

PTP 820S

24 GHz Licensed Microwave Radio



All-Outdoor Specifications

RADIO

- 24000 – 24250 MHz
- 1+0, 1+1 HSB, 2+0

Radio Features

- Protection: 1+1 HSB
- High spectral utilization: QPSK to 2048 QAM w/ACM

ETHERNET

Ethernet Interfaces

- Traffic Interfaces – 1 x 10/100/1000Base-T (RJ-45) and 2 x 1000base-X (SFP) or 2 x 10/100/1000 Base-T (electrical SFP)
- Management Interface - 1 x 10/100 Base-T (RJ-45)
- Optical SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)
Note: SFP devices must be of industrial grade (-40°C to +85°C)

Ethernet Features

- MTU – 9600 Bytes
- Quality of Service
 - o Multiple Classification criteria (VLAN ID, p-bits, IPv4, DSCP, IPv6 TC, MPLS EXP)
 - o 8 priority queues
 - o Deep buffering (configurable up to 64 Mbit per queue)
 - o WRED
 - o P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- Frame Cut Through – controlled latency and PDV for delay sensitive applications
- Header De-Duplication – Capacity boosting by eliminating inefficiency in all layers (L2, MPLS, L3, L4, Tunneling – GTP for LTE, GRE)
- Ethernet OAM –ITU-T Y.1731
- Adaptive Bandwidth Notification (ABN)

SYNCHRONIZATION

Synchronization Distribution

- Sync Distribution over any traffic interface (GE/FE)
- Sync-E (ITU-T G.8261, G.8262)
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)
- Sync-E Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications.

IEEE-1588

- Optimized Transport for reduced PDV
- IEEE-1588 TC

STANDARD

MEF

- Carrier Ethernet 2.0 (CE 2.0)

Radio Spectral Efficiency

- EN 302 217-2-2

Supported Ethernet Standards

- 10/100/1000base-T/X (IEEE 802.3)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (QinQ – IEEE 802.1ad)
- Link aggregation (IEEE 802.3ad)
- Auto MDI/MDIX for 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: IPv6 Traffic Classes

Security

- AES 256-bit Encryption
- Secured protocols (HTTPS, SNMPV3, SSH, SFTP)
- Radius authentication and authorization

Standards Compliance

- EMC: EN 301 489-1, EN 301 489-4, Class B (Europe), FCC 47 CFR, part 15, class B (US), ICES-003, Class B (Canada), TEC/EMI/TEL-001/01, Class B (India)
- Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)

- Safety: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSAC22.2.60950-22
- Ingress Protection: IP66-compliant
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

TECHNICAL SPECIFICATION

Mechanical Specifications

- Dimensions: 230mm(H), 233mm(W), 98mm(D), 6.0kg
- Pole Diameter Range (for Remote Mount Installation): 8.89 cm – 11.43 cm

Environmental Specifications

- -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications

- Standard Input: -48 VDC
- IDU DC Input range: -40 to -60 VDC

Power Consumption Specifications

- Maximum Power Consumption - 35W

PoE Injector Mechanical Specifications

- Dimensions – 134mm(H), 190mm(W), 62mm(D), 1 kg

PoE Injector Environmental Specifications

- 33°C to +55°C (-45°C to +60°C extended)

PoE Injector Power Input Specifications

- Standard Input: -48 or +24 VDC (Optional)
- DC Input range: ±(18/40.5 to 60) VDC (+18VDC extended range is supported as part of the nominal +24VDC support)

PoE Injector Interfaces

- GbE Data Port supporting 10/100/1000Base-T
- Power-Over-Ethernet (PoE) Port
- DC Power Port –40V to -60V (a PoE supporting two redundant DC feeds each supporting ±(18-60)V is available)

