

Flight Mode Annunciator



<div style="display: flex; justify-content: space-around; padding: 5px;"> SPEED ALT G/S* HDG LOC* CAT3 DUAL MDA218 AP 1+2 1 FD 2 A/THR </div>				
Auto Thrust Mode	Vertical Mode	Lateral Mode	Approach Capabilities	Auto flight Status
TOGA	SRS	RWY	CAT 1	AP 1
FLX 42	ALT	RWY TRK	CAT 2	AP 2
MCT	ALT*	GA TRK	CAT 3 SINGLE	AP 1+2
CLB	ALT CRZ	TRACK	CAT 3 DUAL	1FD2
IDLE	ALT CST	HDG	DH XXX	1FD
ASYM	V/S	NAV	MDA XXXX	FD2
A. FLOOR	CLB	LOC		1FD1
TOGA LK	DES	LOC*		2FD2
THR LK	OP CLB	APP NAV		2FD
MAN TOGA	EXP CLB			FD1
MAN FLEX	EXP DES			A/THR
MAN MCT	G/S			
THR MCT	FINAL			
THR CLB	V/S ± XXXX			
THR LVR	FPA ± X.X			
THR SPEED				
THR IDLE				
SPEED	COMBINED MODES			
MACH	LAND			
LVR CLB	FLARE			
LVR MCT	ROLL OUT			
LVR ASYM	FINAL APP			
	FMA MESSAGES			
	USE MAN PITCH TRIM			
	MAN PITCH TRIM ONLY			
	DECELERATE			
	MORE DRAG			
	VERTICAL DISCON AHEAD			
	CHECK APP SEL			
	SET GREEN DOT SPD			
	SET HOLD SPEED			
	MACH SEL .XX			
	SPEED SEL XXX			

Auto Thrust Modes

TOGA	The auto thrust is armed, with the most forward thrust lever in the TOGA detent
FLEX 42	The auto thrust is armed, with the most forward thrust lever in the Flex/MCT detent. The number represents the Flex temperature entered on the MCDU T/O PERF page.
MCT	Single Engine: The auto thrust is armed, with the most forward thrust lever in the MCT detent.
CLB	The auto thrust is armed, with the most forward thrust lever forward in the CLB detent, and the aircraft has reached the preprogrammed acceleration altitude.
IDLE	The auto thrust is armed, with the most forward thrust lever forward in the CLB detent. Idle power has been commanded, will be followed by a low energy warning if the engines remain at IDLE for a predetermined time.
SPEED / MACH	The auto thrust is armed; with the most forward thrust lever above the IDLE detent and up to and including the CLB detent. (MCT single engine) Thrust will vary as required to attempt to maintain the vertical path commanded. Airspeed is ignored if the vertical path cannot be maintained. SPEED is annunciated when IAS is being referenced MACH is annunciated when referencing MACH
ASYM	Indicates that A/THR is armed but both thrust levers are not in the same detent.
A. FLOOR	While in Alpha Floor conditions, the A/THR is engaged and TOGA thrust is commanded regardless of thrust lever position.
TOGA LK	TOGA Lock is engaged following an Alpha Floor engagement. A/THR must be disconnected and rearmed to regain A/THR control
THR LK	Indicates that the A/THR has been disconnected by the A/THR p/b on the FCU or the A/THR has failed. Thrust is locked at the last known position until the thrust levers are moved.
MAN TOGA	The auto thrust is armed, with the most forward thrust lever in the TOGA detent
MAN FLEX 30	The auto thrust is armed, with the most forward thrust lever in the Flex/MCT detent. The number represents the Flex temperature entered on the MCDU T/O PERF page.
MAN MCT	The auto thrust is armed, with the most forward thrust lever in the FLX/MCT detent
MAN THR	Two engines, the auto thrust is armed, with the most forward thrust lever above the CLB detent, BUT not in the FLX/MCT or TOGA detent. Single engine the auto thrust is armed, with the most forward thrust lever above the FLX/MCT detent, But not in the TOGA detent.
THR SPEED	The auto thrust is armed, with the most forward thrust lever in the

