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AgustaWestland Products

SERVICE BULLETIN

N° 139-651

DATE: May 6, 2022

REV. : /

TITLE

ATA 34 - ENHANCED GROUND PROXIMITY WARNING SYSTEM (EGPWS) COMPUTER CONVERSION TO P/N 965-1595-034

REVISION LOG

First Issue

1. PLANNING INFORMATION

A. EFFECTIVITY

All AW139 helicopters equipped with EGPWS computer P/N 965-1595-024 or P/N 965-1595-026 or P/N 965-1595-030.

B. COMPLIANCE

At Customer's option.

C. CONCURRENT REQUIREMENTS

The concurrent requirements for this Service Bulletin are listed in Section 1 of Honeywell Service Bulletin n° 965-1595-34-037 in Annex A.

D. REASON

This Service Bulletin is issued to provide all the necessary instructions for the EGPWS computer upgrade to P/N 965-1595-034.

E. DESCRIPTION

This Service Bulletin is issued in order to provide the necessary instruction on how to perform the software modification of EGPWS computer P/N 965-1595-024 or P/N 965-1595-026 or P/N 965-1595-030 for upgrade to software version -034. The EGPWS computer will then be remarked as P/N 965-1595-034.

This upgrade may be accomplished either at customer location (on the helicopter) or at a shop location.

The software has been updated to incorporate improvements especially for helicopters equipped with “PRIMUS EPIC®” Flight Software Release 8.

EGPWS software -034 installed on helicopters equipped with “PRIMUS EPIC®” Flight Software Release prior to 8 will have an operating mode identical to the software version -030.

NOTE

Supplement n°81 of RFM (Rotorcraft Flight Manual) is dedicated to EGPWS Functions and it contains information about limitations, procedures and performance data.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

Refer to Annex A “Section 1” of Honeywell Service Bulletin n° 965-1595-34-037.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

1) PUBLICATIONS

DATA MODULE		DESCRIPTION	PART
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance	-
DM02	39-A-06-41-00-00A-010A-A	Access doors and panels - General data	-
DM03	39-B-31-61-09-00A-520A-A	Number 1 display controller - Remove procedure	-
DM04	39-B-31-61-10-00A-520A-A	Number 2 display controller - Remove procedure	-
DM05	39-B-31-61-09-00A-720A-A	Number 1 display controller - Install procedure	-
DM06	39-B-31-61-10-00A-720A-A	Number 2 display controller - Install procedure	-

2) ACRONYMS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
CAS	Crew Alerting System
CCD	Cursor Control Devise

DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
EGPWS	Enhanced Ground Proximity Warning System
GPS	Global Positioning System
GS	Glide Slope
HSI	Horizontal Situation Indicator
ICS	Interphone Communication System
ITEP	Illustrated Tools and Equipment Publication
LHD	Leonardo Helicopters Division
MCDU	Multi-Purpose Control Display Unit
MFD	Multifunction Display
MMH	Maintenance Man Hours
PFD	Primary Flight Display
SA	Situational Awareness
SB	Service Bulletin
SW	Software
TAWS	Terrain Awareness and Warning System
WX	Weather Radar

3) ANNEX

Annex A	Honeywell Service Bulletin n° 965-1595-34-037;
Annex B	EGPWS configuration settings check;
Annex C	Power up and ground self-test.

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

EGPWS software to be updated (refer to Annex A, Section 2 of Honeywell Service Bulletin n° 965-1595-34-037).

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	7016683-966		Display Controller	2	.	(1)	-
2	7016683-866		Display Controller NVG	2	.	(2)	-
3	620-2035-134	620-2050-070	Part number/Software version Label	1	.	(3)	-
4	718-1390-038		PCMCIA card, Media Application Software version -034	1	.	(4) (5)	-
5	718-1462-026		CD-ROM, Media Application Softwareversion -034	1	.	(4) (5)	-
6	SW998-2693-605		Floppy Disk Media, ATP Configuration Matrix File, PN 998-2693-605	1	.	(6)	-
7	SM9FLAP32M6		PCMCIA card	1	.	(7) (8)	-

2) CONSUMABLES

Refer to AMDI for the consumable materials required to comply with the AMP DM referenced in the accomplishment instructions.

3) LOGISTIC MATRIX

N.A.

NOTES

(1) Item to be supplied only for helicopters equipped with display controller P/N 7016683-964 and NOT in NVG configuration.

(2) Item to be supplied only for helicopters equipped with display controller P/N 7016683-864 and in NVG configuration.

(3) Refer to Annex A “Honeywell Service Bulletin n° 965-1595-34-037” Paragraph 3.E. to determine which label is required.

(4) PCMCIA card P/N 718-1390-038 is an alternative to CD-ROM, Media Application Software version -034 P/N 718-1462-026 and vice versa.

(5) An operator produced equivalent PCMCIA card can be used as an alternative to do this software modification.

(6) This part is optional and not required if the software modification in this service bulletin is done at a customer location (in the aircraft). It is necessary to perform an ATP on the EGPWS, if desired. The quantity is one for each location that does this software modification. Dash numbers higher than -605 are permitted alternatives. This file can also be downloaded from Honeywell Aerospace Software and Data

Services website (https://ads.honeywell.com/) and can be copied to the customers own disk media.

(7) The item is available from commercial sources. Equivalent alternatives are permitted.

(8) This item is required only if CD P/N 718-1462-026 will be provided.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this service bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
8	Commercial	EGPWS WinViews communications software	1	(B1)	-
9	Commercial	Laptop computer	1	(B2) (B3) (B4)	-
10	704-2617-001	RS-232 cable extension (GJ-20-00) min cable length: 5 ft (1,5 m), max cable length: 50 ft (15,2 m)	1	(B3) (B4)	-
11	951-0386-001 or 951-0386-002	EGPWS smart cable (GJ-21-00)	1		-

Refer also to ITEP for the special tools required to comply with the AMP DM referenced in the accomplishment instructions.

SPECIAL TOOLS NOTES

(B1) Equivalent alternates available from Kermitt, Procomm, and others. WinViews software is also available for download. Go to www.EGPWS.com. From the main page click on 'Aerospace Software and Database Services'. Once on the Software / Services page select 'EGPWS', then click on 'Links', then click on the 'EGPWS Technical Information' (login required). Once on the EGPWS landing page, click on 'Maintenance'; when at the Maintenance landing page, scroll down to get to the EGPWS Maintenance section and click on the WinVIEWS Software.

(B2) Minimum requirements for the laptop PC:

- Windows 7, Windows 8 or Windows 10;
- 256 MB RAM;
- CD-ROM driver.

(B3) To be provided as local supply.

(B4) New PCs don't typically come with an RS-232 interface. USB to RS-232 adapters exist that can be used for this interface. If an adapter is required, it must be successfully installed prior to WinVIEWS Data port selection. Please see and follow adapter manufacturer's installation instructions. The WinVIEWS application expects the host PC to include a COM port.

C. INDUSTRY SUPPORT INFORMATION

Product Enhancement.

If the upgrade will be performed at customer location, the purchase order for all parts of the Honeywell Service Bulletin n°965-1595-34-037 should be made to Leonardo Helicopters.

3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTE

Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.

NOTE

The following steps 2 and 3 are applicable only to helicopters NOT already equipped with display controllers P/N 7016683-966 or P/N 7016683-866.

2. In accordance with AMP DM 39-B-31-61-09-00A-520A-A and DM 39-B-31-61-10-00A-520A-A, remove existing Number 1 and Number 2 display controllers from the helicopter.

NOTE

Display controller P/N 7016683-866 is applicable to helicopters with configuration NVG compatible.

