Introducing the Honeywell MKV-A EGPWS

The Replacement for the MK V EGPWS

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**Purpose:**

The purpose of this document is to introduce the MKV-A EGPWS (Enhanced Ground Proximity Warning System), explain its features, and help customers prepare to receive the MKV-A on their new aircraft.

**Why is Honeywell introducing a new EGPWS?**

Honeywell first produced the current MK V EGPWS in 1996 and has since delivered over 35,000 units. The MK V EGPWS has exceeded all performance requirements and continues to perform its intended function on thousands of aircraft installations.

However, parts obsolescence is driving the MK V EGPWS to end its production run approximately December 2014. Thus, Honeywell has created the new MKV-A EGPWS utilizing the latest hardware, software and development processes as a replacement for the MK V.

Honeywell is accepting orders now for the new MKV-A EGPWS and can accept orders for the MK V until June 30, 2014 with last shipment date of December 31, 2014. We will continue to support, repair, and service the MK V EGPWS for as long as component spare stock exists.

**When will the MKV-A be certified and delivered?**

The MKV-A EGPWS received TSO authorization in December 2013. Aircraft OEMs are certifying the MKV-A now for forward fit installations and will begin delivery of aircraft equipped with the new part as early as 1st quarter 2014. The OEMs will communicate directly with their customers on their detailed implementation plans.

**TSO Authorizations:**

The TSO approvals include:

- TSO-C92c: Airborne Ground Proximity Warning Equipment
- TSO-C151c: Terrain Awareness and Warning System (TAWS)
- TSO-C117a: Airborne Windshear Warning and Escape Guidance Systems for Transport Airplanes
**Functionality:**

The MKV-A includes the same functionality as the MK V EGPWS including the non-TSO functionality such as RAAS, SmartRunway and SmartLanding®. No additional functionality is included in the initial release; however, dataloading methods and media have been modernized. The MKV-A also provides significant growth capability in terms of processor throughput, memory capacity and I/O resources to support future functionality.

**Aircraft Certification (Type Certification (TC) or Supplemental Type Certificate (STC)):**

The MKV-A EGPWS is considered a new product, and it must be TC’d or STC’d prior to aircraft installation.

**MKV-A versus MK V EGPWS:**

![MKV-A and MK V](image)

**MKV-A EGPWS Compatibility with MK V EGPWS**

The MKV-A is designed to be backward compatible with the MK V EGPWS, but it requires certification before it can be used as a drop-in replacement for the MK V in existing installations. Boeing is scheduled to complete this certification for 737, 777, and 747 platforms in Q2 2014 and will update the Interchangeable Parts Drawing.

The current MK V cannot be used as a replacement in new MKV-A installations where configuration files are used to provide aircraft configuration information in place of program pins. This new configuration file approach is being used for Boeing aircraft delivered with the MKV-A. See section below, “Methods to Configure EGPWS for an Aircraft Installation”, for further details on Aircraft Personality Database (APD) and Option Selection Software (OSS).
Updated Data Loading Methods

The current MK V EGPWS utilizes a Linear PCMCIA interface to upload software or terrain databases. The new MKV-A provides two options for data loading the operational software, Envelope Modulation database, Terrain database, Runway database, Obstacle database, Aircraft Personality Database (APD) or Option Selection Software (OSS) Configuration database, and Reloadable Customer Definitions (RCD) database for RAAS, SmartRunway and SmartLanding:

- **USB 2.0** via the front panel (plug in the FAT16 or FAT32 programmed USB stick and data is automatically uploaded)
- **ARINC 615A** (Ethernet) via the front panel using portable data loaders or configurable to utilize on board data loaders via a rear (aircraft) connector interface (see below for new features).
Methods to Configure EGPWS for an Aircraft Installation:

The current MK V EGPWS uses program pins in the aircraft connector to configure the EGPWS for a particular aircraft type, installation design and customer defined preferences such as the altitude call-out menu. These program pins are utilized to full capacity today. The MK V also uses a Reloadable Customer Database (RCD) for additional configuration information if the RAAS, SmartRunway and SmartLanding functions are active.

