

## Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module

The Cisco<sup>®</sup> CRS-3 Carrier Routing System offers industry-leading performance, advanced services intelligence, environmentally conscious design, and system longevity. The Cisco CRS-3 is powered by the Cisco Flow Array - a chipset architecture based on multidimensional engineering and Cisco IOS<sup>®</sup> XR Software, a unique self-healing, distributed operating system.

Packet-based data communications are being replaced by video and rich media traversing the IP Next-Generation Network (NGN) in multiple directions, straining the architectural foundations of both public and private networks serving businesses and consumers. As part of the medianet, a media-aware Cisco IP NGN, the Cisco CRS-3 delivers continuous, always-on operations and scales easily from numerous single-chassis form factors to a massive multi-chassis system. Its design provides an industry-leading efficiency consuming lowest power, cooling and rack-space resources for an intelligent service-rich bandwidth capacity. The CRS-3 builds on the CRS-1 being backward and forward compatible, protecting existing and future investments for decades to come.

This data sheet provides detailed product specifications for the Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module (product number 20X10GBE-WL-XFP). For more information about the Cisco CRS Family or about other available interfaces, visit: <http://www.cisco.com/go/crs>.

**Figure 1.** Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module



## Product Specifications

Table 1 gives specifications for the Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module.

**Table 1.** Product Specifications

Feature	Description
<b>Chassis compatibility</b>	<ul style="list-style-type: none"> <li>Compatible with all current Cisco CRS-3 line-card chassis</li> <li>Compatible with all current Cisco CRS-1 line-card chassis with 140G Fabric Cards</li> <li>Requires Cisco 140G Modular Services Card or 140G Forwarding Processor Card for operation</li> </ul>
<b>Software compatibility</b>	Cisco IOS XR Software Release 4.0.0 or later
<b>Port density</b>	<ul style="list-style-type: none"> <li>Twenty ports of 10 Gigabit Ethernet per PLIM slot</li> <li>Maximum card throughput = 140 Gbps</li> </ul>
<b>Ethernet</b>	<ul style="list-style-type: none"> <li>Encapsulations: ARPA, IEEE 802.2/SAP, IEEE 802.3/SNAP</li> <li>IEEE 802.x flow control</li> <li>802.1q VLAN support, jumbo frames</li> <li>IEEE 802.1p tagging</li> <li>Source/destination MAC accounting and VLAN accounting</li> <li>Full-duplex operation</li> <li>802.1Q VLAN termination</li> <li>Per-port byte and packet counters for policy drops; oversubscription drops; cyclic redundancy check (CRC) error drops; packet sizes; and unicast, multicast, and broadcast packets</li> <li>Per-VLAN byte and packet counters for policy drops; oversubscription drops; and unicast, multicast, and broadcast packets</li> <li>Per-port byte counters for good bytes and dropped bytes</li> <li>10GE Configurable LAN/WAN-PHY support</li> <li>Synchronous Ethernet</li> <li>IEEE 1588</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>140G Gbps line-rate Throughput</li> <li>Maximum number of IM per chassis: 4 slot (4), 8 slot (8), 16 slot (16)</li> </ul>
<b>Reliability and availability</b>	<ul style="list-style-type: none"> <li>Line-card online insertion and removal (OIR) support without system impact.</li> </ul>
<b>Network management</b>	<ul style="list-style-type: none"> <li>Cisco IOS XR Software command-line interface (CLI)</li> <li>Simple Network Management Protocol (SNMP)</li> <li>Extensible Markup Language (XML) interface</li> <li>CraftWorks Interface (CWI)</li> <li>Cisco Active Network Abstraction (ANA)</li> </ul>
<b>Physical dimensions</b>	<ul style="list-style-type: none"> <li>Occupies one-half slot on a Cisco CRS-3 and CRS-1 chassis</li> <li>Weight: 8.45 lbs (3.82 kg)</li> <li>Height: 20.6 in. (52.2 cm)</li> <li>Depth: 11.2 in. (28.4 cm)</li> <li>Width: 1.8 in. (4.49 cm)</li> </ul>
<b>Power</b>	150 Watts
<b>Environmental conditions</b>	<ul style="list-style-type: none"> <li>Storage temperature: -40 to 70°C (-40 to 158°F)</li> <li>Operating temperature: <ul style="list-style-type: none"> <li>Normal: 5 to 40°C (41 to 104°F)</li> <li>Short-term: -5 to 50°C (23 to 122°F)</li> </ul> </li> <li>Relative humidity: <ul style="list-style-type: none"> <li>Normal: 5 to 85%</li> <li>Short-term: 5 to 90% but not to exceed 0.024 kg water/kg of dry air</li> </ul> </li> </ul> <p>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.)</p>

## Approvals and Compliance

Table 2 gives standards compliance information for the Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module.

