

Test Loop Translator

Indoor / Outdoor

Single / Dual / Triple Band

Single / Dual Channel

C-, X-, Ku-, K-, Ka- and Q-Band Output



The RF test loop translator can be used to convert signals from one RF band to another for test and system evaluation purposes.

Operating and control

The converters can be operated via the push buttons on the front panel using self-explanatory display menus or via remote control (RS232, RS422/485, TCP/IP over Ethernet).

Detailed monitoring of the system status and a summary alarm output with dual change over switch contacts are provided. For the remote control ASCII string-based commands as well as addressable, packet-based commands are provided. Remote monitoring and control through a Web browser interface is also integrated.

Key features

- RF Filter on output
- Variable attenuator 0 ... 30 dB, 0.1 dB step size on output
- Signal mute function
- Integrated local oscillator with 100 Hz step size available
- Internal OCXO
- External reference input with automatic reference recognition (5 and 10 MHz)
- 10 MHz reference output
- Low power consumption
- Local control through front panel
- Remote control through RS232, RS422/485 (2-wire or 4-wire) interfaces, TCP/IP over Ethernet, Web browser interface.
- AC power switch on the front panel
- Summary alarm output with dual change over switch contacts
- CE compliant
- **3 years warranty**

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Q-band available on request (contact factory)

Converter Type:	VSTLT-C / VHFLT-C	VSTLT-X / VHFLT-X	VSTLT-Ku / VHFLT-Ku	VSTLT-K / VHFLT-K	VSTLT-Ka1 / VHFLT-Ka1
RF-Input Frequency:	C-Band 5.85 ... 6.65 GHz	X-Band 7.90 ... 8.40 GHz	Ku-Band 13.0 ... 14.5 GHz	K-Band 17.3 ... 18.4 GHz	Ka-Band 27.5 ... 27.7 GHz
RF-Output Frequency:	C-Band 3.4 ... 4.2 GHz	X-Band 7.25 ... 7.75 GHz	Ku-Band 10.95 ... 12.45 GHz	Ku-Band 11.7 ... 12.5 GHz	K-Band 17.7 ... 17.9 GHz
Intermediate Frequency:	-	950 ... 1450 MHz	-	-	-
LO1 Frequency:	2.45 GHz	6.95 GHz	2.05 GHz	4.8 ... 6.65 GHz	9.8 GHz
LO2 Frequency:	-	6.30 GHz	-	-	-
Conversion Scheme:	Single conversion, no frequency inversion	Dual conversion, no frequency inversion	Single conversion, no frequency inversion	Single conversion, no frequency inversion	Single conversion, no frequency inversion
LO-Frequency Resolution:	fix frequency	fix frequency	fix frequency	100 Hz	fix frequency
Phase Noise:					
10 Hz	-76 / -66	-65 / -55	-76 / -66	-66 / -56	-66 / -56
100 Hz	-93 / -83	-85 / -75	-93 / -83	-83 / -73	-83 / -73
1 kHz	-105 / -95	-95 / -85	-105 / -95	-95 / -85	-95 / -85
10 kHz	-111 / -101	-100 / -90	-111 / -101	-101 / -91	-101 / -91
100 kHz	-111 / -101	-103 / -93	-111 / -101	-101 / -91	-101 / -91
1 MHz	-128 / -118	-127 / -117	-128 / -118	-118 / -108	-118 / -108
typ. / max. values in dBc/Hz					

Converter Type:	VSTLT-Ka / VHFLT-Ka				
RF-Input Frequency:	Ka-Band 27.5 ... 31.0 GHz				
RF-Output Frequency:	Ka-Band 17.7 ... 21.2 GHz				
Intermediate Frequency:	10.7 ... 12.7 GHz				
LO1 Frequency:	16.8 ... 18.3 GHz				
LO2 Frequency:	7.0 ... 8.5 GHz				
Conversion Scheme:	Dual conversion, no freq. inversion				
LO-Frequency Resolution:	100 Hz				
Phase Noise:					
10 Hz	-62 / -59				
100 Hz	-82 / -79				
1 kHz	-90 / -87				
10 kHz	-96 / -93				
100 kHz	-98 / -95				
1 MHz	-109 / -105				
typ. / max. values in dBc/Hz					

