



EONC-2A **PON Extension Network Controller**

Features and Benefits

The Intercept™ EO is a PON extension solution that delivers Multigigabit data rates over existing legacy coaxial cabling in a distributed Ethernet architecture for rapid and economical deployment in MDU, enterprise or campus environments. Capable of data rates of up to 2.5 Gbps downstream and up to 2 Gbps in the upstream, EO is highly competitive with FTTH services, at a fraction of the cost.

The EO network controller provides full featured functionality and management capabilities for intuitive subscriber management and superior QoE, time to market and rapid activation and implementation of revenue generating services.

Designed specifically for MDU applications, the EO system can be implemented in a P2P or P2MP delivery design, and can be routed to the EO CPE device or via Wireless router for reliable high speed data coverage throughout the premise environment.

The Intercept™ EONC-2A0x Network controllers are available in 1 port, 4 port and 8 port designs and have full featured functionality targeted to the Multi Dwelling Unit market segment for high speed symmetrical data services. The EONC-2A01, EONC-2A04 and EONC-2A08 Network controllers have 1, 4 and 8 RF ports respectively and enable high bandwidth services of up to 2.5 Gbps downstream and 2 Gbps upstream and capable of serving up to 31 subscribers. Ports can be utilized for loop through wiring in a daisy chain application as needed for superior network reach and flexibility.

The EO solution can utilize RF spectrum between 400 MHz and 900 MHz for legacy networks which have cleared spectrum used for video services, but can also operate in a mode between 1125 MHz to 1675 MHz, leaving all legacy services in place below 1 Ghz. The EO uses **M@CA ACCESS** OFDM technology and can deliver a highly efficient modulation rates up to 1024 k QAM.

The EO solution and Network Controller portfolio provides a highly intuitive cloud management platform for easy onboarding of new subscribers and efficient subscriber and network management.

- **Up to 31 Modems per RF Port**
- **2.5 Gbps Downstream and 2 Gbps Upstream per RF Port**
- **2x 10 G Optical Feed (SFP+)**
- **Compact Size, Low Power Consumption**
- **Carrier Grade Management**
- **Full Features L3 Switch Capabilities**

SPECIFICATIONS

EONC-2A01



System
MoCA Version MoCA 2.5 / MoCA Access 2.5
Protocol IEEE 802.3x
Maximum Segment Size - 31 MoCA Modems
Total Supported MoCA Access Modems Using 1 Segments is 31
MoCA Access Interfaces
RF Connector: F-type, Female
1 RF Connectors, 1 MoCA Access Segments
Impedance: 75 Ω
Max Transmit Power +3 dBm
Modulation - OFDM QAM 1024 /512 /256 /128/64/32/16/8/QPSK/ BPSK
Multiplexing - TDMA/TDD
RF Channels - 3, 4 or 5 with a Channel Width of 100 MHz Each
Maximum Attenuation for Full PHY Rate: 100% Link Quality at 55 dB
Return Loss >10 dB
MoCA Access 2.5 Band Support
MoCA Ext Band A Operation 400 - 900 MHz
MoCA Ext Band D Operation 1125 - 1675 MHz
MoCA/MoCA Access 2.5 Supported Maximum Application Data Rate
Up to 3.2 Gbps Bi-directional Combined Point to Point and Point-to-multipoint Mode
Management Port
Via the WAN Ethernet Interfaces
Web Access Through HTTP and HTTPS
CLI – Console Port
SSHv2
Management Access Filtering
IPv6 Management
System Syslog
Software Upgrade Through Web
SNMP v1, v2c, v3
RMON Group 1, 2, 3 and 9
IEEE 802.1AB LLDP
TIA 1057 LLDP-MED
Cisco Discovery Filtering, CDP
Loop Detection Restore to Default
DNS Client, Proxy
DHCP Server and DHCP Client

