CERAGON

Datasheet

FibeAir IP-20N

REV. A.02 | FEB 2017

General

Assembly options

1RU Chassis – 5x Universal slots;

2RU Chassis –10x Universal slots

Redundant TCC slots (2RU chassis only)

Radio

Supported Frequency Range

6-42 GHz

Radio Configurations

N+0 (N≤8), 2x 4+0, 4x 2+0, 1+1, 2+2

Radio Features

Multi-Carrier Adaptive Bandwidth Control (up to 8+0/2+2)

Protection and Diversity: HSB, SD (BBS)

High spectral utilization: QPSK to 2048 QAM w/ACM

XPIC

Ethernet

Ethernet Interfaces

1RU/2RU Traffic Interfaces - Up to 6/10 x 10/100/1000Base-T (RJ-45) or 1000base-X (SFP)

Optional 10GE Traffic Interface (SFP+)

Management Interfaces - 2 x 10/100 Base-T (RJ-45)

SFP Types - Optical 1000Base-LX (1310 nm) or SX (850 nm)

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/translate

MSTP, ERP (ITU-T G.8032)

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

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

Y.1731 Ethernet OAM

TDM

TDM Interfaces

1RU Chassis: 80 x E1s; 5 x ch-STM-1s, 4 x STM-1s

2RU Chassis: 160 x E1s; 10 x ch-STM-1s, 8 x STM-1s

TDM Features

Native TDM services and TDM PWE using the same hardware

Integrated ch-STM-1 MUX (VC12)

XC capacity – 512 VCs

Timing options – Loop timing, system clock, recovered clock

1+1 / 1:1 path protection

Clear-channel STM-1 (RST)

Synchronization

Synchronization Distribution

Sync Distribution over any traffic interface (GE/FE, E1, STM-1)

Dedicated In/Out synch interface (E1/2 MHz)

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

IEEE-1588 BC*

* Planned for future release.

Standards

MEF

Carrier Ethernet 2.0 (CE 2.0)

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

Supported E1 Standards

ITU-T G.703, G.736, G.775, G.823, G.824, G.828, ITU-T I.432, ETSI ETS 300 147, ETS 300 417

Supported STM-1 Standards

ITU-T G.703, G.775, G.813, G.825, EN 300 386 V1.2.1, ES 201 468; V1.1.1 :2000-03, ES 201 468 V1.2.1 :2002-09, EN 61000 4-3

TDM Pseudowire Standards

SAToP – RFC 4553

Security

Radio Encryption – AES 256

Secured protocols:

- HTTPS
- SNMPv3
- SSH
- SFTP

RADIUS authentication and authorization

Standards Compliance

Radio Spectral Efficiency: EN 302 217-2-2

EMC: EN 301 489-4, EN 301 489-1, FCC 47 CFR, part 15, class B

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

Ingress Protection: IEC 60529 IP56

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

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

Technical Specifications

Mechanical Specifications

1RU Chassis – 44.5mm(H), 444.3mm(W), 245mm(D), 3kg (empty);

2RU Chassis – 88mm(H), 444.3mm(W), 245mm(D), 6kg (empty)

Plugin Card Weights: 0.3kg – 1.5kg

RFU-C – 200mm(H), 200mm(W), 85mm(D), 4kg;

1500HP/RFU-HP – 490mm(H), 144mm(W), 280mm(D), 7kg(W) (excluding Branching)

1500HP/RFU-HP OCB Branching (Split Mount and Compact All-Indoor) – 420mm(H), 110mm(W), 380mm(D), 7kg per carrier

Environmental Specifications

IDU: -5° to +55°C (-25°C to +65°C extended);
RFU: -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications

IDU Standard Input: -48 VDC

IDU DC Input range: -40 to -60 VDC, with maximum current of up to 15A (1RU chassis) or 30A (2RU chassis)

Dual-feed power support

Power Consumption Specifications

TCC – 25W; RMC – 17W; 4XGE LIC – 9W; 1X10GE LIC – 12W; 16XE1 LIC – 17W; ch-STM-1 LIC – 25W; STM-1 – 9W

Fans (1RU/2RU) – 6/30W max (4/6W-25°C)

