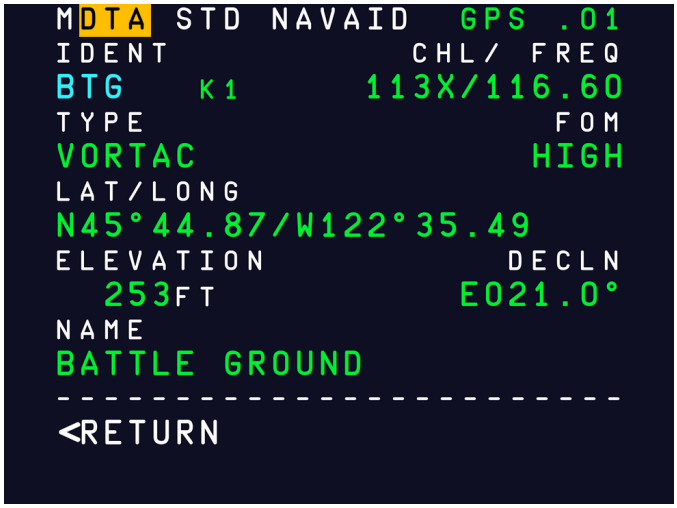
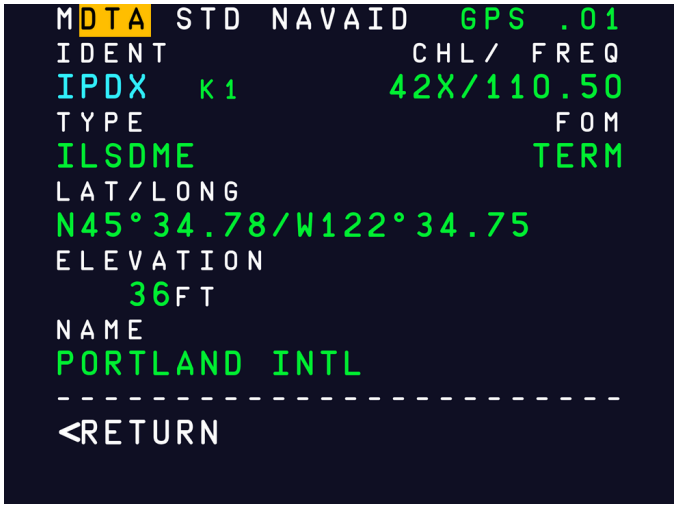
The airport name comes from the airport scenery data, which are read in the background after the aircraft is loaded. Until then NAME is dashed; it appears by itself (the page is refreshed every second).

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PGE.9.2.4 STD NAVAID Page

Ident.: PGE.9.2.4 — 01 NOV 2026
ALL

VORTAC	ILS / DME
	
STD NAVAID page, VORTAC	STD NAVAID page, ILS/DME

IDENT (1L)	Navaid identifier and country code.
CHL/ FREQ (1R)	TACAN / DME channel (for example `113X`) and frequency. FREQ only for a navaid with no DME or TACAN.
TYPE (2L)	VOR, VORDME, VORTAC, DME, TACAN, ILS, ILSDME, ILSTAC, LOC or LOCDME.
FOM (2R)	Figure of merit: TERM (terminal), LOW (low altitude), HIGH (high altitude), EXT (extended range).
LAT/LONG (3L)	Navaid position.
ELEVATION (4L)	Navaid elevation.
DECLN (4R)	Station declination (`E` / `W`).
NAME (5L)	Navaid name, 15 characters at most.

Particular cases:

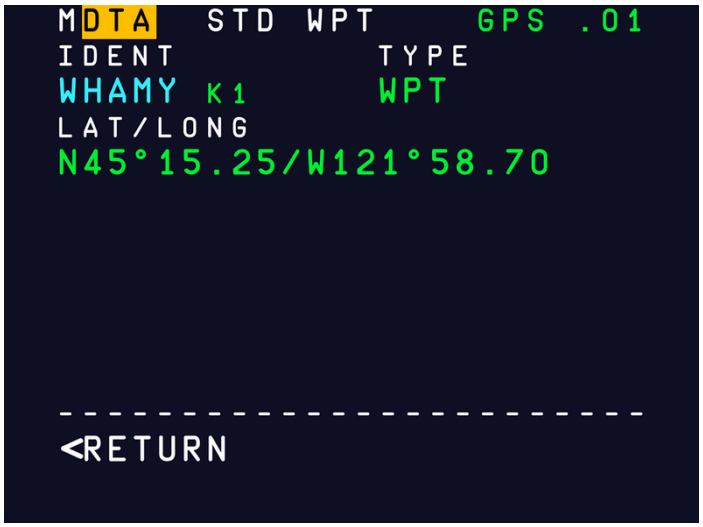
- ILS or LOC: no CHL, FOM or DECLN. NAME is replaced by RUNWAY: the airport and runway of the localizer (for example `KPDX10R`).
- ILSDME, ILSTAC or LOCDME: the page gives the DME or TACAN part only (channel, position, elevation, name); no DECLN.
- VORDME or VORTAC with the DME not at the VOR: LAT/LONG is the VOR position, marked `(VOR)`; ELEVATION is the DME / TACAN elevation, marked `(DME)` or `(TAC)`.

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PGE.9.2.5 STD WPT Page

Ident.: PGE.9.2.5 — 01 NOV 2026
ALL



STD WPT page

IDENT (1L) Waypoint identifier and country code.

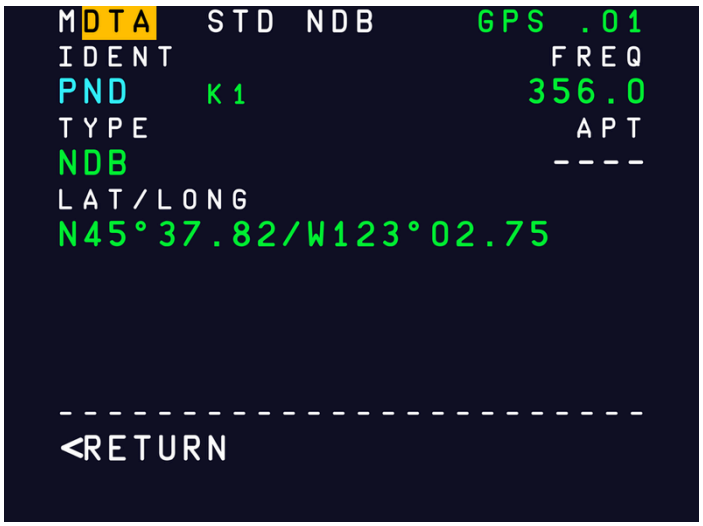
TYPE (1R) WPT (en-route waypoint) or TWPT (terminal waypoint).

APT (1R) For a terminal waypoint, the airport it belongs to.

LAT/LONG (2L) Waypoint position.

PGE.9.2.6 STD NDB Page

Ident.: PGE.9.2.6 — 01 NOV 2026
ALL



STD NDB page

IDENT (1L) NDB identifier and country code.

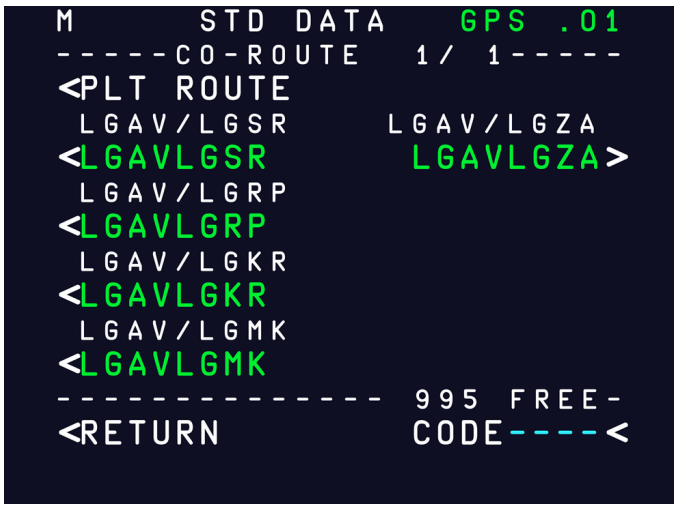
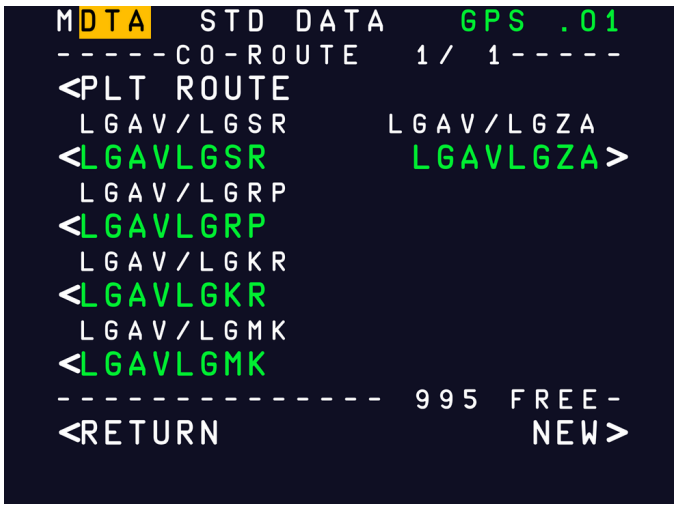
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FREQ (1R)	Frequency in kHz.
TYPE (2L)	NDB (en-route) or TNDB (terminal).
APT (2R)	For a terminal NDB, the airport it belongs to. Dashed otherwise.
LAT/LONG (3L)	NDB position.

PGE.9.2.7 STD DATA Page (CO-ROUTE)

Ident.: PGE.9.2.7 — 01 NOV 2026
ALL

Normal	Edition mode (code entered)
	
STD DATA page (CO-ROUTE)	STD DATA page in edition mode

Reached by <CO-ROUTE (5L) on the DATABASE page, <CO-ROUTE on the PILOT DATA (ROUTE) page, or IDENT on ROUTE SEL with an empty scratchpad. It lists the company routes: stored routes for the city pairs flown by the operator.

Banner (line 1)	CO-ROUTE and the page number. NEXT / PREV show the other pages (circular).
<PLT ROUTE (1L)	Displays the PILOT DATA page (ROUTE) (see PGE.9.3.1).
Routes (2L to 5L, then 2R to 5R)	Up to 8 routes per page: identifier (green) and, above it, the departure / arrival airports when the route has them. The identifier is amber when the route contains a fix, airway or procedure that is no longer in the standard database.
FREE (line 6)	Number of free company route slots.
CODE----< (6R)	Access code field for the company route edition (authorized staff only, on the ground). Once the code is accepted, NEW> is shown here.
<RETURN (6L)	Back to the previous page.

The list shows only the routes whose identifier begins with the characters typed in the scratchpad; the whole list when the scratchpad is empty.

Pressing a route:

- reached from ROUTE SEL: selects the route for ROUTE SEL, which is displayed again,

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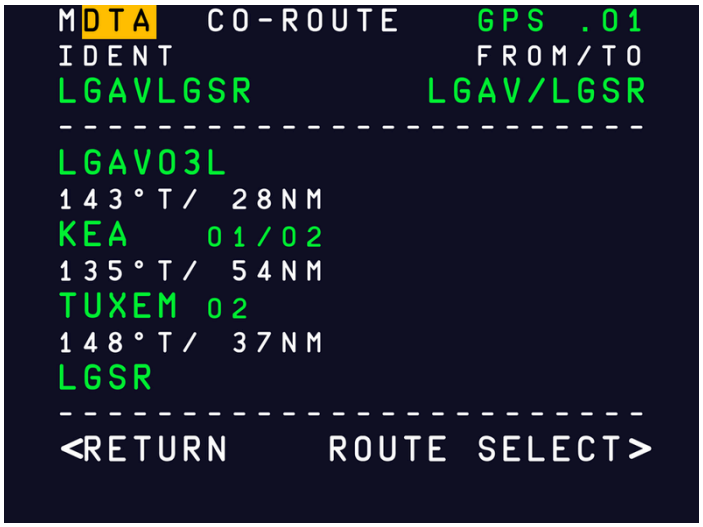
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- otherwise: displays the CO-ROUTE page of the route (read-only review, or edition in edition mode).

The edition, creation, renaming and deletion of company routes are described in MNT.2.

PGE.9.2.8 CO-ROUTE Page

Ident.: PGE.9.2.8 — 01 NOV 2026
ALL



CO-ROUTE page, review

Displays the content of a company route. Without the access code it is read-only (elements green); any modification gives NOT ALLOWED.

IDENT (1L)	Route identifier.
FROM/TO (1R)	Departure and arrival airports (optional).
Elements (2L to 5L, then 3R to 5R)	The route in flight order, from the departure airport to the arrival airport, with between each pair the path `bearing°T/distance` (true bearing). The first numbered element shows its rank and the total (`01/02`).
<RETURN (6L)	Back to the STD DATA page.
ROUTE SELECT> (6R)	Shown when both airports are defined. Displays ROUTE SEL with this route selected, to load it into a flight plan (see PGE.2).

Within the element list:

- A departure procedure is shown as a reverse-video box with the SID (and transition) name, between the departure airport and the last fix of the SID; the departure airport is then followed by the runway (for example `LGAV03L`).
- An airway segment is shown as `VIA` with the airway name in reverse video, between its entry and exit fixes.
- An arrival procedure is shown after the first fix of the STAR as a reverse-video box with the TRANS / STAR names, then a box with the VIA / APP names.
- Data that are no longer in the standard database are amber, and so is the route identifier.
- When the route has more elements than the page, `<----` and `---->` replace the first or last element: their LSK scrolls the list.

Pressing an element displays its STD page; pressing the departure or arrival part displays the DEPARTURE or ARRIVAL page of the procedure (read-only).

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A company route holds up to 50 elements, with no discontinuity.

CAUTION

A company route with airways or procedures can exceed the flight plan capacity once loaded. Check the flight plan after loading.

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PGE.9.3 DATA - PILOT DATABASE

PGE.9.3.1 Pilot Database and PILOT DATA Pages

Ident.: PGE.9.3.1 — 01 NOV 2026
ALL

The pilot database holds data created by the crew:

Type	Capacity	Identifier
Waypoints (including MK waypoints)	300	1 to 5 characters
Airports	100	1 to 4 characters
Navaids (VHF)	100	1 to 4 characters
Routes	100	1 to 10 characters

Two data of the same type cannot have the same identifier (IDENT ALREADY USED). Pilot data are used like standard data in the flight plans, DIRECT TO and the routes. Any creation, modification or deletion raises the DTA alert until the data are saved (SAVE< on the DATA MENU, see PGE.9.1).

Waypoints



PILOT DATA page (WAYPOINTS)

Routes



PILOT DATA page (ROUTE), empty

The PILOT DATA page is reached by AIRPORT>, NAVAID>, WAYPOINT> or ROUTE> on the DATABASE page. The banner gives the type (AIRPORTS, NAVAIDS, WAYPOINTS or ROUTE) and the page number; NEXT / PREV show the other pages (circular).

Identifiers (1L to 5L, then 1R to 5R) — Airports, navaids, waypoints: up to 10 identifiers per page (green). Press: displays the PLT page of the data, to consult, modify or rename it.

<CO-ROUTE (1L) — ROUTE list only. Displays the STD DATA page (CO-ROUTE) (see PGE.9.2.7).

Routes (2L to 5L, then 2R to 5R) — ROUTE list only. Up to 8 routes per page, with their departure / arrival airports above. Amber when the route contains a fix, airway or procedure that is no longer in the standard database. Press: displays the PLT ROUTE page.

FREE (line 6) — Number of free slots of this type.

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NEW> (6R)	Shown when a slot is free. Displays the PLT page empty, to create a data.
<RETURN (6L)	Back to the DATABASE page.

The list shows only the identifiers that begin with the characters typed in the scratchpad; the whole list when the scratchpad is empty.

To delete a data: CLR, then the LSK of the identifier (it goes to reverse video, PRESS EXEC TO CONFIRM), then EXEC. Any other LSK cancels.

Data in use

A pilot data used in the active, temporary or secondary flight plan, or in a pilot route, cannot be modified, renamed or deleted (NOT ALLOWED). Its PLT page shows USED beside the identifier: in reverse video when used in a flight plan, in normal video when used in a route only.

PGE.9.3.2 Common Rules of the PLT Pages

Ident.: PGE.9.3.2 — 01 NOV 2026
ALL

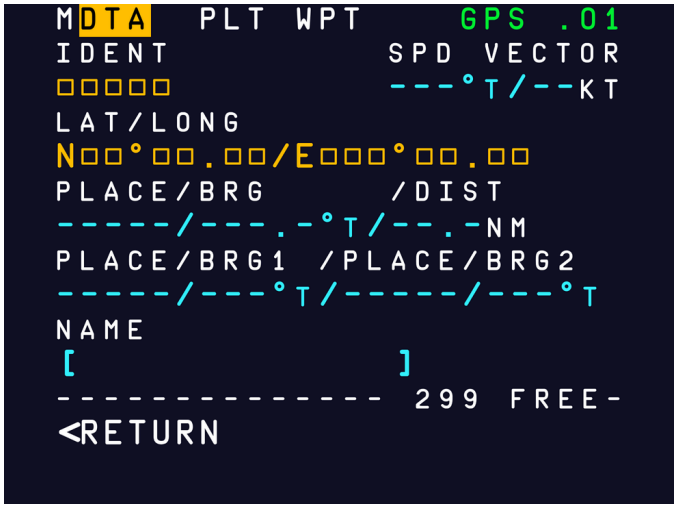
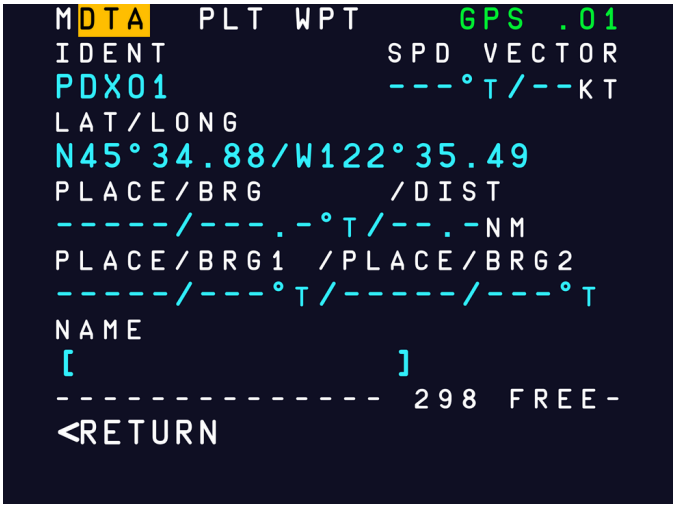
- Empty mandatory fields are amber boxes; empty optional fields are cyan dashes or brackets. The data are cyan (modifiable).
- A new data is stored as soon as its mandatory fields are filled. Until then the page keeps the entries.
- IDENT `-NAME` renames the data (the new identifier must be free).
- A new identifier entered at IDENT of a stored data starts a new data with this identifier.
- CLR, then IDENT (1L), then EXEC deletes the data (IDENT in reverse video, PRESS EXEC TO CONFIRM).
- NEXT / PREV display the next / previous data of the same type.
- Positions: `N4512.3/W12234.5` (DMH; short forms and hemisphere letter before or after accepted).
- Elevations and lengths are entered and shown in the UNITS ALTITUDE unit; elevation range -1500 to 20000 ft.
- The FREE line gives the free slots of this type. <RETURN (6L) returns to the previous page.

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PGE.9.3.3 PLT WPT Page

Ident.: PGE.9.3 — 01 NOV 2026
ALL

New	Created
	
PLT WPT page, new waypoint	PLT WPT page, waypoint created by PLACE/BRG/DIST

Mandatory: IDENT and a position (by any of the three methods).

IDENT (1L)	Waypoint identifier, 1 to 5 letters or digits.
SPD VECTOR (1R)	`TRK/SPD`: true track and speed (up to 999 kt) of a moving waypoint. A non-null speed makes the waypoint a moving waypoint; a null speed or CLR makes it a fixed waypoint again. The position must be entered first (ENTER POSITION FIRST).
LAT/LONG (2L)	Position.
PLACE/BRG /DIST (3L)	`PLACE/BRG/DIST`, for example `BTG/180/10`: position at a true bearing and a distance (NM) from a standard or pilot fix. If PLACE has several data, the DUPLICATE page is displayed.
PLACE/BRG1 /PLACE/BRG2 (4L)	`PLACE1/BRG1/PLACE2/BRG2`: intersection of two true bearings from two fixes. NO INTERSECTION when the bearings do not cross.
NAME (5L)	Free text, 15 characters at most.

The fields 3L and 4L are entry fields only: the FMS computes and stores the position, not the definition. Bearings are true (°T).

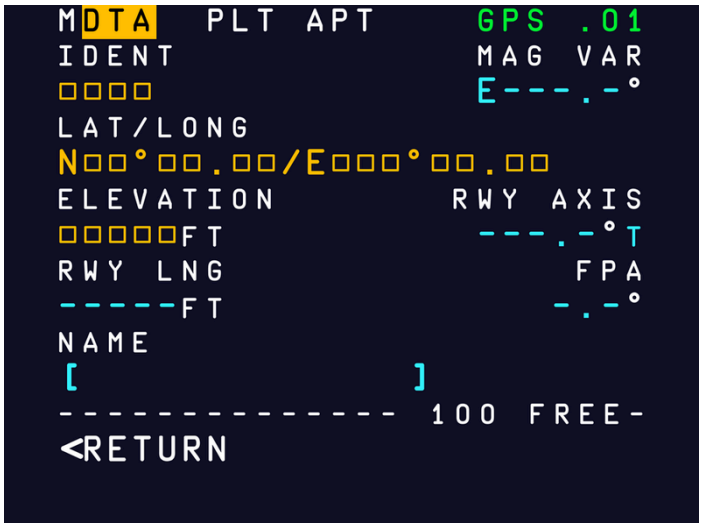
A moving waypoint can be created only from the PILOT DATA page (NEW> or an identifier) or from DIRECT TO through NEW DATA. Otherwise a speed vector entry gives NOT ALLOWED. A moving waypoint cannot be inserted in a pilot route.

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PGE.9.3.4 PLT APT Page

Ident.: PGE.9.3.4 — 01 NOV 2026
ALL



PLT APT page, new airport

Mandatory: IDENT, LAT/LONG and ELEVATION.

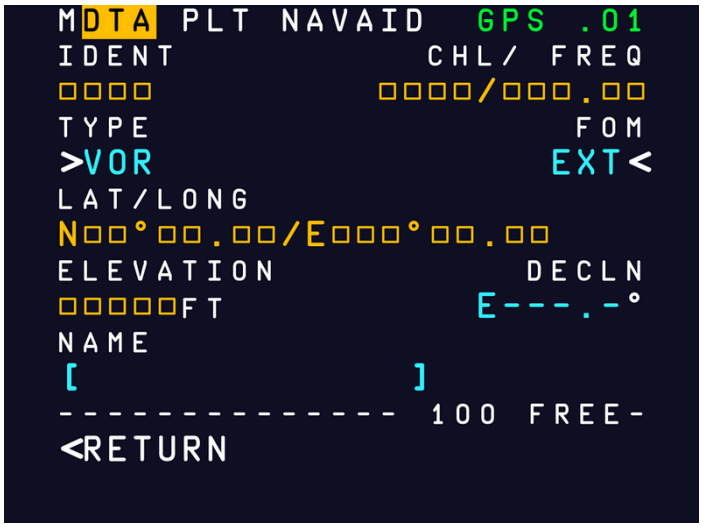
IDENT (1L)	Airport identifier, 1 to 4 characters.
MAG VAR (1R)	Magnetic variation, `E` or `W` and degrees (for example `W2.3`), up to 90°.
LAT/LONG (2L)	Airport reference position.
ELEVATION (3L)	Airport elevation.
RWY AXIS (3R)	Runway direction, 0 to 360° with one decimal. Shown `°M` when MAG VAR is filled, `°T` otherwise.
RWY LNG (4L)	Runway length, 100 to 6000 m (entered in the ALTITUDE unit).
FPA (4R)	Recommended approach flight path angle, 0 to 9.9°.
NAME (5L)	Airport name, 15 characters at most.

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PGE.9.3.5 PLT NAVAID Page

Ident.: PGE.9.3.5 — 01 NOV 2026
ALL



PLT NAVAID page, new navaid

Mandatory: IDENT, CHL/FREQ, LAT/LONG and ELEVATION.

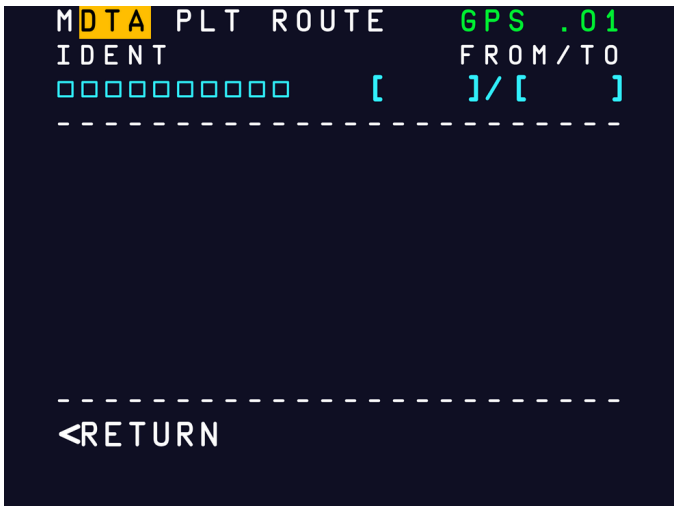
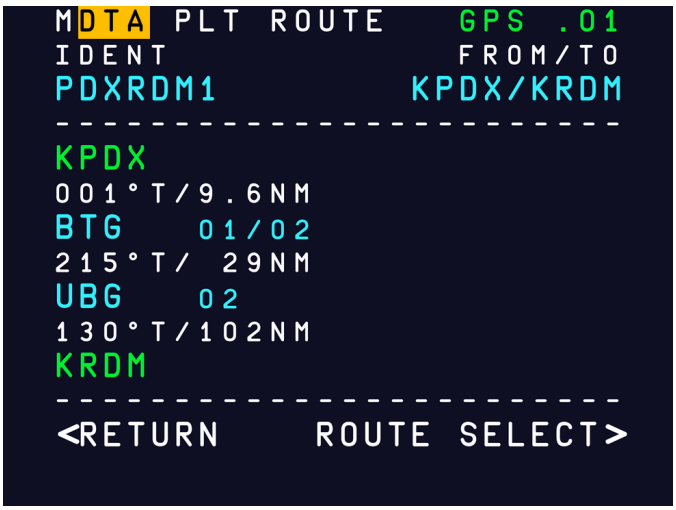
IDENT (1L)	Navaid identifier, 1 to 4 characters.
CHL/ FREQ (1R)	Channel and / or frequency: `074Y`, `/112.70`, `112.70` or `074Y/112.70`. Channel 001 to 126 X or Y; frequency 108.00 to 117.95 MHz on the 50 kHz grid. When only one is entered, the paired one is computed. A channel and a frequency that do not pair give FORMAT ERROR.
TYPE (2L)	VOR, TAC, DME, VORTAC, VORDME. Each press selects the next type. VOR by default.
FOM (2R)	EXT, HIGH, LOW, TERM. Each press selects the next one. EXT by default.
LAT/LONG (3L)	Navaid position.
ELEVATION (4L)	Navaid elevation.
DECLN (4R)	Station declination, `E` or `W` and degrees.
NAME (5L)	Navaid name, 15 characters at most.