Industry-standard CLI and Configuration
Configuration Download and Upload
Multiple SNMP Trap Destinations
WAN Side Interfaces
Interface 2 x SFP Slots 10 Gbps Ethernet
Interface 1 x RJ-45 1 Gbps Ethernet
Carrier Ethernet 2.0 Compliant
ITU-T G.8031/G.8032 Protection Switching
ITU-T G.8275.x PTP Telecom Profile Supported on Transparent Clock
Comprehensive Ethernet OAM Support: IEEE 802.1ag CFM, 802.3ah EFM and ITU-T Y.1731
Service Activation Testers Incorporated: RFC2544, Y.1564
Non-blocking Wire-speed Switching
LEDs
Ethernet: Ethernet Interface Indicator LED
COAX: Coax Cable Link State Indicator LED
Power
Power Consumption System 6 Watts (1 Active RF Port, 1 Active SFP+)
Power Supply 100-240 VAC/50-60 Hz 12 VDC/2 A or 5 VDC/4 A
PWR Input 5 VDC-12 VDC (+/-5 %)
Environmental
Operating Temperature 0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature -20 °C to 65 °C (-4 °F to 149 °F)
Operating Humidity 20 % to 85 % RH, Non-condensing
Non-Operating Humidity 5 % to 95 % RH, Non-condensing
Physical Size
22.0(H)x18.5(D)x6(W) cm
8.66(H)x7.28(D)x2.36(W) inch
Weight
0.55 Kg
Compliance
CE
FCC Part 15b
RoHS

SPECIFICATIONS

EONC-2A01



ESD
DC Voltage on Power Connector +15 VDC
DC Voltage on RF Connector +60 VDC
Impulse Sparkover on RF Connector 500 V Slope 100 V/usec
Impulse Sparkover on RF Connector 600 V Slope 1000 V/usec
Maximum Power Consumption 14 W - 2 SFP+ Ports Operating 1 RF Port, Maximum RF Throughput
Carrier Ethernet Services
E-LINE, E-LAN, E-TREE, and E-Access Supported
MEF-Compliant Dual Rate Policing and Shaping
Carrier Ethernet OAM
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
IEEE 802.1ag Connection Fault Management (CFM)
IEEE 802.3ah Ethernet in the First Mile (EFM)
IETF RFC 2544 Performance Benchmarking Test
Timing and Synchronization
IETF RFC 5905 NTPv4 Client
ITU-T G.8275.x PTP Telecom Profile Supported on Transparent Clock
Protection
IEEE 802.3ad LACP
• IEEE 802.1w/s RSTP / MSTP
• ITU-T G.8031 ELPS & G.8032 v1/v2 ERPS
Quality of Service
8 Hardware Priority Queues
Per-EVC QoS, Policing and Shaping for Service
Isolation and Traffic Engineering
Strict Priority and Weighted Round-Robin (WRR)
Scheduling
Per-Port/VLAN/ToS/DSCP Classification
Per-Port/VLAN/Flow Rate Limiting
Port Control
Port Speed, Duplex Mode, Flow Control
Port State (Administrative Status)
Port Status (Linking Monitoring)
Port Statistics (MIB Counters)
Cable Diagnostics
On-the-Fly SFP Detection

Ethernet Layer 2 Switching
IEEE 802.1D Bridge
IEEE 802.1Q VLAN
VLAN Translation
Private Static VLAN
Port Isolation (static)
Loop Guard
MAC-based and Protocol-based VLAN
Multiple Registration Protocol (MRP)
Multiple VLAN Registration Protocol (MVRP)
GARP VLAN Registration (GVRP)
IEEE 802.1ad Provider Bridge (Native or Translated VLAN)
IEEE 802.3ad Link Aggregation; Static & LACP
Bridge Protocol Data Unit (BPDU)
Guard and Restricted Role
Transparency and Forwarding
Voice VLAN & Auto VoIP
VLAN Trunking
DHCP Snooping
ARP Inspection
Port and Flow Mirroring
Protocol-based and IP Subnet-based VLAN
Error Disable Discovery
Classification of Layer 3 Flow
Multicast Management
IGMPv2 and IGMPv3 Snooping
MLDv1 and MLDv2 Snooping
IP Multicast (IPMC) Throttling, Filtering, Fast Leave and Leave Proxy
Multicast VLAN Registration (MVR) and Profile
Broadcast/Multicast Storm Control
Unknown Multicast Filtering
Well-known Protocol Forwarding
Ethernet Layer 3 Switching
DHCP Option 82 Relay
IPv4/IPv6 Unicast Static Routing
OSPFv3 Routing

