PPC-10G-E-L2+

10 Gigabit Ethernet MM-wave Link

PPC-10G Series

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BUILT-IN ADVANCED L2+ SWITCH

4-port, full duplex 10GE L2+ managed switch allows use this radio in customer's network without buying external switches for 10GE network deployment. This also allows easily build hop-by-hop chain of radios to cover long distance trace. The intermediate network segments could be included to IP traffic exchange at any hop to bring better flexibility of 10GE connectivity to local customers.

CARRIER GRADE RADIO

PPC-10G-E-L2+ is IP radio link, providing true 10 Gbps full-duplex throughput. The link is intended for point-to-point applications such as 5G/LTE+ Backhaul, campus networks, 4K UHD video streaming. ELVA-1's PPC-10G-E-L2+ is available in lightly licensed 70/80 GHz (E-band) frequency formats with 1 ft. or 2 ft. antennas. High power (HP) version of this link has increased range up to up to 24.0 km (15 miles).

The PPC-10G platform is based on state-of-the-art MMIC chips, which support Quadrature Amplitude Modulation in digital data radio communications. Using QAM 128, PPC-10G-E-L2+ link requires only 2 GHz bandwidth at 70/80 GHz for its 10Gpbs data rate. For Q-band, ELVA-1 has pioneered the implementation of QAM 256 technology to achieve the best spectrum efficiency in the industry.

RAPID AND LOW COST 10 GBPS DEPLOYMENT

ELVA-1 PPC-10G-E-L2+ is a fully-outdoor radio, designed for temperatures -50°C (-58°F) to +60°C(140°F), and humidity up to 100%. Delivery kit for each radio contains RSL tuning panel for fast antenna alignment. Link installation can be done within one day.

• Frequency bands: 71-76/81-86 GHz or optionally 40.5-43.5 GHz*****
• Up to **20 km** (**12.4 miles**) or **24 km** (**15 miles**) for HP version at clear sky conditions
• True 10Gbps Full Duplex Operation (E-band)
• Band management and pocket head suppression
• SNMP v.1; v.2; SNMPv2-MIB; Enterprise-MIB; WEB; Telnet; CLI
• Hitless adaptive bandwidth, coding and modulation

PPC-10G-E with L2+ SWITCH SPECIFICATION

Model	PPC-10G-E with L2+			High Power PPC-10G-E with L2+		
Max Throughput	up to 10 Gbps Full Duplex			up to 10 Gbps Full Duplex		
Max Channel Bandwidths	2000 MHz			2000 MHz		
Modulation	QAM-256 to BPSK Adaptive to weather with hitless adaptive bandwidth, coding and modulation					
MTBF	150 000 hours					
Max Distance at max throughput with 2ft antennas at clear sky	up to 20.0 km (12.4 miles)			up to 24.0 km (15 miles)		
Max output power	17dBm (50 mW) at QAM 128 20 dBm (100 mW) at QPSK/BPSK			24.7 dBm (295 mW) at QPSK/BPSK		
Link budget with 1ft / 2ft antennas @ 10^{-9} BER, BPSK modulation	200 dB @250 MHz 197 dB @500 MHz 195 dB @750 MHz 194 dB @1000 MHz 193 dB @1250 MHz 192 dB @1500 MHz 191 dB @2000 MHz			206 dB @250 MHz 203 dB @500 MHz 201 dB @750 MHz 200 dB @1000 MHz 199 dB @1250 MHz 198 dB @1500 MHz 197 dB @2000 MHz		

Max throughput	1330Mbps @250MHz	2660Mbps @500MHz	3750Mbps @750MHz	5200Mbps @1000MHz	7200Mbps @1250MHz	7630Mbps @1500MHz	9980Mbps @2000MHz

Management	SNMP v.1; v.2; SNMPv2-MIB and proprietary MIB; WEB GUI; Telnet; CLI
Ethernet Interface	3×SFP+ 10GBase-LR/SR + 1xCopper 1000/100/10Base-Tx
Ethernet	Transparent for Ethernet services, Flow Control 802.3x PTP IEEE 1588v2 (TC) support
Management	In Band
Forward Error Correction	LDPC; Reed Solomon
Polarization	Vertical / Horizontal

Antenna

Antenna Type	Cassegrain type antenna with radio-transparent radome
Antenna Gain/Beamwidth 1ft antenna - 2ft antenna	45 dB/0.7° - 51 dB/0.35°

Power / Environment

Power Supply AC	Input 88-132 / 176-264 Volts, 50/60 Hz
Transceiver Power Consumption	45 W (+60 W when heater is switched ON)
Power DC Voltage	36 to 60 Volts DC
Power Connection	IP-67
Operational Temperature	-50^{0}C to +60^{0}C / -58^{0}F to 140^{0}F
Humidity	Up to 100%

Physical dimensions

Outdoor unit size w/o antenna	246 x 246 x 110 mm
Weight (ODU w/o antenna)	4 kg max
Delivery set	2 radios with antennas + 2 indoor power supplies

PPC-10G w/L2+ Part Numbering

To choose the right model by its product code, please use the following encoding schema:

