



Model Number: **22253-N5N5-E**

RF Engineering
and Custom Build

VSAT TX-RX Hybrid Unit

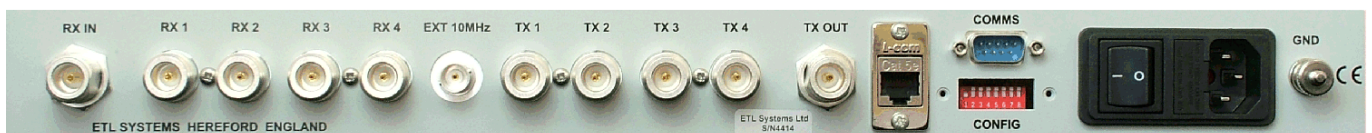
With LNB Powering, BUC Powering & 10MHz Source



Front View of Model 22253-N5N5-E

The VSAT TX-RX module is an L-band hybrid splitter and combiner shelf designed to power and reference VSAT terminals, as well as facilitate the use of multiple modems.

The receive section comprises of a 4-way splitter and provides 18V DC LNB power. The transmit section comprises of a 4-way combiner and provides 24 or 48V DC BUC power. Both sections have a selectable amplifier and provide a 10MHz reference signal via the common port. An optional Ethernet port & web browser interface are also available.



Rear View of Model 22253-N5N5-E

A DIL switch on the rear panel is used to select the BUC voltage and also the internal or external 10 MHz reference source. The shelf incorporates monitoring of LNB and BUC current, as well as 10MHz signal presence. Alarms are triggered if LNB or BUC power, 10MHz signal, or PSU's fail. Alarms are indicated via the front panel LED's and also remotely via a serial port.

The shelf is housed in a 1U high rack with a single mains inlet (there are 3 internal power supplies), and has 50 ohm N-type RF connectors. Other connectors and impedances are also available.





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Technical specifications and operating parameters

| RF Parameters | | | |
|--------------------|--|-------------------------------------|------------------------------|
| RX SIDE | | | |
| Capacity | 4-way Splitter | | |
| Frequency Range | 850-2150 MHz (L-band) | | |
| Insertion Gain | Passive | - 10 dB \pm 1 dB | |
| | Active | 3 dB \pm 1 dB | |
| Flatness over 850- | Passive | \pm 2 dB | |
| | Active | \pm 1 dB | Slope compensating amplifier |
| 1dB Compression | + 10 dBm | | |
| Noise Figure | 9 dB | | |
| Input Return Loss | 15 dB typical | | |
| Output Return Loss | 15 dB typical | | |
| 10MHz Tone | Always supplied via common (RF in) port | | |
| TX SIDE | | | |
| Capacity | 4-way Combiner | | |
| Frequency Range | 850-2150 MHz (L-band) | | |
| Insertion Gain | Passive | - 10 dB \pm 1 dB | |
| | Active | 3 dB \pm 1 dB | |
| Flatness | Passive | \pm 2 dB | |
| | Active | \pm 1 dB | |
| 1dB Compression | + 15 dBm | -40 dB to +5 dBm signal per channel | |
| Noise Figure | 9 dB | | |
| Input Return Loss | 15 dB typical | | |
| Output Return Loss | 15 dB typical | | |
| 10MHz Tone | Always supplied via common (RF out) port | | |
| Power | | | |
| AC Power | 85-264Vac 50/60Hz single PSU & mains inlet | | |
| PSU 24V | 3.2A, 24V DC | | |
| PSU 48V | 4.15A, 48V DC 200W max | | |
| LNB Power (RX) | 18V DC, 500mA via common port, always on | | |
| BUC Power (TX) | 24V DC 3.2A or 48V DC via common port, always on | | |
| Physical | | | |
| Input Connector | N-type | | |
| Input Impedance | 50 Ω | | |
| Output Connector | N-type | | |
| Output Impedance | 50 Ω | | |
| Dimensions | 2U high x 350mm deep x 19" wide | | |
| Weight | 8 kg | | |
| Colour | White 00-E-55 semi-gloss | | |

| RF Parameters | | | |
|--------------------------------------|--|---|---|
| 10MHz SOURCE | | | |
| 10MHz Internal Source | Similar performance to Morion OCXO MV85 unit | | |
| 10MHz Reference Source | Internal/external (via BNC on rear panel) | Selectable internally/externally, always supplied to both Rx & Tx common ports | |
| | Frequency | 10MHz | Factory setting is to \pm 1ppm, \pm 10Hz |
| Output Level | -3.5 \pm 2 dBm (Tx & Rx ports terminated) | 10MHz levels measured using high quality spectrum analyser. Web Browser can be used for indicative measurements with typical uncertainty of \pm 3 dB plus the true variations in levels | |
| | -3.5 \pm 3 dBm (all conditions) | | |
| Output Type | Sine Wave | | |
| Harmonic & Spuri Levels | 2nd Harmonic Level | <- 60 dBc | With respect to 10MHz level 2nd harmonic level is typically 70 dBc 3rd harmonic level is typically 60 dBc |
| | 3rd Harmonic Level | <- 55 dBc | |
| | All other spuri | <- 65 dBc | |
| Internal Reference | 10MHz Sine Wave | Ovenised Crystal Oscillator | |
| Frequency Stability Over Temperature | \pm 1 x 10 ⁻⁸ | 0 to +55°C | |
| Reference Source Ageing | \pm 5 x 10 ⁻⁸ / year | | |
| | \pm 5 x 10 ⁻¹⁰ / day | | |
| Reference Source Phase Noise | <-85 dBc / Hz @ 1Hz | | |
| | <-115 dBc / Hz @ 10Hz | | |
| | <-140 dBc / Hz @ 100Hz | | |
| | <-150 dBc / Hz @ 1000Hz | | |
| | <-155 dBc / Hz @ 10000Hz | | |
| Warm up time | <2 minutes | At 25°C to within \pm 1 x 10 ⁻⁷ | |

| System Control | |
|-------------------|---|
| Local Control | DIL switch on rear panel |
| Display | Front panel LED's for LNB Power, 24V BUC, 48V BUC & amplifier condition |
| Remote Connection | RS232/RS485 & optional RJ345 ethernet port & WBI |

| Environmental | |
|-----------------|--------------------|
| Operating temp. | 0 to 45°C |
| Location | Indoor use only |
| Storage temp. | -20°C to +75°C |
| Humidity | 85% non-condensing |

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