

# DAQlink 4 for MASW



## *A Solid Seismograph at a Great Price*

DAQlink 4 is the fourth generation of seismograph built by the Seismic Source Company. The "MASW" version is configured for small projects, such as ones recording data for MASW and Refraction surveys. A DAQlink MASW is well-suited for use with 24 channel land streamers.

This seismograph is powerful and compact, covering the entire spectrum of seismic acquisition, engineering and research. It is the cornerstone of any small system, addressing the seismic acquisition needs for the geoengineering community.

The housing, made of durable aluminum, is designed to be compact, robust and lightweight, with O-ring seals to ensure case integrity and prevent water infiltration. MASW meets and exceeds the standard IP 67.

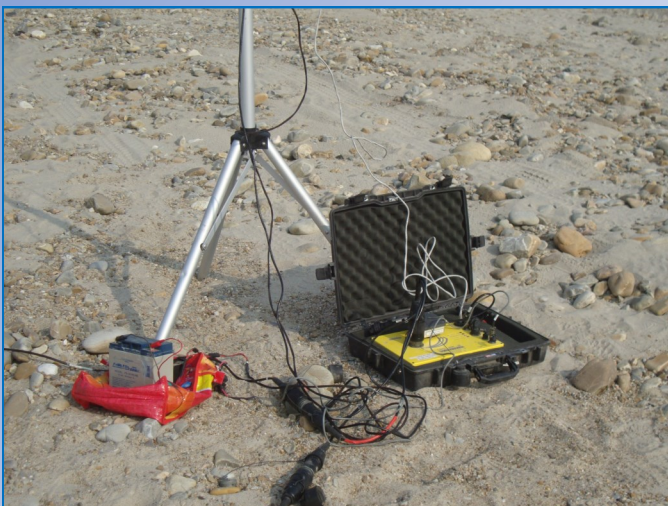
On the top panel there are 3 LEDs, which indicate the instrument status, and six connectors: a data input connector for 24 channels, a connector for 12 volt battery, a GPS expansion connector, a connector for the trigger, an external memory connector and an Ethernet plug for connection with the PC.



**24 Channel  
MASW Seismograph**



DAQlink Recording Surface Wave Data



System with Multiple Seismographs



DAQlink Recording Downhole Data



# DAQlink 4 for MASW



## Features and Operation

### System Features:

#### Cutting-Edge Performance

- Use 1 to 24 channels per seismograph node
- 24-bit Delta-Sigma ADCs – up to 8,000 sps
- Wide Bandwidth – DC to 4000Hz @ 8000 sps
- Low Distortion – <0.00008% THD @ 500 sps
- Wide Dynamic Range – >125 dB @ 500 sps
- Low Noise – <0.2  $\mu$ V RMS @ 500 sps
- Long Records – 32,000 samples per trace

#### Multiple Trigger Modes

- Trigger Manually for Passive Acquisition
- Trigger Remotely with Hammer Switch Time Break for Active Source Acquisition

#### Multiple Data Storage Methods

- 8 Gbytes internal memory card standard
- External mounted, USB-compatible Memory Plug for data backup and transfer
- Ethernet connection for fast data transfers and remote data storage

#### Built-in Ethernet Network

- Use network to configure seismograph and monitor acquisition
- Compatible with cables, Wi-Fi and Cellular Data
- Internal FTP server for external data access

#### Built-in Acceptance Testing

- Instrument Tests:
  - Distortion, Cross-feed, CMRR, Impulse & Noise
- Sensor Tests:
  - Resistance, Frequency, Damping, Sensitivity

#### Expansion Possibilities

- A MASW 4 seismograph can be upgraded to full DAQlink 4 functionality at any time by paying the difference between a MASW and DAQlink seismograph. This upgrade includes DAQlink firmware and software, plus a GPS module.
- All MASW 4 seismographs are compatible with the entire line of Seismic Source Co source control electronics.



24 Channel  
MASW Seismograph

### Operation Modes:

#### Operate as Stand-Alone Seismograph

- Use a sledgehammer and hammer switch
- Small, lightweight unit for small, fast crews

#### Operate as a Networked Seismograph

- Use a network switch to control multiple MASW seismographs
- Use inexpensive wire to trigger multiple MASW simultaneously

#### Operate as an Acquisition System

- Use with a vibrator and Force 3 controller
- Network a computer to Monitor Acquisition, Quality Control Data, and Store Shot Records

