Offsets

FSUIPC offsets of the Project Magenta programs. Revision November 2026.

How to use this list

What	The FSUIPC offsets of the Project Magenta programs. They work wherever the programs connect: FSUIPC, XPUIPC, pmWideClient or pmModel2026.
Offsets	Hexadecimal. 04F4 in a table is offset 0x04F4.
Size	2 bytes, unless the text gives a size.
Read, Write	Seen from your program. Read: a Project Magenta program writes it, you read it. Write: you write it, the program acts.
Legacy	No program uses it any more. Do not use it.
Internal	The programs use it among themselves. It may change.
MCP, FCU	Send commands through 0x04F2. The bit offsets 0x5410-0x5424 are the old way.
A/T off	To see if the autothrottle is disconnected, read 0x310A bit 3. See the FSUIPC documentation.
Questions	support@projectmagenta.com

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Lower offsets: 0x04E0-0x0537

04E0	MCP/FCU speed. Read. 250 = 250 knots.
04E2	MCP/FCU heading. Read. The FCU writes 10000 + heading while a heading is preset in NAV.
04E4	MCP/FCU altitude in 100s of feet. Read. 3000 ft = 30, 31000 ft = 310.
04E6	MCP/FCU vertical speed. Read. 0 when the window is blank. FCU in TRK/FPA: flight path angle x 100. 0.9 = 90, -1.4 = -140.
04E8	MCP/FCU Mach. Read. 70 = Mach 0.70. Written only in Mach mode. To set these values, write 0x5406-0x540E.
04EC	Internal. N1 limit from the MCP or FCU.
04EE	Internal. Thrust mode and second N1 value from the MCP or FCU.
04F0	MCP/FCU lights. Read. 0 after the MCP or FCU exits. See the section 04F0 below.
04F2	MCP/FCU command. Read and write. Write a code, the MCP or FCU runs it and sets the offset to 0. See the section MCP and FCU commands.
04F4	Glass command. Write. Write a code, the glass runs it and sets the offset to 0. See the section Glass commands.
04F6	Captain ND navaids and modes. See the section 04F6 below. First officer: 0x5526.
04F8	Captain ND range index. Read and write. 0 = 5 NM, 1 = 10, 2 = 20, 3 = 40 and so on. First officer: 0x5524.
04F8	A220 glass: own index, 0 = 1000 ft up to 12 = 640 NM.
04FA	Captain decision height in 10s of feet. Read and write. 200 ft = 20, 1050 ft = 105. A negative value is an MDA.
04FC	Internal. PLAN mode waypoint step: 1 = previous, 2 = next. Written and cleared by the glass.
04FE	PFD and ND status from the captain glass. Read. See the section 04FE below.
0500	A/P mode 1: MCP or FCU running, flight directors, FCU thrust gate. Read. See the section 0500 below.
0502	A/P mode 2: armed annunciator values. Read. See the section 0502 / 0504 below.
0504	A/P mode 3: active annunciator values and autopilots. Read. See the section 0502 / 0504 below.
0506	Engine warnings, engines 1 and 2. Read and write. See the section 0506 / 0508 below.
0508	Engine warnings, engines 3 and 4. Read and write. See the section 0506 / 0508 below.
050A	MCP switch inputs. Write. See the section 050A below.
050C	Internal. Autopilot tuning values from the MCP or FCU.
0510	Electrical systems off. Read and write. See the section 0510 below.
0512	Internal. CDU 'load type data' switch. pmGetWeather also changes it after each weather picture; the glass then loads the picture.
0513	Internal. 1 byte. Precision approach flag from the MCDU.
0514	Internal. CDU 'load flight plan' switch.
0516	Internal. CDU climb N1 x 10.
0518	Internal. CDU take-off N1 x 10.
051A	Internal. CDU transition altitude: 1000 + altitude / 100, or 0.
051C	MCP/FCU indications. Read. See the section 051C below.
051E	ND selected mode. 1 byte captain at 0x051E, 1 byte first officer at 0x051F. Read. See the section 051E below.
0520	Internal. CDU speed.
0522	Internal. CDU altitude.
0524	Internal. CDU vertical speed.
0526	Internal. CDU mode.

052A	Internal. CDU heading in degrees x 10.
052C	CDU lights and flight phase. Read. See the section 052C below.
052E	Internal. CDU path data.
0530	Altitude for a wind request, written by the CDU. Legacy, not used.
0532	Wind request complete, not 0. Legacy, not used.
0534	Wind direction, degrees true. Legacy, not used.
0536	Wind speed in knots. Legacy, not used.

04F0 MCP/FCU lights

Read. One bit per light. 1 = light on.

Boeing	The MCP.
bit 0	A/P master L (1).
bit 1	A/P master C (2).
bit 2	V/S.
bit 3	ALT HLD.
bit 4	APP.
bit 5	LOC.
bit 6	LNAV.
bit 7	HDG.
bit 8	FLCH.
bit 9	SPD.
bit 10	THR.
bit 11	A/T.
bit 12	F/D.
bit 13	A/P master R.
bit 14	VNAV.
bit 15	Mach.
Airbus	The FCU.
bit 0	AP 1.
bit 1	AP 2.
bit 2	V/S.
bit 3	ALT HLD.
bit 4	APP.
bit 5	LOC.
bit 6	Managed heading (LNAV / LAT).
bit 7	HDG.
bit 8	LVL CH.
bit 9	SPD.
bit 10	THR.
bit 11	A/T.
bit 12	F/D.
bit 13	Managed speed (VNAV).
bit 14	Managed altitude (VNAV).
bit 15	Mach.

04F6 Captain ND navaids and modes

Read. The MCP or FCU writes it at each EFIS selector change. With no MCP or FCU the glass writes it. The MCP may overwrite a value written from outside. First officer: 0x5526.

bit 0	VOR.
bit 1	NDB.
bit 2	ARP.
bit 3	WPT.
bit 4	Boeing: waypoint data. Airbus: CSTR.
bit 5	VOR1 needle active.
bit 6	VOR2 needle active.
Boeing	Set by the MCP.
bit 12	Hide DH.
bit 13	Hide MDA.
bit 14	Minimums are MDA.
Airbus	Set by the FCU.
bit 10	LS mode active.
bit 11	TRK/FPA active.
bit 12	EXPED active.
bit 14	EXPED active (old bit, kept for older panels).

04FE PFD and ND status

Read. Written by the captain glass.

bit 0	Windshear.
bit 1	Below G/S.
bit 2	Caution.
bit 3	Warning.
bit 4	Stab out of trim. Boeing only. TrimMax and TrimMin must be set.
bit 6	ND mode set on the eight-mode selector.
bit 7	Seatbelt sign. Only when pmSystems is not running.
bit 8	No smoking sign. Only when pmSystems is not running.
bit 9	Weather radar on (captain).
bit 10	EGPWS / terrain on (captain).
bit 11	TCAS on (captain).
bit 12	PLAN mode active.
bit 13	TCAS resolution (red). Only when its sound is enabled.
bit 14	TCAS traffic (amber). Only when its sound is enabled.

0500 A/P mode 1

Read. Not 0 while the MCP or FCU runs. 0 after it exits.

Boeing	The last decimal digit is 1, or 3 with the A/P master on. Divide by 10 and drop the rest. Then read the bits.
bit 0	Mach active.
bit 1	Captain F/D.
bit 2	First officer F/D.
bit 3	PM autopilot active. Always on with X-Plane.
bit 4	CWS roll.

bit 5	CWS pitch.
bit 6	Stab disconnect, manual.
bit 7	F/D light left.
bit 8	F/D light right.
bit 9	CWS A. Also set in VNAV idle.
bit 10	CWS B.
Airbus	Decimal digits: 10000 + flags x 10 + thrust gate. Example: 10032 = Mach, captain F/D, gate CLB.
Third digit	Removed. See 0x5528.
Second digit	Flags, as bits of the digit: bit 0 Mach active bit 1 captain F/D bit 2 first officer F/D
Last digit	Selected thrust gate: 0 TOGA 1 FLX 2 CLB 3 IDLE 4 REV IDLE 5 MAX REV

0502 / 0504 A/P annunciators

Read. These values show the annunciators. They do not set a mode. The meaning of each value depends on the aircraft type file: see the aircraft type documentation.

0502	Armed (standby) modes. Value = thrust x 0x100 + vertical x 0x10 + horizontal. Each channel 0-15.
0502	Boeing MCP also sets 0x1000 = PM autopilot and 0x2000 = A/P master.
0504	Active modes. Value = autopilots x 0x1000 + thrust x 0x100 + vertical x 0x10 + horizontal.
0504	Autopilots: bit 0 = A/P 1, bit 1 = A/P 2, bit 2 = A/P 3. 0 = none. 5 = A/P 1 and 3.
Thrust	Speed modes.
Vertical	ALT and the other vertical modes.
Horizontal	HDG and the other lateral modes.

0506 / 0508 Engine warnings

Read and write. 0x0506 = engines 1 and 2. 0x0508 = engines 3 and 4. First engine in bits 0-2, second engine in bits 8-10. pmSystems or an outside program writes them. The glass shows them.

bits 0, 8	Start valve open.
bits 1, 9	Oil filter bypass.
bits 2, 10	Low oil pressure. The glass sets it when a minimum oil pressure is defined in the aircraft file.

050A MCP switch inputs

Write. Read by the MCP. Use the commands in 0x04F2 where a command exists.

Toggles	Bits 0-4 and 13 act on a change from 0 to 1.
bit 0	TO/GA switch.
bit 1	A/P disconnect.
bit 2	A/T disconnect.
bit 3	Boeing. The MCP stops writing the throttle value to the simulator. 0x5529 bit 0 shows the state.

bit 4	Boeing. A/T detach for moving throttles. Same as bit 3.
bit 13	Stab trim override.
Levels	Bits 5-8: 1 = the MCP does not drive this control. See 0x5840 and up.
bit 5	Elevator.
bit 6	Elevator trim.
bit 7	Aileron.
bit 8	Throttle.

0510 Electrical systems off

Read and write. 1 = the unit is switched off. pmSystems and pmInstructor write it. The glass, the CDU and the MCP read it. pmWideClient clears it at start.

bit 0	All.
bit 1	Captain PFD.
bit 2	Captain ND.
bit 3	Upper EICAS / ECAM.
bit 4	Lower EICAS / ECAM.
bit 5	First officer PFD.
bit 6	First officer ND.
bit 7	Reserved.
bit 8	Standby instruments.
bit 9	CDU / MCDU.
bit 10	RCDU / RMCDU.
bit 11	MCP / FCU. Hardware only.
bit 12	pmSystems power state: batteries off.
bit 13	pmSystems power state: batteries only.
bit 14	pmSystems power state: no external power.

051C MCP/FCU indications

Read.

Boeing	The MCP. Bits 5-8 are set by the CDU.
bit 0	V/S window blank.
bit 1	SPD window blank.
bit 2	TOGA mode active.
bit 3	QNH in hPa.
bit 4	Metric display.
bits 5, 6	VOR/ADF/OFF left. 00 = undefined (default), 10 = OFF, 01 = ADF, 11 = VOR.
bits 7, 8	VOR/ADF/OFF right. Same values.
bit 9	MAP CTR active.
bit 10	TOGA mode, 20 knots added.
bit 11	ALT ACQ mode.
bit 13	The MCP window is minimised.
bit 14	GA mode.
Airbus	The FCU.
bit 0	V/S window blank.
bit 1	SPD window blank.
bit 2	QNH in hPa.
bit 3	QNH in inHg.

bit 9	TRK/FPA.
bit 10	LS switch off (captain).
bit 11	QNH STD.
bit 12	Managed speed, or TOGA.
bit 13	Managed vertical mode.
bit 14	APPR armed.

051E ND selected mode

Read. Two bytes: 0x051E captain, 0x051F first officer. Same bits in both. Written by the glass.

