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Data Sheet

General Availability

ETX-2

Carrier Ethernet Demarcation

- Feature-rich demarcation and aggregation suite, offering a complete Service Assured Access (SAA) solution
- Ideal for service providers, wholesalers, and mobile operators, seeking to deliver and monitor SLA-based MEF-certified CE 2.0 and TDM-over-PSN services
- Versatile offering of multirate Ethernet over fiber, SHDSL, VDSL, GPON, PDH, and TDM traffic, assuring unified service delivery over any access technology
- TWAMP and Layer-2 OAM, diagnostics for scalable and accurate traffic monitoring, quick fault detection, and troubleshooting of Layer-2 and Layer-3 networks

The ETX-2 carrier Ethernet demarcation device is the main component of RAD's Service Assured Access solution, providing:

- Ethernet service uniformity over multiple access technologies including GbE and 10GbE, SHDSL, VDSL, PDH, and SDH
- Both indoor and outdoor enclosures operating in diverse topologies including ring, daisy chain, and hub and spoke
- PW functionality for mobile backhauling and business services
- Synchronization for mobile 2G, 3G, LTE, and LTE-A backhauling networks

ETX-2 is offered in a variety of product options: ETX-203AM, ETX-203AX, ETX-205A, and ETX-220A. (See the dedicated **ETX-203AX-T datasheet** for details on ETX-203AX-T, which provides carrier Ethernet services delivery over LTE or Broadband access.)

MARKET SEGMENTS AND APPLICATIONS

ETX-2 is ideal for carriers, service providers, municipalities, wholesale providers, and mobile operators seeking to offer unified SLA-based Ethernet business services, such as E-Line, E-LAN, E-Tree, and E-Access.

INTEROPERABILITY

The ETX-2 family features and services are standard based and should work with any 3rd party equipment using standard based features and services.

NETWORK TOPOLOGIES

ETX-2 supports several network topologies such as linear, daisy chain, and self-healing rings (G.8032v2), working with ETX-5 or third-party Ethernet devices.

CARRIER ETHERNET 2.0 SERVICES

ETX-2 incorporates a complete set of CE 2.0-certified Ethernet service tools that allows service providers to distinguish between high- and low-priority traffic and optimizes TCP sessions.

ETX-220A also provides MEF 10.3 color-aware and unaware Policers, delivering high-scale multi-CoS services with hierarchical Quality of Service (HQoS).

It supports advanced scheduling, WRED per CoS, shaping per EVC and port, with flexible classification rules and access lists.

MEF Services

ETX-2 delivers E-Line (EVL, EVPL), E-LAN (EPLAN, EVPLAN), E-Tree (EP-TREE, EVP-TREE), and E-Access services.

Layer-2 Control Processing

ETX-2 can be configured to forward or discard Layer-2 control frames (including other vendors' L2CP frames).

DHCP and MLDv2 Snooping

With DHCP and MLDv2 snooping, multicast data is selectively forwarded only to a list of self-learned ports (per multicast group membership), instead of being flooded to all ports in a VLAN.

TDM PSEUDOWIRE

ETX-205A with built-in E1 ports and ETX-2 with smart SFP (MiTOP) provide pseudowire (PW) services. The PWs can be encapsulated using CESoPSN per IETF RFC 5086 or SAToP per IETF RFC 4553.

RAD

Your Network's Edge®

ETX-2

Carrier Ethernet Demarcation

Data Sheet

ETHERNET OVER PDH

ETX-2 provides Ethernet over PDH (EoPDH) services via the following NG-PDH technologies:

- Generic Framing Procedure (GFP G.7041)
- GFP or PDH (G.8040)
- PDH Virtual Concatenation (VCAT G.7043)
- Link Capacity Adjustment Scheme (VCAT G.7042)

NG-PDH solutions improve overall network availability by reducing latency and optimizing line utilization and throughput.

Integrated management of MiRICi smart SFPs provides TDM (E1/T1/E3/T3/OC-3/STM-1) connectivity over PDH or SDH legacy networks.

RESILIENCY

ETX-2 offers fast protection for virtually any kind of failure, in any linear, ring, or dual-homed topology. The device employs IEEE 802.3ad link aggregation (1:1 LAG), ITU-T G.8032v2 Ethernet ring protection, and ITU-T G.8031 Ethernet linear protection, to ensure continuous availability and sub-50 ms restoration in the event of network outages.

