TRANGO SYSTEMS®

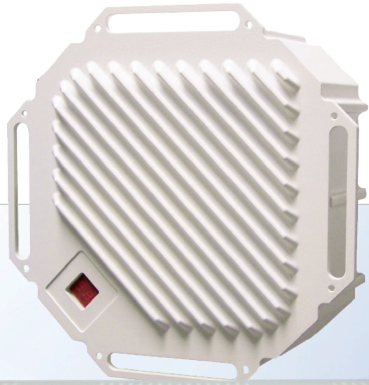*Innovating Microwave Backhaul™*

TrangoLINK Giga® 11 GHz

Split-Architecture Full Duplex Licensed
Microwave IP/TDM Wireless Backhaul System

HIGH-CAPACITY POINT-TO-POINT WIRELESS NETWORK LINK

TrangoLINK Giga® is a high-performance 11 GHz licensed microwave wireless point-to-point system designed for carrier Ethernet, WiMAX/ISP broadband backhaul, mobile network backhaul, private enterprise WAN/LAN extensions, and municipal and public wireless networks.

TrangoLINK Giga® provides a full duplex wireless connection over the air that is ideal for mixed traffic that requires both IP and traditional TDM T1/E1 connectivity.

Each TrangoLINK Giga® consists of two indoor units (IDU) and two outdoor units (ODU). The ODU attaches easily to an external antenna that delivers high link gain and availability.

Benefits

- » Low cost of ownership
- » Excellent system gain for longer range and higher availability
- » No right-of-way issues, unlike fiber deployment
- » Fast ROI relative to fiber and other traditional options

Easy Setup and Deployment

- » Minimal maintenance, "set and forget"
- » Split-mount architecture with direct-mount slip-fit ODU and 1U rackmount unit IDU
- » Easy alignment via real-time digital LED RSSI indicators directly on both ODU and IDU
- » Easily upgrade throughput *as you need it,* with no hardware replacements and no forklift upgrades
- » Pay-as-you-grow 2-tier throughput upgrade path

Highlights

- Up to 480+ Mbps (240+ Mbps full duplex)
- Extremely low latency, <160 µS (typical)
- Supports FCC, IC, and ETSI channel sizes of 10, 20, 28, 30 and 40 MHz ‡
- Standard 2-year manufacturer warranty
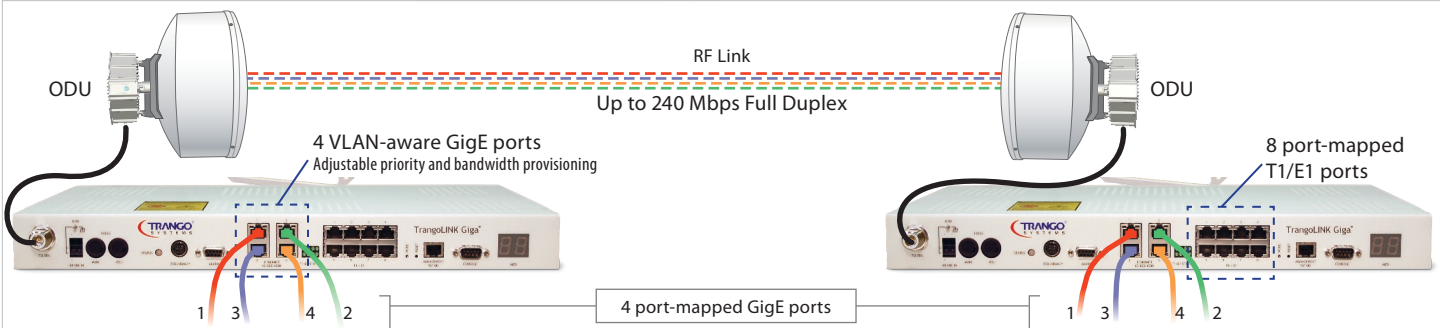
Performance

- » Highly flexible bandwidth management options
- » Selectable filters for improved sensitivity
- » Flexible modulation for greater spectral efficiency
- » Supports jumbo packets in GigE mode
- » Port Priority assignment (VLAN) and QoS features
- » Four configurable 10/100/1000 BaseT ports for payload
- » Eight T1/E1 ports that are automatically added to or dropped from the data stream when connected or disconnected

Fail Safe Features for High Reliability

- » Hot standby configuration for protection against equipment failure
- » Supports dual power supplies for power redundancy

Management

- » Network management through SSH, SNMP, HTTP, and Serial port
- » Built in loop back and far end monitoring

ODU

RF Link
Up to 240 Mbps Full Duplex

ODU

4 VLAN-aware GigE ports
Adjustable priority and bandwidth provisioning

8 port-mapped
T1/E1 ports

1 3 4 2   4 port-mapped GigE ports   1 3 4 2

Specifications

RADIO PARAMETERS			Band 1	Band 2
Frequency of Operation (ODU) ‡		FCC/IC (490 MHz duplex spacing)	*Band 1A:* 10.715 to 10.945 GHz *Band 1B:* 11.215 to 11.435 GHz	*Band 2A:* 10.955 to 11.185 GHz *Band 2B:* 11.445 to 11.685 GHz
		ETSI (490 MHz duplex spacing)	*Band 1A:* 10.715 to 10.945 GHz *Band 1B:* 11.215 to 11.435 GHz	*Band 2A:* 10.955 to 11.185 GHz *Band 2B:* 11.445 to 11.685 GHz

