



Shipcheck/Installation Brief for Man Overboard Indicator (MOBI) System

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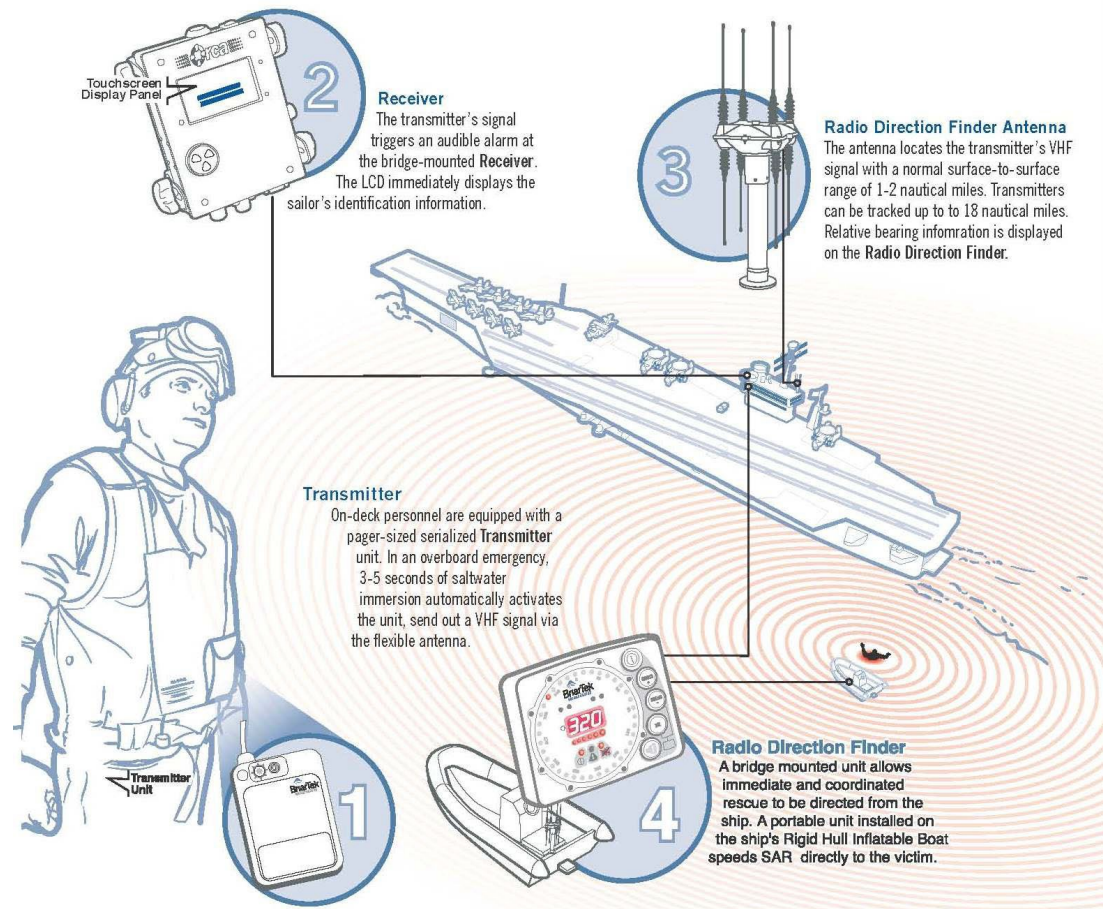
URL: www.briartek.com

BACKGROUND

- The MOBI Program was initiated in FY99 to investigate the feasibility of integrating a commercial off-the-shelf (COTS) man overboard indicator for Navy use that would send a signal to the ship and locate the individual to effect rescue.
- The Navy evaluated a number of commercial devices for use as a MOBI. The Overboard Recovery Communications Apparatus or ORCA[®] manufactured by BriarTek Inc. was determined to be the system best suited for Navy MOBI application.
- MOBI is installed on 90%+ of all Navy Ships
- RHIBs comes equipped with MOBI Direction Finder Display and Antenna (BOATALT GEN47B)
- MOBI will sound an alarm on all MOBI equipped ships within a mile of the MOB
- MOBI is well supported by the vendor and NAVSEA

