REFTEK SYSTEMS INC.

180-MC

MULTI-CHANNEL ACCELEROGRAPH

Multiple Applications, One Solution

The 180-MC Multi-Channel Recorder offers a singular solution for multiple applications, for example, the monitoring of bridges, buildings, and dams.

The MC's rugged design allows for installation in the harsh outdoor environment, and the standard wall-mount design of the enclosure allows the system to be installed out of the way, as opposed to occupying valuable floor space in a building's electrical room.

When using this centralized system, the user has the flexibility to deploy dense sensor arrays around a structure at their discretion. For sites requiring large numbers of recording channels, multiple 180-MCs can be networked together to achieve common triggering of all channels in the system and common time synchronization, establishing a robust solution for large scale projects.

KEY FEATURES

- 12-18 Integrated Recording Channels
- 24-Bit and 30-Bit Output A/D Resolution
- IP Based Communications over Ethernet and Asynchronous Serial
- Embedded/Removable USBDrive
- Remote Alerting for both Event and Alarm Triggers
- Embedded Seedlink Server

APPLICATIONS

- Structural Monitoring (Buildings, Bridges, Dams)
- Dense Accelerometer Arrays

180-MC

REF TEK MULTI-CHANNEL ACCELEROGRAPH

MODEL	R-180-MC12A R-180-MC18A
A/D CONVERTER	
Type	32-bit A/D converters Configurable 24 and 30 bit output resolutions
Dynamic Range	~139 dB typical (wideband) @100 sps
Input Channels	12 or 18
Gain Selection	x1, x2, x4 and x8
Input Full Scale	40, 20, 10, 5 Vpp
Common Mode Rejection	>90 dB
Sample Rates	200, 100 sps
Multiple Sample Rates	Supported for rates in the group 200, 100,
Sampling	Simultaneous on all channels
FIR Filter	~140 dB down in the stopband
CHANNEL SPECIFICATIONS	
Noise Level	<40 µV P-P (<1 count of an 18 bit system) @ 200 sps
Temperature Effects	<1% of Full Scale from -20 °C to 70 °C
TIME BASE	
Type	GNSS Receiver/Clock plus a Disciplined Oscillator
Accuracy with GNSS	±10 µsec after validated 3-D Fix and Locked
Free-Running Accuracy	0.1 ppm over the temp. range of 0°C to 50°C 0.2 ppm from –20 °C to 0 °C
Alternate Time Sources	NTP
TRIGGERED RECORDING	
Trigger Type	Continuous, Vote, External/Event
VOTE TRIGGER	
Votes	User settable number of: • Votes per Channel • Votes required to determine Trigger/Detrigger User settable threshold for issuing votes Threshold range 0.00001 – 4 g
EXTERNAL TRIGGER	
An external signal can be issued by one station to trigger all other statons in the case of an event.	
RECORDER INTERCONNECTION	
Interconnected	Common GPS Time Trigger Notification
Time Synchronization	Within 10 µsec

POWER	
Input Voltage	9–30 VDC
Average Power	<21 Watt-Hour/Day Per Channel
Low Voltage Disconnect	User-programmable
Reset	Resettable via WebUI, Magnet Wand, or external connector pin.
SENSOR CONTROL	
Test Pulse	All Channels
COMMUNICATIONS	
Ethernet	10/100 Base-T, TCP/IP, UDP/IP, FTP, RTP DHCP, Static, Link-Local
WIFI	Access-point mode for local command and control
WebUI	Accessible via WiFi or Ethernet
RECORDING	
Format	Miniseed, MRF
Transmission	SeedLink Server, RTP, Jopens 6.0 (Simulcasting)
Trigger Type	Continuous, STA/LTA, Time, External, Cross, Level and Vote (0.0001 to 4g
Data Products	On-board Calculation of: PGA, PGV, PGD, MMI, PEIS, JMA (email notifications available)
Internal Capacity	8 Gb internal Flash memory data buffer (Upgradeable)
External Capacity	Removable 8, 16, 32 or 64 GB USB drive
MECHANICAL	
Screen	2.8" TFT
Switch	Magnetic Switch for WiFi & LED wakeup
Size	24" high x 20" wide x 16" deep (61 cm x 50.8 cm x 40.6 cm)
Weight w/o Battery	93 lbs (42.2 Kg)
Watertight Integrity	IP67 (recorder)
Humidity	0 to 100%
Operating Temp	–30°C to 70°C
Storage Temp	–30°C to 70°C
Volume	4.4 cubic feet
CERTIFICATIONS	
Compliance	CE, FCC, RoHS

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**.

©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.