Boeing	ND mode.
bit 0	APP.
bit 1	VOR.
bit 2	MAP.
bit 3	PLN.
bit 4	CTR.
Airbus	ND state.
bit 0	Terrain on.
bit 1	Approach light.

052C CDU lights and flight phase

Read. Written by the CDU or MCDU.

bit 0	EXEC.
bit 1	MSG.
bit 2	FAIL.
bit 3	OFST.
bit 4	Autotune active.
bit 5	Waypoint switch, set for 5 seconds. Also set while a route offset is active.
bit 6	Climb.
bit 7	Cruise.
bit 8	Descent.
bit 9	Within 1 NM before top of descent.
bit 10	Past top of descent.
bit 11	Boeing: PATH DES off.
bit 12	Boeing: inside the descend-now distance. Airbus: approach phase.
bit 13	Boeing: the CDU window is minimised.
bit 14	No position entered, IRS not aligned. Boeing CDU and MCDU.

Glass commands: 0x04F4

04F4	Glass cockpit command. Write. A value, not bits.
Action	The glass acts when the value changes.
1-99	Captain display.
101-199	First officer display. Code plus 100. 170 = weather radar on, first officer ND.
200 and up	Every glass.
Repeat	Below 10000 only the last three digits count. Add 1000, 2000 ... to send the same code again. 2150 and 5150 do the same.
10001-26100	The Boeing glass reads these as whole values. The Airbus glass uses the last three digits of every value.
Reset	The glass writes 0 back. Boeing glass: after 0.25 seconds. Airbus glass: after 0.7 seconds. Any glass on the network can do it.
Airbus timing	The Airbus glass drops a change that comes less than 150 ms after the last one.
MCP / FCU	These codes go straight to the glass. The MCP or the FCU may overwrite the result. When an MCP or FCU runs, use its commands in 0x04F2.

Boeing glass (pfd.exe)

Codes 1-99 are for the captain. Add 100 for the first officer. Codes 200 and up act on every display.

ND mode

1		Classic ND: MAP ARC. New ND: MAP.
2		Classic ND: MAP CTR. New ND: no action.
3		VOR.
4		Classic ND: MAP PLAN. New ND: PLN.
5		APP.
6		CTR pushbutton. Toggles centred and arc.
7		Force the display to the 8 modes (APP / VOR / MAP / PLN). Sets MAP arc.
25		Toggle RMI / HSI display in ND MAP ARC.
57		PLAN mode: previous waypoint.
58		PLAN mode: next waypoint.
66		APP, centred.
67		VOR, centred.
68		MAP, arc.
69		PLN.
501	511	First number captain, second first officer. APP, arc.
502	512	VOR, arc.
503	513	MAP, arc.
504	514	PLN.
505	515	APP, centred.
506	516	VOR, centred.
507	517	MAP, centred.
508	518	PLN, centred.

ND range

40	Range 5 NM.
41	Range 10 NM.
42	Range 20 NM.
43	Range 40 NM.
44	Range 80 NM.
45	Range 160 NM.
46	Range 320 NM.
47	Range 640 NM.
48	Range down one step.
49	Range up one step.

TCAS and transponder

50	TFC off, that side. Works in TA ONLY and TA/RA. In any other mode TFC goes off on both sides.
51	TFC on, that side. Works in TA ONLY and TA/RA. In any other mode TFC goes off on both sides.
52	TCAS callsign.
53	TCAS all.

54	Toggle TCAS off / alt.
350	Transponder OFF / STBY.
351	Transponder ALT RPTG.
352	Transponder XPDR.
353	Transponder TA ONLY.
354	Transponder TA/RA.
355	TCAS callsign on. Transponder XPDR.
397	TCAS test.

Map data and pointers

73	Left pointer off.
74	Left pointer ADF.
75	Left pointer VOR.
76	Right pointer off.
77	Right pointer ADF.
78	Right pointer VOR.
90	STA. Toggles VOR and NDB together.
91	VOR toggle.
92	NDB toggle.
93	WPT toggle.
94	ARPT toggle.
95	DATA toggle.
96	POS toggle.
90-96	The captain code also changes 0x04F6.
373	Left pointer off, every display.
374	Left pointer ADF, every display.
375	Left pointer VOR, every display.
376	Right pointer off, every display.
377	Right pointer ADF, every display.
378	Right pointer VOR, every display.
388	Reload navaids.
390	ADF 1 ANT off.
391	ADF 1 ANT on.
392	ADF 2 ANT off.
393	ADF 2 ANT on.

Weather, terrain, VSD, SVT

17	VSD (vertical profile) on. ND mode stays.
18	VSD off. ND mode stays.
70	Weather radar on. Terrain off, VSD off.
71	Weather radar off.
72	Weather radar toggle.
79	VSD off. ND back to MAP arc. Terrain back to what it was before code 89.
80	Terrain on. Weather radar off.
81	Terrain off. VSD off.
82	Terrain toggle.
83	TOPO map on.

84	TOPO map off.
85	SVT step: off, opaque, see-through, opaque ... It does not return to off.
86	SVT off.
80-86	Terrain is EGPWS only. The old type, colour, size and 3D modes are gone.
87	VSD toggle. Weather radar off.
88	VSD off. ND to MAP centred. Weather radar off.
89	VSD on. ND to MAP centred. Weather radar off, terrain on.
380	Weather radar test on.
381	Weather radar test off.
386	GPWS test on.
387	GPWS test off.
396	PULL UP on, for a set time.

Engine and system pages

16	Toggle EICAS on ND in the F4 and F5 pages.
20	Engine page minus 1.
21	Engine page plus 1.
30-39	Engine page 0-9. 30 = page 0 (primary), 39 = page 9 (if defined).
301-308	Lower EICAS page 0-7. Page = code minus 301. 747 and 777: the same code again blanks the page.
309	Lower EICAS page 8. 777: the same code again blanks the page. 747: as 318.
310	Lower EICAS page 9. 747: as 319.
318	CANC.
319	RCL.
321	Decrease synoptic / system display page.
322	Increase synoptic / system display page.
324	Lower EICAS page plus 1.
331-336	Upper engine page 0-5, direct.
340	Upper engine page plus 1. Wraps after page 5.
343	Single engine page: next page, 0-5.
344	Single engine page: toggle page 5 and page 0.

747 lower EICAS pages

301	ENG.
302	STAT.
303	ELEC.
304	FUEL.
305	ECS.
306	HYD.
307	DRS.
308	GEAR.
318	CANC.
319	RCL.

777 lower EICAS pages

301	ENG.
302	STAT.

303	ELEC.
304	HYD.
305	FUEL.
306	AIR.
307	DOORS.
308	GEAR.
309	FCTL.
318	CANC.
319	RCL.

737 items

14	FPV toggle.
26	Metric toggle.
27	hPa / inHg toggle.
62	ND chronometer: start, stop, reset.
63 163	Old list: 62 INHG, 63 HPA, 64 DH, 65 MDA, and 162-165. These numbers are MCP K codes in 0x04F2, not glass codes. Legacy, not used.
64	F/D cross on.
65	F/D cross off.
341	ENG key, lower EICAS (N2 / blank). 737 MAX: see below.
342	SYS key, lower EICAS (SYS / blank). 737 MAX: see below.
382	NAV 1 test on.
383	NAV 1 test off.
384	NAV 2 test on.
385	NAV 2 test off.
401	Caution on (see 0x04FE).
402	Caution reset.
403	Warning on.
404-406	Warning off.
411	Fuel used: toggle.
412	Fuel used: show.
413	Fuel used: hide.
414	Fuel used: reset to 0.
415	Fuel used: show (as 412).

Standby instruments

360	Standby RMI pointer 1: VOR.
361	Standby RMI pointer 1: ADF.
362	Standby RMI pointer 1: off.
363	Standby RMI pointer 2: VOR.
364	Standby RMI pointer 2: ADF.
365	Standby RMI pointer 2: off.
395	Standby QNH STD toggle.
408	Standby APP toggle.
409	Standby HP / IN toggle.
410	Standby ATT RST.
490	Standby baro plus. From pfd build 591.

491	Standby baro minus. From pfd build 591.

Clock

Capt	F/O	First number captain clock, second first officer clock. From pfd build 591.
470	480	TIME / DATE.
471	481	SET.
472	482	Plus.
473	483	Minus.
474	484	ET.
475	485	RESET.
476-479		Spare. No action. Also 486-489.

Display units and selectors

8	Show controls in EICAS.
9	Hide controls in EICAS.
10	PFD/ND, then PFD, then ND (as keys F4, F1, F2). Not when the display is locked.
11	PFD / EICAS. Not when the display is locked.
12	EICAS with standby. Not when the display is locked.
13	EICAS without standby. Not when the display is locked.
15	Standby displays off. Not when the display is locked.
19	Toggle controls in EICAS.
24	Toggle overview page.
55	Show MCP values in EICAS (special PFC display).
56	Hide MCP values in EICAS (special PFC display).
60	Show overview page in ND.
61	Hide overview page in ND.
600-604	Captain main DU switch. 600 + switch position, from 0.
610-612	Captain lower DU switch. 610 + switch position, from 0. Hides the controls.
620-624	First officer main DU switch. 620 + switch position, from 0.
630-632	First officer engine DU switch. 630 + switch position, from 0.

737 MAX

341	ENG. Shows the engine format. Second push removes it.
342	SYS. Shows the system format. Second push removes it.
600	Display select left: OUTBD.
601	Display select left: NORM.
605	Display select left: INBD.
620	Display select right: OUTBD.
621	Display select right: NORM.
625	Display select right: INBD.
660	INFO format toggle.
662	SEL push.
663	SEL push.
664	Outer selector left: C.
665	Outer selector left: L.
666	Outer selector right, first position.
667	Outer selector right, second position.

670, 672	Selector turn plus.
671, 673	Selector turn minus.
25000-25100	Outboard DU weather / terrain brightness, captain. 25000 + 0-100.
26000-26100	Outboard DU weather / terrain brightness, first officer. 26000 + 0-100.

Weather radar panel

20001	Left head: Wx+TERR.
20002	Left head: WXR.
20003	Left head: WXR (VAR).
20004	Left head: MAP.
20005	Left head: TEST.
20001-20005	The captain side shows the left head. It sets terrain off and weather radar on.
20101-20105	Right head, same five modes. The first officer side shows it.
20120	XFR: the right head takes the left mode.
20121	XFR: the left head takes the right mode.
21001-21999	Left tilt. Tilt = (value - 21300) / 15.
22001-22999	Left gain. Gain = value - 22000.
23001-23999	Right tilt. Tilt = (value - 23300) / 15.
24001-24999	Right gain. Gain = value - 24000.
20001-24999	Every display takes these values. On the expanded F6 page each half shows its own side.

Other

22	No Smoking toggle.
23	Seatbelts toggle.
97	Internal. Box controls on.
98	Internal. Box controls off.
399	Internal. Avionics state refresh.
416	Internal. Skip lapse on.
417	Internal. Skip lapse off.
421	No Smoking toggle.
422	No Smoking on.
423	No Smoking off.
424	Seatbelts toggle.
425	Seatbelts on.
426	Seatbelts off.
444	Internal. Hide freeze toggle.
450-453	Internal. Plus page: minus 1, plus 1, 0, 9.
10001-19999	Internal. Display tuning factor = (value - 10000) / 100.

Airbus glass

Codes 1-99 are for the captain. Add 100 for the first officer. Codes 200 and up act on every display.

ND mode

1	MAP. 101 = first officer.
2	NAV.
3	VOR.
4	PLAN.
5	ILS mode.
1-5	Also sets the engine display on that ND off.
28	ND mode one step toward ILS. Order: ILS, VOR, NAV, MAP, PLAN. The glass then writes the mode code 1-5 to 0x04F4 itself.
29	ND mode one step toward PLAN, same way.
57	PLAN mode: previous waypoint.
58	PLAN mode: next waypoint.