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PGE.9.3.6 PLT ROUTE Page

Ident.: PGE.9.3.6 — 01 NOV 2026
ALL

New	With elements
	
PLT ROUTE page, new route	PLT ROUTE page, KPDX to KRDM via BTG and UBG

A pilot route is built like a flight plan, but only airports, fixes, airways and SID / STAR / approach procedures can be inserted or removed; there is no waypoint revision. The route is stored as soon as it has an identifier.

IDENT (1L) — Route identifier, 1 to 10 letters or digits. On a stored route: `-NAME` renames it, `+NAME` creates a copy named NAME. A plain identifier is accepted only on a new route.

FROM/TO (1R) — Departure and arrival airports, optional: `KPDX/KRDM`, `KPDX` or `/KRDM`, standard or pilot airports (else NOT IN DATABASE). CLR removes both, and the procedures.

Elements (2L to 5L, then 3R to 5R) — The route from the departure to the arrival airport, with the true bearing / distance between the elements, as on the CO-ROUTE page (see PGE.9.2.8). The elements are cyan.

<RETURN (6L) — Back to the PILOT DATA page.

ROUTE SELECT> (6R) — Shown when both airports are defined. Displays ROUTE SEL with this route selected (see PGE.2).

Modifying the elements

Scratchpad	LSK of	Effect
Identifier	An element	Inserts the fix before this element (before the arrival airport when pressed on it). Not allowed on the departure airport.
Identifier	The empty line after the last element	Adds the fix at the end. Route without arrival airport only.
`AWY/FIX`	The element after the entry fix	Inserts the airway segment from the previous fix to FIX.
`/`	The element after the entry fix	Displays the AIRWAY LIST of the previous fix, then its TO list.

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Scratchpad	LSK of	Effect
AWY/	The element after the entry fix	Displays the TO list of the airway.
CLR	A fix	Deletes it. A fix that begins or ends an airway segment removes the airway; the last fix of a SID removes the SID; the first fix of a STAR removes the STAR. The airports cannot be deleted.
Empty	Departure airport or last SID fix	DEPARTURE page, to add or change the departure procedure.
Empty	Arrival airport, first STAR fix or the procedure line	ARRIVAL page, to add or change the arrival and approach.
Empty	Another element	Its standard or pilot database page.

- An identifier with several data displays the DUPLICATE page; an unknown identifier displays NEW DATA (see PGE.9.1).
- Procedures can be added only when the airport is a standard database airport.
- An airway that does not exist, or does not contain the entry fix, and an exit fix not on the airway, give NOT IN DATABASE. / on a fix that is on no airway gives NOT ALLOWED.
- A route holds up to 50 elements (MEMORY FULL), with no discontinuity.
- <---- and ----> scroll the list when the route does not fit on the page.

CAUTION

A route with airways or procedures can exceed the flight plan capacity once loaded. Check the flight plan after loading.

To delete a pilot route, use the PILOT DATA (ROUTE) page (see PGE.9.3.1).

PAGE

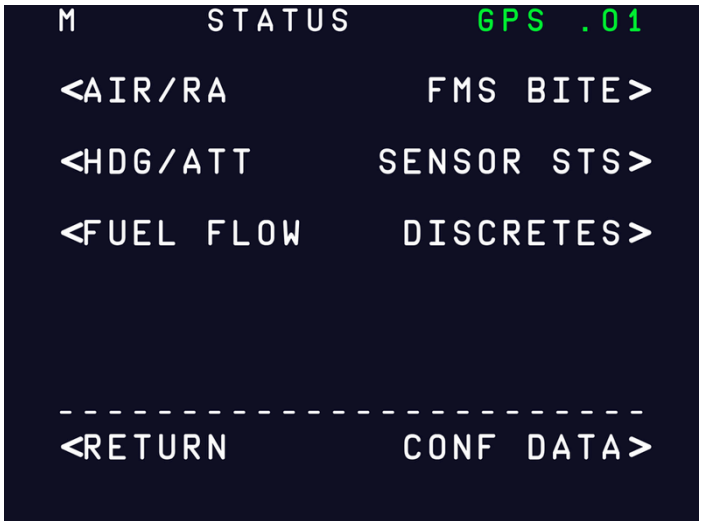
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PGE.10 STATUS

PGE.10.1 STATUS Page

Ident.: PGE.10.1 01 NOV 2026
ALL



STATUS page

Reached by <STATUS (2L) on the DATA MENU. It gives the status of the sensors and data used by the FMS, mainly for checks and maintenance. Several pages also allow backup entries when a sensor is lost.

<AIR/RA (1L)	AIR/RA page.
<HDG/ATT (2L)	HDG/ATT page.
<FUEL FLOW (3L)	FUEL FLOW page.
FMS BITE> (1R)	FMS BITE page.
SENSOR STS> (2R)	SENSOR STS page.
DISCRETES> (3R)	DISCRETES page.
CONF DATA> (6R)	CONF DATA page.
<RETURN (6L)	Back to the DATA MENU.

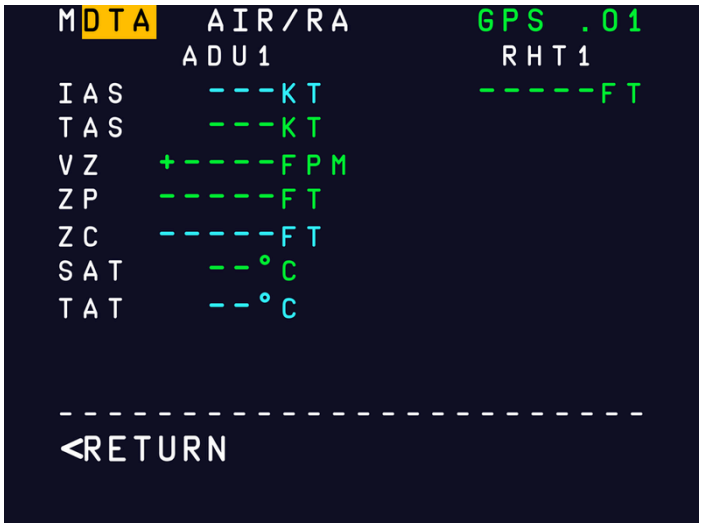
The pages are also displayed by the action prompts of the related alerts on the MESSAGE page (for example INSERT> of AIR, HDG or FFF, CHECK> of CFG or GPS). See ABN.1.

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PGE.10.2 AIR/RA Page

Ident.: PGE.10.2 01 NOV 2026
ALL



AIR/RA page, air data lost

Air data of the ADU and radio height of the radio altimeter. MCDU 1 shows ADU1, MCDU 2 ADU2; when the on-side ADU is not valid, the other one is shown. The label line gives the ADU used and RHT1.

IAS (1L)	Indicated airspeed (kt).
TAS	True airspeed (kt).
VZ	Barometric vertical speed (ft/min).
ZP	Standard (pressure) altitude.
ZC (3L)	Barometric corrected altitude.
SAT	Static air temperature.
TAT (4L)	Total air temperature.
RHT1 (1R)	Radio height.
<RETURN (6L)	Back to STATUS.

Values are green. Altitudes and temperatures follow the UNITS page.

Degraded mode

When a parameter is not valid on both ADUs, its field is cyan and a backup value must be entered to keep the FMS performance, predictions and guidance:

Field	Entry	Range
IAS (1L)	Speed, kt	0 to 999
ZC (3L)	Altitude	-2000 to 50000 ft
TAT (4L)	Temperature	-99 to 99 °C

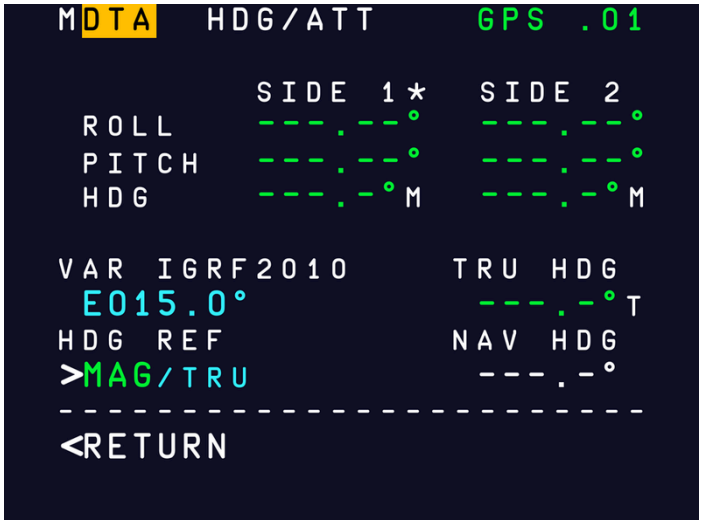
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In this mode TAS is taken equal to IAS, ZP equal to ZC, and SAT is the ISA temperature at that altitude. CLR removes the backup value. Outside the degraded mode the fields cannot be entered (NO ACTION DEFINED).

PGE.10.3 HDG/ATT Page

Ident.: PGE.10.3 — 01 NOV 2026
ALL



HDG/ATT page, heading lost

Attitude and heading of both sides.

SIDE 1 / SIDE 2 (1L / 1R) Column titles. `*` marks the side used by the FMS. Press: selects that side.

ROLL / PITCH / HDG Roll (`R` / `L`), pitch (`U` / `D`) and heading of each side, followed by the heading reference (`M` magnetic, `T` true). Dashed when the data is lost.

VAR (4L) Magnetic variation used by the FMS (`E` / `W`). The label gives its source: the name of the magnetic model, or MANUAL. Enter `E` or `W` and the value (for example `E15.5`) to replace it: VAR MANUAL is shown. CLR returns to the model value.

TRU HDG (4R) True heading.

HDG REF (5L) MAG / TRU, heading reference of the FMS. The same setting as HEADING on the UNITS page.

NAV HDG (5R) Heading used by the navigation. When the heading is dashed (HDG alert), enter the heading, in the FMS reference (0 to 359.9), to keep navigation and predictions. CLR removes it. Not modifiable while a heading is available (NO ACTION DEFINED).

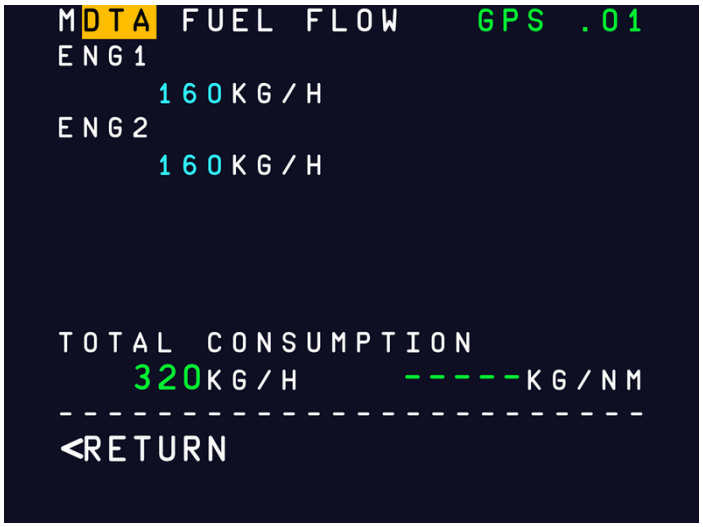
<RETURN (6L) Back to STATUS.

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PGE.10.4 FUEL FLOW Page

Ident.: PGE.10.4 01 NOV 2026
ALL



FUEL FLOW page

Also reached by FUEL FLOW> on the WEIGHT page.

ENG1 (1L) / ENG2 (2L) Fuel flow of each engine (cyan). Flow meter values are small, crew entries large. Dashed when the flow is zero or unknown.

TOTAL CONSUMPTION (5L) Total fuel flow per hour and per NM (green). Dashed when one engine flow is unknown, and per NM while the ground speed is too low.

<RETURN (6L) Back to the previous page.

The crew can replace a missing or wrong flow: enter the value (UNITS weight unit per hour) at ENG1 or ENG2. The total with the other engine may not exceed 1300 kg/h (RANGE ERROR). CLR returns to the flow meter value.

CAUTION

The entered flows are used for the predictions (EFOB) and to update the FOB, even when the flow meters are valid again. They are cancelled at the end of the flight cycle and after a long power interruption.

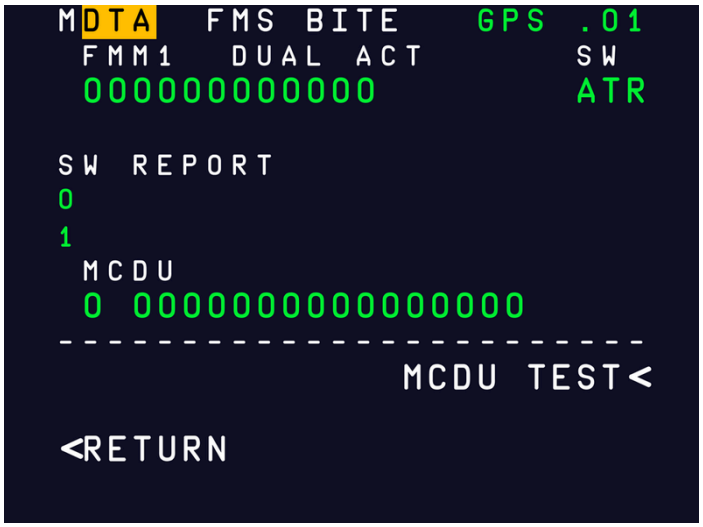
Without fuel flow, the fuel predictions are dashed and the FFF alert is raised.

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PGE.10.5 FMS BITE Page

Ident.: PGE.10.5 01 NOV 2026
ALL



FMS BITE page

FMMn (label line 1) FMS of this MCDU: FMM1 (MCDU 1) or FMM2 (MCDU 2). Then the cross-talk status, DUAL or IND, and ACT when this FMS is the active one (coupled with the autopilot).

FMC status (line 1) Result of the continuous built-in test, 12 digits (bit 1 first). 0 is normal, 1 failed.

SW (1R) Software identification.

SW REPORT Software report counters.

MCDU (line 4) MCDU status: bit 1 (MCDU), then bits 2 to 17 (receiver and data input of ports 1 to 8). 0 is normal.

>CTK INIT (5L) Shown on the inactive FMS only. Starts the cross-talk initialization: first press arms (reverse video, PRESS EXEC TO CONFIRM), EXEC confirms. The inactive FMS then restarts as after a long power interruption (see ABN.1).

MCDU TEST< (5R) Runs the MCDU status test again and refreshes the MCDU word.

<RETURN (6L) Back to the previous page.

FMC bit	Test
1	Pilot database integrity
2	Standard database integrity
4	Pilot data consistent with the standard database
5	System configuration table integrity
6	Performance data integrity
7	Magnetic variation data integrity
10	Company route data integrity
11	Company route data consistency
12	Additional standard database integrity

cont'd... ►►►

cont'd... ►►►

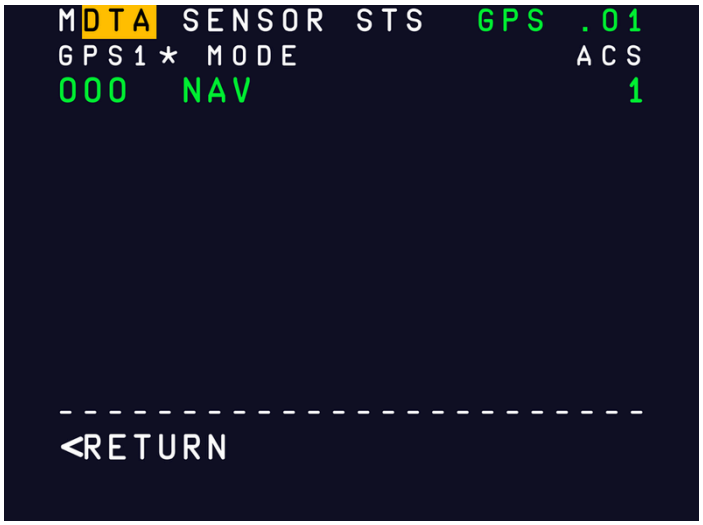
FMC bit	Test
3, 8, 9	Provision, always 0

SIMULATOR NOTE

Bits 5 and 12 have no failure source in the simulation and stay 0.

PGE.10.6 SENSOR STS Page

Ident.: PGE.10.6 — 01 NOV 2026
ALL



SENSOR STS page

Also reached by SENSORS STS> on the POS INIT page (see PGE.1) and by CHECK> of the GPS alert.

GPS1 (1L) * when the GPS is used by the FMS. Three status digits: receiver, radio frequency, sensor (0 normal, 1 failed). Dashed while the receiver is not powered.

MODE (1L) GPS mode: INIT (initialization), ACQ (acquisition of satellites), NAV (3D position and time), ALT (altitude / clock aiding, no RAIM), TEST (self-test), AIDED (position kept from external speed), FAULT (GPS failure).

ACS (1R) Autopilot coupled side: 1 = left-side navigation source, 2 = right side.

<RETURN (6L) Back to the previous page.

The aircraft has one GPS receiver.

SIMULATOR NOTE

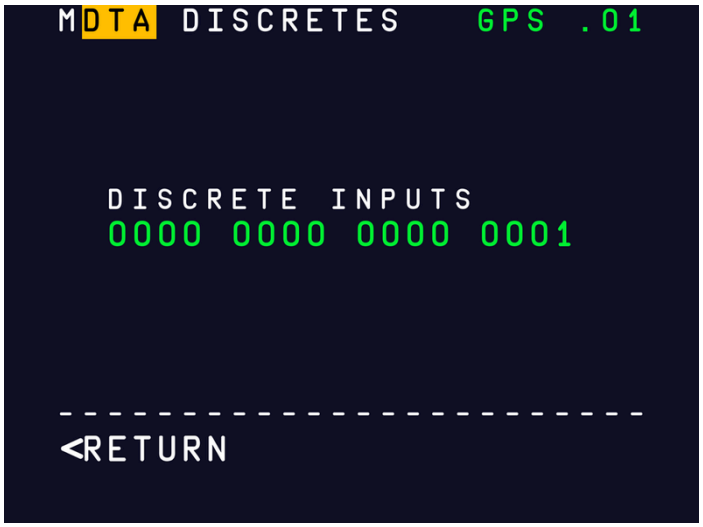
Only the receiver failure (X-Plane GPS failure) sets a status digit. There is no antenna or sensor failure.

cont'd... ►►►

cont'd... ►►►

PGE.10.7 DISCRETES Page

Ident.: PGE.10.7 — 01 NOV 2026
ALL



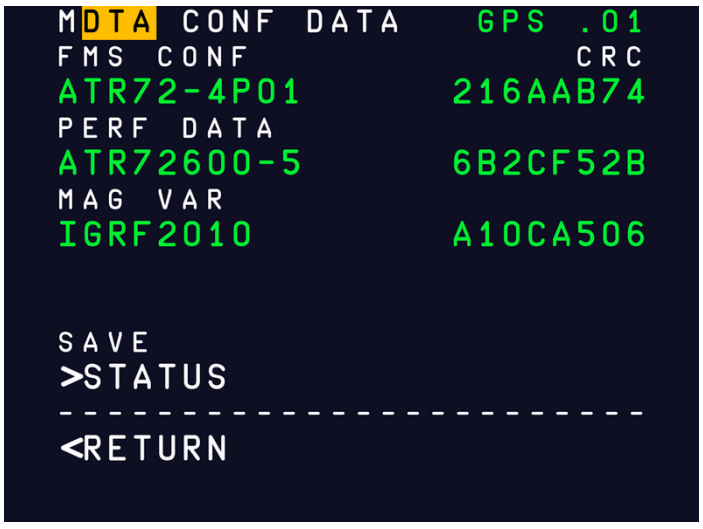
DISCRETES page

The DISCRETE INPUTS word gives 16 discrete inputs of the FMS, bit 1 first, in groups of four.

Bit	Input	Value
4	IAD side	0: side 1, 1: side 2
16	Weight on wheels	0: in flight, 1: on ground
Others	Provision	0

PGE.10.8 CONF DATA Page

Ident.: PGE.10.8 — 01 NOV 2026
ALL



CONF DATA page

Identification and CRC (8 hexadecimal digits) of the data loaded in the FMS. Also displayed by CHECK> of the CFG alert.

cont'd... ►►►

cont'd... ►►►

FMS CONF (1L)	System configuration table.
PERF DATA (2L)	Performance database.
MAG VAR (3L)	Magnetic variation model.
SAVE >STATUS (5L)	Displays the STATUS page.
<RETURN (6L)	Back to STATUS.

FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

FPH.1 PREFLIGHT

FPH.1.1 General

Ident.: FPH.1.1 — 01 NOV 2026
ALL

The preflight procedures prepare the FMS for the flight: initialization of the FMS, of the navigation (flight plan, secondary flight plan, radio navigation) and of the performance (weights, take-off, cruise and wind data), then a check of the predictions.

The procedures of this chapter use the same example flight from Portland (KPDX) to Redmond (KRDM):

ITEM	VALUE
Flight ID	DWS001
Departure	KPDX runway 28R, SID WHAMY5
En route	WHAMY, CUPRI, then airway V25 to DSD
Arrival	KRDM, approach ILS23
Cruise altitude	13 000 ft
Alternate	KPDX at FL140
Weights	ZFW 17 800 kg, FOB 2 400 kg, T/O CG 26 %, RESERVE 400 kg
Local time	UTC − 7 h, scheduled take-off 08H30 local

The recommended order is **WEIGHT** → **PERF INIT** → **FPLN INIT**, then the departure and arrival procedures and the revisions of the route. The other items can be done in any order.

CAUTION

Without the weights, the FMS cannot compute the predictions (ETA, ETE, EFOB) nor the vertical profile. Enter the WEIGHT page first when the load data are available (FPH.1.13).

SIMULATOR NOTE

MCDU keys can be clicked in the 3D cockpit or typed on the computer keyboard once the scratchpad has the keyboard focus (click the scratchpad; ESC gives the keyboard back to X-Plane).

FPH.1.2 FMS Power-Up

Ident.: FPH.1.2 — 01 NOV 2026
ALL

The FMS power-up page is displayed when the FMS has completed its self-test. Its content is described in PGE.1.

► MENU key ..... PRESS, if the MCDU MENU is displayed
► <FMS 1 (or <FMS 2) ..... SELECT
► PERF DATA ..... CHECK ATR72600
► STD DATA ..... CHECK identification and expiry date

The expiry date is amber when the database has expired.

► CONF DATA / NAV DATA ..... CHECK OK

■ If at least one test is FAIL (amber)

► FMS BITE> (6R) ..... PRESS

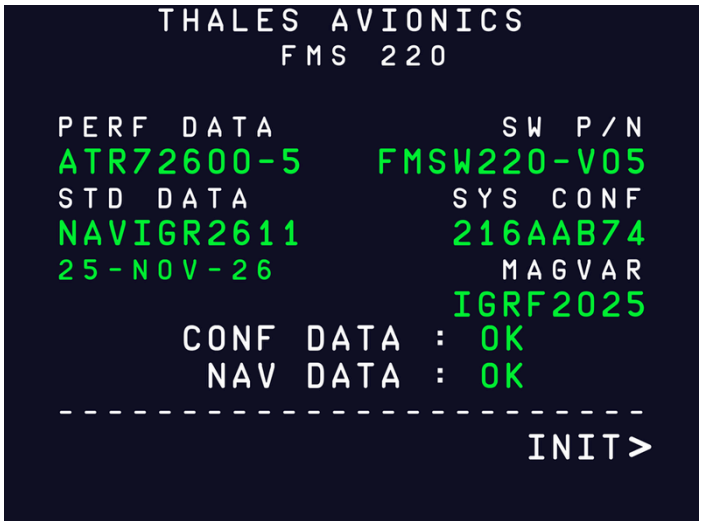
cont'd... ►►►

cont'd... ►►►

The FMS BITE page gives the cause of the failure. See PGE.10 and ABN.2.

■ If both tests are OK

► INIT> (6R) ..... PRESS



FMS power-up page

CAUTION

An expired standard database can be used, but its use should be avoided.

FPH.1.3 Date and Time Initialization

Ident.: FPH.1.3 — 01 NOV 2026
ALL

The INIT page is displayed by INIT> on the power-up page, by the INIT key, or by <INIT on the DATA MENU.

► DATE (1L) / UTC (1R) ..... CHECK

With (GPS) above UTC, the date and time come from the GPS (green) and need no entry. With (FMS), they come from the internal clock of the FMS (cyan): enter the correct values if needed.

► DIFF (2R) ..... ENTER the local time difference

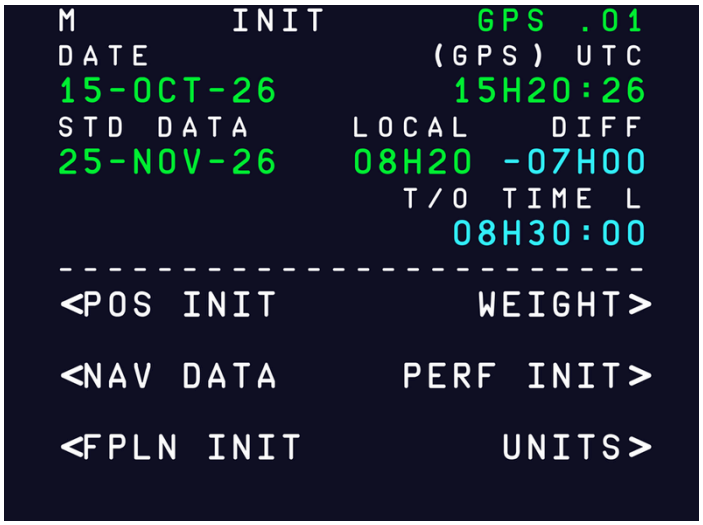
Format `-0700` or `+0530`. With a DIFF other than zero, the times on the MCDU and ND are local times (L), except where Z is shown. CLR returns to +00H00.

► T/O TIME (3R) ..... ENTER the scheduled take-off time

Format `0830`. On the ground, the predictions start from this time.

cont'd... ►►►

cont'd... ►►►



INIT page — DIFF −07H00 and T/O TIME 08H30 local

FPH.1.4 Position Initialization

Ident.: FPH.1.4 — 01 NOV 2026

ALL

The FMS positions itself continuously from the GPS and the radio navaids: in normal operation no position entry is needed. A manual position initialization is done when the INI alert asks for it, or when the crew wants to reset the position on a known point.

► <POS INIT (4L) ..... PRESS
► SENSORS STS> (6R) ..... PRESS
► GPS MODE ..... CHECK NAV

ACQ is shown while the GPS receiver is acquiring the satellites.

