Airworthiness Directive

AD No.: 2022-0168

Issued: 12 August 2022

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I Part M.A.301, or Annex Vb Part ML.A.301, as applicable, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I Part M.A.303, or Annex Vb Part ML.A.303, as applicable] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:	Type/Model designation(s):
AIRBUS HELICOPTERS DEUTSCHLAND GmbH AIRBUS HELICOPTERS	EC135, EC635 and MBB-BK117 helicopters EC 175 B and H160-B helicopters

Effective Date:	26 August 2022
TCDS Number(s):	EASA.R.009, EASA.R.010, EASA.R.150 and EASA.R.516
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2022-0143 dated 08 July 2022.

ATA – Rotorcraft Flight Manual – Section Emergency Procedures – Amendment

ATA 42 – Integrated Modular Avionics – Ethernet Network – Inspection

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Manufacturer(s):

Airbus Helicopters Deutschland (AHD) GmbH, formerly Eurocopter Deutschland GmbH; Eurocopter España S.A.; Kawasaki Heavy Industries, Ltd.; and Airbus Helicopters (AH), formerly Eurocopter, Eurocopter France

Applicability:

AHD EC135 P3H, EC135 T3H, EC635 P3H and EC635 T3H helicopters, all serial numbers (s/n);

AHD MBB-BK117 D-2, MBB-BK117 D-3 and MBB-BK117 D-3m helicopters, all variants, all s/n;

AH EC 175 B helicopters, all s/n; and

AH H160-B helicopters, all s/n.

Definitions:

For the purpose of this AD, the following definitions apply:

The ASB: AH Alert Service Bulletin (ASB) EC135H-05A-001, ASB MBB-BK117 D-2-05A-003, ASB MBB-BK117 D-3-05A-001, ASB EC175-05-00-0003 and ASB H160-46-31-0001, as applicable.

Maintenance mode test procedure: In accordance with the instructions of section 3.B.1 of the ASB (EC135 and MBB-BK117 helicopters) or section 'Accomplishment Procedure - 4.2' of the ASB (EC 175 and H160 helicopters), as applicable.

Operational mode test procedure: In accordance with the instructions of section 3.B.3 of the ASB (EC135 and MBB-BK117 helicopters) or section 'Accomplishment Procedure - 4.4' of the ASB (EC 175 and H160 helicopters), as applicable.

Troubleshooting instructions: In accordance with the instructions of sections 3.B.2 and 3.B.4 of the ASB (EC135 and MBB-BK117 helicopters) or sections 'Accomplishment Procedure - 4.3' and 'Accomplishment Procedure - 4.5' of the ASB (EC 175 and H160 helicopters), as applicable.

Operational limitation: Prohibition to operate a helicopter in Instrument Meteorological Conditions (IMC) and Night Visual Meteorological Conditions (VMC); and installation of a placard in the cockpit in accordance with the instructions of the ASB.

The RFM emergency procedure: Rotorcraft Flight Manual (RFM) emergency procedure as identified in Appendix 1 of this AD, as applicable.

Reason:

Occurrences have been reported of multiple Multi-Function Display (MFD) failures. Investigations identified design deficiencies in the Ethernet network management of the Integrated Modular Avionics suite (IMA), which caused MFD failures after damage to an Ethernet wiring connector and/or an avionics equipment.

This condition, if not detected and corrected, could lead to reduced situational awareness of the pilot, possibly resulting in reduced control of the helicopter.

Due to similarity of design, several types may be affected by similar failures. To address this potential unsafe condition, AH issued the ASB, as defined in this AD, providing instructions for inspections, and EASA issued AD 2022-0143 to require repetitive checks of the functional status of the IMA Ethernet network and, depending on findings, accomplishment of applicable corrective action(s), which may include an operational limitation.

Since that AD was issued, AH developed the RFM emergency procedure, as defined in this AD, providing procedures to be applied in case of loss of all MFD. AH also issued, for affected helicopters, updated RFM or RFM Temporary Revision, including the RFM emergency procedure.

For the reason described above, this AD retains the requirements of EASA AD 2022-0143, which is superseded, and additionally requires incorporation of the RFM emergency procedure into the applicable RFM.

