# TLNB20000AS.0007 Ka-Band Low Noise Block Converter

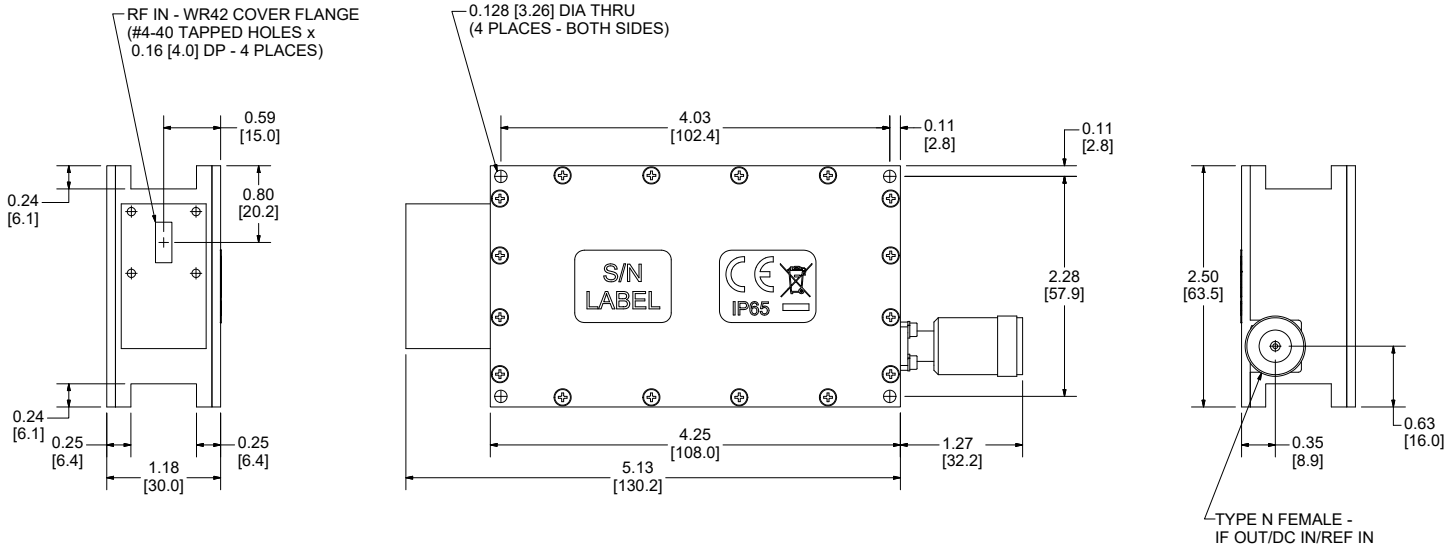
## The TLNB-20000AS Ka-Band Low Noise Block Converter is specially designed for SATCOM applications. Utilizing state-of-the-art HEMT and GaAs FET technology, this block converter has been designed for both fixed and transportable applications.

The TLNB-20000AS has the quality, stability, and performance required for demanding receiver applications in today's SATCOM systems. Internal reference oscillator allows operation when external reference is not present.

**FEATURES:**

- Low noise temperature
- High reliability HEMT design
- Phase-locked LO
- Excellent phase noise
- Reverse polarity protection
- Wide operating temperature range, -40 °C to +70 °C
- Internal reference power muted when external reference is present

### Outline Drawing




NOTES:

1. DIMENSIONS ARE IN INCHES AND [MILLIMETERS].
2. TOLERANCE - ± 0.02 [0.5].
3. PAINT: COLOR TO BE COMMERCIAL WHITE.

Outline - 21104-17

| Parameter | Notes | Specification |
|---|---|---|
| **Input Frequency** | | 20.2 to 21.2 GHz |
| **Output Frequency** | | 1000 to 2000 MHz |
| **Output Spectrum** | | Non-Inverted |
| **Local Oscillator Frequency** | | 19.20 GHz typical |
| **LO Phase Noise with external reference** | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz<br>100 kHz<br>1 MHz | -32 dBc/Hz max.<br>-62 dBc/Hz max.<br>-72 dBc/Hz max.<br>-82 dBc/Hz max.<br>-92 dBc/Hz max.<br>-102 dBc/Hz max. |
| **LO Stability with external reference Arstrat compliant** | | 11 Hz (24 hours)<br>1000 Hz (90 days) |
| **LO Phase Noise with internal reference** | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz<br>100 kHz<br>1 MHz | -21 dBc/Hz max.<br>-51 dBc/Hz max.<br>-61 dBc/Hz max.<br>-74 dBc/Hz max.<br>-92 dBc/Hz max.<br>-102 dBc/Hz max. |
| **LO Stability with internal reference versus temperature** | -40°C to +70°C including setting at +25°C | ±29 kHz |
| **Spurious** | Signal related, IF Band<br>Non-signal related, IF Band | -60 dBc max.<br>-70 dBc max. |
| **Gain (Nominal)** | | 60 dB min., 63 dB typical |
| **Gain Flatness** | | ±1.0 dB full band<br>±0.30 dB per 40 MHz |
| **Gain Stability** | | ±0.5 dB max., per week, constant temperature<br>±2 dB typical versus temperature |
| **Power Output at 1dB compression ($P_{1\ dB}$)** | | +15 dBm min., +18 dBm typical |
| **3rd Order Output Intercept Point ($OIP_3$)** | | +25 dBm min., +28 dBm typical |
| **Noise Temperature, System** | At +23°C | 110 K typical, 115 K max. |
| **VSWR** | Input<br>Output | 1.25:1 typical, 1.35:1 max.<br>1.50:1 typical, 1.80:1 max. |
| **Connectors** | RF Input<br>IF Output/DC In/Ref. In | WR42 Cover Flange<br>Type N Female |
| **Power Requirements** | Voltage<br>Current | +12 VDC min., +22 VDC max.<br>400 mA typical, 450 mA max. |
| **Operating Temperature** | TAMB | -40°C to +70°C |

**External Reference Requirements**

| Parameter | Notes | Specification |
|---|---|---|
| **Frequency** | | 10.00 MHz max. |
| **Input Level** | | -5 dBm min., 0 dBm typical, +5 dBm max. |
| **Input Impedance** | | 50 ohms typical |
| **Phase Noise at Offset Frequency** | 10 Hz offset<br>100 Hz offset<br>1 kHz offset<br>10 kHz offset | -105 dBc/Hz max.<br>-135 dBc/Hz max.<br>-145 dBc/Hz max.<br>-150 dBc/Hz max. |

**Caution:** To prevent potential equipment damage from water intrusion, which will VOID the warranty, use waterproof cable and apply waterproof tape or heatshrink tubing to protect external connections.

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