# SEN> GEOLON-MTS

# **Recorder for Tsunami Warning Systems**

## Description

The seismocorder GEOLON-MTS provides long-term acquisition and storage of seismological and pressure signals. The recorder is based on the well proven GEOLON-MLS. Like for the MLS, the power consumption and the time base stability is highly optimized.

Each GEOLON-MTS offers 4 input channels for 4C data acquisition: Three for broad band seismometers, one for a hydrophone or differential pressure gauge. In addition, the MTS provides the data acquisition of high precision pressure data from sensors of Paroscientific via an extra RS232 interface. In a special version the MTS is able to communicate with hydroacoustic modems and to apply a Tsunami detection algorithm to the acquired pressure data.

The parameterisation of the instrument can easily be carried out and all parameters are permanently stored in non-volatile memory.





# Applications

- Optimised for the use in Tsunami Warning or Monitoring Systems which are positioned at the sea bed.
- In combination with an Ocean Bottom Hydrophone (OBH) or Ocean Bottom Seismometer (OBS) system, the MTS permits autonomous data recording over a time period of up to 15 months due to a power consumption of only 250 mW.



# ...the signal integrity experts

# **GEOLON-MTS**

## **Technical Data**

#### Preparation for measurement campaign:

The instrument can be parameterised using an ASCII terminal via its RS232 interface. The high precision oscillator is synchronised using DCF77 compatible pulses.

#### Data recording:

After low pass filtering, the signals of the four input channels are digitised using Sigma-Delta A/D converters. A final decimating sharp digital low-pass filter is realised in software by a Digital Signal Processor. The effective signal resolution depends on the sample rate as shown in the table below.

Finally the samples are permanently stored on PCMCIA flash- or hard-drive memory modules.

## Data analysis:

The recorded data is played back by plugging the PCMCIA storage modules into a PC. The software package which supports the play back of the data onto the PC hard disk drive is part of the standard deliverables. Output formats for seismic data are PASSCAL, SEED, SEG-Y, binary and audio wave. The pressure data will be written in ASCII.

Samples per Second	f-3dB (Hz)	Resolution (Bits)	Signal-to-Noise Ratio (dB)
1	0.3	21	120
2	0.7	21	120
5	1.7	21	120
10	3.3	20	114
20	6.7	20	110
30	10.0	19	106
50	16.7	18	100
100 *	33	17	96
200 *	67	14	78

Further sample rates selectable are: 3, 4, 6, 25, 40, 60, 75, 120\*, 130\*, 150\* Hz \*optional



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## **Technical Details:**

<ul> <li>Analog inputs:</li> <li>Seismometer Input sensitivity</li> <li>Hydrophone (or differential pressure sensor)</li> <li>Time base deviation:</li> </ul>	3 channels custom configurable 1 channel with low- noise preamplifier (gain switch-selectable) typical < 0.4 sec, max. < 1.5 sec/year
Synchronisation:	GPS time code, DCF77 or single pulse
Storage medium:	PCMCIA flashcard/ microdrive
Storage capacity:	12 PCMCIA slots Type 2 or 6 PCMCIA slots Type 3 at present max, 24 GByte
Power supply:	
- external:	6.2 V 16.5 V
- internal:	3 AA alkaline cells to ease handling after
Power consumption:	depends on sample rate, < 250 mW @ 50 sps < 100 mW standby

## **Compact Physical Dimensions:**

The compact size allows its installation in a pressure cylinder of 15 cm inner diameter or in a small glass sphere. Its length is only 19 cm. Its weight without batteries and PCMCIA memory modules is 1.5 kg.



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