



Datasheet

IP-20E

February 2024 | Rev E.01



Radio

Supported Frequency Range

71-76 GHz, 81-86 GHz

Radio Configurations

1+0, 2+0

Multiband (with IP-20C, IP-20C-HP, IP-20S, IP-20N, IP-20A, or third-party radio carrier)

Radio Features

BPSK to 1024 QAM w/ACM

Built-in frequency scanner to determine the current interference level for each channel

Ethernet

Ethernet Interfaces

Port 1:

- Electric: 10/100/1000Base-T RJ-45
- Ceragon-approved PoE

Port 2:

- SFP cage which supports – Regular and CSFP standards
 - Regular SFP provides Eth2
 - CSFP (Dual BiDir SFP) provides Eth2 and Eth3

Port 3:

- Three hardware options:
 - 1 x 10/100/1000Base-T (RJ-45) used for management and traffic; OR
 - SFP cage supporting Regular SFP – single ETH interface; OR
 - SFP+ cage supporting a 10G single ETH interface.

Notes: Port numbering differs for different hardware models.

SFP devices must be of industrial grade (-40°C to +85°C, -40°F to +185°F)

Ethernet Features

MTU – 9600 Bytes

Quality of Service

- Multiple Classification criteria (VLAN ID, P-bits, IPv4 DSCP, IPv6 TC, MPLS EXP)
- 8 priority queues per port
- Deep buffering (configurable up to 64 Mbit per queue)
- WRED
- P-bit marking/remarking

4K VLANs

VLAN add/remove

MSTP, ERP (ITU-T G.8032)

Frame Cut Through – controlled latency and PDV for delay sensitive applications

Y.1731 Ethernet OAM*

Y.1731 Ethernet Bandwidth Notification (ETH-BN)

Header DeDuplication – Capacity boosting by eliminating inefficiency in all layers (L2,MPLS, L3,L4, Tunneling – GTP for LTE, GRE)**

Adaptive Bandwidth Notification ABN, also known as EOAM)

Management Protocols

SNMP

REST

SDN Support:

- NETCONF/YANG

Synchronization

Synchronization Distribution

Sync Distribution over any traffic interface (GE/FE)

SyncE (ITU-T G.8261, G.8262)

SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)

SyncE Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications

IEEE-1588

Optimized Transport for reduced PDV

IEEE-1588 TC

Standards

MEF

Carrier Ethernet 2.0 (CE 2.0)

Supported Ethernet Standards

10/100/1000base-T/X (IEEE 802.3)

Optical 10Gbase-X (IEEE 802.3ae)

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

* Planned for future release.

** Not available for 500 MHz channels.



RFC 2474: IPv4 DSCP

RFC 2460: IPv6 Traffic Classes

Security

Radio Encryption – AES 256

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

RADIUS authentication and authorization

TACACS+ Authentication, Authorization, and Accounting (session-based)

Standards Compliance

Radio Spectral Efficiency: FCC Part 101, EN 302 217-2

EMC: EN 301 489-4, EN 301 489-1, FCC 47 CFR, part 15, subpart B, ICES-003, TEC/SD/DD/EMC-221/05/OCT-16, IEC 61000-4-29

Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)

Safety: EN 62368-1, IEC 62368-1, UL 62368-1 CSA-C22.2 No.62368-1

Storage: ETSI EN 300 019-1-1 Class 1.2

Transportation: ETSI EN 300 019-1-2 Class 2.3

Technical Specifications

Mechanical Specifications

Dimensions (Direct Mount HW) –

220mm(H), 198mm(W), 75mm(D), 3 kg.

8.66”(H), 7.8”(W), 2.95”(D), 6.6 lbs.

Dimensions (43dBi Integrated Antenna) –

280mm(H), 280mm(W), 110mm(D), 3.5 kg.

11.02”(H), 11.02”(W), 4.33”(D), 7.7 lbs.