It also supports MSTP and RSTP (IEEE 802.1Q) to perform loop-free Bridge forwarding over a mesh/ring physical topology.

TIMING AND SYNCHRONIZATION

ETX-2 incorporates RAD's advanced SyncTop synchronization and timing over packet feature set to support mobile heterogeneous network (HetNet) topology.

The device combines Synchronous Ethernet (SyncE) with IEEE 1588v2 Precision Time Protocol per ITU-T G.8265.1, G.8275.1, and G.8275.2 Telecom profiles for cost-effective synchronization of frequency and phase.

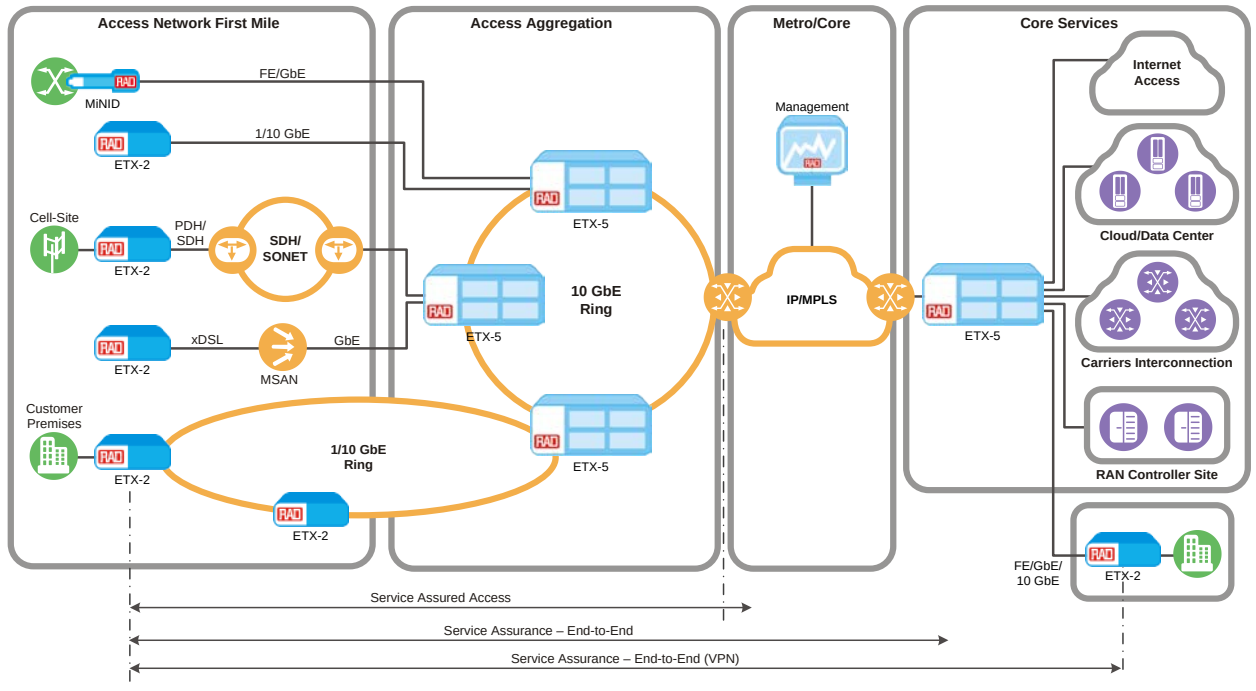
With an integrated GNSS receiver and 1588v2 Grandmaster support, ETX-2 offers a Distributed GM™ solution, allowing mobile operators and service providers to cost-effectively provide reliable frequency and phase accuracy for LTE-A.

The device also supports 1588v2 ordinary clock (OC), boundary clock (BC), and transparent clock (TC), as well as a dual master operating simultaneously in G.8265.1 and G.8275.1 modes.

MANAGEMENT AND SECURITY

The device can be managed via RADview, RAD's carrier-class NMS, or any SNMP-based management system. ETX-2 supports a variety of access protocols, including CLI over Telnet, SNMPv3, and TFTP. Security features include SNMPv3, RADIUS (client authentication), TACACS+ (client authentication, authorization, and accounting), SSH, and SFTP.

Access Control Lists (ACL) can also be used to flexibly filter and mark management traffic, enabling service providers to maintain network security by dropping unwanted packets.