► <RETURN (6L) ..... PRESS
► Initial position ..... SELECT one of:
  ► > GPS POS (3L) ..... PRESS, for the GPS position
  ► > LAST POS (2L) ..... PRESS, for the last known position
  ► WPT (4L) then WPT POS (5L) ..... ENTER the ident of a database point, then PRESS 5L
  ► INIT POS (1L) ..... ENTER a latitude/longitude

A prompt is only shown when that position is available. Pressing a key without a prompt gives NO ACTION DEFINED. On the WPT line, an empty scratchpad displays the DATA LIST.

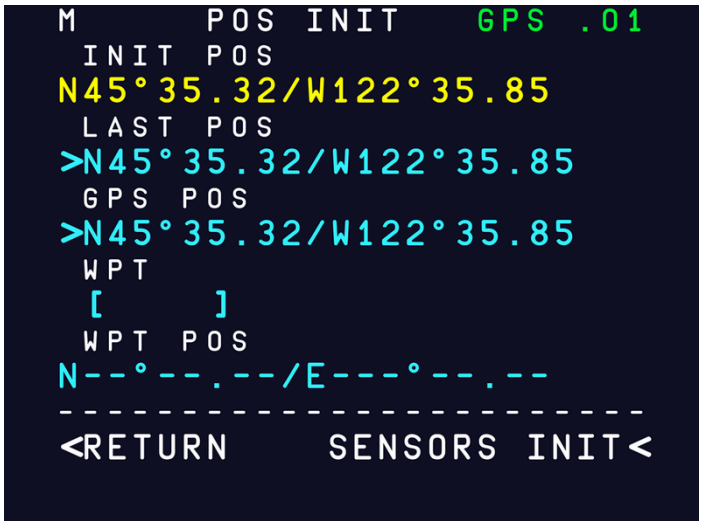
► SENSORS INIT< (6R) ..... PRESS

The prompt is shown once INIT POS is filled. The best computed position (BCP) and the GPS are initialized on INIT POS.

► SENSORS STS> (6R) ..... PRESS, CHECK the sensor in use (*)

cont'd... ►►►

cont'd... ►►►



POS INIT page — GPS POS copied into INIT POS, SENSORS INIT< available

Note

The position initialization is a ground function. In flight, an INIT POS entry is refused (NOT ALLOWED) and the LAST POS / GPS POS prompts are not shown.

FPH.1.5 Database and Units Check

Ident.: FPH.1.5 — 01 NOV 2026 — ALL

Navigation database

► <NAV DATA (5L on INIT, or 2R on DATA MENU) ..... PRESS

► STD DATA ..... CHECK name (* = database in use) and EXP DATE

The EXP DATE is amber when the database has expired.

► CO-RTE DATA / PILOT DATA ..... CHECK name and LAST MOD

(NO DATA) with a dashed date: no data of this type is available.

Units

► UNITS> (6R on INIT, or <UNITS 3L on DATA MENU) ..... PRESS

► HEADING, ALTITUDE, TEMP, BARO SET ..... CHECK, PRESS the LSK to change

The unit in use is large green, the other one small cyan. BARO SET is the unit of the QNH entries.

► <RETURN (6L) ..... PRESS

The UNITS page is described in PGE.1.

FPH.1.6 Navigation Mode Selection

Ident.: FPH.1.6 — 01 NOV 2026 — ALL

The navigation mode gives the position, the wind and the ground speed used by the FMS: BCP (best computed position, GPS and radio navaids mixed) or GPS.

► PROG key ..... PRESS, then PREV (PROG 3/3)

cont'd... ►►►

cont'd... ►►►

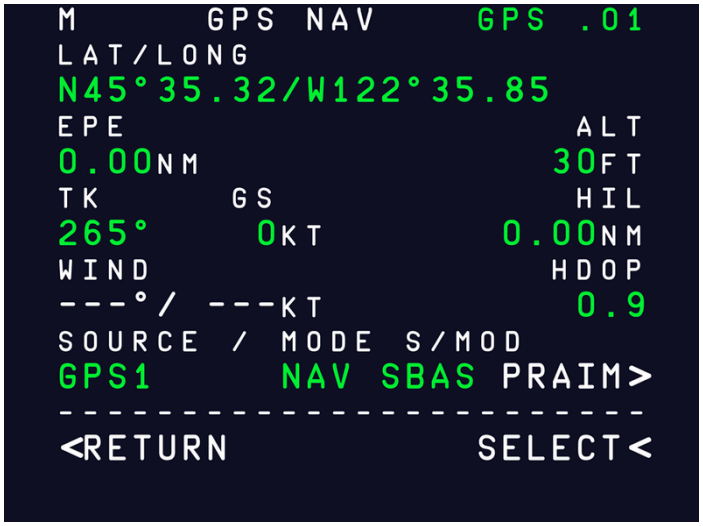
PROG 3/3 shows the position of the mode in use (green), the position difference to the other mode and to the opposite FMS, and the EPE (estimated position error) of each.

► <BCP (2L) or <GPS (3L) ..... PRESS

The BCP NAV or GPS NAV page of the mode is displayed.

► SELECT< (6R) ..... PRESS, to use this mode

SELECT< is shown only on the page of the mode that is not in use.



GPS NAV page — SELECT< makes GPS the navigation mode

The PROG 3/3, BCP NAV and GPS NAV pages are described in PGE.3.

FPH.1.7 Flight Plan Initialization

Ident.: FPH.1.7 — 01 NOV 2026
ALL

► <FPLN INIT (6L on INIT) ..... PRESS

Or: FPLN key, then <NEW FPLN (6L) on the FPLN page.

► <ROUTE (1L) ..... PRESS

<SEC INIT (2L) initializes the secondary flight plan instead (FPH.1.11).

► Route ..... SELECT by IDENT or by FROM/TO
  ► IDENT (1L) ..... ENTER the route ident, or PRESS with an empty scratchpad for the company route list
  ► FROM/TO (2L) ..... ENTER KPDX/KRDM

With FROM/TO, the FMS finds the pilot and company routes of this city pair and the reversed routes that have no procedure. The direct route (no ident) is always the last of the list. NEXT / PREV show the other routes found.

► Route content ..... CHECK

► REVERSE< (2R) ..... PRESS, only to fly the route in reverse

REVERSED is then shown in reverse video. Not available on a route with a departure or arrival procedure.

► FLT ID (1R) ..... ENTER DWS001

Up to 8 letters and digits. Only with FPLN< at 6R.

► FPLN< / SEC< / TMPY< (6R) ..... SELECT the plan to initialize

cont'd... ►►►

cont'd... ►►►

► EXEC key ..... PRESS

The active FPLN page is displayed: KPDX, a FPLN DISCONTINUITY and KRDM.



ROUTE SEL — FLT ID and FROM/TO entered

The ROUTE SEL page is described in PGE.2.3.

FPH.1.8 Selecting a Departure

Ident.: FPH.1.8 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► Left LSK beside KPDX ..... PRESS

The DEPARTURE page is displayed with the runway list and the length of each runway.

► Runway ..... SELECT 28R

The RWY field shows 28R and the list of the SIDs of this runway appears.

► SID ..... SELECT WHAMY5

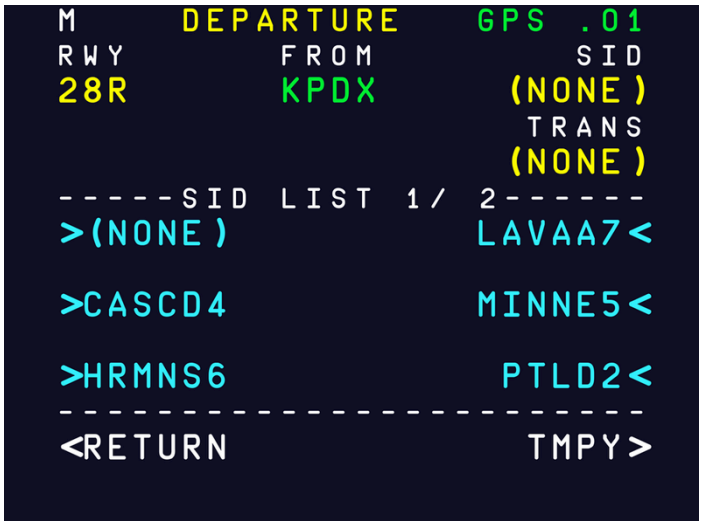
The list of the transitions of the SID appears.

► TRANS ..... SELECT if required
► TMPY> (6R) ..... PRESS, CHECK the temporary flight plan
► EXEC key ..... PRESS

The departure is inserted in the active flight plan and the first FPLN page is displayed.

cont'd... ►►►

cont'd... ►►►



DEPARTURE page — SID list after the runway pick

The DEPARTURE and ARRIVAL pages are described in PGE.2.7.

FPH.1.9 Selecting an Arrival

Ident.: FPH.1.9 — 01 NOV 2026
ALL

► NEXT key ..... PRESS until KRDM is shown
► Left LSK beside KRDM ..... PRESS

The ARRIVAL page is displayed with the approach list.

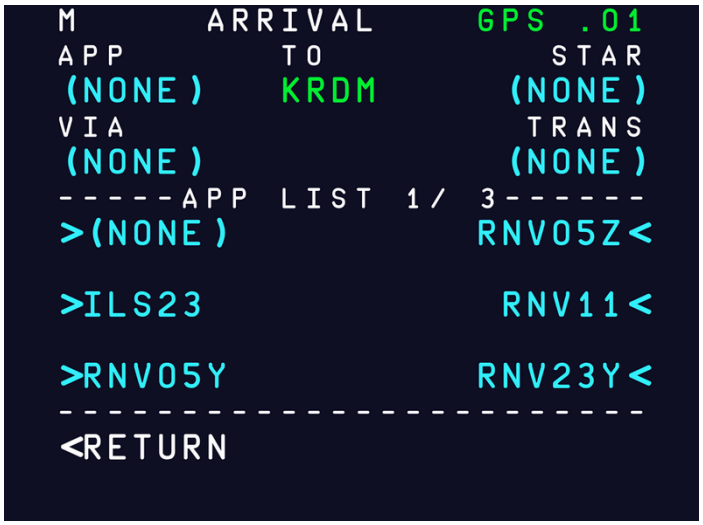
► APP ..... SELECT ILS23

The recommended navaid of the approach and its frequency are shown beside VIA. The STAR list appears.

► STAR ..... SELECT if required
► VIA ..... SELECT if required
► TRANS ..... SELECT if required
► TMPY> (6R) ..... PRESS, CHECK
► EXEC key ..... PRESS

cont'd... ►►►

cont'd... ►►►



ARRIVAL page — approach list

Note

A FPLN DISCONTINUITY may remain between the en-route part and the arrival. Check all FPLN pages and clear it when the route is continuous (MPH.1.6).

FPH.1.10 En-Route Waypoints and Airways

Ident.: FPH.1.10 — 01 NOV 2026
ALL

Adding a waypoint

► Left LSK beside WHAMY ..... PRESS

The LTRL REV page of WHAMY is displayed.

► Scratchpad ..... TYPE CUPRI

► NEXT WPT (2R) ..... PRESS

When more than one CUPRI exists, the DATA LIST page shows each with its position and ICAO region: select the right one.

► EXEC key ..... PRESS

The other ways of inserting a waypoint are given in MPH.1.3.

Inserting an airway

The AIRWAY field is shown on the LTRL REV page only when the waypoint belongs to an airway of the standard database (WHAMY belongs to none, CUPRI to T261, T302 and V25).

► Left LSK beside CUPRI ..... PRESS

■ If the airway ident is known

► Scratchpad ..... TYPE V25

► AIRWAY (4R) ..... PRESS

The AIRWAYS page is displayed: VIA V25, FROM CUPRI, TO in amber boxes. An airway that does not contain CUPRI gives NOT IN DATABASE.

cont'd... ►►►

cont'd... ►►►

■ **If the airway ident is not known**

► AIRWAY (4R) ..... PRESS with an empty scratchpad

The AIRWAY list of the waypoint is displayed (HIGH / LOW filter at 6R). Select the airway.

■ **Then**

► Scratchpad ..... TYPE DSD

► TO (1R) ..... PRESS

With an empty scratchpad, the TO LIST of the airway is displayed instead. A fix that is not on the airway gives NOT IN DATABASE.

► Next airway ..... ENTER, if required, on the next VIA line, then its TO

The FROM of the new line is the TO of the previous one. Up to 5 airways can be linked. A completed line can no longer be changed.

► TMPY> (6R) ..... PRESS, CHECK the TMPY

If the last TO fix is already in the flight plan, the airway joins it and the waypoints between are deleted. If not (DSD here), a FPLN DISCONTINUITY follows it.
On the secondary flight plan the prompt is SEC> and the airway goes into the SEC directly.

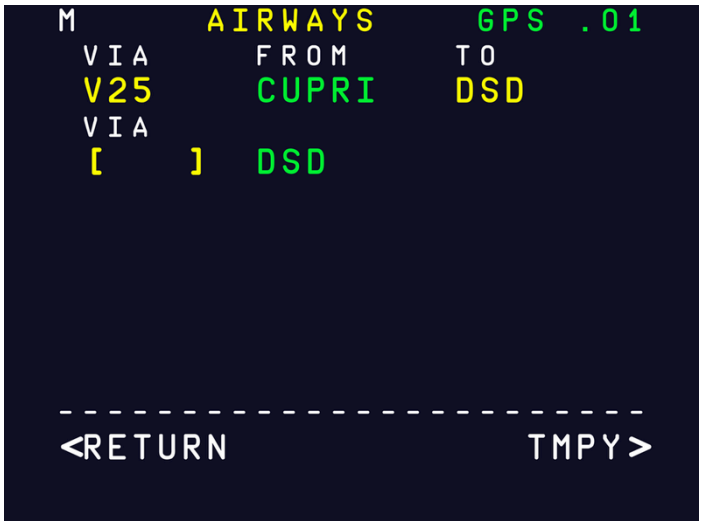
► EXEC key ..... PRESS



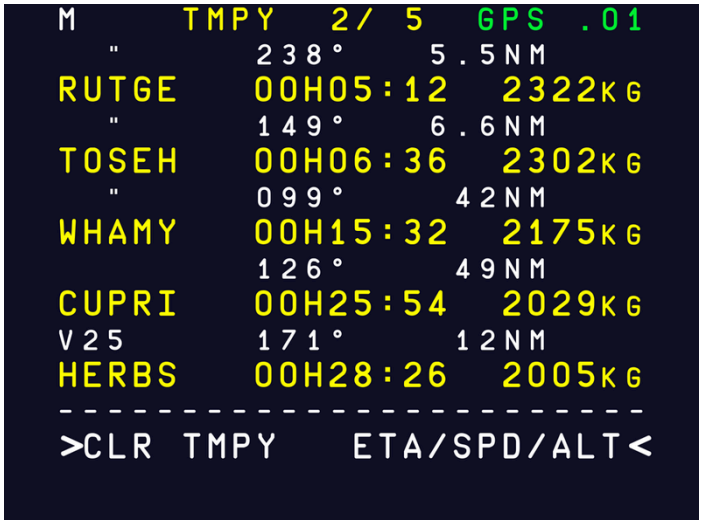
LTRL REV of CUPRI — AIRWAY field available

cont'd... ►►►

cont'd... ►►►



AIRWAYS page — V25 from CUPRI to DSD



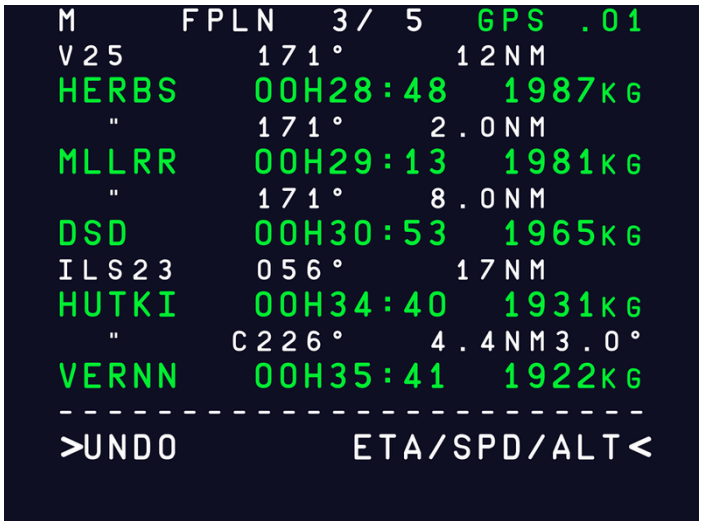
TMPY with the airway: CUPRI, V25, HERBS …

Clearing the discontinuity

► CLR key ..... PRESS (CLEAR ? in the scratchpad)
► Left LSK beside ---FPLN DISCONTINUITY--- ..... PRESS
► EXEC key ..... PRESS
► FPLN pages ..... CHECK the route, with NEXT / PREV

cont'd... ►►►

cont'd... ►►►



FPLN page 3/5 — DSD joined to the approach (HUTKI)

FPH.1.11 Secondary Flight Plan

Ident.: FPH.1.11 — 01 NOV 2026

ALL

The secondary flight plan (SEC) is prepared for a later use: return route, alternate or a change of runway. It is not flown and not shown on the ND. It is described in PGE.2.4.

► <FPLN INIT (6L on INIT), then <SEC INIT (2L) ..... PRESS

Or: FPLN key twice (SEC FPLN page), then <NEW FPLN (6L).

■ To build the SEC from a route

► <ROUTE (1L) ..... PRESS

The ROUTE SEL page opens with SEC< at 6R. Continue as in FPH.1.7.

■ To copy the active flight plan into the SEC

► >COPY FPLN (2L) ..... PRESS

The prompt is in reverse video and PRESS EXEC TO CONFIRM is shown.

► EXEC key ..... PRESS

■ To exchange the active and the secondary flight plans

► SWAP FPLN< (2R) ..... PRESS

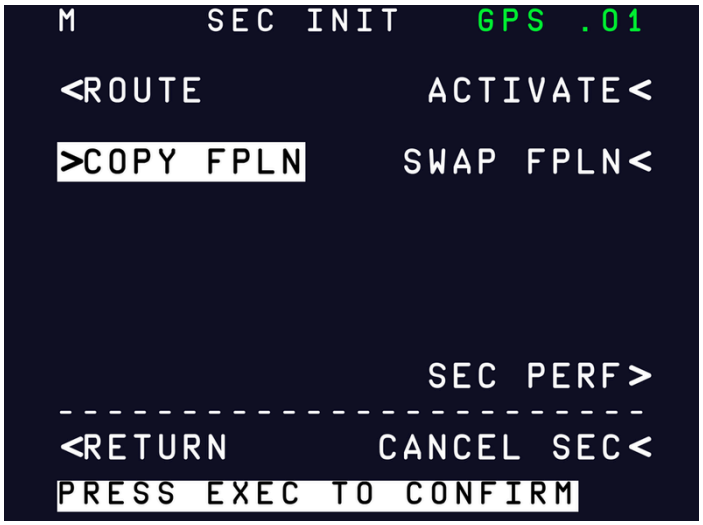
The SEC FPLN page is displayed with a confirmation message.

► EXEC key ..... PRESS

The active FPLN page is displayed.

cont'd... ►►►

cont'd... ►►►



SEC INIT — COPY FPLN armed, PRESS EXEC TO CONFIRM

Note

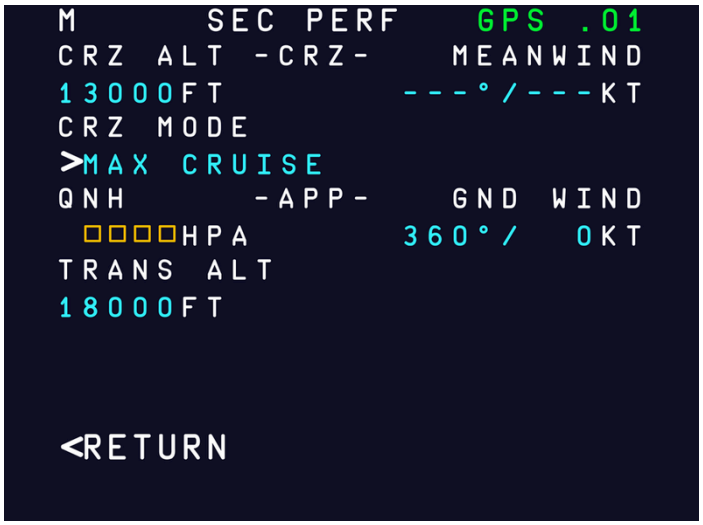
COPY FPLN, SWAP FPLN and ACTIVATE are refused (TMPY EXIST) while a temporary flight plan exists: execute or clear it first.

SEC performance

► SEC PERF> (5R on SEC INIT) ..... PRESS

► CRZ ALT, CRZ MODE, MEANWIND, QNH, TRANS ALT, GND WIND ..... CHECK, ADJUST if required

The SEC predictions use these values. The take-off values (ZFW, FOB) are shown only when the SEC is not a copy of the active flight plan.



SEC PERF page — SEC copied from the active flight plan

cont'd... ►►►

cont'd... ►►►

FPH.1.12 Radio Navigation

Ident.: FPH.1.12 — 01 NOV 2026
ALL

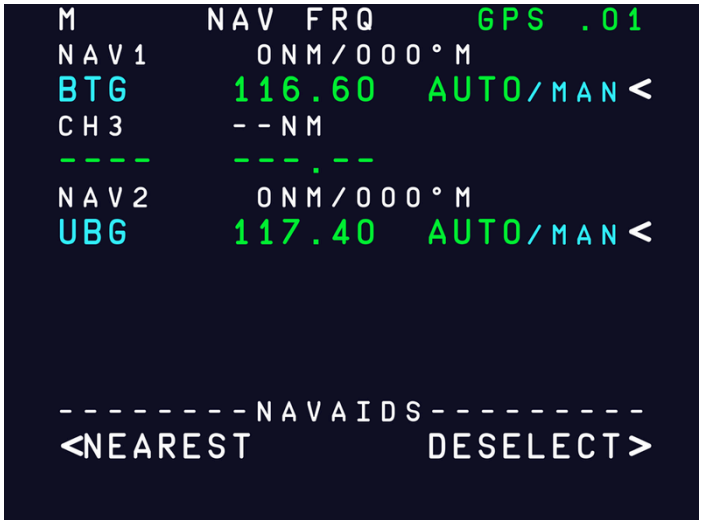
NAV FRQ page

► DATA key, then NAV FRQ> (3R) ..... PRESS

For NAV 1, NAV 2 and the third DME channel (CH3): the navaid tuned, its frequency, distance and bearing.

► AUTO/MAN (1R for NAV 1, 3R for NAV 2) ..... CHECK AUTO, or PRESS to change

With AUTO the FMS tunes the navaid itself. With MAN the frequency is set by the crew (RMS or VCP), or chosen in the nearest navaids (MPH.3.1). CH3 is always tuned by the FMS.



NAV FRQ page

Deselecting a navaid

A navaid known to be out of service can be removed from the radio position and from the autotuning.

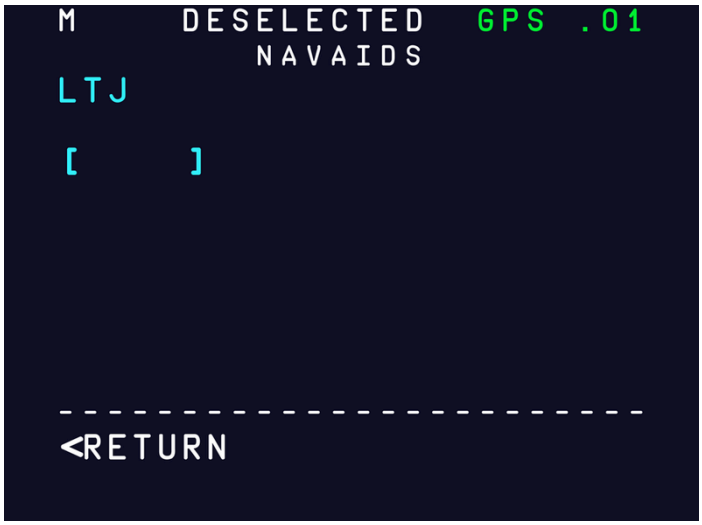
► DESELECT> (6R on NAV FRQ) ..... PRESS
► Scratchpad ..... TYPE the navaid ident, for example `LTJ`
► LSK beside [ ] ..... PRESS

When the ident exists more than once, the DATA LIST page shows each: select the right one. ALREADY DESELECTED is shown when it is in the list already.

► Other navaids ..... REPEAT as required (up to 10)

cont'd... ►►►

cont'd... ►►►



DESELECTED NAVAIDS page — LTJ deselected

CAUTION

A deselected navaid stays in the nearest navaids list: it can still be tuned manually, but it is not used for the radio position and its ident is dashed on the NAV FRQ page.

Reselecting a navaid

► DESELECT> (6R on NAV FRQ) ..... PRESS
► CLR key ..... PRESS
► LSK beside the navaid ..... PRESS
► Other navaids ..... REPEAT as required

The NAV FRQ pages are described in PGE.6.

FPH.1.13 Performance Initialization

Ident.: FPH.1.13 — 01 NOV 2026
ALL

WEIGHT page

► WEIGHT> (4R on INIT) ..... PRESS
► ZFW (1L) ..... ENTER 17800
► FOB (2L) ..... ENTER 2400

GW is computed: ZFW + FOB. A GW entry instead makes the FMS recompute ZFW = GW − FOB.

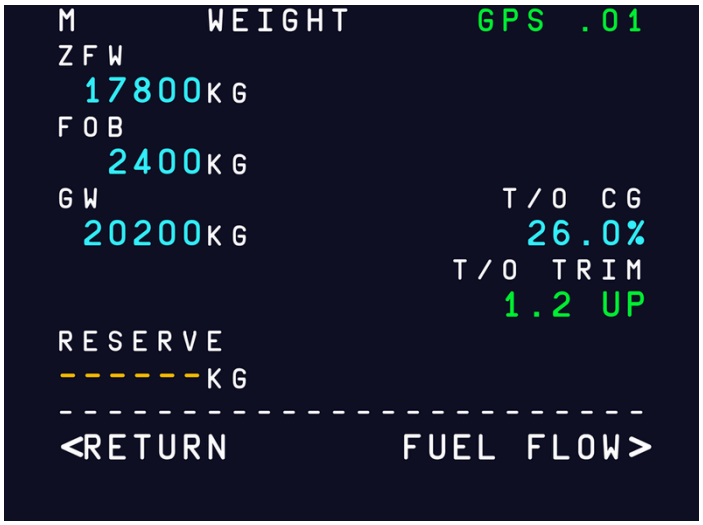
► T/O CG (3R) ..... ENTER 26

T/O TRIM is computed from the T/O CG.

► RESERVE (5L) ..... ENTER 400
► <RETURN (6L) ..... PRESS

cont'd... ►►►

cont'd... ►►►



WEIGHT page completed

CAUTION

Check the entries carefully: the weights are used for the predictions and for the speeds (take-off speeds, managed speeds). A new weight entry deletes the take-off speeds entered by the crew.