SYSTEM DESCRIPTION

- MOBI is a personal saltwater or manually activated alarm system that aids in the detection, location, and recovery of sailors who become man overboard victims.
- The MOBI system consists of a transmitter (TX), receiver (RX) and direction finder (DF). The MOBI TX, which includes an 24-inch flexible antenna, is installed on the MK-1 float coat and the Stearns inherently buoyant lifejacket.
- If a sailor goes into the water while wearing the transmitter, the TX automatically activates emitting a 121.5 MHz signal. The RX identifies the sailor as well as ship from which he/she fell. The DF locates (relative bearing) the sailor. SAR assets can also track the signal.



- Replacement for TX103
- Initial outfitting on CVNs
- Features:
 - A - Antenna w/ strain relief
 - B – Battery check/deactivation recess
 - C - Water sensors
 - D - Distress marker light (DML)
 - E - Battery door
 - F - Antenna tip holder

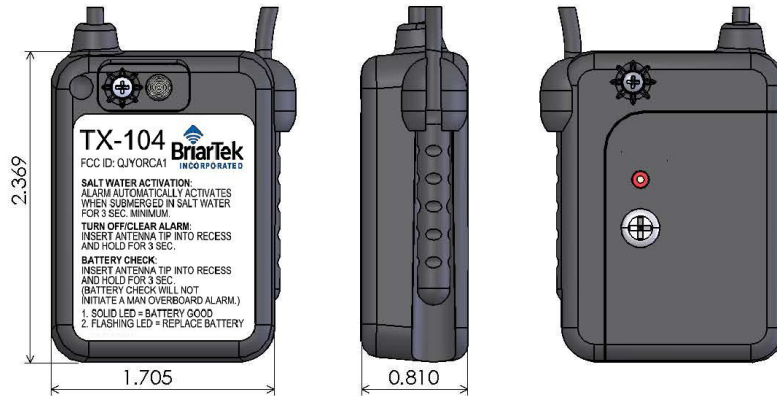


MOBI Hardware – TX104 (Cont.)

System	Transmitter
Part Number	ORCATX-104
Description	Transmitter

Specs:

- Weight: 2.5 oz
- Power: 100 mW
- Tracking Range: 2 NM from small craft, 5 NM from ship, 20 NM or greater from aircraft
- Alerting Range: 1 NM to receiver
- Power Source: One (1) CR123 lithium battery
- Battery Life: 3 years (Armed mode); 24 hours continuous once activated (Transmit mode)
- Distress marker light
- External antenna
- Activation: saltwater
- Modulation Frequency: 121.5 MHz FM
- Includes unique identification
- Meets IP67 watertight standard
- Operating Temperature -10° C (14° F) to +55° C (131° F)
- Storage Temperature -40° C (-40° F) to +60° C (140° F)



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		DIMENSIONS ARE IN INCHES TOLERANCES: ±0.005 FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		NAME	DATE	BriarTek, Inc.	
				DRAWN		ORCATX-104	
				CHECKED			
				ENG APPR.			
				MFG APPR.			
				Q.A.			
				COMMENTS:			
NEXT ASSY	USED ON	FINISH				SIZE	DWG. NO.
						A	
APPLICATION	DO NOT SCALE DRAWING					SCALE:1:1	WEIGHT:
							SHEET 1 OF 1
							REV.

Modification of Life Preservers

The Navy Clothing and Textile Research Facility (NCTRF) made changes to life preservers to accommodate TX as follows:

- MK1 float coat: The sea dye marker pouch is modified to accommodate the sea dye marker on the outboard side and the TX on the inboard side, separated with stitching. The antenna is inserted through a hole in the vest under the pouch flap and through a loop inside the collar
- Inherently buoyant life preserver (IBLP): A new pouch and series of loops holds the TX and antenna.

