



# Falcon Series Frequency Converter Module

The 1U Chassis has the capacity for up to five hot-swap frequency converter modules. These can be all Upconverters, all Downconverters or a mix of both.

- Typical applications:**
- Teleports & Earth Stations
  - Satellite Operations
  - Government & Defence applications
  - Telemetry, Tracking & Command
  - High Resilience applications

**Resilience** from dual redundant hot-swap power supplies & field replaceable CPU & HMI

**Local control & monitoring** via HMI high resolution touchscreen

**Compact** housed in a 1U high chassis with capacity for up to five modules

**Flexible Module Configurations** choose from a mixture of up and down converters with different operating frequencies.

**Hot Swap & replaceable** RF Frequency Converter modules

**Redundancy configurations** Field-replaceable 2+1 or 1+1 redundant configuration

**Field replaceable Internal 10MHz reference source** and external reference inject port with auto detection

**Remote control & monitoring** via RJ45 Ethernet port with SNMP & web browser interface

| Chassis - Specification        |   |
|--------------------------------|---|
| Dimensions / Weight / Colour   | 1U high x 550mm deep x 19" wide / <10 kg / RAL9003—White (Semi-matte)   |
| Capacity                       | Total of 17 module slots. Note that 1 slot will be used for fan (if required) and 1 slot will be used for 10 MHz EXT inject module.                         |
| Temperature                    | Operating: 0 to 45°C / Storage: -20°C to +75°C  |
| Location / Humidity / Altitude | Indoor use only / 20 to 90% non-condensing / 10,000 feet AMSL (Operational) 30,000 feet AMSL (Storage) <i>Above Mean Sea Level</i>                          |
| Control & Monitoring           | Local: HMI touch screen    Remote: Ethernet via RJ45, 10BaseT/100 BaseTx. TCP/IP, SNMP V3 & HTTPS & Web browser interface<br>HMI and CPU field replaceable. |
| MTTR                           | 20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock  |
| AC Input / Consumption         | 85-264Vac 50/60Hz / 150W  |
| PSU Redundancy                 | Dual redundant and alarmed    Diode OR. Hot swappable   |
| Input & Output ports           | Dependant upon module fitted  |
| No. of modules per chassis     | 5 Max. Module 3 slots wide  |





**Frequency Converter Module**

Compact form factor allowing multiple modules to be housed in 1U chassis. Each module uses 3 slots in the chassis.

| Frequency Upconverter Module - RF Parameters |  | Redundancy Module - RF Parameters                                    |  |
|--|--|--|--|
| Model Numbers                                | FN-U-K1L1-24102-XXS5                           | SWF-G1S-KX-109   | SWF-G1S-KX-107   |
| Size   | 3 slots wide                                   | 6 slots wide   | 6 slots wide   |
| Redundancy                                   | Standalone module                              | 1+1 (Note: This column denotes specs for 24102 in 1+1 configuration) | 2+1 (Note: This column denotes specs for 24102 in 2+1 configuration) |
| Input Frequency Range                        | 950 – 2000 MHz                                 |  |  |
| Output Frequency Range                       | Mode 1 : 10.7—11.75 or Mode 2 : 11.7—12.75 MHz |  |  |
| Conversion Gain                              | Max. 35 ± 1.5 dB / Min 5 ± 1.5 dB              | Max. 32 ± 1.5 dB / Min 2 ± 1.5 dB                                    | Max. 29.5 ± 1.5 dB / Min -0.5 ± 1.5 dB                               |
| Gain steps                                   | 0.5 ± 0.25 dB                                  |  |  |
| Gain Flatness (50 Ohm)                       | Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB       |  |  |
| Input Return Loss (50 Ohm)                   | Typ. -18 dB / Min. -14 dB                      | Typ. -15 dB / Min. -11 dB  | Typ. -15 dB / Min. -12 dB  |
| Output Return Loss (50 Ohm)                  | Typ. -15dB / Min. -10 dB                       | Typ. -11 dB / Min. -7 dB   | Typ. -11 dB / Min. -7 dB   |
| Noise Figure At max. gain                    | Typ. 10 dB / Max 12 dB                         | Typ. 11.5 dB / Max 13.5 dB   | Typ. 12.5 dB / Max 14.6 dB   |
| Input Power Range                            | -75 to -30 dBm                                 |  |  |
| OP1dB At max. gain                           | Typ. +12 dBm / Min. +10 dBm                    | Typ. +10 dBm / Min. +8 dBm   | Typ. +8.5 dBm / Min. +6.5 dBm  |
| OIP3 At max. gain                            | Typ. +22 dBm / Min. +20 dBm                    | Typ. +20.5 dBm / Min. +18.5 dBm                                      | Typ. +19 dBm / Min. +17 dBm  |
| Slope Compensation                           | 0-6 dB at L-band                               |  |  |
| Slope Control Steps                          | 1 dB   |  |  |
| Group Delay (max pk-pk)                      | 2 ns   |  |  |
| Internal Reference Stability                 | ± 5 x 10 <sup>-8</sup> over 0 to 50°C          |  |  |
| Phase Noise (Typical values)                 | @10Hz offset                                   | -70 dBc / Hz   |  |
|  | @100Hz offset                                  | -80 dBc / Hz   |  |
|  | @1KHz offset                                   | -85 dBc / Hz   |  |
|  | @10KHz offset                                  | -85 dBc / Hz   |  |
|  | @100KHz offset                                 | -90 dBc / Hz   |  |
|  | @1MHz offset                                   | -110 dBc / Hz  |  |
| Spurs In-band                                | Non-carrier related                            | < -75 dBm  |  |
|  | Carrier related                                | < -50 dBc  |  |
| Spurs Out-of-band                            | Non-carrier related                            | < -80 dBm  |  |
|  |  | < -80 dBm  |  |
| LO Breakthrough                              | < -80 dBm                                      |  |  |
| Image Rejection                              | > 60 dB  |  |  |
| External Reference                           | Input Freq. 10MHz Input Level +3 dBm±3dB       |  |  |
| Mute   | 60 dB  |  |  |
| IF Monitor                                   | Yes. Internal RF detector monitored            |  |  |
| Spectral Inversion                           | Non-inverting                                  |  |  |
| Spec version                                 | 0.1  | 0.1  | 0.1  |

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.  
 Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.  
 Note 3: All specs are for 50 Ohm connectors unless detailed otherwise.