RFU-C – 6-26 GHz (1+0/1+1): 22W/39W; 28-42 GHz (1+0/1+1): 26W/43W

RFU-HP (6-8 GHz) – Max Bias: 73W; Mid Bias: 48W; Min Bias: 34W; Mute: 18W

RFU-HP (11 GHz) – Max Bias: 74W; Mid Bias: 64W; Mute: 21W

1500HP – Max Bias: 85W; Mid Bias: 72W; Mute: 29W

Product Images

IDU

IP-20N 1RU Chassis

IP-20N 2RU Chassis

Modules

Plugin Cards – Radio Modem Cards (RMCs)

Plugin Cards – Traffic Control Cards (TCCs)

Plugin Cards – Ethernet with 1 Combo and 3 Electrical or Optical Interfaces

Plugin Cards – Ethernet with a Single 10GE Optical Interface

Plugin Cards – 16 x E1/1 x ch-STM-1/1 xSTM-1 Interfaces

Radio Units

RFU-C

1500HP/RFU-HP

Radio Specifications

Capacity and Maximum Number of E1s

Notes: For full specifications, please contact your Ceragon sales representative.

	Capacity (Mbps)	Capacity De-Dup	Max. No. of E1s	Capacity (Mbps)	Capacity De-Dup	Max. No. of E1s	Capacity (Mbps)	Capacity De-Dup	Max. No. of E1s
Modulation	3.5 MHz			7 MHz			14 MHz		
QPSK	3-4	4-13	2	8-10	9-32	4	19-24	20-74	9
8 PSK	–	–	–	13-16	13-48	6	29-36	31-112	13
16 QAM	8-10	9-32	4	18-22	19-69	8	40-49	42-153	18
32 QAM	11-14	12-43	5	24-30	26-92	11	53-65	56-203	24
64 QAM	14-17	15-54	6	30-37	32-114	14	66-80	69-249	29
128 QAM	17-21	18-65	8	36-44	38-137	16	79-97	83-301	36
256 QAM	19-24	20-74	9	42-51	44-158	19	90-110	95-344	41
512 QAM	–	–	–	45-54	47-169	20	100-122	105-380	45
1024 QAM Strong	–	–	–	48-58	50-182	21	106-129	111-402	48
1024 QAM Light	–	–	–	51-62	53-194	23	112-137	118-426	50
Modulation	28 MHz			40 MHz			56 MHz		
QPSK	43-52	45-162	19	58-71	61-220	26	87-106	91-331	39
8 PSK	62-76	65-236	28	86-105	90-328	39	127-155	133-482	57
16 QAM	87-107	92-332	39	117-143	123-446	53	176-215	185-670	79
32 QAM	115-140	121-437	52	154-189	162-588	69	232-283	243-881	104
64 QAM	141-173	149-538	64	190-232	199-722	85	284-348	299-1000	128
128 QAM	170-208	179-648	77	229-280	241-873	103	344-420	361-1000	155
256 QAM	196-239	206-745	88	247-302	259-939	111	397-485	416-1000	178
512 QAM	209-255	219-794	94	270-330	284-1000	122	427-521	448-1000	192
1024 QAM Strong	228-278	239-866	102	306-375	322-1000	138	464-567	487-1000	209
1024 QAM Light	241-295	253-917	108	325-398	342-1000	146	493-602	517-1000	222
2048 QAM	263-321	276-1000	118	352-430	370-1000	158	534-653	561-1000	240

Transmit Power

Transmit Power (dBm)	Frequency (GHz)	6-8	11-15	18-23	24	26	28	31	32	36	38	42
QPSK/8 PSK		33	29	22	0	21	14	16	18	12	18	15
16 QAM		33	29	21	0	20	14	15	17	11	17	14
32 QAM		33	29	20	0	19	14	14	16	10	16	13
64 QAM		33	29	20	0	19	14	14	16	10	16	13
128 QAM		32	28	20	0	19	14	14	16	10	16	13
256 QAM		31	27	18	0	17	12	12	14	8	14	11
512 QAM		29	25	18	-1	17	9	12	14	10	14	11
1024 QAM		28	25	17	-3	16	8	11	13	9	13	10
2048 QAM		26	23	15	0	14	6	9	11	7	11	8

