



# Wireless DOCSIS 3.1 Meter

Coax Network Meter

CGNDP3M



The CGNDP3M is a weather-resistant, portable DOCSIS 3.1 meter providing all major testing features required for both DOCSIS and DVB-C network environments with detailed, comprehensive results communicated via a mobile device (Android/iOS) using Hitron's MyMeter mobile app. An Intel Puma 7, OFDM 2x2 with dual band 2.4 and 5GHz WiFi means powerful troubleshooting at a cost-efficient price point.

## Portable DOCSIS 3.1 Meter

The CGNDP3M Coax Network Testing Meter has a DOCSIS 3.1/3.0/2.0/1.1 compliant cable modem to ensure interoperability with all existing cable systems. Further, the CGNDP3M features a 2.5 Gigabit Ethernet port and 802.11b/g/n/ac wireless LAN access point combined to simplify cable connectivity testing and troubleshooting.

## Detailed Diagnostics Supported

All diagnostic readings from the CGNDP3M are displayed on Hitron's handy mobile app MyMeter, compatible with your technician's existing smartphones or tablets\* (iOS/Android). MyMeter provides powerful detailed insights such as upstream/downstream, spectrum, channel scan, MER, Flux, QAM analysis, OFDM, OFDMA, Ingress, Noise, Ping and Traceroute, and SnapShot, a proprietary feature that takes a "snapshot" of the network at a particular time. MyMeter also includes a SpeedTest that measures speeds over 2 Gbps.

## Key Features

- One 2.5 Gigabit Ethernet Port
- Switchable Upstream (5-42, 5-85, 5-204)
- DOCSIS 3.1/3.0/2.0/1.1 Compliant
- DOCSIS WAN
- DOCSIS Logger
- DOCSIS Registration Status
- AC Detection and Rejection
- Full Frequency Spectrum Support up to 1.2 GHz
- IQ Constellation
- Pre-equalizer Analysis
- Speed Test
  - via Coax
  - via Ethernet to CPE
- QAM Measurements
- Optional Cloud Data Collection & Reporting
- Battery Supports up to 8 Hours of Operation

## Interfaces

- 2x RF F-Type 75Ω Male Connector
- 2x Female F-81 Coax Barrels included
- 1x 2.5GBASE-T Ethernet Port (Auto-MDI/MDIX)

## Reception-Demodulation

- DOCSIS 3.1/3.0/2.0/1.1
- DOCSIS 3.1 Demodulation: Multi-carrier OFDM 16 to 4096QAM
- DOCSIS 3.1 using 2 OFDM 192MHz Downstream Channels + 32 SC-QAM
- DOCSIS 3.0 Demodulation: 64QAM, 256QAM
- DOCSIS 3.0 using 32 Bonded Downstream Channels
- Frequency (edge-to-edge): 54-1218MHz / 108\*1218MHz / 254-1218MHz
- Channel Bandwidth: 6/8MHz (DOCSIS 3.0)
- Spectrum Measurement Range: -100dBmV to +50dBmV

## Transmitter-Modulation

- DOCSIS 3.1/3.0/2.0/1.1
- DOCSIS 3.1 Modulation: OFDMA BPSK to 4096QAM
- DOCSIS 3.1 Data Rate: Up to 700Mbps with OFDMA 96MHz Upstream Channels
- DOCSIS 3.0 Modulation: QPSK, 8QAM, 16QAM, 32QAM, 64QAM, and 128QAM (SCDMA only)
- DOCSIS 3.0 Data Rate: Up to 320Mbps with 8 bonded Upstream Channels
- Frequency: Switchable 5-42MHz / 5-85MHz / 5-204MHz
- Upstream Transmit Signal Level: +11 to 65dBmV
- Output Return Loss: >6dB

## Wi-Fi

### Wi-Fi Characteristics

- 802.11a/b/g/n/ac
- 2T2R 2.4GHz 11n and 2T2R 5GHz 11ac Dual Band with 150 Mbps + 400Mbps PHY Rate
- 20/40MHz Channel Bandwidth
- High Power Design for Multi-radio Co-location
- Supports 5180MHz-5240MHz UNII-1, 5748-5825MHz UNII-3 Bands

### Wi-Fi Features

- Up to 4 SSIDs per Radio
- Wi-Fi Output Power Range for North America & Europe
  - 2.4G (.11n, HT:20): 16dBm
  - 2.4G (.11g, HT:20): 17dBm
  - 2.4G (.11b, HT:20): 20dBm
  - 5G (.11ac, HT:20): 10dBm
  - 5G (.11ac, HT:40): 11dBm

## Wi-Fi Security

- WPS
- WPA
- WPA2
- WPA-PSK
- 64/128 bit WEP

## Management

- myMeter App-based GUI for configuration and management
- Power-on Self-Diagnostic
- MIB II/MCNS MIB
- Protocol Support: SNMP v1, v2C, v3

## Mechanical

- LEDs: 7 Status LEDs (Power, Wi-Fi, DS, US Status, Charge, Bat)
- Factory Default Reset Button
- Forced Power Off Button
- Power Restart Button
- Dimensions: 210mm (H) x 165mm (W) x 79mm (D)
- Net Weight: 1300 +/- 10g

