GeoSIG
swiss made to measure

DATA SHEET

fora - CR series

Central Data Aquisition System

Overview

GeoSIG's ***fora - CR series*** is a 19" rack module consisting of Slot-in Modules (SiMs) inserted into vertical slots. Each ***fora*** rack is expandable up to 36 channels, and by combining several ***fora*** systems, hundreds of channels can be monitored. System parameters of the ***fora*** are stored in the non-volatile system memory to allow automatic recovery. It offers continuous and trigger-based recording.

The ***fora*** offers the most flexible sensor connectivity options to cater for the needs of any measuring requirement. Any type of sensor complying with the ***fora*** signal input specifications can be connected on the conveniently available screw terminals. There are enhanced connectivity options via wired Ethernet, external landline modems*, 3G/4G cellular devices*, satellite links* and serial links*. It also offers support for interconnection of multiple devices.

The ***fora*** has built-in display for easy inspection of status and parameters, and it offers support for DVI output for direct graphical visualisation of data and configuration*. There is a USB interface for external, removable storage media and communication devices.

Applications

- Structural Health and Response Monitoring
- Earthquake and seismic monitoring
- Ambient vibration testing
- Induced vibration monitoring and notification
- Building code-compliant instrumentation
- Seismic alarm and safe shutdown

Key Features

- Unlimited number of channels by combining 36 channel modules
- True simultaneous sampling with shared clock for up to 36 channels
- Internal fast SSD hard drive up to 1TB with SATA interface and high storage capacity, mirroring function on SD card* or USB drive*
- Dynamic range 137 dB, 150 dB*
- Individual Δ-Σ ADC per channel 24-bit, 32-bit*
- Adjustable sampling rates up to 2000 sps, 5000 sps*
- TCXO time base with GNSS (GPS, GLONASS, BEIDOU) or NTP synchronisation
- Alarm output* with up to 8 independent relays flexibly configurable for different types of events (through 2x4 alarm option boards)
- Built-in display for easy inspection of status and parameters
- 3 option slots for adding peripherals
- Simple, secure communication over internet or intranet with full remote management
- Power redundancy through dedicated battery input (internal battery charger included)
- Extremely compact and modular with higher than ever channel density
- Configuration and status monitoring via web interface compatible with smartphones / tablets

GeoSIG Ltd Wiesenstrasse 39, 8952 Schlieren, Switzerland. Tel.: +41 44 810 21 50

www.geosig.com

fora - CR series Central Data Acquisition System

Specifications

Overview

GeoSIG's ***fora*** is a 19-inch rack module consisting of Slot-in Modules (SiMs) inserted into vertical slots. Each ***fora*** rack is expandable up to 36 channels. By combining several fora systms, hundreds of channels can be monitored. System parameters of the ***fora*** are stored in the non-volatile system memory to allow automatic recovery.

Sensors

The ***fora*** offers the most flexible sensor connectivity options to cater for the needs of any measuring requirement. Any type of sensor complying with the fora signal input specifications can be connected on the conveniently available screw terminals.

fora rack

Configuration:	Base SiM modules: - fora-SBC data handling SiM - fora-OVP over voltage protection SiM - fora-POWER system power management SiM Channel SiM modules: - fora-DSP digital signal processing SiM - fora-ADC analog-to-digital SiM - fora-OVPS sensor interface SiM
Channels:	up to 36 channels

Digitiser SiM

Configuration:	fora-DSP + fora-ADC mounted at the front of the fora rack up to 12 SiMs per one rack
Channels:	3 channels per SiM
A/D converter:	24 Bit (or 32 bit) D-S per channel with analog and digital FIR anti-aliasing filters
Dynamic range:	146 dB (per bin @ 1 Hz rel. full scale rms) 137 dB @ 50 sps 156 dB (per bin @ 1 Hz rel. full scale rms)* 150 dB @ 40 sps*
Sampling rate:	Up to 2000 (or 5000) sps
Bandwidth:	DC to 1000 Hz standard / Others*

Sensor Interface SiM

Configuration:	fora-OVPS mounted at the back of the ***fora*** rack up to 12 SiMs per one rack
Channels:	3 channels per SiM
Input signal:	20 VDC or 10 VDC differential 2.5 VDC ± 2.5 VDC single ended 0 - 20 mA current loop
Sensor power:	same as DC power 15 or 24* VDC (specify at order)

Data Recording

Type:	Continuous and/or event based

Triggering

Type:	Level or STA/LTA trigger
Pre-event-time:	1 to 720 seconds, typical
Post-event-time:	1 to 7200 seconds, typical
Trigger filtering:	User configurable lowpass, highpass or bandpass

Data Stream

Protocol:	GSBU, SeedLink (Earthworm compatible)

Storage Memory

Size and type:	Internal 64 GB built-in SSD hard drive, higher capacity available on request, removable SD card or USB storage on request, FAT32 or EXT4 formatted
Management:	Intelligent management of memory card capacity using policies as per file type and ring buffer capacity specification
Recording format:	miniSEED, or with extended information encapsulated into blockette 2000*

Power

DC power:	9 - 36 VDC
AC power:	Available on request, AC/DC adaptor with 230 VAC / 50 Hz or 115 VAC / 60 Hz
Consumption:	Typically 15 W with 36 channels excluding the consumption of the connected sensors
Solar panels:	Available on request
External battery:	Available on request, 24 to 100 Ah with battery protection in case of low battery condition with automatic restart after power is restored

Self-Test

User-configurable periodical sensor test and periodical state of health (SOH) report based on comprehensive test of instrument, which can be requested at any time. Sinewave, triangular wave or square wave calibration signal are supported.

Time Base

Internal:	Intelligent Adaptive Real Time Clock (IARTC)
External:	NTP or GNSS
Std. TCXO accuracy:	±0.5 ppm (15 s/year) @ +25 °C ±2.5 ppm (75 s/year) @ -10 to +50 °C Higher accuracy available on request
Accuracy after learn:	< ± 0.5 ppm (15 s/year or 2 ms/h)
Accuracy with NTP:	< ± 4 ms typical, assuming reasonable access to NTP servers

Communication Channel (Digital)

Ethernet TCP/IP
Internal landline modem*
External GSM modem*
External Satellite modem*
External GPRS modem*
External UMTS/3G modem*

User Interface

An intuitive web interface is available for easy configuration with any web browser. Alternatively the configuration file in XML format can be edited on site through the instrument console, exchanged by replacing the memory card, remotely from a server or through SSH. Although the configuration file can be manually edited at any time, a tool is provided to edit it securely.
Network based link allows the user optionally to interact with the unit over the Internet, from anywhere around the world.

Alarm (SiM*)

Alarms:	4 or 8 independent relay contacts for trigger alarm and/or error (NO and NC contacts available)
Relay hold-on:	1 to 60 seconds (user programmable)
Contacts:	Suitable for a low voltage control. In case large loads must be switched, then external relays should be implemented. Max voltage: 125 V / 250 mA

Environment / Housing

Operational temperature:	-20 °C to +70 °C
Storage temperature:	-40 °C to +85 °C
Humidity:	0 % to 100 % (non-condensing)
Rack dimensions:	19" rack, 3 HU, 350 mm depth
Housing:	Various fixed or portable housings available on request
Protection:	Housings with variable protection available on request

*: optional

GeoSIG Ltd Wiesenstrasse 39, 8952 Schlieren, Switzerland. Tel.: +41 44 810 21 50

www.geosig.com