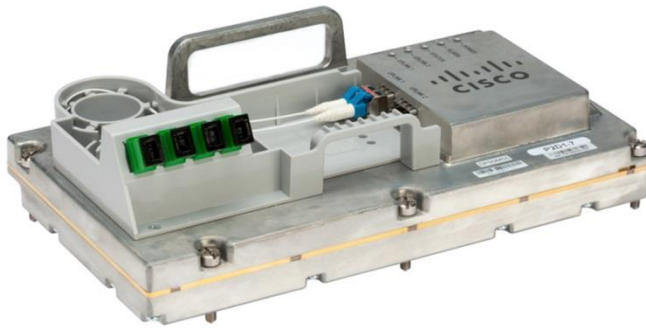# Cisco Smart PHY Model 120 RPD

Product Description

The Cisco Smart PHY Model 120 1x2 RPD (Remote Phy Device) module for the GS7000 Nodes enables customers to prepare their networks for the future with higher bandwidth per subscriber.
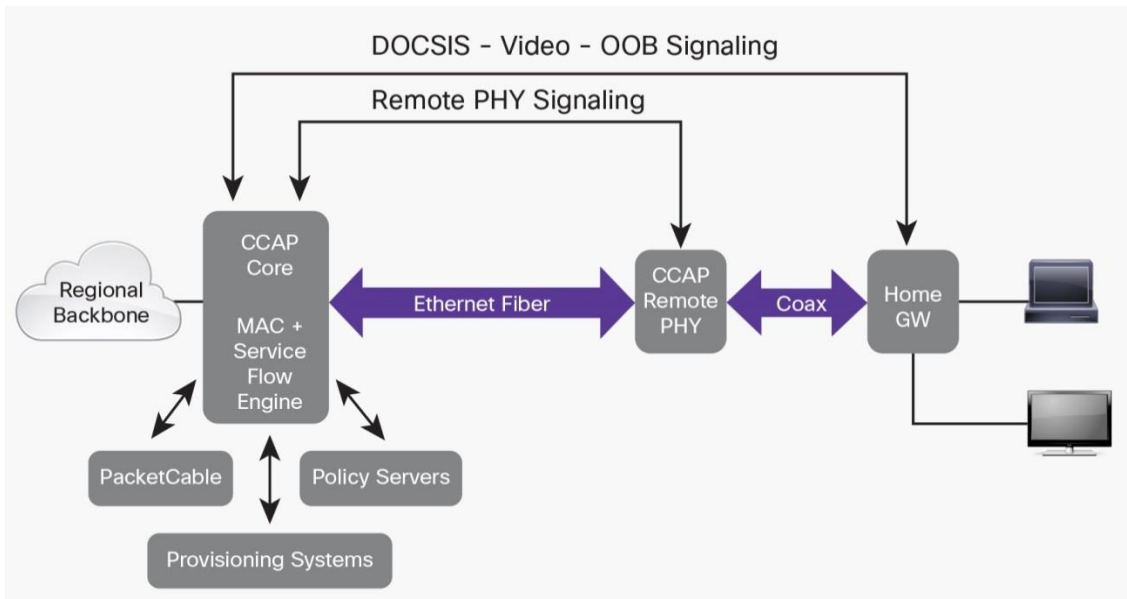
An extension of the Modular Headend Architecture, MHAv2 splits CMTS functions so that CCAP core and physical-layer functions can run separately, in different locations. CCAP core routing can run out of larger hubs (or even cloud CMTS instances in a datacenter), while QAM and ODFM modulation gets pushed out to Remote PHY Devices (RPDs) located nearer to subscribers.

Remote PHY is the product of cable operators asking the industry to help them overcome the limitations of analog fiber and break through the HFC bottleneck. In its most basic form, Remote PHY unlocks major bandwidth increases in existing access networks. But it also enables "fiber deep" architectures that push digital fiber out much closer to homes. Ultimately, Remote PHY helps cable operators deliver capacity and Gigabit service tiers on par with any pure-fiber competitor, at a fraction of the cost of ripping and replacing the existing HFC plant.

With Remote PHY, you can deploy fewer sophisticated CCAP routing platforms, connected to many smaller-footprint, less expensive RPDs. You don't have to run a large number of full-featured I-CMTS platforms at every hub, consuming huge amounts of space and power as you scale, and requiring advanced onsite expertise to deploy and maintain. You can consolidate CCAP core functions to larger hubs or data centers and push digital fiber deeper into your access network—in some cases, all the way to the node. You only have to worry about converting to analog HFC for the last few hundred feet to the residence. And you can dramatically boost bandwidth to every home.

The Cisco Smart PHY model 120 RPD has been integrated with the Cisco Smart PHY deployment automation software. Cisco Smart PHY deployment automation software is a micro-service based software tool that enables full automation for provisioning, configuration and maintenance of standards based RPDs, shelves and Cisco RPHY Cores.

