

Honeywell

SYSTEM DESCRIPTION AND INSTALLATION MANUAL

PRIMUS 700/700A/701/701A

Table 1-5. Receiver Transmitter Leading Particulars

Characteristic	Specification
Dimensions (maximum):	
• Length (excluding connector and waveguide)	15 in. (381 mm)
• Width	5.0 in. (128 mm)
• Height	7.6 in. (194 mm)
RT Weight (maximum):	
• WR-700	15.8 lb (7.2 kg)
• WR-701	16.0 lb (7.3 kg)
• WR-700A	17.0 lb (7.75 kg)
• WR-701A	17.0 lb (7.75 kg)
RT Mounting Tray Weight (maximum):	
• MI585010-1	1.0 lb (0.46 kg)
• MI585146-1	1.1 lb (0.5 kg)
• 7031800-901, -902	2.0 lb (0.92 kg)
Power requirements (See Note)	
• V dc	28 V dc, 5.00 A (7.50 A max at low voltage) (20 V dc min to 33 V dc max)
• V ac	115 V ac/400 Hz, 40 VA (including antenna power) (97 V ac min to 134 V ac max)
Cooling	Blower (Extractor)
Transmitter:	
• Frequency:	
- PRIMUS 700/700A	9375 ± 25 MHz
- PRIMUS 701/701A	9375 ± 5 MHz
• Power	8.0 kW, nominal
• Pulswidth	0.1, 0.33, 0.55, 0.7, 1.6, 2.35, 3.5 μs (determined by selected range and mode)
• PRF (average)	30, 210, 450, 660, 870, 1080 Hz (determined by selected range and mode)
• Emission Class	36M0P0N
• FCC Identifier	GB84DVWR701

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Table 1-5. Receiver Transmitter Leading Particulars (cont)

Characteristic	Specification
Radar Receiver: - Noise Figure 9 dB nominal - MDS -111 dBm - Intermediate Frequency (IF) 40 MHz - IF bandwidth 1 MHz or 15 MHz	
Beacon Receiver: - Noise Figure 10 dB nominal - MDS -84 dBm - Intermediate Frequency (IF) 80 MHz - IF bandwidth 24 MHz - WXP Display Ranges (Honeywell Displays) 0.5, 1, 2.5, 5, 10, 25, 50, 100, 200, 300 NM - ARINC 708/453 Display Ranges Standard ranges are 0.5, 1, 2.5, 5, 10, 20, 40, 80, 160, 240, 320 NM.	
TSO Compliance: - PRIMUS 700/701/700A/701A C63c Class 7 (DO-173, Airborne Weather and Ground Map Pulsed Radar) - PRIMUS 701/701A C102 (DO-172, Airborne Radar Approach and Beacon System for Helicopters) - Software DO-178A Level 2 - Environmental See Table 1-6	
NOTE: Power must conform to DO-160B.	

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Table 1-6. Receiver Transmitter DO-160B Environmental Categories

Characteristic	Radar System		Comments
	P700, P700A, P701A	P701	
Temperature and Altitude	C2	C2	-55 to +70 °C/45,000 ft (test extended to 45,000 ft).
Temperature Variation	B	B	For equipment internal to aircraft in a nontemperature controlled area such as a radome.
Humidity	A	A	Intended for use in a standard humidity environment.
Operation Shocks and Crash Safety (See Note)	PASS	PASS	
Vibration	JLY	JLN/JLY	For helicopter and fixed wing applications
Explosion Proofness	X	X	Not tested
Waterproofness	X	X	Not tested
Fluids Susceptibility	X	X	Not tested
Sand and Dust	X	X	Not tested
Fungus Resistance	X	X	Not tested
Salt Spray	X	X	Not tested
Magnetic Effect	A	A	DC deflection distance is between 0.3 m and 1.0 m.
Power Input	A	A	Intended for constant frequency ac generators or transformer rectified dc.
Voltage Spike	A	A	For installations with a high degree of voltage spikes.
Audio Frequency Susceptibility	Z	Z	For all types of power inputs.
Induced Signal Susceptibility	A	A	For applications where interference-free operation is desired.
Radio Frequency Susceptibility	A	A	For applications where interference-free operation is desired.
Radio Frequency Emission	A	A	For applications where interference-free operation is desired.
NOTE: DO-160B does not have a letter designator for the operational shocks and crash safety test.			

