STC Description Sheet

Superior Weather Awareness - The Honeywell IntuVue™ RDR-7000 Weather Radar offers rotorcraft operators the lightest weight and most technically advanced radar available.

Honeywell and Scandinavian Avionics are delighted to introduce the Honeywell IntuVue™ RDR-7000 Weather Radar upgrade for the AW139 Long-Nose helicopter replacing the aging Primus® 660 and Primus® 701 series radars.

The ScanAv EASA approved STC provides an off-the-shelf certified weather radar upgrade solution to all Honeywell approved Channel Partners and AW139 Long-Nose operators with existing Primus® P701 and P660 Weather Radars Installed to address obsolescence and provide new and enhanced features (refer to System Functionality and Modes of Operation).

This STC requires no aircraft structural work. The design incorporates the existing radar mounts and cable feedthrough used for the legacy Primus® P701 and P660 Weather Radars.

Note: Honeywell is no longer accepting orders for new P660 and P701 Series weather radars and is planning to end repair support by Q2 2023, refer to As per SIL, D201909000028 and D201909000029, respectively.

Approvals

Number	STC	Holder	Authority	Initial Issuance
10078041	STC	Scandinavian Avionics Design APS (Scan Av)	EASA	22 December 2021
-	Validation	Scandinavian Avionics Design APS (Scan Av)	CASA (*)	28 March 2022
SR04718NY	Validation	Scandinavian Avionics Design APS (Scan Av)	FAA	31 March 2022
**A-22-0088	Validation	Scandinavian Avionics Design APS (Scan Av)	TCCA	22 June 2022
2022S07-02	Validation	Scandinavian Avionics Design APS (Scan Av)	ANAC	08 July 2022

(*) the Australian market (CASA) is automatically covered by the EASA STC (as per regulation 21.114).

(**) follow the link http://wwwapps.tc.gc.ca/saf-sec-sur/2/nico-celn/ enter the EASA STC no in the certificate # field.

Approved models

Manufacturer	Model(s)	Modifiers	Specifics (Existing Radar)
Leonardo	AW139	Long Nose	P70X
Leonardo	AW139	Long Nose	P660

Customer Survey Questionnaire

A customer questionnaire, 450429-1134, can be made available upon request to installers/end customers to help determine if their existing configuration is compatible with this STC without deviations.

STC Contents

This STC package contains:

- Rotorcraft Flight Manual Supplement (RFMS)
- Instruction for Continued Airworthiness (ICA)
- Drawing List (MDL)
- Aircraft Maintenance Manual (AMM) Supplement
- Master Minimum Equipment List (MMEL) Supplement
- Technical Order/Installation Instructions
- Diagrams, Drawings, Kits & Parts List, and Configuration Sheets

Installation Kit Contents

The STC offers multiple Installation Kit variants each containing a Unit kit, Electrical kit and a Mechanical kit, which include hardware LRUs, adapter plate, wire harness, fixings and relevant certifications (i.e. Form 1). These are required by the STC for the RDR 7000 installation. Refer to the parts list section for part numbers and descriptions for each kit variant.

For orders and pricing information, consult the latest applicable Honeywell Sales Bulletin.

STC Right To Use (RTU) Fees

STC is made available to Honeywell Authorized dealers and operators. For orders and pricing, consult Sales focal below for the latest applicable Honeywell Sales Bulletin.

Contacts

For Installation Kit and RTU purchases, contact your regional HAT (Honeywell Aerospace Trading) representative or consult the latest applicable Honeywell Sales Bulletin.

Honeywell Technical Sales (D&S) - Adam Gavrich (adam.gavrich2@honeywell.com)

Honeywell Technical Sales (BGA) - Steven Gomez (steven.gomez@honeywell.com)

Scandinavian Avionics – Mads Dam (MSD@scanav.com)

System Functionality and Modes of Operation

The RDR-7000 is designed to be configurable to provide an easy retrofit solution across a large variety of aircraft types and to allow for different feature sets to be used by the end-customer.

There are two general installed modes of operation for the RDR-7000 when installed on the AW139 platform; one that uses a 3-D/Volumetric Buffer (VB) weather processing, and one that uses Real Beam weather processing. The configuration in use is selected via configuration parameters in the base configuration, PN CF69003862-XXX.