THR MCT	<p>Single Engine: the auto thrust is armed, with the most forward thrust lever in the FLX/MCT detent. (Max Continuous thrust is commanded)</p> <p>If the other thrust lever is below the FLX/MCT detent, thrust for that engine would be commanded by TLA. It will be accompanied by a LVR ASYM FMA message and a AUTO FLT ECAM message</p>
THR CLB	<p>The auto thrust is armed, with the most forward thrust lever in the CLB detent. (Climb thrust is commanded)</p> <p>If the other thrust lever is below the CLB detent its thrust will be commanded by TLA. It will be accompanied by a LVR ASYM FMA message and a AUTO FLT ECAM message</p>
THR LVR	<p>The auto thrust is armed, with the most forward thrust lever above the IDLE detent and below the CLB detent. Thrust is commanded by the TLA. Airspeed (Managed or Selected) will be maintained by varying pitch. It will be accompanied by a LVR CLB FMA message and a AUTO FLT ECAM message. (LVR MCT if single engine)</p>
THR IDLE	<p>The auto thrust is armed; with the most forward thrust lever above the IDLE detent and anywhere up to and including the CLB detent. (MCT single engine) Airspeed (Managed or Selected) will be maintained by varying pitch.</p>
LVR CLB	<p>Flashing white, During the initial climb will occur at the thrust reduction altitude, programmed in the MCDU T/O PERF page.</p>
LVR MCT	<p>Flashing white is used to prompt the crew to set the thrust levers to the MCT detent. During T/O will illuminate if an engine is lost or for a single engine GO Around. In both cases it occurs at Green Dot, but only if EO CLR was not selected on the MCDU</p>
LVR ASYM	<p>Indicates that A/THR is armed but both thrust levers are not in the same detent.</p>

Vertical Modes

<p>SRS</p>	<p>Speed Reference system is engaged. The aircraft will fly the vertical path appropriate for the phase of flight. T/O = $V_2 + 10$ Engine Failure (T/O) = V_2 If failure occurs above V_2, current speed up to $V_2 + 10$ GO Around = V_{APP} or current speed if higher Windshear = SRS will allow the speed to decrease to maintain 120 fpm climb.</p> <p>SRS is only available when at least one FD is on and Flap handle greater than FLAPS 1.</p>
<p>ALT*</p>	<p>The FCU altitude has been captured. If a new altitude is selected prior to ALT engagement the FCU will revert to V/ S until a new vertical mode is selected. On older aircraft if the FCU altitude is the cruise altitude selected in the MCDU, ALT* would be replaced by dashes in the vertical mode FMA window.</p>
<p>ALT</p>	<p>An FCU altitude, which is not selected as the cruise altitude, has been engaged. The aircraft will maintain this altitude exactly. “Hard Altitude “</p>
<p>ALT CRZ</p>	<p>The FCU altitude, which is the preprogrammed cruise altitude or an altitude higher than the preprogrammed cruise altitude, has been engaged. The aircraft will maintain a “Soft Altitude” $\pm 50'$ of the FCU altitude. Primarily to reduce power changes.</p>
<p>ALT CST (*)</p>	<p>Indicates a CLB or DES altitude constraint has been engaged. (* If captured) and the FCU altitude is above (CLB) or below (DES) the constraint altitude.</p>
<p>CLB</p>	<p>Vertical navigation is engaged, and all constraints will be met. (Unless the FCU altitude is below the constraint altitude. NAV mode must be engaged. If NAV mode is lost or changed CLB will revert to OP CLB</p>
<p>DES</p>	<p>Vertical Navigation is engaged, and all constraints will be met. (Unless the FCU altitude is above the constraint altitude. NAV mode must be engaged. If NAV mode is lost or changed DES will revert to OP DES. If DES is pushed prior to the TOD the aircraft will enter a 900-1000’ power on descent. Once the descent profile is intercepted the aircraft will attempt to fly the profile using an ECON speed range of ± 20 knots. VNAV calculates an IDLE descent from TOD to the first constraint, then a geometric (straight line) descent for the next segment.</p> <p>Note: If you must level off at an intermediate altitude, Selecting the PROG page and entering your altitude will force the VNAV to recalculate the descent. This will also allow you to change the speeds on the descent page once again if ATC issues a speed restriction</p>

