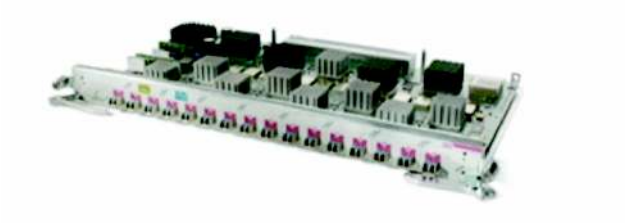
Cisco CRS 16-Port OC-48c/STM-16c POS/DPT Interface Module

The Cisco® CRS-1 Carrier Routing System is the industry's first carrier router offering continuous system operation, unprecedented service flexibility, and system longevity. The Cisco CRS-1 is powered by Cisco IOS® XR Software – a unique self-healing, distributed operating system designed for always-on operation while scaling system capacity up to 92 Tbps. The innovative system architecture combines the Cisco Silicon Packet Processor, the first programmable 40-Gbps application-specific integrated circuit (ASIC), with the Cisco Service Separation Architecture for unprecedented service flexibility and speed to service. The Cisco CRS-1 marks a new era in carrier IP Communications by powering the foundation for network and service convergence today while protecting investments for decades to come.

This data sheet provides detailed product specifications for the Cisco CRS-1 16-Port OC-48c/STM-16c POS/DPT Interface Module. For more information about the Cisco CRS-1 or about other interfaces available for the Cisco CRS-1, visit: http://www.cisco.com/go/crs



Product Specifications

Table 1. Product Specifications

Feature	Description
Chassis Compatibility	Compatible with all current Cisco CRS-1 and CRS-3 line-card chassis
Software Compatibility	Cisco IOS® XR Software Release 2.0 & 3.0 or higher for CRS-1 Cisco IOS XR Software Release 4.0.0 or later for CRS-3
Protocols	• Packet over Synchronous Optical Network/Synchronous Digital Hierarchy (SONET/SDH) • RFC 1619/2615, Point-to-Point Protocol (PPP) over SONET/SDH • RFC 1662, PPP in High-Level Data Link Control (HDLC)-like framing • RFC 2615, PPP over SONET/SDH • HDLC
Port Density	• One 16-port OC-48/STM-16 POS interface per physical layer interface module (PLIM) • All 16 ports can be configured with either short-reach (SR) or long-reach (LR) Small Form-Factor Pluggable (SFP) optics
Optical Options	• Each port is configurable: ◦ SR SFP – LC connector ◦ LR SFP – LC connector • Optical specifications are detailed in Table 3 below.

Feature	Description
Layer1/Layer 2	• Supports a maximum transmission unit (MTU) of up to 9188 bytes • POS channel is supported (up to 8 interfaces in hardware) • Layer 2 encapsulations: HDLC, PPP; no subinterface support • Error counts for B1, B2, B3 • Threshold-crossing alerts (TCAs), far end block error path (FEBE) for B1, B2, and B3 with threshold that can be set • Loss of signal (LOS), loss of frame (LOF), line alarm indicator signal (LAIS), path alarm indicator signal (PAIS), loss of pointer (LOP), line remote defect indicator (LRDI), path remote defect indicator (PRDI), signal failure (SF), signal degrade (SD), line remote error indicator (line FEBE), and path remote error indicator (path FEBE) • Performance monitoring – Error counts for B1, B2, B3, TCAs, and FEBE for B1, B2, or B3 with threshold that can be set • Synchronization • Local (internal) or loop-timed (recovered from network) • Stratum 3 clock accuracy over full operating temperature • Pointer activity monitoring • Local (diagnostic) and line (network) loopback • Payload mapping • 1 + X^43 self-synchronous scrambler • Power and input current monitoring
Reliability and Availability	Online insertion and removal (OIR) without affecting system traffic
Network Management	• Simple Network Management Protocol (SNMP) • Extensible Markup Language (XML) interface • CraftWorks Interface (CWI)
Physical Dimensions	• Occupies one PLIM slot • Weight: 7.8 lb (3.5 kg) • Height: 20.6 in. (52.2 cm) • Depth: 11.2 in. (28.4 cm) • Width: 1.8 in. (4.49 cm)
Power	150W
Environmental Conditions	• Storage Temperature: -40℃ to 70℃ (-40℉ to 158℉) • Operating Temperature: ◦ Normal: 5℃ to 40℃ (41℉ to 104℉) ◦ Short term: -5℃ to 50℃ (23℉ to 122℉) short term • Relative Humidity: ◦ Normal: 5% to 85% ◦ Short-term: 5% to 90% but not to exceed 0.024 kg water/kg of dry air Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This refers to a total of 360 hours in any given year, but, no more than 15 occurrences during that 1 year period.)