Refer to the latest applicable RDR-7000 Installation Design Guide and Line Maintenance Manual (LMM), for applicability and detailed information on configuration parameter selections.

RDR-7000 modes and features for the AW139 installation are denoted by (SM), (SC), (UM) and (UC).

(SM) standard for P701 replacements configurations	
	Real-Beam Maritime Mapping (GMAP1) with built-in Sea Clutter Reduction

(SC) standard for either configuration	
	VB Automatic Weather display mode (WX-ALL); Off-Path / non-relevant weather is cross-hatched
	VB Manual/Constant Altitude display mode (WX-MAN); Pilot-selectable altitude slices by Kft
	Built-in Ground Clutter Suppression using internal topography database
	Enhanced Turbulence detection & display up to 40 NM
	VB Weather Target Alerting (WX-Ahead); works even in GMAP and Variable Gain modes
	3D-Volumetric Ground Mapping (GMAP or GMAP2) with built-in Weather Clutter Reduction

(UM) upgradable for P701 replacement configurations	
	Oil & Gas / Large boat target detection & display (overlaid pre-rendered icons)
	Search & Rescue (SAR) / small target detection, tracking, & display (overlaid pre-rendered icons)

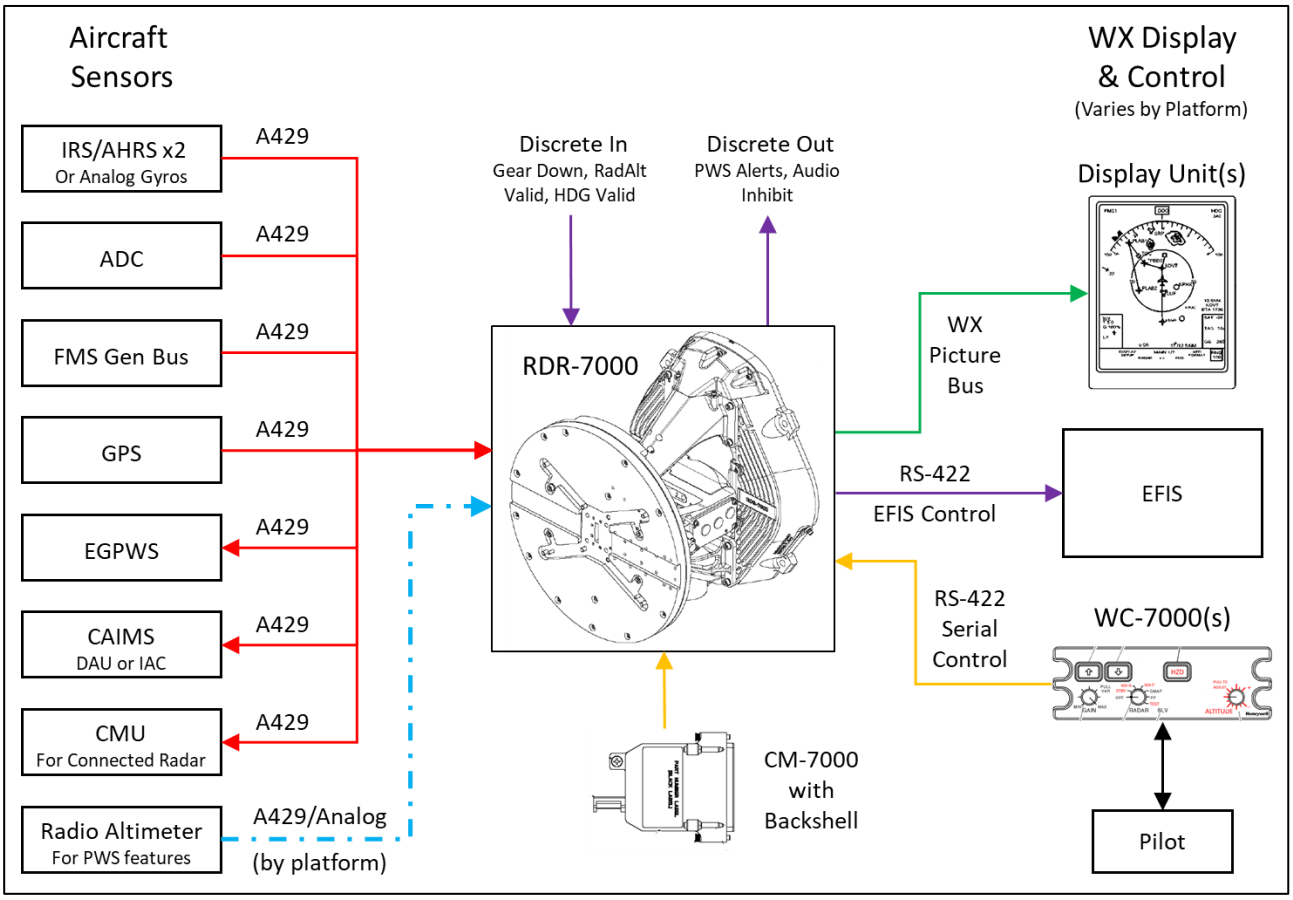
(UC) upgradable for either configuration	
	VB On-Path Weather display mode (WX-PATH); Off-Path weather is removed / de-cluttered
	Extended-Range Turbulence detection & display up to 60 NM
	3D-Volumetric REACT detection & display; works even in Variable Gain mode
	Predictive Hail & Lightning detection & display (overlaid pre-rendered icons)

