

FMS Quick List

Gulfstream G450/G550

Appendix A CPDLC message elements and standardized free text messages

A.1 General

A.1.1 This appendix contains the CPDLC message elements and standardized and preformatted free text messages for the FANS 1/A, ATN B1, and ATN B1-FANS 1/A data link systems described in paragraph 2.1.2. The CPDLC message elements are based on ICAO Doc 4444, 15th Edition.

- [Section A.2](#) provides a CPDLC message element response requirements key;
- [Section A.3](#) provides the CPDLC uplink message elements and intended uses;
- [Section A.4](#) provides the CPDLC downlink message elements; and
- [Section A.5](#) provides CPDLC standardized free text messages.

A.1.2 The following guidelines apply:

a) Normal text is taken from ICAO Doc 4444 (e.g. message response key or message intent/use) and represents the global baseline. *Italic text* supplements the ICAO Doc 4444 guideline either as a *Note* or specific to *FANS 1/A*, *ATN B1*, or *ATN B1-FANS 1/A* data link system.

b) In cases where there is a choice for the message element or the response attribute, the first choice that appears in the row for that message element is shown in **bold text** and indicates the preferred choice, per ICAO Doc 4444, and should be used for new implementations. The second choice is shown in *italic text* and indicates legacy implementations (e.g. FANS 1/A), that are considered acceptable.

c) The following variables are considered operationally interchangeable in this document respecting range and resolution variations as defined in interoperability standards:

ICAO Doc 4444 variable	Equivalent FANS 1/A variable
[level]	[altitude] (<i>See Note</i>)
[specified distance] [direction]	[distance offset] [direction]
[departure clearance]	[predeparture clearance]
[unit name]	[icao unit name]
[code]	[beacon code]
[facility designation]	[icao facility designation]
[persons on board]	[remaining souls]

Note.— ICAO Doc 4444 notes that message elements that contain the [level] variable can be specified as either a single level or a vertical range (i.e. block level). FANS 1/A only considers the [level] variable as a single level and uses message elements that are intended exclusively for specifying a vertical range (e.g. [UM 30](#), [UM 31](#), [UM 32](#), [UM 180](#), [DM 7](#), [DM 76](#), [DM 77](#), etc). ATN B1 uses the [level] variable to specify a vertical range and does not use the message elements intended exclusively for specifying a vertical range, except in cases where an ATN B1 ground system provides data link service to FANS 1/A aircraft.

d) The “CPDLC message set” column indicates which of the CPDLC message sets, FANS 1/A, ATN B1 or FANS 1/A-ATN B1, supports the message element. The cell is shaded **green** if they are valid messages in the ICAO Doc 4444 message set and **red** if they are reserved.

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1) If a CPDLC message set supports a message element that is reserved in ICAO Doc 4444, then the cell will be **red** and the data link system will be highlighted in **green**. In these cases, the ANSPs and operators should establish procedures or automation to avoid the use of these message elements.

2) In some cases, a CPDLC message set supports a message element that is also a valid message element in ICAO Doc 4444, but its use should be avoided due to potential misinterpretation. In these cases, a note has been added to the “Message intent/use” column, and the ANSPs and operators should establish procedures or automation to avoid the use of these message elements.

3) *N/A* in this column indicates that none of the CPDLC message sets support the message element.

e) The CPDLC message set in use will depend on the aircraft system and ground system capabilities and is shown as follows:

Ground systems	Aircraft systems (See Note 2)	CPDLC message set (See Note 1)
FANS 1/A	FANS 1/A	FANS 1/A
FANS 1/A	FANS 1/A-ATN B1	FANS 1/A
FANS 1/A	ATN B1	N/A
ATN B1	FANS 1/A	N/A
ATN B1	FANS 1/A-ATN B1	ATN B1
ATN B1	ATN B1	ATN B1
FANS 1/A-ATN B1	FANS 1/A	FANS 1/A-ATN B1
FANS 1/A-ATN B1	ATN B1	ATN B1
FANS 1/A-ATN B1	FANS 1/A-ATN B1	ATN B1 or FANS 1/A-ATN B1
<i>Note 1.— The FANS 1/A-ATN B1 message set provides the ground system the equivalent of an ATN B1 message set for FANS 1/A aircraft, either through the use of UM 183 and UM 169 [free text] or other message elements that are operationally equivalent, except UM 215, UM 190, UM 227 and UM 196 are not supported.</i>		
<i>Note 2.— A FANS 1/A-ATN B1 aircraft system fully supports FANS 1/A and ATN B1 CPDLC message sets.</i>		

Note.— The FOREWORD suggests that this guidance material may contain material that may eventually become Standards and Recommended Practices (SARPs), or PANS provisions. In particular, ICAO should strongly consider appropriate changes where experience has shown that valid message elements should be avoided, as indicated in this appendix.