OP CLB	A climb utilizing the climb profile speeds at climb thrust will be flown. The aircraft will climb to the FCU altitude and will ignore all altitude constraints. The aircraft will attempt to maintain the profile speed by varying pitch.
EXP CLB	A climb at Green Dot will be flown. Disengaged by selecting another vertical mode.
EXP DES	An idle descent at .80M/340K Disengaged by selecting another vertical mode. Note: The aircraft will not slow to 250 knots @ 10000 feet.
G/S (*)	The ILS glide slope has been engaged. G/S* If captured, G/S in blue on line to for Armed. Once captured the aircraft will ignore all FCU altitudes to maintain GS.
FINAL	The vertical deviation path of an Approach Nav has been engaged. Using IR data the FMGC will build its own vertical path. The Path is built from a point 50' over the approach end of the runway back to the final approach altitude. FINAL engages automatically when the aircraft intercepts this vertical path. The vertical path will clear all crossing constraints associated with the approach in a constant descent with out leveling off.
V/S ± XXXX	A selected vertical speed has been commanded. The aircraft will use pitch and thrust to maintain the selected V/S. Speed is disregarded to maintain the desired vertical rate.
FPA ± X.X	A selected flight path angle has been commanded. The aircraft will use pitch and thrust to maintain the selected FPA. Note: The FPA is relative to the aircraft and not a fixed point on the ground.

Lateral Modes

RWY	Provides a steering command utilizing the localizer for the departure runway from T/O roll through 30' AGL. A LOC must be associated with the runway in use. If the LOC signal is lost during the T/O roll a memorized track will be flown.
RWY TRK	Provides a lateral path along the extended runway centerline for all runways from 30' AGL, Unless NAV mode is engaged.
GA TRK	Provides a lateral path based on the actual aircraft track at the time a GA was initiated.
HDG / TRK	The heading or track selected in the FCU window will be flown. If the heading knob is pulled before it is turned, the aircraft will turn in the direction the knob is rotated. If the desired heading is set prior to pulling the knob the aircraft will turn in the direction to make the shortest turn.

NAV	Lateral navigation is engaged to fly the flight plan in the MCDU. NAV in blue on line 2 indicates that NAV is armed. A cross track error should be present to indicate your displacement from the desired course. If not then LNAV will not intercept the course you have selected.
APP NAV	The APPR p/b has been pushed and the FMGC is flying the selected approach.
LOC	The LOC course is engaged. LOC* in blue for capture, LOC in blue on line 2 when armed. ILS p/b need not be selected on for the AP to fly an ILS approach. However, good operating practice dictates the monitoring of raw data.

Combined Vertical / Lateral Modes

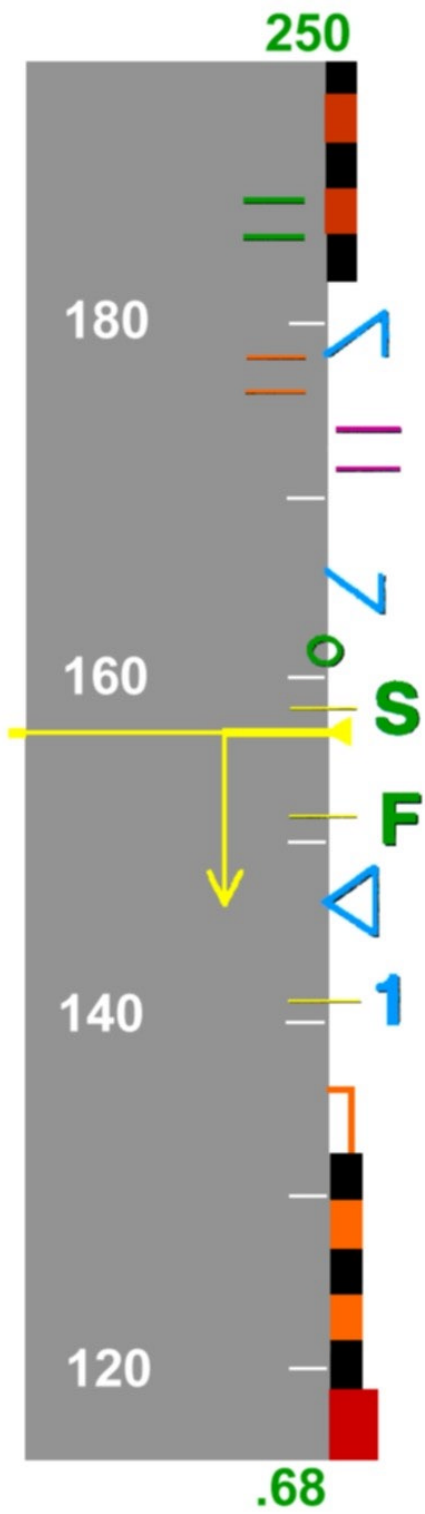
LAND	At 400' AGL the dividing line on the FMA column 2 & 3 disappears along with G/S and LOC and a single mode common to both vertical and lateral guidance is engaged. LAND appears first to indicate that approach guidance can no longer be disengaged on the FCU. From this point on the crew must select TOGA to activate the GA mode and disengage the APPR mode.
FLARE	At approximately 40' RA LAND is replaced by FLARE. (30' for an Autoland)
ROLL OUT	Lateral guidance is provided for tracking the LOC along the runway.
FINAL APP	Is the combined mode for a non ILS approach, FINAL is engaged for vertical NAV and APP NAV is engaged for vertical NAV, the APP p/b has been pushed.