Receiver Threshold (RSL) (dBm @ BER = 10-6)

3.5 MHz	Frequency	6	7-10	11-15	18	23	24	26	28	31-42
QPSK		-97.5	-97.0	-97.5	-96.5	-96.0	-93.0	-95.0	-93.0	-94.0
16 QAM		-91.0	-90.5	-91.0	-90.0	-89.5	-86.5	-88.5	-86.5	-87.5
32 QAM		-88.0	-87.5	-88.0	-87.0	-86.5	-83.5	-85.5	-83.5	-84.5
64 QAM		-84.5	-84.0	-84.5	-83.5	-83.0	-80.0	-82.0	-80.0	-81.0
128 QAM		-81.0	-80.5	-81.0	-80.0	-79.5	-76.5	-78.5	-76.5	-77.5
256 QAM		-77.5	-77.0	-77.5	-76.5	-76.0	-73.0	-75.0	-73.0	-74.0
7 MHz										
QPSK		-95.0	-94.5	-95.0	-94.0	-93.5	-90.5	-92.5	-90.5	-91.5
8 PSK		-89.0	-88.5	-89.0	-88.0	-87.5	-84.5	-86.5	-84.5	-85.5
16 QAM		-88.5	-88.0	-88.5	-87.5	-87.0	-84.0	-86.0	-84.0	-85.0
32 QAM		-85.0	-84.5	-85.0	-84.0	-83.5	-80.5	-82.5	-80.5	-81.5
64 QAM		-82.0	-81.5	-82.0	-81.0	-80.5	-77.5	-79.5	-77.5	-78.5
128 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-74.5	-76.5	-74.5	-75.5
256 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-71.0	-73.0	-71.0	-72.0
512 QAM		-73.5	-73.0	-73.5	-72.5	-72.0	-69.0	-71.0	-69.0	-70.0
1024 QAM Strong		-70.0	-69.5	-70.0	-69.0	-68.5	-65.5	-67.5	-65.5	-66.5
1024 QAM Light		-69.5	-69	-69.5	-68.5	-68.0	-65.0	-67.0	-65.0	-66.0
14 MHz										
QPSK		-92.0	-91.5	-92.0	-91.0	-90.5	-87.5	-89.5	-87.5	-88.5
8 PSK		-86.0	-85.5	-86.0	-85.0	-84.5	-81.5	-83.5	-81.5	-82.5
16 QAM		-85.0	-84.5	-85.0	-84.0	-83.5	-80.5	-82.5	-80.5	-81.5
32 QAM		-82.0	-81.5	-82.0	-81.0	-80.5	-77.5	-79.5	-77.5	-78.5
64 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-74.5	-76.5	-74.5	-75.5
128 QAM		-75.5	-75.0	-75.5	-74.5	-74.0	-71.0	-73.0	-71.0	-72.0
256 QAM		-73.0	-72.5	-73.0	-72.0	-71.5	-68.5	-70.5	-68.5	-69.5
512 QAM		-70.0	-69.5	-70.0	-69.0	-68.5	-65.5	-67.5	-65.5	-66.5
1024 QAM Strong		-67.0	-66.5	-67.0	-66.0	-65.5	-62.5	-64.5	-62.5	-63.5
1024 QAM Light		-66.5	-66.0	-66.5	-65.5	-65.0	-62.0	-64.0	-62.0	-63.0
28 MHz										
QPSK		-89.0	-88.5	-89.0	-88.0	-87.5	-84.5	-86.5	-84.5	-85.5
8 PSK		-84.5	-84.0	-84.5	-83.5	-83.0	-80.0	-82.0	-80.0	-81.0
16 QAM		-82.5	-82.0	-82.5	-81.5	-81.0	-78.0	-80.0	-78.0	-79.0
32 QAM		-79.0	-78.5	-79.0	-78.0	-77.5	-74.5	-76.5	-74.5	-75.5
64 QAM		-76.0	-75.5	-76.0	-75.0	-74.5	-71.5	-73.5	-71.5	-72.5
128 QAM		-72.5	-72.0	-72.5	-71.5	-71.0	-68.0	-70.0	-68.0	-69.0
256 QAM		-69.5	-69.0	-69.5	-68.5	-68.0	-65.0	-67.0	-65.0	-66.0
512 QAM		-67.5	-67.0	-67.5	-66.5	-66.0	-63.0	-65.0	-63.0	-64.0
1024 QAM Strong		-64.5	-64.0	-64.5	-63.5	-63.0	-60.0	-62.0	-60.0	-61.0
1024 QAM Light		-63.5	-63.0	-63.5	-62.5	-62.0	-59.0	-61.0	-59.0	-60.0
2048 QAM		-60.0	-59.5	-60.0	-59.0	-58.5	-55.5	-57.5	-55.5	-56.5

