BFE/SSFE Avionics Selection Guide for A320 Family
Introduction
This guide is intended to provide the operator with a comprehensive list of the Honeywell selectable avionics and options available for the Airbus A320 family.

The guide is arranged by ATA (Air Transport Association) chapters for ease of reference. Key basic information is provided for each available product and option, including part number, quantity per aircraft, SFE/BFE status and offerability status.

- SFE – Supplier Furnished Equipment is procured and supplied by Airbus, either as part of the aircraft price, or as an selectable option.
- BFE – Buyer Furnished Equipment which is procured by the operator directly from the equipment supplier.
- OPT – Optional equipment or feature selectable by the operator.

Offerability
This information augments the Airbus Configuration Guide which does not include the full range of options available to the operator.

Selectable Supplier Furnished Equipment (SSFE)

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Buyer Furnished Equipment (BFE)

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### Key features

- New generation FMS hardware platform, derived from A350, with significant growth potential to meet future ATM requirements including world-wide FMS Navigation Database.
- Significantly improved reliability from removal of batteries (no scheduled maintenance).
- Increased flight efficiency and safety features available in Release 2 including managed CDA, initial 4-D trajectory (e.g. RTA in descent phase within +/- 10 seconds), swapping of active and secondary flight plans, modification of speed in DES managed mode, RNP AR, GLS, and FLS operations (FLS and RNP AR can now both be selected as options by the operator), 4 cruise flight level wind/temperature entries for optimum cruise flight level.
- All new color LCD MCDU.

### Benefits

- Unique fuel saving features including managed CDA and 4 cruise flight level wind/temperature entries
- Demonstrated high field reliability of over 200K FH for latest Pegasus 2 FMS hardware
- 95% spare memory capacity for future growth
- Increased processor performance and faster response
- High speed A615A Navigation Database loading

### Notes

Honeywell FMS Cardset installed in the FMGC is denoted by the FMGC equipment part number selected above (including latest hardware and software revision) applicable for each engine/airframe model.
**Cockpit Voice Recorder (CVR)**

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
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<th>SFE BFE</th>
<th>OFFERABILITY</th>
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<tr>
<td>23</td>
<td>HFR5-V</td>
<td>Solid State Cockpit Voice Recorder (CVR)</td>
<td>980-6032-023</td>
<td>1</td>
<td>SFE</td>
<td>Certified and offerable</td>
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</tbody>
</table>

**Key features**

The HFR5–V Cockpit Voice Recorder (CVR) is a fifth generation crash survivable recording device which supports mandatory cockpit voice and datalink recording. It simultaneously records four channels of audio as well as digital communications (datalink) data from the Air Traffic Services Unit (ATSU). The HFR5–V retains the most recent two hours of recorded information in crash survivable solid state memory. The HFR5–V CVR is designed to meet or exceed the minimum performance, environmental, and crash survival requirements as specified in EUROCAE ED-112. Complies with the airworthiness requirements defined in TSO -C123b and C177 (Datalink).

**Benefits**

- Demonstrated Crash Survivability Performance
- 90 Day Underwater Locator Beacon (ULB)
- High in-service reliability
- 5 Year warranty as standard

**Notes**

Download and playback supported by Honeywell Playback and Test Station (PATS-II) Ground Support Equipment.
Very High Frequency (VHF) Data Radio (VDR)

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
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<th>SFE</th>
<th>OFFERABILITY</th>
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<tr>
<td>23</td>
<td>RTA-50D</td>
<td>ARINC 750 VHF Data Radio (Mode 0/A/2 capable, with 8.33KHz channel spacing)</td>
<td>965-1696-051</td>
<td>3</td>
<td>SFE</td>
<td>Certified and offerable. Submit RFC to Airbus</td>
</tr>
</tbody>
</table>

Key features

- New generation ARINC 750 VHF Data Radio (VDR) with Digital Signal Processing (DPS) and growth potential to additional operating modes, such as VDL Mode 3, with software updates only. Mode 2 capable for ACARS AOC and ATC (CPDLC) messaging as well as Modes 0/A. Typical installation comprises three VDRs.

- Two of the radios are dedicated to voice communications while the third radio is used primarily for data communications and as a backup for voice communications.

- The RTA-50D VDR provides both 25 kHz and 8.33 kHz channel spacing to meet European airspace requirements.

