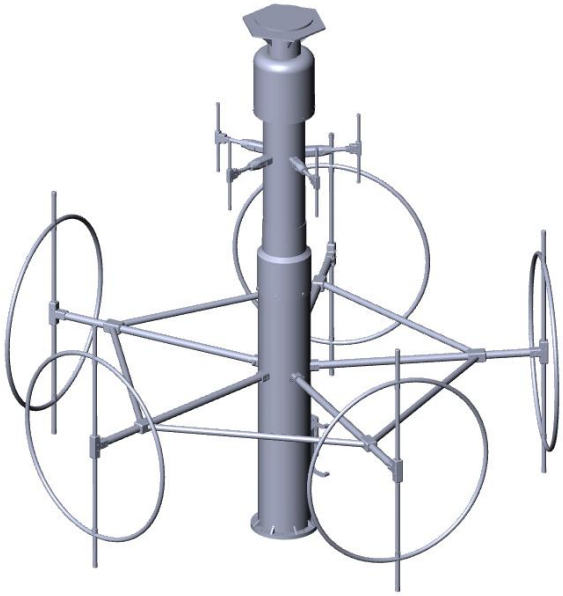
Rugged Wideband DF Antenna System with Band Switch

1 – 3000 MHz

VERSION: 1.1

Product Code: DFS-A0098-01



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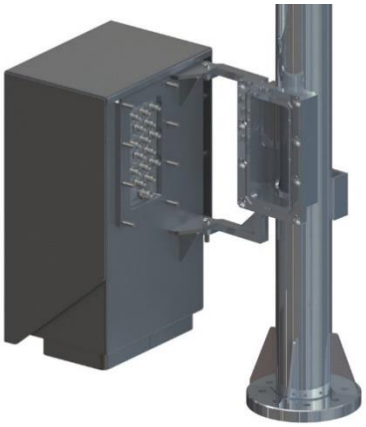

DF-A0183 (DF-A0226 embedded inside enclosure)

PRODUCT DESCRIPTION:

The DFS-A0098-01, as system solution, includes the DF-A0098 DF Array, DF-A0226 Band Switch, and DF-A0183 Switch Enclosure.

The DF-A0098 is a large aperture, wideband, DF antenna and is mechanically and electrically hardened.
The DF-A0098 is suitable for rugged applications such as applicable to Naval surface vessels.

The DF-A0098 offers a unique customisable landing platform to allow 3rd party sensors to be stacked co-linearly on top of the DF stack.
The DF-A0098 central mast allows for a cable feedthrough system, contained within the central mast to allow 3rd party cable runs, to and from 3rd party sensors.

The DF-A0226 functions as a band switch, designed to complement the capabilities of the DF-A0098 and is installed in the DF-A0183 switch housing.
Amongst others, the DF-A0226 offers appropriate DF channel gain functionality suitable for cable runs applicable to Naval surface vessels platforms.
The DF-A0226 also offers DF chain calibration functionality by means of external signal injection or via dedicated wideband noise source, as located inside the DF-A0226.

The DF-A0183 switch housing interfaces mechanically to the side of the DF-A0098 central mast, allowing for a secure and watertight electrical and mechanical interface between array and band switch device.

Two dedicated, monitoring antennas could compliment the DFS-A0098-01, should the platform require dedicated stand-off monitoring functionality, with additional 3rd party sensor functionality.
One dedicated monitoring sensor could be placed port side and the second starboard side.
For this purpose, Alaris Antennas offers the OMNI-A0205-01 as dedicated monitoring antenna solution.

RELATED DOCUMENTS:

Below documents reference individual components within the DFS-A0098-01 solution or components, which would complement the DFS-A0098-01 solution:

- DF-A0098 Brochure
- DF-A0226 Brochure
- DF-A0183 Brochure
- OMNI-A0205-01 Brochure