Description of Equipment

The RDR-7000 system consists of three LRUs: the ART-7000, FP-7000, and CM-7000.

The ART-7000 Antenna Receiver & Transmitter is the main LRU which performs all signal and interface processing, including the interface with the aircraft flight deck control and displays. It hosts the antenna gimbal and drive system, and the transmit/receive circuitry. The FP-7000 is the Flat Plate antenna which focuses the radar energy into a narrow beam. The CM-7000 Backshell houses the configuration module, which characterizes how the aircraft I/O is configured and provides the ability to turn on and off customizable features.

The ART-7000 and FP-7000 are mounted in the nose radome of the host aircraft, replacing the existing installed legacy radar being updated. The way the ART-7000 interfaces with the avionics, specifically for WX display bus (WXPD) and WX control (RS-422 SCI from the WX controller and to the EFIS), differs between aircraft platforms. This is both due to different generations of Honeywell Avionics systems, as well as OEM-specific cockpit variations.



Parts list

Part No.	Description	Comments
Base Hardware		
69003810-101	ART-7000 - Antenna Receiver & Transmitter	
69003831-001	12 " Flat Panel Antenna	
69003851-001	Connector Back Shell Assembly, Side Exit	Includes Configuration Module
7008471-7418	WC-7880 Weather Radar Controller	Drop in replacement for WC-660 (Non NVIS, 5NM range)
7008471-7422	WC-7880 Weather Radar Controller	Drop in replacement for WC-660 (Non NVIS 2.5NM range)
7008471-7712	WC-7700 Weather Radar Controller	Drop in replacement for WC-700 (Non NVIS)
Optional Hardware		
7008471-7424	WC-7880 Weather Radar Controller	Drop in replacement for WC-660 (NVIS)
7008471-7710	WC-7700 Weather Radar Controller	Drop in replacement for WC-700 (NVIS)
3000035-112	AW139 3D Buffer w/ Maritime Install Kit (includes WC-7700 NVIS Controller)	For customers using WC-7700 P/N: 7008471-7710
3000035-212	AW139 3D Buffer w/ Maritime Install Kit (includes WC-7700 Non-NVIS Controller)	For customers using WC-7700 P/N: 7008471-7712
3000035-423	AW139 3D Buffer Install Kit (includes WC-7880 NVIS Controller)	For customers using WC-7880 P/N: 7008471-7424
3000035-523	AW139 3D Buffer Install Kit (includes WC-7880 5NM range Non-NVIS Controller)	For customers using WC-7880 P/N: 7008471-7418
3000035-623	AW139 3D Buffer Install Kit (includes WC-7880 2.5NM range Non-NVIS Controller)	For customers using WC-7880 P/N: 7008471-7422
Base Software		
SW69003810-504	ART-7000 Application Software	Required; factory-loaded into ART-7000
996-1232-547	Topography PDI	Required; factory-loaded into ART-7000
SWM69003869-502	MagVar Coefficient PDI	Required; must be field-loaded via SD card
CF69003862-050	AW139 3D Buffer Base Configuration PDI	Required for AW139 3D Buffer (for P660 upgrade); must be field-loaded via SD card
CF69003862-052	AW139 3D Buffer w/ Maritime Base Configuration PDI	Required for AW139 3D Buffer w/ Maritime (for P701 upgrade); must be field-loaded via SD card
Optional Software		
CU69003862-102	AW139 3D Buffer User Configuration PDI	Optional for adding billable features to AW139 3D Buffer (for P660 upgrade); must be field-loaded via SD card
CU69003862-103	AW139 3D Buffer w/ Maritime User Configuration PDI	Optional for adding billable features to AW139 3D Buffer w/ Maritime (for P701 upgrade); must be field-loaded via SD card
SWM69003870-501	Search & Rescue (SAR) Library PDI	Required if SAR Targets are enabled for AW139 3D Buffer w/ Maritime (P701 upgrade)