3. In accordance with AMP DM 39-B-31-61-09-00A-720A-A and DM 39-B-31-61-10-00A-720A-A, install the new Number 1 and Number 2 display controllers P/N 7016683-966 or P/N 7016683-866.
4. Perform the software upgrade of the EGPWS computer P/N 965-1595-024 or P/N 965-1595-026 or P/N 965-1595-030 according to the following procedure:
   - 4.1 In accordance with AMP DM 39-A-06-41-00-00A-010A-A, gain access to the EGPWS computer in the rear side of the fuselage.
   - 4.2 With reference to Section 3 of Honeywell Service Bulletin n° 965-1595-34-037 in Annex A, perform the software modification of EGPWS computer for upgrade to version -034.
   - 4.3 In accordance with AMP DM 39-A-06-41-00-00A-010A-A, re-install all access panel previously removed.
5. Update the Chart A (see Rotorcraft Flight Manual, Part II, Section 6) and other applicable aircraft documentation to change EGPWS part number from 3G3440F00211 or 3G3440F00212 to new 4G3440F00311.
6. In accordance with Annex B, perform the EGPWS configuration settings check.

7. In accordance with Annex C, perform the power up and ground self-test.
8. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
9. Send the attached compliance form to the following mail box:

   engineering.support.lhd@leonardo.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

ANNEX A

HONEYWELL

SERVICE BULLETIN

N° 965-1595-34-037

Honeywell

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SERVICE BULLETIN

NAVIGATION - MK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM (EGPWS) - Conversion of EGPWS, PN 965-1595-0XX to PN 965-1595-034 - Update Application Software to version -034

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ECCN: 7E994.

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1 Mar 2018
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Transmittal Information

ATA Number 965-1595-34-037 (Publication Number D201711000074)

Summary

This is the INITIAL release.

Refer to Paragraph 4.A. for a list of the acronyms and abbreviations used in this service bulletin.

Revision History

This service bulletin has had no revision as shown in Table 1.

Table 1. Revision History

Revision Number	Revision Date
0	1 Mar 2018

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1. Planning Information

A. Effectivity

(1) This service bulletin is applicable to the the MK XXII EGPWS , PN 965-1595-0XX .

B. Concurrent Requirements

(1) Terrain database version 437 or later is necessary for the correct operation of application software version -034. An EGPWS with application software version -034 and an earlier version of terrain database software installed will cause the Terrain and GPWS INOP/FAIL LEDs to come on. When a compatible terrain database version is loaded, the inoperative condition will be cleared.

(2) SB, ATA Number 965-1590/1595-34-18 (Publication Number 012-0714-118), installs terrain database version 437 and envelope modulation database version B06.

C. Reason

(1) The software is updated to be compatible with the Primus Epic® Phase 8 display architecture found on the Leonardo Helicopters AW139 rotorcraft.

(a) New ARINC 429 output labels are added on existing output busses in the MK XXII EGPWS for use by the Primus Epic® display functions. The labels transmit threat coloring information to the synthetic vision PFD and INAV displays. The threat data is transmitted as an array of data using an ARINC 429 block transfer.

(b) New ARINC 429 output labels are added to transmit the relative altitude thresholds used by the Primus Epic® display functions for generating the horizontal terrain images. The relative altitude coloring allows the pilots to quickly identify potentially threatening terrain.

(c) No hardware changes are being made. Existing ARINC 429 interfaces are being utilized with new labels being read to facilitate this functionality.

D. Description

(1) A summary of the work necessary to do this software modification is given below

(a) This upgrade loads the application software version -034 from the PCMCIA card into the MK XXII EGPWS while the MK XXII EGPWS is either at a customer location (in the aircraft) or at a shop location. A verification procedure is also supplied.

1 Preparation:

- If a PCMCIA card with the production software is used, no preparation is necessary.
- If a PCMCIA card without the production software is used, one of the procedures given below must be used:
  - The production software from a PCMCIA card is put into a different PCMCIA card.
  - The production software from a CD-ROM is put into a PCMCIA card.

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2 The production software is put into the MK XXII EGPWS.

3 A check is done to make sure the production software is correct.

4 The production software version is identified on the MK XXII EGPWS front panel ID label.

5 If this software modification is done at a shop location with a MK XXII EGPWS ground support equipment tester, an optional test may be performed on the MK XXII EGPWS.

NOTE: This software modification can be done at a customer location (in the aircraft) or at a shop location.

NOTE: This is a software change only. The MK XXII EGPWS will not be disassembled and the inspection seals will not be broken.

E. Compliance

(1) This software modification is optional. The operator can make the decision if this software modification is necessary.

F. Approval

(1) This service bulletin includes approved software modification instructions from the manufacturer. The configuration created by this software modification is approved by the applicable regulatory agency.

(2) The configuration created by this software modification meets the requirements of TSO-C151b. This service bulletin approval applies only to the EGPWS. The EGPWS aircraft installation approval must be separately addressed.

G. Manpower

(1) This software modification can be completed in the approximate times that follow:

(a) If this software modification is done at a customer location (in the aircraft):

- 0.5 hour(s) for the labor to do the software modification of the MK XXII EGPWS.

NOTE: The time given above does not include the time to get access to the MK XXII EGPWS on the aircraft.

(b) If this software modification is done at a shop location:

- 0.5 hour(s) for the labor to do the software modification of the MK XXII EGPWS.
- 1.0 more hour(s) for the labor to do a test of the MK XXII EGPWS (optional).

NOTE: If the test is not required, the test time above is not applicable.

H. Weight and Balance

(1) None.

I. Electrical Load Data

(1) Not applicable.

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J. Software Accomplishment Summary

(1) A Software Accomplishment Summary has been completed to agree with the necessary conditions of RTCA document DO-178B, Software Considerations in Airborne Systems and Equipment Certification.

K. References

(1) To find, see, and download Honeywell Technical Publications, go to www.myaerospace.com.

(2) The document(s) that follow(s) is/are necessary to complete this software modification. Unless specified differently, you can use subsequent revisions.

- CMM, ATA Number 34-45-42 (Publication Number 012-0714-001), Revision 15, MK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM (MK XXII EGPWS).

(3) The document(s) that follow(s) is/are recommended but not necessary to do this software modification. Unless specified differently, you can use subsequent revisions. Refer to Paragraph 1.B.

- SB, ATA Number 965-1590/1595-34-18 (Publication Number 012-0714-118), Revision 0, Update MKXXII EGPWS With Terrain Database version 437 and Envelope Modulation Database version B06.

L. Other Publications Affected

(1) CMM, ATA Number 34-45-42 (Publication Number 012-0714-001), Revision 15, MK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM (MK XXII EGPWS), will be revised because of this service bulletin.

(2) This service bulletin has no effect on the test procedure.

M. Interchangeability or Intermixability of Parts

(1) The operator must speak to the OEM about the interchangeability and intermixability of the MK XXII EGPWS part numbers identified in this service bulletin.

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2. Material Information

A. Material - Price and Availability

(1) Speak to Honeywell personnel at the location identified below for the necessary documentation, applicable material and labor prices, available parts, and supply times.

Honeywell
Aerospace Contact Team
Telephone: 800-601-3099 (Toll Free U.S.A./Canada)
Telephone: 602-365-3099 (International Direct)

(2) This software modification can be done at a Honeywell service center or Honeywell-authorized repair location for the price given at the time of the order.

(3) Honeywell can supply the parts necessary to do this software modification. The price for parts will be given at the time of the order. When you make an order for parts, send a purchase order that refers to this SB, ATA Number 965-1595-34-037 (Publication Number D201711000074). The purchase order must include only the applicable parts specified in Table 2 of this service bulletin.

B. Industry Support Information

(1) Honeywell will give no reimbursement to do this software modification. The customer will receive an applicable invoice for the software modification of each MK XXII EGPWS done at a Honeywell service center or Honeywell-authorized repair location.

C. Material Necessary for Each Component

(1) The parts identified in Table 2 are necessary to do this service bulletin.

