



# MERIDIAN COMPACT

## ALL-IN-ONE DIGITAL POSTHOLE SEISMOGRAPH

Introduced in 2009, the Trillium Compact's small size and portability revolutionized broadband fieldwork. The Meridian Compact PH takes broadband to an entirely new level, by marrying the sensor to the digitizer and recorder.

### As shallow as possible, as deep as necessary

Direct bury installation consistently demonstrates performance gains. And combining technologies in a single unit keeps things simple: the Meridian Compact PH seismograph is extremely easy to deploy, with no-mass lock or mass centering required. Its exceptionally small size and generous operational tilt range significantly reduces the time and effort required for site preparation and installation.

### Metadata you can trust

Instrumentation configuration is made easy with an intuitive user interface. Once configured, the Meridian Compact PH builds its own metadata. With the digitizer and sensor housed in a single unit, Dataless SEED or RESP response files are internally built and guaranteed to be correct every time.

### This next-generation seismograph is a marvel of miniaturization, with no compromise in performance

- Accurate
- Deployable
- Portable
- Serviceable



The combination of two proven technologies in a single instrument maintains a small station footprint.



*Polar Certified Model available for operating temperatures down to -45°C*

# TECHNICAL SPECIFICATIONS MERIDIAN COMPACT PH

Specifications subject to change without notice

## SENSOR: Trillium Compact Seismometer

See the *Trillium Compact Seismometer specifications* for more details.

## TECHNOLOGY

**Topology:** Symmetric triaxial

**Mass centering:** None required

**Operational tilt range:** 120s model:  $\pm 2.5^\circ$   
20s model:  $\pm 10^\circ$

## PERFORMANCE

**Bandwidth/120s:** -3 dB corners at 120 s and 108 Hz

**Bandwidth/20s:** -3 dB corners at 20 s and 108 Hz

**Clip Level:** >26 mm/s up to 10 Hz and 0.17 g above 10 Hz

## DIGITAL RECORDER

### DIGITIZER PERFORMANCE & CAPABILITIES

**Type:** 24-bit ADC per channel, simultaneous sampling

**Dynamic range:** 142 dB @ 100 sps (full-scale peak to RMS shorted-input noise)

**Selectable Gain:** 1, 2, 4, 10

**Sensitivity:** 300, 600, 1200, 3000 counts/ $(\mu\text{m/s})$ , 1% accuracy

**Sample rates:** 1, 2, 5, 10, 20, 40, 50, 80, 100, 125, 200, 250, 500, 1000, 2000, 5000 sps

**Dual Sample Rates:** A second sample rate can be selected from the sample rates above

**Decimation Filter:** Selectable linear phase (non-causal) or minimum phase (causal)

**Anti-alias Filters:** -140 dB (linear phase) or -120 dB (minimum phase) at Nyquist frequency, 0 dB at 80% Nyquist

**Digital Filters:**

- User-configurable low-pass and high-pass
- 1st to 5th order, 0.1mHz to Nyquist
- Different filters may be configured for primary and secondary sample rates

**Orientation Correction:** User configurable onboard 3-D data rotation for correcting azimuth and tilt

## CALIBRATION

**Signal Source:** 16-bit DAC with 30 ksp/s output

**Attenuator:** Selectable 1, 10, 100 attenuation

**Waveforms:** Synthesized sine, PRB signals  
Playback user defined calibration files

## AVAILABLE MODELS

**MC20-PH2:** 20s, Standard Model

**MC20-PH2-XC:** 20s, Polar Certified Model

**MC120-PH2:** 120s, Standard Model

**MC120-PH2-XC:** 120s, Polar Certified Model

## RECORDING (CONTINUOUS)

**Formats:** MiniSEED

**Internal Media:** 8 GB flash memory  
(32, 64 or 128 GB options available)

**Removable Media:** SD Card up to 64 GB

## RECORDING (EVENTS)

**Triggers:** Bandpassed STA/LTA, Threshold

**Captured Data:** MiniSEED, ASCII

## DATA RETRIEVAL

**File Transfer:** Via Ethernet, Ethernet-connected DSL, VSAT, cellular, radio

**Media Exchange:** Weather-sealed data cartridge that is field-swappable during continuous recording with no loss of data