Specifications

TRANSMIT POWER

Transmit Power (dBm)	24 UL	Note
QPSK	18	The figures provided below represent the PTP820S's maximum transmit power and its adjustable range. Customers in countries that follow EC Directive 2006/771/EC (including amendments) must observe the 100mW EIRP obligation by adjusting transmit power according to antenna gain and RF line losses. The PTP820S models are supplied with isolators fitted to the radio ports. These isolators insert 20dB into the TX path and are required to meet the 100mW EIRP obligation.
8 PSK	18	
16 QAM	18	
32 QAM	18	
64 QAM	18	
128 QAM	18	
256 QAM	16	
512 QAM	16	
1024 QAM	15	
2048 QAM	14	
Minimum Tx Level	-1	

RECEIVE SENSITIVITY

Modulation	3.5 MHz	7 MHz	14 MHz	28 MHz	40 MHz	56 MHz
QPSK	-94.5	-91.5	-88.5	-85.5	-84.0	-82.0
8 PSK	-	-85.5	-82.5	-81.0	-79.0	-78.0
16 QAM	-87.5	-85.0	-81.5	-79.0	-77.5	-75.5
32 QAM	-84.0	-81.5	-78.5	-75.5	-73.5	-72.0
64 QAM	-81.0	-78.5	-75.5	-72.5	-71.0	-69.0
128 QAM	-77.5	-75.5	-72.0	-69.0	-68.0	-66.0
256 QAM	-74.5	-72.0	-69.0	-66.0	-64.5	-63.0
512 QAM	-	-70.0	-66.5	-64.0	-62.0	-61.0
1024L QAM	-	-66.5	-63.5	-61.0	-59.5	-57.5
1024H QAM	-	-65.5	-63.0	-60.0	-58.5	-56.5
2048 QAM	-	-	-	-56.5	-56.0	-52.0

ETHERNET THROUGHPUT

Modulation	Channel Size	Ethernet Throughput (Mbps)			Channel Size	Ethernet Throughput (Mbps)		
		No Compression	L2 Compression	Multi-Layer Compression		No Compression	L2 Compression	Multi-Layer Compression
QPSK	3.5 MHz	3	3-4	4-11	7 MHz	8	8-10	9-27
8 PSK		NA	NA	NA		13	13-14	13-40
16 QAM		8	8-10	9-27		18	18-20	19-58
32 QAM		11	11-13	12-36		24	24-27	25-77
64 QAM		14	14-16	15-45		30	30-34	31-95
128 QAM		17	17-20	18-54		36	36-41	37-114
256 QAM		19	20-22	20-62		41	41-47	43-132
512 QAM		NA	NA	NA		44	44-50	46-141
1024 QAM Strong		NA	NA	NA		47	47-54	49-151
1024 QAM Light		NA	NA	NA		50	51-57	53-161
QPSK	14 MHz	19	19-22	20-62	28 MHz	40	40-45	42-127
8 PSK		29	29-33	30-93		59	60-68	62-191
16 QAM		40	40-45	42-128		81	82-93	85-261
32 QAM		53	53-60	55-169		107	108-122	112-344
64 QAM		65	65-74	68-208		132	133-150	138-424
128 QAM		78	79-89	82-251		159	160-181	166-509

PTP 820S 24 GHz SPECIFICATION SHEET

256 QAM	14 MHz	89	90-102	94-287	28 MHz	181	182-206	190-580
512 QAM		98	99-112	103-316		199	201-227	209-640
1024 QAM Strong		104	105-119	109-335		212	214-242	223-681
1024 QAM Light		111	111-126	116-355		225	227-257	236-723
QPSK	40 MHz	57	57-65	60-183	56 MHz	81	82-93	86-262
8 PSK		85	86-97	89-273		121	122-138	127-390
16 QAM		116	117-132	121-372		165	166-188	173-531
32 QAM		152	154-174	160-490		217	219-248	228-699
64 QAM		187	189-214	197-602		267	269-304	280-833
128 QAM		226	228-258	238-728		323	325-368	339-833
256 QAM		243	245-278	256-782		369	372-421	388-833
512 QAM		267	269-304	280-833		401	404-457	421-833
1024 QAM Strong		302	305-345	318-833		436	439-497	458-833
1024 QAM Light		321	324-366	337-833		462	466-528	486-833
2048 QAM		347	350-396	365-833		500	505-572	527-833