Installation

Installation Prerequisites

- Existing P-660 radar and controller installed, or P-701 radar and controller installed.
- Standard Tools for the Helicopter Type required for Installation.
- Existing installations must have interfacing LRUs which meet the conditions specified in section XIV of *Technical Order for RDR-7000 Weather Radar Installation in a Leonardo S.p.A. Helicopter, Model AW139 Series, 3000035-TO..*

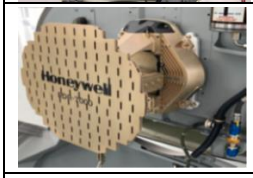
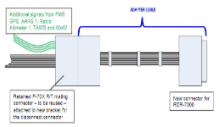
Note: This STC has no explicit limitations regarding EPIC SW Phases.

Installation time

Estimated labor hours: 32 hours (estimated aircraft grounding time: Nominally 4 days).

- 8 hours: Remove existing legacy radar and wiring
- 16 hours: Install new RDR-7000 and wiring
- 8 hours: Configure and test RDR-7000

Installation Description

	• Remove the P70X / P660 Weather Radar R/T, Power Inverter, Waveguide, WX Controller / Beacon Controller and Weather Radar Antenna Pedestal • Remove the P-70X / P660 Radar Controller (to be replaced by WC-7000) and the Beacon Controller. • Remove the waveguide and waveguide bulkhead feedthrough and install the cover plate.
	• Bolt the adapter plate to the bulkhead. The adapter plate is designed to retain the existing antenna alignment for the newly installed radar. • Bolt the radar to the adapter plate.
	• Install WX Controller to the center pedestal at location of the removed Weather Radar Control panel. Secure in Dzus rail. • Install DZUS blanking plate P/N: JA71-005 to the center pedestal in location of the removed Beacon Controller (applicable for P-701 replacements only)
	• Re-use the existing cable mating connector and use the existing feedthrough for the new cable. • The adapter cable will interface the RDR-7000 with the retained harness using the retained mating connector after the removed P-70x weather radar.
	• Re-use the interfaces to EFIS, AHRS 2, ADC, WX Controller, and CAIMS (if applicable). • Installed new wires to the retained P-70X connector for new interfaces to FMS, GPS, AHRS 1, Radio Altimeter 1 and TAWS (AHRS 1 and TAWS for redundancy only) and WoW (weight on wheel) in order to provide data required for the Volumetric Buffer function.
	• Install the software using the SD Card (remove SD Card prior to flight).

STC Limitations/Conditions

The Installation of the RDR-7000 weather radar is limited only to the following AW139 helicopter S/N's (Long Nose Configuration): 31201 (Italian) and higher 41201 (USA) and higher. As a prerequisite for the RDR-7000 weather radar installation, an existing Primus 701 or 660 weather radar system must be installed.

Note: Although the -7424 and 7710 WX Controllers are NVIS compatible, NVIS compliance is not yet available (anticipated late 2022).

Rev History

Revision	Date	Comment
0	-	Initial Revision
1	29-Jun-2022	Included TCCA Validation
2	11-Jul-2022	Included ANAC Validation

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