ND range

40	Range 5 NM.
41	Range 10 NM.
42	Range 20 NM.
43	Range 40 NM.
44	Range 80 NM.
45	Range 160 NM.
46	Range 320 NM.
47	Range 640 NM.
48	Range down one step.
49	Range up one step.

TCAS and transponder

50	TCAS off.
51	TCAS alt.
52	TCAS callsign.
53	TCAS all.
54	Toggle TCAS off / alt.
250-253	TCAS off, alt, callsign, all. Every display.
254	Toggle TCAS off / alt. Every display.
350-355	As 651-656.
611	TCAS below.
612	TCAS all.
613	TCAS above.
614	TCAS altitude setting 4.
641	TCAS range 5 NM.
642	TCAS range 10 NM.
643	TCAS range 20 NM.
644	TCAS range 40 NM.
651	TCAS mode TEST.

652	TCAS mode STBY.
653	TCAS mode XPDR.
654	TCAS mode TA ONLY.
655	TCAS mode TA/RA.
656	TCAS mode 6.

Map data and pointers

73	Left pointer off.
74	Left pointer ADF.
75	Left pointer VOR.
76	Right pointer off.
77	Right pointer ADF.
78	Right pointer VOR.
91	VOR toggle.
92	NDB toggle.
93	WPT toggle.
94	ARPT toggle.
91-94	The captain code also changes 0x04F6.

Weather, terrain, VSD, SVT

17	VSD (vertical profile) on.
18	VSD off.
68	Weather radar test on.
69	Weather radar test off.
70	Weather radar on.
71	Weather radar off.
72	Weather radar toggle.
79	Reload the terrain file.
80	Terrain on.
81	Terrain off.
82	Terrain toggle.
83	TOPO map on.
84	TOPO map off.
85	SVT step: off, opaque, see-through, opaque ... It does not return to off.
86	SVT off.
80-86	Terrain is EGPWS only. The old type, colour, size and 3D modes are gone.
87	VSD toggle.
88	HDD mode toggle.
95	HDD mode toggle (as 88).
96	VSD toggle (as 87).

Engine and system pages

6	Engine page 1.
7	Engine page 2.
14	Engine page 0.
20	Engine page minus 1.
21	Engine page plus 1.

30-39	Engine page 0-9. 30 = page 0 (primary), 39 = page 9 (if defined).
301-319	ECAM system page. Page = code minus 300. The same code again releases the page. 315 is STS.
301	ENG.
302	BLEED.
303	PRESS.
304	ELEC (A330 / A340: EL/AC).
305	HYD.
306	FUEL.
307	APU.
308	COND.
309	DOOR.
310	WHEEL.
311	F/CTL.
312	System page 12.
313	System page 13.
314	System page 14.
315	STS toggle.
316	System page 16.
317	System page 17.
318	EL/DC (A330 / A340).
319	C/B (A330 / A340).
321	Decrease synoptic / system display page.
322	Increase synoptic / system display page.
333	Captain ND shows ECAM.
334	First officer ND shows ECAM.
335	ECAM on ND off.
699, 701-719	Internal. Lower display pages in emergency electrical configuration.

ECAM control panel

406	CLR.
407	RCL.
408	T.O CONFIG.
409	CLR, second button. Also resets master caution.
410	STS toggle.
411	EMER CANC pressed.
412	EMER CANC released.

Standby instruments (ISIS)

64	ISIS bugs toggle.
65	ISIS LS toggle.
66	ISIS baro unit, setting 1.
67	ISIS baro unit, setting 2.
330	Standby QNH STD toggle. Back from STD restores the last QNH. The glass writes 0x553E.
331	Standby QNH minus 1 hPa. Not in STD. The glass writes 0x553E.
332	Standby QNH plus 1 hPa. Not in STD. The glass writes 0x553E.

Clock and timers

62	ND chronometer: start, stop, reset.
63	Main timer: start, stop, reset.

Display units and selectors

8	Show controls in ECAM.
9	Hide controls in ECAM.
10	PFD/ND, then PFD, then ND (as keys F4, F1, F2).
11	PFD / ECAM.
12	ECAM with standby.
13	ECAM without standby.
24	Toggle overview page.
26	PFD metric toggle.
27	PFD hPa / inHg toggle.
60	Show overview page in ND.
61	Hide overview page in ND.
601	Captain PFD / ND normal.
602	Captain PFD / ND switched.
621	First officer PFD / ND normal.
622	First officer PFD / ND switched.

Other

22	No Smoking toggle.
23	Seatbelts toggle.
59	Internal. A/P off flag, right side: clear.
89	Internal. A/P failure reset.
90	Internal. A/P off flag, right side: set.
415	Rudder display toggle.
421	No Smoking toggle.
422	No Smoking on.
423	No Smoking off.
424	Seatbelts toggle.
425	Seatbelts on.
426	Seatbelts off.
460	Internal. Brakes hot.
461	Internal. Brakes cool.
511	Ground spoilers disarmed.
512	Ground spoilers armed.

Other glasses

These programs also read 0x04F4. The side rule is the same. Their code sets differ from the two lists above.

a220gc	A220 glass. Close to the Boeing list. No clock codes, no 737 MAX codes.
gca	Older copy of the Boeing list.
uni890	Older copy of the Boeing list.
pmRJ, pmRJx	Regional jet glass. Small set, own codes.
pmCRJ	CRJ glass. Own set.

pmIFRGCNX	General aviation set.
efi890	General aviation set.
AW139	General aviation set.
DHC6400	General aviation set.
PC12	General aviation set.
UH60M	General aviation set.
pmIFRmain	Small general aviation set.
pmFBW	501 / 502: sidestick priority.
MCP	Follows ND mode codes 1-4.
FCU	Follows ND mode codes 1-5.
CDU	4 = plan mode.

MCP and FCU commands: 0x04F2

04F2	MCP and FCU command input. Read and write. Write a number. The MCP or FCU acts and sets the offset back to 0.
Example	Write 33: A/P 2 on (K033). Write 20: A/T arm off (K020).
Ini file	No ini switch is needed. 0x04F2 always works. DisableRemoteMCP does not change it.
Below 10000	Only the last three digits are used. 4033 and 7033 do the same as 33.
10000-29999	Own commands. Not reduced. See 'Values above 999'.
30000-65535	MCP: reduced to the last three digits. FCU: nothing.
Repeat, MCP	Wait until 0x04F2 reads 0, then write the number again. The thousands do not mark a new press. The same K code within 1 second is dropped.
Repeat, FCU	Wait until 0x04F2 reads 0, or write the number with other thousands: 4033 after 33 is a new press.
1000	FCU: nothing.

Value ranges

1	Speed knob down, big step.
2	Speed knob down, small step.
4	Takes the altitude of the simulator autopilot into the altitude window.
5	Takes the V/S of the simulator autopilot into the V/S window.
3, 6-9	Nothing.
10-199	K codes. Value = code number. 25 = K025.
200-300	Nothing. K208 to K219 can not be sent here.
301-319	B codes, EFIS buttons. 301 = B001.
320-399	Nothing.
400-419	S codes, ND range selector. 400 = S000.
420-500	Nothing.
501-519	M codes, ND mode selector. 501 = M001.
520-999	Nothing.
10000-29999	See 'Values above 999'.

K codes: the MCP (Boeing)

Write the number to 0x04F2, or send the telegram on the serial line. 'Serial only' means the code can not be sent through 0x04F2.

K001-K006	Sends Q001 to Q006 to the MCP hardware. Serial only.
K010	SPD push. In VNAV: speed intervention. Else SPD on, with the speed in the window.
K011	HDG SEL push (747). Heading select.
K012	ALT push. Altitude intervention. Leaves ALT HOLD when the window shows another altitude.
K016	A/T disconnect. SPD, N1 and VNAV off.
K017	F/D on, right (first officer).
K018	F/D off, right (first officer).
K019	A/T arm on. Above 200 feet SPD comes on when no speed mode is active.
K020	A/T arm off. SPD, N1 and VNAV off.
K021	N1 / thrust. On the ground with N1 above 30 it acts as K121. Ignored on the ground with A/T not armed.
K022	SPD.
K023	C/O. IAS / Mach change-over.
K024	LVL CHG. FLCH on 747 and 777.
K025	HDG. 737: HDG SEL. 747 and 777: HDG HOLD.
K026	VNAV.
K027	LNAV.
K028	VOR LOC.
K029	APP.
K030	ALT HOLD.
K031	V/S.
K032	A/P 1 (CMD A). 737: the disengage bar must be up. Through 0x04F2 the bar is set up first.
K033	A/P 2 (CMD B). Through 0x04F2 the bar is set up first.
K034	CWS A toggle. 747: A/P 3.
K035	CWS B toggle.
K036	A/P 3 (CMD C). Not below 50 feet, unless it is on already.
K037	F/D on, left (captain).
K038	F/D off, left (captain).
K040	A/P off. 737: also disengage bar down. The A/Ps stay locked out until K041.
K041	Disengage bar up. A/P can be engaged again.
K042	A/P off. Same as K099.
K044	FPV, captain.
K045	Metres toggle, captain.
K046	ND CTR toggle.
K047	TFC toggle, captain.
K048	MINS RST, captain.
K049	BARO STD toggle, captain.
K050	VOR/ADF selector 1: VOR 1.
K051	VOR/ADF selector 1: ADF 1.
K052	VOR/ADF selector 1: off.
K053	VOR/ADF selector 2: VOR 2.

K054	VOR/ADF selector 2: ADF 2.
K055	VOR/ADF selector 2: off.
K057	Internal. Control loading off.
K058	Internal. Control loading on.
K060	Internal. Bypass off.
K061	Internal. Bypass on.
K062	Baro in inHg, captain.
K063	Baro in hPa, captain.
K064	MINS selector to RADIO (DH), captain.
K065	MINS selector to BARO (MDA), captain.
K066	ND mode APP, captain.
K067	ND mode VOR, captain.
K068	ND mode MAP, captain.
K069	ND mode PLN, captain.
K070-K075	Same as K050 to K055.
K076	Internal. Arms the automatic takeoff.
K077	Trim up. With the A/P on it is disconnected first.
K078	Trim stop.
K079	Trim down. With the A/P on it is disconnected first.
K080	STA (VOR) button.
K081	WXR button.
K082	VSD, captain. Writes 89 to 0x04F4.
K088	Internal. Flight sync.
K089	Internal. FMC key flag.
K090	A/P P/RST light off.
K091	A/T P/RST light off.
K092	FMC P/RST light off.
K093	A/P disconnect button on the yoke. A/P off.
K094	Same as K093, button state forced to pressed.
K095	Same as K093, button state forced to not pressed.
K096	Internal. Aircraft raised flag on.
K097	Internal. Aircraft raised flag off.
K098	A/P off.
K099	A/P off, all types. All three A/Ps and CWS off. Modes cleared when no F/D is on.
K100	Both A/Ps off.
K101	A/P 1 on. Through 0x04F2 the bar is set up first.
K102	A/P 2 on.
K110	Both F/Ds off.
K111	One F/D on, the other off.
K112	As K111, sides swapped.
K113	Both F/Ds on.
K121	TOGA button. Takeoff or go-around. Also sets N1 on. Ignored on the ground with A/T not armed.
K125	HDG SEL, 747 and 777.
K144	FPV, first officer.
K145	Metres toggle, first officer.
K147	TFC toggle, first officer.