This AD is still considered to be an interim action and further AD action may follow.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

Inspection(s):

(1) Within 55 flight hours (FH) after 15 July 2022 [the effective date of EASA AD 2022-0143], and, thereafter, at intervals not to exceed 110 FH, accomplish a check in accordance with the maintenance mode test procedure, and in accordance with the operational mode test procedure, as defined in this AD.

Corrective Action(s):

(2) If, during any check as required by paragraph (1) of this AD, any discrepancy, as identified in the ASB, is detected, before next flight, accomplish the applicable corrective action(s) in accordance with the troubleshooting instructions, as defined in this AD.

Additional Maintenance Requirements:

(3) From 15 July 2022 [the effective date of EASA AD 2022-0143], following accomplishment of any maintenance task on a helicopter that includes disconnection and subsequent re-connection of any connector of the IMA Ethernet network, or following any MFD failure, before next flight, accomplish a check in accordance with the maintenance mode test procedure, and in accordance with the operational mode test procedure, and, depending on findings, accomplish the applicable corrective action(s) in accordance with the troubleshooting instructions.

Operational Limitation:

(4) If, after accomplishment of troubleshooting instructions as required by paragraph (2) or (3) of this AD, as applicable, any discrepancy cannot be removed or corrected, before next flight, implement the operational limitation, as defined in this AD, inform all flight crews and, thereafter, operate the helicopter accordingly.

Alternative Method:

(5) Implementing the operational limitation on a helicopter as specified in paragraph (4) of this AD is an acceptable alternative method to defer compliance with the requirements of paragraphs (1) and (2) of this AD for that helicopter. Following accomplishment of the checks and corrective action(s), as applicable, as required by paragraph (1) and (2) of this AD, the operational limitation can be removed, provided any discrepancy has been removed or corrected, as applicable.

Terminating Action(s):

(6) None.

RFM Amendment:

(7) Within 7 days after the effective date of this AD, amend the applicable RFM by incorporating the RFM emergency procedure, as defined in this AD, inform all flight crews and, thereafter, operate the helicopter accordingly.

(8) Amending the applicable RFM of a helicopter by incorporating the RFM revision as listed in Table 1 of this AD, as applicable, or a later RFM revision which includes the same content as the

RFM emergency procedure, is an acceptable method to comply with the requirements of paragraph (7) of this AD for that helicopter.

Table 1 – RFM Revisions

Helicopter Type/Model	RFM Revision
EC135 P3H	EC135 P3H Flight Manual, Effectivity: HLX Step 2+, Rev. 19.4 EC135 P3H Flight Manual, Effectivity: HLX Step 3.1, Rev. 19.4 EC135 P3H Flight Manual Supplement 9.1-4 Effectivity: HLX Step 3.1, Rev. 1.1
EC135 T3H	EC135 T3H Flight Manual, Effectivity: HLX Step 2+, Rev. 20.2 EC135 T3H Flight Manual, Effectivity: HLX Step 3.1, Rev. 20.2 EC135 T3H Flight Manual Supplement 9.1-4 Effectivity: HLX Step 3.1, Rev. 1.1
EC635 P3H	EC635 P3H Flight Manual, Effectivity: HLX Step 2+, Rev. 19.4 EC635 P3H Flight Manual, Effectivity: HLX Step 3.1, Rev. 19.4 EC635 P3H Flight Manual Supplement 9.1-4 Effectivity: HLX Step 3.1, Rev. 1.1
EC635 T3H	EC635 T3H Flight Manual, Effectivity: HLX Step 2+, Rev. 20.2 EC635 T3H Flight Manual, Effectivity: HLX Step 3.1, Rev. 20.2 EC635 T3H Flight Manual Supplement 9.1-4 Effectivity: HLX Step 3.1, Rev. 1.1
MBB-BK117 D-2	BK117 D-2 FLM HLX 2, Rev. 25.2
MBB-BK117 D-2m	BK117 D-2 FLM HLX 2, Rev. 16.2
MBB-BK117 D-3	BK117 D-3 FLM, Rev. 14.1
MBB-BK117 D-3m	BK117 D-3m FLM, Rev. 12.1
EC 175 B	EC175 B RFM, Basic RFM Edition 2, Temporary Revision 14A
H160-B	*Paper format*: RFM H160-B issue dated 29 June 2022 (approval reference 2983) *e-RFM data package*: AIRCREW H160-000 dated 29 June 2022 (approval reference 2984)

Ref. Publications:

AH ASB EC135H-05A-001 original issue dated 07 July 2022.

