

# Falcon Series Frequency Converter Module

## L-Band to Ka-Band Block Upconverter

L-Band to Ka-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 Ka-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                                  |                                                                                                                                           |               |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Model Numbers                                                                 | FN-U-K4L1-24403AB-XXK5                                                                                                                    |               |
| Size                                                                          | 4 slots wide                                                                                                                              |               |
| Redundancy                                                                    | Supported (based on chassis configuration)                                                                                                |               |
| Input Frequency Range                                                         | 1150 - 2150 MHz                                                                                                                           |               |
| Output Frequency Range (User selectable frequency range via software command) | <b>Mode 1:</b> 27.00 – 28.00 GHz, <b>Mode 2:</b> 28.00 – 29.00 GHz ,<br><b>Mode 3:</b> 29.00– 30.00 GHz, <b>Mode 4:</b> 30.00 – 31.00 GHz |               |
| Mean Conversion Gain                                                          | Max. 22.0 ± 2.0 dB / Min. -3.0 ± 2.0 dB                                                                                                   |               |
| Gain Step Size                                                                | 0.25 ± 0.15 dB                                                                                                                            |               |
| Gain Flatness                                                                 | Full IF-band: ±1.5 dB / Any 40 MHz ±0.3 dB                                                                                                |               |
| Input Return Loss (L-band)                                                    | Typ. -20 dB / Min. -18 dB                                                                                                                 |               |
| Output Return Loss (Ka-band)                                                  | Typ. -18 dB / Min. -14 dB                                                                                                                 |               |
| Noise Figure At max. gain                                                     | Typ. 15 dB / Max 18 dB                                                                                                                    |               |
| Input Power Range                                                             | -75 to -30 dBm                                                                                                                            |               |
| OP1dB At max. gain                                                            | Typ. +5 dBm / Min. 0 dBm                                                                                                                  |               |
| OIP3 At max. gain                                                             | Typ. +13 dBm / Min. +10 dBm                                                                                                               |               |
| Group Delay pk-pk                                                             | 2 ns max                                                                                                                                  |               |
| Slope Control Range                                                           | 0-6 dB, pivot point at 2150 MHz                                                                                                           |               |
| Slop Control Steps                                                            | 1 ± 0.5 dB                                                                                                                                |               |
| Internal Reference Stability                                                  | ± 5 x 10 <sup>-8</sup> over 0 to 50°C                                                                                                     |               |
| Phase Noise<br>(Typical Values)                                               | @10 Hz offset                                                                                                                             | -65 dBc / Hz  |
|                                                                               | @100 Hz offset                                                                                                                            | -78 dBc / Hz  |
|                                                                               | @1 KHz offset                                                                                                                             | -85 dBc / Hz  |
|                                                                               | @10 KHz offset                                                                                                                            | -98 dBc / Hz  |
|                                                                               | @100 KHz offset                                                                                                                           | -101 dBc / Hz |
|                                                                               | @1 MHz offset                                                                                                                             | -110 dBc / Hz |
|                                                                               | @10 MHz offset                                                                                                                            | -130 dBc / Hz |
| Spurs In-band<br>(Measured at -15 dBm output and max gain)                    | Carrier related                                                                                                                           | < -60 dBc     |
|                                                                               | Harmonic                                                                                                                                  | < -60 dBc     |
|                                                                               | Non-carrier related                                                                                                                       | < -75 dBm     |
| Spurs Out-of-band<br>(Measured at -15 dBm output and max gain)                | Carrier Related                                                                                                                           | < -60 dBc     |
|                                                                               | Harmonic                                                                                                                                  | < -60 dBc     |
|                                                                               | Non-carrier related                                                                                                                       | < -70 dBm     |
| LO Breakthrough                                                               | < -75 dBm                                                                                                                                 |               |
| Image Rejection                                                               | >60 dB                                                                                                                                    |               |
| External Reference Input Frequency                                            | 10MHz or 100MHz (auto detection)                                                                                                          |               |
| External Reference Input Level                                                | 0dBm ± 10dB                                                                                                                               |               |
| Mute                                                                          | 60 dB                                                                                                                                     |               |
| Number of conversion stages                                                   | Dual                                                                                                                                      |               |
| Spectral Inversion                                                            | Non-inverting                                                                                                                             |               |
| IF Monitor                                                                    | Yes. Internal RF detector monitored                                                                                                       |               |
| Spec version                                                                  | 0.4                                                                                                                                       |               |

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.