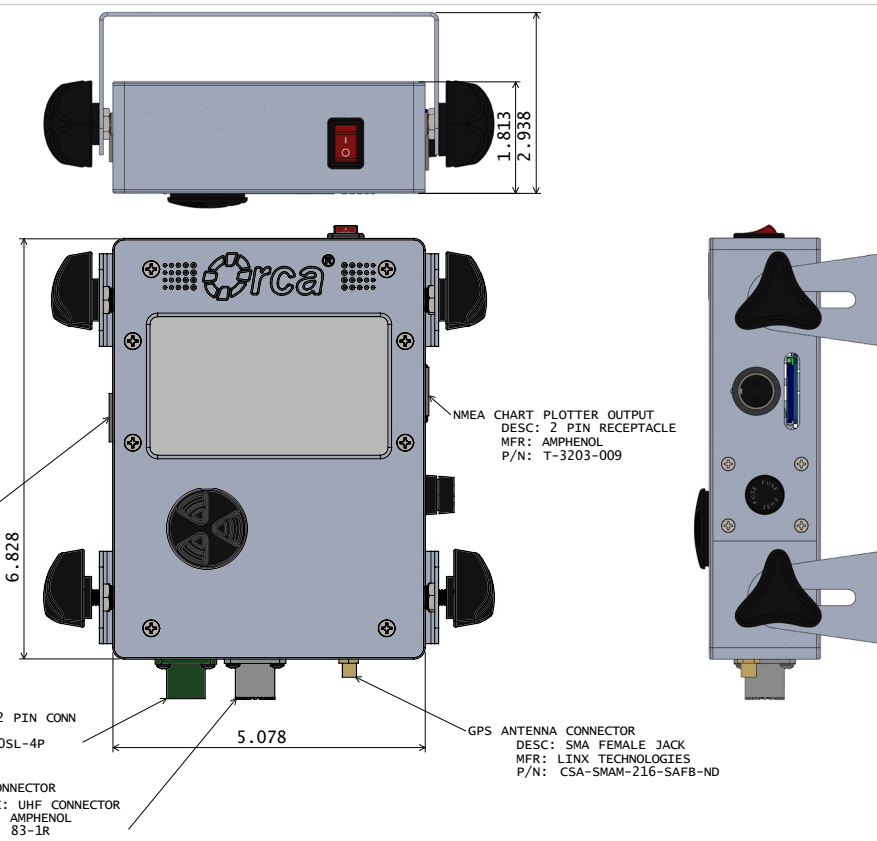


MOBI Hardware – RX

System	MOBI
Sub System	Receiver
Part Number	ORCARX-103
Description	ORCA RX103 Receiver

SPECS:

- Single Channel VHF receiver
- Touch Screen
- Integrated GPS Receiver
- Overall Weight: 2 lbs
- Frequency: 121.5 MHz
- Operating voltage: 12-24 VDC (+/- 10%)
- Current Draw: 200 mA typ, 500 mA max
- In line fuse: 700 mA, 250 V
- RF Sensitivity: .25-.60 µvpd
- RF Input Impedance: 50 ohms
- Adjacent Channel Rejection: 50 dB
- Operating Temperature Range: -10°C (14 °F) +55°C (131 °F)
- Storage Temperature: -40°C (-40° F) +60°C (140° F)