SPECIFICATIONS

EONC-2A01



Security		
Network Access Server – Port-based IEEE 802.1X		
Single and Multiple IEEE 802.1X – MAC-based Authentication – VLAN and QoS Assignment – Guest VLAN		
RADIUS Accounting		
MAC Address Limit		
TACACS+		
Web and CLI Authentication		
Authorization (15 user levels)		
ACLs for Filtering, Policing and Port Copy		
IP Source Guard		
IP MAC Binding Dynamic to Static		
RF Configuration		
The RF frontends cover the full EO frequency range from 400 -1675 MHz. Different RF configurations can be configured via the EO SET management platform:		
EO Frequency Range (MHz)	Required Coexistence (MHz)	Required External RF Passive
400 – 900	Satellite Services 950-2150	EO-SPLITTER_860_950
400 – 900	no other service	no external passive required
1125 – 1625	TV/DOCSIS up to 862	EO-SPLITTER_860_950
1125 – 1625	TV/DOCSIS up to 1002	EO-SPLITTER_1000_1100
1125 – 1625	no other service	no external passive required

SPECIFICATIONS

EONC-2A04



System
MoCA Version MoCA 2.5 / MoCA Access 2.5
Protocol IEEE 802.3x
Maximum Segment Size - 31 MoCA Modems
Total Supported MoCA Access Modems Using 4 Segments is 124
MoCA Access Interfaces
RF Connector: F-type, Female
4 RF Connectors, 4 MoCA Access Segments
Impedance: 75 Ω
Max Transmit Power +3 dBm
Modulation - OFDM QAM 1024/512 /256/128/64/32/16/8/QPSK/ BPSK
Multiplexing - TDMA/TDD
RF Channels - 3, 4 or 5 with a Channel Width of 100 MHz Each
Maximum Attenuation for Full PHY Rate: 100% Link Quality at 55 dB
Return Loss >10 dB
MoCA Access 2.5 Band Support
MoCA Ext Band A Operation 400 - 900 MHz
MoCA Ext Band D Operation 1125 - 1675 MHz
MoCA/MoCA Access 2.5 Supported Maximum Application Data Rate
Up to 3.2 Gbps Bi-directional Combined Point to Point and Point-to-multipoint Mode
Management Port
Via the WAN Ethernet Interfaces
Web Access Through HTTP and HTTPS
CLI – Console Port
SSHv2
Management Access Filtering
IPv6 Management
System Syslog
Software Upgrade through Web
SNMP v1, v2c, v3
RMON Group 1, 2, 3, and 9
IEEE 802.1AB LLDP
TIA 1057 LLDP-MED
Cisco Discovery Filtering, CDP
Loop Detection Restore to Default
DNS Client, Proxy
DHCP Server and DHCP Client