40 MHz									
QPSK	-87.5	-87.0	-87.5	-86.5	-86.0	-80.5	-85.0	-83.0	-84.0
8 PSK	-82.5	-82.0	-82.5	-81.5	-81.0	-75.5	-80.0	-78.0	-79.0
16 QAM	-81.0	-80.5	-81.0	-80.0	-79.5	-74.0	-78.5	-76.5	-77.5
32 QAM	-77.5	-77.0	-77.5	-76.5	-76.0	-70.5	-75.0	-73.0	-74.0
64 QAM	-74.5	-74.0	-74.5	-73.5	-73.0	-67.5	-72.0	-70.0	-71.0
128 QAM	-71.5	-71.0	-71.5	-70.5	-70.0	-64.5	-69.0	-67.0	-68.0
256 QAM	-69.0	-68.5	-69.0	-68.0	-67.5	-62.0	-66.5	-64.5	-65.5
512 QAM	-66.5	-66.0	-66.5	-65.5	-65.0	-59.5	-64.0	-62.0	-63.0
1024 QAM Strong	-63.5	-63.0	-63.5	-62.5	-62.0	-56.5	-61.0	-59.0	-60.0
1024 QAM Light	-62.5	-62.0	-62.5	-61.5	-61.0	-55.5	-60.0	-58.0	-59.0
2048 QAM	-59.0	-58.5	-59.0	-58.0	-57.5	-52.0	-56.5	-54.5	-55.5
56 MHz									
QPSK	-85.5	-85.0	-85.5	-84.5	-84.0	-81.0	-83.0	-81.0	-82.0
8 PSK	-81.5	-81.0	-81.5	-80.5	-80.0	-77.0	-79.0	-77.0	-78.0
16 QAM	-79.0	-78.5	-79.0	-78.0	-77.5	-74.5	-76.5	-74.5	-75.5
32 QAM	-75.5	-75.0	-75.5	-74.5	-74.0	-71.0	-73.0	-71.0	-72.0
64 QAM	-72.5	-72.0	-72.5	-71.5	-71.0	-68.0	-70.0	-68.0	-69.0
128 QAM	-69.5	-69.0	-69.5	-68.5	-68.0	-65.0	-67.0	-65.0	-66.0
256 QAM	-66.5	-66.0	-66.5	-65.5	-65.0	-62.0	-64.0	-62.0	-63.0
512 QAM	-64.5	-64.0	-64.5	-63.5	-63.0	-60.0	-62.0	-60.0	-61.0
1024 QAM Strong	-61.0	-60.5	-61.0	-60.0	-59.5	-56.5	-58.5	-56.5	-57.5
1024 QAM Light	-60.0	-59.5	-60.0	-59.0	-58.5	-55.5	-57.5	-55.5	-56.5
2048 QAM	-55.5	-55.0	-55.5	-54.5	-54.0	-51.0	-53.0	-51.0	-52.0