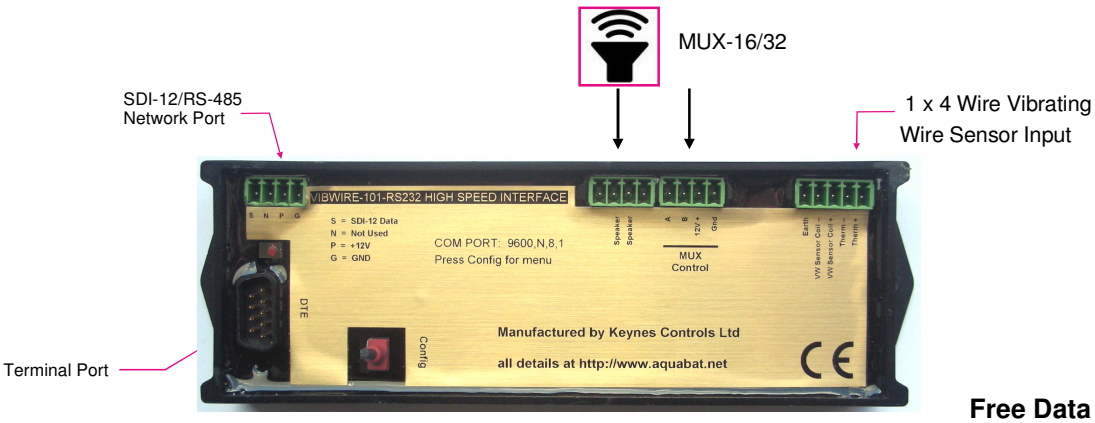
VibWire-101-SDI12/RS485 Vibrating Wire Sensor Interface

Single Channel Instrument

Part No.

VibWire-101-RS485	RS-485 communications (Standard)
VibWire-101-RS485-IL	Isolated Input Option - RS-485 communications
VibWire-101-SDI12	SDI-12 communications (Standard)
VibWire-101-SDI12-IL	Isolated Input Option - SDI-12 communications

No programming experience required to setup and configure this devices.



Expansion for

1 .. 128 x 2 Wire Inputs
1 .. 64 x 4 Wire Inputs

options for

1 .. 128 Temp inputs
1 .. 128 Freq Inputs

32 x Temp + 96 Freq
64 x Temp + 64 Freq
96 x Temp + 32 x Freq

Free Data Logging and Display Software

Technical Specifications

Number of channels	1 x 4 Wire VW Input - standard
Expansion by MUX-16/32 unit	128 x 2 Wire VW Inputs 64 x 4 Wire VW Inputs
VW sensor coil resistance	to 2 K Ohm (standard):- other ranges on request
Distance of VW sensor to interface	0 .. 10 Km depending on cabling.
Frequency range	400 - 6 KHz (standard) Other ranges on request
Frequency Resolution Accuracy	32 bit resolution 0.001 Hz
Long term stability	± 0.05 % FS max. Per year
Temperature range	- 50 to 70 Deg C
Temperature resolution	0.1 ºC +/- 0.2 Deg Thermistor Using 3 K Ohm @ 25 Deg C
Temperature accuracy	± 0.2 ºC / 0.2 ºF SDI-12/RS-485
Thermistor measurement	A half bridge ratio-metric measurement . Value returned in Deg C. Is used for temperature compensation on VW measurements.
Thermistor excitation	2.5 V DC 50 ppm /Deg C
Input resistance	10 K Ohm 0.1 % Completion resistor (Standard) 3.3 K Ohm on request
Input Isolation - to ground	2.5 KV DC to ground
Units - Vibration **Temperature**	Freq (Hz), Digits (Hz2), SI Units - Quadratic expansion Temperature Deg C, mV - Raw

Electrical Data

Voltage supply	**SDI-12/RS-485** bus 10.5 to 16 V DC
Current compensation SDI-12 Option only	Typical values are @ 12 V DC Excitation
Idle mode	1.2 mA typical
Active / measurement	8 mA data transmission These values may change slightly between sensors. Use figures as a guide only.
Measuring time	250 ms
Warm up	3 seconds per channel depending on the VW sensor being used -MUX-16/32 Expansion unit
Response	
High Speed VW Results via RS 232 Port	20 Readings/Sec (50 milli-Sec) to 40 Readings/Sec (25 milli-Sec) depending on sensor.
Length of data lines	
SDI-12	0 .. 100 m
RS-485	0 .. 1 km
SDI-12 Address mode	Supports enhanced addressing 0 .. 9 A .. Z

General Data

Dimensions (mm)	L =260 W = 127 D = 38
Material	Safe for the ingress of dust and moisture.
SDI-12 Digital Port	SDI-12, 1200 Baud, 7 bit, N stop bit, Even Parity - other speeds on request
CE Conformity	CE conformity according to EN 61000-6
Weight	400 g

Communications

Terminal Port	9 Way Male - 9600 Baud 8 data, No Parity, 1 stop bit, No Flow control - DTE
SDI-12 Digital Port	1200 Baud, 7 bit, N stop bit, Even Parity - other speeds on request
RS-485 Network Settings	1200 Baud, 7 data bit, N stop bit, even parity
RS-485 Network Settings - modbus	9600 Baud, 8 data bit, 1 stop bit, even parity

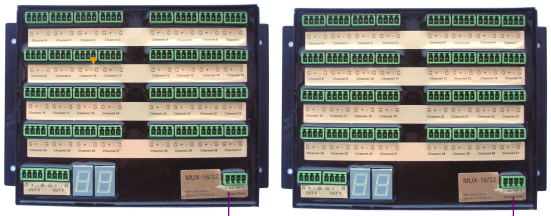
Introduction

The VibWire-101 is a general purpose vibrating wire sensor interface that can be used in a wide range of applications and environments. The device is supplied as standard in a immersion proof enclosure and has a single 4 wire sensor input, a MUX-16/32 expansion and a Terminal configuration port. The instrument is also available for operation on the SDI-12 or RS-485 digital communication networks

The VibWire-101 supports most different manufacturers range of sensors operating in the 400 - 6 K Hz range. The basic VibWire-101 has a single 4 wire sensor input and can be expanded to up to a maximum of 64 x 4 Wire sensors using the MUX-16/32 expansion unit. The VibWire-101 can be integrated with other intelligent sensors to create many different solutions for a large range of geotechnical applications.