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Common Parameters	
RF-Input Characteristics:	Impedance: 50 Ω Return Loss: > 18 dB Max. aggregate input level: +8 dBm (standard) (damage level) LO Leakage: < -80 dBm Connector: SMA female (standard) K female (2.92 mm) (-Ka standard) WR28 waveguide (-Ka with option WR28)
Input/ Output-Monitor (Option):	Signal level in ref. to in/output: -20 dB Impedance: 50 Ω Connector: SMA female
RF-Output Characteristics:	Impedance: 50 Ω Return Loss: > 18 dB 1 dB compression point: > 5 dBm ¹⁾ LO leakage: < -80 dBm Output muting: > 60 dB (by command or sense input or by alarm condition) Connector: SMA female (standard) K female (2.92 mm) (-Ka standard) WR28 waveguide (-Ka with option WR28)
LO Test Output (Option):	Frequency: LO Frequency standard (LO/2 Frequency on -Ka) Signal level: -10 dBm ±3 dB Impedance: 50 Ω Connector: SMA female
Transfer Characteristics:	Max. conversion gain: 0 dB ±1 dB Attenuation Range: 0 ... 30 dB, Step 0.1 dB Gain variation over temp.: ±1.0 dB Gain flatness over freq.: ±1.0 dB max. over band Gain flatness over 40 MHz: ±0.5 dB
Group Delay Variation	Ripple: < 1 ns peak to peak / 80 MHz (single conversion) < 2 ns peak to peak / 80 MHz (dual conversion)
Spurious Outputs:	Signal related: < -50 dBc (within RF-Output band) ^{1) 2)}
Intermodulation (3rd order):	OIP3: > 15 dBm
Frequency Stability:	±1 x 10 ⁻⁷ , -30 °C ... 60 °C ±1 x 10 ⁻⁸ , -30 °C ... 60 °C (after 30 min warm up) ±1 x 10 ⁻⁹ per day (fixed temperature after 24 h warm up)

¹⁾ at max. conversion gain

²⁾ Pout = -10 dBm

Specifications are subject to change

These converter types are only a small selection of what is available. Please contact us for further frequency bands and features.

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S-, C-, Ku-, K-, Ka- and Q-band

Indoor Housing:

Reference Input	Frequency: 5 or 10 MHz sine wave Level: 5 dBm ±5 dB Modes: auto/extern/intern Connector: BNC female
Reference Output	Frequency: 10 MHz Level: 0 dBm ±3 dB Connector: BNC female
Monitoring and Control Interface:	Protocol: SNMP Connection: UDP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
	Protocol: HTTP (web browser interface) Connection: TCP/IP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
	Protocol: Multipoint Connection: RS232 or RS422/RS485 (configurable), connector DSUB09 female or TCP/IP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
Alarm Interface: Mute Input:	Alarm: two potential free contacts (DPDT), Mute Input: TTL logic input with internal pull up Connector DSUB09 female
Temperature Range:	Standard performance: 0 °C ... 50 °C operating, - 30 °C ... 80 °C storage High performance: -30 °C ... 60 °C operating (10 minutes warm up at -30 °C)
Relative Humidity:	< 95 % non condensing
User Interface: (Indoor only)	LCD-Display 2 x 40 characters, 4 cursor keys, 4 function keys VFD-Display 2 x 40 characters, 4 cursor keys, 4 function keys (option VFD)
Mains Power Input:	100 ... 240 V AC nominal, 90 ... 264 V AC max., 50 ... 60 Hz
Mains Power Consumption:	Max.: 45 VA / 30 W (single converters) Typ.: 35 VA / 23 W (single converters)
Mains Power Input Connector:	Indoor: IEC C14
Mains Fuse:	2 x 2.0 A, time-lag fuse
Dimension and Weight:	Indoor: 483 x 44 x 505 mm ³ (WxHxD), 1 RU (19") approx. 8.4 kg or 483 x 44 x 270 mm ³ (WxHxD), 1 RU (19") approx. 6 kg (depends on converter type)

Outdoor Housing:

Reference Input (Option):	Frequency: 5 or 10 MHz sine wave Level: 5 dBm ±5 dB Modes: auto/extern/intern Connector: SMA female
Reference Output (Option):	Frequency: 10 MHz Level: 0 dBm ±3 dB Connector: SMA female
Combined Monitoring and Control Interface and Alarm Interface:	Protocol: Multipoint packet format commands Connection: RS232 or RS422/RS485 (configurable), connector MIL-C-26482: MS 3120 E 14-19-S Alarm output: Two potential free contacts (DPDT) 24 V DC output: max. 0.3 A 6.5 V DC output: max. 0.2 A Connection type: MIL-C-26482: MS 3120 E 14-19-S Mute Input: TTL logic input with internal pull up
Monitoring and Control Interface:	Protocol: SNMP Connection: UDP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
	Protocol: HTTP (web browser interface) Connection: TCP/IP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
	Protocol: Multipoint packet format commands Connection: TCP/IP over Ethernet (10 or 100 Mbps, auto sensing), connector RJ-45
Temperature Range:	-30 °C ... 60 °C operating (10 minutes warmup at -30 °C)
Relative Humidity:	< 100 %
Mains Power Input:	100 ... 240 V AC nominal, 90 ... 264 V AC max., 50 ... 60 Hz
Mains Power Consumption:	Max.: 45 VA / 30 W (single converters) Typ.: 35 VA / 23 W (single converters)
Mains Power Input Connector:	Amphenol C16-1 (3+PE) male
Mains Fuse:	2 x 2 A time-lag fuse
Dimensions:	322 x 108 x 391 mm ³ (WxHxD) (small housing) (standard) 402 x 111 x 391 mm ³ (WxHxD) (large housing) 412 x 74 x 515 mm ³ (WxHxD) (XL housing)
Degree of Protection:	IP 67 (acc. IEC 529)

Specifications are subject to change