Table 2. Operator-Purchased Material

New PN	Keyword/ Nomenclature	Old PN	Qty	List Price	Instructions/ Disposition Codes
620-2035-134	Part number/Software version Label, PN 965-1595-034	Various	1	1	3 4
620-2050-070	Part number/Software version Label, PN 965-1595-034	Various	1	1	3 4
718-1390-038	PCMCIA card, Media Application Software version -034	Various	1	1	3 5 6

Table 2. Operator-Purchased Material (Cont)

New PN	Keyword/ Nomenclature	Old PN	Qty	List Price	Instructions/ Disposition Codes
718-1462-026	CD-ROM, Media Application Software version -034	Various	1	1	3 5 6
SW998-2693-605	Floppy Disk Media, ATP Configuration Matrix File, PN 998-2693-605	Various	1	2	7

NOTES:

1. Refer to the Honeywell, Aerospace Contact Team (Paragraph 2.A.) when you need data about available parts, supply times, or minimum order quantities.
2. There is no charge for this part.
3. The customer or local regulatory authority can make decisions about what to do with the used parts. Discard or erase the used software and do not use it again.
4. Refer to Paragraph 3.E. to determine which label is required.
5. Earlier application software version PCMCIA cards can be programmed again, thus, do not discard.
6. An operator produced equivalent PCMCIA card can be used as an alternative to do this software modification.
7. This part is optional and not required if the software modification in this service bulletin is done at a customer location (in the aircraft). It is necessary to perform an ATP on the EGPWS, if desired. The quantity is one for each location that does this software modification. Dash numbers higher than -605 are permitted alternatives. This file can also be downloaded from Honeywell Aerospace Software and Data Services website (https://ads.honeywell.com/) and can be copied to the customers own disk media.

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(2) The item(s) specified in Table 3 is/are necessary to do this service bulletin. The item(s) is/are available from commercial sources and should not be ordered as part of this service bulletin. Equivalent alternatives are permitted for the materials specified in Table 3.

Table 3. Operator-Supplied Material

Number	Description	Source
SM9FLAP32M6	PCMCIA card	CAGE: 0Z1V7

D. Material Necessary for Each Spare

(1) Same as Paragraph 2.C.

E. Reidentified Parts

(1) Not applicable.

F. Tooling - Price and Availability

(1) In addition to the equipment specified in the documents given in Paragraph 1.K.(2) of this service bulletin, the item(s) shown in Table 4 is/are necessary to do this software modification.

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Table 4. Necessary Equipment

Number	Description	Source
	EGPWS WinViews communications software [1]	commercially available
	PC, International Business Machines or equivalent	commercially available
	power supply, 28 VDC with a minimum supply current of 2 amperes	commercially available
	RS232 cable [2]	commercially available
	test wiring to connect the output of the power supply to the power input pins at J1 of EGPWS	commercially available
700-1710-001	configuration module	CAGE: 97896
951-0386-001	smart cable assembly [3]	CAGE: 97896
RD50F0OJOX	connector (P2)	CAGE: 97896

NOTES:

1. Equivalent alternates available from Kermitt, Procomm, and others. WinViews software is also available for download. Go to www.EGPWS.com. From the main page click on 'Aerospace Software and Database Services'. Once on the Software / Services page select 'EGPWS', then click on 'Links', then click on the 'EGPWS Technical Information' (login required). Once on the EGPWS landing page, click on 'Maintenance'; when at the Maintenance landing page, scroll down to get to the EGPWS Maintenance section and click on the WinVIEWS Software.
2. This tool is for connection from the PC to the EGPWS P3 maintenance connector, PN 704-2617-001.
3. PCMCIA to EGPWS interface cable.

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3. Accomplishment Instructions

A. General

WARNING: TO AVOID INJURY TO PERSONNEL, BE AWARE THAT VOLTAGES ARE PRESENT IN THE UNIT AND IN THE TEST EQUIPMENT. VOLTAGES AS LOW AS 28 VOLTS CAN CAUSE SERIOUS INJURY UNDER SOME CONDITIONS. DO NOT BE MISLED BY THE TERM "LOW VOLTAGE."

WARNING: BEFORE YOU USE A MATERIAL, REFER TO THE MANUFACTURER'S MATERIAL SAFETY DATA SHEETS. SOME MATERIALS CAN BE DANGEROUS.

CAUTION: DO NOT USE A MATERIAL THAT IS NOT EQUIVALENT TO THE MATERIAL SPECIFIED BY HONEYWELL. A MATERIAL THAT IS NOT EQUIVALENT CAN CAUSE DAMAGE TO THE EQUIPMENT AND CAN MAKE THE WARRANTY NOT APPLICABLE.

CAUTION: THE MK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE ITEMS. USE INDUSTRY APPROVED PRECAUTIONS.

CAUTION: THIS EQUIPMENT CONTAINS MOISTURE-SENSITIVE PARTS. SPECIAL HANDLING IS NECESSARY.

(1) Obey the precautions.

(2) Refer to the MK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM (MK XXII EGPWS) CMM, ATA Number 34-45-42 (Publication Number 012-0714-001), for procedures and precautions. Use all CAUTIONS and WARNINGS. Refer to the IPL in the CMM for the location of the parts, unless specified differently.

(3) Keep all hardware for use in assembly unless specified differently.

(4) Obey standard established shop practices during software modification of the MK XXII EGPWS unless specified differently.

B. Preparation

(1) Obtain the appropriate part number/software version label as shown in Table 2. The correct label to use will depend on whether the EGPWS has an "Old Style" or "New Style" front panel label. Refer to Paragraph 3.E. to make the determination of which is necessary.

(2) Obtain either the application software version PCMCIA card, PN 718-1390-038 or CD-ROM, PN 718-1462-026 as shown in Table 2.

(3) If using a CD-ROM follow the instructions for copying its contents onto a PCMCIA card in Paragraph 3.G.

(4) If desired, you can copy the contents of the PCMCIA card onto a different PCMCIA card per the instructions in Paragraph 3.H.

C. Software Modification at Customer Location (Aircraft)

(1) Load PCMCIA card data with system in aircraft.

NOTE: To complete the procedure in this section, refer to Figure 1 and Figure 2.