Industry-standard CLI and Configuration
Configuration Download and Upload
Multiple SNMP Trap Destinations
WAN Side Interfaces
Interface 2 x SFP Slots 10 Gbps Ethernet
Interface 1 x RJ-45 1 Gbps Ethernet
Carrier Ethernet 2.0 Compliant
ITU-T G.8031/G.8032 Protection Switching
ITU-T G.8275.x PTP Telecom Profile Supported on Transparent Clock
Comprehensive Ethernet OAM Support: IEEE 802.1ag CFM, 802.3ah EFM, and ITU-T Y.1731
Service Activation Testers Incorporated: RFC2544, Y.1564
Non-blocking Wire-speed Switching
LEDs
Ethernet: Ethernet Interface Indicator LED
COAX: Coax Cable Link State Indicator LED
Power
Power Consumption System 9 Watts (4 Active RF Ports, 1 Active SFP+)
Power Supply 100-240 VAC/50-60 Hz 12 VDC/2 A or 5 VDC/4A
PWR Input 5 VDC-12 VDC (+/-5 %)
Environmental
Operating Temperature 0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature -20 °C to 65 °C (-4 °F to 149 °F)
Operating Humidity 20 % to 85 % RH, Non-condensing
Non-Operating Humidity 5 % to 95 % RH, Non-condensing
Physical Size
22.0(H)x18.5(D)x6(W) cm
8.66(H)x7.28(D)x2.36(W) inch
Weight
0.55 Kg
Compliance
CE
FCC Part 15b
RoHS

SPECIFICATIONS

EONC-2A04



ESD
DC Voltage on Power Connector +15 VDC
DC Voltage on RF Connector +60 VDC
Impulse Sparkover on RF Connector 500 V Slope 1000 V/usec
Impulse Sparkover on RF Connector 600 V Slope 1000 V/usec
Maximum Power Consumption 14 W - 2 SFP+ Ports Operating 4 RF Ports, Maximum RF Throughput
Carrier Ethernet Services
E-LINE, E-LAN, E-TREE, and E-Access Supported
MEF-Compliant Dual Rate Policing and Shaping
Carrier Ethernet OAM
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
IEEE 802.1ag Connection Fault Management (CFM)
IEEE 802.3ah Ethernet in the First Mile (EFM)
IETF RFC 2544 Performance Benchmarking Test
Timing and Synchronization
IETF RFC 5905 NTPv4 Client
ITU-T G.8275.x PTP Telecom Profile Supported on Transparent Clock
Protection
IEEE 802.3ad LACP
IEEE 802.1w/s RSTP / MSTP
ITU-T G.8031 ELPS & G.8032 v1/v2 ERPS
Quality of Service
8 Hardware Priority Queues
Per-EVC QoS, Policing and Shaping for Service
Isolation and Traffic Engineering
Strict Priority and Weighted Round-Robin (WRR)
Scheduling
Per-Port/VLAN/ToS/DSCP Classification
Per-Port/VLAN/Flow Rate Limiting
Port Control
Port Speed, Duplex Mode, Flow Control
Port State (Administrative Status)
Port Status (Linking Monitoring)
Port Statistics (MIB Counters)
Cable Diagnostics
On-the-Fly SFP Detection

Ethernet Layer 2 Switching
IEEE 802.1D Bridge
IEEE 802.1Q VLAN
VLAN Translation
Private Static VLAN
Port Isolation (static)
Loop Guard
MAC-based and Protocol-based VLAN
Multiple Registration Protocol (MRP)
Multiple VLAN Registration Protocol (MVRP)
GARP VLAN Registration (GVRP)
IEEE 802.1ad Provider Bridge (Native or Translated VLAN)
IEEE 802.3ad Link Aggregation; Static & LACP
Bridge Protocol Data Unit (BPDU)
Guard and Restricted Role
Transparency and Forwarding
Voice VLAN & Auto VoIP
VLAN Trunking
DHCP Snooping
ARP Inspection
Port and Flow Mirroring
Protocol-based and IP Subnet-based VLAN
Error Disable Discovery
Classification of Layer 3 Flow
Multicast Management
IGMPv2 and IGMPv3 Snooping
MLDv1 and MLDv2 Snooping
IP Multicast (IPMC) Throttling, Filtering, Fast Leave and Leave Proxy
Multicast VLAN Registration (MVR) and Profile
Broadcast/Multicast Storm Control
Unknown Multicast Filtering
Well-known Protocol Forwarding
Ethernet Layer 3 Switching
DHCP Option 82 Relay
IPv4/IPv6 Unicast Static Routing
OSPFv3 Routing