AH ASB MBB-BK117 D-2-05A-003 original issue dated 07 July 2022.

AH ASB MBB-BK117 D-3-05A-001 original issue dated 07 July 2022.

AH ASB EC175-05-00-0003 original issue dated 07 July 2022.

AH ASB H160-46-31-0001 original issue dated 07 July 2022.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system. This may include reporting on the same or similar components, other than those covered by the design to which this AD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.

5. For any question concerning the technical content of the requirements in this AD, please contact:
   Airbus Helicopters Deutschland GmbH, Industriestrasse 4, 86609 Donauwörth, Federal Republic of Germany, Telephone: + 33 (0)4 42 85 97 97;
   Web portal: https://airbusworld.helicopters.airbus.com
   E-mail: customersupport.helicopters@airbus.com.

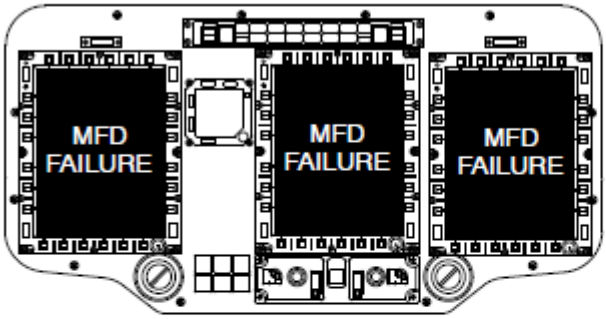
   Airbus Helicopters (Technical Support) at:
   Web portal: https://airbusworld.helicopters.airbus.com
   E-mail: TechnicalSupport.Helicopters@airbus.com, or Telephone +33 (0)4 42 85 97 89.

Appendix 1 – RFM Emergency Procedure

MBB-BK117 (all models / variants)
Loss of all MFD
Page 1/2

Conditions/Indications

- MFDs:



- MFD FAILURE displayed on all MFDs
- If autopilot upper modes were coupled, they may decouple after 10 seconds (indicated by an „autopilot decouple“ voice message).

Procedure

● **ON GROUND**

1. Double engine emergency shutdown	– Perform

● **IN FLIGHT**

1. Aircraft trajectory	– Maintain using IESI and stand–by compass. – Use AFCS “recovery” or “go–around” modes, if desired – Operate aircraft within the approved performance
2. MFD2 pb	– OFF

CAUTION IF THE MFD IS RESTARTED AT NIGHT, THE MFD WILL REBOOT WITH FULL BRIGHTNESS AND MAY DISTURB THE PILOT BRIEFLY. RESTARTING AN MFD DURING CRITICAL FLIGHT PHASES SHALL BE AVOIDED.

3. MFD2 pb	– ON

If MFD2 restarts (all functions linked to MFD are recovered):

4. MFD2	– Maintain in FND format
5. LAND AS SOON AS PRACTICABLE	

NOTE
- For HTAWS to be available, SVS must be switched off (select FDS). After restarting MFD2, it takes 2 minutes before HTAWS is available.
- TCAS alerts are lost.
- Weather radar RDR2000 is lost; weather radar RDR1600 remains operational.

MBB-BK117 (all models / variants)
Loss of all MFD
Page 2/2

If MFD2 does not restart (all MFDs remain off):

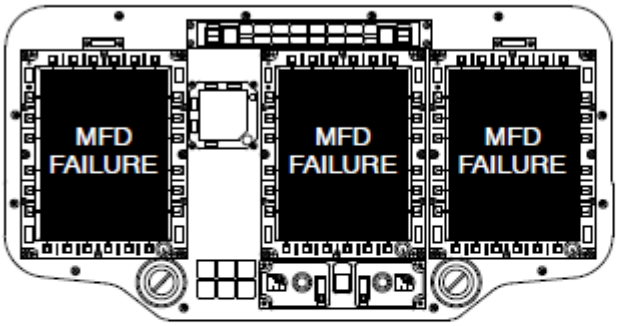
4. VMC conditions – Establish
5. LAND AS SOON AS PRACTICABLE