Channel Size ‡	10 MHz / 20 MHz / 30 MHz / 40 MHz					
RF Power Output (max per modulation)	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
	+22 dBm	+22 dBm	+22 dBm	+21 dBm	+20 dBm	+19 dBm
Modulation Format	Selectable from QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM					
Receiver Sensitivity	-64 dBm (256 QAM maximum speed); -89 dBm (QPSK minimum speed)					
Features	ATPC (Automatic Transmit Power Control), Modulation Shifting, Forward Error Correction					
Regulatory Compliance ‡	**FCC/ANSI**: Part 101, Part 15 Class B Unintentional Radiator **Industry Canada (IC)**: SRSP-310.7 Issue 2 **ETSI**: EN 302 217-2-1 V1.2.1, EN 302 217-2-2 V1.2.2, EN 301 489, ITU R F.387-10, CEPT 12-06E					

DATA							
Data Throughput/ RSSI (1E10⁻⁶ BER) ‡		Speeds are uni-directional. For aggregate full duplex speeds, multiply throughput numbers below by 2.					

Legend
Basic Package = 108 Mbps maximum
License Key 1 = 240 Mbps maximum *

Channel Size	QPSK / RSSI	16QAM / RSSI	32QAM / RSSI	64QAM / RSSI	128QAM / RSSI	256QAM / RSSI
10 MHz	15 Mbps / -89 dBm	32 Mbps / -82 dBm	36 Mbps / -79 dBm	45 Mbps / -76 dBm	52 Mbps / -73 dBm	N/A
20 MHz	32 Mbps / -86 dBm	68 Mbps / -79 dBm	76 Mbps / -76 dBm	93 Mbps / -73 dBm	110 Mbps / -70 dBm	118 Mbps / -67 dBm
28 / 30 MHz	45 Mbps / -84 dBm	95 Mbps / -78 dBm	108 Mbps / -74 dBm	135 Mbps / -72 dBm	155 Mbps / -68 dBm	167 Mbps / -66 dBm
40 MHz	65 Mbps / -83 dBm	137 Mbps / -76 dBm	155 Mbps / -72 dBm	190 Mbps / -70 dBm	223 Mbps / -66 dBm	240 Mbps / -64 dBm

Packet Size	64-9600 bytes
Flow Control	Yes, via Ethernet pause frames (GigE mode only)
Security	Authentication uses 2 level password
Configuration & Management	SSH, HTTPS, Console (RS232), Ethernet, SNMPV2
Remote firmware update	TFTP client in radio unit

ANTENNA	Model/Description	Gain	3 dB Beamwidth
Antenna options	AD11G-2 / 2-foot antenna with slip-fit mount	34.3 dBi mid-band	3.4°
	AD11G-3 / 3-foot antenna with slip-fit mount	37.1 dBi mid-band	2.6°
	AD11G-4 / 4-foot antenna with slip-fit mount	40.4 dBi mid-band	1.7°
	AD11G-6 / 6-foot antenna with slip-fit mount	43.8 dBi mid-band	1.1°

POWER	
Input for Indoor Unit (IDU)	-40.5 to –57 VDC
Power Consumption	IDU: < 70 Watts; ODU: < 20 Watts

MECHANICAL & ENVIRONMENTAL	INDOOR UNIT	OUTDOOR UNIT (without antenna)
Enclosure	19-inch rackmount, 1U height	Cast Aluminum
Indicators	2-digit LED RSSI indicator; Ethernet speed and activity for each port; Backup OK indicator; Fault indicator; Power indicator	2-digit LED "in dBm" RSSI indicator for alignment
IF/power/control connection	N-Female	N-Female
Dimensions (height × width × length)	1.75 × 19 × 13 inches	12 × 12 × 6.8 inches
Weight	6 lbs	13.5 lbs
Temperature Range (operational)	14° to 122° F (-10° to +50° C)	-40° to 131° F (-40° to +55° C)
Humidity	95% non condensing	100% condensing
Interfaces	4 GigaEthernet ports RJ45 (10/100/1000BaseT ports) 8 T1/DS1 ports RJ45	N/A
Out of band Management port	1 Ethernet port RJ45	N/A
Alarms	2 inputs – TTL ; 2 outputs – Dry contact closure isolated 50V 1A	N/A
Power connector	4 Pin Terminal Block to support redundant power supplies	N/A
Redundancy (1+1)	4 pin circular	N/A
Console	DB9	N/A
Antenna Connector	N/A	Slip-fit mount / Optional waveguide adapter: WR90 / UBR100
1+1 Protection Coupler	N/A	< -17 dB Return Loss, 3.8 dB Insertion Loss (typical) 20 dB port-to-port Isolation

* Based on purchasable Option Key. Contact sales for more information.
‡ Legal regulations for specific frequencies vary from region to region—users are responsible for complying with their region's regulations.

CE   **RoHS** Compliant