

# Falcon Series Frequency Converter Module

## X-band to L-band agile downconverter

X-Band to L-Band block downconverter 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.

### Hot Swap & Replaceable

RF Frequency Converter modules

### Variable Gain & Slope

For balancing input signals.

### Frequency Conversion

Down conversion from X-Band to L-Band.

### Redundancy Configurations

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

## 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

| RF Parameters                                            |                                 |                                         |
|----------------------------------------------------------|---------------------------------|-----------------------------------------|
| Input Frequency Range                                    |                                 | 7250 to 8500 MHz                        |
| Output Frequency Range                                   |                                 | 950 to 2150 MHz                         |
| Mean Conversion Gain                                     | Max.                            | 35 ± 1.5 dB                             |
|                                                          | Min.                            | 0 ± 1.5 dB                              |
| Gain Steps                                               |                                 | 0.25 ± 0.15 dB                          |
| Gain Flatness                                            | Full Band                       | ± 1.0 dB                                |
|                                                          | Any 500MHz                      | ± 0.6 dB                                |
|                                                          | Any 40MHz                       | ± 0.3 dB                                |
| Slope Control (pivot point at 2150 MHz)                  | Range                           | 0-6 dB                                  |
|                                                          | Steps                           | 1 dB                                    |
| Input Return Loss                                        | Typ.                            | -18 dB                                  |
|                                                          | Max.                            | -15 dB                                  |
| Output Return Loss                                       | Typ.                            | -18 dB                                  |
|                                                          | Max.                            | -15 dB                                  |
| Noise Figure (at max. gain)                              | Typ.                            | 8 dB                                    |
|                                                          | Max.                            | 10 dB                                   |
| Operational Input Level                                  | Max.                            | -30 dBm                                 |
| OP1dB (at max. gain)                                     | Typ.                            | 15 dBm                                  |
|                                                          | Min.                            | 13 dBm                                  |
| OIP2 (at max. gain)                                      | Typ.                            | 48 dBm                                  |
|                                                          | Min.                            | 44 dBm                                  |
| OIP3 (at max gain, (Δf = 5 MHz two carriers 0 dBm each)) | Typ.                            | 25 dBm                                  |
|                                                          | Min.                            | 22 dBm                                  |
| Internal Reference Stability                             |                                 | ± 5 x 10 <sup>-8</sup> (over 0 to 50°C) |
| Phase Noise (dBc/Hz)                                     | 10Hz                            | -68                                     |
|                                                          | 100Hz                           | -80                                     |
|                                                          | 1kHz                            | -90                                     |
|                                                          | 10kHz                           | -110                                    |
|                                                          | 100kHz                          | -115                                    |
|                                                          | 1MHz                            | -120                                    |
| Spurs In-Band                                            | Carrier Related<br>>1MHz Offset | -60 dBc (At -5dBm output. Non-harmonic) |
|                                                          | Non-Carrier Related             | -75 dBm (At -5dBm output. Non-harmonic) |
| Spurs Out of Band                                        | Carrier Related                 | -60 dBc (At -5dBm output)               |
|                                                          | Non-Carrier Related             | -75 dBm (At -5dBm output)               |



| RF Parameters (contd.)        |                 |                                                                                  |
|-------------------------------|-----------------|----------------------------------------------------------------------------------|
| LO Breakthrough               |                 | -75 dBm max.                                                                     |
| Image Rejection               |                 | 60 dB typ.                                                                       |
| External Reference            | Input Frequency | 10 MHz or 100 MHz                                                                |
|                               | Input Level     | 0 dBm $\pm$ 10 dB                                                                |
| Number of Conversion Stages   |                 | Single                                                                           |
| Spectral Inversion            |                 | Non-inverting                                                                    |
| Mute                          |                 | 60 dB                                                                            |
| IF Power Monitor              |                 | Yes                                                                              |
| Number of Modules per Chassis |                 | 4 max.                                                                           |
| System Control                |                 |                                                                                  |
| Control Method                |                 | Via chassis; local and remote as provided by chassis                             |
| LNB Power                     |                 | No                                                                               |
| Physical & Environmental      |                 |                                                                                  |
| Dimensions                    |                 | 4 x Genus 1U slots                                                               |
| Weight                        |                 | <0.5 kg                                                                          |
| Temperature                   |                 | Operating: 0 to 50°C / Storage: -20°C to +75°C                                   |
| Location/Humidity             |                 | Indoor use only — 20 to 90% non-condensing                                       |
| Altitude                      |                 | 10,000 feet AMSL (Operational) 30,000 feet AMSL (Transport) Above Mean Sea Level |
| Spec. Version                 |                 | 1.0                                                                              |

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.