NOTE
- GPS navigation information can be obtained from the FMS.
- The following AFCS functions are available:
  - Basic stabilization (attitude hold)
  - AFCS "recovery" (double forward press on the AP/BKUP ON pb on the cyclic) will engage ALT, IAS, HDG/TRK modes on the current values. After engagement, individual upper modes can be disengaged through the APCP or AP UM OFF pb on cyclic grip.
  - Go–around mode will be available through the GA pb on the collective. This will engage V/S or FPA and IAS.
  - The AFCS status (engaged upper modes IAS, ALT, V/S, FPA, HDG, TRK) is visible on the APCP.
  - It is not possible to engage upper modes through the APCP.
  - It is not possible to change the upper mode references through the cyclic/collective beep or rotary knob on APCP.
- All vehicle related aural alerts (tones and voice message) remain available.
- HTAWS and TCAS aural alerts are lost.
- Transponder Mode C (altitude reporting) is lost.
- Warning unit is still operating.

EC 135 / EC635 (all models / variants)
Loss of all MFD
Page 1/2

Conditions/Indications

- MFDs:



- MFD FAILURE displayed on all MFDs
- If autopilot upper modes were coupled, they may decouple after 10 seconds (indicated by an „autopilot decouple" voice message).

Procedure

● **ON GROUND**

1. Double engine emergency shutdown	– Perform

● **IN FLIGHT**

1. Aircraft trajectory	– Maintain using IESI and stand-by compass. – Use AFCS "recovery" or "go-around" modes, if desired – Operate aircraft within the approved performance
2. MFD2 pb	– OFF

CAUTION IF THE MFD IS RESTARTED AT NIGHT, THE MFD WILL REBOOT WITH FULL BRIGHTNESS AND MAY DISTURB THE PILOT BRIEFLY. RESTARTING AN MFD DURING CRITICAL FLIGHT PHASES SHALL BE AVOIDED.

3. MFD2 pb	– ON

If MFD2 restarts (all functions linked to MFD are recovered):

4. MFD2	– Maintain in FND format
5. LAND AS SOON AS PRACTICABLE	

NOTE
- For HTAWS to be available, SVS must be switched off (select FDS). After restarting MFD2, it takes 2 minutes before HTAWS is available.
- TCAS alerts are lost.
- Weather radar RDR2000 is lost; weather radar RDR1600 remains operational.

EC 135 / EC635 (all models / variants)
Loss of all MFD
Page 2/2

If MFD2 does not restart (all MFDs remain off):

4. VMC conditions – Establish
5. LAND AS SOON AS PRACTICABLE

NOTE

- GPS navigation information can be obtained from the FMS.
- The following AFCS functions are available:
  - Basic stabilization (attitude hold)
  - AFCS "recovery" (double forward press on the AP/BKUP ON pb on the cyclic) will engage ALT, IAS, HDG/TRK modes on the current values. After engagement, individual upper modes can be disengaged through the APCP or AP UM OFF pb on cyclic grip.
  - Go-around mode will be available through the GA pb on the collective. This will engage V/S or FPA and IAS.
  - The AFCS status (engaged upper modes IAS, ALT, V/S, FPA, HDG, TRK) is visible on the APCP.
  - It is not possible to engage upper modes through the APCP.
  - It is not possible to change the upper mode references through the cyclic/collective beep or rotary knob on APCP.
- All vehicle related aural alerts (tones and voice message) remain available.
- HTAWS and TCAS aural alerts are lost.
- Transponder Mode C (altitude reporting) is lost.
- Warning unit is still operating.

EC 175 B
Loss of all MFD
Page 1/2

Symptoms	CORRECTIVE ACTIONS
MFD FAILURE displayed on all MFD	• ON GROUND: - Engine shutdown. • IN FLIGHT: 1. Aircraft trajectory a. Maintain using IESI and stand-by compass. b. Use AFCS "recovery" (or "go-around"), if necessary. c. Operate aircraft within the approved performance. 2. MFD2 .....Reset (OFF/ON). **CAUTION** **IF THE MFD IS RESTARTED AT NIGHT, THE MFD WILL REBOOT WITH FULL BRIGHTNESS AND MAY DISTURB THE PILOT BRIEFLY. RESTARTING AN MFD DURING CRITICAL FLIGHT PHASES SHALL BE AVOIDED.** - If MFD2 restarts: All functions linked to MFD are recovered. 3. MFD2 .....Maintain in FND format. **LIMIT DURATION OF FLIGHT** **NOTE** **1. If autopilot upper modes were coupled, they may decouple after 10 seconds (indicated by an "autopilot decouple" voice message).** **2. For HTAWS to be available, SVS must be switched off (select FDS). After restarting MFD, it takes 2 minutes before HTAWS is available.** **3. TCAS alerts are lost.**