Pole Diameter Range (for Remote Mount Installation) –

8.89cm – 11.43cm; 3.5” – 4.5”

Environmental Specifications

-33°C to +55°C

-27°F to +131°F

Power Input Specifications

Standard Input: -48 VDC; DC Input range: -40.5 to -60 VDC

Power Consumption Specifications

Active – 43W; Standby – 36W

PoE Injector Mechanical Specifications

134mm(H), 190mm(W), 62mm(D), 1 kg.

5.28”(H), 7.48”(W), 2.44”(D), 2.2 lbs.

PoE Injector Environmental Specifications

-33°C to +55°C

-27°F to +131°F

PoE Injector Power Input Specifications

Standard Input: -48 VDC

DC Input range: -18/40.5 to -60 VDC

PoE Injector Interfaces

GbE Data Port supporting 10/100/1000Base-T

Power-Over-Ethernet (PoE) Port

DC Power Port –40VDC to -60VDC (a PoE supporting two redundant DC feeds each supporting -18 to -60VDC is available)

Product Images

IP-20E



Radio Specifications

Capacity

	Capacity (Mbps)	Capacity De-Dup	Capacity (Mbps)	Capacity De-Dup
Modulation	14 MHz		28 MHz	
BPSK	6-8	7-25	17-21	18-64
QPSK	17-20	17-63	38-46	39-143
8 QAM	135-165	28-100	57-70	60-218
16 QAM	-	-	79-97	83-302
32 QAM	-	-	106-129	111-401
64 QAM	-	-	131-160	137-497
128 QAM	-	-	158-193	166-600
256 QAM	-	-	180-220	189-685
512 QAM	-	-	199-244	209-758
Modulation	62.5 MHz		125 MHz	
BPSK	39-48	41-149	87-106	91-330
QPSK	90-110	95-343	185-226	194-704
8 QAM	136-166	143-518	276-337	290-1050
16 QAM	185-227	195-706	376-460	395-1431
32 QAM	244-298	256-928	496-606	521-1885
64 QAM	298-364	313-1134	609-744	640-2316
128 QAM	359-439	377-1365	734-897	770-2500
256 QAM	410-501	430-1558	835-1021	877-2500
512 QAM	450-550	473-1712	920-1125	966-2500
1024 QAM	502-613	527-1908	-	-
Modulation	250 MHz		500 MHz	
BPSK	177-217	186-675	354-433	372-1348
QPSK	374-457	393-1423	748-914	785-2500
8 QAM	556-680	584-2116	1112-1359	1168-2500
16 QAM	756-925	794-2500	1512-1849	1588-2500
32 QAM	995-1217	1045-2500	1990-2433	2090-2500
64 QAM	1222-1494	1283-2500	2443-2500	2500-2500
128 QAM	1471-1799	1545-2500	-	-
256 QAM	1650-2017	1733-2500	-	-

Transmit Power and Receiver Threshold (RSL) (dBm @ BER = 10⁻⁶)

Transmit Power	14	28	62.5	125	250	500	RSL	14	28	62.5	125	250	500
BPSK	18	18	18	18	18	15		-90.5	-87.5	-83.0	-80.0	-77.0	-74.0
QPSK	18	18	18	18	18	15		-87.2	-84.6	-79.5	-76.5	-73.5	-70.5
8 QAM	18	18	18	18	16	11		-83.1	-80.6	-75.5	-72.5	-70.0	-67.0
16 QAM	-	17	17	17	15	10		-	-77.4	-73.0	-69.5	-67.0	-64.0
32 QAM	-	17	17	17	15	10		-	-73.9	-69.0	-66.0	-63.0	-60.0
64 QAM	-	16	16	16	14	9		-	-70.8	-66.0	-63.0	-60.0	-57.0
128 QAM	-	16	16	16	14	-		-	-67.6	-63.0	-60.0	-57.0	-
256 QAM	-	15	15	15	13	-		-	-64.6	-59.5	-57.0	-54.0	-
512 QAM	-	14	14	14	-	-		-	-62.4	-57.0	-54.0	-	-
1024 QAM	-	-	13	-	-	-		-	-	-54.0	-	-	-