## Electrical

- Input Power: 12VDC, 5A
- Power Adapter: 100-240VAC, 50/60Hz to 12VDC
- Battery: Lithium Battery Cells 8850mAh
- Battery: ~8h of Typical Operation, ~4h Full Load, ~4h to Charge
- Surge Protection
  - RF Input sustains at least 2KV
  - Ethernet RJ-45 sustains at least 4KV

## Environmental

- Operating Temperature: -14°C (7°F) ~ 42°C (108°F)
- Operating Humidity: 10% ~ 90% (Non-condensing)
- Storage Temperature: -40°C (-40°F) ~ 80°C (176°F)
- Water Resistant

## Regulatory Compliance

- FCC Part 15 Class B Subpart B, Part 15.247, Part 15.407, Part 2.1091
- ICES-003 Issue 6, Class B
- RoHS Compliant

Specifications subject to change without further notice. Product photo may differ.

DOCSIS 3.1 is a CableLabs standard for high speed Internet access that defines support for up to 10 Gbps downstream and 1 Gbps upstream. Actual cable operator network speeds will vary and will be less than the calculated maximum possible speeds. Actual upload and download speeds are affected by several factors including, but not limited to: the capacity of your cable operator's network, the services offered by your cable operator, cable and Internet network traffic, your computer equipment etc. Final speeds will also be limited by each device and the quality of its connection to the modem or router.

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P/N: CGNDP3M-D-003

## Features provided by the MyMeter App

### Spectrum Analysis

- Real-time Spectrum
- Spectrum Averaging Intervals: Selected from 1-16
- High-reliability Measurements
- MoCA Spectrum
- Automated Testing

### Channel Scan

- Downstream Receive Power (Rx) and MER are collected for each downstream channel.
- Individual Channel Power and MER can be accessed by clicking on each channel bar in the graph.

### Constellation

- QAM Constellations, Power Levels, MER, etc, can be confirmed on each DOCSIS channel for verification without repeated data entry.

### Flux

#### Pre-Equalization

- Cable Modem Adaptive Equalizer Response and Coefficients displayed.
- “Invisible” Cable Problems detected:
  - Cable Damage
  - Loose Connectors
  - Water Damaged Cables

#### ICFR

- Peak-to-valley Measurement of Frequency Response Deviations in-channel

#### Taps

- DOCSIS 2.0/3.0 Pre-equalization Taps
  - Taps 1-7 counter group delay at or near the diplexer roll (85 MHz)
  - Tap 8 IS the primary or main tap that contains the RF payload (FFT)
  - Taps 9-24 overcome any RF echoes due to impedance mismatches encountered in the cable system

#### Echoes

- The echo measurement indicates the cavity width between the two impedance mismatches that make up the impairment.
- At 0.87 velocity of propagation, a DOCSIS 2.0/3.0 equalizer tap is equal to approximately 85 feet of cable (26 meters).

### DOCSIS Measurements

- Signal Levels and MER for Downstream Channels
- Upstream Channels
- DOCSIS Registration Status Flow
- DOCSIS Registration Information
- Re-register feature to restart the cable modem and re-synchronize to the CMTS

### D3.1 OFDM and OFDMA Measurements

- Downstream OFDM Metrics:
  - Frequencies & Subcarriers
  - Status Indicator
  - Modulation Order vs Subcarrier, Bit Loading
- Downstream Channel Estimate Coefficients
- Full Spectrum Plot of the OFDM Carrier displayed.
- Power Levels and Error Rates for the Fundamental Components inside the OFDM Carrier measured.
  - PLC: Physical Link Channel
  - NCP: Next Codeword Pointer
  - MDC (Profiles): Actual Modulation Profiles in use in the channel
- Minimum and Average MER Readings for each 6 MHz

### Ingress

- Find and Troubleshoot Ingress and Noise

### Upstream Alignment

- Observe the Overall In-Channel Return Path Response to the CMTS Port
- Upstream DOCSIS Transmit Levels used to observe and manage amplifier levels and tilt.

### Downstream Alignment

- Low/High Tilt, Reference and Raw Spectrum all in one widget
- Operates independently without a headend sweep unit
- Captures frequency bin data at each downstream channel to display frequency response (Utilizing 6 MHz chunks of OFDM Downstream as a “high” measurement channel.)

### Channel Maps

- Channel Map Selection to focus on known channels
- Detect and Create Channel Maps automatically

### Ping/Trace Route

- Ping or Traceroute to IP addresses (and websites) to test for latency and/or packet loss.
- Configurable Ping Count, Packet Size
- Enter an IP Address or a DNS Name for a website

### Extra Features

The following features are offered with a HitronCloud package.

- Feature Management performed via the MSO Web UI
  - Technician Account Creation and Management
  - Firmware Upgrade Management
  - Data Collection
  - Speed Test
  - App Analytics

### Optional Accessories

- Meter Battery Charger Dock
- Extra/Spare Battery
- Car Charger Wire
- Shoulder Bag
- Antenna