



# Falcon Series

## Frequency Converter Module

### L-Band Block Upconverter

**Typical applications:**

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

Converting L-band to L-band. 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.

**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

**Secure protocols** with SNMPv3 and HTTPS

**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) Above Mean Sea Level                              |
| 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 Downconverter Module - RF Parameters |  | Redundancy Module - RF Parameters                                    |  |
|--|--|--|--|
| Model Numbers                                  | FN-U-L1L1-24115-XXXX                                       | SWF-G1S-CX-111   | SWF-G1S-CX-110   |
| Size   | 3 slots wide   | 4 slots wide   | 6 slots wide   |
| Redundancy                                     | Standalone Module  | 1+1 (Note. This column denotes specs for 24115 in 1+1 configuration) | 2+1 (Note. This column denotes specs for 24115 in 2+1 configuration) |
| Input Frequency Range                          | 950—1450 MHz   |  |  |
| Output Frequency Range                         | 1950—2450 MHz  |  |  |
| Conversion Gain                                | 0 ± 2 dB   | -4.0 ± 2 dB  | -5.0 ± 2 dB  |
| Gain Steps                                     | N/A  |  |  |
| Gain Flatness (50 Ohm)                         | Full IF-band: ±1.0 dB                                      |  |  |
| Input Return Loss (RF-Band, 50 Ohm)            | Typ -18 dB / Min.-15 dB (50 Ohm)                           | Typ -15dB / Min -12.0dB  | Typ -15dB / Min -12.0dB  |
| Output Return Loss (IF-Band, 50 Ohm)           | Typ. -18 dB / Min.-15 dB (50 Ohm)                          | Typ -15dB / Min -12.0dB  | Typ -15dB / Min -12.0dB  |
| Noise Figure                                   | Typ. 18 dB / Max. 22 dB                                    | Typ 20.0dB / Max 24.0dB  | Typ 20.6dB / Max 24.5dB  |
| Maximum Operational Input Level                | 0 dBm  |  |  |
| OP1dB  | Typ. +5 dBm / Min.+3 dBm                                   | Typ. +2.5dBm / Min. +0.5dBm  | Typ. +2.0dBm / Min. +0dBm  |
| OIP3   | Typ. +15 dBm / Min.+12 dBm                                 | Typ. +13.0dBm / Min. +10.0dBm  | Typ. +12.5dBm / Min. +9.5dBm   |
| Group Delay (max pk-pk)                        | 2 ns   |  |  |
| Internal Reference Stability                   | ±5x10 <sup>-8</sup> over 0 to 50°C                         |  |  |
| Phase Noise (Typical values)                   | @10Hz offset   | -70 dBc / Hz   |  |
|  | @100Hz offset  | -80 dBc / Hz   |  |
|  | @1KHz offset   | -90 dBc / Hz   |  |
|  | @10KHz offset  | -95 dBc / Hz   |  |
|  | @100KHz offset   | -100 dBc / Hz  |  |
|  | @1MHz offset   | -110 dBc / Hz  |  |
| Spurs In-band                                  | Non-carrier related  | <-70 dBm   |  |
| Spurs Out-of-band                              | Carrier related  | <-60 dBc   |  |
|  | Non-carrier related  | <-75 dBm   |  |
| LO Breakthrough                                | <-60 dBm (TBC)   |  |  |
| Image Rejection                                | > 60 dB typ (TBC)  |  |  |
| External Reference                             | Input Freq. 10 MHz. Auto detection. 1 required per chassis |  |  |
| External Ref. Input Level                      | +3 dBm ± 3dB (Subject to change)                           |  |  |
| Mute   | 60 dB  |  |  |
| Number of conversion stages                    | Dual   |  |  |
| 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.

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