Access Aggregation with SLA-Based Services

ETX-2

Carrier Ethernet Demarcation

MONITORING AND DIAGNOSTICS

Featuring multi-layer OAM and PM tools, ETX-2 performs hardware-based monitoring and diagnostics at high scale and precision. End-to-end connectivity OAM (IEEE 802.1ag) as well as single-segment OAM (IEEE 802.3-2005) ensure flow-level fault management and performance monitoring over Layer-2 networks and also quickly detect connectivity failures for robust protection. Layer-2 and 3 wirespeed loopbacks offer flexible diagnostic tools.

RFC-5357 TWAMP light delivers the same functionality over Layer-3 networks, as well as one-way TWAMP with counters for loss, delay, fragmented packets, reorders and duplication, in addition to configurable test packet size. Multiple VRF support the robust TWAMP setup. High-scale TWAMP is provided in ETX-205A by a PM controller (PMC) in a dedicated enclosure.

The Performance Management Portal is an SLA assurance system that is part of the RADview management system, enabling real-time monitoring of Ethernet service performance by collecting KPI data from RAD devices.

Service Activation Tests

The ETX-2 family offers service activation tools with multiple RFC-2544, Y.1564, and L3 SAT testers.

Digital Diagnostics Monitoring

ETX-2 supports digital diagnostics monitoring (DDM) SFP functions according to SFF-8472, excluding external DDM calibration.

Table 1. Interfaces

Specifications	ETX-203AX 	ETX-203AM 	ETX-205A 	ETX-220A 
10GbE XFP (fiber optic)	–	–	–	Network: 1 or 2 User: 1 or 2 10GBASE-SR 10G BASE-ER 10G BASE-LR, 10G BASE-ZR
1GbE ports	4/6 SFP or copper ports 5 in ETX-203AX-E1 5 out of 6 in use in ETX-203AX-ODU 4 in ETX-203AX/X	4 fixed ports and 2 ports on replaceable module SFP, copper, or SFP/copper combo port	6 SFP/copper combo port	Up to 12 or 22 SFP or copper port
1GbE Fiber Optic (SFP-based)	Fast Ethernet: 100BASE-FX, 100BASE-LX10, 100BASE-BX10 Gigabit Ethernet: 1000BASE-SX, 1000BASE-LX10, 1000BASE-BX10			
1GbE Copper	10/100BASE-T or 10/100/1000 BASE-T			
E1/T1	EoPDH E1 network port	-	TDM PW E1/T1 ports	-
E1/T1/T3/STM-1/OC-3	Via integrated Smart SFP (MiRIC)			
E1/T1/T3 PWE services	Via integrated Smart SFP (MiTOP)			
GNSS	-		SMA (HW ready	
SHDSL	SHDSL8W ordering option	-		
Timing	-		2 MHz, 2 Mbps, 1PPS, ToD	
VDSL2	-	Using VDSL SFP	-	

Note: *It is strongly recommended to order this device with original RAD SFP/XFP transceivers. RAD cannot guarantee full compliance to product specifications for units using non-RAD transceivers. For full details on SFP/XFP transceivers, see the* ***Pluggable Transceivers data sheet****.*

ETX-2

Carrier Ethernet Demarcation

Specifications

INTERFACES

See **Interfaces** table for ETX-2 product options.

E1/T1 Interfaces (Ethernet over PDH)

(ETX-203AX with EoPDH E1 network port)

Number of Ports	One
Compliance	G.703, G.823
Data Rate	E1: 2.048 Mbps
	T1: 1.544 Mbps
Line Coding	E1: HDB3
	T1: B8ZS
Framing	E1: Framed (G.732N with CRC)
	T1: Framed (ESF)
Max. Frame Size	10240 bytes
Impedance	E1: 120Ω, balanced; 75Ω, unbalanced (via adapter cable)
	T1: 100Ω, balanced
Connectors	Replaceable network module, with four RJ-45 connectors
	Four E1/T1 ports: One E1/T1 interface per RJ-45
	Eight E1/T1 ports: Two E1/T1 interfaces per RJ-45; with adapter cable

E1/T1 Interfaces (TDM Pseudowire)

(ETX-205A: built-in TDM PW E1/T1 ports)

Number of Ports	4 or 8
Compliance	E1: G.703, G.732N, G.732S
	T1: ANSI T1.101, ANSI T1.403
Data Rate	E1: 2.048 Mbps
	T1: 1.544 Mbps
Line Coding	E1: HDB3
	T1: B8ZS
Framing	E1: Framed (G.732N with or without CRC) Framed with CAS (G.732S with or without CRC) Unframed
	T1: Unframed or ESF
Impedance	E1: 120Ω, balanced 75Ω, unbalanced (via adapter cable)
	T1: 100Ω, balanced
Connectors	Electrical, RJ-45
Payload Encapsulation	CESoPSN, SAToP
Network Encapsulation	MEF 8, UDP/IP

