Downhole Minimus

A downhole digitiser that converts the data at source for stronger and more reliable signals. Suitable for all borehole applications and strongly recommended for installations exceeding 100 metres depth.

DOWNHOLE MINIMUS

SPECIFICATIONS

SENSOR INPUTS	
Primary digitisation channels	Eight at 24 bits Differential input: 40 V peak-to-peak (± 20 V). Also compatible with single-ended inputs: 20 V peak-to-peak (± 10 V)
Secondary channels	Six analogue channels for sensor mass positions, two internal calibration channels
Internal environmental channels	Humidity Temperature Supply voltage MEMS accelerometer (three component) Magnetometer (three component)
Input impedence	50 kΩ
PERFORMANCE	
ADC converter type	Delta-sigma
ADC conversion delay	6 µs
Output format	32-bit
Dynamic Range	>142 dB at 100 samples per second
Gain drift	3 ppm / °C
Common-mode rejection	>110 dB
DATA PROCESSING	
Output rates available	1 sample per hour up to 5000 samples per second for primary channels, user-selectable Multiple independent data streams at different sample rates for all channels (transmission and recording) Up to 500 samples per second for environmental channels
Decimation filters	÷2, ÷3, ÷4, ÷5 decimation (Causal / Acausal)
Out-of-band rejection	>194 dB
Data transmission mode	Continuous and trigger modes
Triggered data	Retrievable using event table in digitiser's web page. User selectable pre and post event time.
Trigger modes	STA/LTA, Threshold
Output streams	Direct output of PGA, PGV and PGD without external software
Selectable gain	Unity, ×2, ×4, ×8, ×12, ×64
TIMING AND CALIBRATION	
Timing source precision	Accuracy when GNSS locked ±50 ns. Typical drift when unsynchronised (without GNSS) <1 ms per day
Timing source at the surface	Stratum 1: GNSS (GPS and GLONASS, BeiDou optional), PTP (Precision Time Protocol)
Calibration signal generator	Triangle, Step or Broadband noise with adjustable amplitude.

OPERATION AND POWER USAGE	
Operating temperature	-20 to +60 °C
Relative humidity range	zero to 100 %
Power supply	9 - 36 V DC* Or mains 90 - 250 V AC
Power consumption at 12 V DC	Dependent upon installations parameters
**Power voltage for operation of this unit only. Connection to additional instrumentation or use of longer cables may result in a higher input voltage requirement.*	
SOFTWARE	
Operating system	Windows and Linux compatible
Communication technologies supported	Ethernet (10/100/1000BASE-T) Optional Power over Ethernet (PoE)
USER INTERFACE	
Configuration and control	(Ethernet) Güralp Discovery - free download, web browser interface.
DATA COMMUNICATION	
Data recording formats	miniSEED (metadata stored in dataless SEED format)
Data streaming protocols (via Ethernet)	GCF (Scream!), GDI-link[1] and SEEDlink[1] ([1]metadata sent in RESP, StationXML and dataless SEED file formats)
Memory and storage	Dual redundant 16 GB microSD cards Option for 64 GB or 128 GB 256 MB
RAM	
PHYSICAL CHARACTERISTICS	
Casing type	Environmentally sealed, hard anodised aluminium
Environmental sensor	Humidity and temperature
Dimensions	Diameter 89 mm Height without lifting bail 350 mm Height with lifting bail 725 mm
Connector type	MIL-DTL-26482 Series 1: 2 × Ethernet Power Ethernet - 8P8C (RJ45) Power - 10 pin GNSS - 10 pin (GPS)
Global navigation satellite system (GNSS)	Compact, encapsulated, waterproof, precision timing GPS/GLONASS (BeiDou optional) receiver
Communication / Connectors	100 bar/10 MPa waterproof connector up to 1000 metres
Surface Interface Unit dimensions	512* mm × 376 mm × 432 mm *Allow additional 350 mm for cable connectors

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DAS-MIN-0003 Issue D