

High-Speed DF Antenna Band Switch

1 – 6000 MHz

Product Code: DF-A0226

VERSION: 1.1



PRODUCT DESCRIPTION:

The DF-A0226 is a high-speed, 4-band switch intended for direction finding applications. It accepts four frequency bands, each with five antenna elements, and outputs the elements of any one band to the corresponding five RF outputs. The switch is controlled via ethernet or an RS-485 serial interface to allow remote control over a distance up to 500m. Band switching can also be accomplished via direct differential pair switching for higher speed if needed. All switching is solid state for rapid and unlimited switching cycles.

The DF-A0226 includes an internal noise source as well as an external input for chain calibration purposes. Either the internal noise source or the external calibration input may be selected to simultaneously inject a balanced signal in place of the antenna inputs and thereby correct errors caused by variations in the system's RF path.

PRODUCT FEATURES:

- DF switch
 - Independent band and channel switching
 - External injection mode for chain calibration
 - Internal chain calibration noise source, selectable with either inline amplifier or with the amplifier bypassed.
 - Low noise amplifier on each channel with passive bypass capability
- Monitoring
 - Single-channel amplifier
 - Low noise pre-amplifier on input
 - DC-injection to power upper stages
- Advanced input stages:
 - ESD protection
 - Removable FM traps for Band A
 - Removable RF limiters for each DF input channel (1.5W – 2W).
 - Removable Band B HP filters
- Advanced output stages:
 - Output amplifiers for long cables
 - Cable slope correction on amplifiers
 - ESD protection

APPLICATIONS:

- DF band switching and monitoring channel amplification for our range of DF antennas, particularly DF-A0062 and DF-A0095 (5-element DF interferometers).
- For outdoor applications, DF-A0226 should be ordered in conjunction with DF-A0057-03 or similar (outdoor housing for DF switches).

SPECIFICATIONS:

Electrical – DF chain:		
Frequency range	1 MHz– 6000 MHz	
Frequency bands	Band A: 1 – 500 MHz; Band B: 100 – 1400 MHz; Band C: 500 – 3600 MHz; Band D: 2000 – 6000 MHz	
Channels per band	5	
Input VSWR	< 3:1	
Gain	100 MHz	22 ± 2 dB
	3 GHz	23 ± 2 dB
	6 GHz	28 ± 2 dB
Noise figure	< 11 dB	
OIP3 (typical)	100 MHz	28 dBm active, 32 dBm passive
	3 GHz	28 dBm active, 31 dBm passive
	6 GHz	26 dBm active, 31 dBm passive
Maximum input level	20 dBm CW, 30 dBm pulse, passive	
Electrical – calibration chain:		
Amplitude unbalance	< 2 dB	
Phase unbalance	< 15°	
Maximum input level	20 dBm passive	
Internal noise source power output	66 ± 4 dB ENR	
Electrical – monitoring:		
Frequency range	20 – 6000 MHz	
Input VSWR	< 2.5 :1	
Gain	100 MHz	22 ± 2 dB
	3 GHz	23 ± 2 dB
	6 GHz	28 ± 2 dB
Noise figure	< 11 dB	
OIP3 (typical)	100 MHz	28 dBm active, 32 dBm passive
	3 GHz	28 dBm active, 31 dBm passive
	6 GHz	26 dBm active, 31 dBm passive
Maximum input level	20 dBm CW, 30 dBm pulse, passive	
DC power injection	+13.8 V DC, 300 mA (max.)	
Power and control interface:		
Power supply	19 – 36V DC, TBD at 24V	
Control interface	<ul style="list-style-type: none"> • RS-485 • Ethernet • Dedicated switching lines, each a differential pair using RS485 levels 	
Total switching time	< 150 µS (RS485) < 50 µS (Ethernet) < 25 µS (dedicated switching lines)	
Mechanical:		
RF connectors	input	22 x SMA female
	output	6 x SMA female
Dimension	TBD	
Total mass	TBD	
Material	Aluminium	
Environmental: designed to meet the following specifications		
Temperature range	-20 °C to 70 °C	
Vibration	0.02g ² /Hz, 2 – 300 Hz	
Shock	40 G for 10 ms	
Thermal shock	-20 °C to 70 °C	
Water ingress rating	IP54	