



# Falcon Series Frequency Converter Module

## L-Band to IF-Band Agile Downconverter

### Typical applications:

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

L-Band to IF-Band agile 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



#### Redundancy configurations

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



#### Variable Gain & Slope

For balancing input signals.



**Frequency Conversion** Down conversion from L-Band to IF-Band.

### Chassis Options



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



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



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



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



**Compact indoor & outdoor** chassis options, which can be part populated



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



**Secure protocols** with SNMPv3 and HTTPS



Indoor Chassis



Outdoor Unit





| Frequency Downconverter Module - RF Parameters |                                       | Redundancy - RF Parameters   |  |
|--|---------------------------------------|--|--|
| Model Numbers                                  | FN-D-L1F2-24404AA-XXXX                | SWF-G1S-CX-111A-xxxx   | SWF-G1S-CX-117-xxxx  |
| Size   | 4 slots wide                          | 4 slots wide   | 4 slots wide   |
| Redundancy                                     | Standalone module                     | 1+1 (Note: This column denotes specs for 24404 in 1+1 configuration) | 2+1 (Note: This column denotes specs for 24404 in 2+1 configuration) |
| Input Frequency Range                          | 850-3150 MHz in 1 kHz step size       |  |  |
| Output Frequency Range                         | 70 ± 20 MHz / 140 ± 40 MHz            |  |  |
| Mean Conversion Gain                           | Max. 35 ± 2 dB / Min. 5 ± 2 dB        | Max. 34.4 ± 2.2 dB / Min. 4.4 ± 2.2 dB                               | Max. 34.4 ± 2.3 dB / Min. 4.4 ± 2.3 dB                               |
| Gain steps                                     | 0.1 ± 0.1 dB                          |  |  |
| Gain Flatness (50 Ohm)                         | ±0.3 dB                               | ±0.5 dB  | ±0.6 dB  |
| Input Return Loss (50 Ohm)                     | Typ. -20 dB / Min. -18 dB             | Typ. -15 dB / Min. -12 dB  | Typ. -15 dB / Min. -12 dB  |
| Output Return Loss (50 Ohm)                    | Typ. -20 dB / Min. -18 dB             | Typ. -15 dB / Min. -12 dB  | Typ. -15 dB / Min. -12 dB  |
| Noise Figure At max. gain                      | Typ. 8 dB / Max 10 dB                 | Typ. 8.7 dB / Max 10.7 dB  | Typ. 10.7 dB / Max 12.8 dB   |
| Maximum Operational Input level                | - 30 dBm at max gain                  |  |  |
| OP1dB At max. gain                             | Typ. +13 dBm / Min. +10 dBm           | Typ. +12.3 dBm / Min. +9.3 dBm                                       | Typ. +10.3 dBm / Min. +7.3 dBm                                       |
| OIP3 At max. gain                              | Typ. +25 dBm / Min. +22 dBm           | Typ. +24.3 dBm / Min. +21.3 dBm                                      | Typ. +22.3 dBm / Min. +19.3 dBm                                      |
| Internal Reference Stability                   | ± 5 x 10 <sup>-8</sup> over 0 to 50°C |  |  |
| Phase Noise<br>(Typical values)                | @10Hz offset                          | -70 dBc / Hz   |  |
|  | @100Hz offset                         | -84 dBc / Hz   |  |
|  | @1KHz offset                          | -98 dBc / Hz   |  |
|  | @10KHz offset                         | -104 dBc / Hz  |  |
|  | @100KHz offset                        | -107 dBc / Hz  |  |
|  | @1MHz offset                          | -112 dBc / Hz  |  |
| Spurs In-band<br>@ -5dBm output                | Carrier Related                       | < -60 dBc  |  |
|  | Non-carrier related                   | < -75 dBm  |  |
| Spurs Out-of-band<br>@ -5dBm output            | Carrier related                       | < -60 dBc  |  |
|  | Non-carrier related                   | < -75 dBm  |  |
| LO Breakthrough                                | < -60 dBm                             |  |  |
| Image Rejection                                | >60 dB typical                        |  |  |
| External Reference Input Frequency             | 10 MHz or 100 MHz (Auto detection)    |  |  |
| External Reference Input Level                 | 0 dBm ± 10 dB                         |  |  |
| Mute   | 60 dB                                 |  |  |
| Number of conversion stages                    | Dual                                  |  |  |
| Spectral Inversion                             | Non-inverting                         |  |  |
| Spec version                                   | 0.1                                   | 1.0  | 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.

ETL SYSTEMS LIMITED  
Coldwell Radio Station  
Madley  
Hereford  
England HR2 9NE

TELEPHONE  
+44 (0)1981 259020

WEB  
www.etlsystems.com

EMAIL  
info@etlsystems.com