Figure 1.   MHAv2 Reference Architecture

Features and Benefits

The Cisco Smart PHY 120 RPD module offer the following features and benefits:

- Pluggable SFP+ support

Table 1.   Features

Downstream/Upstream configurations	1x1 and 1x2 (Downstream x Upstream)
DS capacity	160 narrowcast QAMs plus Six OFDM 192 MHz orthogonal frequency-division multiplexing (OFDM) blocks per port
US capacity	12 US channels per port or 2 OFDMA blocks (96 MHz) per port
Channel assignment	Flexibility QAM channel frequency placement
Video	Broadcast, VOD and SDV (future) SCTE 55-1 and SCTE 55-2 (future) OOB
Video encryption	PowerKEY (future), VPME and DVB
CIN connectivity	Dual 10 GBE SFP+ Path Redundancy (future) Daisy Chaining (future)
Operation & maintenance	AGC and leakage detection tone generation US monitoring

Table 2.   Specifications

Description	Specification
Design to be Compliant with Cablelabs Remote PHY specifications	• CM-SP-R-PHY-I07-170524 Remote PHY Specification • CM-SP-R-DEPI-I07-170524 Remote Downstream External PHY Interface Specification • CM-SP-R-UEPI-I07-170524 Remote Upstream External PHY Interface Specification • CM-SP-GCP-I03-170524 Generic Control Plane Specification • CM-SP-R-DTI-I05-170524 Remote DOCSIS Timing Interface Specification • CM-SP-R-OOB-I05-170908 Remote Out-of-Band Specification • CM-SP-R-OSSI-I07-170908 Remote PHY OSS Interface Specification • CM-SP-DRFI-I16-170111
Power requirements	
Power consumption	48W typical
Environmental specifications	
Operating temperature range	-40to140°F(-40 to 60°C)
Operating humidity range	5 to 95%
Mechanical specifications	
Dimensions	L x H x D: 10.0 x 3.0 x 5.75 in (254 x 76 x 146 mm)
Weight	1.4kg
RF connectors	F connector

Optical SFP+ Options

Table 3.   Optical SFP+ Module Options

20 KM SFP+ PIDs 400 ps/nm/km dispersion	40 KM SFP+ PIDs 800 ps/nm/km dispersion	80 KM SFP+ PIDs 1600 ps/nm/km dispersion
RPHY-S10G-20K-200=	RPHY-S10G-40K-200=	RPHY-S10G-80K-200=
RPHY-S10G-20K-210=	RPHY-S10G-40K-210=	RPHY-S10G-80K-210=
RPHY-S10G-20K-220=	RPHY-S10G-40K-220=	RPHY-S10G-80K-220=
RPHY-S10G-20K-230=	RPHY-S10G-40K-230=	RPHY-S10G-80K-230=
RPHY-S10G-20K-240=	RPHY-S10G-40K-240=	RPHY-S10G-80K-240=
RPHY-S10G-20K-250=	RPHY-S10G-40K-250=	RPHY-S10G-80K-250=
RPHY-S10G-20K-260=	RPHY-S10G-40K-260=	RPHY-S10G-80K-260=
RPHY-S10G-20K-270=	RPHY-S10G-40K-270=	RPHY-S10G-80K-270=
RPHY-S10G-20K-280=	RPHY-S10G-40K-280=	RPHY-S10G-80K-280=
RPHY-S10G-20K-290=	RPHY-S10G-40K-290=	RPHY-S10G-80K-290=
RPHY-S10G-20K-300=	RPHY-S10G-40K-300=	RPHY-S10G-80K-300=
RPHY-S10G-20K-310=	RPHY-S10G-40K-310=	RPHY-S10G-80K-310=
RPHY-S10G-20K-320=	RPHY-S10G-40K-320=	RPHY-S10G-80K-320=
RPHY-S10G-20K-330=	RPHY-S10G-20K-330=	RPHY-S10G-80K-330=
RPHY-S10G-20K-340=	RPHY-S10G-40K-340=	RPHY-S10G-80K-340=
RPHY-S10G-20K-350=	RPHY-S10G-20K-350=	RPHY-S10G-80K-350=
RPHY-S10G-20K-360=	RPHY-S10G-40K-360=	RPHY-S10G-80K-360=
RPHY-S10G-20K-370=	RPHY-S10G-20K-370=	RPHY-S10G-80K-370=
RPHY-S10G-20K-380=	RPHY-S10G-40K-380=	RPHY-S10G-80K-380=
RPHY-S10G-20K-390=	RPHY-S10G-40K-390=	RPHY-S10G-80K-390=

Ordering Information

The RPD is available in two configurations:

PID	Description
RPD-1X2=	Smart PHY 120 RPD with SCTE 55-1 OOB
RPD-1X2-PKY=	Smart PHY 120 RPD with SCTE 55-2 OOB

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