Table 2. Power

Specifications	ETX-203AX 	ETX-203AM 	ETX-205A 	ETX-220A 
Power Supply	ETX-203AX, ETX-203AX/DSL: Integrated wide-range AC/DC with auto detection AC: 100–240 VAC (-10%, +6%), 50/60 Hz DC: 48 VDC (40 to 60 VDC) ETX-203AX/DSL/B: AC: 100–240 VAC (ext. PS) DC: 12 VDC ETX-203AX/ODU/X: AC: 100–240 VAC (-10%, +6%), 50/60 Hz	AC: 100 to 230 VAC, (-10%, +6%), 0.4A-0.2A, 50/60 Hz, 47–63 Hz DC: 48 VDC (40-60 VDC), 0.4/0.3A	**8.5" enclosure:** AC: 100 to 240 VAC (-10%, +6%), 50/60 Hz DC: 48 VDC (20 to 60 VDC) **19" enclosure:** AC: 100 to 240 VAC, 50/60 Hz DC: 24/48 VDC nominal (20 to 72 VDC)	AC: 100 to 240 VAC (-10%, +6%), 1A-0.5A, 50/60 Hz DC: 48 VDC nominal (40 to 60 VDC), 0.4/0.3A
Power Consumption	15W/3.3/PLD max ETX-203AX/ODU/X: Without PoE – 25W With PoE – 85W (25W regular + 60W PoE)	Modular base: 12W max Modular uplink: 5W max	19" enclosure: 22W max 8.5" enclosure: 21W max PMC option: 90W max	70W max
Power Redundancy	-	-	+	+

ETX-2

Carrier Ethernet Demarcation

SHDSL Interfaces

Provided with ETX-203AX SHDSL8W ordering option

Type	SHDSL.bis
Number of Ports	Two or four
Number of Wires	Four or eight
Connectors	Replaceable network module, with one RJ-45 connector for 4-wire ordering option or two RJ-45 connectors for 8-wire ordering option
Line Coding	16 or 32 TC-PAM
Line Rate	192–5696 kbps (see table below)
Impedance	135Ω
Compliance	ITU-T G.991.2, G.994.1, ETSI TS 101524
Bonding	According to IEEE 802.3ah, ITU-T G.998.2
Max. Frame Size	2048 bytes

Table 3. SHDSL Typical Ranges (26 AWG)

Data Rate (kbps)	4-wire (km)	4-wire (mi)	8-wire (km)	8-wire (mi)
192	8	4.9	8	4.9
512	6.7	4.1	6.7	4.1
1536	6	3.7	6.5	4
2048	5.7	3.5	6.4	3.9
4096	5.1	3.1	5.7	3.5
4608	5	3	5.5	3.4
5696	4.6	2.8	5.1	1
11392	2.9	1.8	4.6	2.8
17088	–	–	3.5	2.1
22784	–	–	2.9	1.8

Management and Security

Management Options	Local management via LAN port or serial port
	Remote management via in-band VLAN
Protocols and Security	SSH (Secure CLI)
	Telnet
	SNMPv3
	SFTP
	NETCONF/YANG management interface (ETX-203AX/X, ETX-205A/X)
	Password-protected access
	Authorization levels
	RADIUS or TACACS+ authentication
	Static routing
	Access Control List (ACL)
Large Deployments	Plug and play zero touch provisioning (DHCP, PPPoE, XML configuration files download via TFTP/SCP)
	Configuration backup and restore

Control Port

Interface	V.24/RS-232 DCE
Connector	RJ-45
Format	Asynchronous
Data rate	9.6, 19.2, or 115.2 kbps

Ethernet Management Port

Type	10/100/1000BASE-T
Connector	RJ-45

Timing and Synchronization

Specifications	ETX-203AX 	ETX-203AM 	ETX-205A 	ETX-220A 
Best Master Clock Algorithm (BMCA)	-		+	
IEEE-1588v2 precision time protocol (PTP) per G.8265.1, G.8275.1, and G.8275.2 Telecom profiles	TC		OC, TC, BC GM with integrated GNNS Slave clock	OC, TC, BC
GNSS	-		Connector: SMA (HW ready)	-
PTP ports	-		ToD/1PPS (RJ-45), External clock (CONN.COAX SMA), 1PPS (CONN.COAX SMA), 2M (SMA)	
Station clock	-		Balanced E1, unbalanced E1 (via adapter cable); RJ-45 connector	
SyncE recovery from PDH module to Ethernet ports	+		-	
Synchronous Ethernet (SyncE), eSYNCE	-		ITU-T G.8261-G.8264	