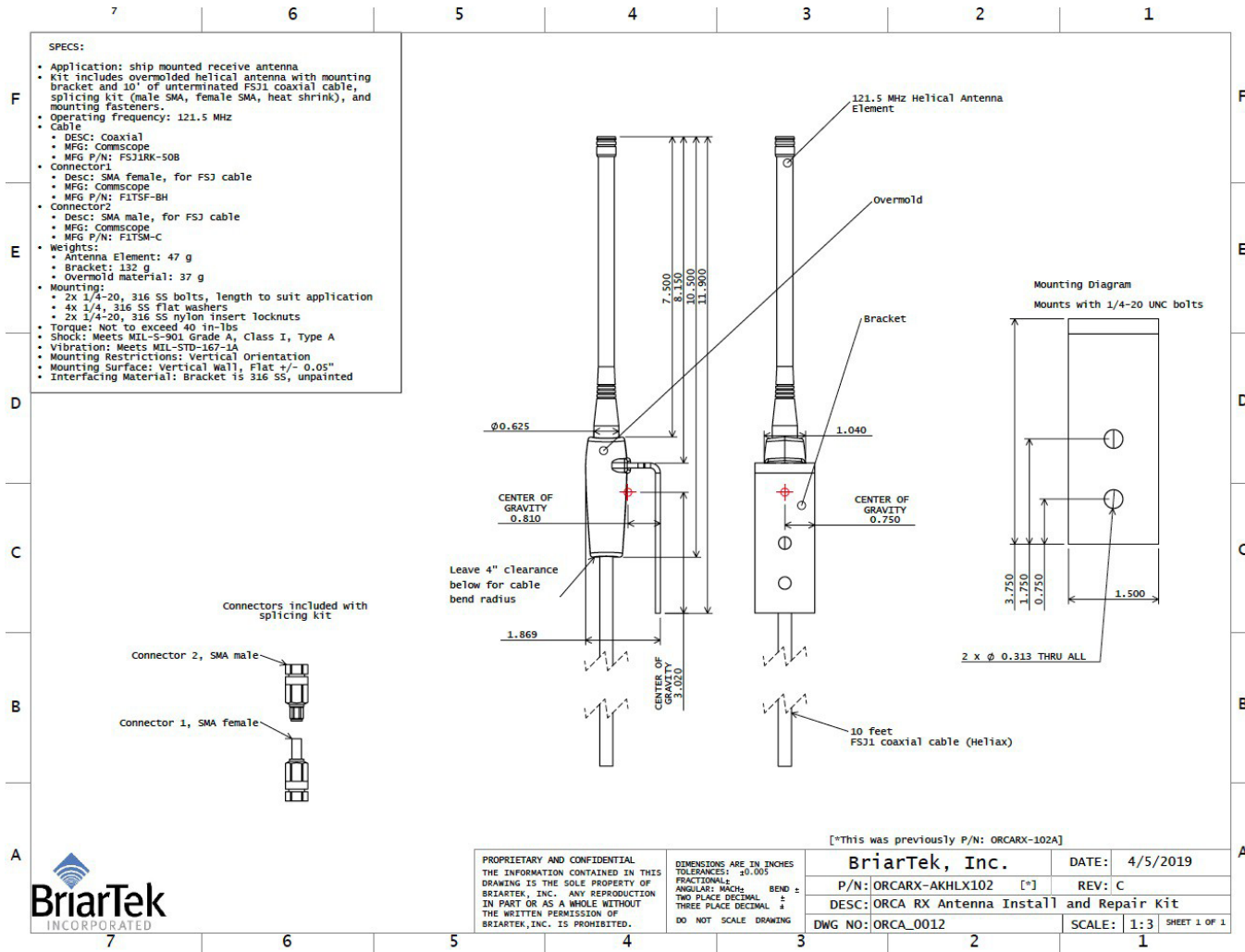
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 TWO PLACE DECIMAL ±
 THREE PLACE DECIMAL ±

DO NOT SCALE DRAWING

BriarTek, Inc.	DATE:	8/11/2015
P/N: ORCARX-103		
DESC: ORCA RX103 Receiver		
SCALE: 1:2	SHEET 1 OF 2	

MOBI Hardware – RX antenna



MOBI Hardware – GPS antenna

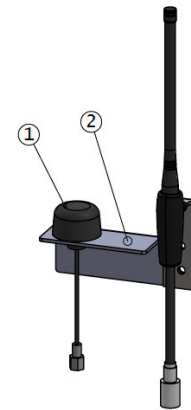
System	MOBI
Sub System	Receiver
Part Number	ORCARX-GA102A
Description	ORCA GPS Antenna and cable

APPLICATION:

Ship Mounted GPS Antenna

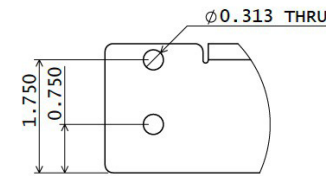
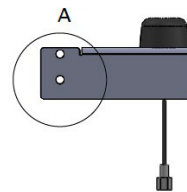
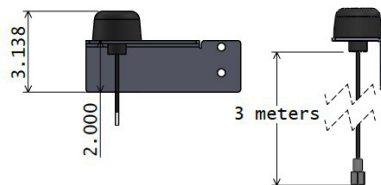
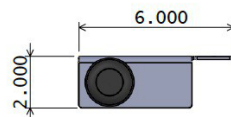
SPECS:

