



Datasheet

FibeAir IP-20E

Rev B.01 | April 2020



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 only; 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

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

RADIUS authentication and authorization

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

Standards Compliance

Radio Spectral Efficiency: EN 302 217-2-2

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, CSA C22.2.60950-22

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 (-45°C to +60°C extended)
-27°F to +131°F (-49°F to +140°F extended)

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 (-45°C to +60°C extended)
-27°F to +131°F (-49°F to +140°F extended)

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 | - | - | - |