K148	MINS RST, first officer.
K149	BARO STD toggle, first officer.
K150	Internal. MCP writes on. Used by pmModel. 0x04F2 keeps the value for 3 seconds.
K151	Internal. MCP writes off. Used by pmModel. 0x04F2 keeps the value for 3 seconds.
K162	Baro in inHg, first officer.
K163	Baro in hPa, first officer.
K164	MINS selector to RADIO (DH), first officer.
K165	MINS selector to BARO (MDA), first officer.
K166-K169	ND mode APP, VOR, MAP, PLN, first officer. Legacy, not used. Use M011 to M014.
K170	First officer VOR/ADF selector 1: VOR 1.
K171	First officer VOR/ADF selector 1: ADF 1.
K172	First officer VOR/ADF selector 1: off.
K173	First officer VOR/ADF selector 2: VOR 2.
K174	First officer VOR/ADF selector 2: ADF 2.
K175	First officer VOR/ADF selector 2: off.
K180	Internal. Thrust lever position flag off.
K181	Internal. Thrust lever position flag on.
K182	VSD, first officer. Writes 189 to 0x04F4.
K199	Internal. Quits the MCP.
K208	Master caution pressed, left. Serial only.
K209	Fire warning pressed, left. Serial only.
K218	Master caution pressed, right. Serial only.
K219	Fire warning pressed, right. Serial only.

K codes: the FCU (Airbus)

Write the number to 0x04F2, or send the telegram on the serial line. 'Serial only' means the code can not be sent through 0x04F2.

K001-K006	Sends Q001 to Q006 to the FCU hardware. Serial only.
K010	SPD push, as in the MCP.
K011	HDG push, as in the MCP.
K012	ALT push, as in the MCP.
K017	F/D 1 toggle.
K018	F/D 1 off.
K019	A/THR on. Ignored with both engines below 20 percent N2, or with the FCU off.
K020	A/THR off. Ignored with both engines below 20 percent N2.
K021	THR / N1.
K022	SPD.
K023	SPD / MACH change-over. To Mach: not on the ground.
K024	Level change: open climb or open descent.
K025	HDG.
K026	Managed vertical mode. Needs managed lateral mode.
K027	Managed lateral mode (NAV).
K028	LOC.
K029	APPR. Not with the approach failure set.
K030	ALT hold.
K031	V/S or FPA.
K032	AP1. Not with an A/P failure set.
K033	AP2. Not with an A/P failure set.
K034	ND range down.
K035	ND range up.
K036	A/P 3.
K037	F/D 2 toggle.
K038	F/D 2 off.
K040	A/P off. In the air: A/Ps off, nothing more. On the ground: modes cleared too when no F/D is on.
K041	A/P engage enable, as in the MCP. The FCU has no disengage bar.
K045	Metric ALT.
K048	LS button, first officer.
K049	LS button, captain.
K050	Baro knob push: QNH, captain.
K051	Baro knob pull: STD, captain.
K052	SPD knob push: managed speed.
K053	SPD knob pull.
K054	HDG knob push: managed heading.
K055	HDG knob pull.
K056	ALT knob push: managed altitude.
K057	ALT knob pull.
K058	V/S knob push.
K059	V/S knob pull.
K060	EXPED button.

K061	HDG-V/S / TRK-FPA button.
K062	Baro in inHg, captain.
K063	Baro in hPa, captain.
K065	Internal. Spoiler arm flag off.
K066	Internal. Spoiler arm flag on.
K069	Internal. Alpha floor reset.
K070	VOR/ADF selector 1: VOR 1, captain.
K071	VOR/ADF selector 1: ADF 1, captain.
K072	VOR/ADF selector 1: off, captain.
K073	VOR/ADF selector 2: VOR 2, captain.
K074	VOR/ADF selector 2: ADF 2, captain.
K075	VOR/ADF selector 2: off, captain.
K080	TERR on ND toggle, captain.
K081	TERR on ND toggle, first officer.
K083	FCU off.
K084	FCU on.
K085	Master warning switch. Writes 4 to 0x56F8.
K086	Master caution switch. Writes 1 to 0x56F8.
K088	Internal. Alpha floor test.
K090	A/P off, same as K099. Through 0x04F2 only.
K091	A/P off, same as K099. Through 0x04F2 only.
K094	A/P off, same as K099. Through 0x04F2 only.
K099	A/P off. Same as K040.
K100	Both A/Ps off.
K101	AP1 on.
K102	AP2 on.
K110	Both F/Ds off.
K111	One F/D on, the other off.
K112	As K111, sides swapped.
K113	Both F/Ds on.
K125	HDG.
K149	LS button, first officer.
K150	Baro knob push: QNH, first officer.
K151	Baro knob pull: STD, first officer.
K152	STD, both sides.
K158	LS button, side of this FCU.
K162	Baro in inHg, first officer.
K163	Baro in hPa, first officer.
K170	VOR/ADF selector 1: VOR 1, first officer.
K171	VOR/ADF selector 1: ADF 1, first officer.
K172	VOR/ADF selector 1: off, first officer.
K173	VOR/ADF selector 2: VOR 2, first officer.
K174	VOR/ADF selector 2: ADF 2, first officer.
K175	VOR/ADF selector 2: off, first officer.
K180	Writes 62 to 0x04F4.
K181	Writes 501 to 0x04F4.
K182	Master warning switch. Writes 4 to 0x56F8.

K183	Master caution switch. Writes 1 to 0x56F8.
K184	Writes 162 to 0x04F4.
K185	Writes 502 to 0x04F4.
K186	Master warning switch. Writes 4 to 0x56F8.
K187	Master caution switch. Writes 1 to 0x56F8.
K301-K305	Writes 301 to 305 to 0x04F4. Serial only. Through 0x04F2 these numbers are B001 to B005.

B, S and M codes: EFIS panel

Write 300 + n for B, 400 + n for S, 500 + n for M to 0x04F2. First number captain, second first officer.

B codes: EFIS buttons, the MCP (Boeing)

Capt	F/O	
301	311	B001 / B011. WXR toggle.
302	312	B002 / B012. STA. Steps through VOR and NDB.
303	313	B003 / B013. WPT toggle.
304	314	B004 / B014. ARPT toggle.
305	315	B005 / B015. DATA toggle.
306	316	B006 / B016. POS toggle.
307	317	B007 / B017. TERR toggle.

S codes: ND range, the MCP (Boeing)

Capt	F/O	First number captain, second first officer.
400	410	S000 / S010. Range 5 NM.
401	411	S001 / S011. Range 10 NM.
402	412	S002 / S012. Range 20 NM.
403	413	S003 / S013. Range 40 NM.
404	414	S004 / S014. Range 80 NM.
405	415	S005 / S015. Range 160 NM.
406	416	S006 / S016. Range 320 NM.
407	417	S007 / S017. Range 640 NM.
408	418	S008 / S018. TFC toggle.

M codes: ND mode, the MCP (Boeing)

Capt	F/O	First number captain, second first officer.
501	511	M001 / M011. APP.
502	512	M002 / M012. VOR.
503	513	M003 / M013. MAP.
504	514	M004 / M014. PLN.
505	515	M005 / M015. CTR button. In MAP on the captain side it also steps through the VSD.

B codes: EFIS buttons, the FCU (Airbus)

Capt	F/O	First number captain, second first officer. ND data buttons: VOR, NDB, WPT, ARPT, CSTR. One button on at a time.
301	311	B001 / B011. ND data button 1.
302	312	B002 / B012. ND data button 2.
303	313	B003 / B013. ND data button 3.

304	314	B004 / B014. ND data button 4.
305	315	B005 / B015. ND data button 5.
306	316	B006 / B016. ND data button 6.

S codes: ND range, the FCU (Airbus)

Capt	F/O	
401	411	First number captain, second first officer. There is no S000 in the FCU.
402	412	S001 / S011. Range step 1.
403	413	S002 / S012. Range step 2.
404	414	S003 / S013. Range step 3.
405	415	S004 / S014. Range step 4.
406	416	S005 / S015. Range step 5.
407	417	S006 / S016. Range step 6.
		S007 / S017. Captain: range step 7. First officer: range step 6.

M codes: ND mode, the FCU (Airbus)

Capt	F/O	
501	511	First number captain, second first officer. The FCU writes the ND mode to 0x04F4.
502	512	M001 / M011. Writes 5 / 105 to 0x04F4.
503	513	M002 / M012. Writes 3 / 103 to 0x04F4.
504	514	M003 / M013. Writes 2 / 102 to 0x04F4.
505	515	M004 / M014. Writes 1 / 101 to 0x04F4.
506	516	M005 / M015. Writes 4 / 104 to 0x04F4.
		M006 / M016. Writes 333 / 334 to 0x04F4.

0x04F2 values above 999

Values from 10000 to 29999 are not reduced to three digits. nn and nnn are numbers with leading zeroes: 10005 = MINS up 5.

The MCP (Boeing)

100nn	MINS up nn steps, captain.
102nn	MINS down nn steps, captain.
110nn	BARO down nn steps, captain.
111nn	BARO up nn steps, captain.
120nn	MINS up nn steps, first officer.
122nn	MINS down nn steps, first officer.
130nn	BARO down nn steps, first officer.
131nn	BARO up nn steps, first officer.
14nnn	Nothing.
15nnn	Internal. A/P test. 15000 = off.
160nn-162nn	Internal. Pitch factors.
17nnn	Internal. Bank factor.
18nnn	Internal. Throttle adjust.
19nnn	Internal. Altitude capture factor.
20000-20009	Internal. CPflight MIP input.
21nnn	N1 set knob up nn steps. 737 MAX: left selector knob.
22nnn	N1 set knob down nn steps. 737 MAX: left selector knob.
23nnn, 24nnn	Nothing.
25nnn, 26nnn	Internal. Code nnn to the CPflight hardware.

27nnn-29nnn	Nothing.
30000-65535	Reduced to the last three digits.

The FCU (Airbus)

1000	Nothing.
1001-9999	Reduced to the last three digits.
10nnn	Nothing. The FCU has no MINS and BARO values here.
11nnn	Internal. Cycle time.
12nnn-14nnn	Nothing.
15nnn	Internal. A/P test. 15000 = off.
160nn-162nn	Internal. Pitch factors.
17nnn	Internal. Bank factor.
18nnn, 19nnn	Nothing.
20000-65535	Nothing.

Airbus thrust and fly-by-wire: 0x48F0-0x48FF

The MCDU, the FCU, pmFBW and the Airbus glass write most of these. An outside program may read them all. It may write 0x48F0, 0x48F2 and 0x48FD.

48F0	1 byte. Electrical off for the Airbus glass. Write. Same bits as the low byte of 0x0510.
48F1	1 byte. Electrical off for the MCDU. Legacy, not used.
48F2	1 byte. Airbus thrust gate. Boeing: reset and fault bits. Read and write. See the section 48F2 below. For one gate per engine use 0x5490.
48F3	1 byte. Airbus thrust and trim flags. Read. See the section 48F3 below.
48F4	Zero fuel weight plus block fuel in 100s of lb. Read. Multiply by 0.4536 for kg. Written by the MCDU.
48F6	FLEX temperature set in the MCDU. Read.
48F8	Take-off flap set in the MCDU. Read. 1 = 1, 2 = 1+F, 3 = 2, 4 = 3.
48FA	Runway altitude from the MCDU. Read.
48FC	1 byte. pmFBW state. Read. See the section 48FC below.
48FD	1 byte. pmFBW commands. Write. See the section 48FD below.

48F2 Thrust gate

Airbus	A value, not bits.
0	Control off.
1	MREV.
2	REV IDLE.
3	IDLE.
4	CLB.
5	THR MCT.
6	TOGA.
7	Alpha floor / TOGA LK. Set by the FCU.
10	Disables the current setting. The gate comes from thrust lever 2.
11	Disables the current setting. The gate comes from thrust lever 4.
10, 11	Use them to switch to MREV and REV IDLE and back, with the lever position for the other gates.
Boeing	Bits, written by the MCP.
bit 0	A/P reset.
bit 1	A/T reset.
bit 2	FMC fail.
bit 3	A/P fault.
bit 4	A/T fault.

