



GST-43-M

Seismic Switch with Metal casing

Features

- Two Seismic Switch Set points (2 mg to Full Scale) with Independent Digital Output
- Internal Tri-axial MEMS Accelerometers
- Industrial 16 Bit 80 MHz CPU
- Automatic Zero Offset
- STA/LTA Earthquake Detected Algorithm Support Real Time Tri-axial and Vector Acceleration Output
- Store Earthquake Time, Maximum Intensity, Vector, Tri-axial Acceleration and Instant Tri-axial Acceleration of Earthquake and/or tremors.
- Support Modbus RTU /TCP, NTP Time Calibration, Up to 3 Hosts Connections Via Modbus TCP



Introduction

An earthquake always breaks out unexpectedly and sometimes brings devastating impacts, such as fires, road/bridge damages, building collapse, etc. That really threatens people's lives and brings the huge property damages.

Therefore, establishing a complete earthquake early warning system becomes important and urgent to prevent any further significant damages to the important facilities.

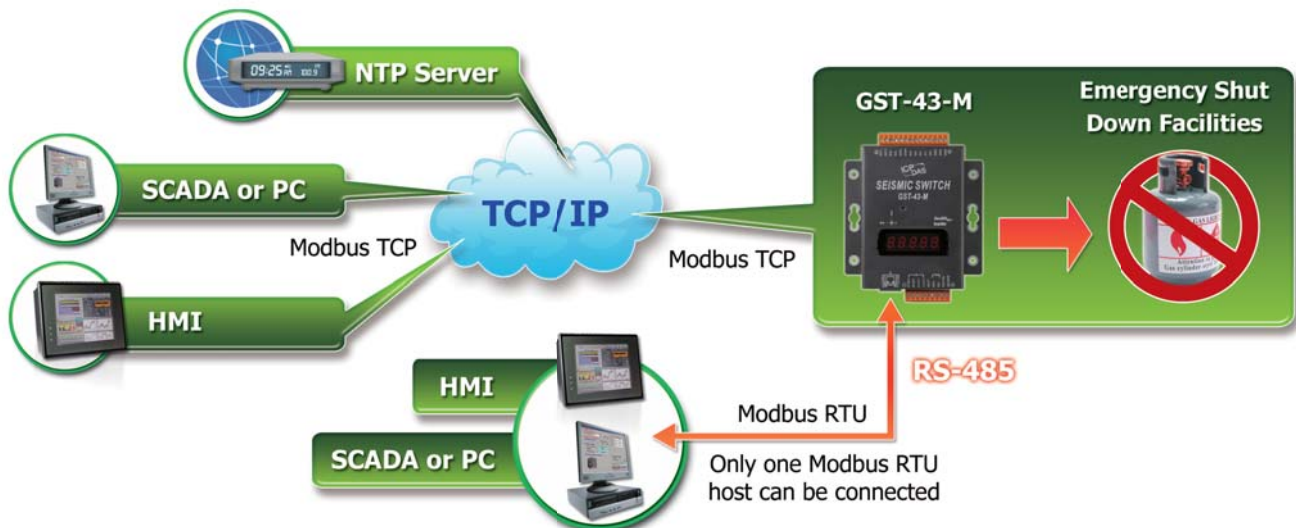
GST-43-M is an advanced earthquake monitor which features a tri-axial MEMS accelerometer, a powerful 16 Bit 80 MHz industrial CPU. The MEMS accelerometer acquired vibration signal by 100 Hz sampling rate. The CPU filters this vibration signal with digital low pass filter to minimize non-earthquake signal which is above 20 Hz.

One of the other big features of GST-43-M is earthquake detection algorithm. GST-43-M adopts STA/LTA algorithm to detect earthquake. This algorithm is very useful to eliminate none earthquake vibration. Except to traditional earthquake detection algorithm, it's newly numerical computation software, which carries out real time vector calculation faster than ever. With automatic zero drifting compensation and high capacity FIFO buffer, making GST-43-M has stable and high speed STA/LTA calculation to achieve highly reliable earthquake detection and GST-43-M equips with 2 digital outputs for emergency auto-reactions.

GST-43-M is not only a seismic switch but also an earthquake intensity indicator. It could real time display maximum intensity according to CWB (Central Weather Bureau, Taiwan) earthquake intensity standard, maximum vector, tri-axial acceleration and instant tri-axial acceleration...etc. User can preset threshold of acceleration for 2 digital outputs individually in order to protect crucial facilities.

The open connectivity of GST-43-M offers Modbus RTU /TCP protocol to seamlessly connect with PC, PLC and HMI (Human Machine Interface). The connection number of host can be up to 3 simultaneously. So it is very easy to connect with broadcast, disaster prevention system. It also provides active connection to server ability which is useful to deploy at environment with no real IP. With NTP (Network Time Protocol) capability which keep GST-43-M internal time within 1 second accuracy.