SIMULATOR NOTE

With EFB **SETTINGS ▸ REALISM ▸ LOADSHEET TO FMS** set to AUTO (default), the EFB WEIGHT & BALANCE page sends ZFW and FOB to the WEIGHT page and clears T/O CG and T/O TRIM: enter the T/O CG of the new loadsheet. RESERVE is never sent by the EFB. With MANUAL, the crew enters every value.

PERF INIT page

► PERF INIT> (5R on INIT, or 6R on any PERF page) ..... PRESS

► CRZ ALT (1R) ..... ENTER 13000

Also `FL130` or `130`.

► DFLT FPA (3R) ..... CHECK 3.0°

Default flight path angle of the descent profile and its predictions (PRI.4).

► ALTN/CRZ ALT (5R) ..... ENTER `KPDX/FL140`

► FF FACTOR (2L) ..... CHECK, ENTER if required

Fuel flow correction for the predictions only: it changes the EFOB along the flight plan, not the fuel on board.

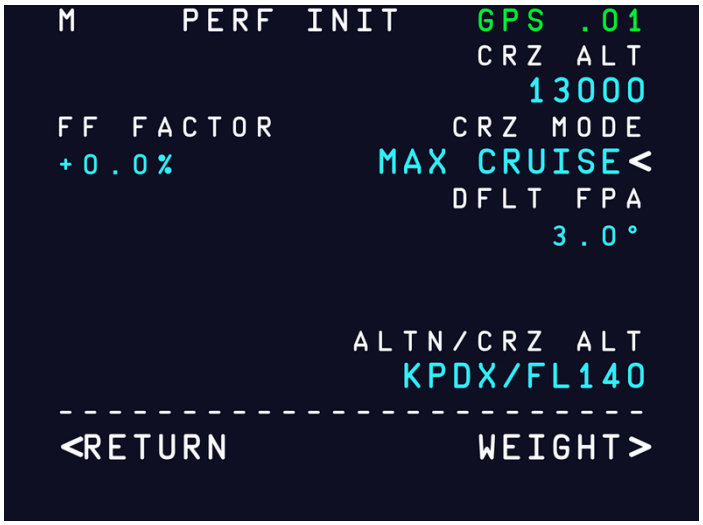
► CRZ MODE (2R) ..... CHECK LONG RANGE

Press to change between LONG RANGE (range) and MAX CRUISE (time), or enter an IAS for a constant-speed cruise.

► <RETURN (6L) ..... PRESS

cont'd... ►►►

cont'd... ►►►



PERF INIT page completed

CAUTION

With a CRZ ALT above the ceiling of the aircraft, the FMS cannot compute the predictions: ETA, ETE and EFOB are dashed.

FPH.1.14 Take-Off Performance

Ident.: FPH.1.14 — 01 NOV 2026
ALL

► PERF key ..... PRESS

On the ground the TAKE OFF page is displayed.

► DEPT RWY ..... CHECK KPDX28R

► RWY LNG/AXIS (2L) ..... CHECK

Database values (small). To change them, enter `length/axis` (for example `7900/284`): the entry is large cyan. An entered value is lost after a power interruption.

► TRANS ALT (3L) ..... CHECK

Transition altitude of the departure airport: small when it comes from the database, amber boxes when unknown. An entry (1 000 to 18 000 ft) is large cyan; CLR returns to the database value.

► V1 (3R), VR (4R), V2 (5R) ..... CHECK, or ENTER

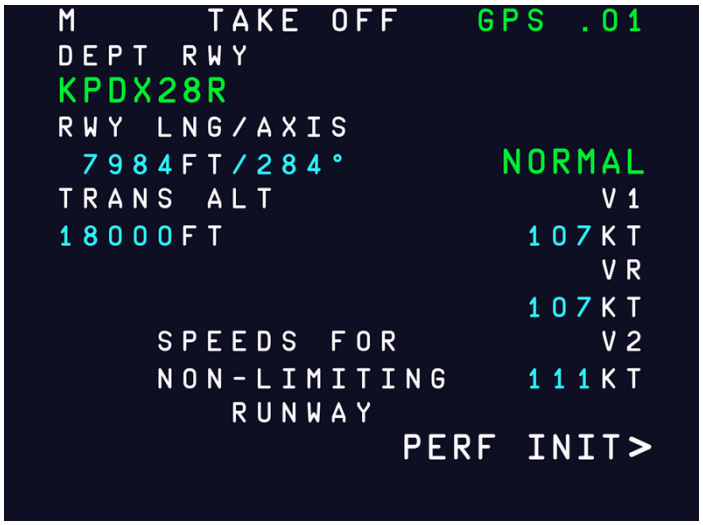
The computed speeds (small) are for a non-limiting runway. To use the speeds of the take-off computation, enter V1, then VR, then V2: the first entry deletes the two other computed speeds.

► Speed status ..... CHECK

NORMAL (green): computed without icing. ICING (amber): computed for icing conditions. MANUAL (white): at least one speed entered by the crew.

cont'd... ►►►

cont'd... ►►►



TAKE OFF page

Note

The crew speeds are deleted by a new weight entry and by a power interruption. After take-off, the computed speeds can change to ICING if the system detects icing conditions.

FPH.1.15 Cruise Performance

Ident.: FPH.1.15 — 01 NOV 2026
ALL

► PERF key ..... PRESS (or NEXT from TAKE OFF)

The CRUISE page is displayed.

► DEST MEANWIND (2L) ..... ENTER the mean wind to the destination, for example 260/30

True direction / speed, at the cruise level. Without an entry the FMS uses the present wind.

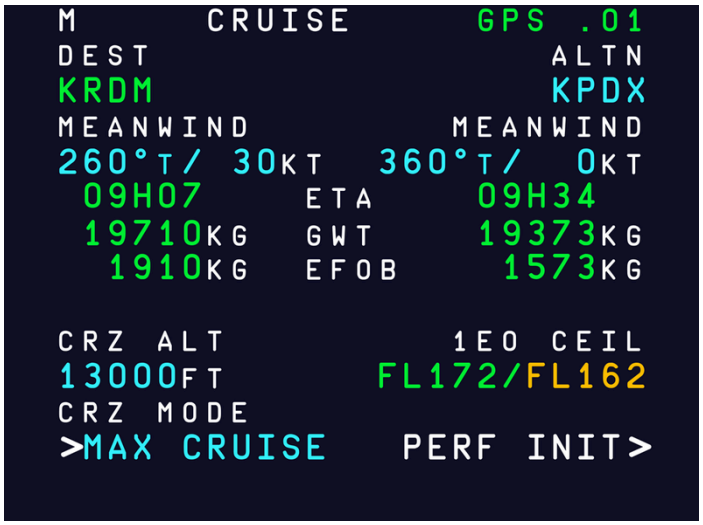
► ALTN MEANWIND (2R) ..... ENTER the mean wind to the alternate

Default 360°/0 kt.

► ETA / EFOB at DEST and ALTN ..... CHECK

cont'd... ►►►

cont'd... ►►►



CRUISE page — DEST MEANWIND 260°/30 kt

CAUTION

The MEANWIND is used by the simplified wind model only. Once a wind profile is entered at a waypoint (FPH.1.16), the FMS uses the wind profiles along the whole flight plan and the DEST MEANWIND is no longer used.

CAUTION

When the EFOB at the destination is lower than the RESERVE, it is shown in amber and the FAL alert is raised (ABN.1).

FPH.1.16 Vertical Wind Profile

Ident.: FPH.1.16 — 01 NOV 2026 — ALL

Wind profiles give more accurate predictions than the mean wind. A profile entered at one waypoint is used upstream and downstream along the flight plan; a later profile applies downstream (PRI.3).

► FPLN key ..... PRESS (twice for the SEC)

► Right LSK beside CUPRI ..... PRESS

The VERT REV page is displayed.

► <WIND (5L) ..... PRESS

Not available on the last waypoint of the plan.

► Scratchpad ..... TYPE a wind group `direction/speed/FL`, for example `270/35/FL120`

True direction, speed in kt, altitude as a flight level (`120` or `FL120`).

► LSK beside the brackets (2L) ..... PRESS

A new group is inserted. To change a group, type the new values (partial entries such as `/40` are allowed) and press its LSK. The groups are sorted by decreasing altitude.

► Other groups ..... REPEAT as required

Up to 4 groups; two groups must be more than FL5 apart.

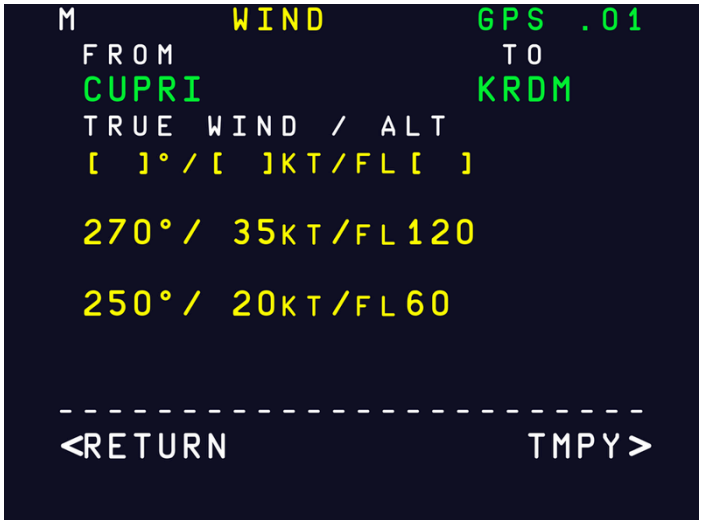
► NEXT / PREV ..... PRESS to CHECK the profile of the next / previous leg

cont'd... ►►►

cont'd... ►►►

► EXEC key ..... PRESS

The FPLN page is displayed.



WIND page at CUPRI — two groups entered in the TMPY

A profile defined at the waypoint is in large characters; a profile carried from another waypoint is in small characters. The WIND page is described in PGE.2.9.

FPH.1.17 Checking the Predictions

Ident.: FPH.1.17 — 01 NOV 2026
ALL

► FPLN key ..... PRESS

The FPLN page shows ETE and EFOB at each waypoint. EFOB is amber below the RESERVE.

► ETA/SPD/ALT< (6R) ..... PRESS

ETA, speed constraint and altitude constraint at each waypoint.

► ALT constraints ..... CHECK along the climb

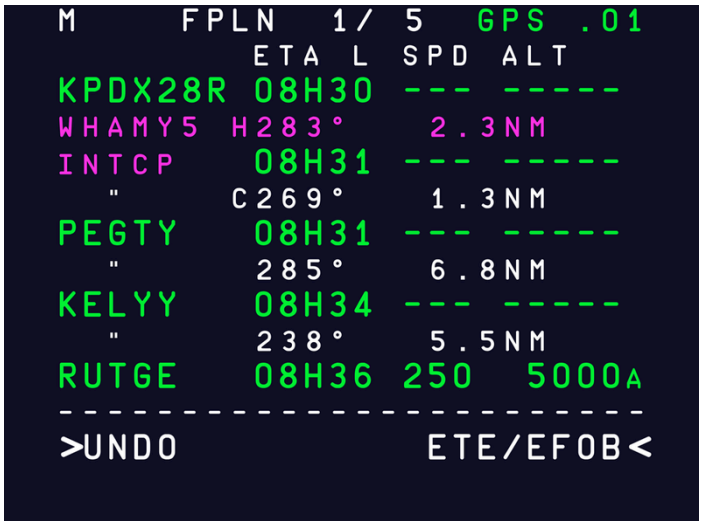
Green: predicted to be met. Amber: predicted to be missed. Magenta: constraint of the TO waypoint. A c before the value: corrected by the temperature compensation.

► PROG key ..... PRESS, CHECK DEST ETA, DIST, EFOB on PROG 1/3

► VNAV key ..... PRESS, CHECK CRZ ALT and the TOD on VNAV 1/2

cont'd... ►►►

cont'd... ►►►



FPLN page 1/5 in ETA/SPD/ALT format, on the ground

On the ground the ETAs start from the T/O TIME. Altitude and speed constraints are changed on the VERT REV page (MPH.2.3).

FPH.2 TAKE OFF AND CLIMB

FPH.2.1 Flight Phases

Ident.: FPH.2.1 — 01 NOV 2026
ALL

The take-off phase starts at lift-off. The climb phase starts 1 500 ft above the departure airport and lasts until the top of climb (TOC). The cruise phase starts when the aircraft passes the TOC (FPH.3). The flight phases are defined in PRI.3.

FPH.2.2 Monitoring the Take-Off

Ident.: FPH.2.2 — 01 NOV 2026
ALL

► PERF key ..... PRESS (NEXT / PREV if required) for the TAKE OFF page

■ Before take-off

► Speeds on the PFD ..... MONITOR against V1, VR, V2 and the FMS target speed

The take-off speeds of the TAKE OFF page are the speed bugs of the PFD. The FMS managed speed is the AFCS target speed.

■ After take-off

► Speed status (2R) ..... MONITOR

NORMAL can change to ICING (amber) after take-off, when the system detects icing conditions: the speeds are then those of the icing conditions.

FPH.2.3 Monitoring the Vertical Guidance

Ident.: FPH.2.3 — 01 NOV 2026
ALL

► VNAV key ..... PRESS

► VDEV (4R) and TGT IAS (2R) ..... MONITOR

VDEV is the vertical deviation from the FMS climb profile: positive above, negative below.

► Next level point (1L) ..... CHECK

↑13000 with its ETA: the predicted top of climb.

In climb, the cruise altitude the FMS uses is the CRZ ALT entered by the crew (PERF INIT, CRUISE or VNAV 1/2), replaced by the selected altitude of the FGCP when the selected altitude is higher. Without an entry, the present altitude is used.

► CRZ ALT (5L) ..... ENTER a new value if required

In climb, CRZ ALT is insertable (cyan, > prompt). The entry must be between the selected altitude and the computed ceiling + 5 000 ft, else RANGE ERROR.

cont'd... ►►►

cont'd... ►►►



VNAV 1/2 in climb — ALT SEL 9 000 ft, top of climb to 13 000 ft ahead

CAUTION

A change of the selected altitude or a vertical revision of the flight plan updates the vertical profile. When the profile cannot be built, a vertical profile message is shown in the scratchpad (PRI.4, ABN.1).

The horizontal guidance is monitored as described in MPH.1.8.

FPH.2.4 Monitoring the Predictions

Ident.: FPH.2.4 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► ETA/SPD/ALT< (6R) ..... PRESS
► ALT constraints of the climb legs ..... CHECK

Green: predicted to be met. Amber: predicted to be missed. Magenta: constraint of the TO waypoint. A c before the value: corrected by the temperature compensation.

Altitude and speed constraints are changed on the VERT REV page (MPH.2.3).

FPH.2.5 Monitoring the Transition Altitude

Ident.: FPH.2.5 — 01 NOV 2026
ALL

► Altitude ..... MONITOR against the departure TRANS ALT

The departure transition altitude comes from the database. It is shown, and can be changed, on the TAKE OFF page (FPH.1.14).

The FMS provides the transition altitude to the displays: in take-off and climb, the baro setting of the PFD flashes when the aircraft is above the departure transition altitude with a QNH setting.

FPH.2.6 Monitoring the Vertical Track

Ident.: FPH.2.6 — 01 NOV 2026
ALL

► ALT SEL ..... SET the next cleared altitude as required

cont'd... ►►►

cont'd... ►►►

■ **When the selected altitude is the cruise altitude**

► FMS phase ..... CHECK CRUISE once the aircraft has reached it

The target speed changes from the climb speed to the cruise speed.

SIMULATOR NOTE

The vertical track alert (flashing selected altitude on the PFD) is given only before the top of descent and before a step, with a VNAV mode engaged (FPH.4.1, FPH.3.4). It is not given one minute before an intermediate selected altitude in climb.

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FPH.3 CRUISE

FPH.3.1 Cruise Altitude

Ident.: FPH.3.1 — 01 NOV 2026
ALL

The FMS changes from climb to cruise when the aircraft reaches the top of climb. The cruise altitude is used for the level interception points of the cruise. It is shown on PERF INIT, CRUISE and VNAV 1/2.

In cruise:

- the cruise altitude is the selected altitude of the FGCP (without a valid selected altitude: the crew entry, else the present altitude),
- CRZ ALT is green and cannot be entered (NOT ALLOWED), unless the selected altitude is invalid,
- the cruise altitude is frozen, so that the selected altitude can be changed without changing the top of descent and the descent profile:
  - during the last 5 minutes before the TOD,
  - during the last 10 minutes before the TOD when the approach has a final approach fix and the selected altitude is set to the FAF altitude − 100 ft or below.



VNAV 1/2 in cruise — CRZ ALT green, TOD and DEST ETA

FPH.3.2 Monitoring the Predictions

Ident.: FPH.3.2 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► ETE (ETE/EFOB format) ..... CHECK

ETE is underlined at a waypoint with an RTA, and amber when the RTA is missed (MPH.2.2).

► EFOB ..... CHECK

Amber when lower than the RESERVE.

► ETA/SPD/ALT< (6R) ..... PRESS
► ETA ..... CHECK

Underlined with an RTA, amber when the RTA is missed.

cont'd... ►►►

cont'd... ►►►

Note

- *The values of the missed approach legs are cyan while the missed approach is not active.*
- *The values shown on the FROM line are those of the moment it was sequenced.*
- *Speed and altitude constraints are changed on the VERT REV page.*

FPH.3.3 Step Climb or Step Descent

Ident.: FPH.3.3 — 01 NOV 2026 — ALL

► FPLN key ..... PRESS

► Right LSK beside the step waypoint (CUPRI) ..... PRESS

The VERT REV page is displayed.

► Scratchpad ..... TYPE the step altitude, for example `15000` (or `FL150`, `150`)

► STEP TO (2L) ..... PRESS

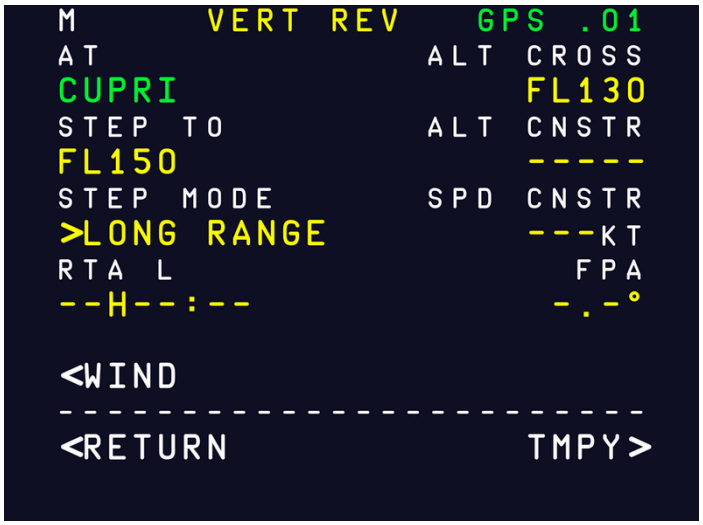
The step altitude is shown and the STEP MODE field appears below it. The step altitude is limited like CRZ ALT (RANGE ERROR above it).

► STEP MODE (3L) ..... PRESS to change LONG RANGE / MAX CRUISE, or ENTER an IAS

An IAS (150 to 250 kt) gives a constant-speed cruise. The STEP MODE becomes the CRZ MODE when the step waypoint is sequenced.

► EXEC key ..... PRESS

The step is inserted in the flight plan and the FPLN page is displayed. Its level interception point is shown on VNAV 1/2.



VERT REV of CUPRI — STEP TO FL150, STEP MODE MAX CRUISE (TMPY)

To delete a step: CLR on STEP TO (2L), then EXEC.

FPH.3.4 Monitoring the Vertical Track During a Step

Ident.: FPH.3.4 — 01 NOV 2026 — ALL

► PFD selected altitude ..... MONITOR

cont'd... ►►►

cont'd... ►►►

With a VNAV mode engaged, the vertical track alert (the selected altitude readout flashes) is raised when the step becomes due.

► ALT SEL ..... SET the step altitude, ENGAGE the vertical mode to follow the step

The alert stops when the selected altitude is changed.

FPH.3.5 Entering the Approach Data

Ident.: FPH.3.5 — 01 NOV 2026
ALL

► PERF key ..... PRESS (NEXT / PREV if required) for the APPROACH page

► TRANS ALT (3L) ..... CHECK

Transition altitude of the destination: small from the database, amber boxes when unknown. To change it, enter the value: large cyan. CLR returns to the database value. Not possible when the destination of the flight plan is not an airport (NOT ALLOWED).

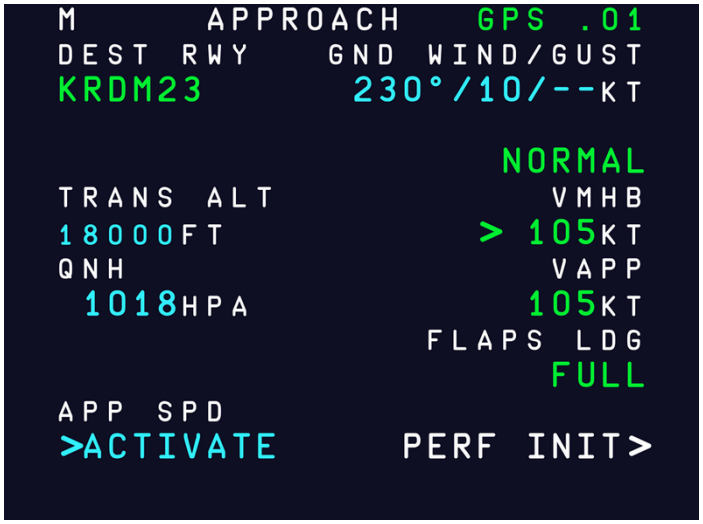
► QNH (4L) ..... ENTER the destination QNH

In the BARO SET unit of the UNITS page. The same QNH is shown on VNAV 2/2.

► GND WIND/GUST (1R) ..... ENTER the destination surface wind, for example `230/10` or `230/10/25`

Used for VAPP and by the simplified wind model. A gust lower than the mean wind is refused (RANGE ERROR).

► VAPP (4R) ..... CHECK



APPROACH page — QNH and GND WIND entered

Note

The QNH cannot be entered in descent below the transition level (NOT ALLOWED).

The APPROACH page is described in PGE.5.

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FPH.4 DESCENT

FPH.4.1 Descent Initiation

Ident.: FPH.4.1 — 10 NOV 2026
ALL

The descent phase starts when the aircraft passes the top of descent (TOD). The TOD is the point computed by the FMS where a descent at the managed speed lets the aircraft follow the descent profile and its altitude constraints. It is shown on the ND, on PROG 1/3 (ETA and distance) and on VNAV 1/2 (ETA).

► PROG key ..... PRESS, MONITOR the TOD ETA and distance

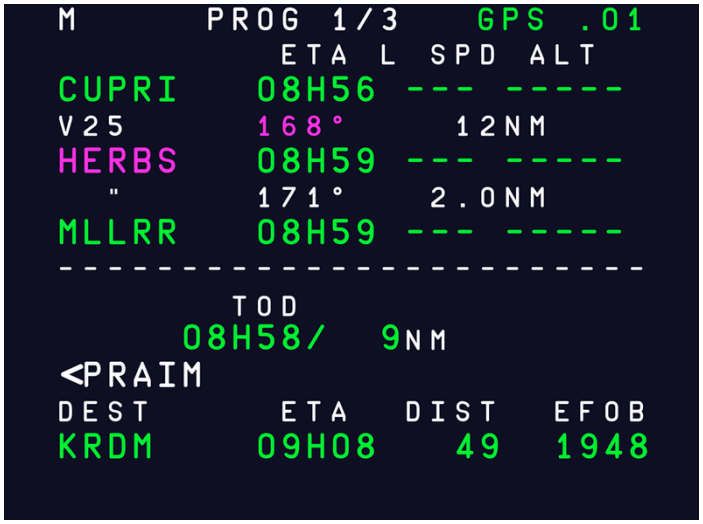
■ Before the TOD

► PFD selected altitude ..... MONITOR

With a VNAV mode engaged, the vertical track alert is raised one minute before the TOD: the selected altitude readout of the PFD flashes. The alert ends when the selected altitude is changed, or at the TOD.

► ALT SEL ..... SET the next cleared altitude

► Vertical mode ..... ENGAGE as required to follow the descent profile



PROG 1/3 — TOD 9 NM ahead

Descent before the TOD

In cruise with VNAV (VNAV ALT at the cruise altitude), the descent can be started early: set ALT SEL below the aircraft and press the VNAV pb again.

- More than 5 minutes before the TOD: VNAV VS, a descent at −1 500 ft/min to the FMS altitude, ALT SEL armed.
- 5 minutes or less before the TOD: VNAV PATH, the descent profile.

The same action continues a VNAV climb or descent after a level-off at the selected altitude.

FPH.4.2 Monitoring the Transition Level

Ident.: FPH.4.2 — 01 NOV 2026
ALL

► Altitude ..... MONITOR against the destination transition level

cont'd... ►►►

cont'd... ►►►

The destination transition altitude comes from the database. It is shown, and can be changed, on the APPROACH page and on VNAV 2/2 (FPH.3.5).

In descent and approach, the baro setting of the PFD flashes when STD is still set below the destination transition altitude, or below 2 500 ft radio height.

FPH.4.3 Monitoring the Vertical Guidance

Ident.: FPH.4.3 — 01 NOV 2026 — ALL

► VNAV key ..... PRESS
► VDEV (4R) and TGT VS (3R) ..... MONITOR

VDEV: vertical deviation from the descent profile, positive above, negative below. TGT VS: vertical speed that keeps the aircraft on the profile.

► FGCP vertical speed ..... ADJUST to the TGT VS

■ Aircraft on the profile (VDEV close to zero)

► Next level-off and the following descent point ..... MONITOR

■ Aircraft above the profile (VDEV positive)

► Vertical speed ..... SELECT a rate of descent greater than the TGT VS

■ Aircraft below the profile (VDEV negative)

► Vertical speed ..... SELECT a rate of descent smaller than the TGT VS



VNAV 1/2 in descent — ↓9000, TGT VS −804 FPM, VDEV −5 FT

The horizontal guidance is monitored as described in MPH.1.8.

FPH.4.4 Monitoring the Vertical Track

Ident.: FPH.4.4 — 01 NOV 2026 — ALL

► ALT SEL ..... SET the next cleared altitude when the aircraft reaches the selected altitude

cont'd... ►►►

cont'd... ►►►

SIMULATOR NOTE

In descent, the vertical track alert is given only before the TOD and before a step. It is not given one minute before an intermediate selected altitude.

FPH.4.5 Monitoring the Predictions

Ident.: FPH.4.5 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► ETA/SPD/ALT< (6R) ..... PRESS
► ALT constraints of the descent legs ..... CHECK

Amber: predicted to be missed. Magenta: constraint of the TO waypoint. Green otherwise. A c before the value: corrected by the temperature compensation. Values of the missed approach legs are cyan while the missed approach is not active.

► SPD constraints of the descent legs ..... CHECK

Constraints are changed on the VERT REV page (MPH.2.3).