48F3 Thrust and trim flags

1 byte. Bits count from 0.

bit 0	Alpha floor.
bit 1	MAN PITCH TRIM ONLY.
bit 2	USE MAN PITCH TRIM.
bit 3	TOGA LOCK.
bit 4	Airbus controls disabled.
bit 5	Gate setting disabled.

48FC pmFBW state

1 byte. Read. Written by pmFBW.

bit 0	Set while any state or command bit in 0x48FC or 0x48FD is set.
bit 1	Fly-by-wire enabled. Enabled does not mean active.
bit 2	Pitch priority mode enabled. Enabled does not mean active.
bit 4	Fly-by-wire active.

48FD pmFBW commands

1 byte. Write. Read by pmFBW.

bit 0	Disable fly-by-wire.
bit 1	Enable fly-by-wire.
bit 2	Enable pitch priority. Same as bit 3.
bit 3	Enable pitch priority.
bit 4	Alternate law.
bit 5	Direct law.
bit 7	Mechanical backup.
Re-enable	After a disable: set bit 0 to 0. Then set bit 1 to 1 and back to 0. Fly-by-wire has control again.

Upper offsets: 0x5400-0x54FF

5400	Glass build number. Read. 0 after the glass exits.
5402	MCP/FCU build number. Read. 0 after the MCP or FCU exits.
5404	CDU/MCDU build number. Read.
5406-5424	MCP and FCU values and bit offsets: see that section.
5428	CDU keyboard interface. Write. See the section 5428 below.
542A	Glass keyboard interface. Write. See the section 542A below.
542C	pmInstructor key input. Write. Low byte: ASCII character. High byte: bit 0 shift, bit 1 ctrl, bit 2 alt. Function keys: 112 = F1, 113 = F2 and so on.
542E	Close-all word. Write 12345, then 0. Each Project Magenta program quits when the value changes to 12345.
542E	Internal. Other values are in use between the programs: 12001, 12010, 20000 + n, 21000 + n.
5430	Internal. CDU remote block, 0x5430-0x545D: page to load.
5432	Internal. CDU remote command.
5434	Internal. 8 bytes. CDU remote page set.
543D	Internal. 8 bytes. CDU remote page active.
5446	Internal. 24 bytes, to 0x545D. CDU remote scratchpad.
5460	Internal. 24 bytes: latitude, longitude, type, 8 bytes each. A fix from the MCP for pmInstructor.
5478	1 byte. Captain ND state from the glass. Read. See the section 5478 / 5479 below.
5479	1 byte. First officer ND state from the glass. Read. Same bits.
5480	Internal. 16 bytes. Text command line for the MCP or FCU.
5490	1 byte. Airbus thrust gate, engine 1. Read and write. See the section 5490 / 5491 below.
5491	1 byte. Airbus thrust gate, engine 2. Read and write.
5494	VOR 3 data, six values of 2 bytes, 0x5494-0x549F. See the section 5494 below.
54A0	Internal. 16 bytes, 0x54A0-0x54AF. pmSystems message bits for the glass.
54B0	MCP/FCU value command and window read-back, 0x54B0-0x54CF. See the section 54B0 below.
54D0-54E9	Spare.
54F0	Internal. CDU X-Plane menu switch, 1 or 0.
54F8	Last PFC hardware button pressed. Legacy, not used.

5428 CDU keyboard interface

Write. Sends one key to the CDU or MCDU: scratchpad characters, line select keys and function keys. 0 = free. The CDU sets the offset to 0 when it has taken the key.

Low byte	The key: ASCII character or key code.
High byte	Modifier bits:
bit 0	Shift.
bit 1	Ctrl.
bit 2	Internal. Line select key from the Airbus glass MCDU.
bit 3	Internal. Letter or number key from the glass.
bit 4	Repeat toggle. Change this bit to send the same key twice in a row.
bit 6	The key goes to the RCDU. The CDU ignores it. 'A' to the CDU = 65. 'A' to the RCDU = 64 x 256 + 65 = 16449.
Key codes	Low byte values.

8	CLR.
46	DELETE.
107	+ (plus).
112	F1. F2 = 113 and so on: function key X = 112 + (X - 1).
190	. (period).
191	/ (slash).
203	Internal.
204	Internal.
220	Automatic navaid selection (autotune). No high byte = enable, shift = disable, ctrl = toggle.
222	Internal. Sent by the MCP.
32001	Internal. Whole value, sent by the CDU.
32002	Internal. Whole value, sent by the CDU.
Space	The space key is not supported.

542A Glass keyboard interface

Write. Sends one key to the glass, airliner and general aviation. The glass sets the offset to 0 when it has taken the key.

Low byte	ASCII character. Function keys: 112 = F1, 113 = F2 and so on.
High byte	Modifier and target bits. Change a free bit to send the same key twice in a row.
bit 0	Shift.
bit 1	Ctrl.
bit 2	Alt.
bit 4	Target: captain glass.
bit 5	Target: first officer glass.
bit 6	Target: EICAS / ECAM.
No target	No target bit set: all glass programs take the key.
Negative	Internal. A negative value moves a display element. Sent by the CDU menu.

5478 / 5479 ND state

Read. 1 byte each. 0x5478 captain, 0x5479 first officer. Written by the glass. 1 = on.

bit 0	WXR.
bit 1	TERR.
bit 2	TOPO.
bit 3	SVT.
bit 4	SVT see-through.
bit 5	VSD.
bit 6	TFC.
bit 7	Always 1 while the glass runs.

5490 / 5491 Airbus thrust gates

Read and write. 1 byte per engine. 0x5490 engine 1, 0x5491 engine 2. Use these, not 0x48F2.

0	Control off.
1	MREV.
2	REV IDLE.
3	IDLE.
4	CLB.

5	THR MCT.
6	TOGA.
10	Disables the current setting. The gate comes from thrust lever 2.
11	Disables the current setting. The gate comes from thrust lever 4.

5494 VOR 3 data

The third VOR receiver of the Airbus. Six values, 2 bytes each.

5494	Frequency.
5496	OBS (course).
5498	Flag.
549A	Radial.
549C	Deflection.
549E	DME.

54B0 MCP/FCU value command and windows

Sets one MCP or FCU window to a value. Write the value to 0x54B2 first. Then write the command to 0x54B0. The MCP or FCU answers in 0x54B0: 0 = done, -1 = not supported.

54B0	Command. Write. Then read the answer.
1	Altitude in feet.
2	Speed in knots.
3	Mach x 1000.
4	Heading.
5	Course left.
6	Course right.
7	Vertical speed.
20	Internal. A named control, from the glass panels.
54B2	4 bytes, signed. Value for the command. Write.
Read-back	The MCP windows. Read.
54B8	4 bytes. Altitude window in feet.
54BC	Speed window in knots.
54BE	Mach x 1000.
54C0	Heading.
54C2	Course 1.
54C4	Course 2.
54C6	Vertical speed.
54C8	Reserved. 0.
54CA	Reserved. 0.
54CC	Reserved. 0.
54CE	Flags. bit 0 = STD, bit 1 = Mach mode.

MCP and FCU values: 0x5406-0x540E

Write a value to set an MCP or FCU window. The MCP or FCU decides whether it is used, depending on the active modes. Read the real values from 0x04E0 and the offsets after it. No ini switch is needed.

5406	Speed in knots. Write. 250 = 250 knots. Acts when the value changes.
	MCP: 0 is ignored. The MCP sets the offset back to 0 after use.
	FCU: ignored below the lowest speed of the window. Highest value 399. The window goes to IAS. Not set back to 0.
5408	Heading in degrees. Write. 320 = 320 degrees. With X-Plane the MCP subtracts the magnetic variation.
540A	Altitude in hundreds of feet. Write. 120 = 12000 feet. MCP: highest 50000 feet. FCU: 0 is ignored.
	Internal. FCU: values above 32000 are TCAS vertical speed commands.
540C	V/S in feet per minute. Write. Negative as 65536 - value: -1800 = 63736. Rounded to 50. The MCP may also write here.
	Ignored in level change, in altitude capture, and for the value -1 (65535).
	MCP: 6000 is read as 0. 747: also engages V/S.
	FCU: in TRK/FPA the value is FPA x 100. 90 = 0.9, -140 = -1.4. Pulls the V/S knob when V/S is not active.
540E	Mach x 100. Write. 72 = Mach 0.72. Used only when the speed window is in Mach. MCP: lowest 0.40.

MCP and FCU bit offsets: 0x5410-0x5424

These offsets are the old way. Use 0x04F2 and 0x5406-0x540E for new work.

Size	Each offset is 4 bytes. Read and write.
5410-541F	Read by the MCP or FCU. DisableRemoteMCP in the ini file must be Off. In the FCU the key is DisableRemoteFCU. With a CPflight FCU these offsets are off.
5420-5427	Read by the glass. DisableRemoteMCP does not change them.
Toggled	0x5410, 0x5414, 0x541C, 0x5420: each CHANGE of a bit is one press. Setting the bit back to 0 is another press.
Set	0x5418, 0x5424: set the bit to 1. The program acts and sets it back to 0.
At start	MCP: bits that are set when the MCP starts act once. FCU: they do not. Start with all bits 0.

5410 MCP/FCU buttons 0-31

5410-5413	Toggled. A change of bit n sends K code n: bit 25 = K025. See the K tables for the meaning in each program.
bit 0	Free.
bits 1-6	Send Q001 to Q006 to the hardware.
bits 7-9	Free.
bit 10	K010. SPD push.
bit 11	K011. HDG SEL push.
bit 12	K012. ALT push.
bit 13	MCP: V/S (K031). FCU: free.
bits 14, 15	Free.
bit 16	MCP: A/T disconnect (K016). FCU: free.
bit 17	K017. F/D on, first officer. FCU: F/D 1 toggle.
bit 18	K018. F/D off, first officer. FCU: F/D 1 off.
bit 19	K019. A/T arm on.
bit 20	K020. A/T arm off.
bit 21	K021. THR / N1.
bit 22	K022. SPD.
bit 23	K023. Speed / Mach change-over.
bit 24	K024. FLCH / level change.
bit 25	K025. HDG.
bit 26	K026. VNAV.
bit 27	K027. LNAV.
bit 28	K028. LOC.
bit 29	K029. APP.
bit 30	K030. ALT HOLD.
bit 31	V/S (K031).

5414 MCP/FCU buttons 32-63

5414-5417	Toggled. A change of bit n sends K code 32 + n: bit 1 = K033. See the K tables for the meaning in each program.
bit 0	K032. A/P 1.
bit 1	K033. A/P 2.
bit 2	K034. MCP: CWS A. FCU: ND range down.
bit 3	MCP: V/S (K031). CWS B can not be sent here. FCU: K035, ND range up.

bit 4	K036. A/P 3.
bit 5	K037. F/D on, captain. FCU: F/D 2 toggle.
bit 6	K038. F/D off, captain. FCU: F/D 2 off.
bit 7	Free.
bit 8	K040. A/P off. 737: also disengage bar down.
bit 9	K041. 737: disengage bar up.
bit 10	K099. A/P off, all types.
bit 11	V/S (K031).
bit 12	K044. MCP: FPV.
bit 13	K045. Metres.
bit 14	K046. MCP: ND CTR.
bit 15	K047. MCP: TFC.
bit 16	K048. FCU: LS button, first officer.
bit 17	K049. FCU: LS button, captain.
bit 18	K050. FCU: baro knob push, QNH.
bit 19	K051. FCU: baro knob pull, STD.
bit 20	K052. FCU: SPD knob push.
bit 21	K053. FCU: SPD knob pull.
bit 22	K054. FCU: HDG knob push.
bit 23	K055. FCU: HDG knob pull.
bit 24	K056. FCU: ALT knob push.
bit 25	K057. FCU: ALT knob pull.
bit 26	K058. FCU: V/S knob push.
bit 27	K059. FCU: V/S knob pull.
bit 28	K060. FCU: EXPED button.
bit 29	K061. FCU: TRK/FPA button.
bit 31	Free.

