

# Falcon Series Frequency Converter Module

## L-Band to X-Band Block Upconverter

L-Band to X-Band block upconverter module with variable gain and slope.

The 1U chassis has the capacity for up to four hot-swap frequency converter modules. These can be all upconverters, all downconverters or a mix of both.

### Frequency Converter Module



#### Frequency Converter Module

Compact form factor allowing multiple modules to be housed in the Genus chassis. Each module occupies 4 slots in the chassis.

#### Redundancy Configurations

Field-replaceable 2+1 or 1+1 redundant configuration

#### Hot Swap & Replaceable

RF Frequency Converter modules

#### Variable Gain & Slope

For balancing input signals.

#### Frequency Conversion

Up conversion from L-Band to X-Band.

### Chassis Options

#### Local control & monitoring

via HMI high resolution touchscreen

#### Resilience

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

#### Compact indoor & outdoor

chassis options, which can be part populated

#### Secure protocols

with SNMPv3 and HTTPS

#### Flexible Module Configurations

choose from a mixture of up and down converters with different operating frequencies.

#### Remote control & monitoring

via RJ45 Ethernet port with SNMP & web browser interface

#### Field replaceable Internal reference source

and external reference inject port with auto detection



Indoor Chassis



Outdoor Unit

| Frequency Upconverter Module - RF Parameters |                     | Redundancy - RF Parameters               |                                       |                                                                              |                                                                              |
|----------------------------------------------|---------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Model Numbers                                |                     | FN-U-X3L1-24447AA-XXXX                   | SWF-G1S-KX-109A-xxxx                  | SWF-G1S-KX-115-xxxx                                                          |                                                                              |
| Size                                         |                     | 4 slots wide                             |                                       | 4 slots wide                                                                 |                                                                              |
| Redundancy                                   |                     | Standalone Module                        |                                       | 1+1 ( <b>Note:</b> This column denotes specs for 24447 in 1+1 configuration) | 2+1 ( <b>Note:</b> This column denotes specs for 24447 in 2+1 configuration) |
| Input Frequency Range                        |                     | 950 –1450 MHz                            |                                       |                                                                              |                                                                              |
| Output Frequency Range                       |                     | 7900—8400 MHz                            |                                       |                                                                              |                                                                              |
| Mean Conversion Gain                         |                     | Max 30 ± 2.0 dB / Min 0 ± 2.0 dB         | Max 28.8 ± 2.3 dB / Min -1.2 ± 2.3 dB | Max 29 ± 2.6 dB / Min -1 ± 2.6 dB                                            |                                                                              |
| Gain Step Size                               |                     | 0.25 ± 0.15 dB                           |                                       |                                                                              |                                                                              |
| Gain Flatness (50 Ohm)                       |                     | Full band: ±1.0 dB<br>Any 36MHz: ±0.3 dB | Full band: ±1.3 dB                    | Full band: ±1.6 dB                                                           |                                                                              |
| Input Return Loss (RF-band, 50 Ohm)          |                     | Typ. -18 dB / Min.-16 dB                 | Typ -12 dB / Min.-9 dB                | Typ -12 dB / Min.-9 dB                                                       |                                                                              |
| Output Return Loss (IF-band, 50 Ohm)         |                     | Typ. -18 dB / Min.-15 dB                 | Typ -15 dB / Min.-11 dB               | Typ -15 dB / Min.-12 dB                                                      |                                                                              |
| Noise Figure At max. gain                    |                     | Typ. 12 dB / Max. 15 dB                  | Typ. 14.5 dB / Max. 17.5 dB           | Typ. 14.5 dB / Max. 17.5 dB                                                  |                                                                              |
| Maximum Operational Input level              |                     | - 30 dBm at max gain                     |                                       |                                                                              |                                                                              |
| OP1dB At max. gain                           |                     | Typ. +15 dBm / Min.+12 dBm               | Typ. +13.5 dBm / Min.+9.5 dBm         | Typ. +13.5 dBm / Min.+9.5 dBm                                                |                                                                              |
| OIP3 At max. gain                            |                     | Typ. +27 dBm / Min.+25 dBm               | Typ. +25.5 dBm / Min.+23.5 dBm        | Typ. +25.5 dBm / Min.+23.5 dBm                                               |                                                                              |
| Internal Reference Stability                 |                     | ±5 x 10-8 over 0 to 50°C                 |                                       |                                                                              |                                                                              |
| Phase Noise (Typical Values)                 | @10 Hz offset       | -68 dBc / Hz                             |                                       |                                                                              |                                                                              |
|                                              | @100 Hz offset      | -80 dBc / Hz                             |                                       |                                                                              |                                                                              |
|                                              | @1 KHz offset       | -90 dBc / Hz                             |                                       |                                                                              |                                                                              |
|                                              | @10 KHz offset      | -106 dBc / Hz                            |                                       |                                                                              |                                                                              |
|                                              | @100 KHz offset     | -107 dBc / Hz                            |                                       |                                                                              |                                                                              |
|                                              | @1 MHz offset       | -115 dBc / Hz                            |                                       |                                                                              |                                                                              |
| Spurs In-band @ -5dBm output                 | Non-carrier related | <-75 dBm                                 |                                       |                                                                              |                                                                              |
|                                              | Carrier related     | <-60 dBc                                 |                                       |                                                                              |                                                                              |
| Spurs Out-of-band @ -5dBm output             | Carrier Related     | <-60 dBc                                 |                                       |                                                                              |                                                                              |
|                                              | Non-carrier related | <-75 dBm                                 |                                       |                                                                              |                                                                              |
| LO Breakthrough                              |                     | <-60 dBm                                 |                                       |                                                                              |                                                                              |
| Image Rejection                              |                     | >60 dB typical                           |                                       |                                                                              |                                                                              |
| External Reference Input Frequency           |                     | 10MHz or 100MHz (auto detection)         |                                       |                                                                              |                                                                              |
| External Reference Input Level               |                     | 0dBm ± 10dB                              |                                       |                                                                              |                                                                              |
| Mute                                         |                     | 60 dB                                    |                                       |                                                                              |                                                                              |
| Spectral Inversion                           |                     | Non-inverting                            |                                       |                                                                              |                                                                              |
| Number of conversion stages                  |                     | Single                                   |                                       |                                                                              |                                                                              |
| IF Power Monitor                             |                     | Yes                                      |                                       |                                                                              |                                                                              |
| Spec version                                 |                     | 0.1                                      | 1.1                                   | 1.1                                                                          |                                                                              |

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.