

PRODUCT DATASHEET

Calix E3-48C Sealed ESAN



DESCRIPTION

The Calix E3-48C Sealed Ethernet Service Access Node (ESAN) provides 48 VDSL2/ADSL2+ with integrated POTS (VoIP) subscriber ports, with two 10GE SFP+ ports and three Gigabit Ethernet SFPs ports, to provide high speed copper services with integrated Ethernet transport. With support for SIP and H.248 VoIP protocols, the E3-48C is a cost effective way to retire legacy TDM DLCs and transform your network from TDM to all IP. For mixed services deployment scenarios, the E3-48 supports automatic fall back to ADSL2+, eliminating the need for a separate ADSL2+ DSLAM. Future software upgrades will enable cross-talk reduction through the implementation of vectoring capability. The E3-48C integrates into Calix B-series, C-series, and E-series network deployments.

KEY ATTRIBUTES

DSL AND POTS INTERFACE DENSITY: The Calix E3-48C Sealed Ethernet Service Access Node (ESAN) is equipped with 48 VDSL2 / ADSL2+ Fallback ports. The E3-48C also supports 48 analog POTS ports for VoIP based services. The unit supports pair bonding in both ADSL2+ and VDSL2 modes. With integrated 10GE or GE Ethernet transport, the E3-48C provides an industry leading Sealed Ethernet Service Access Node for DSL and VoIP access.

INTEGRATED HIGH-CAPACITY UPLINKS: The Calix E3-48C Sealed Ethernet Service Access Node includes five MSA compliant Small Form-Factor Pluggable transceiver sockets: three SFP and two SFP+. The three SFP ports provide 1GE/2.5GE and the two SFP+ ports provide 10GE/1GE bandwidths for support of various uplink and downlink configurations. The units can be daisy chained or ringed and aggregated to a single device in the network such as a Calix C7, E7 or another E3-48C. The E3-48C can be integrated smoothly into Calix E-Series, C-Series, and B-Series deployed networks using point-to-point links. The E3-48C also supports GPON uplinks to an E7 GPON OLT for indoor MDU applications allowing simultaneous support of both single-family and multi-dwelling applications over a single optical distribution network.

BONDING: The Calix E3-48C supports both VDSL2 pair bonding and ADSL2+ pair bonding, ensuring the ability to provide 100Mbps bandwidth services to subscribers, and support of extended copper service areas.

VECTORING: The E3-48C hardware architecture supports industry-leading VDSL2 Unit Level Vectoring technology on all 48 ports. Vectoring reduces crosstalk to maximize bandwidth.

SMALL FORM FACTOR: The Calix E3-48C Sealed ESAN is a small, compact, self-enclosed product designed to be installed in OSP locations: wall, pole, vented cabinet, or pedestal.

SEAMLESS SYSTEM MANAGEMENT: The Calix E3-48C Sealed ESAN provides GUI and CLI craft interfaces, and SNMP based management. As with all Calix products, the E3-48C integrates into Calix Management System (CMS) for auto discovery, alarm aggregation, service provisioning, monitoring, and a wide range of other management functions.

NATIVE IPTV SUPPORT: The Calix E3-48C Sealed ESAN is optimized for robust delivery of IPTV services. IGMP control and efficient multicast packet forwarding can be enabled to maximize the utilization of bandwidth, on both the trunk and the subscriber drop interfaces. In addition, the high throughput capacity of each node provides ample uplink and switching performance for ubiquitous take rates of HDTV services.

INDUSTRY STANDARDS COMPLIANCE: The Calix E3-48C Sealed ESAN is designed to comply with all applicable ADSL/VDSL2 ITU standards including G.992.1 (ADSL/G.dmt), G.992.2 (G.Lite), G.992.3/4 (ADSL2), G.992.5 (ADSL2+), G.993.2 (VDSL2), G.994.1 (G.hs), G.998.2 (VDSL2 Pair Bonding), G.998.1 (ATM-based multi-pair bonding), G.998.4 (G.INP), and ANSI T1.413, interoperating with a wide range of CPE.

For GPON access networks, the E3-48C, when configured with a GPON interface, supports ITU-T G.984 and G.988 standards.

SPECIFICATIONS

Calix E3-48C Sealed ESAN

PORTS

48 ports VDSL2/ADSL2+ Fallback
48 ports POTS
3 SFP sockets at 1GE/2.5GE rates
2 SFP+ sockets at 1GE/10GE rates,
Support of GPON interace for
C-Temp applications
Integrated over-voltage 5-pin protectors

GPON CHARACTERISTICS

Max. split: 64 GPON
Max. reach: 58 km (36 miles) with
C+/FEC
Maximum Attenuation:
GPON Class B+, 28 dB
GPON Class C+, 32 dB
1490 ± 10 nm optical receiver:
-27.0 to -8.0 dBm
1310 ± 20 nm optical transmitter:
0.5 to 5.0 dBm

PHYSICAL DIMENSIONS

Width: 17 in (43.2 cm)
Depth: 6 in (15.2 cm)
Height: 23.2 in (58.9 cm)

WEIGHT

48.00 lbs. (21.77 kg) net weight
51.91 lbs. (23.54 kg) with 5-pin
protectors

OPERATING ENVIRONMENT

Temperature: -40° C to +65° C
(-40° F to +149° F)
GIA WAN deployment:
-40° C to +51.7° C
(-40° F to +125° F) plus solar load
Humidity: 10 to 95%
(non-condensing)