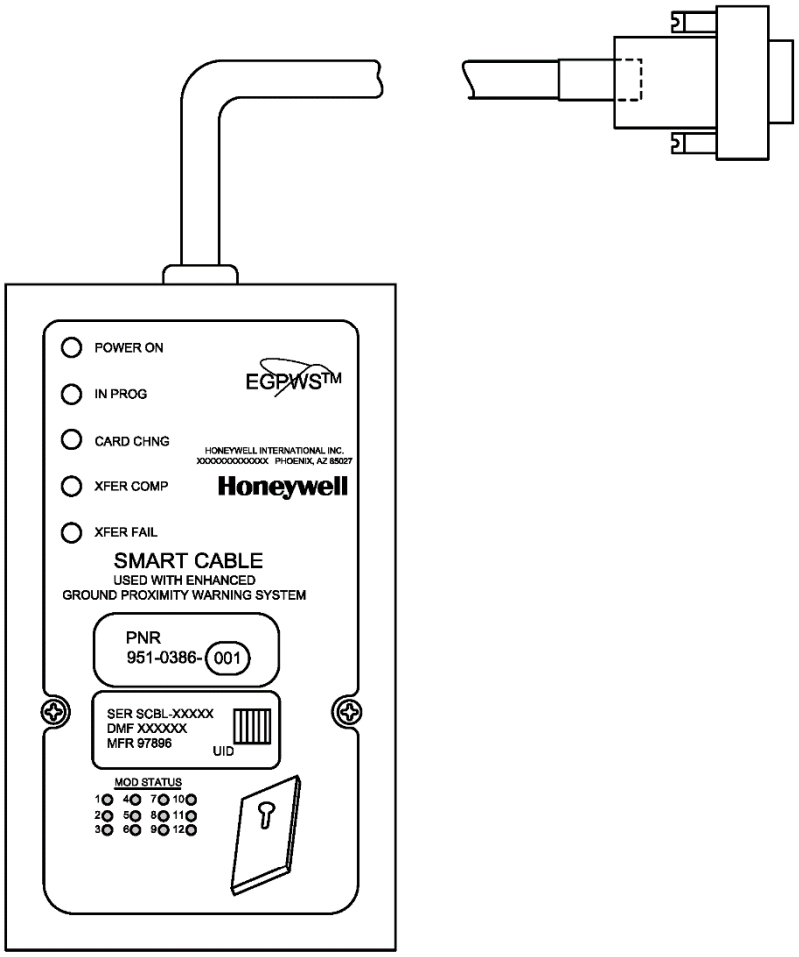

Figure 1. (Sheet 1 of 1) EGPWS Smart Cable

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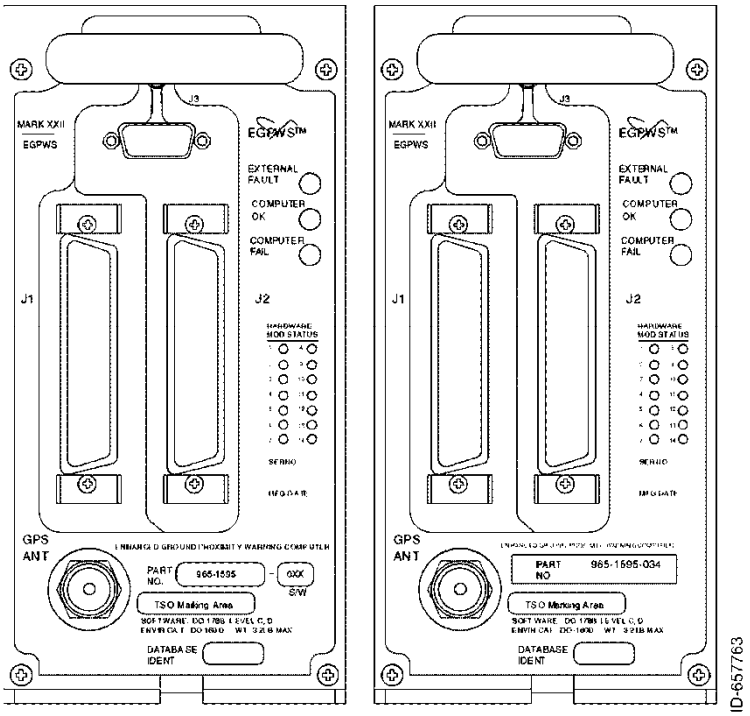

Figure 2. (Sheet 1 of 1) Old Style EGPWS Front Panel Label, Part Number/Software version Label

(a) Make sure that the circuit breaker to the EGPWS is on and that the COMPUTER OK LED on the EGPWS front panel is on.

(b) Connect the smart cable to connector J3 on the front panel. Make sure the POWER ON LED on the smart cable assembly is on.

(c) Put the PCMCIA card into the PCMCIA card slot in the smart cable.

(d) While the software is installed, make sure that the IN PROG LED on the smart cable assembly stays on.

(e) After the software is installed, make sure the XFER COMP LED on the smart cable assembly comes on.

(f) Remove the PCMCIA card from the smart cable.

(g) After approximately 30 seconds, make sure that the COMPUTER OK LED on the EGPWS comes on. This identifies that the software was installed correctly.

(h) Disconnect the smart cable from connector J3 on the front panel of the EGPWS.

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(i) Do the verification of the application software version. Go to Paragraph 3.C.(2) or Paragraph 3.C.(3).

(2) **Verification of Application Software version in Aircraft Using Self Test Method**

(a) The ST function is used to do the verification of the application software. The ST function can be started from the aircraft cockpit with the GPWS test switch. In this procedure, the ST button is used to start the ST sequence from the aircraft cockpit.

NOTE: The use of the cockpit ST function can change from one aircraft to another. For example, the ST function can be started when the GPWS PULL-UP indicator is pushed or when a separate ST switch is activated.

(b) The EGPWS ST function has six levels that describe the following:

- Current condition and configuration of the EGPWS
- Fault and warning history
- Condition of the different inputs.

(c) To help navigate through the different levels, there are two cancel functions:

- Short cancel (push and hold the ST for more than 0.5 second but less than 2 seconds)
- Long cancel (push and hold the ST more than 2 seconds but less than 8 seconds).

(d) The short cancel and long cancel functions operate differently when the ST is in different levels. To start the ST sequence, or to continue from one level to another, use the short cancel. When the instruction to push the ST button is given in this paragraph, use the short cancel sequence. The procedure will guide the operator directly to Level 3 ST, system configuration, skipping most of Level 1 and Level 2 ST.

1 Push the ST button to start the Level 1 ST.

2 After the Level 1 ST message starts, push the ST button. This cancels the Level 1 ST and starts the Level 2 ST.

3 After the Level 2 ST message starts (CURRENT FAULTS...), push and hold the ST button for 5 seconds.

4 When the message PRESS TO CONTINUE is heard, push the ST button. This starts the Level 3 ST (system configuration).

5 Make sure that after the MOD status and serial number messages, you hear the messages below:

- Application software version -034
- Terrain database version 437 (or later)
- Envelope MOD database version B06 (or later).

NOTE: Ignore the messages that remain.

6 When the ST finishes Level 3, the message PRESS TO CONTINUE is heard. If the ST button is not pushed, the ST sequence stops.

7 Go to Paragraph 3.E.

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(3) **Verification of Application Software version in Aircraft by Checking Present Status**

(a) Connect one end of the RS232 cable to connector J3 on the front panel of the EGPWS. Connect the other end of the RS232 cable to a PC that has WinVIEWS communication software installed.

(b) Apply power to the EGPWS. Make sure the COMPUTER OK LED on the EGPWS front panel is on.

(c) On the PC, start the WinVIEWS software and enter CTRL-Z on the keyboard.

(d) At the > prompt, enter PS on the keyboard.

(e) Make sure that after the MOD status and serial number messages, you see the messages below:

- Application software version -034
- Terrain database version 437 (or later)
- Envelope MOD database version B06 (or later).

NOTE: Ignore the messages that remain.

(f) Remove power to the EGPWS.

(g) Disconnect the RS232 cable from the EGPWS.

(h) Go to Paragraph 3.E.

D. Software Modification at Shop Location

(1) Load PCMCIA card data with the system at shop location

NOTE: To load and verify application software at a shop location, use assistance from Honeywell field service engineers.

NOTE: To complete the procedure in this section, refer to Figure 1 and Figure 2.

(a) The equipment specified below is necessary to do this procedure. Refer to Table 4 in Paragraph 2.F.

- A 28 VDC power supply with a minimum supply current of 2 amperes
- EGPWS WinVIEWS communications software
- RS232 cable, PN 704-2617-001
- PC
- Connector (P2), PN RD50F0OJOX (CAGE: 28198), with configuration module, PN 700-1710-001
- Test wires to connect the output of the power supply to the power input pins at J1 of the EGPWS.

(b) Make sure the power supply is off. Connect the power supply to the EGPWS connector as shown in Table 5.

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Table 5. Power Supply Connections

J1 Pin	J1 Pin Nomenclature
40, 60	Power 28 VDC (+)
41, 61	Power 28 VDC (-)
42	CGND

(c) Turn on the power supply.

(d) Make sure the COMPUTER OK LED on the EGPWS front panel is on.

(e) Connect the smart cable to Connector J3 on the front panel. Make sure the POWER ON LED on the smart cable assembly is on.

(f) Put the PCMCIA card into the PCMCIA card slot in the smart cable.

(g) While the software is installed, make sure that the IN PROG LED on the smart cable assembly stays on.

(h) After the software is installed, make sure the XFER COMP LED on the smart cable assembly comes on.

(i) Remove the PCMCIA card from the smart cable.

(j) After approximately 30 seconds, make sure that the COMPUTER OK LED on the EGPWS comes on. This identifies that the software was installed correctly.

(k) Disconnect the smart cable from Connector J3 on the front panel of the EGPWS.

(l) Turn off the power supply.

(m) Do the verification of the application software version. Go to Paragraph 3.D.(2).

(2) **Verification of Application Software version at Shop Location**

(a) Connect one end of the RS232 cable to connector J3 on the front panel of the EGPWS. Connect the other end of the RS232 cable to a PC that has WinVIEWS installed.

(b) Connect the P2 connector, with the configuration module attached, to connector J2 on the front panel of the EGPWS.

(c) Apply power to the power supply. Make sure the COMPUTER OK LED on the EGPWS front panel is on.

(d) On the PC, start WinVIEWS and enter CTRL-Z on the keyboard.

(e) At the > prompt, enter PS on the keyboard.

