

PathTrak™ HCU200

Integrated Return Path Monitoring Module



Key Features

- Integrated 16-port return path monitoring unit, no RPM cards to buy
- Supports all existing MACTrak™ capabilities plus full spectrum analyzer and monitoring functions
- DOCSIS® 3.0 compatible including 0.5–85 MHz frequency range
- Fully compatible with HCU400s and HCU1500s on the same server
- Solid-State data storage, no hard drive to fail
- Small footprint, requires only 1 RU of rack space
- –48 VDC powering with optional AC adapter

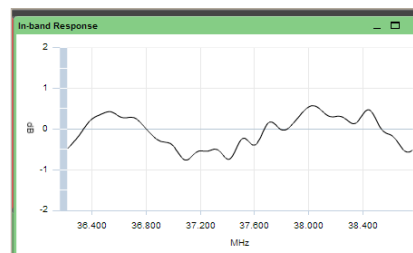
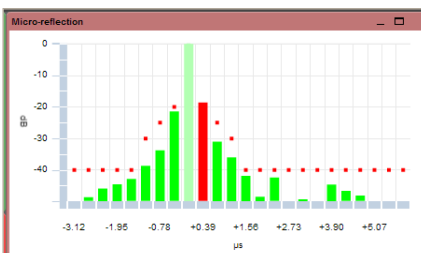
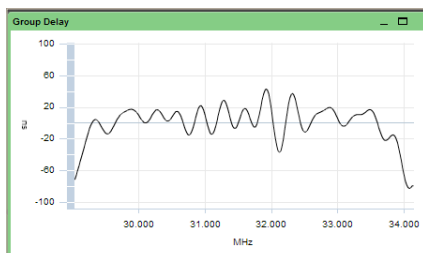
Applications

- Monitor hubs previously thought too small for PathTrak coverage
- Add monitoring capacity in 16-port increments when existing HCUs fill up
- Easy set up via LCD display and front-panel keypad
- Looks like an HCU with 2 RPM cards in PathTrak Client and WebView
- Eliminates needing stand-alone spectrum and QAM analyzers for troubleshooting return path problems

Complete PathTrak Return Path Monitoring capability now offered in a 16-port 1 RU self-contained unit. The HCU200 allows for applying full PathTrak capabilities, including MACTrak Technology, to hubs previously thought too small to support the existing PathTrak HCU chassis/RPM card architecture. The HCU200 combines all HCU and RPM card functionality into a single 1-RU rack-mount module.

The HCU200 is ideal for small hubs and headends where the larger PathTrak HCU units are not feasible because of space issues or cost. The HCU200 is also an attractive option when needing just a few additional nodes of monitoring capacity when no open slots exist in HCUs for adding RPM cards.

The HCU200 is fully compatible with existing PathTrak hardware and can be added to existing PathTrak Servers similar to adding an HCU400 or HCU1500. The HCU200 ports look like standard RPM card ports in all tree structures and reports. Each HCU200 contains its own digital signal processor (DSP) plus spectrum and quadrature amplitude modulation (QAM) analyzer measurement engines and, therefore, adding more HCU200s later will not affect overall system speed or performance.