**Response Metadata:** Generate and download full digitizer/sensor response files in RESP or Dataless SEED format, or access from the SD Archive Media in StationXML format

## DATA STREAMING

**Continuous:** Seismic data and State-of-Health data

**Formats:** SeedLink, Nanometrics NP

**Events:** Triggered event data: email, secure file transfer, other options available

## TIMING - GNSS & PRECISION NETWORK TIMING

**Timing System:** Internal DCXO clock disciplined to selectable timing source

**Timing Source:** Select from GNSS, PTP (Precision Timing Protocol), NTP or free-running

**Timing Server:** Serve PTP or NTP time to other Meridian, Titan SMA/EA or Centaur

**Timing Accuracy:**

- <5  $\mu\text{sec}$  (GNSS Always On)
- <100  $\mu\text{sec}$  (GNSS duty cycled, PTP or local NTP)

**GNSS Support:** Internal 32-channel GNSS receiver

**GNSS Power:** Selectable: Always on, duty cycled, or off

## COMMUNICATIONS

**Web-based UI:** Supports standard PC, tablet and mobile devices

**Network interface:** 10/100 Base-T Ethernet

**IP Addressing:** Static, dynamic (DHCP) or link-local IP address

**Protocols:** WebSocket, UDP/IP unicast/multicast, HTTP data streaming

## SEISMOGRAPH SPECIFICATIONS

### POWER

**Power Input:** 9-36 VDC isolated input

**Consumption:** 1.0 W (1.3 W with Ethernet) typical

## Protection:

- Lightning surge protected
- Reverse-voltage and over-voltage protected
- Self-resetting over-current protection

**Battery Manager:** User configurable low voltage shutdown and restart thresholds

## ENVIRONMENTAL

**Operating temperature:**

-20°C to +60°C (Standard Model)

-45°C to +60°C (Polar Certified Model)  
(Including the SIU)

**Storage temperature:**

-40°C to +70°C (Standard Model)

-60°C to +70°C (Polar Certified Model)

**Shock:**

- 100 g half sine, 5 ms without damage, 6 axes
- No mass lock required for transport

**Pressure:** Insensitive to pressure

**Ingress Protection:** Rated to IP68 to 40 m for continuous immersion

**Humidity:** 0 to 100%

## PHYSICAL

**Max. cable length:** 40 m

**Housing:** Stainless steel

**Weight:** 3.3 kg

**Height:** 238 mm, including connector

**Diameter:** 97 mm

**Removable digitizer:** Digital recorder can be removed for servicing

**Connector:** 16-pin, Subconn Micro series, top mounted

## SURFACE INTERFACE UNIT (SIU)

### FEATURES

**Status LEDs:** Removable media, Archive, Time, Link, Sensor, System

**Connectors:**

- Power: 3-pin MIL-Circular
- Ethernet: 4-pin MIL-Circular
- Data cartridge: 8-pin MIL-Circular
- GPS antenna: TNC connector with 3.3 V supply for active antenna
- Meridian: 14-pin MIL-Circular

**Data cartridge:** Field-swappable, weather-sealed data cartridge that holds replaceable SD card (41 mm dia. x 67 mm)

**Buttons:** Media Eject, Shutdown

## PHYSICAL/ENVIRONMENTAL

**Housing:** Powder coat aluminum with nickel-plated steel base

**Ingress Protection:** Rated to IP67

**Dimensions:**

- Length: 180 mm
- Width: 83 mm
- Height: 43 mm including connectors

Specifications for Meridian Compact PH 120s and Meridian Compact PH 20s

Specifications are the same for both products unless otherwise stated. For more detailed specifications, please go to [www.nanometrics.ca](http://www.nanometrics.ca).

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