(f) Make sure that after the MOD status and serial number messages, you see the messages below:

- Application software version -034
- Terrain database version 437 (or later)
- Envelope MOD database version B06 (or later)

NOTE: Ignore the messages that remain.

(g) Turn off the power supply.

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(h) Disconnect all test equipment and power leads to the EGPWS.

(i) Go to Paragraph 3.E.

E. Modification Status Marking

NOTE: To determine whether the EGPWS has the old style or new style ID labels and to complete the procedures below, refer to Figure 2 and Figure 3.

(1) For an EGPWS with the old style front panel ID label:

(a) Refer to Figure 2 and remove the old part number and software version labels (left hand graphic).

(b) Install a new combined part number/software version label, PN 620-2050-070 from Table 2, in the approximate location shown in Figure 2 (right hand graphic).

(2) For an EGPWS with the new style front panel ID label:

(a) Refer to Figure 3 and remove the old part number/software version label.

(b) Install a new combined part number/software version label, PN 620-2035-134 from Table 2, in the approximate location shown in Figure 3.

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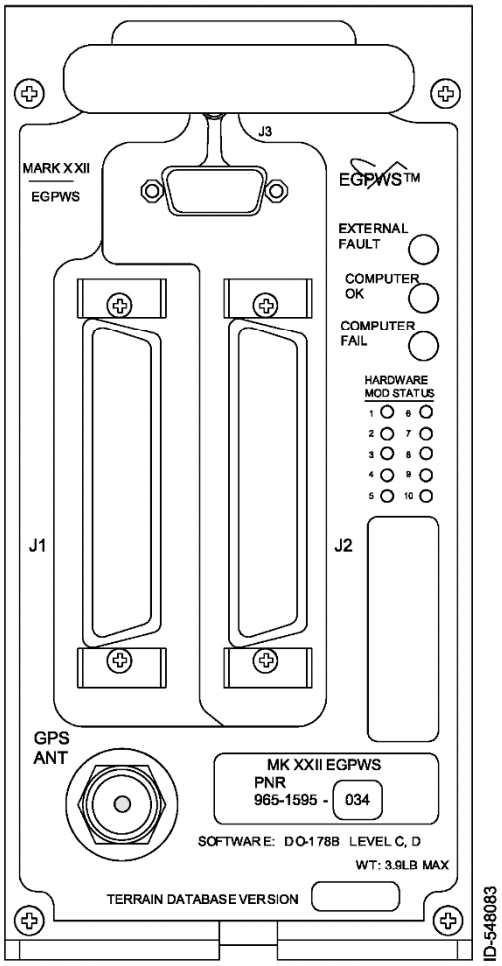

Figure 3. (Sheet 1 of 1) New Style EGPWS Front Panel Label, Part Number/Software version Label

F. Testing

(1) If required, perform an ATP on the EGPWS. Use floppy disk media, ATP configuration matrix file, PN SW998-2693-605. Dash numbers higher than 605 are permitted alternatives. Refer to the instructions in the TESTING AND FAULT ISOLATION section of the CMM.

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G. Program PCMCIA Card from CD-ROM

(1) Put the application software CD-ROM, PN 718-1462-026, into the CD-ROM drive on the PC. Refer to Table 2.

(2) Put a blank or old version PCMCIA card into the PCMCIA drive of the PC.

(3) Use Windows Explorer for the selection of the PCMCIA drive and delete all folders and files currently on the PCMCIA card.

(4) Empty the recycle bin (if there is one).

(5) Copy the APP folder and all of its files from the CD-ROM to the PCMCIA card.

(6) Write-protect the files.

(a) On the left side of the Windows Explorer window, click on the APP folder so it is highlighted.

(b) Make a selection of the menu, FILE, PROPERTIES.

(c) Make sure the read-only attribute box is checked. If not, check the read-only box. Click on the APPLY button. Click on the OK button.

(d) Make selection of the menu, EDIT, SELECT ALL. All of the files in the folder must be highlighted.

(e) Make a selection of the menu FILE, PROPERTIES again.

(f) Make sure the read-only box is checked. If not check the read-only box. Click the APPLY button. Click the OK button.

(7) Eject the PCMCIA card from the PCMCIA card slot.

(8) Label the PCMCIA card as application software version -034.

(9) Remove the CD-ROM from the CD-ROM drive.

H. Copy PCMCIA Card

(1) Put the application software PCMCIA card, PN 718-1390-038, into the PCMCIA drive on the PC. Refer to Table 2.

(2) Copy the APP folder and its files of the PCMCIA card to a folder made for it on a hard drive

(3) Remove the PCMCIA card from the PCMCIA drive.

(4) Put a blank or old version PCMCIA card into PCMCIA drive.

(5) Use Windows Explorer for the selection of the PCMCIA drive and delete all folders and files currently on the PCMCIA card.

(6) Empty the recycle bin (if there is one).

(7) Copy the APP folders and all of its files from the folder made in Paragraph 3.H.(2) to the PCMCIA card.

(8) Write-protect the files.

(a) On the left side of the Windows Explorer window, click on the APP folder so it is highlighted.

(b) Make a selection of the menu, FILE, PROPERTIES.

(c) Make sure the read-only attribute box is checked. If not, check the read-only box. Click on the APPLY button. Click on the OK button.

(d) Make selection of the menu, EDIT, SELECT ALL. All of the files in the folder must be highlighted.

(e) Make a selection of the menu FILE, PROPERTIES again.

(f) Make sure the read-only box is checked. If not check the read-only box. Click the APPLY button. Click the OK button.

(9) Eject the PCMCIA card from the PCMCIA drive.

(10) Label the PCMCIA card as application software version -034.

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4. Appendix

A. Appendix A, Acronyms and Abbreviations

(1) Refer to Table 6 for a list of the acronyms and abbreviations used in this service bulletin.

Table 6. Acronyms and Abbreviations

Term	Full Term
APP	application
ARINC	Aeronautical Radio, Incorporated
ATA	Air Transport Association
ATP	acceptance test procedure
CAGE	commercial and government entity
CD-ROM	compact disk read-only memory
CGND	chassis ground
CMM	component maintenance manual
ECCN	export control classification number
EGPWS	enhanced ground proximity warning system
FAA	Federal Aviation Administration
ID	identification
GPWS	ground proximity warning system
INOP/FAIL	inoperable/failure
IPL	illustrated parts list
LED	light emitting diode
MOD	modification
OEM	original equipment manufacturer
OSHA	Occupational Safety and Health Administration
PC	personal computer
PCMCIA	personal computer memory card international association
PN	part number
Qty	quantity
RTCA	Radio Technical Commission for Aeronautics
SFAR	Special Federal Aviation Regulation
ST	self test
TSO	Technical Standard Order
VDC	volts, direct current

ANNEX B

EGPWS CONFIGURATION SETTINGS CHECK

6.5.2. EGPWS CONFIGURATION SETTINGS CHECK

1.	With the helicopter powered off connect the Laptop PC to the EGPWS Test Connector J1380 installed into right side avionic bay using a RS-232 cable (See APPENDIX A). The WinVIEWS S/W (Windows Virtual Interface to the Enhanced Warning System) must be previously installed on the laptop computer and properly set (See APPENDIX A).	❒
2.	Ensure Radar Altimeters are operative and push the EGPWS circuit breaker **(CB171)** IN	❒
3.	Power on the helicopter and wait for the EGPWS to complete power up (approx. 2 mins)	❒
4.	Launch the WinViews in Terminal Mode, start the Configuration Sub-mode by typing “CFG<enter>” at the prompt (>). The following Table 6-1 identifies the basic aircraft configuration data, aircraft signals, and optional configuration items.	❒