SPECIFICATIONS

EONC-2A04



Security

Network Access Server – Port-based IEEE 802.1X

Single and Multiple IEEE 802.1X – MAC-based Authentication – VLAN and QoS Assignment – Guest VLAN

RADIUS Accounting

MAC Address Limit

TACACS+

Web and CLI Authentication

Authorization (15 User levels)

ACLs for Filtering, Policing, and Port Copy

IP Source Guard

IP MAC Binding Dynamic to Static

RF Configuration

The RF frontends cover the full EO frequency range from 400 – 1675 MHz. Different RF configurations can be configured via the EO SET management platform:

EO Frequency Range (MHz)	Required Coexistence (MHz)	Required External RF Passive
400 – 900	Satellite Services 950-2150	EO-SPLITTER_860_950
400 – 900	no other service	no external passive required
1125 – 1625	TV/DOCSIS up to 862	EO-SPLITTER_860_950
1125 – 1625	TV/DOCSIS up to 1002	EO-SPLITTER_1000_1100
1125 – 1625	no other service	no external passive required



SPECIFICATIONS

EONC-2A08



System
MoCA Version MoCA 2.5 / MoCA Access 2.5
Protocol IEEE 802.3x
Maximum Segment Size - 31 MoCA Modems
Total Supported MoCA Access Modems Using 8 Segments is 248
MoCA Access Interfaces
RF Connector: F-type, Female
8 RF Connectors, 8 MoCA Access Segments
Impedance: 75 Ω
Max Transmit Power +3 dBm
Modulation - OFDM QAM 1024/512 /256/128/64/32/16/8/QPSK/ BPSK
Multiplexing - TDMA/TDD
RF Channels - 3, 4 or 5 with a Channel Width of 100 MHz Each
Maximum Attenuation for Full PHY Rate: 100% Link Quality at 55 dB
Return Loss >10 dB
MoCA Access 2.5 Band Support
MoCA Ext Band A Operation 400 - 900 MHz
MoCA Ext Band D Operation 1125 - 1675 MHz
MoCA/MoCA Access 2.5 Supported Maximum Application Data Rate
Up to 3.2 Gbps Bi-directional Combined Point to Point and Point-to-multipoint Mode
Management Port
Via the WAN Ethernet Interfaces
Web Access Through HTTP and HTTPS
CLI – Console Port
SSHv2
Management Access Filtering
IPv6 Management
System Syslog
Software Upgrade Through Web
SNMP v1, v2c, v3
RMON Group 1, 2, 3, and 9
IEEE 802.1AB LLDP
TIA 1057 LLDP-MED
Cisco Discovery Filtering, CDP
Loop Detection Restore to Default
DNS Client, Proxy
DHCP Server and DHCP Client

Industry-standard CLI and Configuration
Configuration Download and Upload
Multiple SNMP Trap Destinations
WAN Side Interfaces
Interface 4 x SFP Slots 2.5 Gbps Ethernet
Interface 4 x SFP Slots 10 Gbps Ethernet
Carrier Ethernet 2.0 Compliant
ITU-T G.8031/G.8032 Protection Switching
ITU-T G.8275.x PTP Telecom Profile Supported on Transparent Clock
Comprehensive Ethernet OAM Support: IEEE 802.1ag CFM, 802.3ah EFM, and ITU-T Y.1731
Service Activation Testers Incorporated: RFC2544, Y.1564
Non-blocking Wire-speed Switching
LEDs
Ethernet: Ethernet Interface Indicator LED
COAX: Coax Cable Link State Indicator LED
Power
Power Consumption System 17 Watts (8 Active RF Ports, 1 Active SFP+)
Power Supply 100-240 VAC/50-60 Hz 24 VDC/2A
PWR Input 24 VDC (+/-5 %)
Environmental
Operating Temperature 0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature -20 °C to 65 °C (-4 °F to 149 °F)
Operating Humidity 20 % to 85 % RH, Non-condensing
Non-Operating Humidity 5 % to 95 % RH, Non-condensing
Physical Size
24.0(H)x18.5(D)x3.5(W) cm
9.45(H)x7.28(D)x1.34(W) inch
Weight
1.85 Kg
Compliance
CE
FCC Part 15b
RoHS