FPH.4.6 Inserting a Holding Pattern

Ident.: FPH.4.6 — 01 NOV 2026
ALL

A hold can be inserted at a waypoint of the active flight plan or at the present position (PPOS).

► FPLN key ..... PRESS

■ Hold at the present position

► Left LSK beside the FROM waypoint ..... PRESS

The LTRL REV page at PPOS is displayed.

■ Hold at a waypoint of the flight plan

► Left LSK beside the waypoint (DSD) ..... PRESS

The LTRL REV page of the waypoint is displayed.

■ Then

► <HOLDING (3L) ..... PRESS

The HOLDING AT page is displayed with the default values (small).

► TURN (3L) ..... PRESS to change RIGHT / LEFT
► INBND CRS (2L) ..... ENTER the inbound course if different
► TIME/DIST (2R) ..... ENTER a leg time (`1.5`) or a leg distance (`/6.5`)

The other value is computed with the holding speed.

► IAS (3R) ..... ENTER the holding speed if required

From the minimum operating speed to 250 kt, else RANGE ERROR. Refused (NOT ALLOWED) on a hold at PPOS and on a hold already active.

► TMPY> (6R) ..... PRESS, CHECK the hold in the TMPY
► EXEC key ..... PRESS

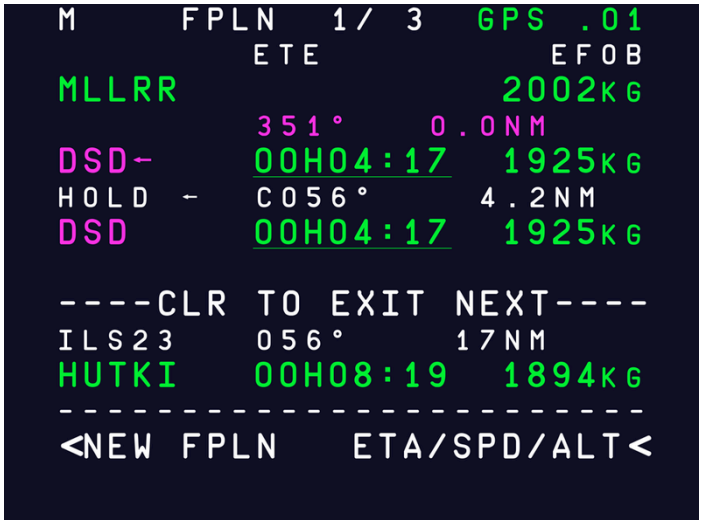
The hold is inserted in the active flight plan and the FPLN page is displayed.

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HOLDING AT DSD — LEFT turns, 1.5 min legs



FPLN page — hold at DSD, CLR TO EXIT NEXT

Crew values are large; CLR on a field restores the default. To change, exit or delete the hold, see MPH.1.9. The HOLDING AT page is described in PGE.2.10.

FPH.4.7 Entering the Approach Flight Area

Ident.: FPH.4.7 — 01 NOV 2026
ALL

The flight area becomes APPROACH (from TERMINAL) when all these conditions are met:

- an approach procedure with a final approach fix (FAF) is in the flight plan,
- the aircraft is less than 2 NM along the track from the FAF,
- the cross-track error (XTK) is less than 0.3 NM and the track angle error (TKE) less than 90°,
- the integrity of the position is sufficient (GPS or radio navigation).

The flight areas and their RNP are described in PRI.1. When a condition is not met, the APP alert (APPROACH NOT ENABLE) is raised (ABN.1).

cont'd... ►►►

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cont'd... ►►►

CAUTION

The position source shown in the title line is amber when the sensors in use are not compliant with the P-RNAV and US-RNAV standards: V-D with a VOR and a DME that are not co-located, V-V, or D-R.

PAGE

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FPH.5 APPROACH

FPH.5.1 Approach Phase

Ident.: FPH.5.1 — 01 NOV 2026
ALL

The FMS enters the approach phase when all these conditions are met:

- the direct distance to the destination airport is less than 10 NM, and
- the active leg belongs to the approach procedure of the destination, or the TO waypoint is the destination airport.

SIMULATOR NOTE

The vertical track alert is not given before the selected altitude in the approach phase.

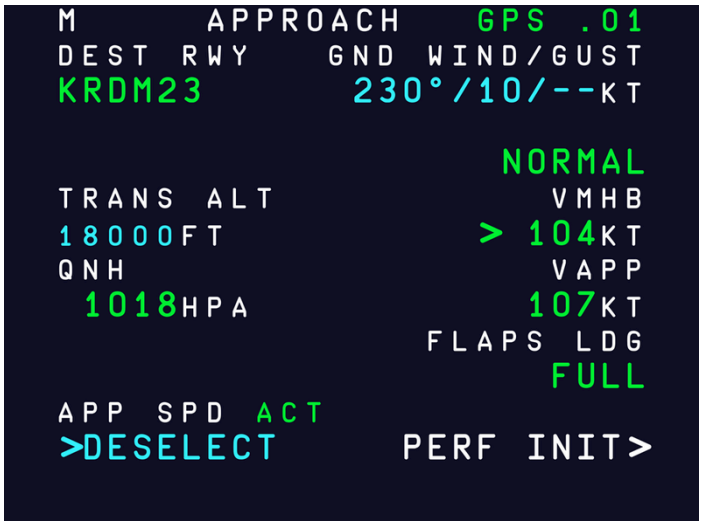
FPH.5.2 Approach Speed Activation

Ident.: FPH.5.2 — 01 NOV 2026
ALL

The managed speed has an approach phase, which gives the approach speeds of the flap configuration. It is normally activated automatically. The crew can activate it earlier, or deselect it.

► PERF key ..... PRESS (NEXT / PREV if required) for the APPROACH page
► APP SPD (6L) ..... PRESS

>ACTIVATE: the managed speed changes to its approach phase, ACT (green) is shown beside APP SPD and the prompt becomes >DESELECT. >DESELECT returns the managed speed to its normal phase.



APPROACH page — APP SPD ACT, activated by the crew in descent

Note

- *The approach phase of the managed speed is not active at power-up.*
- *Activation is refused on the ground and while the AFCS go-around mode is engaged (NOT ALLOWED).*
- *The FMS activates it automatically when the FMS enters the approach phase, when the AFCS captures the localizer, or when the landing gear is extended (with an altitude condition). It returns to the normal phase when the destination is changed.*

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FPH.5.3 Monitoring the Vertical Guidance

Ident.: FPH.5.3 — 01 NOV 2026
ALL

► VNAV key ..... PRESS
► VDEV (4R) and TGT VS (3R) ..... MONITOR
► FGCP vertical speed ..... ADJUST to the TGT VS

■ Aircraft on the profile (VDEV close to zero)

► Next level-off and the following descent point ..... MONITOR

■ Aircraft above the profile (VDEV positive)

► Vertical speed ..... SELECT a rate of descent greater than the TGT VS

■ Aircraft below the profile (VDEV negative)

► Vertical speed ..... SELECT a rate of descent smaller than the TGT VS

The FMS provides the destination elevation to the PFD, which shows the zone below it on the altitude scale. The horizontal guidance is monitored as described in MPH.1.8.

FPH.6 GO AROUND

FPH.6.1 Go-Around Phase

Ident.: FPH.6.1 — 01 NOV 2026
ALL

The FMS is in the go-around phase when the crew engages the go-around mode of the AFCS. The go-around mode engaged on the ground (take-off) does not activate the missed approach.

FPH.6.2 Missed Approach

Ident.: FPH.6.2 — 01 NOV 2026
ALL

The missed approach comes with the approach selected on the ARRIVAL page. On the FPLN page it follows the destination runway, in cyan, until it is activated.

The missed approach is activated when:

- the AFCS go-around mode is engaged in the descent or approach phase, or
- a DIRECT TO one of the missed approach waypoints is performed, the waypoint being selected by the left LSK beside it in the DIRECT TO list (PGE.4.1).

Then the missed approach legs are green, part of the active flight plan, and shown as active on the ND.

After a go-around, the approach just flown is strung again into the flight plan after the missed approach, for a new approach. After a DIRECT TO a missed approach waypoint, the flight phase becomes CRUISE. If that DIRECT TO is undone (>UNDO on the FPLN page, then EXEC), the missed approach is de-activated again and the flight phase returns to the phase before the DIRECT TO.



FPLN page after the go-around at KRDM — missed approach legs active (green)

Note

A missed approach waypoint entered in the IDENT field of the DIRECT TO page gets a DIRECT TO, but the missed approach is not activated: its legs stay cyan.

► FPLN pages ..... CHECK the missed approach legs and their speed constraints

cont'd... ►►►

cont'd... ►►►

■ **When cleared to follow the missed approach**

► LNAV ..... ENGAGE (or HDG to follow the FMS guidance)

■ **When entering the approach area again**

► Approach procedure ..... REPEAT (FPH.5)

FPH.7 DONE

FPH.7.1 End of Flight

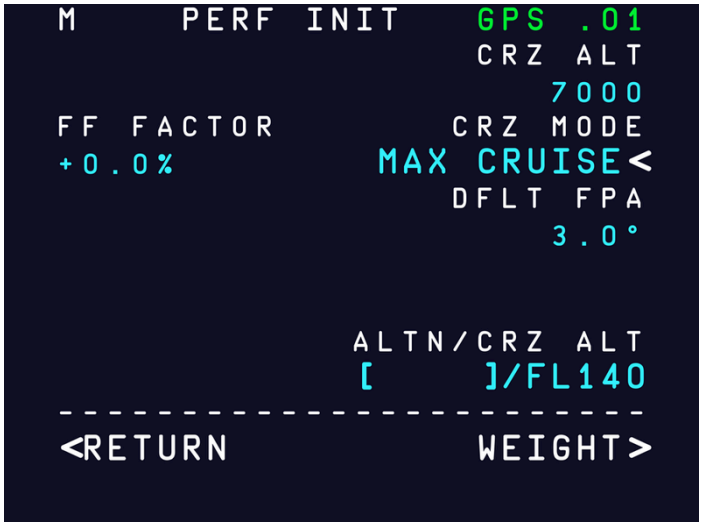
Ident.: FPH.7.1 — 01 NOV 2026
ALL

The end of the flight cycle is reached when the aircraft has been on the ground for more than 30 seconds after a flight. The FMS then resets the data of the flight:

- the active flight plan, the TMPY and the SEC are deleted (the missed approach legs with them),
- DFLT FPA returns to 3.0°,
- CRZ MODE returns to LONG RANGE,
- FF FACTOR returns to +0.0 %,
- ZFW, FOB and T/O CG are deleted (and the T/O TRIM),
- V1, VR and V2 return to the values computed by the FMS,
- the fuel flows entered by the crew are replaced by the fuel flow meters.

The RESERVE is kept.

► PERF INIT ..... CHECK DFLT FPA 3.0°, CRZ MODE LONG RANGE, FF FACTOR +0.0 %
► WEIGHT ..... CHECK ZFW, FOB, T/O CG dashed
► FPLN ..... CHECK empty



PERF INIT page after the end of the flight cycle

Reset values are in small characters, crew entries in large characters.

Note

A SEC saved with DATA SAVE (MPH.3.4) is kept and recovered at the next FMS power-up.

SIMULATOR NOTE

The same end of flight cycle is applied when a COLD & DARK or TURNAROUND ground state is selected on the EFB.

PAGE

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MPH.1 LATERAL FUNCTIONS

MPH.1.1 Flight Plan Revisions

Ident.: MPH.1.1 — 01 NOV 2026 — ALL

The revisions of this chapter apply to the active flight plan, the temporary flight plan (TMPY) and the secondary flight plan (SEC). A revision of the active flight plan is first built in a TMPY (yellow): EXEC makes it active, >CLR TMPY (6L) discards it. A revision of the SEC applies at once, without TMPY. See PGE.2.2.

CAUTION

During 1 minute after the activation of a revision, >UNDO (6L on the FPLN page) gives back the flight plan as it was before the revision, in a TMPY. After 1 minute, <NEW FPLN replaces >UNDO.

MPH.1.2 Revising the Departure or the Arrival

Ident.: MPH.1.2 — 01 NOV 2026 — ALL

► FPLN key ..... PRESS
► Left LSK beside the departure airport or runway (or the destination or landing runway) ..... PRESS

The DEPARTURE (or ARRIVAL) page is displayed with the present selections.

► RWY, SID, TRANS (or APP, STAR, VIA, TRANS) ..... PRESS the field LSK for its list, then SELECT the new item

Each new selection resets the fields that follow it.

► TMPY> (6R) ..... PRESS, CHECK the new procedure in the TMPY
► EXEC key ..... PRESS

The first FPLN page is displayed.

The procedure pages are described in PGE.2.7.

CAUTION

With LNAV engaged, a new arrival selection is refused (NOT ALLOWED) when the destination airport is the TO waypoint (typically after a DIRECT TO the destination), or when the active leg is part of the STAR or of the approach (missed approach excluded). This applies to APP, STAR, VIA, TRANS and the approach TYPE. Disengage LNAV before revising the arrival.

CAUTION

A new approach selected while the present approach is flown (LNAV disengaged) replaces the legs being flown: the TMPY then starts at PPOS, followed by a discontinuity. Check the TMPY before EXEC and use DIRECT TO to join the new approach.

MPH.1.3 Inserting a Waypoint

Ident.: MPH.1.3 — 01 NOV 2026 — ALL

A waypoint can be inserted by its ident, a position, a place/bearing/distance, a place-bearing/place-bearing intersection, a latitude or longitude crossing, or an along-track offset.

► Scratchpad ..... TYPE the waypoint (see the table)

cont'd... ►►►

cont'd... ►►►

► Left LSK beside the waypoint or the discontinuity ..... PRESS

The new waypoint is inserted before the selected waypoint, which moves down. A discontinuity is inserted between them. On a discontinuity line, the new waypoint fills the discontinuity.

► TMPY ..... CHECK

► EXEC key ..... PRESS

The NEXT WPT field of the LTRL REV page inserts the waypoint after the revised waypoint instead, joined to the rest of the flight plan (FPH.1.10).

ENTRY	EXAMPLE	WAYPOINT CREATED
Ident (standard or pilot database)	`CUPRI`	CUPRI
Latitude/longitude	`N4512.3W12234.5`	named by the FMS
Place/bearing/distance	`DSD/270/20`	DSD-01
Place/bearing/place/bearing	`DSD/270/UBG/180`	named by the FMS
Latitude or longitude crossing	`/W12130.0`	W121
Along-track offset	`/10` (after) or `/-10` (before)	CUPRI10



TMPY — DSD/270/20 inserted before DSD as DSD-01, with a discontinuity

Note

- *No insertion on the FROM waypoint, nor on the TO waypoint while the FMS is coupled to the autopilot (NOT ALLOWED).*
- *When the new waypoint is already further down the flight plan (not in the missed approach), the legs between them are deleted.*
- *An airport inserted this way is a simple waypoint: use DIRECT TO or NEW DEST for its procedures.*
- *An ident found in no database displays the NEW DATA page, to create it in the pilot database (MPH.3.2). An ident found more than once displays the DATA LIST.*

Latitude or longitude crossing

The FMS creates a waypoint where the flight plan crosses the latitude or the longitude, searching from the selected waypoint down the flight plan. The path does not change.

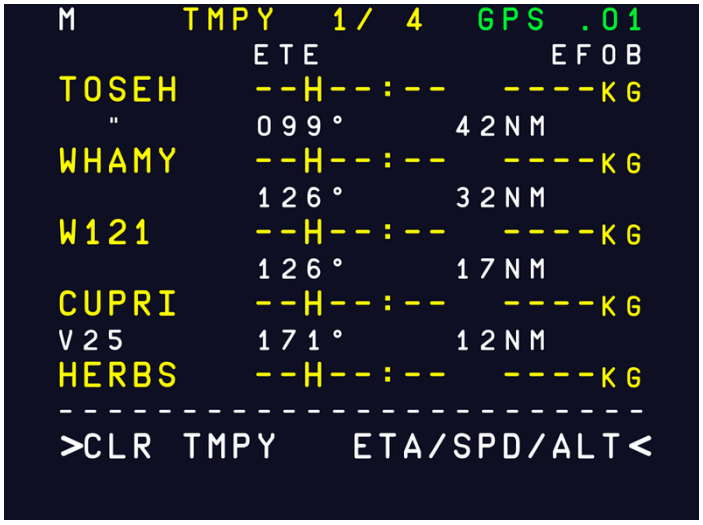
cont'd... ►►►

cont'd... ►►►

► Scratchpad ..... TYPE / and the latitude or longitude, for example /W12130.0 or /N4500.0

► Left LSK beside the reference waypoint (WHAMY) ..... PRESS

The point is named by its degrees only (W121). NO VALID INTERSECTION is shown when the flight plan does not cross it.



TMPY — W121 crossing inserted between WHAMY and CUPRI

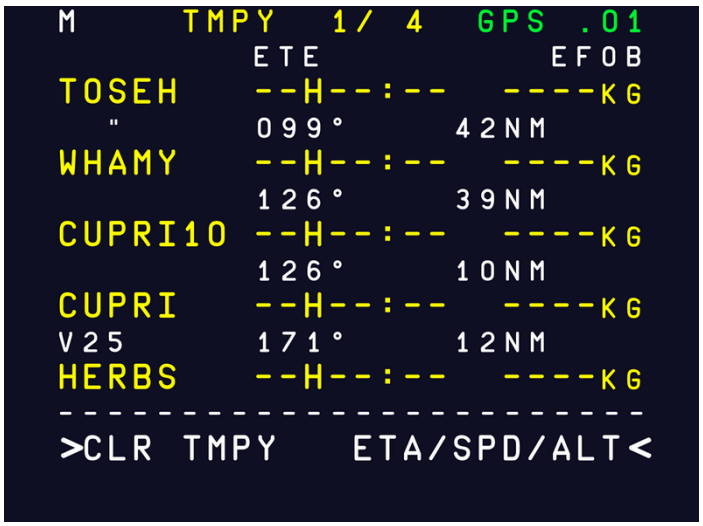
Along-track offset

The FMS creates a waypoint on the flight plan at a distance after (positive) or before (negative) the reference waypoint. The path does not change.

► Scratchpad ..... TYPE / and the distance in NM, for example /-10

► Left LSK beside the reference waypoint (CUPRI) ..... PRESS

The point is named by the reference ident and the distance (CUPRI10).



TMPY — CUPRI10, 10 NM before CUPRI

Crossing and along-track points can also be entered in the NEXT WPT field of the LTRL REV page. The constraints of the reference waypoint are not copied.

cont'd... ►►►

cont'd... ►►►

MPH.1.4 Clearing a Waypoint

Ident.: MPH.1.4 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► CLR key ..... PRESS with an empty scratchpad (CLEAR ?)

A message in the scratchpad is cleared first: press CLR again.

► Left LSK beside the waypoint ..... PRESS

The waypoint and its leg are deleted and replaced by a discontinuity. There are never two discontinuities in a row. A cleared hold or procedure turn leaves no discontinuity.

► EXEC key ..... PRESS

Note

Not allowed (NOT ALLOWED): the FROM waypoint, the TO waypoint while the FMS is coupled to the autopilot, the origin and destination airports, and a waypoint before or after a curved (RF) leg.

MPH.1.5 Inserting a Discontinuity

Ident.: MPH.1.5 — 01 NOV 2026
ALL

► Scratchpad ..... TYPE /
► Left LSK beside the waypoint ..... PRESS

A discontinuity is inserted before the waypoint. The end point of the previous leg is repeated after the discontinuity, so the flight plan can be joined again from there.

► EXEC key ..... PRESS

A discontinuity cannot be inserted between the present position and the TO waypoint, nor next to another discontinuity.

MPH.1.6 Clearing a Discontinuity

Ident.: MPH.1.6 — 01 NOV 2026
ALL

► FPLN key ..... PRESS
► CLR key ..... PRESS with an empty scratchpad (CLEAR ?)
► Left LSK beside ---FPLN DISCONTINUITY--- ..... PRESS

The waypoints before and after are joined. When the same fix is on both sides, only one remains.

► EXEC key ..... PRESS

Note

The discontinuity after PPOS cannot be cleared: make a DIRECT TO the first waypoint of the flight plan (MPH.1.11).

MPH.1.7 Secondary Flight Plan

Ident.: MPH.1.7 — 01 NOV 2026
ALL

Initialization, copy and SEC PERF: see FPH.1.11.

Activation of the SEC

► SEC INIT page ..... DISPLAY (FPLN INIT, <SEC INIT)

cont'd... ►►►

cont'd... ►►►

► ACTIVATE< (1R) ..... PRESS

The SEC FPLN page is displayed with PRESS EXEC TO CONFIRM.

► EXEC key ..... PRESS

The SEC replaces the active flight plan and the active FPLN page is displayed. The WGT alert reminds the crew to check the weights (ABN.1).

Swap of the active and secondary flight plans

► SWAP FPLN< (2R on SEC INIT) ..... PRESS, then EXEC

Cancellation of the SEC

► CANCEL SEC< (6R on SEC INIT) ..... PRESS

PRESS EXEC TO CONFIRM is shown.

► EXEC key ..... PRESS

COPY, ACTIVATE and SWAP are refused (TMPY EXIST) while a TMPY exists.

MPH.1.8 Monitoring the Horizontal Guidance

Ident.: MPH.1.8 — 01 NOV 2026 — ALL

► PROG key ..... PRESS twice (PROG 2/3)
► XTK ..... MONITOR

■ LNAV engaged

► XTK ..... CHECK within the flight technical error

■ LNAV not engaged

► Heading ..... ADJUST to keep the XTK within half the RNP
► IAS ..... MONITOR against the TGT IAS (magenta), ADJUST if required

The PROG 2/3 page is described in PGE.3, the RNP in PRI.1.

MPH.1.9 Holding Pattern

Ident.: MPH.1.9 — 01 NOV 2026 — ALL

Inserting a hold

See FPH.4.6.

Changing a hold

► FPLN key ..... PRESS
► Left LSK beside the hold entry waypoint (or, once the hold is active, the hold exit waypoint) ..... PRESS
► <HOLDING (3L) ..... PRESS

The HOLDING AT page shows the hold. Values changed by the crew are large.

► TURN (3L) ..... PRESS to change if required
► INBND CRS, TIME/DIST, IAS ..... ENTER the new values as required

The IAS of a hold at PPOS or of an active hold cannot be changed.

► EXEC key ..... PRESS

A change to an active hold applies at the next pass over the holding fix.

cont'd... ►►►

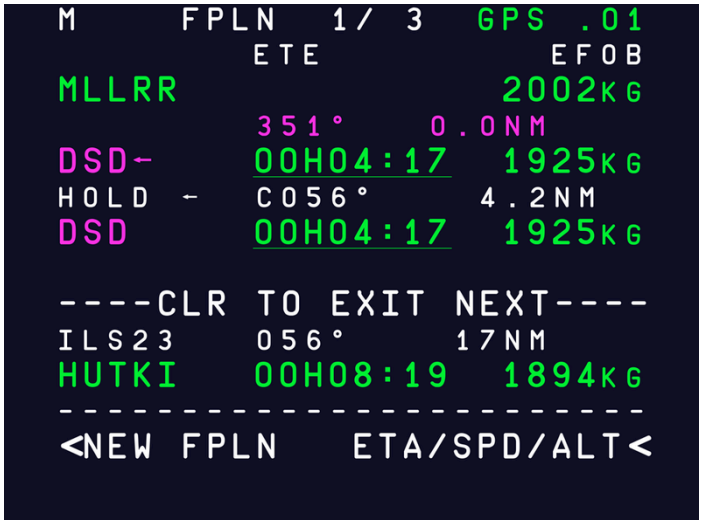
cont'd... ►►►

The predictions after a hold include one pattern (see PGE.2.10).

Exiting a hold

► FPLN key, NEXT / PREV ..... DISPLAY the hold
► CLR key ..... PRESS
► Left LSK beside ----CLR TO EXIT NEXT---- ..... PRESS
► EXEC key ..... PRESS

The aircraft leaves the hold at the next pass over the holding fix and continues the flight plan. The line stays displayed.



FPLN page — active hold at DSD

An active hold can also be left by a DIRECT TO the holding fix or to the next waypoint.

Clearing a hold

► CLR key ..... PRESS, then the left LSK beside the hold leg (HOLD)
► EXEC key ..... PRESS

MPH.1.10 Offset

Ident.: MPH.1.10 — 01 NOV 2026
ALL

A lateral offset makes the aircraft fly parallel to the flight plan.

Inserting or changing an offset

► FPLN key ..... PRESS
► Left LSK beside the FROM waypoint ..... PRESS

The LTRL REV page at PPOS is displayed.

► Scratchpad ..... TYPE `L` or `R` and the distance in NM, for example `R5`
► OFFSET (2L) ..... PRESS

The offset is shown in yellow.

► <RETURN (6L) or FPLN key ..... PRESS, CHECK the TMPY
► EXEC key ..... PRESS

cont'd... ►►►

cont'd... ►►►

OFST is shown on the active leg of the FPLN page and the OFST annunciator comes on. PROG 2/3 shows the OFFSET.



LTRL REV at PPOS — offset R5 entered

The offset is refused:

- RANGE ERROR: outside L20 to R20 NM,
- NOT ALLOWED: when the active leg is not a track-to-fix or a course-to-fix leg, belongs to the approach, ends at (or the next leg ends at) the destination runway, is followed by a discontinuity, or turns by more than 90° onto the next leg, and when a 45° intercept would not reach the offset path early enough on the remaining offsetable legs.

OFFSET DELAYED: the 45° intercept cannot reach the offset path on the active leg, but it can on the next one. The offset starts at the next leg.

OFFSET CANCELLED: the offset is cancelled by the FMS when the next leg cannot be offset (not a track-to-fix or course-to-fix leg, approach leg, destination runway, turn of more than 90°). The aircraft rejoins the flight plan with a 45° intercept, or a direct to the next leg end when the intercept is not possible.

CAUTION

A new offset entered while an offset is delayed cancels it: enter the new offset again.

Deleting an offset

► Left LSK beside the FROM waypoint ..... PRESS
► CLR key (or `L0` / `R0` in the scratchpad) ..... PRESS / TYPE
► OFFSET (2L) ..... PRESS
► <RETURN (6L) or FPLN key ..... PRESS, CHECK the TMPY
► EXEC key ..... PRESS

The aircraft returns to the flight plan and OFST disappears.

An offset cannot be entered or deleted in the SEC (NOT ALLOWED).

cont'd... ►►►

cont'd... ►►►

MPH.1.11 Direct To

Ident.: MPH.1.11 — 01 NOV 2026
ALL

The DIRECT TO pages are described in PGE.4.

Direct to a waypoint of the flight plan

► DTO key ..... PRESS
► LSK beside the waypoint ..... PRESS

The DIRECT TO page is displayed and the direct is built in the TMPY.

► EXEC key ..... PRESS

The legs and discontinuities before the waypoint are deleted. The FROM becomes T-P.
For a missed approach waypoint: the missed approach is activated (its legs turn green) and the flight phase becomes CRUISE.