Antenna and Cable
 weight: 5 oz (142 g)
 operating frequency: 1575.42 MHz
 Bracket
 material: 316SS, 1/8" THK
 weight: 10 oz (283 g)



GPS is co-mounted with RX antenna as shown here, using SS 1/4"-20 bolts, flat washers, and lock nuts.

Item	Qty	P/N	Description
1	1	931-1002-ND	GPS Antenna with 3m coax cable with male SMA plug connector
2	1	RX-GA102A Bracket	ORCA GPS Antenna Bracket
3	6 in.	CHW500P	Heat shrink, heavy duty, adhesive lined, 0.5 Inch
4	12 in.	CHW750P	Heat shrink, heavy duty, adhesive lined, 0.75 Inch
5	4	316FW0250	WASHER, FLAT, 1/4, 316CRES
6	1	500170	Connector SMA plug STR 50 OHM solder
7	2	00-MIL-S-1222H-1/4-20x1.0-316	Cap screw, 1/4-20X1.0, HHCS SS-316
8	2	25CNNE3	1/4-20 Nylon Insert Locknut 316SS

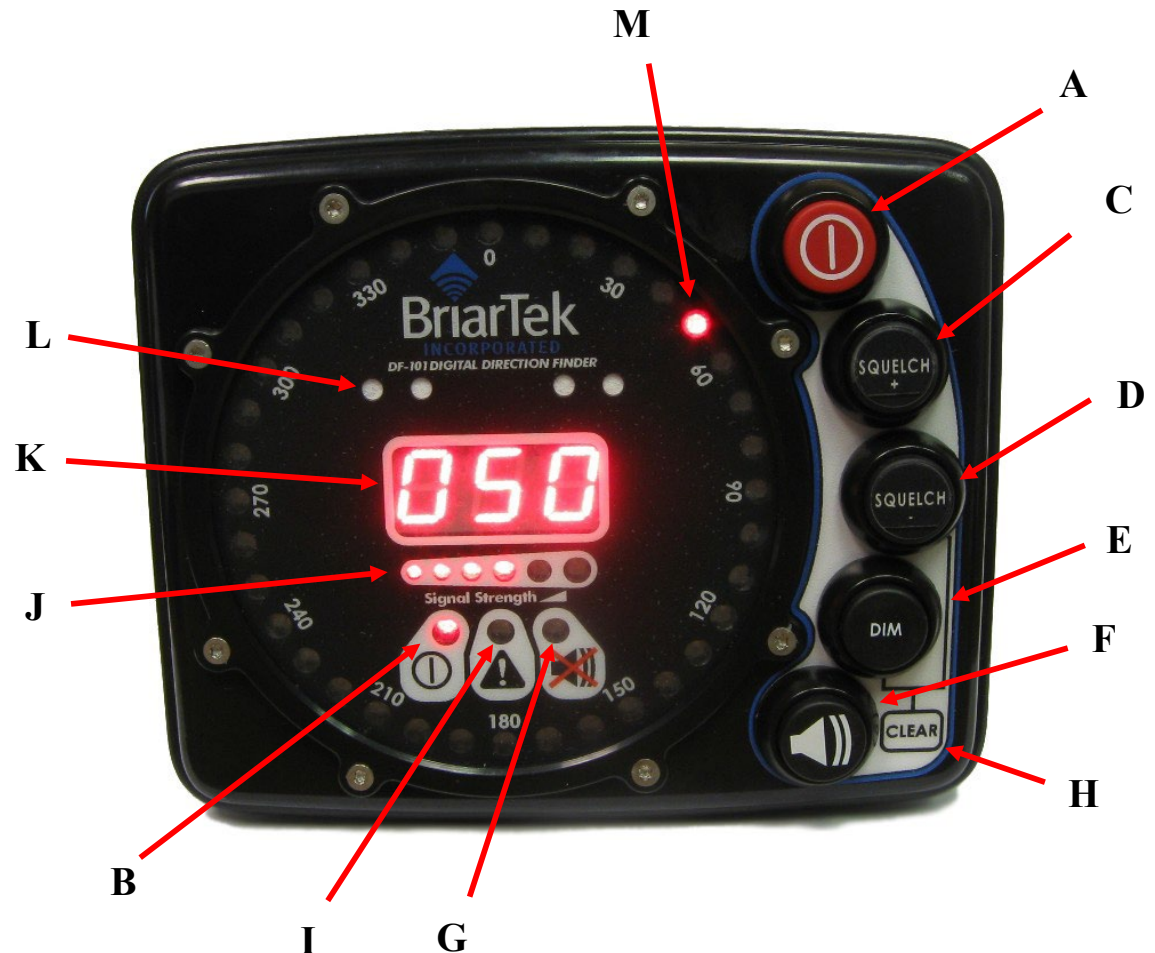


DETAIL A
 SCALE 1 : 2
 MOUNTING

- DF Display is mounted on the bridge (typically above/below windshield)

- Features:

- A – Power On/Off (Red) Button
- B – Power On/Off LED
- C – Squelch Increase Button
- D – Squelch Decrease Button
- E – Display Dimmer Button
- F – Speaker On/Off Button
- G – Speaker On/Off LED
- H – Clear (Depress Squelch Decrease [D] & Dim [E] Simultaneously)
- I – Warning LED
