

# REF TEK COLT-PH

## POSTHOLE BROADBAND SEISMOMETER

### EXCEPTIONAL PERFORMANCE

The compact REF TEK® Colt-PH™ broadband seismometer provides high quality data for scientists conducting earth movement studies.

#### Low Self-Noise

Using a force-balance electronic feedback circuit design, the REF TEK Colt-PH has exceptionally low self-noise allowing it to better measure ground motion even at the quietest sites. Scientists requiring portable posthole style seismometers now have a high dynamic range instrument available for quick, easy deployment.

#### Robust

The shock resistant mass locking system protects the instrument during transportation to any field location. And, with a 100m water depth IP68 rating, posthole flooding won't damage your instrument.

#### Intelligent Design

Many features make the REF TEK Colt-PH broadband seismometer quick to install, including:

##### » ALIGNMENT TOOLS

Successful installations depend on precise directional alignment, the REF TEK Colt makes that easy with removable north/south pointers installed in the base of the unit to make orientation to the scribe line effortless.

##### » DIGITAL LEVEL

Digital tiltmeter allows for simple verification of level while instrument is downhole.

##### » THREE POINT LEVELING

Leveling is made easy with 360° access to the leveling feet, just put it on site, then move the wheels until the unit is level.

##### » MASS UNLOCK

The automatic Mass Unlock simply unlocks the mass when you turn on the unit, no screwdriver required.

##### » CONNECTOR

With the connector located on the top of the unit, you can be ready for connecting the sensor to the recorder quickly and easily.



### BENEFITS

- » Low self-noise, resulting in high quality data for all your analysis requirements.
- » Posthole form factor allowing for deployment in quiet downhole environment.
- » Shock resistant housing and robust automatic mass locking system makes the unit ready for any field environment.
- » Available in two frequency ranges for varying scientific budgets.

### RELIABLE PERFORMANCE FOR

- » Permanent and temporary broadband installations including:
  - » Local and regional broadband networks
  - » Aftershock and portable deployments
  - » Earthquake Early Warning Network (EEW)

# REF TEK COLT-PH

## POSTHOLE BROADBAND SEISMOMETER

### SPECIFICATIONS

#### ELECTRICAL

<b>Sensor Type</b>	Symmetrical (3 Component), Posthole
<b>Feedback</b>	Force balance with capacitive transducer
<b>Bandwidth</b>	0.0083 (120 seconds) – 80 Hz (Flat velocity response) 0.0167 (60 seconds) – 80 Hz (Flat velocity response)
<b>Dynamic Range</b>	>140dB (0.01-0.05Hz); >160 dB (1–10 Hz)
<b>Self-Noise</b>	Below NLNM from 40 seconds to 10 Hz
<b>Clip Level</b>	>10 mm/s (<20Hz)
<b>Nominal Sensitivity</b>	2000 V/m/s $\pm$ 1% (see supplied test sheet for precise value)
<b>Full Scale Output</b>	40 Volts Peak-Peak (Differential Output)
<b>Output Impedance</b>	<100 Ohms
<b>Parasitic Resonances</b>	>100 Hz
<b>Cross Axis Coupling</b>	<1%
<b>Linearity</b>	<–60 dB
<b>Total Harmonic Distortion</b>	<–60 dB
<b>Calibration Constant</b>	~10 m/s <sup>2</sup> /A (nominal)
<b>Calibration Input</b>	Calibration current on 3 components simultaneously
<b>Calibration Enable Capability</b>	Active Low on Pin L to stay enable
<b>Cal Coil</b>	Single Cal signal input, isolated until cal enable line activated
<b>Mass Position Outputs</b>	$\pm$ 10 V

#### POWER

<b>Input Voltage</b>	9-30 VDC
<b>Consumption</b>	<0.8 Watts
<b>Protection</b>	Over-voltage, Reverse-voltage, & surge protection

### SPECIFICATIONS

#### MECHANICAL

#### SIZE

**Without Handle & Feet** 150 mm (5.9") Diameter x 220 mm (8.6") Height

**With Handle & Feet** 150 mm (5.9") Diameter x 270 mm (10.6") Height

**Weight** 12 kg (26.5 lbs)

**Leveling** Three adjustable leveling feet with locknuts, Digital Tiltmeter  $\pm$  0.1° precision

**Operational Tilt Range**  $\pm$ 5.0°

**Digital Tilt** RS-232,485 serial port, range -90° to +90° from vertical, 0.1° precision

**Alignment** North pointing orientation marker, removable N/S pins screw into the base for additional alignment guidance

**Mass Lock/Unlock** Automatic unlock when sensor powers on (Unlock on Active LOW for more than 6 sec on Pin U)  
Automatic lock when sensor powers off (Unlokc on Active LOW for more than 6 sec on Pin K)  
Lock/Unlock can also be done via logic level commands from digitizer

**Mass Centering** Automatic when sensor powers on (Start after unlock, Active LOW pulse on Pin M)  
Manual upon logic level command from Digitizer

**Mass Centering Range**  $\pm$  2.0° (Auto-centering by motors)

**Mass Temperature Sensitivity**  $\pm$  20°C without mass re-centering

#### ENVIRONMENTAL

**Operating Temp.** –25 °C to +60 °C

**Storage Temp.** –55 °C to +80 °C

**Watertight Integrity** IP68 (100m water depth)

#### CERTIFICATIONS

**Compliance** CE, RoHS

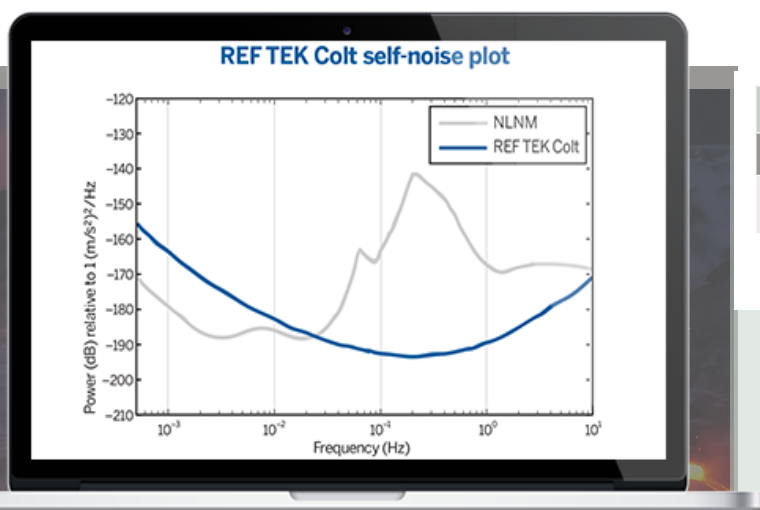
### ORDERING INFORMATION

PART NO.	DESCRIPTION
R-181-Colt-PH-120	REF TEK Posthole Colt broadband seismometer, 120 seconds to 80 Hz
R-181-Colt-PH-60	REF TEK Posthole Colt broadband seismometer, 60 seconds to 80 Hz

### CUSTOMER SUPPORT

REF TEK products are installed in locations around the world, from urban settings to rainforests to deserts. The environments are often challenging for electronics and REF TEK Systems is committed to providing reliable, practical support. Our team includes seismologists and seismic installation experts as well as engineers and technicians.

**Contact [support@reftek.com](mailto:support@reftek.com).**



©2020–2021, Reftek Systems Inc. All rights reserved. REF TEK is the trademark of Reftek Systems Inc., registered in the United State of America and in other countries.