Benefits

- Maintains commonality between A320CEO, A320NEO and A330 fleets for spares provisioning

- Direct replacement and interchangeable with Honeywell’s legacy RTA-44D VHF Data Radio

- Classified as “Best in Class” and on White List for European Datalink Services Requirements / PM-CPDLC

- 5 Year warranty as standard

Notes

Can be selected via RFC/MSCN process to Airbus.
High Frequency (HF) Radio System

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
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<td>23</td>
<td>FK516</td>
<td>HF Data Radio (HFDR)</td>
<td>965-0453-001</td>
<td>1 or 2</td>
<td>SFE</td>
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<td></td>
<td></td>
<td>Antenna Coupler</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>23</td>
<td>XK516D1</td>
<td>HF Data Radio (HFDR), Datalink Capable</td>
<td>965-0452-052</td>
<td>1 or 2</td>
<td>SFE</td>
<td>Certified and offerable</td>
</tr>
</tbody>
</table>

Key features
- Long Range Voice and Datalink Communications over HF radio wave frequency bands
- Allows for world-wide voice/data coverage when outside of VHF range
- Modern Digital Signal Processing ensure robust tuning and operational performance
- Fully compliant with the HF Data Link communication protocols specified in ARINC 635 and utilizes a 400W transceiver to ensure long range communications are always available
- Highly reliable and compliant with ARINC 753, ARINC 719 and ARINC 753.

Benefits
- Full voice and datalink capabilities outside of VHF coverage range (e.g. oceanic airspace, remote areas of the world). Usually lower message costs through service providers than other long-range communication systems (e.g. SATCOM)
- 5 Year warranty as standard

Notes
Basic aircraft has provisions for a single HF. Dual HF provisions and installations are optional, as are the provisions and activation of HF Datalink Communications. As an alternative, a voice-only HF Radio can be installed via the Airbus RFC/MSCN process.
Flight Data Recorder (FDR)

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
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<th>SFE BFE</th>
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<tr>
<td>31</td>
<td>HFR5-D</td>
<td>Solid State Flight Data Recorder</td>
<td>980-4750-002</td>
<td>1</td>
<td>SFE</td>
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</table>

Key features
The HFR5–D Flight Data Recorder (FDR) is a fifth generation crash survivable recording device which supports mandatory recording of flight data parameters. The HFR5–D retains the most recent twenty five hours of recorded flight data in a solid state crash survivable memory. ARINC 573/717/747 hardware interface is provided to accept serial Harvard Bi-phase data at a rates of up to 1024 twelve-bit words per second from the FDAU or equivalent equipment.

The HFR5–D FDR complies with the airworthiness requirements defined in TSO-C124b and fully satisfies the Minimum Operational Performance Specification (MOPS) for Crash Protected Airborne Recorder Systems as stated in ED-112.

Benefits
- Demonstrated Crash Survivability Performance
- 90 Day Underwater Locator Beacon (ULB)
- High demonstrated in-service reliability
- 5 Year warranty as standard

Notes
Download and analysis capability is supported with the Honeywell Enhanced Hand Held Download Unit (eHHDLU), Playback and Test Station (PATS-II) and Aircraft Data Recovery and Analysis Software (ADRAS-32).
### IntuVue™ 3-D Weather Radar System

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
<th>QTY</th>
<th>SFE BFE</th>
<th>OFFERABILITY</th>
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<tr>
<td>34</td>
<td>RP-1</td>
<td>Radar Processor with PWS and optional Hazard v2.0</td>
<td>930-1005-002</td>
<td>1 or 2</td>
<td>SFE</td>
<td>Certified and offerable</td>
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<td>34</td>
<td>TR-1</td>
<td>Transmitter/Receiver module</td>
<td>930-2000-020</td>
<td>1 or 2</td>
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<td>34</td>
<td>DA-1A or DA-1B</td>
<td>Single Antenna Drive Dual Antenna Drive</td>
<td>930-3000-001 or 930-3001-001</td>
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<td>Certified and offerable</td>
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<td>CP-2B or CP-2B</td>
<td>Control Panel for Hazard v2</td>
<td>930-6201-001 or 930-6201-002</td>
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<td>FP30-1</td>
<td>Flat Plate Antenna (30”)</td>
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<td>34</td>
<td>MT-3</td>
<td>RP-1 Mounting Tray</td>
<td>930-7002-001</td>
<td>1 or 2</td>
<td>SFE</td>
<td>Certified and offerable</td>
</tr>
</tbody>
</table>

### Key features
The RDR-4000 IntuVue® weather radar uses 3-D volumetric scanning and pulse compression technologies to provide a complete view of the weather from 0 to 60,000 feet across a 320 nm detection range. IntuVue’s weather analysis tools help pilots find the safest and most efficient route for improved fuel efficiency and passenger safety. The latest Hazard v2.0 version contains industry leading hail and lightning prediction technology, 60 nm extended range turbulence detection, Weather Ahead alerting, plus Convective Weather Discrimination for improved awareness of convective weather in stratus conditions.