For example, PPC-10G link with L2+ switch and 2ft antennas, 71-76/81-86 GHz frequency band has product code PPC-10G-E-L2-2ft.
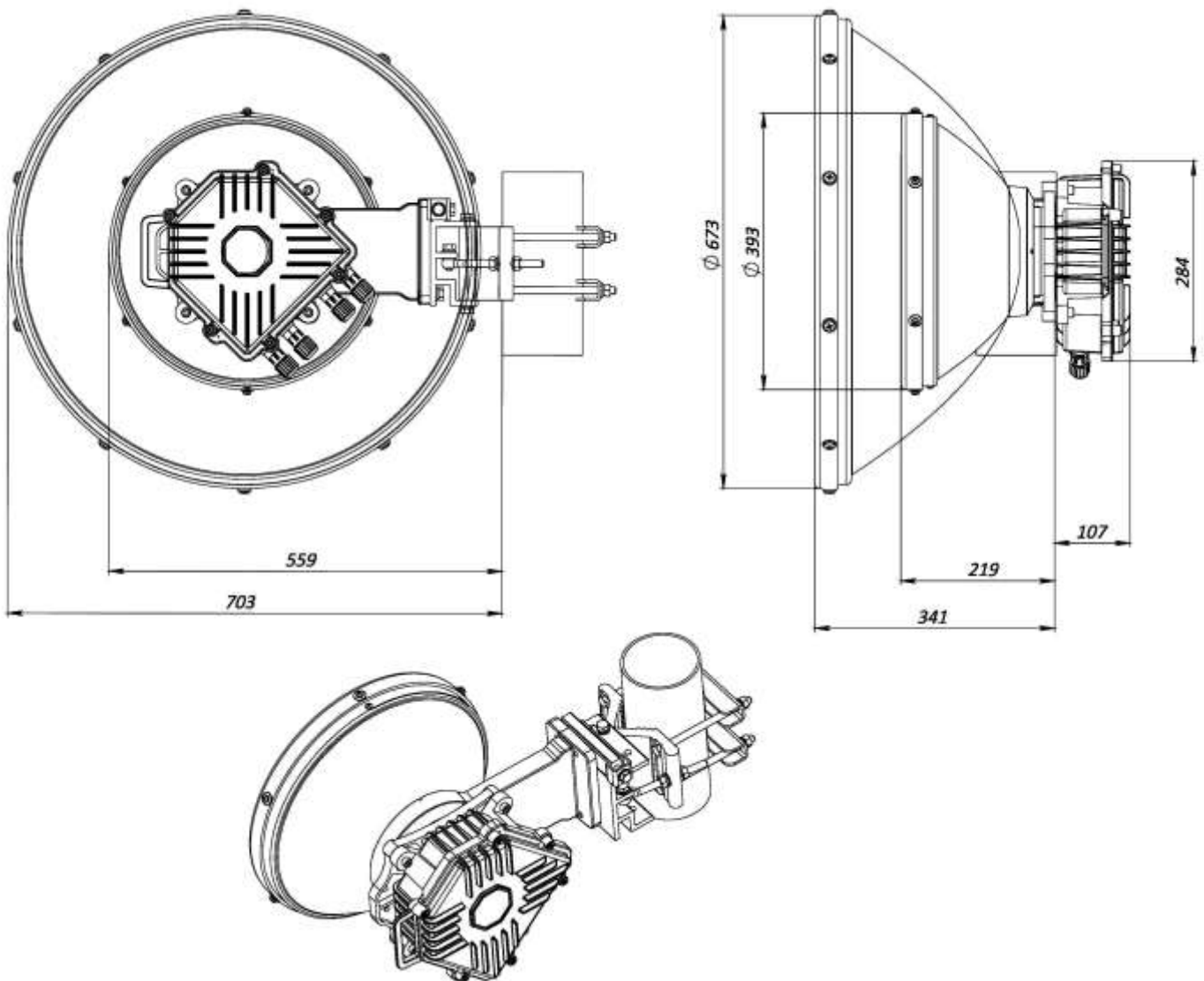
L2+ SWITCH SPECIFICATION

- 3xSFP+/SFP 10GbE ports + 1x1000Base-Tx
- Auto negotiation all ports
- Flow Control 802.3x all ports
- Jumbo frame – max 10k
- Support VLAN 802.1q
- Support QoS 802.1p min 8
- Class of service Interface & VLAN ID
- Class of service Interface & P-Bits
- Class of service Interface & DSCP
- Class of service Interface & VLAN ID & DSCP
- Class of service Interface & IPv6 TC
- Class of service Interface & MPLS EXP
- Support two-rate, three-color 2R3C Policing MEF 10.1
- Support Scheduling Strict Priority SP
- Support Scheduling Weighted Round Robin WRR
- Support Scheduling Weighted Fair Queuing WFQ
- Support Carrier Ethernet services E-Lines/EPL / EVPL
- Support MSTP 802.1s
- Support IPv6 at L2 (hardware)
- Support QoS (CoS IEEE 802.1p), DiffServ : QoS (ToS/DSCP)
- Support 802.3ah (OAM)/ 802.3ag (OAM)
- Support ITU-T Y.1731 (OAM)
- Support L2 bridging modes (C-Vlan; S –Vlan)
- Support Q-in-Q 802.1 ad
- Support Header compression L2/L3/L4
- Support IEEE 1588v2 Precision Time Protocol (TC)
- Support ITUT G.8032 or EAPS; ITUT G.802.3 ad

PPC-10G-E-L2+ DIMENSIONS WITH 1 FT OR 2 FT ANTENNA

ITU RAIN RATE ZONES TO DETERMINE LINK AVAILABILITY
USE HTTP://LINKBUDGETCALC.ELVA-1.COM FOR PPC-10G RADIOS