Direct to a waypoint not in the flight plan

► DTO key ..... PRESS
► IDENT (1L) ..... ENTER one of:
  ► Ident ..... of an airport, navaid or waypoint of the standard or pilot database
  ► Latitude/longitude ..... `N4512.0W12105.0`
  ► Place/bearing/distance ..... `DSD/130/12`
  ► Place/bearing/place/bearing ..... `DSD/020/UBG/120`

With an empty scratchpad, 1L displays the DATA LIST with the filter ALL.

► EXEC key ..... PRESS

The waypoint becomes the TO waypoint, followed by a discontinuity.

Direct to a nearby airport

► DTO key ..... PRESS
► ABEAM> (1R), then AIRPORTS> (1R) ..... PRESS

The 20 nearest airports within 240 NM, nearest first, with the longest runway.

► LSK beside the airport ..... PRESS
► EXEC key ..... PRESS

cont'd... ►►►

cont'd... ►►►



DIRECT TO — nearest airports

Direct to with abeam points

► DTO key ..... PRESS twice (or ABEAM> on the DIRECT TO page)

The title is DTO ABEAM.

► LSK beside the waypoint (DSD) ..... PRESS

The TMPY is displayed with the abeam points (ABWHAMY, ABCUPRI …): the waypoints skipped, projected onto the new track.

► EXEC key ..... PRESS

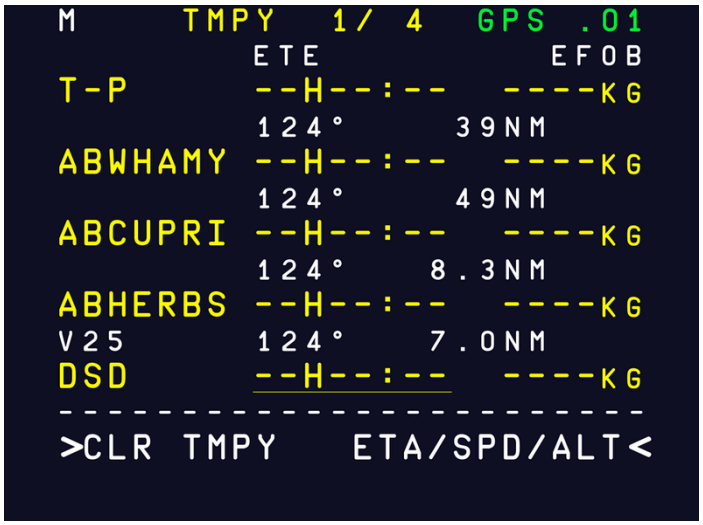


DTO ABEAM — waypoint list

cont'd... ►►►

FOR FLIGHT SIMULATION USE ONLY - NOT FOR REAL-WORLD OPERATIONS

cont'd... ►►►



TMPY after DTO ABEAM DSD

Note

The abeam points and the DIRECT TO waypoint of a DTO ABEAM cannot be revised (lateral or vertical revision, insertion, deletion, new DIRECT TO). No abeam point is made for existing abeam points, crossing and along-track points, moving waypoints, legs without a fix termination and holds; nor when it would be less than 2 NM from the previous one.

Direct to with an inbound course (intercept)

► DTO key ..... PRESS
► LSK beside the waypoint (DSD) ..... PRESS
► INBND CRS (2L) ..... ENTER the inbound course, for example `171`
► INTCP DIST (3L) ..... ENTER the distance before the waypoint where the course is intercepted, for example `10`

Only with an INBND CRS.

► ALT CNSTR (4L) ..... ENTER if required
► EXEC key ..... PRESS

The FMS inserts a course-to-fix leg on the inbound course before the waypoint.

cont'd... ►►►

cont'd... ►►►



DIRECT TO DSD with INBND CRS 171° and INTCP DIST 10 NM

MPH.1.12 Mark

Ident.: MPH.1.12 — 01 NOV 2026
ALL

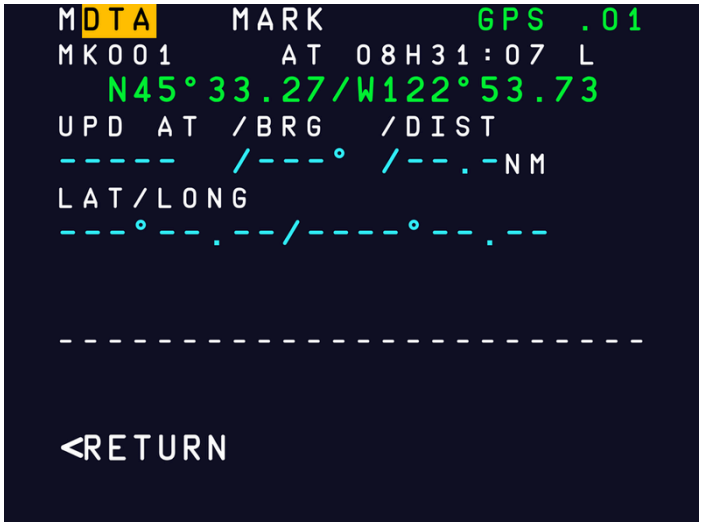
Marking the present position

► MRK key ..... PRESS

The present position is stored as a pilot waypoint named with the first free MKnnn (MK001, MK002 …). The MARK page shows it with the time of the mark (L local, Z UTC).

► DATA key, then SAVE< (6R) ..... PRESS

To keep the waypoint after the FMS is switched off (MPH.3.4).



MARK page — MK001

Updating the FMS position

When the aircraft overflies a known point, the FMS position can be moved onto it. The MRK key freezes the position at the moment it is pressed.

cont'd... ►►►

cont'd... ►►►

► MRK key ..... PRESS when over the point
► Point overflown ..... ENTER one of:
  ► UPD AT (2L) ..... its ident, or `ident/bearing/distance` from a fix
  ► LAT/LONG (3L) ..... its latitude/longitude

With an empty scratchpad, UPD AT displays the DATA LIST (filter ALL). The position of the point and the difference (ΔPOS) to the frozen position are shown, with PRESS EXEC TO CONFIRM.

► ΔPOS ..... CHECK
► EXEC key ..... PRESS

CAUTION

Check the position difference carefully: the update cannot be undone.

The MARK page is described in PGE.8.

MPH.1.13 RNP Insertion

Ident.: MPH.1.13 — 01 NOV 2026
ALL

The RNP is computed by the FMS from the sensors in use, the flight area and the database (PRI.1). The crew can enter another value.

► PROG key ..... PRESS twice (PROG 2/3)
► Scratchpad ..... TYPE the RNP in NM, for example `0.5`
► RNP (6L) ..... PRESS

En route and terminal area: 0.2 to 20 NM. Approach area: 0.2 to 0.3 NM. Outside the range: RANGE ERROR.



PROG 2/3 — RNP 0.5 NM entered

► To cancel ..... CLR, then RNP (6L)

The RNP returns to the computed value.

CAUTION

An RNP larger than the computed value raises the RNP alert (ABN.1).

cont'd... ►►►

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MPH.1.14 Predictive RAIM

Ident.: MPH.1.14 — 01 NOV 2026
ALL

Prediction along the flight plan

► PROG key, then <PRAIM (5L) ..... PRESS

On the ground, PRAIM 2/2 is displayed.

► >ACT/SEC (1L), criterion (2L), T/O TIME (1R) ..... CHECK

► >START PREDICTION (3L) ..... PRESS

PRESS EXEC TO CONFIRM is shown.

► EXEC key ..... PRESS

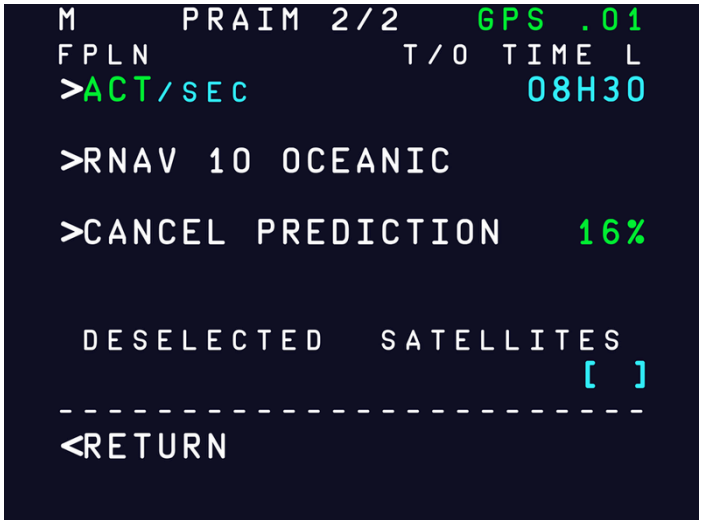
The prediction runs; its progress is shown in %.

■ When the prediction is complete

► Result ..... CHECK RESULT OK

■ If <RESULT FAIL

► <RESULT ..... PRESS for the detailed results



PRAIM 2/2 — prediction in progress

CAUTION

- The prediction is allowed only on the ground, with a flight plan that is not empty (NOT ALLOWED otherwise).
- While it runs, the plan, criterion, T/O TIME and deselected satellites cannot be changed.
- A change of the flight plan during the prediction is not taken into account: cancel and start a new prediction.

Cancelling the prediction

► >CANCEL PREDICTION (3L) ..... PRESS

► EXEC key ..... PRESS

The prediction is also cancelled at take-off. The PRAIM pages are described in PGE.3.

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MPH.2 VERTICAL FUNCTIONS

MPH.2.1 Monitoring the Vertical Guidance

Ident.: MPH.2.1 — 01 NOV 2026
ALL

See the flight phase procedures: climb FPH.2.3, cruise FPH.3.1, descent FPH.4.3, approach FPH.5.3. The VERT REV page is described in PGE.2.6, the vertical navigation in PRI.4.

MPH.2.2 RTA Insertion or Modification

Ident.: MPH.2.2 — 01 NOV 2026
ALL

A required time of arrival (RTA) can be set on one waypoint of the flight plan.

► FPLN key ..... PRESS
► Right LSK beside the waypoint (DSD) ..... PRESS

The VERT REV page is displayed.

► Scratchpad ..... TYPE the RTA

`0920` (or `092000`): at 09H20. `A0920`: at or after. `B0920`: at or before. The time is in the time base of the label (RTA L local when a DIFF is set, else Z).

► RTA (4L) ..... PRESS

The RTA is shown with, beside it, the difference between the predicted ETA and the RTA: green, or amber when the RTA is missed.

■ If DELETE OTHER RTA ? is shown

► EXEC key ..... PRESS, to replace the RTA of the other waypoint

Only one RTA per flight plan.

► EXEC key ..... PRESS

The RTA is inserted and the FPLN page is displayed.



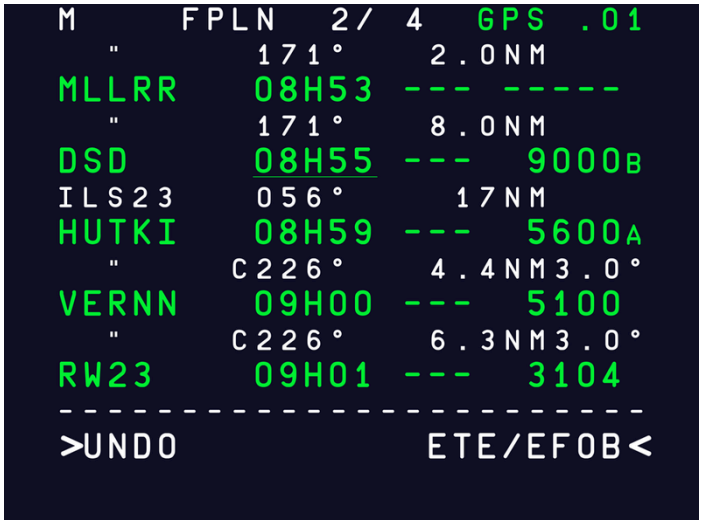
VERT REV of DSD — RTA B09H20, ETA 18 min before it; ALT CNSTR 9000B (TMPY)

cont'd... ►►►

cont'd... ►►►

On the FPLN page (ETE or ETA) and on PROG 1/3, the time of the RTA waypoint is underlined: green (yellow in a TMPY) when the RTA is met, amber when missed. RTA MISSED is then shown in the scratchpad.

In cruise and descent the managed speed (TGT IAS on VNAV 1/2) becomes the RTA speed, and the ETA of the RTA waypoint converges on the RTA. With the speed mode on AUTO the aircraft flies it (PRI.1.11).



FPLN page 2/4 in ETA/SPD/ALT format — DSD with RTA (underlined) and 9000B

► To delete the RTA ..... CLR, then RTA (4L), then EXEC

Note

No RTA can be set on a moving waypoint (NOT ALLOWED).

MPH.2.3 Constraint Insertion or Modification

Ident.: MPH.2.3 — 01 NOV 2026
ALL

► FPLN key ..... PRESS

► Right LSK beside the waypoint ..... PRESS

The VERT REV page is displayed.

► ALT CNSTR (2R) ..... ENTER the altitude constraint

`9000` at, `9000A` at or above, `9000B` at or below; a flight level as `FL120`. A window as `FL90/FL100` (lower/upper).

► FPA (4R) ..... ENTER the flight path angle of the leg ending at the waypoint, if required

1.0° to 9.0°. Only in the descent part of the flight plan (cyan); elsewhere the field is green and the entry is refused (NOT ALLOWED).

► SPD CNSTR (3R) ..... ENTER the speed constraint (IAS), if required

A speed constraint is an "at or below" limit.

► EXEC key ..... PRESS

The constraints are inserted and the FPLN page is displayed.

To delete a constraint: CLR, then its LSK (ALT CNSTR, SPD CNSTR or FPA), then EXEC.

cont'd... ►►►

cont'd... ►►►

Note

With the temperature compensation ON (VNAV 2/2), an altitude constraint entered by the crew is taken as a corrected value and shown with a c before it; the c goes when the compensation is set OFF, the value stays. See PGE.3.

MPH.2.4 Vertical Wind Profile Modification

Ident.: MPH.2.4 — 01 NOV 2026 — ALL

► FPLN key ..... PRESS (twice for the SEC)
► Right LSK beside the waypoint ..... PRESS
► <WIND (5L) ..... PRESS

Large characters: the profile is defined at this waypoint. Small characters: the profile is carried from another waypoint.

► Scratchpad ..... TYPE the new values (all or part of `direction/speed/FL`)
► LSK beside the group ..... PRESS

A new group is entered on the brackets.

► To delete a group ..... CLR, then the LSK beside the group

When the last group of a profile defined at the waypoint is deleted, the waypoint takes again the profile carried from the other waypoints. The last group of a carried profile cannot be deleted (NOT ALLOWED).

► EXEC key ..... PRESS

The FPLN page is displayed.

The full procedure for a new profile is in FPH.1.16.

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MPH.3 OTHER FUNCTIONS

MPH.3.1 Radio Navigation

Ident.: MPH.3.1 — 01 NOV 2026
ALL

The FMS tunes the VOR/DME receivers for its radio position (autotuning) and shows their raw data on the NAV FRQ page (PGE.6).

Navaid manual tuning

► DATA key, then NAV FRQ> (3R) ..... PRESS

■ To choose among the nearest navaids

► NAV1 (1L) or NAV2 (3L) ..... PRESS with an empty scratchpad

The NAV1 TUNE (NAV2 TUNE) page shows the nearest VHF navaids with their type, frequency, bearing and distance. NEXT / PREV for more.

► LSK beside the navaid ..... PRESS

The receiver is tuned in manual mode (MAN) and the NAV FRQ page is displayed again.

■ To enter a frequency

► Scratchpad ..... TYPE the frequency, for example `117.40`

► NAV1 (1L) or NAV2 (3L) ..... PRESS

108.00 to 117.95 MHz. The receiver changes to MAN.

Navaid autotuning

► DATA key, then NAV FRQ> (3R) ..... PRESS

► AUTO/MAN (1R for NAV 1, 3R for NAV 2) ..... CHECK AUTO

■ If MAN is in use

► AUTO/MAN< ..... PRESS to select AUTO

► AUTO ..... CHECK, after a few seconds, that it is still selected

Note

When a VOR receiver is selected as a navigation source in the cockpit, AUTO is refused (NOT ALLOWED).

Deselecting and reselecting navaids

See FPH.1.12.

MPH.3.2 Pilot Data: Creation, Modification, Deletion, Rename

Ident.: MPH.3.2 — 01 NOV 2026
ALL

The pilot database holds airports, navaids, waypoints and routes created by the crew (PGE.9.3, MNT.3).

► DATA key, then DATABASE> (1R) ..... PRESS

► AIRPORT> / NAVAID> / WAYPOINT> ..... PRESS

The PILOT DATA page lists the data of this type, with the number of free slots. Type the first characters of an ident in the scratchpad to see only the idents that begin with them.

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■ To create a data

► NEW> (6R) ..... PRESS

► Fields ..... FILL IN (see the example below)

■ To consult or change a data

► LSK beside the ident ..... PRESS

The PLT APT, PLT NAVAID or PLT WPT page is displayed. NEXT / PREV show the other data.

■ To delete a data

► CLR key, then the LSK beside the ident ..... PRESS

PRESS EXEC TO CONFIRM is shown.

► EXEC key ..... PRESS

■ To rename a data

► IDENT (1L on its PLT page) ..... ENTER – and the new ident, for example –DSD12

Note

- *A data used in the active, temporary or secondary flight plan cannot be changed or deleted: USED is shown in reverse video beside its ident. A data used in a route cannot be deleted: USED is shown in normal video.*
- *Two data of the same type cannot have the same ident (IDENT ALREADY USED).*
- *After a change, the DTA alert (NAV DATA MODIFIED / SAVE DATA) asks for a DATA SAVE (MPH.3.4).*

Example: pilot waypoint 10 NM east of DSD

► DATA, DATABASE> (1R), WAYPOINT> (3R), NEW> (6R) ..... PRESS

► IDENT (1L) ..... ENTER DSD10

Up to 5 characters.

► PLACE/BRG/DIST (3L) ..... ENTER DSD/090/10

True bearing. The position is computed and shown in LAT/LONG. The position can also be entered directly in LAT/LONG (2L), or as the intersection of two bearings in PLACE/BRG1/PLACE/BRG2 (4L), for example DSD/090/LTJ/150.

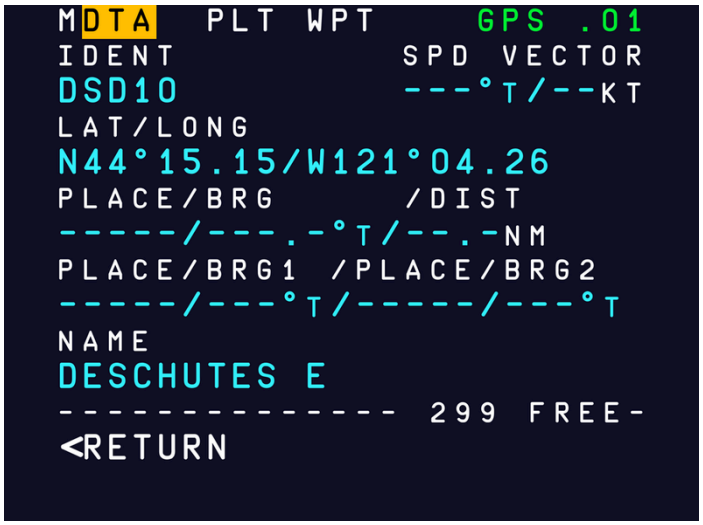
► NAME (5L) ..... ENTER if required (up to 15 characters)

► <RETURN (6L) ..... PRESS

DSD10 is in the PILOT DATA list.

cont'd... ►►►

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PLT WPT — DSD10 created from DSD/090/10

A data is stored once its IDENT and its position are entered.

MPH.3.3 Pilot Routes

Ident.: MPH.3.3 — 01 NOV 2026
ALL

Creating a pilot route

► DATA, DATABASE> (1R), ROUTE> (4R) ..... PRESS

The PILOT DATA page of the routes is displayed (<CO-ROUTE at 1L gives the company routes).

► NEW> (6R) ..... PRESS

The PLT ROUTE page is displayed.

► IDENT (1L) ..... ENTER the route ident, for example `KPDXKRDM1`

The route is stored as soon as it has an ident. Departure and arrival airports are optional.

► FROM/TO (1R) ..... ENTER `KPDX/KRDM`

The airports are shown in the route list with the direct leg between them.

► Left LSK beside the arrival airport (KRDM) ..... PRESS

The ARRIVAL page is displayed: select the approach (ILS23), STAR, VIA and TRANS, then <RETURN.

► Left LSK beside the departure airport (KPDX) ..... PRESS

The DEPARTURE page is displayed: select the runway (28R), SID (WHAMY5) and TRANS, then <RETURN.

► Waypoints ..... TYPE the ident and PRESS the LSK of the element before which it goes

For example `CUPRI` on the KRDM line. A duplicate ident displays the DATA LIST; an unknown ident the NEW DATA page.

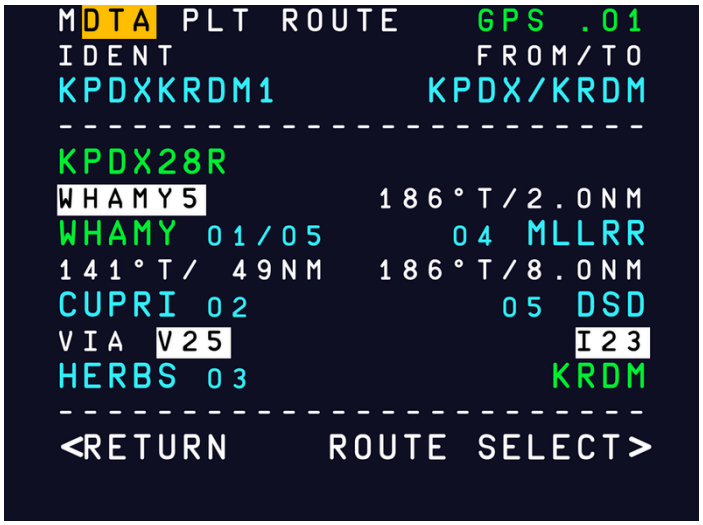
► Airways ..... TYPE `airway/exit fix` and PRESS the LSK of the element before which it goes

For example `V25/DSD` on the KRDM line. `/` alone displays the AIRWAY LIST, then the TO LIST.

► DATA SAVE ..... PERFORM (MPH.3.4)

cont'd... ►►►

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PLT ROUTE — KPDXKRDM1 with SID, V25 and the approach (I23)

On the PLT ROUTE page the procedures and airways are shown in reverse video; ----> and <---- scroll a long route. CLR on an element deletes it (not the airports); CLR on the last fix of the SID or the first fix of the arrival deletes that procedure. Waypoints cannot be revised in a route. A route is created as a copy of another one by entering + and the new ident in the IDENT field of the displayed route.

CAUTION

Check every pilot route on the MCDU before use.

Using a pilot route

ROUTE SELECT> (6R on PLT ROUTE, when both airports are set) displays the ROUTE SEL page with the route, to initialize the flight plan (FPH.1.7). The route can also be called by its ident, or found by FROM/TO, on the ROUTE SEL page.

Modifying, deleting or renaming a pilot route

► DATA, DATABASE> (1R), ROUTE> (4R) ..... PRESS

The idents of the routes are shown with their airports. An ident in amber: the route holds fixes, airways or procedures that are no longer in the standard database. NEXT / PREV show the other routes; the first characters typed in the scratchpad filter the list.

■ To modify

► LSK beside the route ..... PRESS, then change the route on the PLT ROUTE page

■ To delete

► CLR key, then the LSK beside the route ..... PRESS

► EXEC key ..... PRESS

■ To rename

► LSK beside the route ..... PRESS

► IDENT (1L) ..... ENTER – and the new ident

The company routes are maintained as described in MNT.2.

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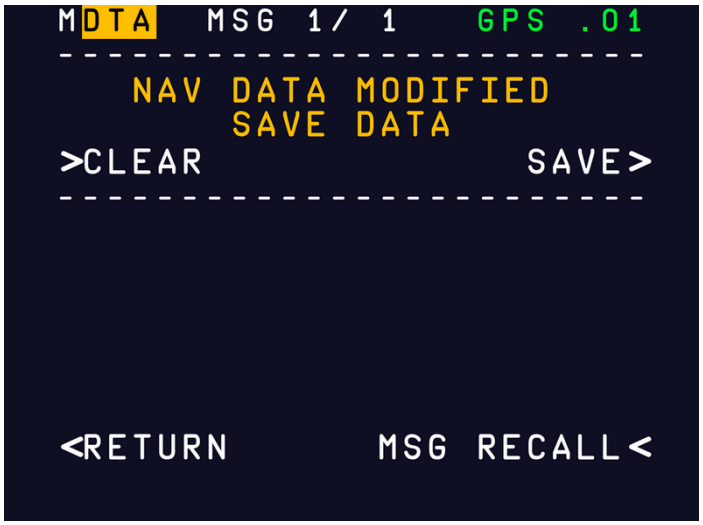
MPH.3.4 Saving Data

Ident.: MPH.3.4 — 01 NOV 2026
ALL

► DATA key ..... PRESS
► SAVE< (6R) ..... PRESS

The pilot data, the MARK waypoints, the company routes and the SEC are saved. XFER DATA IN PROGRESS is shown in the scratchpad during the save. XFER FAIL is shown if the save fails.

The DTA alert (NAV DATA MODIFIED / SAVE DATA) is raised after any change of the pilot data. On the MSG page, SAVE> gives the DATA MENU page.



MSG page — DTA alert after the creation of pilot data

SIMULATOR NOTE

The saved data are kept in the aircraft's user data folder and recovered at the next start of the aircraft.

MPH.3.5 Standard Database Selection

Ident.: MPH.3.5 — 01 NOV 2026
SIMULATOR ONLY

SIMULATOR NOTE

The FMS uses one standard navigation database, built from the X-Plane navigation data (stock or Navigraph) installed in the simulator. There is no second (additional) standard database to select: the NAV DATA page is read-only. See MNT.1.

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ABN.1 FMS ALERTS

ABN.1.1 Alert Indication

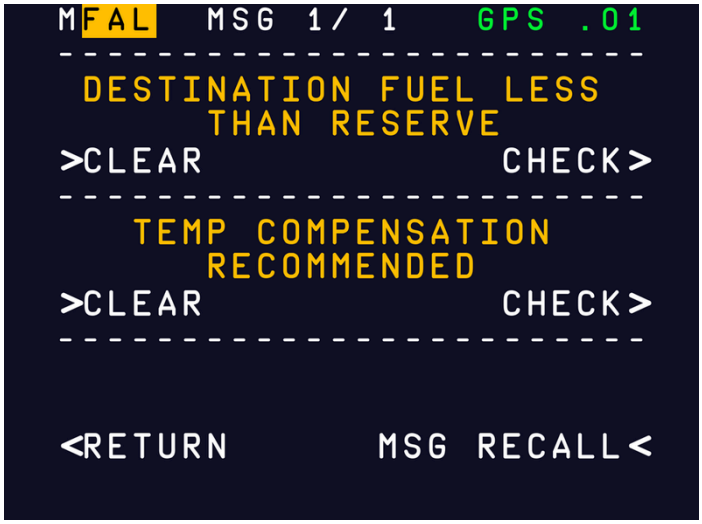
Ident.: ABN.1.1 — 01 NOV 2026
ALL

The FMS monitors its sensors, its data and the flight plan. When a monitored condition is found, the FMS raises an alert. Each alert has a three-letter code and a message of one or two lines.