- J – Signal Strength Indicator
- K – Numeric Bearing Indicator
- L – Speaker (4 Ports)
- M – Circular Display Bearing Indicator (36 LEDs)



ORCA[®] Hardware – DF (Cont.)

Recovery Boat DF

- Display and antenna are installed on RHIBs (5M/7M/24FT/11M) and LCPLs via BOATALT GEN47B concurrent w/ SHIPALT installation
- Display is mounted on RHIB and LCPL console
- Antenna is mounted on RHIB transom/arch and LCPL stbd cockpit

DF Antenna mounted on RHIB



Display

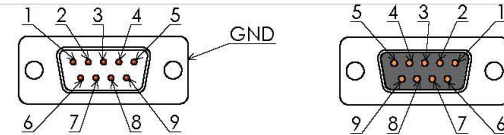


ORCA[®] Hardware – DF (Cont.)

System	MOBI
Sub System	Direction Finder
Part Number	ORCADF-D101
Description	Direction Finder Display

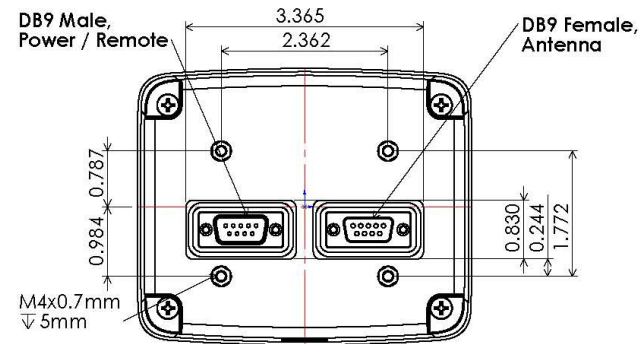
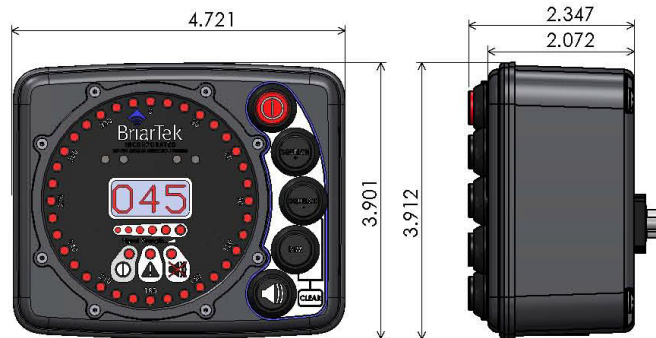
SPECS:

- Relative bearing display
- LED illumination
- Overall weight: 11.6 oz (329 g)
- Operating frequency: 121.5 MHz
- Operating voltage: 12-24 VDC (+/- 10%)
- Current draw: max350 mA
- Accuracy: +5°
- Operating temperature range: -20°C (-4 °F) +60°C (140 ° F)
- Storage temperature: -50°C (-58° F) +70°C (158° F)
- Weatherproof applications require DB9 connectors with waterproof hood (Conec P/N: 165X15019X) and extended gasket (Conec P/N: 795-305420).