SPECIFICATIONS

EO-NC-3G-40RF8



ESD
DC Voltage on Power Connector +30 VDC
DC Voltage on RF Connector +60 VDC
Impulse Sparkover on RF Connector 500 V Slope 1000 V/usec
Impulse Sparkover on RF Connector 600 V Slope 1000 V/usec
Maximum Power Consumption 24 W - 4 SFP+ Ports Operating 8 RF Ports, Maximum RF Throughput
Carrier Ethernet Services
E-LINE, E-LAN, E-TREE, and E-Access Supported
MEF-Compliant Dual Rate Policing and Shaping
Carrier Ethernet OAM
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
IEEE 802.1ag Connection Fault Management (CFM)
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IETF RFC 5905 NTPv4 Client
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Quality of Service
8 Hardware Priority Queues
Per-EVC QoS, Policing and Shaping for Service
Isolation and Traffic Engineering
Strict Priority and Weighted Round-Robin (WRR)
Scheduling
Per-Port/VLAN/ToS/DSCP Classification
Per-Port/VLAN/Flow Rate Limiting
Port Control
Port Speed, Duplex Mode, Flow Control
Port State (Administrative Status)
Port Status (Linking Monitoring)
Port Statistics (MIB Counters)
On-the-Fly SFP Detection

Ethernet Layer 2 Switching
IEEE 802.1D Bridge
IEEE 802.1Q VLAN
VLAN Translation
Private Static VLAN
Port Isolation (static)
Loop Guard
MAC-based and Protocol-based VLAN
Multiple Registration Protocol (MRP)
Multiple VLAN Registration Protocol (MVRP)
GARP VLAN Registration (GVRP)
IEEE 802.1ad Provider Bridge (Native or Translated VLAN)
IEEE 802.3ad Link Aggregation; Static & LACP
Bridge Protocol Data Unit (BPDU)
Guard and Restricted Role
Transparency and Forwarding
Voice VLAN & Auto VoIP
VLAN Trunking
DHCP Snooping
ARP Inspection
Port and Flow Mirroring
Protocol-based and IP Subnet-based VLAN
Error Disable Discovery
Classification of Layer 3 Flow
Multicast Management
IGMPv2 and IGMPv3 Snooping
MLDv1 and MLDv2 Snooping
IP Multicast (IPMC) Throttling, Filtering, Fast Leave and Leave Proxy
Multicast VLAN Registration (MVR) and Profile
Broadcast/Multicast Storm Control
Unknown Multicast Filtering
Well-known Protocol Forwarding
Ethernet Layer 3 Switching
DHCP Option 82 Relay
IPv4/IPv6 Unicast Static Routing
OSPFv3 Routing

SPECIFICATIONS

EONC-2A08



Security

Network Access Server – Port-based IEEE 802.1X

Single and Multiple IEEE 802.1X – MAC-based Authentication – VLAN and QoS Assignment – Guest VLAN

RADIUS Accounting

MAC Address Limit

TACACS+

Web and CLI Authentication

Authorization (15 user levels)

ACLs for Filtering, Policing and Port Copy

IP Source Guard

IP MAC Binding Dynamic to Static

RF Configuration

The RF frontends cover the full EO frequency range from 400 - 1675 MHz. Different RF configurations can be configured via the EO SET management platform:

EO Frequency Range (MHz)	Required Coexistence (MHz)	Required External RF Passive
400 – 900	Satellite Services 950-2150	EO-SPLITTER_860_950
400 – 900	no other service	no external passive required
1125 – 1625	TV/DOCSIS up to 862	EO-SPLITTER_860_950
1125 – 1625	TV/DOCSIS up to 1002	EO-SPLITTER_1000_1100
1125 – 1625	no other service	no external passive required