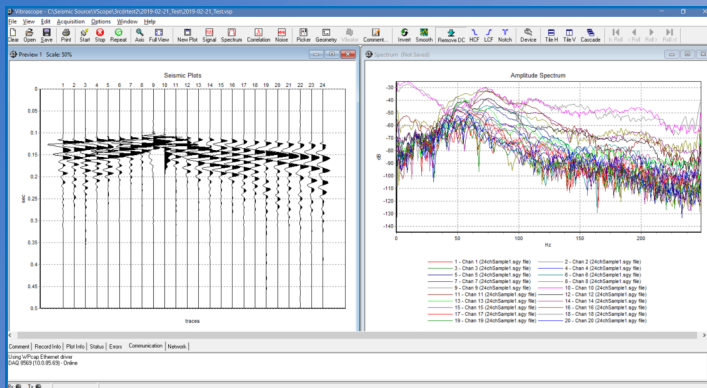


MASW Works with All Sources

# DAQlink 4 for MASW



## Software and Expansion

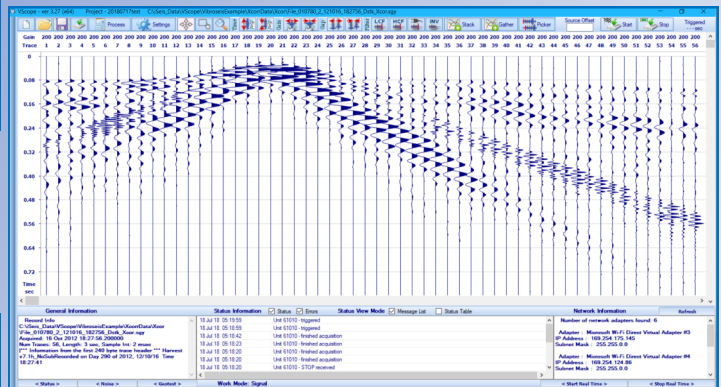
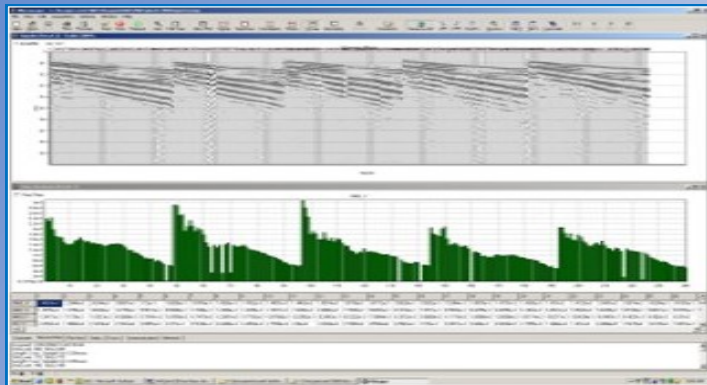


### Vslope Acquisition Software

- Configures Seismograph for Acquisition
- Monitors Recording Operations
- Amplitude & Phase Spectra for Quality Control
- RMS Noise and Signal Graphs

### Vslope Acquisition Software

- Bandpass & Notch Filters
- Sums Shots as Acquired
- Correlates Vibrator Data



### Vslope Acquisition Software

- Offloads Data from Seismograph
- Concatenates Records from Multiple DAQlinks
- Stores Data on Computer or Network

## Expandability and Flexibility

All MASW 4 seismographs are compatible with the entire line of Seismic Source control electronics. This includes the Force 3 Vibroseis controller, the Boom Box 3 dynamite synchronizer and the RTM 3 remote trigger module. MASW units are also compatible with the Universal Encoder 2 and 3. Use a UE2 or a UE3 for precise source operation.





# DAQlink 4 for MASW



## Features and Specifications

### Technical Features

**A/D Conversion:**

One 24-bit, delta-sigma ADC for each channel

**Dynamic Range:**

Greater than 125 dB (measured @ 500 sps)

**Common Mode Rejection:**

Greater than 100 dB (measured @ 500 sps)

**Harmonic Distortion**

Better than 0.0001% (measured @ 500 sps)

**Noise Floor:**

0.15 mV RMS (measured @ 500 sps  
& high gain)

**Bandwidth:**

DC to 4000 Hz at 8k SPS

**Trigger Accuracy:**

±1 microsecond at any sampling frequency

**Maximum input signal:**

Standard (gain x 1) 6.5 Volts peak to peak

**Input Impedance:**

100 K Ohms

**Preamp Gain (software selectable):**

Standard: x1 (0dB), x4 (12 dB) & x16 (24 dB)

**Digital Filter (software selectable):**

Low-Cut Filter - user selectable

Notch Filter 50 or 60 Hz - user selectable

**Anti-Alias Filters:**

85% of the Nyquist frequency

**Sampling Interval:**

0.125, 0.250, 0.500, 1.00, 2.00, 4.00,  
& 8.00 milliseconds

**Sampling Rate:**

8000, 4000, 2000, 1000, 500, 250,  
& 125 sps

**Record Length:**

Up to 32,000 samples per trace

**Pre-Trigger Delay:**

Up to 30 seconds

**Post-Trigger Delay:**

Up to 100 seconds

**A complete MASW Field System typically includes the following:**

- 1..... DAQlink 4 "MASW" version
- 1..... Power Cable
- 1..... Ethernet Data Cable
- 1..... Trigger Port Cable
- 1..... Hammer Switch with Extender Cable
- 1..... "Y" Cable (for connecting to spread)
- 2..... 12 Channel Spread Cables
- 24.... Geophones (customer selects frequencies)
- 1..... 12v Battery (customer provided)



24 Channel  
MASW Seismograph

### Physical Features

**PC Network Interface:**

100-BaseT Ethernet onboard,  
Includes real-time data transfer.

**Internal Memory:**

8 Gbytes (standard)

**Power Requirements:**

9 to 27 VDC

**Power Consumption:**

24 channels: less than 0.13 Watt / channel

**Included Tests:**

Internal tests for verification of the  
instrument and the line

**Dimensions:**

Dimensions: 280 x 250 x 40 mm

Weight: 2.0 kg

**Case:**

Sturdy and compact, with waterproof seal