Power Supply/Remote Interface	
Pin	Designation
1	Power +, 12-24 VDC (+/- 10%)
2	RS-485 COM-
3	-
4	-
5	-
6	Power -, GND
7	RS-485 COM+
8	Audio out
9	-

Antenna Connection	
Pin	Designation
1	Power +, 7.5 VDC
2	RS-485 COM / RS-232 FROM display
3	RS-232 TO display
4	-
5	-
6	Power -, GND
7	RS-485 COM+
8	Audio in
9	-



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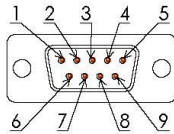
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NEXT ASSY	USED ON	DRAWN		ORCADF-D101	
APPLICATION	DO NOT SCALE DRAWING	CHECKED		REV.	
		ENG APPR.		SCALE: 1:2	
		MFG APPR.		WBGHT:	
		Q.A.		SHEET 1 OF 1	
		COMMENTS:			

ORCA[®] Hardware – DF (Cont.)

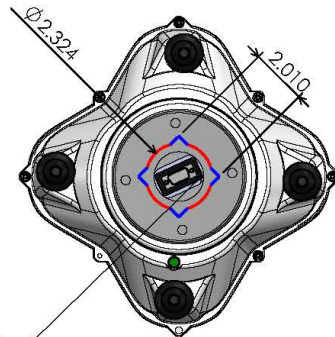
System	Direction Finder
Part Number	ORCADF-A101
Description	Direction Finder Antenna

SPECS:

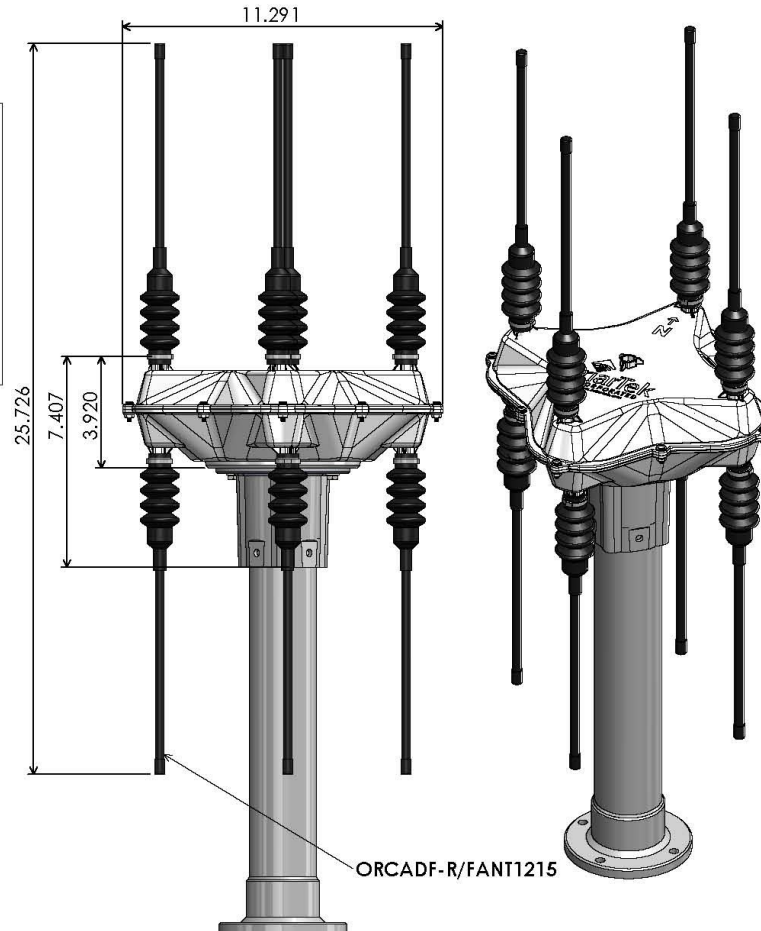
- Operating Frequency: 121.5 MHz
- Operating Voltage: 7-12 VDC (powered via display)
- Current Draw: max 350 mA
- Weight: 68.7 oz (1949 g)
- Accuracy $\pm 5^\circ$
- Operating Temperature Range: -20°C (-4°F) $+60^\circ\text{C}$ (140°F)
- Storage Temperature: -50°C (-58°F) $+70^\circ\text{C}$ (158°F)
- Weatherproof applications require DB9 connector with waterproof hood (Conec P/N: 165X15019X) and extended gasket (Conec P/N: 795-305420)