### Benefits
- Improved situational awareness of both On-Path and Off-Path weather and vertical analysis mode
- Extended range turbulence, Weather Ahead alerting and predictive warnings for hail, lightning and windshear reduce the risk of encountering hazardous weather
- Fully independent dual controls for both pilots
- Dual redundant antenna drive reduces delays, turn backs and diversions

### Notes
Select one P/N from each row. Hazard v2.0 is chosen by selecting the associated CP-2B. Dual system for either version can be selected by choosing quantity 2 where optional and selecting the DA-1B (dual).
Enhanced Ground Proximity Warning System (EGPWS)

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<th>TYPE</th>
<th>TITLE</th>
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<th>SFE BFE</th>
<th>OFFERABILITY</th>
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<td>34</td>
<td>MKV-A</td>
<td>Enhanced Ground Proximity Warning System</td>
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<td>SFE</td>
<td>Certified and offerable Submit RFC to Airbus</td>
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<td></td>
<td>(EGPWS)</td>
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<td></td>
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<td></td>
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<tr>
<td>34</td>
<td>RAAS</td>
<td>Runway Awareness &amp; Advisory System (RAAS)</td>
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<td></td>
<td>SFE OPT</td>
<td>Certified and offerable Submit RFC to Airbus</td>
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</table>

**Key features**
- Terrain Awareness and Warning System (TAWS) provides terrain alerting and display functions with additional features meeting the requirements of TSO C151b Class A TAWS
- EGPWS uses inputs including GPS position, attitude, altitude, airspeed, and glideslope deviation. These are used with internal terrain, obstacles, and airport runway databases to predict a potential conflict between the aircraft flight path and terrain or an obstacle
- Includes features such as Peaks, Obstacles, Envelope Modulation, Terrain Clearance Floor, Runway Field Clearance Floor and Geometric Altitude.

**Benefits**
- Industry leading terrain awareness and warning system installed on >90% of commercial aircraft worldwide
- Supports Runway Awareness & Advisory System (RAAS)
- Supports Runway Overrun Protection System (ROPS)
- Over 10,000 runway ends enabled for ROPS & RAAS
- New MKA-V EGPWS provides state of the art hardware platform with future growth capability.
- USB Database loading

**Notes**
- Upgrade to EGPWS from the basic offered TAWS option via Airbus RFC/MSCN process
- TCAS and Dual ATC (Mode S) DO-260B Transponder must also be selected with EGPWS option
- No Cost Option for EGPWS, TCAS andDual ATC (Mode S) DO-260BTransponder
# Traffic Alert & Collision Avoidance (TCAS) / Transponder

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<th>ATA</th>
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<td>34</td>
<td>TPA-100B</td>
<td>Next Gen ACAS Processor with ATSAW and Change 7.1</td>
<td>940-0351-005</td>
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<td>ANT-81A</td>
<td>Antenna</td>
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<td>TRA-100B</td>
<td>Mode S Transponder (DO-260B)</td>
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<td>ATSAW</td>
<td>Airborne Traffic Situational Awareness (ATSAW)</td>
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<td></td>
<td>OPT SFE</td>
<td>Certified and offerable Submit RFC to Airbus</td>
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</table>

## Key features

The TCAS II Change 7.1 updates reduce the risk of possible mid-air collisions in increasingly congested skies and are mandatory for operation in EASA regulated airspace. Change 7.1 is compatible and recommended for operations in regions where existing TCAS Change 7.0 remains prevalent.

- Optional ADS-B In ATSAW features include In Trail Procedures (ITP), Vertical Separation on Approach (VSA) and Airborne Traffic Situational Awareness (AIRB) for greater safety, improved efficiency and fuel savings.
- Delivers compliance with TSO-C119c and ETSO-C119c, including both RTCA/DO-185B for TCAS II Change 7.1.

Newly designed TRA-100B Mode S transponder meets DO-260B with growth capacity for future mandates.