Table 6-1: EGPWS Configuration Data w/ Phase 6 or previous

Category	Signal Type Optional Items	ID Number	Sub-Categories	Value (If TRUE is selected, message is reported in Self-Test Level 3)
1	Aircraft Type	147		
2	Air Data	254		
3	Position	253		
4	Altitude Callouts	8		
5	Audio Menu	128		
6	Terrain Display	251		
7	Option Select #1	29	TA&D Alternate Pop-Up	FALSE
			Peaks Mode Enable	TRUE
			Obstacle Awareness Enable	TRUE
			Bank Angle Enable	TRUE
			WOW Reversal Select	FALSE
			GPS Altitude WGS-84 Select	FALSE
			GPS Altitude MSL Select	TRUE
8	Radio Altitude	253		
9	Navigation	251		
10	Attitude	253		
11	Heading	255		
13	I/O Discrete Type	130		
14	Audio Output Volume Level	0		
15	Autorotation Threshold	15		
16	Torque Type	18		
17	Option Select #2	97	Autorotation Callouts	2
			Helo Normal Pop-up Range	5
			Helo Low Altitude Pop-up Range	2.5
			Mode 6B always ON Enable	FALSE
			Normal Terrain Airspeed Select	TRUE
			Low Altitude Airspeed Select	TRUE
			Low Altitude NO VFOM Select	FALSE
18	Option Select #3	81	Audio Inhibit Time(Minutes)	5
			Inhibit All except Minimums Type Callout and100 Ft Callout Select	FALSE
			Inhibit All except Minimums Type Callout Select	FALSE
			InhibitIncludesTooLowGearSelect	TRUE
			InhibitAltitudeCallouts50 Ft andBelowOverRunwaySelect	TRUE

Table 6-2: EGPWS Configuration Data w/ Phase 7

Category	Signal Type Optional Items	ID Number	Sub-Categories	Value (If TRUE is selected, message is reported in Self-Test Level 3)
1	Aircraft Type	147		
2	Air Data	254		
3	Position	253		
4	Altitude Callouts	8		
5	Audio Menu	128		
6	Terrain Display	251		
7	Option Select #1	29	TA&D Alternate Pop-Up	FALSE
			Peaks Mode Enable	TRUE
			Obstacle Awareness Enable	TRUE
			Bank Angle Enable	TRUE
			WOW Reversal Select	FALSE
			GPS Altitude WGS-84 Select	FALSE
			GPS Altitude MSL Select	TRUE
8	Radio Altitude	253		
9	Navigation	248		
10	Attitude	253		
11	Heading	255		
13	I/O Discrete Type	130		
14	Audio Output Volume Level	0		
15	Autorotation Threshold	15		
16	Torque Type	18		
17	Option Select #2	97	Autorotation Callouts	2
			Helo Normal Pop-up Range	5
			Helo Low Altitude Pop-up Range	2.5
			Mode 6B always ON Enable	FALSE
			Normal Terrain Airspeed Select	FALSE
			Low Altitude Airspeed Select	FALSE
			Low Altitude NO VFOM Select	TRUE
18	Option Select #3	81	Audio Inhibit Time(Minutes)	5
			Inhibit All except Minimums Type Callout and100 Ft Callout Select	FALSE
			Inhibit All except Minimums Type Callout Select	FALSE
			InhibitIncludesTooLowGearSelect	TRUE
			InhibitAltitudeCallouts50 Ft andBelowOverRunwaySelect	TRUE
19	Option Select #4	0	Low Altitude	0

Table 6-3: EGPWS Configuration Data w/ Phase 8

Category	Signal Type Optional Items	ID Number	Sub-Categories	Value (If TRUE is selected, message is reported in Self-Test Level 3)
1	Aircraft Type	147		
2	Air Data	254		
3	Position	253		
4	Altitude Callouts	8		
5	Audio Menu	128		
6	Terrain Display	227		
7	Option Select #1	29	TA&D Alternate Pop-Up	FALSE
			Peaks Mode Enable	TRUE
			Obstacle Awareness Enable	TRUE
			Bank Angle Enable	TRUE
			WOW Reversal Select	FALSE
			GPS Altitude WGS-84 Select	FALSE
			GPS Altitude MSL Select	TRUE
8	Radio Altitude	253		
9	Navigation	248		
10	Attitude	253		
11	Heading	255		
13	I/O Discrete Type	130		
14	Audio Output Volume Level	0		
15	Autorotation Threshold	15		
16	Torque Type	18		
17	Option Select #2	97	Autorotation Callouts	2
			Helo Normal Pop-up Range	5
			Helo Low Altitude Pop-up Range	2.5
			Mode 6B always ON Enable	FALSE
			Normal Terrain Airspeed Select	FALSE
			Low Altitude Airspeed Select	FALSE
			Low Altitude NO VFOM Select	TRUE
18	Option Select #3	81	Audio Inhibit Time(Minutes)	5
			Inhibit All except Minimums Type Callout and100 Ft Callout Select	FALSE
			Inhibit All except Minimums Type Callout Select	FALSE
			InhibitIncludesTooLowGearSelect	TRUE
			InhibitAltitudeCallouts50 Ft andBelowOverRunwaySelect	TRUE
19	Option Select #4	0	Low Altitude	0

5.	Program the EGPWS Configuration Module with the following procedure: • Create the following command string if Primus Epic® Phase 8 is installed: **CUW 0/19 147 254 253 8 128 227 29 253 248 253 255 0 130 0 15 18 97 81 0/** • Create the following command string if Primus Epic® Phase 7 is installed: **CUW 0/19 147 254 253 8 128 251 29 253 248 253 255 0 130 0 15 18 97 81 0/** • Create the following command string if Primus Epic® SW Release previous than Phase 7 is installed: **CUW 0/18 147 254 253 8 128 251 29 253 251 253 255 0 130 0 15 18 97 81/**	❒
6.	After completing the data string as defined above, press **ENTER**. The cursor will flash waiting for an answer "**Y**" or "**N**". Press the **Y** key in order to confirm and send the data to the EGPWC. Following the writing to the Configuration Module the EGPWC is automatically rebooted to allow the new configuration to take effect. ***NOTE:*** *If only one or few IDs do not match Table 6-1, as alternative to step (4), the following procedure may be used to modify the categories individually:* • *With WinVIEWS active in Terminal Mode, start the configuration sub-mode by typing "***CFG***" at the prompt (>).* • *Use the CAT command with the following structure:* **CAT<space><category#><space><ID#><space><T or F><enter>** *<T or F> is TRUE or FALSE for rebooting the EGPWC. Use "T" if only one category is to be changed and EGPWC will reboot following <enter>. Use "F" if another individual ID is to be changed by another CAT operation*	❒
7.	Close WinViews.	❒
8.	Adjust the volume of the EGPWS aural alarms/messages: • On pilot's AV900 Audio Ctrl Panel push and hold **INPH** (**PLT** for Block 3), **HDPH**, and **COM1 MIC** buttons simultaneously until the display window reads "**CONFIG**". This should take about five seconds. • Push **HDPH** button to scroll through the User Configuration Data until **WRN3** (Warning 3 Gain) is displayed. • Turn the **VOL** Knob to set volume to 70. • Push and hold the **INPH** (**PLT** for Block 3), **HDPH**, and **COM1 MIC** buttons simultaneously until the Display Window reads: "**SAVING**". • After a short delay, the Display Window will change to read: "**BCASTING**". The display windows on the other AV-900's will read: "**DATASYNC**". After another short delay, the AV-900 will return to normal operation.	❒
9.	Reset the EGPWS system by means of the relevant circuit breaker **(CB171)**.	❒

APPENDIX A

LAPTOP - EGPWC CABLE ASSEMBLY AND SETTINGS

1.	Prepare the RS-232 cable extension (required to interface the computer port to the EGPWS computer) as described in Figure 7-1, maximum cable length: 50'	❒
2.	Install the application: WinVIEWS SW (Windows Virtual Interface to the Enhanced Warning System) on the computer that will be used for the test procedure.	❒
3.	Connect the computer to the EGPWC by mean of the RS-232 as described in Figure 7-1.	❒
4.	Power on the computer and configure the RS-232 as follow: • BAUD RATE: 19200; • PARITY: none; • DATA BITS: 8; • STOP BITS: 1	❒
5.	Power on the EGPWS system and launch the WinVIEWS Application on the computer. This initiates the connection to the EGPWS computer.	❒

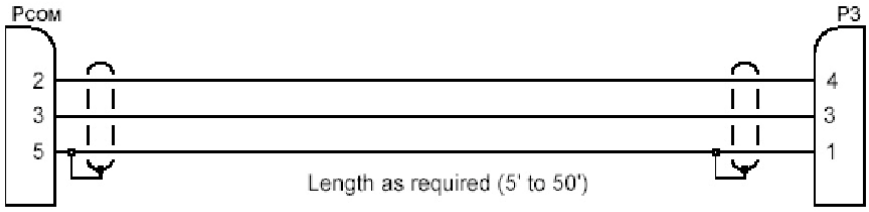

Figure 7-1: RS-232 EGPWS Laptop connection

Note: the mating connector for the EGPWC J3 test connector is a male (pins) 15 pin double density D-subminiature type, Positronic Industries part number ODD15M1OYOZ. PC connector is a standard DB9 serial port connector.