Approvals and Compliance

Table 2. Compliance and Agency Approvals

Feature	Description
Safety Standards	• UL/CSA/IEC/EN 60950-1 • IEC/EN 60825 Laser Safety • ACA TS001 • AS/NZS 60950 • FDA-Code of Federal Regulations Laser Safety
EMI	• FCC Class A • ICES 003 Class A • AS/NZS 3548 Class A • CISPR 22 (EN55022) Class A • VCCI Class A • BSMI Class A • IEC/EN 61000-3-2: Power Line Harmonics • IEC/EN 61000-3-3: Voltage Fluctuations and Flicker

Feature	Description
Immunity (Basic Standards)	• IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8kV Contact, 15kV Air) • IEC/EN-61000-4-3: Radiated Immunity (10V/m) • IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2kV Power, 1kV Signal) • IEC/EN-61000-4-5: Surge AC Port (4kV CM, 2kV DM) • IEC/EN-61000-4-5: Signal Ports (1kV) • IEC/EN-61000-4-5: Surge DC Port (1kV) • IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10Vrms) • IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30A/m) • IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations
ETSI and EN	• EN300 386: Telecommunications Network Equipment (EMC) • EN55022: Information Technology Equipment (Emissions) • EN55024: Information Technology Equipment (Immunity) • EN50082-1/EN-61000-6-1: Generic Immunity Standard
Network Equipment Building Systems (NEBS)	This product is designed to meet the following requirements (qualification in progress): • SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety • GR-63-CORE: NEBS Physical Protection

Additional Specifications

Table 3. Additional Specifications – Optics

Parameter	Short Reach 1310-nm (SR-1)	Long Reach 1550-nm (LR-2)
Connector Type	SFP – LC connector	SFP – LC connector
Target Distance	2 km	80 km
Transmitter		
Power out (maximum)	-3 dBm	3 dBm
Power out (minimum)	-10 dBm	-2 dBm
Extinction ratio (minimum)	8.2 dB	8.2 dB
Side-mode suppression (minimum)	N/A	30 dB
Modulation type	Direct	Direct
Receiver		
P (RMax) (minimum overload)	-3 dBm	-9 dBm
P (RMin) (minimum sensitivity)	-18 dBm	-28 dBm
Optical Link		
Fiber type	G.652 (single-mode fiber [SMF])	G.652 (SMF)
Maximum dispersion	12 ps/nm	1600 ps/nm
Attenuation range	0 to 7 dB	12 to 24 dB
Optical path penalty	1 dB	2 dB
Compliance	• GR-253 SR-1 • ITU-T G.957 I-16	• GR-253 LR-2 • ITU-T G.957 L-16.2
Optical power monitoring	±3 dB accuracy	±3 dB accuracy

Ordering Information

To place an order, visit: Cisco Ordering Home Page

Table 4. Ordering Information

Product Part Number	Product Name
16OC48-POS/DPT (=)	Cisco CRS-1 16-port OC-48c/STM-16c POS/DPT interface module
POM-OC48-SR-LC-C (=)	Cisco CRS-1 1-port OC-48c/STM-16c pluggable optic module; 1310-nm SM-SR-LC
POM-OC48-LR2-LC-C (=)	Cisco CRS-1 1-port OC-48c/STM-16c pluggable optic module; 1550-nm SM-LR2-LC

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For More Information

For more information about the Cisco CRS-1 16-Port OC48c/STM16c POS/DPT interface Module, contact your local account representative or visit: http://www.cisco.com/go/crs

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