



Datasheet

IP-50EX

April 2024 | Rev. A



Radio

Supported Frequency Range

71-76 GHz, 81-86 GHz

Radio Configurations

1+0, 2+0 (XPIC), 1+1 HSB Protection with Unit Redundancy*

Radio Features

- ATPC
- High spectral utilization: BPSK to 256 QAM w/ACMB
- Adaptive Bandwidth Notification (EOAM)
- XPIC
- Multiband (with IP-20 and IP-50 families)†
- Layer 1 Link Bonding (with IP-20N/IP-20A)

Ethernet

Ethernet Interfaces

Port 1:

- DC port

Port 2:

- RJ45 – 1GbE (electrical, mgmt./data)

Port 3:

- SFP28 - 1/2.5/10/25GbE

Port 4:

- SFP28 - 1/2.5/10/25GbE

Port 5:

- QSFP (internal)
- Option for SFP+ (1x10GbE) with adaptor

Ethernet Features

MTU – 9612 Bytes

Quality of Service

- Multiple Classification criteria (VLAN ID, P-bits, IPv4 DSCP, IPv6 TC)
- 8 CoS queues per port
- WRED
- P-bit marking/remarking

4K VLANs

VLAN add/remove

MSTP, ERP (ITU-T G.8032)

Ethernet OAM (Y.1731)

Ethernet Bandwidth Notification (ETH-BN) (Y.1731)

* Only 1+0 is supported in the initial release.

Management Protocols

SNMP

REST

SDN Support:

- NETCONF/YANG

Synchronization Protocols

Enhanced Ethernet Equipment Clock (eEEEC) Specification (G.8262.1)

PTP Telecom Class A Boundary Clock (T-BC) (G.8273.2)

PTP Telecom Class A Transparent Clock (T-TC) Specification (G.8273.3)

Enhanced SyncE Network Limits (G.8261, clause 9.2.1)

Enhanced PTP Network Limits (G.8271.1)

Ethernet Synchronization Messaging Channel (ESMC) (G.8264, clause 11)

PTP Telecom Profile for Time (Full Timing Support) (G.8275.1)

Precision Time Protocol (version 2, IEEE1588-2008)

Standards

MEF

Carrier Ethernet 2.0 (CE 2.0)

Supported Ethernet Standards

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

10GBase-LR (IEEE 802.3)

Virtual LAN (VLAN, IEEE 802.1Q)

MAC bridges (IEEE801.D)

Class of service (IEEE 802.1p)

Provider bridges (QinQ – IEEE 802.1ad)

Link aggregation (IEEE 802.1AX)

Auto MDI/MDIX for 1000baseT

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)

† Planned for future release.



Standards Compliance

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

EMC: EN 301 489-1, EN 301 489-4, Class A (Europe)

FCC 47 CFR, part 15, subpart B, class A (US)

ICES-003, Class A (Canada)

TEC/SD/DD/EMC-221/05/OCT-16, Class A (India)

IEC 61000-4-29

Surge: EN61000-4-5, Class 4 (for PWR port)

Safety: EN 62368-1, IEC 62368-1, UL 62368-1,

CAN/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

IP-50EX



Technical Specifications

Mechanical Specifications

Dimensions (Direct Mount HW) –
228mm(H), 233mm(W), 76mm(D), 2.77 kg.
9”(H), 9.2”(W), 3”(D), 6.1 lbs.

Dimensions (43dBi Integrated Antenna) –
313mm(H), 276mm(W), 97mm(D), 4.5 kg.
12.3”(H), 10.9”(W), 3.8”(D), 9.9 lbs.

Environmental Specifications

-40°C to +55°C

-40°F to +131°F

Power Input Specifications

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

Power Consumption Specifications

Typical Power – 50W

Maximum Power – 55W



Radio Specifications

Note that the modulation per profile differs per channel bandwidth. For 250-2000 MHz channels, IP-50EX implements ACMB with ten available working points, as shown in the following table:

Profile and Modulation	250-2000 MHz
Profile 0	BPSK – ¼ channel spacing
Profile 1	BPSK – ½ channel spacing
Profile 2	BPSK – full channel spacing
Profile 3	QPSK
Profile 4	8 PSK
Profile 5	16 QAM
Profile 6	32 QAM
Profile 7	64 QAM
Profile 8	128 QAM
Profile 9	256 QAM
Profile 10	512 QAM
Profile 11	1024 QAM

Ethernet Capacity [Mbps]

Profile	250	500	1000	2000
0	48-59	98-121	190-234	330-407
1	95-117	197-243	379-467	660-814
2	190-235	394-485	758-935	1319-1627
3	382-471	788-972	1517-1871	2640-3256
4	574-707	1183-1459	2276-2807	4108-5067
5	765-944	1578-1946	3036-3744	5478-6756
6	957-1180	1973-2433	3795-4680	6848-8446
7	1148-1416	2367-2920	4554-5616	8218-10000
8	1340-1652	2762-3406	5313-6553	9931-10000
9	1532-1889	3157-3893	6073-7489	–
10	1723-2125	3552-4380	6832-8425	–
11	1915-2361	3946-4867	–	–



Transmit Power [dBm]

Note: The accuracy of these values is up to +/-2dB.

Channel Spacing (MHz)	250	500	1000	2000
¼ BPSK	21	21	21	21
½ BPSK	21	21	21	21
BPSK	21	21	21	21
4 QAM	21	21	21	21
8 QAM	20	20	20	20
16 QAM	19	19	19	19
32 QAM	18	18	18	18
64 QAM	17	17	17	17
128 QAM	16	16	16	16
256 QAM	15	15	15	–
512 QAM	15	15	15	–
1024 QAM	14	14	–	–

Receive Level Threshold [dBm@10E-6]

Note: The values listed in this section are typical. Actual values may differ in either direction by up to 2dB.

Channel Spacing (MHz)	250	500	1000	2000
BPSK	-77.2	-74.2	-71	-68.9
4 QAM	-74.9	-71.6	-68.5	-65.9
8 QAM	-69.8	-66.4	-63.3	-60.5
16 QAM	-68.4	-65.2	-61.9	-59.1
32 QAM	-64.3	-61.2	-58.1	-56.2
64 QAM	-62.5	-59.2	-56	-53.4
128 QAM	-59.6	-56.3	-53	-49.8
256 QAM	-56.7	-53.4	-50.1	–
512 QAM	-53.5	-50.3	-47	–
1024 QAM	-49.5	-47.1	–	–