Note

New PCs don't typically come with an RS-232 interface. USB to RS-232 adapters exist that can be used for this interface. If an adapter is required, it must be successfully installed prior to WinVIEWS Data port selection. Please see and follow adapter manufacturer's installation instructions. The WinVIEWS application expects the host PC to include a COM port.

ANNEX C

POWER UP AND GROUND SELF-TEST

6.6.1. POWER UP AND GROUND SELF-TEST

1.	Ensure GPS signal is received. If necessary, carry the helicopter outside the hangar in order to be in view of the GPS satellites	❒
2.	Power up the helicopter by means of the External Power switch. Verify that the EGPWS circuit breaker **(CB171)** is pushed IN and ensure Radar Altimeters CBs are IN.	❒
3.	Ensure that the green "**Computer OK**" lamp on the face of the EGPWC is illuminated[1].	❒
4.	Ensure that the amber "**External Fault**" and the red "**Computer Fail**" lamps are NOT lit[1].	❒
5.	Confirm that all navigation sensors are initialized via **POS INIT**.	❒
6.	Select **Map** Page on both **MFDs**.	❒
7.	Select the "**Terrain**[2]" option from the **MAP** scroll down menu on the pilot and copilot **MFD** displays (if applicable). Verify that the sub-menu "**SA Terrain**[3]" is selected.	❒
8.	Wait until the **TAWS** warm-up has been completed. During the warm-up procedure the amber annunciation "**TAWS FAIL**" is displayed on the lower left corner of the attitude sphere and in the **TAWS** status boxes. Because the EGPWS requires **GPS** information to operate, it may take 2 to 5 minutes after power-up before the aircraft **GPS** system has acquired satellites for proper operation. During the acquisition the EGPWS mode annunciation "**TAWS N/A**[4]" will be displayed on the lower left corner of the **PFD HSI** and on the **TAWS** status window on the **MFD MAP** page. When the warm-up and acquisition have been completed, no annunciation is displayed.	❒
9.	Verify that the EGPWS status window is visualized in the left bottom corner of the **MAP** page(s) on the **MFD**'s with the green **TAWS**[5] mode annunciation.	❒
10.	Check that the terrain display appears on the **MFD MAP** page.	❒
11.	Push **WX/TERR** button on pilot and copilot Display Controllers twice if both **WX** and **TAWS** are installed or once if only **TAWS** is installed.	❒

[1] *If EGPWC is not reachable, connect a laptop to J380 connector (see Annex A) and launch WinViews. Type "PS<enter>" at the prompt (>) and verify neither "External Fault" nor "Computer Fail" indication is given. Presentation should be "CURRENT FAULTS: NO FAULTS".*
[2] *If Primus Epic® SW Release previous than PH8 is installed, this annunciation is "**TAWS**"*
[3] *If Primus Epic® SW Release previous than PH8 is installed, the sub-menu is not present.*
[4] *If Primus Epic® SW Release previous than PH8 is installed, this option is "**TERR N/A**"*
[5] *If Primus Epic® SW Release previous than PH8 is installed, this option is "**TERRAIN**"*

12.	Verify **TAWS** data is displayed on PLT and CPLT side **PFD HSI** in arc compass mode. ***NOTE:*** • *For SW Rel Ph8 TAWS data on the PFD HSI provide coloration of the Absolute Terrain and visualization of known obstacles.* • *For SW Rel. previous than Ph8, TAWS data on PFD HSI provide coloration of threatening zones around the a/c.*	❒
13.	Verify that the terrain mode annunciation is displayed directly below the **WX** mode annunciation in the lower left corner of the **PFDs HSI**, with the green **TAWS**[5] mode annunciation.	❒
14.	Use the Outer knob of the pilot **CCD** to change the displayed range of the pilot verify: • For SW Rel Ph7 and previous, **MFD MAP** page and the pilot **PFD HSI** ranges change together. • For SW Rel Ph8, selecting **MFD MAP** with CCD, the range changes accordingly to CCD knob. Selecting **PFD HSI** with CCD, the range changes accordingly to CCD knob	❒
15.	Use the Outer knob of the copilot **CCD** to change the displayed range of the pilot verify: • For SW Rel Ph7 and previous, **MFD MAP** page and the pilot **PFD HSI** ranges change together. • For SW Rel Ph8, selecting **MFD MAP** with CCD, the range changes accordingly to CCD knob. Selecting **PFD HSI** with CCD, the range changes accordingly to CCD knob	❒
16.	Switch the pilot and copilot **PFD**s in composite mode and verify steps *11 12* and *13*.	❒
17.	Switch the pilot and copilot **MFD**s in composite mode and verify steps*11 12* and *13*.	❒
18.	Return back with all the displays in normal mode.	❒
19.	Ensure the **LOW ALT** key on **MCDU** page **MENU→TAWS** page is set to **OFF**.	❒
20.	Connect two headsets to the pilot and copilot ICS plug. By mean of the pilot **MCDU** page **MENU→TEST** enable the **TAWS** test function by pressing the **TAWS** test button. Please note that the Self-Test aural volume is 6dB lower than the warning aural volume.	❒

SELF TEST LEVEL 1

21.	Verify that the amber annunciation "**TAWS TEST**" is visualized on the lower left corner of the **PFD** attitude sphere.	❒
22.	Verify that the amber annunciation "**TAWS TEST**" is visualized on the **TAWS** status window on the **MFD MAP** page.	❒
23.	Verify the amber annunciation **TAWS N/A**[4] turns on momentarily on the lower left corner of the **PFD HSI**	❒
24.	Verify the green advisory message **TAWS LOW ALT** turns on momentarily on the **MFD CAS** list	❒
25.	Verify the green advisory message **TAWS AUDIO MUTE** turns on momentarily on the **MFD CAS** list	❒
26.	Verify **GLIDESLOPE** aural warning message is heard on the pilot and copilot headphones.	❒
27.	Verify the green advisory message **TAWS GS CANCEL** turns on momentarily on the **MFD CAS** list	❒
28.	Verify **PULL UP** aural warning message is heard on the pilot and copilot headphones	❒
29.	Verify that • *For SW Rel Ph8, the coloration of the Absolute Terrain (SA Terrain) on PFD HSI is momentarily shown at full brightness* • *For SW Rel. previous than Ph8, the Terrain Display Self-Test pattern is displayed on MFD MAP page and on PFD HSI*	❒
30.	Verify **WARNING! TERRAIN** aural warning message is heard on the pilot and copilot headphones	❒
31.	Verify that • *For SW Rel Ph8, the coloration of the Absolute Terrain (SA Terrain) on PFD HSI returns at selected brightness* • *For SW Rel. previous than Ph8, the Terrain Display Self-Test pattern turns off after several sweeps of the terrain display* End of **Self-Test Level 1**.	❒

SELF TEST LEVEL 2

Note: Ignore the status of the TAWS FAIL status annunciator and TAWS N/A4 mode annunciator.
Note: To get to a Level 2 Self-Test the operator must select the command Self-Test Level 2 on the WinVIEWS application.

