ETL Systems
New technologies
in RF distribution

# Test Loop Translator

**Typical Applications**
- To replace the satellite link for test and alignment of earth station systems operating in the C, Ku & Ka frequency bands.
- SNG testing.
- Satcoms & Teleports testing.

# Genus Series
## Test Loop Translators

ETL Systems TLT modules offer loop-back testing capability within the 1U Genus modular chassis.

Genus is multi-configurable, so it can combine multiple RF and test functions into one habitat. TLT options include L, C, X, Ku, K and Ka-Band.

Front Panel

Ka-Band TLT Module


C-Band to L-Band TLT Module

Rear Panel (For indication only)

**Resilience** from dual redundant hot-swap power supplies & field replaceable CPU, HMI & 10 MHz reference source

**Flexible Module Configurations** including interchangeable frequency range options. User selectable via HMI or web browser

**Internal 10MHz reference source** and external reference inject port with auto detection

**Hot Swap & replaceable** Test Loop Translator modules

**Customisation** standard & custom options available

**Compact** housed in a 1U high chassis

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

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

| Chassis - Specification | |
|---|---|
| Model | GNS-196-1U |
| Capacity | Total of 17 module slots. Note that 1 slot may be used for fan (if required) and 1 slot may be used for 10 MHz EXT inject module (if required).<br>Note actual modules may require >1 slot. Refer to required module spec table. |
| Control & Monitoring | Local: HMI touch screen Remote: Ethernet via RJ45, 10BaseT/100 BaseTx. TCP/IP, SNMP V2/3 & HTTPS & Web browser interface |
| PSU Redundancy | Dual redundant and alarmed Diode OR. Hot swappable |
| Dimensions | 1U high x 550mm deep x 19” wide |
| Weight / Colour | <10 kg / RAL9003—White (Semi-matte) |

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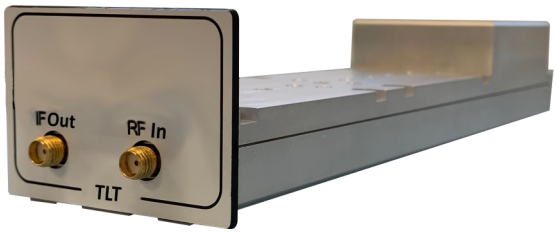


| GENERAL SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| Model Number | | TLT-U-L1L1-1001-S5S5 | TLT-D-C2C1-1002-S5S5 | TLT-D-K3K1-1003-S5S5 | TLT-D-C3L1-1005-S5S5 |
| Frequency Band | | L-Band | C-band | Ku-band | C– to L-band |
| Operating Frequency | Input | 2025 - 2125 MHz | 5.725—6.725GHz | 12.75GHz—14.5GHz | 5.725—6.725GHz |
| | Output | 2200 - 2300 MHz | 3.4—4.4GHz | 10.7GHz—12.75GHz | 0.95—1.95GHz |
| LO Step Size | | N/A | 1KHz (At LO centre) | | |
| External Reference | | Input Freq. 10 MHz Auto detection (External reference optional) | | | |
| External Reference Level | | +3dBm ±3dB | | | |
| LO Frequency Control | | N/A | ± 250MHz | ± 750 MHz | 3925—5625MHz |
| Internal Reference Stability | | ±0.05ppm over 0 to 50°C | ±0.05ppm over 0 to 50°C | ±0.05ppm over 0 to 50°C | ± 5 x $10^{-8}$ over 0 to 50°C |
| Maximum Input Power Level | | 0dBm (Operational) | 0dBm (Operational) | 0dBm (Operational) | -10dBm (operational) |
| Absolute max Input Power | | + 10 dBm (No damage) | + 20 dBm (No damage) | +15dBm (No damage) | +20dBm (No damage) |
| Conversion Gain | | -20 ± 2.0 dB | 0 ± 3.0 dB | 0 ± 3.0dB | -20 ± 3.0dB |
| RF Connector | | SMA Female | SMA Female | SMA Female | SMA Female |
| Impedance | | 50ohms | | | |
| Attenuation Control Range | | 0 to 30dB | 0 to 60dB | | |
| Attenuation Control Steps | | 0.25dB ±0.20 Over full operating band | | | |
| Number of modules per | | 4 Max (3 slots wide) | 1 Max (8 slots wide) | 1 Max (8 slots wide) | 3 Max (4 slots wide) |
| Input Return Loss | | 18 dB typ. 12 dB min | 14dB typ. 12dB min. | 14dB typ. 10dB min. | 14dB typ. 12dB min |
| Output Return Loss | | 18 dB typ. 15 dB min | 14dB typ. 12dB min. | 14dB typ. 10dB min. | 16dB typ. 12dB min |
| Fixed LO Phase Noise | 100Hz | -80 dBc / Hz (typical) | -70 dBc / Hz (typical) | -70 dBc / Hz (typical) | -75 dBc / Hz (typical) |
| | 1KHz | -95 dBc / Hz (typical) | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) |
| | 10KHz | -100 dBc / Hz (typical) | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) | -85 dBc / Hz (typical) |
| | 100KHz | -105 dBc / Hz (typical) | -85 dBc / Hz (typical) | -85 dBc / Hz (typical) | -95 dBc / Hz (typical) |
| | 1MHz | -115 dBc / Hz (typical) | -105 dBc / Hz (typical) | -100 dBc / Hz (typical) | -110 dBc / Hz (typical) |