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C. Antenna Pedestal (WA-700)

- (1) The WA-700 antenna is a remote-mounted LRU, which contains the flat-plate radiator, elevation and azimuth drive motors, and associated electronics.
- (2) The antenna unit is intended to be cantilever-mounted on a forward facing bulkhead under a suitable radome.
- (3) Table 1-7 gives the leading particulars of the antenna pedestal.

Table 1-7. Antenna Pedestal Leading Particulars

Characteristic	Specification
Dimensions (maximum)	See Figure 5-5, Antenna Outline and Installation Drawing
Weight (maximum):	
• 10-, 12-, and 10x14-inch flat plate	8.6 lb (3.92 kg)
• 18-inch flat plate	10.9 lb (5.0 kg)
• 24-inch flat plate	15.3 lb (7.0 kg)
Power requirements (See Note)	None (supplied from RT unit)
TSO Compliance:	
• MI585467-VAR	C63c (DO-173), C102 (DO-172)
- Environmental	For 10, 12, and 10x14-inch antennas: DO-160B D2A/JLY/XXXXXXXXAAAAA
- Temperature	For 12x18 and 18-inch antennas: DO-160B D2A/JL/XXXXXXXXAAAAA
- Altitude	-55 to +70 °C
• MI585354 with 24-inch antenna	55,000 feet
- Environmental	C63c (DO-173)
- Temperature	DO-160B D2A/JL/XXXXXXXXAAAAA
- Altitude	-55 to +70 °C
Beam Width/Gain:	55,000 feet
• 10-inch radiator	10 degrees/26 dB
• 12-inch radiator	7.9 degrees/28 dB
• 10x14-inch radiator	9 by 7 degrees/27.5 dB
• 18-inch radiator	5.6 degrees/31 dB
• 24-inch radiator	4.2 degrees/33 dB

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PRIMUS 700/700A/701/701A

Table 1-7. Antenna Pedestal Leading Particulars (cont)

Characteristic	Specification
Scan Angle:	
• Wide	120 degrees
• Narrow	60 degrees
Scan Speed:	
• Wide scan (120 degrees)	12 looks per minute
• Narrow scan (60 degrees)	24 looks per minute
Stabilization	Two-axis line-of-sight
Elevation Excursion	± 30 degrees combined pitch/roll/tilt
NOTE: Power must conform to DO-160B.	

D. Indicator (WI-700)

- (1) The WI-700 indicator is an instrument, panel-mounted unit, which contains the color display tube, memory and logic circuitry, and power supply circuitry.
- (2) The indicator also contains all the controls required to operate the PRIMUS 700/700A system.

NOTE: A separate controller (WC-701) is required to give the PRIMUS 701/701A beacon control elements.

- (3) Control signals are carried from the indicator to the RT using a 2-wire enhanced serial control interface (ESCI) bus. Picture data is carried from the RT to the indicator using a 2-wire enhanced weather radar picture data (EWXPD) bus.
- (4) Table 1-8 gives the leading particulars of the WI-700 indicator. Indicator controls are given in Table 1-9.

Table 1-8. Indicator Leading Particulars

Characteristic	Specification
Dimensions (maximum):	
• Length (excluding knobs)	12.24 in. (311 mm)
• Width	6.25 in. (159 mm)
• Height	4.81 in. (122 mm)
Weight (maximum)	
• Indicator	11.0 lb (5.0 kg)
• Indicator Mounting Tray	0.5 lb (0.25 kg)