CERAGON

Datasheet

IP-50E

Rev. A.08 | May 2019

Note:	For feature availability, check the Release Notes for the CeraOS version you are using.

Radio

Supported Frequency Range

71-76 GHz, 81-86 GHz

Radio Configurations

1+0, 2+0 (XPIC)*

Radio Features

- ATPC*
- High spectral utilization: BSK to 512 QAM w/ACM
- Adaptive Bandwidth Notification (EOAM)*
- XPIC*
- Multiband*

Ethernet

Ethernet Interfaces

Port 1:

- DC port

Port 2:

- RJ-45 1GE/Management/PoE Port (no traffic)

Port 3:

- SFP – 1/2.5GE Multiband port

Port 4:

- QSFP – 4 x 1/10GE or 1x40GE traffic interface (QSFP+)
- Option for SFP+ (1x10GE) with adaptor

Port 5:

- SFP –10 GE traffic interface (SFP+)

Notes:	For traffic, only Port 5 (Eth 7) is supported in the initial release. SFP+ and QSFP+ devices must be of industrial grade (-40°C to +85°C, -40°F to +185°F)

Ethernet Features

MTU – 9612 Bytes

Quality of Service

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

4K VLANs

VLAN add/remove

Y.1731 Ethernet OAM

Y.1731 Ethernet Bandwidth Notification (EBN)

Management Protocols

SNMP

REST

SDN Support:

- NETCONF/YANG*

Synchronization Protocols

Enhanced Ethernet Equipment Clock (eEEC) Specification (G.8262 Opt 1 and Opt 2)

PTP Telecom Boundary Clock (T-BC) and Time Slave Clock (T-TSC) Specification (G.8273.2, Class C)*

PTP Telecom Transparent Clock (T-TC) Specification (G.8273.3, Class C)*

Enhanced SyncE Network Limits (G.8261, clause 9.2)

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)

Optical 10Gbase-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

* Planned for future release.

Security

Radio Encryption – AES 256*

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

Standards Compliance

Radio Spectral Efficiency: 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
TEC/SD/DD/EMC-221/05/OCT-16, Class A (India)
|IEC 61000-4-29

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

Safety: EN 60950-1, EN 62368-1, IEC 60950-1,IEC 62368-1, UL 60950-1, UL 62368-1, CAN/CSA C22.2 NO 60950-1, CAN/CSA C22.2 NO 62368-1, EN 60950-22, IEC 60950-22, UL 60950-22, CAN/CSA C22.2 NO 60950-22

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

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

Technical Specifications

Mechanical Specifications

Dimensions (Direct Mount HW) –

322mm(H), 227/270mm(W), 86mm(D), 5.5kg
12.67”(H), 8.93”/10.62”(W), 3.38”(D), 12.12 lbs.

Dimensions (43dBi Integrated Antenna) -
341mm(H), 270/276mm(W), 103mm(D), 7kg
13.42”(H), 10.62/10.86”(W), 4.05”(D), 15.43 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 Redundancy option by using both a DC power input and a passive PoE injector simultaneously.

Power Consumption Specifications

Active – 58W; Standby – 47W

Product Images

IP-50E

Radio Specifications

Ethernet Capacity [Mbps]

Channel Spacing (MHz)	250	500	750	1000
BPSK	198-242	396-484	585-715	775-947
4 QAM	396-484	792-968	1171-1431	1550-1895
8 QAM	594-726	1188-1453	1757-2147	2326-2843
16 QAM	792-968	1585-1937	2342-2863	3102-3792
32 QAM	990-1211	1981-2421	2928-3579	3877-4740
64 QAM	1189-1453	2377-2906	3514-4296	4653-5688
128 QAM	1387-1695	2773-3390	4100-5012	5429-6636
256 QAM	1585-1937	3170-3875	4685-5728	6204-7585
512 QAM	1783-2179	3566-4359	–	–
Channel Spacing (MHz)	1250	1500	1750	2000
BPSK	946-1157	1161-1420	1334-1630	1389-1698
4 QAM	1894-2315	2324-2841	2669-3262	2779-3397
8 QAM	2842-3474	3487-4263	4004-4895	4170-5097
16 QAM	3789-4632	4650-5685	5339-6527	5560-6797
32 QAM	4737-5790	5813-7106	6674-8159	6951-8497
64 QAM	5684-6949	6976-8528	8010-9791	8341-9997
128 QAM	6632-8107	8139-9949	9345-9997	9997-9997
256 QAM	7579-9265	–	–	–

Transmit Power [dBm]

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

Channel Spacing (MHz)	250	500	750	1000	1200	1500	1750	2000
BPSK	18	18	18	18	18	18	18	18
4 QAM	18	18	18	18	18	18	18	18
8 QAM	17	17	17	17	17	16	16	16
16 QAM	17	17	17	17	17	16	16	16
32 QAM	17	17	17	17	17	16	16	16
64 QAM	16	16	16	16	16	15	15	15
128 QAM	16	16	16	16	16	15	15	15
256 QAM	15	15	15	15	15	–	–	–
512 QAM	12	12	–	–	–	–	–	–

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	750	1000	1200	1500	1750	2000
BPSK	-75.8	-72.8	-71.0	-69.8	-69.0	-68.4	-67.9	-67.4
4 QAM	-73.7	-70.5	-68.7	-67.6	-66.8	-66.2	-65.7	-64.9
8 QAM	-69.1	-65.8	-64.0	-62.8	-62.0	-61.4	-60.9	-59.9
16 QAM	-67.3	-64.3	-62.5	-61.2	-60.4	-59.8	-59.3	-58.6
32 QAM	-64.8	-60.7	-58.9	-58.6	-57.8	-57.2	-56.7	-55.5
64 QAM	-61.9	-57.6	-55.8	-55.7	-54.9	-54.3	-53.8	-52.4
128 QAM	-58.9	-54.7	-52.9	-52.6	-51.8	-51.2	-50.7	-48.0
256 QAM	-56.0	-50.4	-48.6	-49.8	-49.0	–	–	–
512 QAM	-52.4	-49.4	–	–	–	–	–	–