The MKV-A employs two methods of configuring the EGPWS:

- Dual purpose I/O pins which can be used as program pins to support backwards compatibility with existing MK V installations along with an RCD if RAAS/SmartRunway/SmartLanding functions are active.
- Loadable configuration databases known as an APD (Aircraft Personality Database) and OSS (Option Selection Software). The APD contains program pin settings for up to 29 aircraft types. An RCD is needed to complement the APD if RAAS/SmartRunway/SmartLanding functions are active. Boeing production installations use a loadable OSS file in place of the APD and RCD. The OSS file contains both program pin options and configuration information for the RAAS function. New installations utilizing the new APD/RCD or OSS configuration approach may no longer have the program pins wired, hence only a MKV-A EGPWS can be used. (Note: For aircraft delivered with an OSS, an APD/RCD can be loaded and this will replace the OSS. Please contact Honeywell if you want to change the configuration by creating a new APD and RCD).

New Interface (Input / Output) Capability:

The new available I/O (via the aircraft interface connector) includes:

- Ethernet - three ports that can be used for on board 615A data loading or potential future display interface.
- Additional 429 Input (receive) channels – to support future functionality growth
- Additional 429 Output (transmit) channels - to support future functionality growth
- Additional Discrete (lamp driver) Outputs – to support flexibility in aircraft installation and functionality growth.
- Additional Monitor (INOP lamp driver) Outputs - to support flexibility in aircraft installation and functionality growth

Power / Weight / Mounting / Reliability

Power: The MKV-A uses the same power as the current MK V, breaker sizing is unchanged.
Weight: The MKV-A weighs one pound (0.45 Kg) less than the current MK V
Mounting: The MKV-A uses the same mounting tray and connector as the MK V
Reliability: The MKV-A MTBF is predicted to be 25% greater than the current MK V
MKV-A Part Numbers

The following table provides a summary of the initial MKV-A Part numbers and the current MK V EGPWS part numbers that are being replaced.

### Initial MKV-A Black Label Release

<table>
<thead>
<tr>
<th>New MKV-A EGPWS Part Number</th>
<th>Characteristics</th>
<th>Replaces MK V EGPWS Part Numbers</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>69000940-101</td>
<td>115 VAC</td>
<td>965-0976-003-XXX-XXX 115 VAC; used on multiple aircraft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>965-1690-0XX 115 VAC; used on B737 &amp; B747-8</td>
<td></td>
</tr>
<tr>
<td>69000941-101</td>
<td>28 VDC</td>
<td>965-0976-040-XXX-XXX 28 VDC; used on multiple aircraft</td>
<td></td>
</tr>
<tr>
<td>69000942-151</td>
<td>115 VAC</td>
<td>965-1676-0XX 115 VAV; used on A320/330/340</td>
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</tbody>
</table>

**Customer preparation for new MKV-A**

Aircraft deliveries with the new MKV-A will begin in 2014, and the OEM will communicate with their customers when this change occurs. In preparation for the new MKV-A customers should plan for:

- **Spares** – As outlined above, the current MK V and MKV-A EGPWS are not fully interchangeable on new Boeing aircraft delivered with the MKV-A EGPWS. Please contact your Customer Business Manager, Technical Sales Manager or Direct Sales Account Manager for details of promotional MKV-A spares pricing.

- **APD/OSS Software** – The OSS software will be delivered as part of the on-board loadable S/W library. Line maintenance staff should be made aware of this change and the requirement to load the OSS (or equivalent APD/RCD) when installing a replacement MKV-A unit.