ETX-2

Carrier Ethernet Demarcation

RESILIENCY

Dual Homing	Dual homed link redundancy
Ethernet Path Protection	G.8031 linear 1:1 protection
Ethernet Ring	G.8032v2 rings with sub 50 ms protection for Ethernet traffic
Link Aggregation	IEEE 802.1ax (802.3ad) 1:1 LAG with LACP for pairs of network or user Ethernet ports
	LAG with load balancing (ETX-220A)

NETWORKING CAPABILITIES

Services	Ethernet E-LAN, E-Line, E-Tree
	MEF CE2.0 compliant
	Layer-2 services with available bandwidth
Layer-2 Forwarding	Jumbo frame support
Flow Classification Rules	Outer VLAN or outer + inner VLAN
	PCP
	TOS/DSCP
	EtherType
	IP/MAC source/destination address
	5-tuple ACL
Policing	Color aware/unaware dual token bucket with user-configurable CIR + CBS and EIR + EBS
	2-rate/3-color policing per EVC.CoS
	Bandwidth policing per MEF 10.3 (ETX-220A)
	Hierarchical envelope policer per MEF 10.3
	MultiCoS EVCs per MEF 10.3 (ETX-220A)
Scheduling	8 × CoS per EVC scheduling elements
	Strict Priority (SP) and Weighted Fair Queue (WFQ)
Shaping	Per port (ETX-220A)
	Per EVC
	Per EVC.CoS

BRIDGE

Max. Frame Size	9600 bytes
Compliance	802.1D, 802.1Q, 802.1ad
Mode	VLAN-aware, VLAN-unaware
VLAN Editing	Inner/outer VLAN editing per VLAN and p-bit values

PHYSICAL

8.5-inch Enclosures (ETX-203AM, ETX-203AX, ETX-205A)

Height	43.7 mm (1.7 in)
Width	Regular plastic: 220 mm (8.7 in)
	Metal: 215.5 mm (8.5 in)
Depth	ETX-203AX Regular plastic: 170 mm (6.7 in) Metal: 152.5 mm (6 in)
	ETX-203AM, ETX-205A: 300 mm (11.8 in)
Weight	ETX-203AX Regular plastic: 0.7 kg (1.5 lb) Metal: 0.9 kg (2 lb)
	ETX-203AM: 2.3 kg (5.1 lb)
	ETX-205A: 2.4 kg (5.2 lb)

19-inch Enclosures (ETX-205A, ETX-220A)

Height	43.7 mm (1.7 in)
Width	440 mm (17.4 in)
Depth	Regular: 240 mm (9.5 in)
	NEBS: 300 mm (11.8 in)
Weight	Regular: 3.1 kg (6.8 lb)
	ETX-205A with PMC: 3.9 kg (8.6 lb)

Aluminum IP67 Outdoor Enclosure (ETX-203AX/ODU/X)

Height	250 mm (9.8 in)
Width	192 mm (7.6 in)
Depth	93 mm (3.7 in)
Weight	2.89 kg (6.4 lb)

ENVIRONMENTAL

Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	Regular: 0 to 50°C (32 to 122°F)
	Extended temperature (metal): (ETX-203AX, ETX-203AM, ETX-220A): -20 to 65°C (-4 to 149°F)
	Extended temperature (metal): ETX-205A, ETX-203AX-DSL/B, ETX-203AX/ODU/X: -40 to 65°C (-40 to 149°F); cold start above -20°C (-4°F)
	ETX-205A with PMC: 0 to 45°C (32 to 113°F)
Humidity	5% to 90%, non-condensing ETX-203AX Outdoor: 5% to 100% condensing

Note: In the temperature-hardened devices, a single SFP-30H is supported at temperature up to 62°C (143°F).