5418 MCP/FCU knobs

5418-541B	Set the bit to 1 for one step. The MCP or FCU sets it back to 0.
bit 0	DH down, 10.
bit 1	DH up, 10.
bit 2	HDG down, 1.
bit 3	HDG up, 1.
bit 4	HDG down, 10.
bit 5	HDG up, 10.
bit 6	ALT down, 100.
bit 7	ALT up, 100.
bit 8	ALT down, 1000.
bit 9	ALT up, 1000.
bit 10	SPD down, 1. Mach .01.
bit 11	SPD up, 1. Mach .01.
bit 12	SPD down, 10. Mach .01.
bit 13	SPD up, 10. Mach .01.
bit 14	V/S down, 100.
bit 15	V/S up, 100.
bit 16	CRS down, 1.

bit 17	CRS up, 1.
bit 18	QNH down. 0.01 or 1, depending on the unit.
bit 19	QNH up. 0.01 or 1, depending on the unit.
bit 20	ND range down, captain.
bit 21	ND range up, captain.
bit 22	ND mode down, captain.
bit 23	ND mode up, captain.
bit 24	ND range down, first officer. MCP only.
bit 25	ND range up, first officer. MCP only.
bit 26	ND mode down, first officer. MCP only.
bit 27	ND mode up, first officer. MCP only.

541C Captain ND controls

541C-541F	Toggled. Captain side. Bits 25 to 30 act in the FCU only.
bit 0	Boeing: CTR. Airbus: ILS mode.
bit 1	APP. Old ND modes: MAP ARC.
bit 2	VOR. Old ND modes: MAP CTR.
bit 3	MAP. Old ND modes: ROSE.
bit 4	PLN.
bit 5	Range 10.
bit 6	Range 20.
bit 7	Range 40.
bit 8	Range 80.
bit 9	Range 160.
bit 10	Range 320.
bit 11	Range 640.
bit 12	VOR.
bit 13	NDB.
bit 14	WPT.
bit 15	ARPT.
bit 16	DATA.
bit 17	POS.
bit 18	VOR 1 on.
bit 19	ADF 1 on.
bit 20	VOR/ADF 1 off.
bit 21	VOR 2 on.
bit 22	ADF 2 on.
bit 23	VOR/ADF 2 off.
bit 24	METRIC.
bit 25	FCU: HDG-V/S / TRK-FPA.
bit 26	FCU: thrust lever TOGA.
bit 27	FCU: thrust lever FLX/MCT.
bit 28	FCU: thrust lever CLB.
bit 29	FCU: thrust lever IDLE.
bit 30	FCU: thrust lever REV IDLE. MAX REV when the lever is in REV IDLE already.
bit 31	Thrust lever MAX REV. Legacy, not used.

5420 First officer ND controls

5420-5423	Toggled. First officer side. Read by the glass.
bit 0	ILS mode (Airbus).
bit 1	MAP ARC.
bit 2	MAP CTR.
bit 3	VOR.
bit 4	MAP PLAN.
bit 5	Range 10.
bit 6	Range 20.
bit 7	Range 40.
bit 8	Range 80.
bit 9	Range 160.
bit 10	Range 320.
bit 11	Range 640.
bit 12	VOR.
bit 13	NDB.
bit 14	WPT.
bit 15	ARPT.
bit 16	DATA.
bit 17	POS.
bit 18	VOR 1 on. Legacy, not used.
bit 19	ADF 1 on. Legacy, not used.
bit 20	VOR/ADF 1 off. Legacy, not used.
bit 21	VOR 2 on. Legacy, not used.
bit 22	ADF 2 on. Legacy, not used.
bit 23	VOR/ADF 2 off. Legacy, not used.
bit 24	METRIC.

5424 Glass selectors

5424-5427	Set the bit to 1. The glass acts and sets it back to 0.
bit 0	Show controls on the engine page.
bit 1	Show standby gauge on the engine page.
bit 2	Engine page down.
bit 3	Engine page up.
bit 4	Synoptic page down. Legacy, not used.
bit 5	Synoptic page up. Legacy, not used.
bit 6	PLAN mode: selected waypoint down.
bit 7	PLAN mode: selected waypoint up.

Upper offsets: 0x5500-0x55FF

5500	PFC.DLL version. Legacy, not used.
5508	737 speed reference dial. Read and write. Byte 0x5508 = value. Byte 0x5509 = selector: 0 AUTO, 1 V1, 2 VR, 3 WT, 4 VREF, 5 BUG, 6 SET.
5508	Airbus: alpha protection speed. The Airbus glass writes it. Read.
550A	737 N1 reference selector. Write. 0 = AUTO, 1 = engine 1, 2 = engine 2, 3 = both.
550A	Airbus: minimum speed. The Airbus glass writes it. Read.
550C	737 N1 reference value x 10. Write.
550C	Airbus: maximum speed. The Airbus glass writes it. Read.
550E	Transition altitude set in the CDU or MCDU. Read.
5510	V1. Set by the CDU or MCDU. Read.
5512	VR. Set by the CDU or MCDU. Read.
5514	V2. Set by the CDU or MCDU. Read.
5516	VREF. Set by the CDU or MCDU. Read.
5518	Airbus: green dot speed, from the Airbus glass. Boeing: stall speed, from the CDU. Read.
551A	CDU timer value. Only the CRJ FMC writes it. Read.
551C	Minimum speed. From the CDU, the MCDU or the Airbus glass. Read.
551E	Maximum speed. From the CDU or MCDU. Read. At a flap limit the Boeing CDU alternates the speed and 1000 + speed every half second.
5520	1 byte. Captain VOR/ADF selector, needle 1. Write. 0 = no change. 1, 2, 3 = switch position 0, 1, 2.
5521	1 byte. Captain VOR/ADF selector, needle 2. Write. Same values. The CRJ autopilot panel puts bearing source and RA test here.
5522	1 byte. First officer VOR/ADF selector, needle 1. Write. Same values as 0x5520.
5523	1 byte. First officer VOR/ADF selector, needle 2. Write. Same values as 0x5520.
5524	1 byte. First officer map range. Read and write. 0 = 5 NM, 1 = 10, 2 = 20, 3 = 40 and so on.
5525	1 byte. First officer map mode, from the MCP. Read. Value = 2 to the power of the mode. Plus 1 when centred.
5526	First officer ND modes. See the list below.
5528	FCU dashes, MCP trim wheel, FD lights. See the list below.
552A	Reference bank angle for the autopilot. Read and write. 0 = 25 degrees. 1 = AUTO.
552C	Lower engine page. Read. Same as 0x04F4 codes 301-319 minus 300: 1 = ENG, 2 = BLEED. To set the page write 0x04F4.
552C	CRJ: map mode, in 0x552C and 0x552D.
552E	First officer altimeter setting. Read and write. Same format as 0x0330: hPa x 16. Active when not 0. With X-Plane 0 = follows the captain.
5530	737 glareshield annunciators. Read. The bits are declared in pmSystems sysvar.txt.
5532	First officer decision height in tens of feet. Read and write. 200 feet = 20, 1050 feet = 105. Negative = MDA. 0x552E must be set.
5534	1 byte. Button pass-through. See the list below.
5535	1 byte. Read and write. Boeing: bit 0 CWS A, bit 1 CWS B. Airbus ECAM keys: bit 0 EMER CANC, bit 1 CLR, bit 2 STS, bit 3 RCL, bit 4 CLR 2.
5536	Captain temporary QNH and CRJ fail flags. See the list below.
5538	First officer temporary QNH and CRJ fail flags. See the list below.
553A	Internal. Thrust setting for a motor quadrant while the A/T is detached.
553C	Temperature set in the FMC (derate). From the Boeing CDU. Read.

553E	Standby altimeter setting. See the list below.
5540	Internal. 737 glareshield annunciators, conditional display.
5542	Lower engine page the pilot chose on the ECAM panel. Read. 0 = automatic page. For lights and logic. To set the page write 0x04F4.
5544	1 byte. Airbus ECAM page lights, for the page chosen by key. Read.
5545	1 byte. ECAM CLR status, from the Airbus glass. Read.
5546	1 byte. FMC flight phase, from the MCDU. Read.
5547	1 byte. Airbus page phase, 1-10. Read.
5542-5546	pmInstructor playback, while 0x556A is set: 0x5542 = IAS x 10, 0x5544 = TAS x 10, 0x5546 = vertical speed. 2 bytes each. The Boeing glass shows them.
5548	pmSystems hardware. See the list below.
554A	1 byte. MCP hardware. See the list below.
554B	1 byte. Remote CDU state. Read. 1 = connected. 2 = remote active.
554D	1 byte. Aircraft type. See the list below.
554E	1 byte. Legacy, not used.
5550	Version of the Project Magenta flight model (pmModel in pmWideClient). Read.
5552	Docking command. Write. 10 = the MCP, FCU, CDU and MCDU dock into the glass window. The window handle is at 0x5556.
5552	Internal. 98, 99 = all programs quit. Above 10000 = shut the PC down.
5554	ADF2 frequency x 10, kHz. Read.
5556	4 bytes. Window handle of the glass. The glass writes it. Read.
5558	Second set value. Now the upper half of 0x5556. Legacy, not used.
555A	Internal. 1 = the flight model does the flare below 50 feet.
5560	pmSounds version. Read.
5562	1 byte. pmSounds inhibit bits. Write. Bit n = Inhibit n in the pmSounds ini. bit 0 GPWS. bit 1 gear warning. bit 2 flaps warning.
5564	pmSounds command word. See the list below.
5566	1 byte. pmSounds flags. Read. Bit 0 = takeoff warning.
5568	1 byte. NAV and marker sounds. Write. Same as 0x3122, and bypasses it.
556A	pmInstructor playback flag. Set while a playback runs. Read.
556D	1 byte. Stick shaker command, from the MCP. Read. 255 = on, 0 = off.
556E	PFC hardware check bits 0-14. Legacy, not used.
5570	pmSystems version. Read.
5572-557F	Internal. pmSystems flags.
5580	pmInstructor version. Read. Value = 10000 + build.
5582	Internal. pmInstructor flags.
5584	pmInstructor command word. See the list below.
5586-558F	Internal. pmInstructor flags.
55A5	1 byte. Gust lock, from pmFBW. Read.
55B0-55BB	Brakes. See the list below.
55D0-55DF	Failure flags. See the list below.
55E0	Hydraulic pressure 1, display override. Write. Same factors as in FS. For 0 write 1.
55E2	Hydraulic pressure 2, display override. Write.
55E4	Hydraulic pressure 3, display override. Write.
55E6	Hydraulic pressure 4, display override. Write.
55E8	1 byte. Gear position, 1-252. From the MCP or pmFBW. Read.

55E9	1 byte. Read. bit 0 aircraft raised. bit 1 force gear up.
55EA	Airbus thrust gate, engine 4. Legacy, not used.
55EC	1 byte. 737 lights. Read. bit 0 speedbrake do not arm. bit 1 anti-skid. bit 2 autobrake disarm.
55EE	pmSystems state. Read. bit 0 pmSystems runs. bit 1 CPFlight overhead connected.
55F0-55FE	Dimmers. See the list below.

5526 ND modes, first officer

5526	Modes shown on the first officer ND. The MCP or FCU writes them. Read.
bit 0	VOR.
bit 1	NDB.
bit 2	ARP.
bit 3	WPT.
bit 4	Boeing: plan data. Airbus: CSTR.
bit 5	VOR1 needle active.
bit 6	VOR2 needle active.
Boeing	Bits 7-14 from the MCP.
bit 7	First officer altimeter setting in hPa.
bit 8	Metric display.
bit 12	Hide DH.
bit 13	Hide MDA.
bit 14	Minimums = MDA.
Airbus	Bits 9-13 from the FCU.
bit 9	First officer altimeter set to STD.
bit 10	First officer LS. The Airbus glass takes LS from 0x5528 bit 12.
bit 11	First officer altimeter setting in hPa.
bit 13	V/S limit blink.