When at least one alert is pending:

- the code of the highest-priority alert shows in amber reverse video in the MCDU title line, right of the M/T letter,
- the MSG annunciator of the MCDU comes on,
- the POS annunciator of the MCDU also comes on for a POS or INI alert,
- **MSG** shows on the PFD.

The title-line code always follows the live alert list, also while the MESSAGE page is displayed.



MESSAGE page — FAL and ISA pending, FAL (highest priority) in the title line

The MSG key displays the MESSAGE page (see PGE.7). It lists the alerts by priority, two per page, each with its prompts:

>CLEAR (2L / 4L)	Removes the alert from the list of this MCDU. Not shown for an alert that cannot be removed by the crew.
Action prompt (2R / 4R)	CHECK>, INSERT>, CHANGE>, SAVE> or CTK>: displays the page where the crew checks or corrects the cause.
MSG RECALL< (6R)	Shows again the alerts that were masked on this MCDU.

Delay

Some causes must be present for a given time before the alert is raised (the DELAY column of ABN.1.2). The time counts in simulator time: it stops while the simulator is paused. If the cause changes during the delay, the count starts again.

Removal of an alert

An alert leaves the list in one of three ways:

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Cause gone	The FMS withdraws the alert from both MCDUs, including where it was masked. MSG RECALL< does not bring it back.
>CLEAR, masked alert	The alert is masked on this MCDU only. MSG RECALL< brings it back as long as its cause is present. If the cause goes and comes again, the alert is raised again.
>CLEAR, cleared alert	The alert is removed on this MCDU only and is not recallable. This applies to WGT, to NRP ALERT (FAL) and to RADIO NAV AUTOTUNING FAILURE (R/N), whose causes are single events.

Some alerts have no >CLEAR prompt (INI, HDG, FFF, and POS SELECTED POS NOT VALID / BCP POSITION UPDATING). They stay until the cause is corrected.

Note

Alert clearing is not shared between the two FMS. An alert masked or cleared on one MCDU stays on the other MCDU, with its MSG annunciator.

Dual FMS

Each FMS runs its own monitoring and raises its own alerts on the MCDU connected to it. RADIO NAV AUTOTUNING FAILURE is raised only by the active FMS (the FMS coupled with the autopilot), because only that FMS tunes the radios.

ABN.1.2 List of Alert Codes

Ident.: ABN.1.2 — 01 NOV 2026 — ALL

The table lists the alerts the FMS raises, from the highest to the lowest priority. When several alerts are pending, the title line shows the code of the first one in this order.

Column >CLEAR: **M** = the alert is masked (recallable), **C** = the alert is cleared, **–** = no >CLEAR prompt.

CODE	MESSAGE	CAUSE	>CLEAR	DELAY
CFG	CONF A/C TYPE INCONSISTENCY	FMS CONF aircraft type differs from the aircraft	M	–
CFG	PERFDB A/C TYPE INCONSISTENCY	PERF DATA aircraft type differs from the aircraft	M	–
WGT	SEC FPLN ACTIVATED / CHECK WEIGHT	Active weights replaced by SEC PERF weights	C	–
CTK	CROSS TALK FAILURE / NO COMMUNICATION FMS1/2	No cross talk activity	M	15 s
CTK	CROSS TALK INIT / PRESS CTK TO CONFIRM	FMS powered up in flight	M	–
CTK	CROSS TALK INIT / CONFIRM ON THE OTHER FMS	Other FMS powered up in flight	M	–
INI	CHECK INITIAL POSITION / AND INIT SENSORS	Initial position invalid on ground	–	–
AIR	AIR DATA FAILURE / INSERT BACKUP PARAMETERS	ZC, CAS or TAT invalid	M	5 s
HDG	HEADING INPUT NOT VALID / INSERT NAV HEADING	Heading invalid	–	5 s
POS	SELECTED POS NOT VALID / CHANGE NAV MODE	Selected navigation mode position invalid	–	5 s
POS	BCP POSITION UPDATING / IN 30S	BCP far from its best sensor	–	5 s

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CODE	MESSAGE	CAUSE	>CLEAR	DELAY
POS	POSITION DISCREPANCY	Navigation modes, or FMS 1 and FMS 2, disagree	M	5 s
FAL	DESTINATION FUEL LESS / THAN RESERVE	EFOB at destination below RESERVE	M	–
FAL	NRP ALERT	Non return point within 1 min	C	–
FFF	FUEL FLOW FAILURE / INSERT BACKUP PARAMETERS	Fuel flow 1 or 2 invalid	–	30 s
DTA	NAV DATA MODIFIED / SAVE DATA	User data or SEC FPLN not saved	M	–
VAR	INSERTED/COMPUTED / VAR DISCREPANCY	Entered magnetic variation differs by more than 2°	M	–
FPL	FPLN DISCONTINUITY / OR END OF ROUTE	Discontinuity or end of route within 1 min	M	–
GPS	GPS FAILURE / CHECK GPS STATUS	GPS receiver fault	M	5 s
R/N	RADIO NAV EPE > RNP / OR INVALID	Radio navigation EPE invalid or above RNP	M	8 s
R/N	RADIO NAV AUTOTUNING / FAILURE	Tuned frequency differs from the command	C	–
AIM	NO GPS RAIM	GPS position or integrity lost — en route	M	30 s
AIM	NO GPS RAIM	— terminal area, approach area before the FAF	M	10 s
AIM	NO GPS RAIM	— approach area after the FAF, HDOP degraded or invalid	M	10 s
AIM	NO GPS RAIM	— approach area after the FAF, HDOP valid	M	300 s
AIM	GPS PRAIM NOT VALID / AT FAF OR MAP	Predicted HIL at FAF or MAP not valid	M	–
HIL	GPS HORIZONTAL / INTEGRITY ALERT	GPS HIL above the limit — en route	M	20 s
HIL	GPS HORIZONTAL / INTEGRITY ALERT	— terminal and approach areas	M	–
APP	APPROACH NOT ENABLE / CHECK TKE OR XTK	Approach guidance condition not met	M	–
APP	APPROACH NOT ENABLE / CHECK POS EPE OR GPS HIL	Approach GPS or radio condition not met	M	–
RNP	NAVIGATION ACCURACY / DEGRADED	ANP above RNP	M	–
RNP	RNP > RNP_DEFAULT / AIRSPACE INCONSISTENCY	Inserted RNP above the default	M	–
RNP	RNP APPROACH / INTEGRITY DEGRADED	GPS integrity not sufficient for the RNP approach	M	–
FMS	FMS BITE FAILURE	A BITE status bit set	M	5 s
ISA	TEMP COMPENSATION / RECOMMENDED	Cold destination, compensation off	M	–
ALN	IRS ALIGNMENT / IN PROGRESS	The AHRS of the FMS side is aligning	M	–
TMR	END OF COUNTDOWN TIMER	Countdown timer at 00:00	M	–

ABN.1.3 Meaning of the Alerts

Ident.: ABN.1.3 — 01 NOV 2026 — ALL

The alerts are given in alphabetical order of their code. The message is shown as on the MESSAGE page.

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AIM

NO GPS RAIM

Cause — The GPS gives a position without integrity (no HIL: RAIM not available), or, in flight, the GPS is working but gives no valid position. The delay depends on the flight area (see ABN.1.2). In the approach area after the FAF, the delay is 10 s when the GPS HDOP is above 10 or invalid, and 300 s when the HDOP is valid.

Action — CHECK> displays the GPS NAV page. Check the GPS mode, the number of satellites and the HIL.

GPS PRAIM NOT VALID *AT FAF OR MAP*

Cause — In the approach phase, with the GPS used for navigation and the missed approach not active: the HIL predicted at the time of passage over the FAF or the MAP is not available or is above 0.3 NM.

Action — CHECK> displays the PRAIM page, where the predictions at FAF and MAP can be requested.

AIR

AIR DATA FAILURE *INSERT BACKUP PARAMETERS*

Cause — The barometric corrected altitude (ZC), the calibrated airspeed or the total air temperature is invalid on both air data computers, and no backup value is inserted for it. When only one air data computer fails, the FMS uses the other one and no alert is raised.

Action — INSERT> displays the AIR/RA page. Enter IAS, ZC and TAT as required.

Removal — The alert is withdrawn when a backup value is inserted for each invalid parameter, or when the data are valid again.

ALN

IRS ALIGNMENT *IN PROGRESS*

Cause — The AHRS of the FMS side (AHRS 1 for FMS 1, AHRS 2 for FMS 2) is in alignment, after its power-up or a realignment, on the ground or in flight.

Action — Wait for the end of the alignment.

Removal — The alert is withdrawn at the end of the alignment.

APP

The approach conditions are checked from 2 NM along track before the FAF of the selected approach, until the FAF is sequenced. They are not checked when the missed approach is active.

APPROACH NOT ENABLE *CHECK TKE OR XTK*

Cause — The cross track error (XTK) is 0.3 NM or more, or the track angle error (TKE) is 90° or more.

Action — CHECK> displays PROG 2/3. Check XTK and TKE.

APPROACH NOT ENABLE *CHECK POS EPE OR GPS HIL*

Cause — With the GPS used for navigation: the GPS HIL is 0.3 NM or more, or the HIL predicted at the FAF or the MAP is not available or above 0.3 NM. With the radio navigation used: the radio navigation EPE is 0.5 NM or more. Also raised when neither is used.

Action — CHECK> displays PROG 3/3. With GPS, check the current HIL on GPS NAV and the predicted HIL on PRAIM. With radio navigation, check the EPE on BCP NAV and the navaids on NAV FRQ.

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CFG

CONF A/C TYPE ***INCONSISTENCY***

PERFDB A/C TYPE ***INCONSISTENCY***

Cause — The aircraft type of the configuration file (FMS CONF) or of the performance database (PERF DATA) is not the type of the aircraft in which the FMS is installed. Both files are shown on the CONF DATA page.

Action — ► CLEAR masks the alert. The FMS predictions are not reliable: report the configuration.

CTK

CROSS TALK FAILURE ***NO COMMUNICATION FMS1/2***

Cause — There has been no activity on the cross talk for more than 15 s: the cross talk link has failed, or the other FMS is lost (its display unit is failed or not powered). The two FMS then work in independent mode. The alert and the independent mode stay after the link comes back, until a cross talk initialization is done.

Action — If the other FMS is not powered, restore its power. To resynchronize the two FMS, use CTK INIT on the FMS BITE page of the inactive FMS (see ABN.2.1). CTK> displays the FMS BITE page.

CROSS TALK INIT ***PRESS CTK TO CONFIRM***

CROSS TALK INIT ***CONFIRM ON THE OTHER FMS***

Cause — An FMS has been powered up in flight after a long power interruption (more than 5 s) while the other FMS was running. The FMS powered up last shows PRESS CTK TO CONFIRM; the other FMS shows CONFIRM ON THE OTHER FMS. The two FMS stay in independent mode until the confirmation.

Action — On the MCDU that shows PRESS CTK TO CONFIRM, press CTK> beside the message. The data of the other FMS are transferred: XFER DATA IN PROGRESS shows in the scratchpad until the transfer ends, then the two FMS are back in dual mode and both alerts are withdrawn. On the MCDU that shows CONFIRM ON THE OTHER FMS, no action is possible: confirm on the other MCDU.

Note

On the ground, the cross talk initialization after a power-up is automatic: CROSSTALK INIT shows in the scratchpad while the two FMS harmonize their data, and no alert is raised. A power interruption of 5 s or less is transparent.

DTA

NAV DATA MODIFIED ***SAVE DATA***

Cause — Data of the pilot database or of the company routes have been modified and not saved, or the secondary flight plan has been modified on the ground and not saved. Unsaved data are lost at the next long power interruption of the FMS.

Action — SAVE> displays the DATA MENU page. Press SAVE< to save the data.

Removal — The alert is withdrawn when the data are saved.

FAL

DESTINATION FUEL LESS ***THAN RESERVE***

Cause — The estimated fuel on board (EFOB) predicted at the destination is lower than the RESERVE entered on the WEIGHT page.

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Action — CHECK> displays the CRUISE page. Check the fuel predictions, the fuel on board and the reserve.

Removal — The alert is withdrawn when the destination EFOB is again equal to or greater than the reserve.

NRP ALERT

Cause — The non return point (NRP, shown on PROG 1/3) will be reached within 1 minute.

Action — CHECK> displays PROG 1/3. The alert stays until >CLEAR is pressed.

FFF

FUEL FLOW FAILURE ***INSERT BACKUP PARAMETERS***

Cause — The fuel flow of engine 1 or engine 2 is invalid and no backup value is inserted for it.

Action — INSERT> displays the FUEL FLOW page. Enter the fuel flow of the failed side.

Removal — The alert is withdrawn when a backup value is inserted for each failed side, or when the fuel flow is valid again. There is no >CLEAR prompt.

FMS

FMS BITE FAILURE

Cause — The internal test of the FMS has set a status bit to 1 on the FMS BITE page. The bits monitor the stored data: integrity of the pilot data, of the company routes and of the performance data, the standard navigation database, the consistency of the pilot and company routes with the standard database, and the magnetic variation model.

Action — CHECK> displays the FMS BITE page. Find the bit set to 1 (see PGE.10).

FPL

FPLN DISCONTINUITY ***OR END OF ROUTE***

Cause — LNAV is engaged and a flight plan discontinuity, or the end of the flight plan, will be reached within 1 minute. The end of the flight plan at the destination, at its runway or at the end of the approach does not raise the alert.

Action — CHECK> displays the FPLN page. Complete the flight plan or prepare the lateral mode.

GPS

GPS FAILURE ***CHECK GPS STATUS***

Cause — The GPS receiver is in fault. The self-test and the satellite acquisition after power-up are normal and do not raise the alert.

Action — CHECK> displays the SENSOR STS page. Check the GPS status and mode.

HDG

HEADING INPUT NOT VALID ***INSERT NAV HEADING***

Cause — The heading of both AHRS is invalid.

Action — INSERT> displays the HDG/ATT page. Enter the navigation heading in the selected reference (MAG or TRUE).

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Removal — The alert is withdrawn when a valid AHRS heading is available again. There is no >CLEAR prompt.

HIL

GPS HORIZONTAL INTEGRITY ALERT

Cause — The GPS horizontal integrity limit (HIL) is greater than twice the current RNP. The delay is 20 s en route, none in the terminal and approach areas.

Action — CHECK> displays the GPS NAV page. Check the HIL.

INI

CHECK INITIAL POSITION AND INIT SENSORS

Cause — On the ground, the initial position is not valid: the GPS gives no position with an EPE lower than 0.1 NM, and no position has been initialized by the crew.

Action — CHECK> displays the POS INIT page. Check the initial position and do the sensors initialization (SENSORS INIT). The POS annunciator is on with this alert.

Removal — The alert is withdrawn when the GPS position is valid, or after the crew initialization. There is no >CLEAR prompt.

ISA

TEMP COMPENSATION RECOMMENDED

Cause — The temperature compensation is not active, and the temperature deviation from ISA at the destination (VNAV 2/2) is lower than −15 °C. When the destination value is not available, the current temperature deviation is used.

Action — CHECK> displays VNAV 2/2. Press TEMP COMP> to activate the cold temperature compensation.

Removal — The alert is withdrawn when the compensation is activated, or when the deviation is −15 °C or more.

POS

SELECTED POS NOT VALID CHANGE NAV MODE

Cause — The position of the selected navigation mode is invalid (for example the GPS mode selected and the GPS position lost). The FMS does not change the mode by itself.

Action — CHANGE> displays PROG 3/3. Select the other navigation mode. There is no >CLEAR prompt.

POSITION DISCREPANCY

Cause — The position of the selected navigation mode and the position of the other mode differ by more than 0.1 NM or by more than the sum of their EPE, whichever is greater. In dual mode, also raised when the positions of FMS 1 and FMS 2 differ by more than the RNP.

Action — CHECK> displays PROG 3/3. Identify the inconsistent navigation source.

BCP POSITION UPDATING IN 30S

Cause — The best computed position (BCP) differs from its best sensor by more than 0.1 NM or by more than the sensor EPE, whichever is greater. The BCP is re-initialized on that sensor.

Action — CHECK> displays the BCP NAV page. There is no >CLEAR prompt.

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The POS annunciator is on while a POS alert is pending.

R/N

RADIO NAV EPE > RNP ***OR INVALID***

Cause — The radio navigation is used in the BCP, and its position is invalid because of a receiver failure, or its EPE is greater than the RNP for radio navigation in the present flight area (5.0 NM en route, 2.0 NM terminal, 0.7 NM approach), or than the RNP inserted by the crew on PROG 2/3. Lack of coverage alone (no station received) does not make the position invalid.

Action — CHECK> displays the NAV FRQ page. Check the radio navigation data.

RADIO NAV AUTOTUNING ***FAILURE***

Cause — During automatic tuning, a NAV receiver returns a frequency different from the frequency commanded by the FMS. The NAV receiver goes to manual tuning (MAN). Raised only by the active FMS.

Action — CHECK> displays the NAV FRQ page. Check the radio navigation data. The alert stays until >CLEAR is pressed.

RNP

NAVIGATION ACCURACY ***DEGRADED***

Cause — The actual navigation performance (ANP) is greater than the current RNP, or the GPS is not used for navigation and the EPE is greater than 3.8 NM.

Action — CHECK> displays PROG 2/3. Check ANP and RNP.

RNP > RNP_DEFAULT ***AIRSPACE INCONSISTENCY***

Cause — The RNP inserted on PROG 2/3 is greater than the default RNP computed for the present flight area and sensors.

Action — CHECK> displays PROG 2/3. Enter a new RNP, or clear the inserted one.

RNP APPROACH ***INTEGRITY DEGRADED***

Cause — In the approach area, during an RNP approach (RNAV, LNAV/VNAV, LP or LPV) flown on GPS, the GPS HIL is invalid or above 0.3 NM. Not raised when the missed approach is active.

Action — CHECK> displays PROG 2/3. Check ANP and RNP.

TMR

END OF COUNTDOWN TIMER

Cause — The countdown of the TIMERS page has reached 00:00. The scratchpad also shows END OF COUNTDOWN TIMER.

Action — ► CLEAR masks the alert.

Removal — The alert is withdrawn when the countdown is reset or given a new value.

cont'd... ►►►

cont'd... ►►►

VAR

INSERTED/COMPUTED ***VAR DISCREPANCY***

Cause — The magnetic variation entered on the HDG/ATT page differs from the computed magnetic variation by more than 2°.

Action — CHECK> displays the HDG/ATT page. Enter a new magnetic variation.

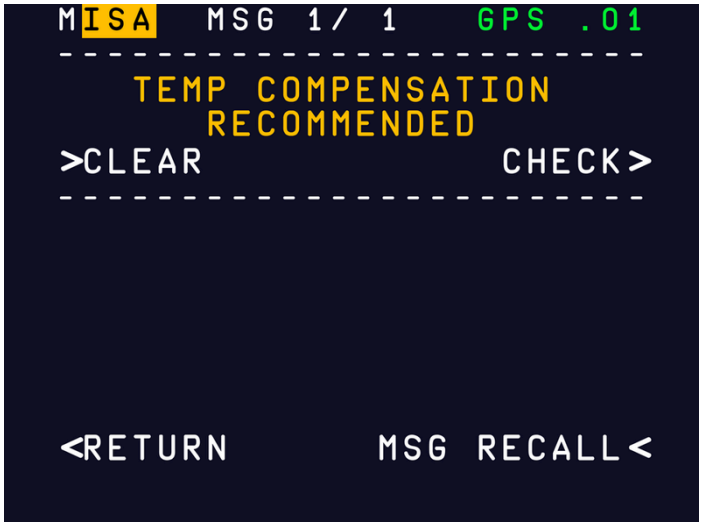
WGT

SEC FPLN ACTIVATED ***CHECK WEIGHT***

Cause — A swap or an activation of the secondary flight plan has replaced at least one active weight (ZFW or FOB) with a value entered on the SEC PERF page. The T/O CG is reset at the same time.

Action — CHECK> displays the WEIGHT page and clears the alert. Check FOB and ZFW, and enter the T/O CG.

Removal — The alert is also withdrawn when the WEIGHT page is displayed by any other means.



MESSAGE page — after >CLEAR on FAL, ISA is first; MSG RECALL< brings FAL back

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ABN.1.4 Alerts Not Simulated

Ident.: ABN.1.4 — 01 NOV 2026

SIMULATOR ONLY

SIMULATOR NOTE

The following alerts of the FMS are not raised, because their cause cannot occur in the simulation:

- **CMD** CROSS TALK COMMAND REJECT: the FMS never rejects a command sent by the other FMS.
- **CTK** USED STANDARD DATABASE DISCREPANCY, ADDITIONAL STANDARD DATABASE DISCREPANCY and COMPANY DATABASE DISCREPANCY: the two FMS always use the same databases.
- **CFG** CURRENT FM CONF DATA DISCREPANCY and CONF DATA DISCREPANCY: the two FMS always use the same configuration data.
- **LAB** LABEL ERROR / CHECK WEIGHT UNIT: the fuel unit is not received from the fuel system, so it cannot be invalid.
- **FAL** DESTINATION FUEL LESS THAN RESERVE for the rerouting point: the FMS has no rerouting point. The alert is raised for the destination only.
- **DTA** for a discrepancy of the saved data between the two sides: the saved data are common to both FMS.
- **FMS** for an MCDU status bit: no MCDU internal failure is simulated (the MCDU FAIL failure blanks the MCDU instead).

The two CFG type alerts of ABN.1.3 can only be raised with a modified aircraft or data file.

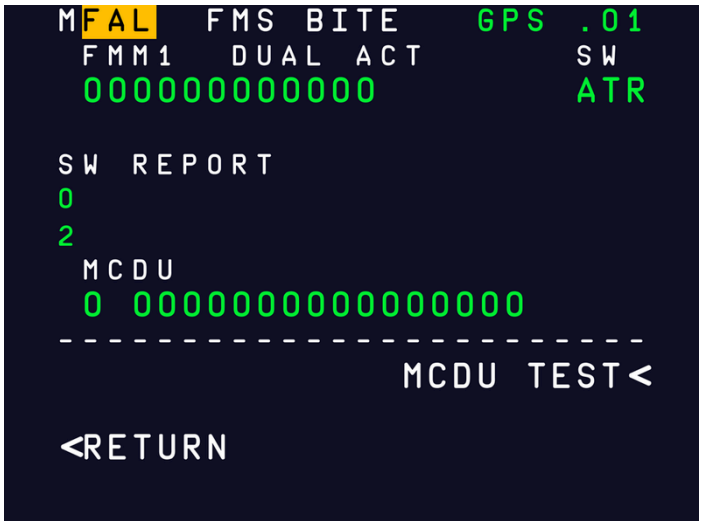
ABN.2 OPERATIONAL CHECKING

ABN.2.1 FMS Resynchronization

Ident.: ABN.2.1 — 01 NOV 2026
ALL

In dual mode the two FMS are synchronized: an entry made on one MCDU is sent to the other FMS through the cross talk. After a cross talk failure (CTK alert), the two FMS work in independent mode, each with its own data, and they stay independent after the link comes back. The CTK INIT command resynchronizes them.

CTK INIT is available only on the FMS that is not coupled with the autopilot (the inactive FMS). On the FMS BITE page, the active FMS shows ACT beside the cross talk status, and has no >CTK INIT prompt.



FMS BITE page of the active FMS — ACT shown, no >CTK INIT

On the MCDU of the inactive FMS:

► DATA key ..... PRESS
► <STATUS (2L) ..... PRESS
► FMS BITE> (1R) ..... PRESS
► FMS BITE page ..... CHECK no ACT, cross talk status IND
► >CTK INIT (5L) ..... PRESS

>CTK INIT shows in reverse video, PRESS EXEC TO CONFIRM shows in the scratchpad and the EXEC annunciator comes on. Any other key, or leaving the page, cancels the command.

► EXEC key ..... PRESS

The FMS makes a long power interruption and restarts. The MCDU shows the MENU page with no system selected.

► <FMS (on MENU) ..... SELECT

The restarted FMS receives the data of the other FMS, as at a power-up (CROSSTALK INIT in the scratchpad). When the transfer ends, the two FMS are in dual mode again and the CTK alert is withdrawn.

► FMS BITE page ..... CHECK DUAL

cont'd... ►►►

cont'd... ►►►

CAUTION

CTK INIT restarts the inactive FMS: its own entries are replaced by the data of the active FMS. Check the flight plan and the performance data on both MCDUs after the resynchronization. If the cross talk link is still failed, the FMS restarts but no data are transferred, and the two FMS stay independent.

After a power-up in flight

When an FMS is powered up in flight after a long power interruption, the resynchronization is not automatic: the CTK alert CROSS TALK INIT / PRESS CTK TO CONFIRM asks the crew to confirm it from the MESSAGE page (see ABN.1.3, CTK).

ABN.2.2 Checking the FMS Position

Ident.: ABN.2.2 — 01 NOV 2026 — ALL

The FMS position is checked against the other navigation sources on PROG 3/3 (see PGE.3):

► PROG key ..... PRESS until PROG 3/3
► Selected mode (green) ..... CHECK position and EPE
► Other mode (BCP or GPS) ..... CHECK bearing / distance from the FMS position, and EPE
► FM2 (or FM1) line ..... CHECK bearing / distance to the position of the other FMS

Dashes when the cross talk is not available.

A discrepancy between the modes, or between the two FMS, larger than the limits of ABN.1.3 (POS) raises the POS alert.

To check the radio navigation part of the BCP:

► <BCP (2L on PROG 3/3) ..... PRESS

The BCP NAV page shows the BCP mode and EPE.

► DATA key, NAV FRQ> (3R) ..... PRESS
► NAV FRQ page ..... CHECK the navaids used and their status

ABN.2.3 Checking the Sensors

Ident.: ABN.2.3 — 01 NOV 2026 — ALL

► DATA key ..... PRESS
► <STATUS (2L) ..... PRESS
► SENSOR STS> (2R) ..... PRESS
► Sensor status ..... CHECK

The SENSOR STS page is described in PGE.10.

ABN.2.4 Checking the Databases and Configuration Data

Ident.: ABN.2.4 — 01 NOV 2026 — ALL

Navigation databases

► DATA key ..... PRESS
► NAV DATA> (2R) ..... PRESS
► STD DATA ..... CHECK name and EXP DATE

The EXP DATE is amber when the database has expired.

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cont'd... ►►►

► CO-RTE DATA / PILOT DATA ..... CHECK

Configuration data

► DATA key ..... PRESS
► <STATUS (2L) ..... PRESS
► CONF DATA> (6R) ..... PRESS
► FMS CONF, PERF DATA, MAG VAR ..... CHECK identification and CRC

SIMULATOR NOTE

The configuration data and the navigation databases cannot be uploaded from a compact flash card. The navigation data come from X-Plane (see SIM.3). The SAVE >STATUS prompt of the CONF DATA page only displays the STATUS page: no FMS status file is written.

