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P-alert Network Accelerometer

Features

- Detect P wave and estimate whether the following shockwave is devastating or not.
- Embedded Industrial 16 Bit 80 MHz CPU and MEMS accelerometers with 16 bits output resolutions.
- 4 kinds of trigger algorithms: Pd, PGA, Displacement and STA/LTA for earthquake detecting.
- Support Modbus RTU / TCP, NTP time calibration and up to 3 hosts connections via Modbus TCP.
- Two seismic switch set points for each digital output.
- Earthquake data recordable when using PC utility.

Description

P-alert is a network accelerometer with advanced P wave alarm technology. It is embedded Pd technology developed by Prof. Yih-Min Wu from National Taiwan University (Please Google for related documents Prof. Wu has published). Designed to reduce earthquake damage, P-alert can issue an alarm within 3 seconds after P wave is detected whether the following shockwave is devastating or not.

P-alert offers four kinds of trigger algorithms: Pd, PGA, Displacement and STA/LTA for event determination. Pd algorithm was developed by Prof. Wu as it was mentioned above. PGA stands for Peak Ground Acceleration. P-alert offers 10 Hz and 20 Hz low pass filters which are user adjustable to filter out high frequency components in signal generated by non-earthquake vibration. Component “a” is especially equipped with real time displacement calculation which is able to deploy displacement trigger algorithm in “a” axis. The conventional STA/LTA trig algorithm is available in P-alert, too.

Intensity standards of MMI (Modified Mercalli Intensity), CWB (Central Weather Bureau, Taiwan), and China (GB/T-17742-2008) are also available and can be shown instantaneously. Other useful earthquake information is stored and ready for being retrieved in P-alert. These include trigger time, maximum intensity, maximum acceleration for each component and maximum acceleration in vector. The powerful networking capability features streaming real time data to hosts, automatically connecting up to 2 servers and NTP (Network Time Protocol) time calibration. With these networking functions, P-alert is a wonderful front end device for EEW (Earthquake Early Warning) system.

Combining with PC utility, it is feasible to record seismic data for research purposes and to have voice warnings if needed. Providing two outputs and supporting industrial communication standard Modbus TCP/RTU, P-alert is an ideal product for seismic safety control in numerous applications.

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P-alert Specification

P-alert is a P wave alarm equipped with MEMS accelerometers for 16 bit output resolution. It is embedded 2 digital outputs for facility protection before or during the earthquake. With Modbus TCP/RTU capabilities, it is very easy to integrate P-alert with industrial applications, such as PLC, HMI and SCADA. Up to 2 hosts can be connected to P-alert at the same time.

Accelerometer

Type:	Tri-axial MEMS
Range:	± 2 g
Frequency Response:	0.05~20 Hz
Displacement Frequency Response:	0.075 HPF
Shock:	3000 g 0.5ms 10000 g 0.1ms

Resolution

Output Resolution:	16 Bit

Earthquake Gauge

Algorithm:	Pd, PGA, Displacement, STA/LTA
STA Setting Range:	0.1~100 seconds
LTA Setting Range:	0.1~200 seconds
Event Duration Time:	1~200 seconds

Switch Set-points

Digital Output Numbers:	2
Set-point Range:	1~1960 gal
Contact Type:	Normal Open
Contact Capacity:	60V / 0.6ADC
Hold-On time:	User Define

Power

Supply Voltage:	10~30 VDC
Power (@12V):	3.5 W

Input / Output

Modbus RTU:	RS-232 or RS-485 format 19200, N, 8, 1
Modbus TCP:	3 Hosts Simultaneously
Modbus ID:	Default 101，settable
Modbus function:	Function 3 and 16
Active Connect to TCP Server	Support 2 TCP Servers
Time Calibration	Via NTP or PC Utility
Data Recording	Via Network by PC Utility

Size

Dimension:	125 * 105 * 30 mm
Weight:	450g (without Power and Cable)

Enviroment

Operation Temp.:	-10~60℃
Storage Temp.:	-20~70℃

國家磐石獎

Calibration Laboratory
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