Specifications
RF Measurements

Input ports	16 (F-connector or BNC) with activity indicator
Input port impedance	75 Ω
Frequency range	500 kHz to 85 MHz
Total measurement range	-50 to 60 dBmV
Operational temperature range and accuracy	±2 dB at room temperature; ±3 dB drift, 0 to 50°C
Spur free dynamic range	50 dB typical with 0 dBmV input ¹
Port-to-port isolation	>65 dB
Resolution bandwidths	
Standard	30, 300, 1000
DOCSIS	160, 320, 640, 1280, 2560, and 5120 kHz
Video	Programmable to 10, 30, 100, 300, 1000 kHz
Attenuator	0 to 50 dB in 1 dB steps
Level accuracy	±2 dB on signal pulses >10 μs; ±4 dB on signal pulses >1 μs
Minimum noise burst measurable	<1 μs
Dwell time	Programmable from 1 μs to 100 ms
Monitoring mode	250 max points frequency resolution, scan rate depends on measurement settings, typically 4 to 8 scans per second for every port
Interactive Spectrum Analyzer mode	500 points frequency resolution, up to 6 full spectrum scans per second with 20 μs dwell time
Interactive Monitoring View mode	Up to 250 points frequency resolution, up to 6 full spectrum scans per second with 20 μs dwell time
Interactive QAM Analyzer mode ²	QAM64, QAM32, QAM16, and QPSK demodulation, level, modulation error ratio (MER), un-equalized MER, Codeword error rate, In-band channel response, group delay, ingress under the carrier, spectrum, micro-reflections, impulse noise and constellation, live strip chart over time
Recommended input level of active signals	0 to +50 dBmV (over range indicator to prevent invalid measurement results)

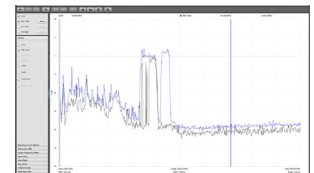
General

Enclosure	19 inch 1 RU rack mount
Display	2x16 character back lit
Data Storage	1 GB flash memory
Ethernet	10/100 Mbps
Serial port	1 – HSM1000 control port
USB	1 – USB 2.0
Power	Dual -48 V DC (-46 to 50 V DC)

¹ Minimum from 5 to 85 MHz with 0 dBmV input is 46 dBc; from 500 kHz to 5 MHz is 45 dBc

² QAM Analyzer features only available on QAMTrak/MACTrak-enabled units using WebView 2.5 or higher

Health	
Codeword Errors	6.82 %
UNCORRECTABLE RATE:	0.00 %
TOTAL RATE:	1.39 %
MER	2.27 %
MER:	37.35 dB ✓
MIN: 31.80	AVG: 36.06
MAX: 37.79	
Un-equalized MER	2.27 %
UN-EQUALIZED MER:	34.49 dB ✓
MIN: 24.77	AVG: 31.71
MAX: 34.52	
Impairments	
Carrier Level Delta	0.87 dB
CARRIER LEVEL:	4.80 dBmV ✓
MIN: 4.52	AVG: 4.87
MAX: 5.39	
Micro-reflection	0.00 %
MICRO-REFLECTION:	-44.21 dB ✓
MIN: -44.21	AVG: -38.17
MAX: -28.83	
In-band Response	0.00 %
IN-BAND RESPONSE:	0.38 dB ✓
MIN: 0.27	AVG: 0.38
MAX: 0.73	
Group Delay	0.00 %
GROUP DELAY:	56.08 ns ✓
MIN: 39.33	AVG: 68.72
MAX: 107.14	
Ingress Under Carrier	0.00 %
INGRESS UNDER CARRIER:	-51.00 dBc ✓
MIN: -54.15	AVG: -50.25
MAX: -46.34	
Impulse Noise	20.45 %
IMPULSE NOISE:	5.83 ✓
MIN: 3.88	AVG: 6.78
MAX: 15.43	


Ordering Information

HCU200 Modules	Description
HCU200	HCU200 spectrum-only with F or BNC Options
HCU200-MACPACK	HCU200 with QAMTrak and MACTrak options
HCU200 Options	Description
HCU200-MACTRAK-UPG	Field upgrade of HCU200 to HCU200-MACPACK
HCU200-AC-ADPTR	Optional AC Power adapter for HCU200

Test & Measurement Regional Sales

NORTH AMERICA TEL: 1 866 228 3762 FAX: +1 301 353 9216	LATIN AMERICA TEL: +1 954 688 5660 FAX: +1 954 345 4668	ASIA PACIFIC TEL: +852 2892 0990 FAX: +852 2892 0770	EMEA TEL: +49 7121 86 2222 FAX: +49 7121 86 1222	WEBSITE: www.jdsu.com/test
---	--	---	---	--