## Benefits

- Extended active surveillance range of 100nm and demonstrated passive surveillance range of >120 nm for improved situational awareness
- Hybrid surveillance for improved operation in high density traffic
- On-wing software loadable to reduce cost and time of performing upgrades
- TCAS event tool to decode and playback traffic events
- Growth capability for new features and mandates with ensured compatibility between TCAS and Transponders
- 5 Year warranty as standard

## Notes

EGPWS must also be selected with TCAS and Dual ATC (Mode S) DO-260B Transponder option

No Cost Option for EGPWS, TCAS and Dual ATC (Mode S) DO-260B Transponder
Radio Altimeter System

<table>
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<tr>
<th>ATA</th>
<th>TYPE</th>
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<td>ALA-52B</td>
<td>Low-Range Radio Altimeter</td>
<td>066-50007-0432</td>
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<td>Certified and offerable</td>
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<td>ALA-52B</td>
<td>Radio Altimeter Antenna</td>
<td>071-50025-0400</td>
<td>4</td>
<td>SFE</td>
<td>Certified and offerable</td>
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</tbody>
</table>

**Key features**
- Low-Range Radio Altimeter system generally in accordance with ARINC 707.
- Superior digital RF front-end electronics and Digital Signal Processing (DSP) for robust capture and elimination of false tracking.
- Demonstrated performance up to and beyond 5,000 feet Above Ground Level (AGL), which resulted in actual field reliability of greater than 50,000 Flight Hours (FH).
- Recently refreshed and upgraded using state of the art digital RF technology to significantly improve reliability and performance.

**Benefits**
- High reliability achieved with new digital RF technology derived from the Honeywell Radio Altimeter from 787
- New software for improved robustness to signal leakage
- Superior performance up to and beyond 5000 feet Above Ground Level (AGL)
- Enhanced system BITE to isolate antenna/coax faults
- Enhanced multipath and double bounce rejection
- 5 Year warranty as standard
Automatic Director Finder (ADF) Receiver

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
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<td>34</td>
<td>DFA-75B</td>
<td>Automatic Direction Finder (ADF)</td>
<td>066-50013-1202</td>
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<td>SFE</td>
<td>Certified and offerable</td>
</tr>
</tbody>
</table>

**Key features**
The DFA-75B ADF Receiver also provides digital Morse Code decoding outputs, fault memory, and built-in test equipment (BITE) interfaces for use in a Central Maintenance Computer (CMC) or in a Centralized Fault Display System (CFDS) as per ARINC 604 and Airbus ABD-0048.
The DFA-75B ADF Receiver uses a combined ADF Loop and ADF Sense antenna for RF inputs, a control unit for frequency selection (ARINC 429 serial digital), and an audio output sink for Morse Code functions. Bearing output to a RDMI (Radio Digital Magnetic Indicator) display or equivalent is transferred via an ARINC 429 data bus.

**Benefits**
- Refreshed technology to address future obsolescence
- High demonstrated in-service reliability
- 5 Year warranty as standard
Distance Measuring Equipment (DME) Interrogator

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<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
<th>QTY</th>
<th>SFE BFE</th>
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<td>34</td>
<td>DMA-37B</td>
<td>Distance Measuring Equipment</td>
<td>066-50013-1222</td>
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<td>SFE</td>
<td>Certified and offerable</td>
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</tbody>
</table>

Key features
The DMA-37B DME Interrogator is a very powerful scanning device. In addition to stations selected by the flight crew, it automatically searches for up to five stations within a 300-nautical mile range. The DMA-37B provides fast scan and digital Morse Code decoding outputs, fault memory, and built-in test equipment (BITE) interfaces for use in a Central Maintenance Computer (CMC) or in a Centralized Fault Display System (CFDS) as per ARINC 604 and Airbus ABD-0048.

The DMA-37B DME Interrogator requires an L-Band, vertically polarized antenna for RF inputs and outputs, a control head or flight management system for tuning, and an audio output sink for Morse Code functions as provided in the Airbus installation.

Benefits
- Refreshed technology to address future obsolescence
- Demonstrated in-service reliability
- 5 Year warranty as standard
### Integrated Multi-Mode Receiver (IMMR)

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
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<th>SFE BFE</th>
<th>OFFERABILITY</th>
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<tbody>
<tr>
<td>34</td>
<td>IMMR</td>
<td>Integrated Multi-Mode Receiver (ILS, GLS, FLS, RNP-AR and SBAS capable with integrated VOR/MB)</td>
<td>69002602-0101</td>
<td>2</td>
<td>SFE</td>
<td>Certification Planned 2018 with EIS 2019 (TBC)</td>
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<td>34</td>
<td>ANA-55G</td>
<td>GPS SBAS Capable Antenna</td>
<td>071-50029-5510</td>
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<td>SFE</td>
<td>Certified and offerable</td>
</tr>
</tbody>
</table>

**Key features**

The IMMR meets industry-defined sensor requirements for Instrument Landing Systems (ILS) and Global Navigation Satellite Systems (GNSS). This includes support for GLS CATI requirements, SBAS/LPV support, and future growth to GLS CATII/III as well as multi-constellation GNSSU support with only a software modification to the unit.