5528 FCU dashes, MCP trim wheel, FD lights

Boeing	Written by the MCP. Read.
bit 0	AP PRST. The MIP button input is K090: 0x04F2 value 90.
bit 1	AT PRST. The MIP button input is K091: 0x04F2 value 91.
bit 2	FMC PRST. The MIP button input is K092: 0x04F2 value 92.
bit 3	Altimeter set to STD.
bit 4	Trim value decreases. For a trim wheel motor.
bit 5	Trim value stable.
bit 6	Trim value increases.
bit 7	747: HDG SEL.
bit 8	A/T is detached. For moving throttles.
bit 9	FD light left.
bit 10	FD light right.
bit 11	747: HDG HOLD.
bit 13	Stab trim override and indicator.

bit 14	First officer altimeter set to STD.
Airbus	Written by the FCU. Read.
bit 0	Speed dashed.
bit 1	Heading dashed.
bit 2	V/S dashed.
bit 3	Altimeter set to STD.
bit 7	TRK/FPA active.
bit 9	FD light left.
bit 10	FD light right.
bit 11	LS light left.
bit 12	LS light right.
bit 13	Thrust idle.

5534 Button pass-through

5534	1 byte. The MCP sets a bit when the button is pressed. pmFBW reads the byte and clears it. Read.
bit 0	Captain caution.
bit 1	Captain fire.
bit 2	First officer caution.
bit 3	First officer fire.
bits 4, 6	Second press within 0.3 seconds.
bit 5	Airbus ALL page.

5536, 5538 Temporary QNH and CRJ fail flags

5536	Captain temporary QNH, inHg x 100. From the MCP. Read.
5536	CRJ: captain fail flags, in 0x5536 and 0x5537.
5536 bit 0	ATT.
5536 bit 1	IAS.
5536 bit 2	ALT.
5536 bit 3	VS.
5536 bit 4	FAIL PFD.
5536 bit 5	ATT1 select.
5536 bit 6	ATT2 select.
5536 bit 7	AIR DATA1 select.
5537 bit 0	AIR DATA2 select.
5537 bit 1	Revert captain PFD.
5537 bit 5	Oil 1 fail.
5538	First officer temporary QNH, inHg x 100. From the MCP. Read.
5538	CRJ: first officer fail flags, in 0x5538 and 0x5539.
5538 bit 4	FAIL first officer PFD.
5539 bit 1	Revert first officer PFD.
5539 bit 5	Oil 2 fail.

553E Standby altimeter setting

553E	Standby altimeter setting. Read and write. hPa x 16, same format as 0x0330. 16212 = 1013.25 hPa.
0	Not set. The standby altimeter follows the main altimeter (Boeing glass). The MCP starts it at 16212.

Limits	The Boeing glass takes 15200-17400: 950-1087 hPa. The MCP takes 14400-17600. A value outside counts as not set.
Step	One knob step = 1 hPa or 0.01 inHg. A step leaves STD.

5548 pmSystems hardware

5548	Hardware pmSystems is connected to. pmSystems writes it. Read.
bit 0	Phidgets.
bit 1	PFC overhead.
bit 2	InterfaceIT.
bit 4	CPFlight 737. Also set for the FSC overhead.
bit 5	EHID.

554A MCP hardware

554A	1 byte. Hardware the MCP or FCU is connected to. Read.
bit 0	PFC MCP.
bit 1	CPFlight MCP.
bit 2	ELAN basic protocol.
bit 3	Aerosoft MCP.
bit 4	EHID.
bit 5	FSC TQ.
bit 6	FSC MIP.
bit 7	MCP software runs. The bit changes state every 3 seconds.

554D Aircraft type

554D	1 byte. Autopilot type. All other programs take the same type. The MCP or FCU writes it. pmSystems writes it when no MCP runs. Read.
2	A320.
3	737.
4	747.
7	777.
10	CRJ.
11	CRJ 700.
20	ERJ.
22	A220.

5564 pmSounds command word

5564	Write a code. pmSounds plays it and writes 0 back. Write.
1001	GPWS test.
1002	Short test.
1007	CRJ test.
1010	Airbus caution chime.
1011	Airbus caution chime.
1012	Triple click.
1017	A/P disconnect repeat off.
1018	A/P disconnect, priority.
1019	A/P disconnect.
1020	A/P disconnect.
1021	Airbus caution chime.

1022	A/P disconnect and caution.
1030	Stall.
1031	Stall.
1032	Too low flaps.
1035	Speed speed speed.
1036	Dual input.
1037	Priority left.
1038	Priority right.
1099	Stop the test.
1201	Terrain.
1202	Don't sink.
1301	Thrust lever caution: MCT.
1302	Thrust lever caution: CLB.
1303	Thrust lever caution: ASYM.
1304	Thrust lever caution: LIM.
14n0	CRJ triple chime, n times. 1430 = 3 times.
14n1	CRJ caution, n times.
1502 1503	Music on, music off.
1555	Altitude warning.
1570	Mute the A/P sound.
1600	Instructor mute on.
1601	Instructor mute off.
1650	Gear sound off.
1651	Gear sound on.
2001-2003	Rain, thunder.
2502 2503	Music on, music off.
3001	PTU.
5001	Engine fail.
5002	Compressor stall.
5003	Fire.
5004	Evacuation horn on.
5005	Evacuation horn off.
6001-6004	Play the sound file named after the COM1, COM2 or standby frequency.
10000-10999	Engine volume.
11000-11999	Main volume.
20000-29999	MDA / 10.
Other	The call number of a sound in the pmSounds sound list.

5584 pmInstructor command word

5584	Write a code. The program that handles it writes 0 back. Write.
pmInstructor	Codes read by pmInstructor.
10001	Menu MAIN.
10002	Menu POSITION.
10003	Menu ENVIRONMENT.
10004	Menu LOAD/FUEL.
10005	Menu FAIL.
10006	Menu ATTITUDE.

10007	Menu VIEW.
10008	Menu VPATH.
10009	Menu MENU.
20001	Internal. Load a QTG script: name at 0x4000, scenario at 0x4010, 16 characters each.
20101	Flight freeze, toggle.
20102	Flight freeze on.
20105	Reposition to the runway. The CDU sends it.
20301	Pushback north.
20302	Pushback east.
20303	Pushback south.
20304	Pushback west.
20401	Position: runway. The MCP sends it.
20402	Position: 10 NM.
20403	Position: 7 NM.
20404	Position: airwork, 10000 feet.
20405	Position: ILS approach, 2500 feet (L).
20406	Position: 4 NM.
20501	Weather: clear.
20502	Weather: preset. The first user weather named PRESET.
20701	Fail now.
20702	Clear failures.
20707	Engine start 1.
20708	Engine start 2.
20709	APU start.
20710	External power, on the ground.
20711	Map page MAP.
20712	Map page APPROACH.
20700 + n	The MCDU sends 20700 + key number.
pmFBW	Codes read by pmFBW.
30000	Internal. All controls live again.
30001-30065	Internal. Kill one control: 30001 elevator, 30002 aileron, 30004 rudder, 30008 throttle, 30016 protections, 30032 trim, 30064 thrust and throttle, 30065 brakes.
30101-30165	Internal. The same control back on: 30101 elevator to 30165 brakes.
MCP, FCU	Codes read by the MCP and the FCU.
31000-31299	Internal. MCP: instructor throttle position. 31000 + 100 x lever + percent. Lever 0 = both, 1, 2.
31008	Internal. FCU: kill throttle.
31300	Internal. MCP: flap handle and park brake from the quadrant to the sim, once.

55B0 Brakes

55B0	1 byte. Autobrake position. Same as 0x2F80, but Project Magenta handles the autobrake. The MCP or FCU writes it. Read.
55B1	1 byte. Autobrake position asked for by hardware or the CDU. Write. 1-5, 6 = off. The MCP copies it to 0x55B0.
55B2	Left brake 1. Write.
55B4	Right brake 1. Write.
55B6	Left brake 2. Write.
55B8	Right brake 2. Write.

55BA	1 byte. Autobrake acts. The FCU writes 1. Read.
55BB	Internal. 1 byte. Soft breaker bits.

55D0 Failure flags

55D0-55DF	Failure flags. Four values of 4 bytes each. pmInstructor sets them. The glass, the MCP and pmFBW read them. Read.
55D2 bit 0	G/S fail.
55D2 bit 1	LOC fail.
55D8 bit 0	Flaps fail.
55D8 bit 1	Spoiler fail.
55D8 bit 2	Gear fail.
55D8 bit 3	Flaps left fail.
55D8 bit 4	Flaps right fail.
55D8 bit 6	Brakes fail.

55F0 Dimmers

55F0-55FE	Brightness, 1 byte each. Read and write. 0 = INOP, 1 = dark, 100 = bright. Bitmap frames must be disabled in the glass.
55F0	Captain PFD.
55F1	Captain ND.
55F2	Upper ECAM.
55F3	Lower ECAM.
55F4	First officer ND.
55F5	First officer PFD.
55F6	pmSystems display.
55F7	MCP.
55F8	FMC. Legacy, not used.
55F9	RFMC. Legacy, not used.
55FA	ISIS.
55FC	Pedestal.
55FD	Overhead.
55FE	MIP.

pmSystems offsets: 0x5600-0x57FF

5600-57FF	pmSystems offsets. They are declared in the pmSystems sysvar.txt file: name, offset, bit. Use that file as the reference.
5648	1 byte. FireStatus. See 'Fire and failure codes'.
5724	4 bytes, float. X-Plane: centre of gravity as X-Plane shows it, metres. First of three values. Read.
5728	4 bytes, float. X-Plane: centre of gravity, second value. Read.
572C	4 bytes, float. X-Plane: centre of gravity, third value. Read.
573A	1 byte. X-Plane: nosewheel steering override, from the pmFBW tiller.
573C	X-Plane: nosewheel steering command, from the pmFBW tiller.
5750	1 byte. FailureCode. See 'Fire and failure codes'.
5764	1 byte. X-Plane: view command. Write. Cleared after use.
57E0-57F3	Reserved for the A220: free220_01 to free220_20, 1 byte each. Declared in pmSystems sysvar.txt. Do not allocate in this range.

Airbus lights

56F7 bit 0	MasterCaution light.
56F7 bit 2	MasterWarning light.
56F7 bit 3	APU fire light.
56F7 bits 4-7	Fire lights 1 to 4.
56F8 bit 0	MasterCautionSwitch, the button.
56F8 bit 1	RecallSwitch.
56F8 bit 2	MasterWarningSwitch, the button.
56F8 bits 3-7	Fire switches.
5718 bit 0	pmFBW runs.
5718 bit 1	StickPriority11 light.
5718 bit 2	StickPriority12 light.
5718 bit 3	StickPriority21 light.
5718 bit 4	StickPriority22 light.
5719 bit 0	AutoLandFail light.

Fire and failure codes

5648	1 byte. FireStatus. The value is one code from the lists below. Read and write.
5750	1 byte. FailureCode. The value is one code from the lists below. Read and write.
Boeing	FireStatus, 0x5648.
21	Fire fault test.
22	Fire detector test.
23	Fire bottles test.
25	Cargo fire test.
51	Engine 1 fire.
52	Engine 2 fire.
53	APU. Used with 55.
55	APU fire.
Boeing	FailureCode, 0x5750.
10	IAS / pitot fail.
71	Hot start engine 1.