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MNT.1 NAVIGATION DATABASE

MNT.1.1 Databases of the FMS

Ident.: MNT.1.1 — 01 NOV 2026
ALL

The FMS works with three databases:

Database	Content	Name on NAV DATA
Standard database (STD DATA)	Airports, runways, VHF navaids, NDBs, waypoints, airways, SID, STAR and approach procedures	Identifier and cycle, with its expiry date
Company database (CO-RTE DATA)	Company routes (see MNT.2)	CORTEBID00, with the date of the last modification
Pilot database (PILOT DATA)	Pilot waypoints, airports, navaids and routes (see MNT.3)	PLTDTBID00, with the date of the last save

The standard database cannot be changed from the MCDU. It is loaded when the FMS starts.

MNT.1.2 Checking the Standard Database

Ident.: MNT.1.2 — 01 NOV 2026
ALL

The database in use is checked before each flight, on the power-up page and on the NAV DATA page (see PGE.1):

► STD DATA ..... CHECK identifier and expiry date

The expiry date is amber when the database has expired.

► NAV DATA test ..... CHECK OK

The * beside the identifier marks the database in use. When no database is loaded, `(NO DATA)` is shown and the date is dashed.

NAV DATA test at power-up

At each FMS power-up, once the standard database is loaded, the FMS checks every pilot route and company route against it: departure and arrival airports, fixes, airways and procedures must exist in the standard database.

- All routes consistent: the test is OK.
- At least one route inconsistent: the test FAILS, INCONSISTENT NAV DB is shown in the scratchpad and <FMS BITE gives the details. The inconsistent routes, and their elements, are amber in the route lists and on the route pages (see PGE.9.2, PGE.9.3).

An inconsistent route can still be reviewed. Correct it (or delete it) before use: re-enter the missing elements from the new database.

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MNT.1.3 Standard Database in X-Plane

Ident.: MNT.1.3 — 01 NOV 2026

SIMULATOR ONLY

SIMULATOR NOTE

The standard database is built from the X-Plane navigation data. The FMS chooses one source for the whole session, when the aircraft loads:

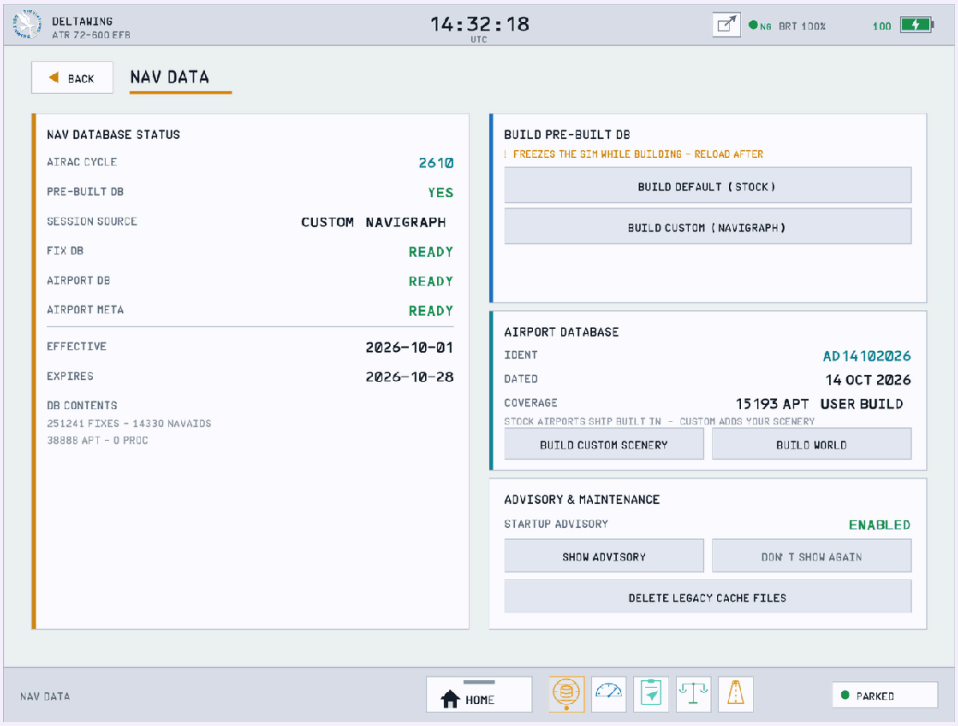
- **Navigraph**: when Navigraph data are installed in the X-Plane `Custom Data` folder, they are used for everything (fixes, navaids, airways, airports, procedures). Database identifier `NAVIGR` + cycle, for example `NAVIGR2610`.
- **X-Plane default**: otherwise the data of X-Plane's `Resources/default data` folder are used. Identifier `DEFFAL` + cycle.

The two sources are never mixed: a procedure from one source always uses the fixes of the same source.

To change the database (new Navigraph cycle, Navigraph installed or removed), update the X-Plane `Custom Data` folder, then reload the aircraft. The deselected navaids list is cleared when the database changes.

Pre-built database. For a fast loading, the aircraft uses a pre-built copy of the navigation data. A pre-built database for the X-Plane default data is supplied. For Navigraph data, build one from the EFB: NAV DATA app, BUILD CUSTOM (NAVIGRAPH). The build freezes the simulator for a while; reload the aircraft afterwards. Without a matching pre-built database the FMS reads the raw X-Plane files: it works, but the loading is slower, and an advisory recommends building one. Build it again after each new Navigraph cycle.

The EFB NAV DATA app also shows the AIRAC cycle, its effective and expiry dates, the session source and the loading state of each database.



EFB NAV DATA app

Expiry date. It is the end of validity of the pre-built database cycle. When the FMS reads the raw files, the expiry date may be unknown: it is then dashed, never amber.

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Airport names. The airport names (STD APT NAME) come from the scenery airport data; the EFB AIRPORT DATABASE card can add the airports of your custom scenery.

SIMULATOR NOTE

Only one standard database is loaded. There is no additional standard database and no database swap from the MCDU.

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MNT.2 COMPANY ROUTES

MNT.2.1 Company Route List

Ident.: MNT.2.1 — 01 NOV 2026
ALL

► DATA key ..... PRESS
► DATABASE> ..... PRESS
► <CO-ROUTE ..... PRESS

The STD DATA page (CO-ROUTE) lists the company routes with their departure and arrival airports (see PGE.9.2.7).

- NEXT / PREV show the other pages of the list.
- Type the first characters of an identifier in the scratchpad: only the routes beginning with them are listed. Empty the scratchpad for the whole list.
- An amber identifier is a route with a fix, airway or procedure that is not in the standard database in use.
- <PLT ROUTE displays the pilot routes.

The crew can review and select company routes. Creating, changing or deleting them needs the access code.

MNT.2.2 Review of a Company Route

Ident.: MNT.2.2 — 01 NOV 2026
ALL

► Route identifier on STD DATA ..... PRESS

The CO-ROUTE page shows the route, read-only (see PGE.9.2.8).

► Element ..... PRESS (as required)

Displays its standard database page, or the departure / arrival procedure.

► <---- / ----> ..... PRESS to scroll (long routes)
► ROUTE SELECT> ..... PRESS to select the route

Displays ROUTE SEL with the route selected; EXEC loads it (see PGE.2).

CAUTION

A company route with airways or procedures can exceed the flight plan capacity. Check the flight plan after loading.

MNT.2.3 Company Route Edition

Ident.: MNT.2.3 — 01 NOV 2026
ALL

CAUTION

Company route edition is for authorized staff only. It is possible on the ground only.

► STD DATA page (CO-ROUTE) ..... DISPLAY
► Access code `1111` ..... ENTER at CODE (6R)

NEW> replaces CODE. A wrong code gives INCORRECT PASSWORD; in flight the entry gives NOT ALLOWED.

The edition mode ends at take-off and after a long power interruption.

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Deleting a company route

► CLR ..... PRESS
► Route identifier ..... PRESS

On the STD DATA page; or, on the CO-ROUTE page, the IDENT (1L) LSK. The identifier goes to reverse video and PRESS EXEC TO CONFIRM is shown.

► EXEC ..... PRESS

Any other LSK cancels the deletion.

Modifying a company route

► Route identifier on STD DATA ..... PRESS

The CO-ROUTE page is displayed with the elements in cyan (modifiable).

► Fixes, airways, procedures ..... INSERT / DELETE

All the rules of the pilot routes apply (see PGE.9.3.6), with these differences:

- only standard database data can be used: airports, fixes and procedures of the pilot database are refused (NOT ALLOWED),
- FROM/TO (1R) accepts standard database airports only.

To rename the route, enter `-NEWNAME` at IDENT (1L). To create a copy under a new name, enter `+NEWNAME`.

Creating a company route

► NEW> (6R) ..... PRESS

An empty CO-ROUTE page is displayed.

► IDENT (1L) ..... ENTER the route identifier (1 to 10 characters)

The route is created.

► FROM/TO (1R) ..... ENTER (optional)
► Fixes, airways, procedures ..... INSERT
► DATA key ..... PRESS
► SAVE< ..... PRESS

- A company route holds up to 50 elements (MEMORY FULL).
- An identifier already used gives IDENT ALREADY USED.
- MEMORY FULL is also shown when no company route slot is free.

MNT.2.4 Saving the Changes

Ident.: MNT.2.4 — 01 NOV 2026
ALL

Creations, modifications, renaming and deletions of company routes are kept in the FMS memory only. They raise the DTA alert. To keep them, save the user data: SAVE< on the DATA MENU (see PGE.9.1).

Changes not saved are lost at the next long power interruption: the company database is then loaded again from its saved copy.

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SIMULATOR NOTE

The company routes supplied with the aircraft are stored in `plugins/ATR_Series_SASL/data/modules/Custom Module/resources/std_coroutes.dat`. After the first SAVE of a change, the modified company database is stored in `plugins/ATR_Series_SASL/data/output/DWSim_Data/DWSim_FMS_CoRoutes.dat` and is used instead of the supplied one.

The EFB FPLN app (LIBRARY) can also save the active flight plan as a company route, load one, and export or import the whole company route library as a file, to share routes between installations.

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MNT.3 PILOT DATA

MNT.3.1 User Data

Ident.: MNT.3.1 — 01 NOV 2026
ALL

The user data are:

- the pilot database: pilot waypoints (including MK waypoints), airports, navaids and routes,
- the company routes modified by the authorized user (see MNT.2),
- the secondary flight plan.

They are created and modified on the MCDU (see PGE.9.3): from the PILOT DATA pages, from NEW DATA when an unknown identifier is entered, with the MRK key, or from the SEC pages.

Any change is kept in the FMS memory and raises the DTA alert (NAV DATA MODIFIED / SAVE DATA). SAVE< on the DATA MENU is then amber.

MNT.3.2 Saving User Data

Ident.: MNT.3.2 — 01 NOV 2026
ALL

► DATA key ..... PRESS
► SAVE< ..... PRESS

XFER DATA IN PROGRESS is shown during the save. The DTA alert goes and SAVE< turns white. With two FMS in DUAL, both FMS take the saved data.

- XFER FAIL: the save failed; the data are still in the FMS memory only.
- The secondary flight plan is not saved while it is a copy of the active flight plan.
- The PILOT DATA date on the NAV DATA page is the date of the last save.

User data not saved are lost after a long power interruption: the FMS then loads the last saved user data again.

SIMULATOR NOTE

Saved user data are kept between sessions. They are stored in the aircraft folder, `plugins/ATR_Series_SASL/data/output/DWSim_Data/`:

File	Content
`DWSim_FMS_PilotDB.dat`	Pilot database
`DWSim_FMS_SecFpln.dat`	Secondary flight plan
`DWSim_FMS_CoRoutes.dat`	Modified company routes

Data not saved are lost when the aircraft is reloaded or X-Plane is closed. Keep a copy of these files before reinstalling or updating the aircraft.

MNT.3.3 Erasing User Data

Ident.: MNT.3.3 — 01 NOV 2026
ALL

► DATA key ..... PRESS
► >ERASE ..... PRESS

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The prompt goes to reverse video, PRESS EXEC TO CONFIRM is shown and the EXEC annunciator lights. A second press of >ERASE cancels.

► EXEC ..... PRESS

ERASING DATA is shown during the erase.

The erase deletes the pilot database and the saved secondary flight plan, in the FMS memory and in the saved copy, on both FMS. To allow it, the active, temporary and secondary flight plans are cancelled.

- XFER FAIL: the erase failed.
- The company routes are not erased.

CAUTION

The erase cannot be undone. It cancels the active flight plan.

MNT.3.4 Deleting One Pilot Data

Ident.: MNT.3.4 — 01 NOV 2026
ALL

► DATABASE> on the DATA MENU ..... PRESS
► AIRPORT> / NAVAID> / WAYPOINT> / ROUTE> ..... PRESS
► CLR, then the identifier ..... PRESS
► EXEC ..... PRESS

A pilot data used in a flight plan or in a pilot route cannot be deleted (NOT ALLOWED): remove it from the flight plan or route first. On the PLT WPT, PLT APT and PLT NAVAID pages, CLR then IDENT, then EXEC, deletes the data displayed.

Save the user data afterwards to make the deletion permanent.

SIM.1 USING THE MCDU IN X-PLANE

SIM.1.1 MCDU Keys in the 3D Cockpit

Ident.: SIM.1.1 — 01 NOV 2026

SIMULATOR ONLY

The two MCDUs are on the pedestal: MCDU 1 on the CAPT side, MCDU 2 on the F/O side. Every key of the keyboard is clickable with the mouse: line select keys, function keys, letters, digits and the BRT keys. A key moves and clicks when it is pressed.

As on the aircraft, the MCDU takes a short time to process a key:

- a letter, a digit or CLR shows in the scratchpad about 0.3 s after the press,
- after a line select key or a function key that changes the page, the screen is black for a moment, then the new page shows (about 0.6 s after the press).

The keys are processed in the order they were pressed, so fast typing is not lost.

Short click	One key press.
Key held more than 1 s	Taken as a second press of the same key.
CLR, short click	Clears the last character of the scratchpad.
CLR held 1 s	Clears the whole scratchpad.
+/-	The first press types -, the next presses change it to + and back.
BRT keys	One step per click; held, the brightness changes continuously. The screen never goes fully dark.

Note

Keep mouse clicks short on the other keys: a key held for more than 1 s is entered twice.

A right-button drag over the MCDU screen moves the view, as elsewhere in the cockpit (see the FCOM, SIM.6).

SIM.1.2 MCDU Pop-up Window

Ident.: SIM.1.2 — 01 NOV 2026

SIMULATOR ONLY

Each MCDU can be shown in an X-Plane pop-up window. The pop-up shows the whole MCDU: the screen, the annunciators and the keyboard. All its keys can be clicked as in the cockpit.

► MCDU screen in the cockpit ..... CLICK (above the scratchpad line)

The pop-up of that MCDU opens.

In the pop-up:

- drag the MCDU face or the screen to move the window,
- use the X-Plane pop-out control to move the window out of the X-Plane window, for example to a second monitor,
- close it with the X-Plane close control, or with a new click on the MCDU screen in the cockpit.

The two MCDU pop-ups can be open at the same time, for example to use MCDU 2 from the CAPT seat. Moving and resizing the pop-ups is described in the FCOM, SIM.7.

Each MCDU pop-up has its own X-Plane command (open / close), and one command closes every pop-up. They can be assigned to a key or a joystick button (see SIM.2).

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SIM.1.3 VR

Ident.: SIM.1.3 — 01 NOV 2026

SIMULATOR ONLY

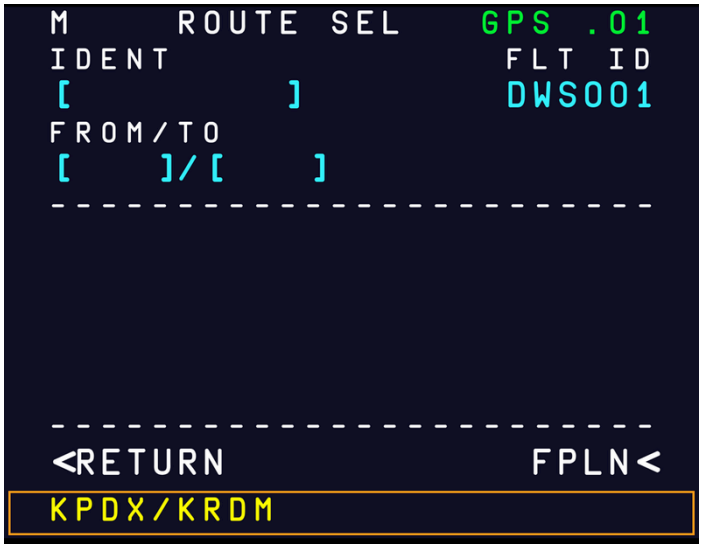
In VR, the MCDU keys in the cockpit are pressed with the controller, as any other cockpit control. A click on the MCDU screen opens the MCDU as a VR window, with its keyboard. Leaving VR turns an open VR window back into a normal pop-up.

SIM.1.4 Typing with the Computer Keyboard

Ident.: SIM.1.4 — 01 NOV 2026

SIMULATOR ONLY

The scratchpad of each MCDU accepts the computer keyboard, in the 3D cockpit and in the pop-up.



MCDU, keyboard typing active (amber frame on the scratchpad line)

► Scratchpad line of the MCDU ..... CLICK

An amber frame shows around the scratchpad line: the keyboard types into this MCDU. The frame is a simulator indication only.

► Entry ..... TYPE

► Line select key ..... CLICK to insert the entry in the field

A to Z, 0 to 9	Letter and digit keys.
. and /	Dot and slash keys.
SPACE	SP key.
+ or -	+/- key. The sign typed is the one pressed.
BACKSPACE	CLR, short press (one character).
DELETE	CLR held (whole scratchpad).
ESC	Ends the keyboard typing.

Each typed key presses the MCDU key itself: the key moves and clicks, and the MCDU processing time applies. ENTER has no function: as on the aircraft, an entry is inserted with a line select key. Key combinations with CTRL or ALT are

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ignored.

The keyboard is released by a new click on the scratchpad line, by ESC, or after 30 s without a key press. Only one MCDU (or the EFB) has the keyboard at a time.

CAUTION

While the keyboard types into the MCDU, the X-Plane keyboard commands do not operate.

SIM.1.5 Two MCDUs

Ident.: SIM.1.5 — 01 NOV 2026

SIMULATOR ONLY

The two MCDUs are complete and independent units. Each has its own page, scratchpad and brightness, and its own keyboard typing. MCDU 1 is connected to FMS 1 and MCDU 2 to FMS 2.

In dual mode, an entry made on one MCDU is sent to the other FMS through the cross talk, so the flight plans and the data entered are the same on both sides. Each crew member can display a different page at the same time. Do not make entries on the same page from both MCDUs at the same time: the last entry is the one kept.

Alerts are cleared on each MCDU separately (see ABN.1.1).

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SIM.2 HARDWARE AND EXTERNAL DISPLAYS

SIM.2.1 Commands for Keys and Buttons

Ident.: SIM.2.1 01 NOV 2026

SIMULATOR ONLY

Every MCDU key is an X-Plane command, separately for MCDU 1 and MCDU 2. The commands can be assigned to keys of the computer keyboard or to buttons of a joystick or of a home cockpit (X-Plane **Settings**, **Keyboard** or **Joystick**; see the FCOM, SIM.6). They are in the X-Plane command list with the other aircraft commands, under **DWSim**, grouped by MCDU.

KEYS	COMMANDS (for each MCDU)
Line select keys	6 left, 6 right
Function keys	MENU, PREV, NEXT, RMS, FPLN, DTO, PERF, MSG, EXEC, PROG, DATA, VNAV, MRK
Brightness	BRT up, BRT down
Letters and digits	A to Z, 0 to 9
Other keys	Dot, slash, space, +/-, CLR

A command acts as the key pressed with the mouse: the key moves and clicks, the MCDU processing time applies, a command held for more than 1 s counts as a second press, and CLR held for 1 s clears the whole scratchpad (see SIM.1.1).

Note

In the X-Plane command list, the slash key is described as the DASH button.

The pop-up of each MCDU also has a command (see SIM.1.2).

SIM.2.2 MCDU Screen Export

Ident.: SIM.2.2 01 NOV 2026

SIMULATOR ONLY

The text of both MCDU screens is published as X-Plane datarefs, for external MCDU hardware, web panels and home cockpit software. The layout is the one X-Plane uses for the screen of its own CDU:

- 16 lines of 24 characters: line 0 is the title line, lines 1 to 12 are the six label and data line pairs, line 14 is the scratchpad,
- for each character, a style byte: large or small font, reverse video, colour,
- a screen-on flag (off while the MCDU is not powered, in its self-test or failed), and the BRT level.

Software written for the X-Plane CDU screen datarefs only needs the dataref names changed. The datarefs are refreshed 10 times per second, and only when the screen changes.

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SIM.3 NAVIGATION DATA, FLIGHT PLANS AND LOADSHEET

SIM.3.1 Navigation Data Source

Ident.: SIM.3.1 — 01 NOV 2026

SIMULATOR ONLY

The standard database of the FMS (STD DATA) is built from the X-Plane navigation data:

- when Navigraph navigation data are installed in the X-Plane **Custom Data** folder, they are used first, and the X-Plane default data fill the gaps,
- otherwise the X-Plane default navigation data are used.

The AIRAC cycle and its expiry date show on the FMS power-up page and on the NAV DATA page of the MCDU (see PGE.9). The EFB NAV DATA application shows the source used in the session (CUSTOM (NAVIGRAPH) or DEFAULT (STOCK)) and builds the pre-built database, which makes the navigation data ready at once at each X-Plane start (see the FCOM, SIM.2).

Note

A pre-built database is made for one AIRAC cycle and one source. After a new cycle is installed, build it again from the EFB NAV DATA application, then reload the aircraft.

SIM.3.2 Flight Plans from the EFB

Ident.: SIM.3.2 — 01 NOV 2026

SIMULATOR ONLY

The flight plan is normally built on the MCDU. The EFB can also send a flight plan to the FMS (see the FCOM, SIM.2):

FPLN application	TYPE ROUTE (a typed route string) and BUILD (a selection of procedures) send the route to the FMS. LIBRARY holds the company routes, the same as the ROUTE SEL page of the MCDU.
SIMBRIEF application	Imports the latest SimBrief flight plan (OFP). LOAD ROUTE → FMS sends its route, with the departure runway and the cruise altitude.

The EFB sends the flight plan to one of three targets:

ACTIVE	The route becomes the active flight plan at once.
TEMPORARY	The route is built as a temporary flight plan (TMPY, yellow). Check it on the FPLN pages and press EXEC.
SECONDARY	The route is built as the secondary flight plan. Activate it from the SEC FPLN page.

The cruise altitude sent with a SimBrief route shows on PERF INIT as a crew entry.

With EFB **SETTINGS, REALISM, SIMBRIEF ROUTE TO FMS** set to MANUAL, the SimBrief route is not sent: the crew types it on the MCDU, and the SIMBRIEF application compares the FMS flight plan with the OFP.

CAUTION

Always check a flight plan received from the EFB on the MCDU FPLN pages and on the ND (PLAN mode) before using it: discontinuities, departure and arrival procedures, and constraints.

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SIM.3.3 Loadsheet to the WEIGHT Page

Ident.: SIM.3.3 — 01 NOV 2026

SIMULATOR ONLY

With EFB **SETTINGS, REALISM, LOADSHEET TO FMS** set to AUTO (default), the EFB WEIGHT & BALANCE application (SET FUEL & WEIGHT), a SimBrief load (SET FUEL & WEIGHTS) or a saved loadout sends ZFW and FOB to the WEIGHT page.

The same transfer clears T/O CG and T/O TRIM, because the previous CG is no longer valid: enter the new T/O CG from the EFB loadsheet. RESERVE is never sent by the EFB.

With MANUAL, nothing is sent: the crew enters every value on the WEIGHT page. The SIMBRIEF application then shows the values entered on the MCDU beside the loaded values.

SIM.4 SAVED DATA, AIRCRAFT STATE AND FAILURES

SIM.4.1 Saved FMS Data

Ident.: SIM.4.1 — 01 NOV 2026

SIMULATOR ONLY

The FMS data saved with DATA MENU SAVE< are written to the aircraft folder and loaded again at the next session:

- the pilot database (waypoints, navaids, airports and routes, MARK waypoints included),
- the company routes changed on the MCDU,
- the secondary flight plan.

SAVE< is amber while there are unsaved data, and the DTA alert is pending (see ABN.1.3). Data that are not saved are lost at the next long power interruption of the FMS and at the end of the X-Plane session.

The FMS also keeps, from one session to the next, the last position (LAST POS on the POS INIT page) and the RESERVE of the WEIGHT page.

The active flight plan and the other entries (weights, performance data) are not saved: at each load of the aircraft the FMS starts without a flight plan. To keep a route, store it as a pilot route, as a company route (EFB FPLN application, LIBRARY), or as the secondary flight plan, and save.

SIM.4.2 Aircraft State

Ident.: SIM.4.2 — 01 NOV 2026

SIMULATOR ONLY

The aircraft state saved by the EFB (see the FCOM, SIM.5) includes the brightness of the two MCDUs, but not the FMS data.

The EFB GROUND & CONFIG presets act on the FMS as follows:

READY TO TAXI	The FMS is powered and the position initialization is done (GPS POS, then SENSORS INIT). The two FMS are in dual mode at once.
TURNAROUND	The FMS is powered and in dual mode at once. The flight cycle of the FMS ends.
COLD & DARK	The aircraft is unpowered. The flight cycle of the FMS ends. At the next power-up, the FMS make a long power-up with the cross talk initialization (CROSSTALK INIT in the scratchpad).

SIM.4.3 Failures for Training

Ident.: SIM.4.3 — 01 NOV 2026

SIMULATOR ONLY

The EFB FAILURES application (see the FCOM, SIM.4) has the following failures that act on the FMS and the MCDU:

FAILURE (EFB)	EFFECT ON THE FMS / MCDU
MCDU 1 FAIL, MCDU 2 FAIL (34 NAV)	The MCDU blanks, its FAIL annunciator comes on and its keys have no effect. The other MCDU works normally.
FMS CROSS TALK link failure (34 NAV)	After 15 s, CTK alert and independent mode (see ABN.2.1).
DU2 failure, DU4 failure (31 IND/REC)	Loss of FMS 1 (DU 2) or FMS 2 (DU 4), which are hosted in these display units.
GPS 1 failure (34 NAV)	GPS alert, then the position of the GPS mode is lost.
GPS satellite outage, SBAS outage (34 NAV)	Four satellites in view. With SBAS also out of service (or not fitted), the GPS has no integrity: AIM alert.

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FAILURE (EFB)	EFFECT ON THE FMS / MCDU
ADC failures (34 NAV)	AIR alert when the same parameter is lost on both ADCs.
AHRS power loss (34 NAV)	HDG alert when both AHRS are lost.
Fuel flow indication failures (28 FUEL)	FFF alert.