Approach Capability

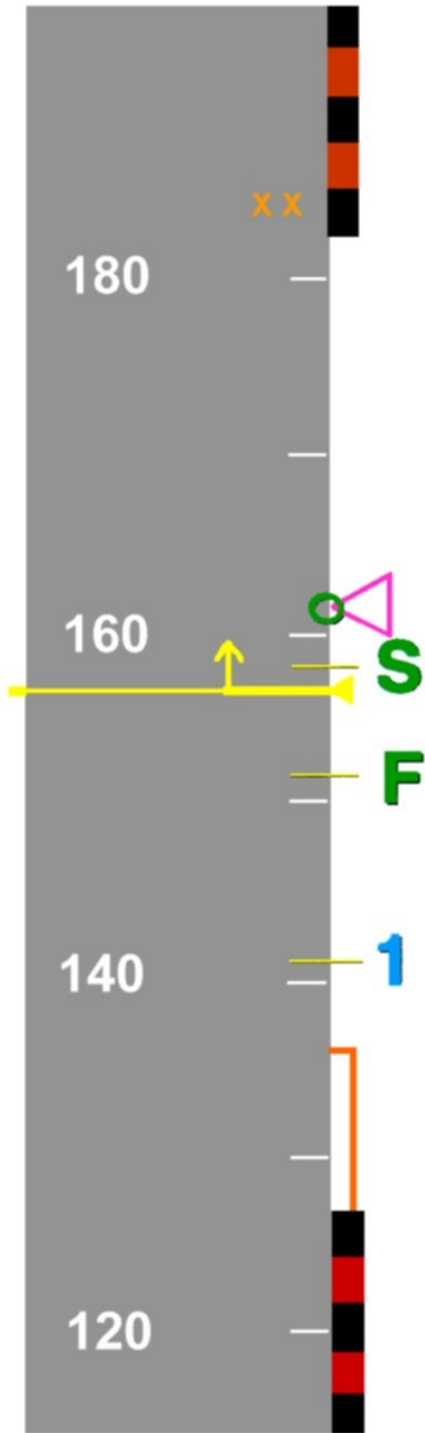
CAT 1	CAT I Approaches may be flown. <i>Autoland not available</i>
CAT 2	CAT I Autoland approaches may be flown to CAT II/III runways
CAT 3 Single	CAT II Autoland approaches may be flown to CAT II/III runways CAT 3 single will be annunciated until the second AP is coupled. <i>"Fail passive"</i>
CAT 3 Dual	CAT III Autoland approaches may be flown to CAT III runways <i>"Fail operational"</i>
MDA XXXX	Decision height for ILS approaches or MAP altitude for Non-precision approaches has been entered in the PERF page of the MCDU. At this altitude the altimeter will change to amber.
DH XXX	Radio Altimeter for CAT II and CAT III approach has been entered in the PERF page of the MCDU.