72	Hot start engine 2.
81	Hung start engine 1.
82	Hung start engine 2.
Airbus	FireStatus, 0x5648.
51	Engine 1 fire.
52	Engine 2 fire.
55	APU fire.
Airbus	FailureCode, 0x5750.
10	IAS / pitot fail.
11	Glareshield autoland. Red AUTO LAND light.
20	Flaps locked.
31	FWC1 fault.
32	FWC2 fault.
33	FWC1+2 fault.
50	APU fail.
61	Forward 1 pump.
62	Forward 2 pump.
63	Centre 1 pump.
64	Centre 2 pump.
65	Aft 1 pump fault.
66	Aft 2 pump fault.
71	Hot start engine 1.
72	Hot start engine 2.
81	Hung start engine 1.
82	Hung start engine 2.
91	AC BUS 1 fault.
92	AC BUS 2 fault.
111	High oil temperature engine 1.
112	High oil temperature engine 2.
120	CAB PR SYS 1 fault.
121	CAB PR SYS 2 fault.
122	CAB PR SYS 1+2 fault.
CRJ	FireStatus, 0x5648.
41	Engine 1 fire.
42	Engine 2 fire.
A220	FailureCode, 0x5750.
41	Engine 1 fire.
42	Engine 2 fire.
45	APU fire.
46	Cargo fire.
47	Cargo fire, forward.

Overrides and hardware inputs: 0x5800-0x59FF

5800	Engine override active. Write. See also 0x050A.
5802-5808	N1 x 10, engines 1 to 4, 2 bytes each. Write. The glass shows engines 1 and 2.
580A-5810	N2 x 10, engines 1 to 4, 2 bytes each. Write.
5812-5818	EGT x 10, engines 1 to 4, 2 bytes each. Write.
581A-5820	VIB x 10, engines 1 to 4, 2 bytes each. Write.
5822-5828	Fuel flow, engines 1 to 4, 2 bytes each. Not multiplied by 10. Write.
5830-5836	N1 x 10, scaled output from the glass. Engines 1 to 4, 2 bytes each. Read.
5838-583E	N2 x 10, scaled output from the glass. Engines 1 to 4, 2 bytes each. Read.
5840	Elevator, autopilot output from the MCP. Read.
5842	Elevator trim, autopilot output from the MCP. Read.
5844	Aileron, autopilot output from the MCP. Read.
5846	Throttle, output from the MCP. One value for all 4 throttles. Read.
584A	pmFBW control input: elevator. pmFBW writes it. Must not be 0, or 0x584A and 0x584C are not read. Lowest value 1.
584C	pmFBW control input: aileron. pmFBW writes it.
5850	1 byte. Overrides what the MCP sets in 0x310A. Disable only. Write.
5851	1 byte. Override for 0x310B. Legacy, not used.
5852	Oil pressure engine 1, FS format. Write. For the Boeing glass.
5854	Oil temperature engine 1. Write.
5856	Oil pressure engine 2, FS format. Write.
5858	Oil temperature engine 2. Write.
5860-58AF	Internal. Waypoint data and flags for the general aviation glass.
58B0	8 bytes, double. Vertical guidance for the PFD. Read. From the MCP: non-precision approach path deviation. From the CDU: VNAV deviation.
58B8	8 bytes, double. Lateral guidance for the PFD. Read. From the MCP: LOC deviation. From the CDU: LNAV deviation.
58B0, 58B8	With an autopilot type that is not an MCP: pitch and bank targets.
58FC	Internal. 1 byte. pmFBW flags.
5900	Control hardware flags. Write.
5902	Throttles. Write.
5904	Throttle 1, as 0x3330. Write.
5906	Throttle 2, as 0x3332. Write.
5910	1 byte. Throttle hardware flags. Write. bit 0 hardware active. bit 1 spoiler in the armed position.
5911	1 byte. Airbus flap position. Write. 1 = UP, then 1, 2, 3, FULL: values 1 to 5.
5912	Single throttle. Legacy, not used.
5914	Throttle 1, 0-16383. Write.
5916	Throttle 2, 0-16383. Write.
5918	Throttle 3, 0-16383. Write.
591A	Throttle 4, 0-16383. Write.
591C	Spoiler, 0-16383. Write.
5910-591C	Throttle hardware that writes these offsets does not need to set 0x310A.
5920	1 byte. Fly-by-wire protections, from pmFBW. See the list below.
5923	1 byte. Gravity gear extension. From the FCU or pmFBW. Read.
5924	Alpha-min speed, from the Airbus glass. Read.

5926	Thrust lever angle 1 x 10, from pmFBW. Read.
5928	Thrust lever angle 2 x 10, from pmFBW. Read.
5930, 5934	4 bytes each. Speed tape limits from the Boeing glass. Read. Value = red x 1000 + yellow.
5950	Internal. 4 bytes. Windshear test wind: speed x 1000 + direction.

5920 Fly-by-wire protections

5920	1 byte. pmFBW sets a bit while the protection acts. Read.
bit 0	Bank limit.
bit 1	High speed.
bit 2	Pitch limit.
bit 3	Alpha protection.

Brain and reserved: 0x5B00-0x5FFF

5400-5BFF	Reserved for Project Magenta. Do not allocate in this range.
5A80	Internal. 8 bytes. CASA 212 keys.
5B00	128 bytes. NetDir: the network folder, text, null terminated. The CDU or MCDU writes it. Read.
5B80-5B89	Brain address block. See the list below.
5BA0-5BCF	X-Plane link block, 48 bytes. See the list below.
5BD0	Internal. X-Plane: disable elevator. From the MCP.
5BD2	Internal. X-Plane: disable aileron. From the MCP.
5BD4, 5BD6	Internal. Lights out for PFC MCP hardware.
5C00-5EFF	Internal. Remote CDU transfer. The CDU or MCDU writes 700 bytes from 0x5C00. The remote CDU reads them.
5E00	Internal. Offset lock table, 4 bytes per entry.
5F00	Internal. Offset lock table, 16 entries of 4 bytes.
5D00-5FFF	Reserved.

5B80-5B89 Brain address

5B80-5B89	Brain writes this block every 2 seconds while its sim link is up. A program reads it to find Brain. Read. Brain listens on port 5000.
5B80	Brain build number. 0 = no Brain. Brain writes 0 when it closes.
5B82-5B85	IPv4 address of the Brain PC, 1 byte per part. 192.168.1.20 = 192, 168, 1, 20. In local mode 127.0.0.1.
5B86	1 byte. Heartbeat. Plus 1 at each write.
5B87	1 byte. Number of clients connected.
5B88	1 byte. Protocol level. Now 1.
5B89	1 byte. Spare.
UDP 5001	Brain also sends a UDP beacon on port 5001.

5BA0 X-Plane link block

5BA0-5BCF	Internal. 48 bytes between pmWideClient on X-Plane and the Project Magenta programs.
5BA4	Internal. A/P button pulse, from the CRJ autopilot panel.
5BAA	Internal. Throttle enable, from the MCP.
5BB2	Internal. View, 0 or 1000, from the CDU.
5BC2	Internal. X-Plane connected flag.
5BCC	Internal. X-Plane height above ground x 10.

5BA8-5BBC FMS lateral guidance

5BA8-5BBC	Lateral guidance from the CDU to the MCP. The CDU writes, the MCP reads. Read.
5BA8	Bank command, degrees x 1000. Positive = right.
5BAC	Flags. bit 0 guidance valid. bit 1 in a turn.
5BAE	Sequence number. Plus 1 at each CDU update.
5BB6	Kept for pitch guidance.
5BBA	Desired track, degrees true x 10.
5BBC	Cross-track error, NM x 100. Positive = right.

Serial telegrams (MCP hardware)

The MCP/FCU codes were first defined by ELAN Informatique. The hardware talks to the MCP or FCU on a serial line.

Line	19200,N,8,1.
Format	ASCII text. Each telegram ends with one byte of value 0.
Example	HDG pressed: the hardware sends "K025" + chr(0).
0x04F2	The K, B, S and M codes can also be sent as numbers through 0x04F2.

Hardware to program

Knnn	Key or switch. See the K tables.
Bnnn	EFIS button. See the B tables.
Snnn	ND range selector. See the S tables.
Mnnn	ND mode selector. See the M tables.
M215	CTR, first officer. Older form of M015.
V01 nnn	Left course. "V01 123" = course 123.
V02 nnn	Speed. "V02 245" = 245 knots. Mach as .nn.
V03 nnn	Heading. "V03 320" = 320 degrees.
V04nnnnn	Altitude. "V0412000" = 12000 feet.
V05snnnn	V/S. "V05-1800" = -1800 feet per minute.
V06 nnn	Right course. "V06 232" = course 232.
V08dnnn	DH / MDA steps. d = 1 up, 0 down. nnn = steps. Not an absolute value.
V09 nn	Bank limit in degrees. "V09 25" = 25 degrees.
V10dnnn	MINS, captain. d = 1 up, 0 down. "V101002" = up 2 steps.
V11dnnn	BARO, captain. "V110004" = down 4 steps.
V12dnnn	MINS, first officer.
V13dnnn	BARO, first officer.
V14dnnn	N1 set knob. 737 MAX: left selector knob.
V15dnnn	Speed reference knob. 737 MAX: right selector knob.
V16dnnn	Standby baro.
V17d	ND range step, captain. d = 1 up, 0 down.
V18d	ND range step, first officer.
E0 oooo b value	Writes a value to an offset. oooo = offset, 4 hex digits. b = bytes: 1, 2, 4 or 8. The value is all text after the 7th character.
	"E004F42005" writes 5 to 0x04F4, 2 bytes. "E004F422" writes 2 to 0x04F4. "E00BC081234.5" writes 1234.5 to 0x0BC0, 8 bytes, double.
E0VHF1	COM1 frequency.
E0VHF2	COM2 frequency.
EICAS01-10	MCP: writes 301 to 308, 318, 319 to 0x04F4.
R019	A/T arm flag on, nothing else.
R020	A/T arm flag off, nothing else.
R040	FCU: A/P off, as K040.
R041	As K041.
KPFC, KDKS	MCP: hardware hello from PFC or DKS. The MCP starts the link again.
KCPF, CPFCU	Hardware hello from CPflight.
KAPP	FCU: arms the approach.
INT100	FCU: ALT knob step 100.

INT1000	FCU: ALT knob step 1000.
I00, G00	Reserved for CPflight.
J00, H00	Reserved for CPflight. Legacy, not used.

The FCU takes V01 to V06, V08, V10 to V13 and V22.

Program to hardware

L0nnn	Light on. nnn = 100 + K code of the button. "L0125" = HDG light on.
L1nnn	Light off. "L1125" = HDG light off.
L0198	Backlight on.
L1198	Backlight off.
D01 nnn	Left course display. "D01 123" = course 123.
D02 nnn	Speed display. "D02 245" = 245 knots.
D03 nnn	Heading display. "D03 320" = 320 degrees.
D04nnnnn	Altitude display. "D0412000" = 12000 feet.
D05snnnn	V/S display. "D05-1800" = -1800 feet per minute. V/S 0 is sent as "D05 +00".
D06 nnn	Right course display. "D06 232" = course 232.
D08 nnn	Decision height display. "D08 200".
X1105	V/S display on.
X1005	V/S display off.
X1102	SPD display on.
X1002	SPD display off.
Q001-Q006	Sent to the hardware for K001 to K006.

Changes

Nov 2026	The whole list checked against the programs. Wrong entries corrected, missing ones added, unused ones marked Legacy. New layout.
Nov 2026	0x04F4: 737 clock buttons 470-475 and 480-485, standby + and - 490 and 491 (pfd build 591).
Oct 2026	0x04F4: 83 and 84 TOPO map, 85 and 86 SVT, 17 and 18 VSD. Terrain is EGPWS only.
Aug 2026	0x57E0-0x57F3 reserved for the A220.