DATA SHEET

CISCO CRS-1 4-PORT OC-192C/STM-64C 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 4-Port OC-192c/STM-64c 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 line-card chassis
Software Compatibility	Cisco IOS® XR Software Release 2.0 & 3.0 or higher
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	• Four ports of OC-192/STM-64 POS interfaces per physical layer interface module (PLIM) slot • All four ports have same optical reach (very short reach [VSR], short reach [SR], intermediate reach [IR], or long reach [LR]) (LR supported in 3.0 or higher)
Layer1/Layer 2 Feature Summary	• Supports a maximum transmission unit (MTU) of up to 9188 bytes • 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

Feature	Description
	• 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) enabling installation and removal without affecting system traffic
Network Management	• Cisco IOS XR Software command-line interface (CLI) • Simple Network Management Protocol (SNMP) • Extensible Markup Language (XML) interface • CraftWorks Interface (CWI) • Element management system (future)
Physical Dimensions	• Occupies one PLIM slot • Weight: 8.6 lbs (3.9 kg) • Height: 20.6 in. (52.32 cm) • Depth: 1.8 in. (4.57 cm) • Width: 1.8 in. (4.57 cm)
Power	150W
Environmental Conditions	• Storage Temperature: -40°C to 70°C (-40°F to 158°F) • Operating Temperature: – Normal: 5°C to 40°C (41°F to 104°F) – Short term: -5°C to 50°C (23°F to 122°F) 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
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	Very Short Reach 850 nm (VSR-1)	Short Reach 1310 nm (SR-1)	Long Reach 1550 nm (LR-2)	Intermediate Reach 1550 nm (IR-2)
Connector Type	Standard MTP (MPO) multi-fiber optical connectors	SC	SC	SC
Target Distance	300 m	2 km	80 km	40 km
Transmitter				
Power Out (Maximum)	-3 dBm	-1 dBm	4 dBm	2 dBm
Power Out (Minimum)	-10 dBm	-6 dBm	0 dBm	-1 dBm
Extinction Ratio (Minimum)	6 dB	6 dB	9 dB	8.2 dB
Side-Mode Suppression (Minimum)	—	30 dB	—	30 dB
Modulation Type	Direct	Direct	External	External
Receiver				
P (RMax) (minimum overload)	-3 dBm	-1 dBm	-7 dBm	-1 dBm
P (RMin) (minimum sensitivity)	-16 dBm	-11 dBm	-24 dBm	-14 dBm
Optical Link				
Fiber Type	62.5 um multimode ribbon fiber	G.652	G.652	G.652
Maximum Dispersion	Not applicable	6.6 ps/nm	1600 ps/nm	800 ps/nm
Attenuation Range	3.75 dB/km	0-4 dB	11-22 dB	0-11 dB
Maximum Optical Path Penalty	—	1 dB	2 dB	2 dB
Compliance	OIF-VSR4-01.0	ITU-T G.691 I-64.1; GR-253 SR-1	ITU G.959.1 PIL1-2D2	GR-253 IR-2 G.691 S-64.2b
Miscellaneous				
Optical Power Monitoring	—	±2 dB accuracy Both Transmit and Receive Directions	±2 dB accuracy Both Transmit and Receive Directions	±2 dB accuracy Both Transmit and Receive Directions
Laser Bias Current Monitoring	—	Transmit direction only	Transmit direction only	Transmit direction only
Temperature Monitoring	—	Transmit direction only	Transmit direction only	Transmit direction only

ORDERING INFORMATION

To place an order, visit:

Cisco Ordering Home Page

Table 4. Ordering Information

Product Part Number	Product Name
4OC192-POS/DPT-VS (=)	Cisco CRS-1 4xOC-192/STM-64 POS/DPT Interface Module/VS
4OC192-POS/DPT-SR (=)	Cisco CRS-1 4xOC-192/STM-64 POS/DPT Interface Module/SR
4OC192-POS/DPT-IR (=)	Cisco CRS-1 4xOC-192/STM-64 POS/DPT Interface Module/IR
4OC192-POS/DPT-LR (=)	Cisco CRS-1 4xOC-192/STM-64 POS/DPT Interface Module/LR

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FOR MORE INFORMATION

For more information about the Cisco CRS-1 4-Port OC-192c/STM-64c POS/DPT Interface Module, contact your local account representative or visit:

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