<table>
<tr><th colspan="3">MIL-STD-810G</th></tr>
<tr><th colspan="3">The following specifications will be designed and tested for as far as test facility capability allows</th></tr>
<tr><th>Requirement</th><th>Test limits</th><th>Test Description</th></tr>
<tr><td>Temperature (Operational)</td><td>The DFS-A0098-01 shall withstand, under nominal conditions, operating temperatures within -40°C and +71°C.</td><td>Tests will be performed according to MIL-STD-810G w/Change1 Methods 501.6 and 502.6 Procedure II.</td></tr>
<tr><td>Temperature (Storage)</td><td>The DFS-A0098-01 shall withstand, under nominal conditions, operating temperatures within -40°C and +85°C.</td><td>Tests will be performed according to MIL-STD-810G w/Change1 Method 501.6 and 502.6 Procedure I.</td></tr>
<tr><td>Vibration</td><td>The DFS-A0098-01 shall withstand, in nominal conditions, sine vibration applied separately in the X, Y and Z axes in accordance with:

<table><tr><th>Frequency Range (Hz)</th><th>Single Amplitude (inch)</th></tr><tr><td>4 to 10</td><td>0.100 ± 0.010</td></tr><tr><td>11 to 15</td><td>0.030 ± 0.006</td></tr><tr><td>16 to 25</td><td>0.020 ± 0.004</td></tr><tr><td>26 to 33</td><td>0.010 ± 0.002</td></tr></table></td><td>Tests will be performed according to MIL-STD-810G w/Change1 Method 528.1 TYPE I for mast mount equipment</td></tr>
<tr><td>Mechanical Shock</td><td>The DFS-A0098-01 shall operate, under nominal conditions, when exposed to the following mechanical shock levels:
• 40g and 6 ms half-sine pulse in the vertical direction
• 20g and 11 ms half-sine pulse in the horizontal direction</td><td>Tests will be performed according to MIL-STD-810G w/Change1, Method 516.7 Procedure I.</td></tr>
<tr><td>Humidity</td><td>The DFS-A0098-01 shall withstand, under nominal conditions, humidity levels as indicated below:
• Operational test: RH = 95% in the temperature range from -30 to 60°C</td><td>Tests will be performed according to MIL-STD-810G w/Change1 Method 507.6 Procedure.II</td></tr>
<tr><td>Rain</td><td>DFS-A0098-01 shall withstand 100mm/hr rain/blowing rain</td><td>MIL-STD-810G w/Change1 Method 506.6 Procedure I</td></tr>
<tr><td>Salt Fog</td><td>DFS-A0098-01 shall withstand salt fog as follows:
2x 24Hr wet cycles & 2x 24Hr dry cycles</td><td>MIL STD-810G w/Change1 Method 509.6</td></tr>
<tr><td colspan="3">Alaris Antennas will endeavor to design the DFS-A0098-01 to conform to the following MIL-STD-810G specifications but will not have the unit undergo formal qualification.</td></tr>
<tr><td>Water ingress</td><td>IP56</td><td>Designed to conform</td></tr>
<tr><td>Washdown</td><td>DFS-A0098-01 shall withstand, under nominal conditions, continuous flow of water of 100 litres/minute and for a duration of at least 20 minutes, at a temperature of 20°C</td><td>MIL-STD-810G w/Change1 Method 506.6 Procedure II</td></tr>
<tr><td>Ice</td><td>DFS-A0098-01 shall withstand Ice load with thickness of 37mm</td><td>MIL STD-810G w/Change1 Method 521.4</td></tr>
<tr><td>Solar Radiation</td><td>DFS-A0098-01 shall withstand 56x 24hr Solar Radiation cycles (samples)</td><td>MIL STD-810G w/Change1 Method 505.6 Procedure II</td></tr>
<tr><td>Hail</td><td>DFS-A0098-01 shall withstand Hail stones as follows:
Vertical drop of 25 mm diameter hailstones, with velocity of 25 m/s for a 7-minute duration. 6 stones/min</td><td></td></tr>
</table>

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MIL-STD-461F	
Requirement	**Description (All limits as per MIL-STD461F specification, except where specified differently)**
CE101	Conducted Emissions, Power Leads, 30 Hz to 10 kHz
CE102	Conducted Emissions, Power Leads, 10 kHz to 10 MHz
CS101	Conducted Susceptibility, Power Leads, 30 Hz to 150 kHz
CS106	Conducted Susceptibility, Transients, Power Leads
CS114	Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz
CS116	Conducted Susceptibility, Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz
RE101	Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz
RE102	Radiated Emissions, Electric Field, 10 kHz to 18 GHz
RS101	Radiated Susceptibility, Magnetic Field, 30 Hz to 100 kHz
RS103	Radiated Susceptibility, Electric Field, 2 MHz to 18 GHz only *Specific customer requirements to be discussed.