- **Terrain and Envelope Modulation Databases** – Terrain and Envelope Modulation Database updates are loadable via USB 2.0 memory stick or ARINC 615A Ethernet. Honeywell is releasing a new Service Bulletin and Service Information Letter to provide specific instructions for obtaining and installing the Terrain and Envelope Modulation Databases for the MKV-A. The databases will be available for download at the same web site as the current MK V databases. While the databases utilize the same source data, the database file structures are different between the MK V and MKV-A and therefore customers will not be able to copy MK V databases into the MKV-A or vice versa. Separate media (and files) will be required to update MK V and MKV-A databases. Finally, please note that the MKV-A databases will have separate media files depending on whether the operator wants to upload via USB or ARINC 615A, and...
therefore you will see different database “source” files to select from on the website: MK V (PCMCIA), MKV-A (USB), and MKV-A (ARINC 615A)

- STCs – Operators who have installed RAAS, SmartRunway or SmartLanding using an STC will require an amendment to the STC prior to enabling RAAS, SmartRunway or SmartLanding on new aircraft delivered with the MKV-A EGPWS. Honeywell is in the process of updating Honeywell owned STCs. In addition, a new RCD file loadable via USB or an ARINC 615A Dataloader is required from Honeywell. Please contact Honeywell for more information and assistance in determining exact requirements.

**Supporting Documentation**

Honeywell has released the following customer related documentation for the MKV-A:
- Product Specification, PDS69000940-000 ([Link](#))
- Installation Manual, PDS69000940-501 ([Link](#))
- Interface Control Document, SYS69000940-700 ([Link](#))
- Line Maintenance Manual, PDS69000940-201 ([Link](#))
- Pilot’s Guide, PDS69000940-801 ([Link](#))
- End of MK V Production Announcement / Service Letter, D201312000067 ([Link](#))
- Component Maintenance Manual (1st Qtr 2014)

**Frequently Asked Questions**

- **Can I use a MK V EGPWS as a spare for the MKV-A EGPWS?** This will depend on the MKV-A aircraft installation design. If the installation uses the new Program Pin scheme with an APD or OSS then only a MKV-A may be used as a spare (since the MK V does not support this scheme) For example, Boeing production deliveries with the MKV-A will utilize the OSS configuration scheme and these aircraft will only work with MKV-A EGPWS computers. If an OEM or STC holder implements the MKV-A with the MK V compatible program pin scheme and includes both the MKV-A and MK V in their certification paper work it would be possible for a MK V to be a spare for the MKV-A.

- **Can I use a MKV-A EGPWS as a spare for a MK V EGPWS?** If the TC or STC holder includes the MKV-A in your aircraft certification then a MKV-A EGPWS could be used as a spare for a MK V EGPWS. In this case the TC or STC would include both the MKV-A and MK V on its “approved parts list.” Boeing will do this for 737, 777, and 747.

- **How do I obtain spare OSS, Database or Software Media for my aircraft?** For spare OSS media the operator must contact Boeing. Databases may be downloaded from the same web site as the current EGPWS databases and then copied to either a USB or Compact Disk depending which file format (upload method) is desired. Software is available from Honeywell.
- **Can I use my MK V RAAS RCD in my MKV-A EGPWS?** No, the media and file formats are different between the MK V (PCMCIA) and MKV-A (USB or ARINC 615A) and therefore new RCDs must be obtained from Honeywell.

- **We have MK V shop level repair capability, can we use the MK V ATP tester to test the MKV-A?** No, the MKV-A has new hardware and updated I/O and therefore a new ATP tester is required if shop level repair/update capability is required.

- **Can I still update software or databases on wing with the MKV-A?** Yes, software and database updates are possible on wing with a similar process to the current MK V. The only difference will be that the MKV-A requires different media (i.e. USB or ARINC 615A compact disk) than the MK V (which used the PCMCIA card).

- **I am receiving new production aircraft with the MKV-A, how do I install my currently STC’d RAAS/SmartRunway/SmartLanding into these units?** Since SmartRunway/SmartLanding (RAAS) requires STC authorization and the MKV-A is a new part number, an STC update is required to utilize these functions. Operators will have to develop operational methods to handle MKV-A without these functions until STCs are obtained. One option is to work with the OEM to obtain OEM RAAS functionality as an interim until an STC is obtained.