DIAGNOSTICS

Connectivity Fault Management (CFM)	Per IEEE 802.1ag
Counters	RMON2 port-level counters
Delay and Loss Measurements	Per MEF 36
EFM Link-fault OAM	Per IEEE 802.3ah
ICMP Echo	Over L2 and L3 services
	Tests IP connectivity (PING)
KPI Measurements	Accurate one-way KPI measurements
Link-level OAM	Per IEEE 802.3-2005
Limiting Multicast Traffic Flooding	DHCP and MLDv2 snooping
Loop Prevention	Using MSTP and RSTP
Loopback Tests	Non-disruptive loopback per flow, with MAC/IP address swap
	Loopbacks at Ethernet port level
	On-demand Layer-2 and 3 loopbacks
LLDP Discovery	Per IEEE 802.1AB
Service Activation Tests	RFC-2544: Eight built-in wirespeed testers
	ITU-T Y.1564: Eight built-in wirespeed testers
Service Utilization and Performance Monitoring	Per ITU-T Y.1731.2012, including synthetic loss measurement
TWAMP	TWAMP light generator and responder (SW license)
	ITU-T Y.1731 PM (SLM; DM)
	RFC 5618 TWAMP responder and receiver
	TWAMP sender
	PM Controller (PMC) (ETX-205A)

STANDARDS COMPLIANCE

CE	CE 2.0
MEF	MEF 2.0, MEF 3.0, MEF 9, MEF10, MEF 14, MEF 20, MEF 36, MEF 46
	MEF 6: E-Line: EPL and EVPL E-LAN: EPLAN and EVPLAN
IEEE	802.3, 802.3u, 802.1D, 802.1Q, 802.1p, 802.3ad, 802.3-2005, 802.1ax, 802.1ag
ITU-T	Y.1731, G.8031, G.8032v2, G.8262, G.8265, RFC-2544, Y.1564

Ordering

The information below represents examples of supported configurations. For additional configuration options, please contact your local RAD partner.

ETX-2 SOFTWARE

ETX-2-SW TWAMP

License to activate and operate TWAMP related functionalities in ETX-2

ETX-203AX

Hardware

(See **Ordering Options** below for options explanations)

ETX-203AX/2SFP/4SFP

ETX-203AX/GE/2SFP/4SFP

ETX-203AX/2SFP/2UTP2SFP

ETX-203AX/2SFP/4UTP

ETX-203AX/2UTP/4UTP

ETX-203AX/1SFP1UTP/4UTP

ETX-203AX/H/1E1/1SFP/2UTP2SFP

ETX-203AX/GE30/SH8W/1UTP

ETX-203AX/ACEX/GE30/SH8W/1UTP/B

ETX-203AX/DC/GE30/SH8W/1UTP/B

ETX-203AX/H/GE30/2SFP/4SFP

ETX-203AX/N/GE30/2SFP/2UTP

ETX-203AX/H/AC/ODU/GE30/1S1U/2U2P/X

ETX-203AX/N/2SFP/2UTP/X

Notes:

- *Product options are available with FE, GE, or GE30 interfaces.*
- *All ordering options, except ETX-203AX/DSL/B, can be temperature hardened (have the /H option).For temperature-hardened options, use industrial type SFP transceivers with maximum operating temperature 85°C (185°F).*

Software

ETX-203AX-SW/GE30
Software license for 1 Gbps per port, and up to 64 shaped EVCs per port

ETX-203AX-SW/GE
Software license for 1 Gbps per port

ETX-203AM

Hardware

(See **Ordering Options** below for options explanations)

ETX-203AM/DC/GE30/2ETH/2SFP2UTP

ETX-203AM/AC/SH4W/4UTP

ETX-203AM/AC/GE/2ETH/4SFP

ETX-203AM/AC/GE30/8E1T1/4UTP

ETX-203AM/AC/GE/4UTP

ETX-203AM/H/AC/GE30/VDSL8W/POTS/4UTP

ETX-203AM/H/AC/GE30/VDSL8W/ISDN/4UTP

Modules

ETX-M/2ETH
Eth network uplink module with 2 combo ports

Notes:

- *Product options are available with the FE, GE, GE30 interfaces, or hardened (/H) option.*
- *Only the Ethernet network module (2ETH) is NEBS certified.*

Software

ETX-203AM-SW/GE30

Software license for 1 Gbps per port, and up to 64 shaped EVCs per port

ETX-203AM-SW/GE

Software license for 1 Gbps per port

ETX-205A

(See **Ordering Options** below for options explanations)