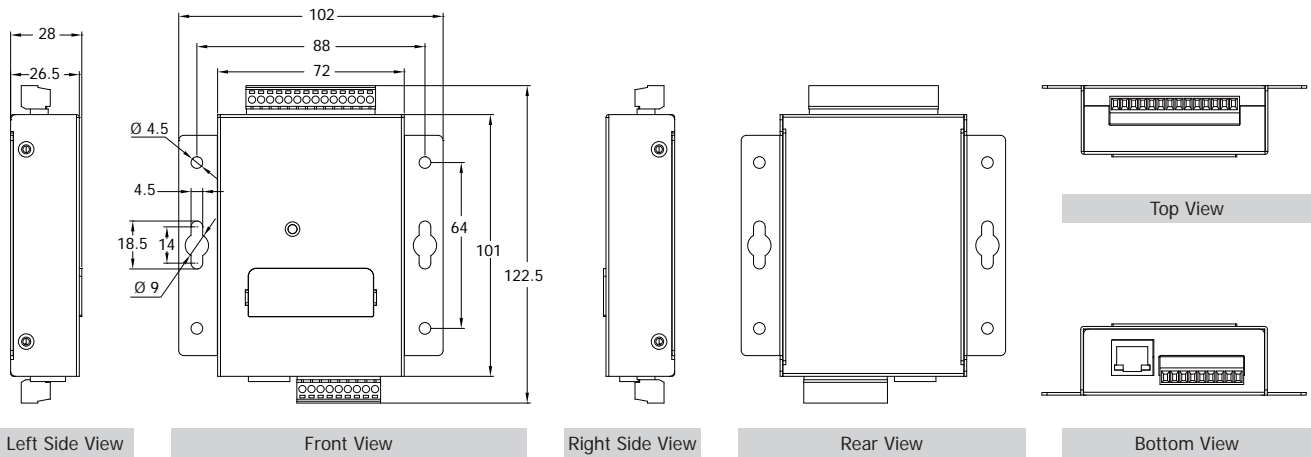
Applications



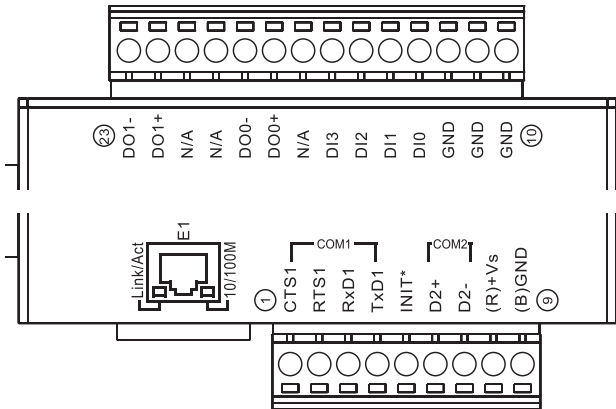
Specifications

Models	GST-43-M
CPU	
CPU	80186 or compatible (16-bit and 80 MHz)
SRAM	512 KB
Flash	512 KB
EEPROM	16 KB
NVRAM	31 Bytes (battery backup)
RTC (Real Time Clock)	RTC Provide seconds, minutes, hours, date of week/month; month and year, valid from 1980 to 2079
64-bit Hardware Serial Number	Yes
Built-in Watchdog Timer	Yes (0.8 second)
Communication Interface	
COM1	RS-232 (TxD, RxD, CTS, RTS and GND); Non-isolated
COM2	RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated
Ethernet Port	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto_MDIX, LED indicator)
COM Port Formats	
Data bit	8
Parity	None
Stop bit	1
Modbus Formats	
Modbus TCP	3 Host Simultaneously
Modbus ID	Default 101, settable
Modbus Function	Function 3 and 16
Modbus Variables Address	100 ~ 158, 171 ~ 191 include Real Time Acceleration, Event Information, IP Address Setting, Server IP Address Setting, NTP IP Address Setting, etc
LED Display	
5-Digit 7 Segment LED Display	Yes
System LED Indicator	Yes
Accelerometer	
Type	Tri-axial MEMS
Range	± 2 g (X Y Axes) + 1 g / -3 g (Z Axis)
Frequency Response	0 ~ 20 Hz
Shock	500 g/0.5 ms 3000 g/0.1 ms
Digitizer	
ADC Resolution	12 Bit
Digital Resolution	< 0.001g
Earthquake Gauge	
Algorithm	STA/LTA
STA Setting Range	0.1 ~ 100 Sec.
LTA Setting Range	0.1 ~ 200 Sec.
Offset Period	30 ~ 32767 min.
Event Duration Time	1 ~ 200 Sec.
Switch Setpoints	
Digital Output Numbers	2
Setpoint Range	2 ~ 1960 Gal (0.01 m/s ²)
Contact Type	Normal Open (Photo MOS Relay)
Contact Capacity	0.6 A DC
Hold-On time	Same as Event Duration Time
Power	
Protection	Power reverse polarity protection
Frame Ground for ESD Protection	Yes
Required Supply Voltage	+10 V _{dc} ~ +30 V _{dc} (non-regulated)
Power consumption	3.5 W (GST-43-M only)
Mechanical	
Dimensions (W x H x D)	102 mm x 123 mm x 28 mm
Weight	281 g (Without Power and Cable)
Operating Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-40 °C ~ +80 °C
Relative Humidity	5 ~ 90% RH, non-condensing

Dimensions (Units: mm)



Pin Assignments



Wire Connections

Output Type	Readback as 1	Readback as 0
From A Relay Contact	Relay On 	Relay Off
	ON State DI value as 1 	OFF State DI value as 0
TTL/CMOS Logic	Logic Level Low 	Logic Level High
Open Collector	On 	Off

Ordering Information

GST-43-M CR	Seismic Switch with Metal casing
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Accessories

	GPSU06U-6	24 V/0.25 A, 6 W Power Supply
	DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
	MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting