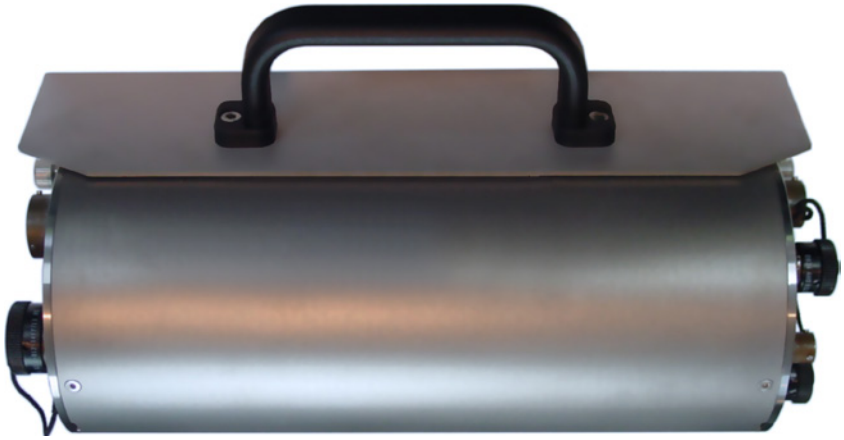
DM24SxEAM

CAPTURE. PROCESS. DISTRIBUTE.



Sophisticated and adaptable digital aqusition system

The Güralp DM24S3EAM and DM24S6EAM are three- and six-channel digitisers combined with storage and communications modules. These data aqusition systems provide flexible and expandable tools for connecting analogue and digital instruments to your network. A USB interface beneath the lid allows for simple bulk data storage and easy retrieval in deployments without telemetry.

Inside the robust, aluminium or stainless steel casing is a 24-bit, high fidelity digitiser with a GPS-synchronised timing system. Designed for data quality and durability, the Güralp DM24SxEAM includes a stable and robust Linux-powered unit with on-board storage and networking.

The Güralp DM24SxEAM can be fully controlled and accessed via a web interface suitable for both expert and non-expert field staff.

Applications

> Borehole
> Vault
> Networked Arrays
> Earthquake Early Warning systems

Image shows the Güralp DM24S3EAM. DM24S6EAM uses the same casing.

Key features

Four or seven low-noise 24-bit analogue-to-digital conversion (ADC) channels (three or six primary plus one auxiliary)

Ultra-low internal noise: 138 dB of dynamic range at 40 samples per second

Eight environmental channels with 20-bit resolution (3 for mass position and 5 for user applications)

Triggering/events subsystem capabilities including STA/LTA, level (threshold), software triggers, per-channel voting and peer-to-peer network voting

Four concurrent output sample rates (continuous or triggered) up to 1,000 samples per second

Multi-user Linux operating system with full network support

On-board Web server (HTTP and HTTPS) allows full remote configuration of digitizer parameters and broadband sensors, including remote lock, unlock and centre

Additional, external USB storage connection

Built in calibration signal generator: step, sine or broadband

DM24SxEAM

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SPECIFICATIONS

PRIMARY SENSOR INPUTS	
Number of channels	Three or six
Input voltage	±20 V (40 V peak-to-peak) differential
Sample rates available	1 to 1,000 samples per second
Gain options availalbe	1x, 2x, 4x, 8x, 16x, 64x
ADDITIONAL CHANNELS	
Number of auxillary channels	One
Input voltage	±10 V (20 V peak-to-peak) single-ended
State-of-health reporting	Environmental logging (supply current, temperature), GPS lock status
Optional environmental channels	Eight (3 for mass positions; 5 for user applications)
DIGITISER PERFORMANCE	
Digitiser type	Fourth-order sigma-delta
Digitiser resolution	24-bit
Dynamic range	140 dB at 20 samples per second 138 dB at 40 samples per second 135 dB at 80 samples per second 135 dB at 100 samples per second
Highest output capability	3 x 1,000 samples per second
Digital filter types	FIR (linear phase) and IR (for low latency mode)
Decimation filters	2, 4, 5, 8, 10
Anti-aliasing filter at Nyquist frequency	>160 dB
Absolute accuracy	0.50%
Nominal sensitivty (at unity gain)	3.2 µV/Count
Input impedance	117 kΩ
Crosstalk (out of band rejection)	>140 dB
Linearity	-116 dB at 80 samples per second
Common-mode rejection ratio	>80 dB
USER INTERFACE	
Control and configuration	Web browser, terminal based menus, Linux control line
External indicators	Optional external LCD display available.
SOFTWARE	
Operating system	Linux
Triggering modes	STA/LTA ratio, levels, external, software, per-channel voting, network voting
REAL-TIME DATA COMMUNICATION	
Interfaces / Connections	Serial, Ethernet, Wi-Fi
Protocols	Scream! (Antelope / Earthworm), SEEDLink or CD1..1
Latency	Digital filtering and packetisation delays: 0.9 s at 500 samples per second 1.4 s at 200 samples per second Causal low-latency mode also available

DATA STORAGE & TRANSMISSION	
Data storage file formats	GCF, miniSEED
Internal storage capacity	16 GB flash memory (accessible with USB2.0 port (via GPIO connector)
External storage options	Hot-swappable USB armored canister (connects to USB connector). Multiple storage size options available.
Data retrieval interfaces	Scream! (Antelope, Earthworm), CD1.1, SEEDlink, GDI-link
TIMING	
Timing system	DCXO internal clock
Timing protocols	GPS and NTP (Network Timing Protocol)
Timing accuracy when GPS unlocked	100 µs per day at 40 samples per second
Timing accuracy when GPS locked	<1 µs per day
GPS receiver timing sources	GPS
CALIBRATION CONTROLS	
Calibration signal generator types	Sine, step or broadband noise, all with adjustable amplitude and frequency
CONNECTORS	
Sensor input	26-pin Mililtary specification bayonet
Ethernet	6-pin 10/100 Base-T Ethernet military-specification bayonet
Data out / power	10-pin serial/power Military-specification bayonet
GPS	10-pin Military-specification bayonet
General purpose input/output	12-pin serial Military-specification bayonet
USB external storage	6-pin Military-specification bayonet
POWER	
Power supply voltage	12 to 28 V DC
Power consumption	2.36 W at 12 V with GPS connected
ENVIRONMENTAL / PHYSICAL	
Operating temperature range	-40 to +60 °C
Operating humidity range	0-100% relative humidity
Enclosure ingress protection	IP68 - protection against prolonged effects ofimmersion under pressure (tested under 3 m of water for 72 hours)
Enclosure material	Stainless steel cylinder
Dimensions (length x width x depth)	274 x 114 x 114 mm
Weight	1.99 kg
SUPPORTING DOCUMENTATION	
Calibration values	Digitiser sensitivity and test results enclosed
Full user's guide	DM24 manual available online at: http://www.guralp.com/documents/MAN-D24-0004.pdf EAM manual available online at: http://www.guralp.com/documents/MAN-EAM-0003.pdf

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