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A.2 CPDLC message element response requirements key

Response column	Description
	For uplink message
W/U	Response required. Yes Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR <i>Note.— WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.</i> <i>FANS I/A.— WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.</i>
A/N	Response required. Yes Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR <i>Note.— AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.</i> <i>FANS I/A.— AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.</i>
R	Response required. Yes Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR <i>Note.— ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.</i> <i>FANS I/A.— ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS I/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an “R” response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction.</i>
Y	Response required. Yes Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required)
N	Response required. No, unless logical acknowledgement required. Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR <i>FANS I/A.— Defined “Response not required,” but not used. Under some circumstances, an ERROR message will also close an uplink message.</i>

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Response column	Description
NE	[Not defined in ICAO Doc 4444] <i>FANS I/A.— The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute.</i>
	For downlink messages
Y	Response required. Yes Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required).
N	Response required. No, unless logical acknowledgement required. Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR <i>FANS I/A.— Aircraft do not have the capability to receive technical responses to downlink message elements with an “N” response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS I/A aircraft and ICAO Doc 4444. As an example, most emergency messages have an “N” response attribute for FANS I/A whereas ICAO Doc 4444 defines a “Y” response attribute for them. As a consequence, for FANS I/A aircraft, the ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received.</i>

A.3 CPDLC uplink message elements

Ref #	Message Intent/Use	Message Element	Resp.	Data link system(s)
	Responses/Acknowledgements (uplink)			
UM 0	Indicates that ATC cannot comply with the request.	UNABLE	N or NE	FANS I/A ATN B1 FANS I/A- ATN B1
UM 1	Indicates that ATC has received the message and will respond. <i>Note.— The flight crew is informed that the request is being assessed and there will be a <u>short-term delay</u> (e.g. as appropriate, given the situation, but not to exceed 10 minutes). The exchange is not closed and the request will be responded to when conditions allow.</i>	STANDBY	N or NE	FANS I/A ATN B1 FANS I/A- ATN B1

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Ref #	Message Intent/Use	Message Element	Resp.	Data link system(s)
UM 2	Indicates that ATC has received the request but it has been deferred until later. <i>Note.— The flight crew is informed that the request is being assessed and a long-term delay can be expected. The exchange is not closed and the request will be responded to when conditions allow.</i>	REQUEST DEFERRED	N or NE	FANS 1/A
UM 3	Indicates that ATC has received and understood the message.	ROGER	N or NE	FANS 1/A ATN B1 FANS 1/A-ATN B1
UM 4	Yes.	AFFIRM	N or NE	FANS 1/A ATN B1 FANS 1/A-ATN B1
UM 5	No	NEGATIVE	N or NE	FANS 1/A ATN B1 FANS 1/A-ATN B1
UM 235	Notification of receipt of unlawful interference message.	ROGER 7500	N	N/A (Urgent)
UM 211	Indicates that the ATC has received the request and has passed it to the next control authority. <i>FANS 1/A and FANS 1/A-ATN B1.— Uses <u>UM 169x</u> free text for FANS 1/A aircraft.</i>	REQUEST FORWARDED	N	FANS 1/A [free text] ATN B1 FANS 1/A-ATN B1
UM 218	Indicates to the pilot that the request has already been received on the ground.	REQUEST ALREADY RECEIVED	N	N/A
UM 237	Indicates that the request cannot be responded to by the current unit and that it should be requested from the next unit. <i>FANS 1/A and FANS 1/A-ATN B1.— Uses <u>UM 169ab</u> free text for FANS 1/A aircraft.</i>	REQUEST AGAIN WITH NEXT UNIT	N	FANS 1/A [free text] ATN B1 FANS 1/A-ATN B1
	Vertical Clearances (uplink)			
UM 6	Notification that a level change instruction should be expected. <i>Note.— Avoid use of this message element due to potential misinterpretation.</i>	EXPECT [level]	R	FANS 1/A

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Ref #	Message Intent/Use	Message Element	Resp.	Data link system(s)
UM 7	Notification that an instruction should be expected for the aircraft to commence climb at the specified time. <i>Note.— The controller should only use this message to respond to a flight crew request (e.g. WHEN CAN WE EXPECT).</i>	EXPECT CLIMB AT [time]	R	FANS 1/A
UM 8	Notification that an instruction should be expected for the aircraft to commence climb at the specified position. <i>Note.— The controller should only use this message to respond to a flight crew request (e.g. WHEN CAN WE EXPECT).</i>	EXPECT CLIMB AT [position]	R	FANS 1/A
UM 9	Notification that an instruction should be expected for the aircraft to commence descent at the specified time. <i>Note.— The controller should only use this message to respond to a flight crew request (e.g. WHEN CAN WE EXPECT).</i>	EXPECT DESCENT AT [time]	R	FANS 1/A
UM 10	Notification that an instruction should be expected for the aircraft to commence descent at the specified position. <i>Note.— The controller should only use this message to respond to a flight crew request (e.g. WHEN CAN WE EXPECT).</i>	EXPECT DESCENT AT [position]	R	FANS 1/A
UM 11	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time. <i>Note.— Avoid use of this message element due to potential misinterpretation.</i>	EXPECT CRUISE CLIMB AT [time]	R	FANS 1/A
UM 12	Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position. <i>Note.— Avoid use of this message element due to potential misinterpretation.</i>	EXPECT CRUISE CLIMB AT [position]	R	FANS 1/A
UM 13	(Reserved) <i>Note.— Avoid use of this message element, AT [time] EXPECT CLIMB TO [altitude], as it is reserved in ICAO Doc 4444.</i>	N/A	R	FANS 1/A

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