Pin	Designation
1	Power +, 7.5 VDC
2	RS-485 COM- / RS-232 FROM display
3	RS-232 TO display
4	-
5	-
6	Power -, GND
7	RS-485 COM+
8	Audio In
9	-



Waterproof DB9 Male
array base mounts to:
-round mast 2.318" diameter
-square mast 2"x2" square



DIMENSIONS ARE IN INCHES TOLERANCES: ± 0.005		DRAWN	NAME	DATE	BriarTek, Inc. ORCADF-A101
MATERIAL		CHECKED			
FINISH		ENG APPR.			
NEXT ASSY USED ON		MFG APPR.			
APPLICATION		COMMENTS:		SCALE: 1:2	REV.
DO NOT SCALE DRAWING				SIZE A	DWG. NO.
				WEIGHT:	SHEET 1 OF 1

PROGRAM PLAN

-
- Hardware Requirements
 - Outfit each ship as noted per AEL with MOBI transmitters (one each MK-1 float coat and IBLP), Receiver (Receiver Display on bridge and Receiver and GPS Antennas topside), and Direction Finder (DF Display on bridge and DF Antenna(s) topside).
 - Spares: Additional 5% transmitters, one receiver and one direction finder.
 - Provide transmitters for aviation squadrons assigned to ships.
 - Installation Schedule/Plan
 - MOBI SHIPALTs are entered in Navy Data Environment (NDE) database and scheduled based on ships' operational schedules.
 - Install via SHIPALTs/BOATALTs using BriarTek alteration installation teams (AIT).
 - ILS Requirements
 - APLs and PMS developed.
 - Ships will have access to interactive BriarTek website after installation.

INTEGRATED LOGISTIC SUPPORT STATUS

- Maintenance and Supply Support documentation includes following items:
 - MIP/MRCs for Transmitter, DF, Receiver, Power Supply/BBU.
 - APL for Receiver (99A120002) and DF (99A100002).
 - AEL/APL for Transmitter (AELs 2-330015000, 2-330015001, 2-330015002, APL 99A100001).
- Training methods to be utilized include on board training by OEM upon installation and follow-on refresher training using videos and BriarTek web site (<http://www.briartek.com>).
- PQS is developed and available - NAVEDTRA 43125.
- Technical Manual (SN574-AA-MMC-010) IAW MIL-DTL-24784/4B
- Replacement components available through the Navy Supply System; NAVSUP utilizing Direct Vendor Delivery contracts for life cycle supply support.
- A MOBI inspection checklist has been developed for INSURV inspections.

SHIPALT / SCD #s

Ship Class	SHIPALT /SCD #
AGF 3	5290
ARS 50	1179
AS 39	2582
CG 47	748
CVN 68	9211
DDG 51	445/22498
FFG 7	482
LCC 19	1497
LCS1	*
LCS2	16833

Ship Class	SHIPALT / SCD #
LHA 1	1174
LHD 1	461
LHD 5	3270
LPD 4	1226
LPD 17	*
LSD 41	1374
LSD 49	5196
MCM 1	319
PC 1	78/10091

* Accomplished during construction