# High-Speed DF Antenna Band Switch

1 – 6000 MHz

**VERSION: 1.2**

Product Code: DF-A0226

## 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;<br>Band B: 100 – 1400 MHz;<br>Band C: 500 – 3600 MHz;<br>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 | | • RS-485<br>• Ethernet<br>• Dedicated switching lines, each a differential pair using RS485 levels |
| Total switching time | | < 150 µS (RS485)<br>< 50 µS (Ethernet)<br>< 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 | | 0.02g²/Hz, 2 – 300 Hz |
| Shock | | 40 G for 10 ms |
| Thermal shock | | -20 °C to 70 °C |
| Water ingress rating | | IP54 |