In addition, the IMMR contains a fully integrated VHF Omni Receiver (VOR)/Marker Beacon (MB) receiver which eliminates the need for any separate VOR/MB unit(s) in Airbus applications. It thereby saves acquisition cost, DOC (lower aircraft weight, reduced number of LRU’s), and maintenance costs (reducing LRU count from four 3-MCU LRU’s down to two).

**Benefits**

- New generation Integrated Multi Mode Receiver (IMMR) certified with GLS CAT I, FLS, RNP-AR and SBAS
- Integrated VOR / Marker Beacon eliminates two LRU's from the aircraft, saving weight, space and costs
- Growth capability built-in for future capabilities such as GLS CAT II/III and Multi-Constellation
- Backwards compatible and retrofitable in place of existing ARINC 755 MMRs
- 5 Year warranty as standard

**Notes**

Prior to certification of the IMMR, the existing Honeywell RMA-55B MMR and RVA-36C VOR/MB Receiver can be installed.
### Automatic Fixed Emergency Locator Transmitter (ELT)

<table>
<thead>
<tr>
<th>ATA</th>
<th>TYPE</th>
<th>TITLE</th>
<th>EQUIPMENT P/N</th>
<th>QTY</th>
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#### Key features
The RESCU 406 AFN2 automatically activates upon impact in the event of a crash. The transmitter’s internal navigation module connects with the aircraft navigation data bus to help reduce search time by transmitting the latitude/longitude information in the 406 MHz signal in the event of activation. Also available is a smaller/lighter Aircraft Identification Module (AIM) optional feature that helps simplify transmitter movement from one aircraft to another by automatically reprogramming the AFN2 unit.

#### Benefits
- Weight / Size reduction over existing fixed ELTs
- Built in Navigation Aircraft Identification Module
- Reprogrammable without opening unit
- Compliant to FAA Issue Paper on lithium batteries
- Backward compatible with RESCU 406 AFN

#### Notes
Prior to certification of the AFN2, the existing Honeywell AFN Fixed ELT can be installed.
**Portable Emergency Locator Transmitter (ELT)**

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**Key features**
The new RESCU 406 SG is a completely new design portable ELT which is crew deployable and activates instantly upon immersion in water. The new design also features a built in GPS receiver to transmit the current location for faster search and rescue. It’s rugged design ensures the device is robust, reliable and available for use when needed.

Using a mounting bracket with flexible release mechanism, the transmitter is quick to install with a compact form factor that supports flexibility in mounting location. Operated with minimal crew training, the new design includes a water sensor for automatic operation, flotation device and tether.

**Benefits**
- Built in GPS Receiver to improve search and rescue
- Reprogrammable without opening unit
- Flotation ring and tether for in-water use
- Aluminium machine housing for ruggedness
- Compliant to FAA Issue Paper on lithium batteries

**Notes**
Prior to certification of the SG ELT, the existing Honeywell RESCU 406 SE ELT can be installed.
**Airline Operational Control (AOC) Software**

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**Key features**

The ATSU-AOC software provides a powerful and highly configurable solution for airlines to optimize the use of AOC datalink to improve fleet operations and efficiency. OUT/OFF/ON/IN (OOOI) movement messages and other common functions such as free text, delay reports and weather requests are provided in the Airbus AOC standard database. No certification is necessary for adaptation of this database, as the proprietary partitioned software architecture allows changes to be made to the AOC Database to allow new or different functionality to be implemented without affecting the certification status of the AOC software. Commonality with the Honeywell MKII/II+ family of ACARS CMU’s is also maintained, enabling easy adaption of the solution across all fleet types. The Honeywell AOC Software is recognized in the industry as the most flexible and readily reprogrammable ACARS AOC software available.

**Benefits**

- Fully customizable to the airline specific requirements via the Honeywell ART (ACARS Reconfiguration Tool)
- Consultation and customization services available from Honeywell Datalink specialists
- Supports routine and non-routine positions report through customization

**Notes**

Airbus AOC standard databases are available in either LBS or KG (Tons) units (FOB) and are included with the Honeywell AOC Software selection without any additional charges.