POINT-TO-POINT

TrangoLINK Giga® 23 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 18 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 620+ Mbps (310+ Mbps full duplex)
- Extremely low latency, <150 µS (typical)
- Supports FCC, IC, and ETSI channel sizes of 10, 20, 28, 30, 40, 50, and 56 MHz ‡
- Standard 2-year manufacturer warranty

Performance

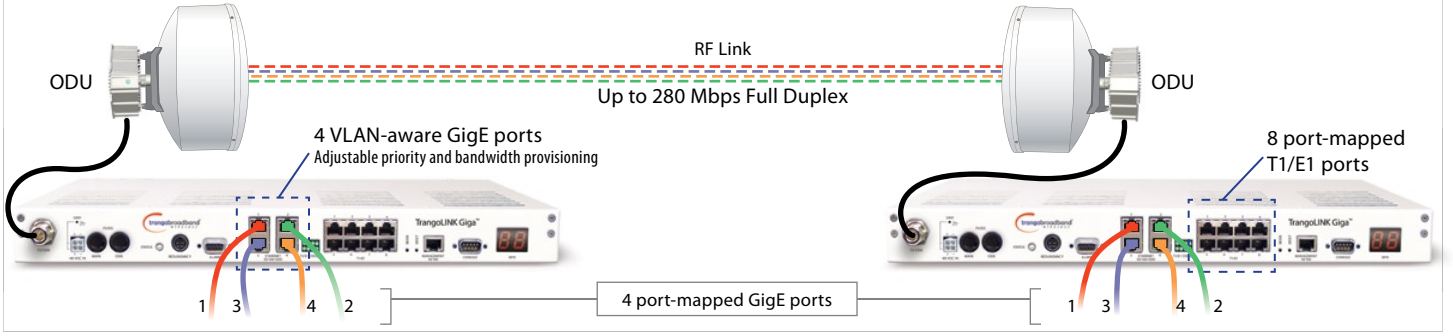
- Highly flexible bandwidth management options
- Selectable filters for improved sensitivity
- Flexible modulation for greater spectral efficiency
- Supports jumbo packets in GigE mode
- Port Priority assignment (VLAN) and QoS features
- Four configurable 10/100/1000 BaseT ports for payload
- Eight T1/E1 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



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Split-Architecture Point-to-Point Microwave Backhaul

Specifications

RADIO PARAMETERS						
Frequency of Operation (ODU) ‡	**FCC/IC** (1200 MHz duplex spacing)		***Band 2A:*** 22.015 to 22.358 GHz		***Band 2B:*** 23.023 to 23.366 GHz	
	ETSI (1008 MHz duplex spacing)		***Band 2A:*** 22.015 to 22.358 GHz		***Band 2B:*** 23.023 to 23.366 GHz	
Channel Size ‡	10 MHz / 20 MHz / 30 MHz / 40 MHz / 50 MHz / 56 MHz					
RF Power Output (max per modulation)	**QPSK**	**16QAM**	**32QAM**	**64QAM**	**128QAM**	**256QAM**
	+20 dBm	+19 dBm	+18 dBm	+17 dBm	+16 dBm	+15 dBm
Modulation Format	Selectable from QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM					
Receiver Sensitivity	-61 dBm (256 QAM maximum speed); -87 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-321.8 Issue 2 **ETSI:** EN 302 217-2-1 (System Dependent) Class 6A, EN 302 217-2-2 (Essential Requirements) Class 6A, ITU-R F.637-3					
DATA						
Data Throughput/ RSSI (1E10-6 BER) ‡	Speeds are uni-directional. For aggregate full duplex speeds, multiply throughput numbers below by 2.					
Channel Size	**QPSK / RSSI**	**16QAM / RSSI**	**32QAM / RSSI**	**64QAM / RSSI**	**128QAM / RSSI**	**256QAM / RSSI**
10 MHz	14 Mbps / -87 dBm	30 Mbps / -80 dBm	34 Mbps / -76 dBm	43 Mbps / -74 dBm	N/A	N/A
20 MHz	31 Mbps / -86 dBm	66 Mbps / -79 dBm	74 Mbps / -76 dBm	91 Mbps / -73 dBm	108 Mbps / -70 dBm	N/A
28 / 30 MHz	44 Mbps / -82 dBm	93 Mbps / -75 dBm	105 Mbps / -72 dBm	130 Mbps / -69 dBm	153 Mbps / -66 dBm	165 Mbps / -63 dBm
40 MHz	64 Mbps / -80 dBm	135 Mbps / -74 dBm	153 Mbps / -70 dBm	188 Mbps / -68 dBm	220 Mbps / -64 dBm	238 Mbps / -62 dBm
50 MHz	75 Mbps / -80 dBm	160 Mbps / -73 dBm	180 Mbps / -69 dBm	220 Mbps / -67 dBm	260 Mbps / -63 dBm	280 Mbps / -61 dBm
56 MHz	79 Mbps / -80 dBm	175 Mbps / -73 dBm	198 Mbps / -69 dBm	243 Mbps / -67 dBm	287 Mbps / -63 dBm	310 Mbps / -61 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	AD23G-1 / 1-foot antenna with slip-fit mount		35.1 dBi mid-band		2.7°	
	AD23G-2 / 2-foot antenna with slip-fit mount		40.2 dBi mid-band		1.7°	
	AD23G-3 / 3-foot antenna with slip-fit mount		43.7 dBi mid-band		1.1°	
	AD23G-4 / 4-foot antenna with slip-fit mount		46.2 dBi mid-band		0.8°	
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: WR42 / UBR220	
1+1 Protection Coupler	N/A				< -17 dB Return Loss, 3.8 dB Insertion Loss (typical) 20 dB port-to-port Isolation	

Legend

Basic Package = 108 Mbps maximum
License Key 1 = 310 Mbps maximum *

* 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 local regulations.

CE RoHS Compliant

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