ETX-205A/AC/19

ETX-205A/AC/19/4E1T1

ETX-205A/AC/19/8E1T1

ETX-205A/AC/19/SYE

ETX-205A/AC/19/PTP

ETX-205A/AC/19/4E1T1/PTP

ETX-205A/AC/19/8E1T1/PTP

ETX-205A/AC/19/GPS

ETX-205A/AC/PTP

ETX-205A/DC/4E1T1/PTP

ETX-205A/HN/DCR/19/PTP

ETX-205A/AC/19V/DC2X/128S/PMC
Note: *19" ordering options are available with any combination of AC or DC power supplies.*

ETX-220A

(See **Ordering Options** below for options explanations)

ETX-220A/AC/2XFP/20S/SYE/ESK

ETX-220A/AC/2XFP/10U10S/SYE/ESK

ETX-220A/AC/3XFP/10S/SYE/ESK

ETX-220A/AC/3XFP/10U/SYE/ESK

ETX-220A/AC/3XFP/10S/PTP/ESK

ETX-220A/AC/4XFP/10U/SYE/ESK

ETX-220A/AC/4XFP/SYE/ESK

ETX-220A/AC/2XFP/20S/SYE/BSK

ETX-220A/AC/2XFP/10U10S/SYE/BSK

ETX-220A/AC/3XFP/10S/SYE/BSK

ETX-220A/AC/3XFP/10U/SYE/BSK

ETX-220A/AC/3XFP/10S/PTP/BSK

ETX-220A/DC/4XFP/10S/SYE/BSK

ETX-220A/DC/4XFP/10U/SYE/BSK

ETX-220A/DC/4XFP/SYE/BSK

ETX-220A/ACR/4XFP/PTP/BSK

Notes

- *The Basic Software Key (BSK) option provides basic scheduling with a single queue block per port; the Enhanced Software Key (ESK) option allows for HQoS with shaping per EVC by providing more queue blocks per port (refer to user manual for the exact number).*
- *All ordering options are available with AC, DC, dual AC (ACR) or dual DC (DCR) power supplies.*
- *All ordering options are available with the hardened (/H) option.*

ORDERING OPTIONS

Some options are not supported by all models. Some option combinations are invalid or may require a minimum order. To determine the BOM for your application, please contact your local RAD partner.

E1/T1 Ports	1E1	1 E1 port
	4E1T1	4 E1/T1 ports
	8E1T1	8 E1/T1 ports
Enclosure	Default	Indoor 8.5" 1U plastic box (ETX-203AX) Half 19" metal box (ETX-205A)
	19	19" 1U metal box
	19V	19" metal box with co-processor for virtualization
	ODU	Outdoor enclosure
Ethernet Network or User Port	4S	4 empty SFP slots
	1E1SFP	1 Ethernet over E1 port, 1 SFP Eth port
	1SFP	1 SFP Eth port`
	2SFP	2 SFP Eth ports
	1SFP1UTP	1 SFP Eth slot, 1 UTP Eth ports
	1S1U	1 SFP or 1 UTP

	1UTP	1 copper Ethernet port
	2UTP	2 copper Ethernet port
	2XFP	2 XFP 10GbE ports
	3XFP	3 XFP 10GbE ports
	4XFP	4 XFP 10GbE ports
	SH8W	8-wire SHDSL uplink
Ethernet User Port		
	1UTP	1 UTP Ethernet port
	2SFP	2 SFP Ethernet ports
	2UTP2SFP	2 UTP Ethernet ports, 2 SFP Ethernet ports
	3UTP	3 10/100/1000BaseT UTP ports
	4SFP4UTP	4 SFP Eth ports, 4 copper Eth ports
	4SFP	4 SFP Ethernet ports
	4UTP	4 copper Eth ports
	2SFP2UTP	2 SFP Eth ports, 2 copper Eth ports
	24SFP	24 SFP Ethernet ports
	12CMB	12 GbE combo ports
	2U2P	2 UTP/PoE GbE Ethernet ports
	2UTP	2 copper Ethernet ports
	4U2P	4 copper Ethernet ports
	20S	20 SFP GbE ports
	10U	10 copper GbE ports
	10U10S	10 copper GbE ports, 10 SFP GbE ports
	10S	10 SFP GbE ports
	20S	20 SFP GbE ports
Interface Type	Default	No interface
	DC2X	Dual core, 2 Ghz, Xeon (PMC only)
	128S	SSD 128 GB (PMC only)
	2XFP	2 10GbE ports, XFP-based
	3XFP	3 10GbE ports, XFP-based
	4XFP	4 10GbE ports, XFP-based
	10S	10 GbE SFP ports
	10U	10 GbE copper ports
	10U10S	10 GbE copper-based ports and 10 GbE SFP-based ports
	20S	20 GbE ports, SFP-based
	20U	20 GbE ports, copper-based
Network Module Platform	2ETH	Ethernet network module
	Default	Regular size memory
	B	Compact, EXT PS
	X	Extended memory
Power Supply	AC	Single AC power supply
	ACDC	AC and DC power supplies
	ACR	Redundant (dual) AC power supply
	ACEX	External AC power supply
	DC	Single 48V DC power supply
	DCR	Redundant (dual) DC power supply
	DDC	Dual feed DC power supply
Software Key	BSK	Basic software key
	ESK	Enhanced software key
Port Type (SW license)	Default	FE of 100 Mbps per port (for ETX-203AX, ETX-203AM)
	GE	1 Gbps per port
	GE30	1 Gbps per port, 30 shaped EVCs
Temperature Range	Default	Plastic enclosure
	H	Temperature hardened, metal enclosure
	N	NEBS Compliant
	HN	Temperature-hardened, NEBS-certified
Timing Options	Default	Standard clock recovery
	GPS	Integrated GPS and SyncE
	PTP	1588v2 timing and SyncE
	SYE	SynceE
Software Package	Default	no software package
	PMC	High-scale Performance Monitoring controller