**Table 2.** Compliance and Agency Approvals

Feature	Description
<b>Safety Standards</b>	<ul style="list-style-type: none"> <li>• UL/CSA/IEC/EN 60950-1</li> <li>• AS/NZS 60950.1</li> <li>• IEC/EN 60825 Laser Safety</li> <li>• FDA – Code of Federal Regulations Laser Safety</li> </ul>
<b>EMI</b>	<ul style="list-style-type: none"> <li>• FCC Class A</li> <li>• ICES 003 Class A</li> <li>• AS/NZS CISPR 22 Class A</li> <li>• CISPR 22 (EN55022) Class A</li> <li>• VCCI Class A</li> <li>• IEC/EN 61000-3-2: Power Line Harmonics</li> <li>• IEC/EN 61000-3-3: Voltage Fluctuations and Flicker</li> </ul>
<b>Immunity (Basic Standards)</b>	<ul style="list-style-type: none"> <li>• IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8-kV contact, 15-kV air)</li> <li>• IEC/EN-61000-4-3: Radiated Immunity (10V/m)</li> <li>• IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2-kV power, 1-kV signal)</li> <li>• IEC/EN-61000-4-5: Surge AC Port (4-kV CM, 2-kV DM)</li> <li>• IEC/EN-61000-4-5: Signal Ports (1 kV)</li> <li>• IEC/EN-61000-4-5: Surge DC Port (1 kV)</li> <li>• IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10 Vrms)</li> <li>• IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30A/m)</li> <li>• IEC/EN-61000-4-11: Voltage Dips, Short Interruptions, and Voltage Variations</li> </ul>
<b>ETSI and EN</b>	<ul style="list-style-type: none"> <li>• EN300 386: Telecommunications Network Equipment (EMC)</li> <li>• EN55022: Information Technology Equipment (Emissions)</li> <li>• EN55024: Information Technology Equipment (Immunity)</li> <li>• EN50082-1/EN-61000-6-1: Generic Immunity Standard</li> </ul>
<b>Network Equipment Building Standards (NEBS)</b>	<p>This product is designed to meet the following requirements (qualification in progress):</p> <ul style="list-style-type: none"> <li>• SR-3580: NEBS Criteria Levels (Level 3)</li> <li>• GR-1089-CORE: NEBS EMC and Safety</li> <li>• GR-63-CORE: NEBS Physical Protection</li> </ul>

## Additional Specifications

**Table 3.** Additional Specifications

Gigabit Ethernet XFP Optics	Maximum Distance
10 Gigabit Ethernet short-reach (SR) optics (multimode fiber)	300 meters
10 Gigabit Ethernet long-reach (LR) optics (single-mode fiber)	6.2 miles (10 km)
10 Gigabit Ethernet extended-reach (ER) optics (single-mode fiber)	25 miles (40 km)
10 Gigabit Ethernet long-haul (ZR) optics (single-mode fiber)	50 miles (80 km)
10 Gigabit DWDM fixed wavelength XFP (100-GHz ITU grid)	50 miles (80 km)
10 Gigabit DWDM Tunable XFP (50-GHz ITU grid)*	50 miles (80 km)

\* Not yet qualified on this card; planned for future release

## Ordering Information

To place an order, contact your local Cisco representative or visit the Cisco Ordering Home Page. Use the ordering information in Table 4.

**Table 4.** Ordering Information

Product Part Number	Product Name
20X10GBE-WL-XFP(=)	Cisco CRS-3 20-port 10GbE LAN/WAN-PHY Interface Module
XFP-10G-MM-SR(=)	Cisco 10 Gigabit Ethernet SR (300 meters) Optics
XFP10GLR-192SR-L(=)	Low Power multirate XFP supporting 10GBASE-LR and OC-192 SR
XFP10GER-192IR-L(=)	Low Power multirate XFP supporting 10GBASE-ER and OC-192 IR
XFP-10GZR-OC192LR(=)	Cisco 10 Gigabit Ethernet ZR (80 km) Optics
DWDM-XFP-xx.xx(=)	Cisco 10 Gigabit DWDM (80 km) Optics

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## For More Information

For more information about the Cisco CRS-3 20-Port 10GE LAN/WAN-PHY Interface Module, contact your local Cisco representative or visit: <http://www.cisco.com/go/crs>.



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