EC 175 B
Loss of all MFD
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	- If MFD2 does not restarts (all MFD remain off): 3. VMC conditions.....Establish. **LIMIT DURATION OF FLIGHT** **NOTE** **1. If autopilot upper modes were coupled, they may decouple after 10 seconds (indicated by an "autopilot decouple" voice message).** **2. GPS navigation information can be obtained from the FMS.** **3. The following AFCS functions are available:** • **Basic stabilization (attitude hold).** • **AFCS "recovery" (double press on the AP RECOV push-button on the cyclic grip) will engage ALT, IAS, HDG/TRK modes on the current values. After engagement, individual upper modes can be disengaged through the APCP or AP UM OFF push-button on cyclic grip.** • **Go-around mode will be available through the GO AROUND push-button on the collective grip.** • **The AFCS status (engaged upper modes, V/S or FPA, ALT, HDG or TRK, IAS) is visible on the APCP.** • **It is <u>not</u> possible to engage upper modes through the APCP.** • **It is <u>not</u> possible to change the upper mode references through the cyclic/collective beep or rotary buttons.** **4. All vehicle related aural alerts (tones and voice message) remain available.** **5. HTAWS and TCAS aural alerts are lost.** **6. Transponder Mode C (altitude reporting) is lost.** **7. Central Warning Panel (CWP) is still operating.**

H160-B
Loss of all MFD
Page 1/3

LOSS OF ALL MFD

SYMPTOMS

No content

TEMPORARY INFORMATION

Reason for change:
HELIONIX issue impacting MFD

SYMPTOMS

Loss of all MFD (MFD failure displayed on all MFD)

CORRECTIVE ACTIONS

No content

TEMPORARY INFORMATION

Reason for change:
HELIONIX issue impacting MFD

■ **ON GROUND :**

1. Engine shutdown ..... PERFORM
(Refer to *4.3.7 "ENGINE SHUTDOWN"*)

■ **IN FLIGHT :**

1. Aircraft trajectory
   a. Maintain using IESI and stand-by compass
   b. Use AFCS RECOVERY (or GO AROUND) if necessary
   c. Operate aircraft within the approved performance
2. MFD2..... RESET (OFF/ON)

> **CAUTION**
> If the MFD is restarted at night, the MFD will reboot with full brightness and may disturb the pilot briefly. Restarting an MFD during critical flight phases shall be avoided.

H160-B
Loss of all MFD
Page 2/3

- **If MFD2 restarts (All functions linked to MFD are recovered):**
  3. MFD 2.....Maintain in FND format

LIMIT DURATION OF FLIGHT

NOTE

– If autopilot upper modes were coupled they may decouple after 10 seconds (indicated by an "autopilot decouple" voice message).
– For HTAWS to be available, SVS must be switched off (select FDS). After restarting MFD , it takes 2 minutes before HTAWS is available.
– TCAS alerts are lost.

H160-B
Loss of all MFD
Page 3/3

• **If MFD2 does not restart (all MFD remain off):**

4. VMC conditions ..... Establish

LIMIT DURATION OF FLIGHT

NOTE

– If autopilot upper modes were coupled they may decouple after 10 seconds (indicated by an "autopilot decouple" voice message).
– GPS navigation information can be obtained from the FMS .
– The following AFCS functions are available:
  • Basic stabilization (attitude hold),
  • AFCS RECOVERY (double press on the AP RECOV push-button on the cyclic grip) will engage ALT, IAS, HDG/ TRK modes on the current values. After engagement, individual upper modes can be disengaged through the APCP or AP UM OFF push-button on cyclic grip,
  • Go-around mode will be available through the GO AROUND push-button on the collective grip. This will engage V/S or FPA and IAS,
  • The AFCS status (engaged upper modes V/S or FPA, ALT, HDG or TRK, IAS) is visible on the APCP,
  • It is not possible to engage upper modes through the APCP,
  • It is not possible to change the upper mode references through the cyclic/collective beep or rotary buttons.
– All vehicle aural alerts (tones and voice message) remain available.
– HTAWS and TCAS aural alerts are lost.
– Transponder Mode C (altitude reporting) is lost.