SUPPLIED ACCESSORIES

AC power cord (one per AC power supply)

DC connection kit, PLUG-DC/TB-S/J (ETX-203AM with DC power supply)

CBL-E1-SPLT
Cable to extract two E1/T1 ports from one RJ-45 connector of E1/T1 network module; four cables supplied for 8 E1T1 option (ETX-203AM)

CBL-RJ45/2BNC/E1/X
Balanced E1 (RJ-45) to unbalanced E1 (2 BNC) adapter cable (ETX-203AM, ETX-205A)

ETX-203AX-PS/ACEX/B
AC external power supply for ETX-203AX/ACEX/GE30/SH8W /1UTP/B

ETX-205A-PS/?/!
Extractable power supply for ETX-205A

ETX-220A-PS/?/!
Extractable power supply for ETX-220A

?	NEBS (Default = International)	
	N	NEBS3
!	Power supply	
	AC	Single AC power supply
	DC	Single DC power supply

See **Mounting Kits** table.

OPTIONAL ACCESSORIES

ETX-203AX-AC-DC-ADPTOR
AC/DC connector adapter, when using 48 VDC input

ETX-203AX-AC-DC-ADPTOR/90DEG
90-degree AC/DC connector adapter, when using 48 VDC input

CBL-RJ45/D9/F/6FT
Control port cable with male RJ-45 and female DB-9 connector

ETX-203AX-PS/ACEX/B
110/220 VAC AC external power supply for
ETX-203AX/DC/GE30/SH8W/1UTP/B

Spare part for ETX-203AX/ACEX/GE30/SH8W/1UTP/B

DC output range: 11.4 ~ 12.6V

Max load: 2A

SFP-GPON-1DH
GPON optical network terminal SFP (ETX-220A)

See **Mounting Kits** table.

Table 4. Mounting Kits

Product	19" Rack	23" Rack	Wall	Pole
ETX-203AM (8.5")	RM-35/P1 – one unit RM-35/P2 – two units	RM-35-23/P1 – one unit RM-35-23 – two units	WM-35	
ETX-203AX plastic (8.5")	RM-33-2– one or two units	–	Built into device enclosure	
ETX-203AX metal (8.5")	RM-35/A – one unit RM-35/A2 – two units	–	WM-35-TYPE4	
ETX-203AX/DSL (8.5")	RM-35/P1 – one unit RM-35/P2 – two units	–	WM-35	
ETX-203AX/DSL/B (8.5")	RM-35/A – one unit RM-35/A2 – two units	–	WM-35-TYPE4	
ETX-203AX NEBS (8.5")	RM-35/P1 – one unit RM-35/P2 – two units	RM-35-23/P1 – one unit RM-35-23 – two units	WM-35-TYPE4	
ETX-203AX/ODU/X (8.5")	–	–	WM-35-ODU/P	WM-35-ODU/P
ETX-205A (8.5")	RM-35/P1 – one unit RM-35/P2 – two units	–	WM-35	
ETX-205A (19")	RM-34 (supplied)	RM-34-23	WM-34	
ETX-220A (19")	RM-34 (supplied)	RM-34-23	WM-34	

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