STORAGE ENVIRONMENT

Temperature: -40° C to +85° C
(-40° F to +165° F)
Humidity: 5 to 95%
(non-condensing)
Power options
Local Universal AC
-48 VDC
Line/Remote power

POWER SPECIFICATIONS

Power consumption: 120 Watts

POTS IMPEDANCE

900 Ω + 2.16 μf

SUBSCRIBER LOOP LENGTH

1830 Ω, including 430 Ω telset

RINGING

15 REN/card ring source
5 REN at 1400 Ohms

RING VOLTAGE

Balanced 86 Volts AC at 20 Hz

LOOP CURRENT

During normal operation: 25 mA
During battery backup: 18 mA

POTS DETAILS: GAIN

+2 dB for A to D
-2 dB for D to A

IDLE CHANNEL NOISE

GR-303, 12.5.8.10. < 18 dBrcC0

FREQUENCY RESPONSE

404 to 2804 Hz: +/- 0.5 dB

SIGNALING MODES

Loop-Start

VOIP SIGNALING

TDM Gateway, SIP, H.248

VDSL2 ETHERNET PACKET TRANSFER MODE

VDSL2 ITU-T G.993.2
ITU-T G.994.1 G.hs or Handshake
Compliant with IEEE STD 802.3AH-
2004, (EFM)Ethernet First Mile

ADSL2+ FORMAT

Full-rate ANSI T1.413, Issue 2
G.DMT full-rate ITU-T G.992.1
G.Lite ITU-T G.992.2
ADSL2 ITU-T G.992.3 including Annex
A, L, and M
ADSL2+ ITU-T G.992.5 including
Annex A/M
ITU-T G.994.1 G.hs or Handshake

XDSL MULTI-PAIR BONDING

ITU-T G.998.1 ADSL2+ ATM-based
bonding
ITU-T G.998.2 VDSL2 PTM-based
bonding
Up to two ports per bonding group
Up to 24 bonding groups per
service unit
Adjacent and non-adjacent port bonding
support

STANDARDS SUPPORT

Broadband Forum TR-101
Broadband Forum TR-114,
"VDSL2 Performance Test Plan"
DHCP Relay, and Layer 2 DHCP Relay
w/ DHCP Option 82 insertion
IEEE 802.1ad QinQ (Provider Bridges)
IEEE 802.1AX / 802.3ad Link
Aggregation
IEEE 802.1p Prioritization
IEEE 802.1Q VLAN tagging
IEEE 802.1w Rapid Spanning Tree
Protocol (RSTP)
IETF RFC 2684 bridged encapsulation
IETF RFC 4562 MAC-Forced Forwarding
IGMPv2 Snooping
PPPoA to PPPoE conversion, and
PPPoE Intermediate Agent
Secured management access per
HTTPS and SSHv2
SNMP V2c and SNMPv3

COMPLIANCE

UL-60950, Standard for Safety
FCC 47 CFR (ICES-003) Part 15 Class A
and Class B
NEBS Level 1 and Level 3 [Telcordia GR-
1089 and GR-63]
Telcordia GR-63 CORE, Network
Equipment Building System
Telcordia GR-78 CORE, Generic Physical
Design Requirements for
Telecommunications Products and
Equipment
Telcordia GR-1089-CORE (Sect. 7) for
Electrical Safety
Telcordia GR-3108 Class 4 and
GR-2834 Immersion Testing

ORDERING INFORMATION

Calix E3-48C Sealed ESAN

Calix E3-48C Service Node:

100-03241.....E3-48C VDSL2/ADSL2+ POTS Combo 48 Port Unit, Universal Power (AC/DC/Remote),
3 x 1 GE/2.5 GE and 2 x 10 GE ports

Calix E3-48 and E3-48C Cable Entry Plugs

100-03224.....Gland Fitting Plug Kit, hex hole nylon plugs

Calix E3-48 and E3-48C Alarm Cable

100-03226.....Alarm cable, DB-9, 20 ft.—Above-Grade (Gland Fittings)

Calix E3-48 and E3-48C Fiber Patch Cables

100-03285.....Fiber patch; 6 x LC/UPC to LC/UPC, 100 ft., OSP rated
100-03216.....Fiber patch; 6 x LC/UPC to unterminated, 30 ft., OSP rated
100-03217.....Fiber patch; 12 x LC/UPC to unterminated, 30 ft., OSP rated

Calix E3-48 and E3-48C Accessories

100-03371.....Access Panel Hex-Pin Head Security Key, set of 5
100-00035.....Five-Pin Protection Module (Gas/Solid State), Quantity 25 (for specifications, see the [Bourns datasheet](#))
000-00731.....Remote Power Five-Pin Protection Module (Gas Discharge), Quantity 100
100-03201.....SFP+ DA Cable, 2M—Above Grade (Gland Fittings)

Calix E3-48 and E3-48C Mounting Kits

100-03749.....E3-48 Pole Mounting Bracket
100-03223.....E3-48 Wall Mounting Bracket
100-03222.....E3-48 Emerson CoolPed Mounting Bracket Kit

Calix E3-48C Service Node with GPON Interface – Indoor MDU Packages

000-00820.....E3-48C VDSL2 Combo 48 Port Unit, Universal Power, GPON Fed - Indoor C-Temp