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.

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| GENERAL SPECIFICATIONS | | | | |
|---|---|---|---|---|
| Model Number | | TLT-D-KXK1-1006-K5S5 | TLT-D-X3X3-1007-S5S5 | TLT-D-K4KX-1024-K5K5 |
| Frequency Band | | K-Band | X-Band | Ka-band |
| Operating Frequency | Input | 17.3 GHz—18.3 GHz | 7.9—8.4 GHz | 27.0—31.0GHz |
| | Output | 10.7 GHz—12.75 GHz | 7.25—7.75 GHz | 17.3—21.2GHz |
| LO Step Size | | 1KHz (At LO centre) | | |
| External Reference | | Input Freq. 10 MHz Auto detection (External reference optional) | | |
| External Reference Level | | +3dBm ±3dB | | |
| LO Frequency Control | | 1250 MHz | N/A | ± 1.75GHz |
| Internal Reference Stability | | ±0.05 ppm over 0 to 50°C | ± 0.05 ppm over 0 to 50°C | ± 5 x $10^{-8}$ over 0 to 50°C |
| Maximum Input Power Level | | 0 dBm (Operational) | 0 dBm (Operational) | 0dBm (Operational) |
| Absolute max Input Power | | +15 dBm (No damage) | +15 dBm (No damage) | +20dBm (No damage) |
| Conversion Gain | | 0 ± 3.0 dB | 0 ± 3.0 dB | 0 ± 3.0dB |
| RF Connector | | 2.92mm/SMA | SMA | 2.92mm |
| Impedance | | 50ohms | | |
| Attenuation Control Range | | 0 to 60dB | | |
| Attenuation Control Steps | | 0.25dB ±0.20 Over full operating band | | |
| Number of modules per | | 1 Max (8 slots wide) | 1 Max (8 slots wide) | 1 Max (8 slots wide) |
| Input Return Loss | | 14dB typ. 10dB min. | 14dB typ. 10dB min. | 14dB typ. 10dB min. |
| Output Return Loss | | 14dB typ. 10dB min. | 14dB typ. 10dB min. | 14dB typ. 10dB min. |
| Fixed LO Phase Noise | 100Hz | -70 dBc / Hz (typical) | -70 dBc / Hz (typical) | -70 dBc / Hz (typical) |
| | 1KHz | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) | -75 dBc / Hz (typical) |
| | 10KHz | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) | -80 dBc / Hz (typical) |
| | 100KHz | -85 dBc / Hz (typical) | -85 dBc / Hz (typical) | -85 dBc / Hz (typical) |
| | 1MHz | -100 dBc / Hz (typical) | -100 dBc / Hz (typical) | -100 dBc / Hz (typical) |

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