Know your modes

Speed Tape













































Normal Law



ALTERNATE
&
DIRECT
LAW

ND Symbols

SYMBOL TYPE	SYMBOL	DEFINITION
Position where the A/C will reach	 	<ul style="list-style-type: none"> • FCU selected altitude (Blue) • Constrained altitude (Magenta)
Top of DES	 	<ul style="list-style-type: none"> • DES not armed (White) • DES armed (Blue)
Start of CLIMB	 	<ul style="list-style-type: none"> • CLB not armed (White) • CLB armed (Blue)
Intercept point	 	<p>Indicates the point where the A/C meets the FMGC computed vertical profile</p> <ul style="list-style-type: none"> • Selected (White) • Managed (Blue)
Speed change		<p>Indicates the point where the A/C will initiate an automatic ACCEL or DECEL from current speed to new computed speed in case of SPD LIM, SPD CSTR or HOLDING SPD (Magenta)</p>
Decelerate point		<p>Indicates where the A/C will initiate an automatic DECEL to reach V_{app} (when APPR phase starts) (Magenta)</p>
ALT CNST	  	<ul style="list-style-type: none"> • CSTR is predicted to be met (Magenta) • CSTR is predicted to be missed (Amber) • CSTR is not being considered (White)

SYMBOL DEFINITION	SYMBOL	COLOR
Active Flight Plan Route	 	Green (NAV Engaged) Green (NAV Not Engaged)
Secondary Flight Plan Route		White
Temporary Flight Plan Route		Yellow
Alternate Flight Plan Route	 	Blue in Plan Green in ARC or Rose
Missed Approach Flight Plan Route	 	Blue in Plan Green in ARC or Rose
Engine Out Flight Plan Route	 	Blue (F-PLN Not Active) Green (F-PLN Active)
Pre-Nav Engage Path Vector		Green
Airports		Magenta
Runway Symbol		White
Tuned ILS		Blue
Collocated VORTAC and VOR/DME NAVAID		Magenta
Collocated Tuned VORTAC or VOR/DME NAVAID		Blue
VOR NAVAID		Magenta
Tuned VOR NAVAID		Blue
DME NAVAID, i.e. TACAN (no azimuth)		Magenta
Tuned DME NAVAID (no azimuth)		Blue
NDB NAVAID		Magenta
Tuned NDB NAVAID		Blue
Waypoint (option to ND)		Magenta
Active Waypoint		White
Right Holding Pattern or Procedure Turn (Not active or Next Leg)		White
Left Holding Pattern or Procedure Turn (Not active or Next Leg)		White
Right Holding Pattern (Active or Next Leg)		Green
Left Holding Pattern (Active or Next Leg)		Green
Cross Track Error information		Yellow/White

Situational awareness, all the time more self confidence
Bruno Mecha | post@flyfmo.com

A319/A320/A321 FMGS – AP / FD modes

Guidance	Managed	Selected
Lateral	<ul style="list-style-type: none"> ● NAV and APP NAV ● APPR ● LOC ● RWY ● RWY TRK ● G.A. TRK 	<ul style="list-style-type: none"> ● HDG - TRK
Vertical	<ul style="list-style-type: none"> ● CLB ● DES ● SRS (TO / GA) ● G / S ● FLARE ● FINAL 	<ul style="list-style-type: none"> ● OP CLB ● OP DES ● Expedite (towards altitude selected on FCU but managed speed) ● ALT ● V / S – FPA
Speed	<ul style="list-style-type: none"> ● F. PLN reference (ex. : optimum) ● Expedite 	<ul style="list-style-type: none"> ● FCU selected

A319/A320/A321 FMGS – AP / FD modes

● Managed guidance

Take-off :

- **RWY** : automatic runway axis follow up through ILS use
- **RWY. TRK** : follow up of the memorized runway axis
- **SRS** : pitch guidance to maintain $V_2 + 10$

Climb/Cruise/Descent :

- **NAV** : lateral guidance along the defined F.PLN
- **CLB/DES** : vertical guidance with respect of all the F.PLN defined constraints
- **APP NAV** : lateral guidance along a defined non precision approach

Approach and landing :

- **APPR** : ILS approach (ILS beams capture and track) and non precision approach
- **LOC** : LOC use only (capture and track)
- **FLARE** : automatically performed around 30ft
- **FINAL** : vertical guidance along a defined non precision approach

● Selected guidance

Lateral :

- **HDG/TRK** : selected on FCU

Vertical :

- **OP CLB/OP DES** : open modes for level changes with a fixed thrust and speed held on elevator
 - **EXPED** : level change with maximum climb/descent
 - **ALT** : altitude capture and hold
 - **V/S-FPA** : vertical speed or flight path angle track
-