HMS Transponder 9106x

The Cisco Hybrid Management Sub-layer (HMS) transponder offers monitoring and control capabilities for Cisco amplifiers and nodes deployed in HFC networks managed by a HMS-compliant Monitoring and Control (M&C) system. The transponder is compatible with any HMS-compliant M&C system including Cisco's ROSA™ NMS (Network Management System) and ROSA Element Management System (EMS). By supporting interoperability with both current and future HMS-compliant M&C systems, the new transponder enables operators to continue to integrate Cisco products into existing or new HFC networks. Communications with the transponder is accomplished via the built-in fully frequency agile forward RF data carrier receiver and reverse RF data carrier transmitter.

The HMS transponder is currently available for Compact Amplifiers and Nodes. The transponder is a true plug-in module and plugs directly into the monitorable amplifier or node's transponder socket. Since the Compact Amplifiers and Nodes have an individual transponder socket, the transponder can be snapped into place without interrupting service. No special mounting kits or cables are required and all test points will remain fully accessible at all times.

The HMS transponder monitors vital operational parameters, including:

- RF level of the forward data carrier (transponder Rx)
- 24 V DC supply
- AC supply voltage
- Internal temperature
- Monitoring the alarm status of the amplifier/node
- Control of the 3-state reverse switch
- Control RF level of the reverse data carrier (transponder Tx)
- Control a variety of parameters depending on product (amplifier or node)
- HMS standard sub-layer MIBs

Figure 1. Compact Transponder 9106x

Frequency Agility

The transponder has a Frequency Shift Keying (FSK) data modem (frequency agile within specified bandwidths), which has the proven robust ability to resist radio interference. Frequency agility enables the customer to alter receive and transmit frequencies of the transponder.

No programming of the HMS transponder is required. For fast registration within EMS, it is recommended that you program the Rx frequency prior to installation. No field set-up or adjustments are required. The transponder utilizes internal nonvolatile memory for storage of vital parameters like frequency and transmits level data. Field service is easily accomplished with the Handheld Programmer Terminal 91200.

Set-Up and Adjustment

The unit can be snapped directly into the product's available transponder socket. The transponder utilizes internal nonvolatile memory for storage of the unit address and other important operational parameters.

Programming is easily accomplished with the Handheld Programmer Terminal 91200.

Features

- Frequency agile 5 to 65 MHz for reverse path
- Frequency agile 45 to 174 MHz for forward path
- Auto registration in HMS-compliant EMS
- Full duplex
- Simple and easy field service with use of Handheld Programmer Terminal
- Simple and easy installation - no switching or re-adjustments of amplifier or node

Product Specifications

See the table below for product specifications.

Table 1. Product Specifications

Specification	Unit	Specification	Additional Information
Transponder Transmitter Section			
Carrier frequency	MHz	5-65	Agile within the frequency band in 50 kHz steps
Modulation type		FSK	
Deviation	kHz	± 67	
Transmitter bandwidth	kHz	400	
RF output level	dBµV	84 - 110	
Output level step size	dB	1	
Recommended level	dB	-	Same as payload reverse signals*
Data rate	kbps	38.4	
Spurious and harmonics	dBc	> 55	5 - 2000 MHz
Transponder Receiver Section			
Carrier Frequency	MHz	45 - 174	Agile within the frequency band in 50 kHz steps
Input level range	dBµV	35 - 80	
Recommended level	dB	10	Below analog video carriers
Monitored Parameters			
Temperature	°C	± 2	
DC voltage	%	± 5	
General and Environmental			
Power consumption			N/A **
Operating temperature range	°C	-40 to +85 -40 to +100	Specifications Reduced specifications
Mechanical Specifications			
Dimensions H x W x D	mm	38 x 80 x 12.5	
Weight	g	40	
Connector		3 pole 2.5 mm	Mini Jack

Note:

* The loss from the transponder to the reverse amplifier output varies depending on product type. Recommended level at reverse amplifier output is 90 – 95 dBµV.

** For power consumption specifications, refer to the individual amplifier or node data sheets.

Ordering Information

See the table below for ordering information.

Table 2. Accessories

Description	Part Number
HMS Transponder for Compact Amplifiers and Compact Nodes	
HMS Transponder for Compact Amplifier types 93199/93218/93228/93211/93221/93199/93212	A91061.10
HMS Transponder for Compact Node types 9007x/9009x	A91062.10
HMS Transponder for Compact EGC Amplifier types 93240/93250/93251	A91063.10
HMS Transponder for Compact EGC Fiber Deep Node types 90100/90300	A91064.10
HMS Transponder for Compact EGC SegNode type 90200	A91065.10
HMS Transponder for Compact Dual/Single Amplifier types 93270/93280	A91067.10
Related Equipment	
Phoenix™ HFC Network Monitoring Gateway	See data sheet*
Handheld Programmer Terminal, required to configure the transponder	A91200.10**
Download Kit, for use with the Handheld Programmer Terminal	A91210.10**

Note:

*For additional information, see the Phoenix HFC Network Monitoring Gateway (P/N: 8986653) data sheet.
**For additional information, see the Handheld Programmer Terminal (P/N: A541401) and Download Kit (P/N: A541402) data sheet(s).

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