32.	Select the command **Self-Test Level 2** on the Command Menu of the WinVIEWS application.	❒
33.	Verify the following voice messages are annunciated: "**CURRENT FAULTS**", "**NO FAULTS**". End of **Self-Test Level 2**.	❒

SELF TEST LEVEL 3

Note: Ignore the status of the TAWS FAIL status annunciator and TAWS N/A[4] mode annunciator.
Note: To get to a Level 3 Self-Test the operator must select the command Self-Test Level 3 on the WinVIEWS application.

34.	Select the command **Self-Test Level 3** on the Command Menu of the WinVIEWS application.	❒
35.	Verify that the following voice messages are annunciated on the pilot and copilot headphones and record all unspecified details: **"SYSTEM CONFIGURATION"** **"PART NUMBER 965-1595-034"** _____ **"MOD STATUS X"** _____ **"SERIAL NUMBER XXXX"** _____ **"APPLICATION SOFTWARE VERSION XXX"** _____ **"TERRAIN DATABASE VERSION XXXXXX"** _____ **"ENVELOPE MOD DATABASE VERSION XXX"** _____ **"BOOT CODE VERSION XXXX"** _____ ***NOTE1:*** *"X's" listed above represent numbers, letters, the word "point" or no annunciation. Any of these annunciations are acceptable where "X" is listed below. (e.g. the serial number could be annunciated as "SERIAL NUMBER 316").* ***NOTE2:*** *Verify that the Terrain Database is the correct one required from the WO and that is up to date. If not, see Annex C for terrain database update and Annex D for terrain database download.*	❒
36.	Depending on the Primus Epic® SW Release installed, verify that the following voice messages, listed in Table 6-4, Table 6-5 and Table 6-6, match their expected values listed in para. § 6.5.2. • If Primus Epic® SW Release Ph8 is installed follow Table 6-4 • If Primus Epic® SW Release Ph7 is installed follow Table 6-5 • If Primus Epic® SW Release previous than Ph7 is installed follow Table 6-6.	❒
37.	Close WinViews	❒

Table 6-4: Configuration Items Test (Primus Epic® SW Release Ph8 installed)

	Voice Message	Expected Value	Observed	Pass/Fail
A	“AIRCRAFT TYPE”	147		
B	“AIR DATA TYPE”	254		
C	“POSITION INPUT TYPE”	253		
D	“CALLOUTS OPTION”	8		
E	“AUDIO MENU”	128		
F	“TERRAIN DISPLAY TYPE“	227		
G	“OPTIONS 1 TYPE”	29		
H	“RADIO ALTITUDE TYPE”	253		
I	“NAVIGATION INPUT TYPE”	248		
J	“ATTITUDE INPUT TYPE”	253		
K	“MAGNETIC HEADING TYPE”	255		
L	“I/O DISCRETE TYPE”	130		
M	“VOLUME SELECT”	0		
N	“AUTOROTATION THRESHOLD TYPE“	15		
O	“ENGINE TORQUE TYPE”	18		
P	“OPTIONS 2 TYPE”	97		
Q	“OPTIONS 3 TYPE”	81		
R	“OPTIONS 4 TYPE”	0		
S	“BANK ANGLE SELECTED”			
T	“OBSTACLE AWARENESS ENABLED”			
U	“PEAKS MODE ENABLED”			
V	“GPS ALTITUDE REFERENCE MSL SELECTED”			
W	“MODE 6 LOW VOLUME SELECTED”			
X	“AUTOROTATION CALLOUT OPTION 2 SELECTED”			
Y	“NORMAL POP UP RANGE 5 SELECTED”			
Z	“LOW ALTITUDE POP UP RANGE 2.5 SELECTED”			
Aa	“LOW ALTITUDE NO VFOM SELECTED”			
Bb	“AUDIO INHIBIT TIME 5”			
Cc	“INHIBIT TOO LOW GEAR SELECTED”			
Dd	“INHIBIT RUNWAYCALLOUT 50 AND BELOW SELECTED”			
Ee	“LOW ALTITUDE OPTIONS 0 SELECTED”			

Table 6-5: Configuration Items Test (Primus Epic® SW Release Ph7 installed)

	Voice Message	Expected Value	Observed	Pass/Fail
A	“AIRCRAFT TYPE”	147		
B	“AIR DATA TYPE”	254		
C	“POSITION INPUT TYPE”	253		
D	“CALLOUTS OPTION”	8		
E	“AUDIO MENU”	128		
F	“TERRAIN DISPLAY TYPE“	251		
G	“OPTIONS 1 TYPE”	29		
H	“RADIO ALTITUDE TYPE”	253		
I	“NAVIGATION INPUT TYPE”	248		
J	“ATTITUDE INPUT TYPE”	253		
K	“MAGNETIC HEADING TYPE”	255		
L	“I/O DISCRETE TYPE”	130		
M	“VOLUME SELECT”	0		
N	“AUTOROTATION THRESHOLD TYPE“	15		
O	“ENGINE TORQUE TYPE”	18		
P	“OPTIONS 2 TYPE”	97		
Q	“OPTIONS 3 TYPE”	81		
R	“OPTIONS 4 TYPE”	0		
S	“BANK ANGLE SELECTED”			
T	“OBSTACLE AWARENESS ENABLED”			
U	“PEAKS MODE ENABLED”			
V	“GPS ALTITUDE REFERENCE MSL SELECTED”			
W	“MODE 6 LOW VOLUME SELECTED”			
X	“AUTOROTATION CALLOUT OPTION 2 SELECTED”			
Y	“NORMAL POP UP RANGE 5 SELECTED”			
Z	“LOW ALTITUDE POP UP RANGE 2.5 SELECTED”			
Aa	“LOW ALTITUDE NO VFOM SELECTED”			
Bb	“AUDIO INHIBIT TIME 5”			
Cc	“INHIBIT TOO LOW GEAR SELECTED”			
Dd	“INHIBIT RUNWAYCALLOUT 50 AND BELOW SELECTED”			
Ee	“LOW ALTITUDE OPTIONS 0 SELECTED”			

Table 6-6: Configuration Items Test (Primus Epic® SW Release previous than Ph7 installed)

	Voice Message	Expected Value	Observed	Pass/Fail
A	“AIRCRAFT TYPE”	147		
B	“AIR DATA TYPE”	254		
C	“POSITION INPUT TYPE”	253		
D	“CALLOUTS OPTION”	8		
E	“AUDIO MENU”	128		
F	“TERRAIN DISPLAY TYPE“	251		
G	“OPTIONS 1 TYPE”	29		
H	“RADIO ALTITUDE TYPE”	253		
I	“NAVIGATION INPUT TYPE”	251		
J	“ATTITUDE INPUT TYPE”	253		
K	“MAGNETIC HEADING TYPE”	255		
L	“I/O DISCRETE TYPE”	130		
M	“VOLUME SELECT”	0		
N	“AUTOROTATION THRESHOLD TYPE“	15		
O	“ENGINE TORQUE TYPE”	18		
P	“OPTIONS 2 TYPE”	169		
Q	“OPTIONS 3 TYPE”	81		
R	“OPTIONS 4 TYPE”	0		
S	“BANK ANGLE SELECTED”			
T	“OBSTACLE AWARENESS ENABLED”			
U	“PEAKS MODE ENABLED”			
V	“GPS ALTITUDE REFERENCE MSL SELECTED”			
W	“MODE 6 LOW VOLUME SELECTED”			
X	AUTOROTATION CALLOUT OPTION 2 SELECTED			
Y	“NORMAL POP UP RANGE 5 SELECTED”			
Z	“LOW ALTITUDE POP UP RANGE 2.5 SELECTED”			
Aa	“NORMAL TERRAIN WITH AIRSPEED SELECTED”			
Bb	“LOW ALTITUDE WITH AIRSPEED SELECTED”			
Cc	“LOW ALTITUDE NO VFOM SELECTED”			
Dd	“AUDIO INHIBIT TIME 5”			
Ee	“INHIBIT TOO LOW GEAR SELECTED”			
Ff	“INHIBIT RUNWAYCALLOUT 50 AND BELOW SELECTED”			
Gg	“LOW ALTITUDE OPTIONS 0”			

Note: The sequence of messages reported into Table 6-4, Table 6-5 and Table 6-6 can be slightly different.

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