Part No.	Download details at:
AquaLOG	http://www.aquabat.net/Aqualogv103/aqualogv103.html
MUX-16/32	http://www.aquabat.net/mux/multiplexer32.html
Q-Log	http://www.aquabat.net/QLOGFree/qlogv2.html

32 x 2 Wire or 64 x 2 Wire Option



Data Logger Option

AquaLOG Data Logger

RS-485 Network

Options for SDI-12

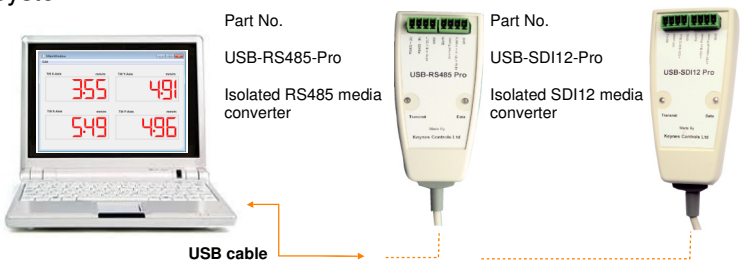
VibWire-101

Options for 1 - 4 MUX-16/32 Units

16 - 64 x 4 Wire VW Sensors
32 x 128 2 Wire VW Sensors

PC Based Data Acquisition & Display System

The image below shows the minimum equipment needed to create a Windows PC based vibrating wire data acquisition system.



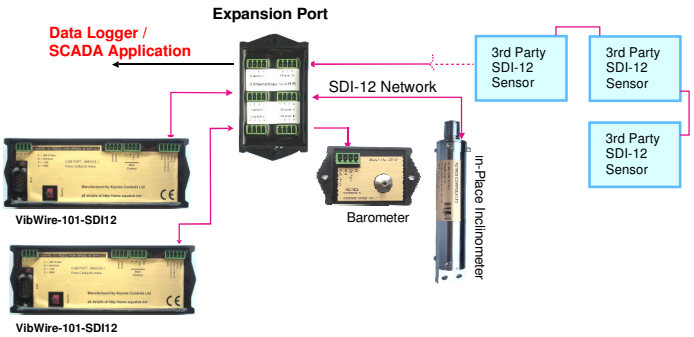
The USB-SDI12-Pro and USB-485-Pro media converters can power up to 4 x VibWire-101 units

Important Note.

Download a free copy Q-Log at

http://www.aquabat.net/QLOGFree/qlogv2.html

Systems Integration & 3rd Party Devices



The VibWire-101 instruments can all be deployed on the same network as any 3rd party sensors and interfaces supporting the specified communications network. All of the devices can be directly connected to 3rd party data loggers and data acquisition systems.

The VibWire-101 is fully supported in the Keynes Controls free Q-LOG data acquisition and display software.

The Q-LOG software gives the 'User' the ability to simply create vibrating wire sensor monitoring systems in a Windows environment without any programming experience being required.

Testing & Evaluation

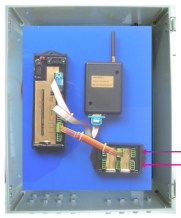
The VibWire range of interfaces along with the Q-LOG software make field testing sensor and creating fixed site monitoring systems a simple task.

No prior knowledge of the sensor frequency response is required as the VibWire interfaces fully configures the frequency inputs automatically. The temperature sensor can be defined to give results directly in Deg °C or Deg °F.

Measurement Types

The VibWire-101 can be configured to supply measurement values in Hz, digits or SI units.

Remote Access / Auto Reporting



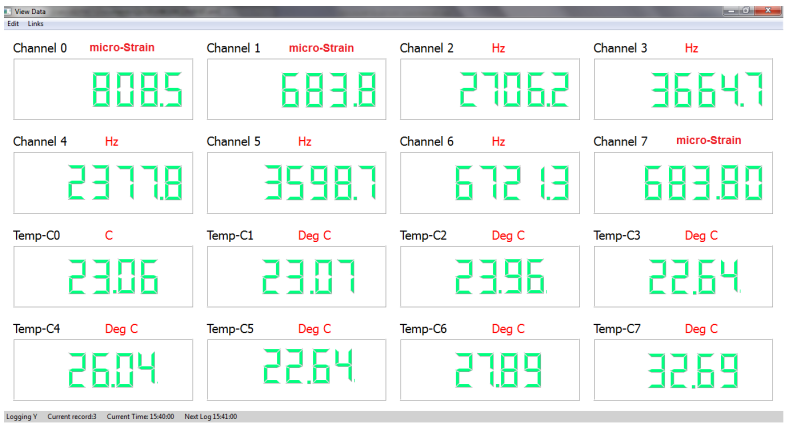
A GPRS modem connected to the Keynes Controls AquaLog data logger unit, and is used to transmit data over the mobile phone network to the Internet.

Ezi-Log Web Interface

Any number of VibWire interfaces and 3rd party Data from the VibWire-101 units can be remotely accessed via the Ezi-Log Web Interface.

VibWire-101-SDI12

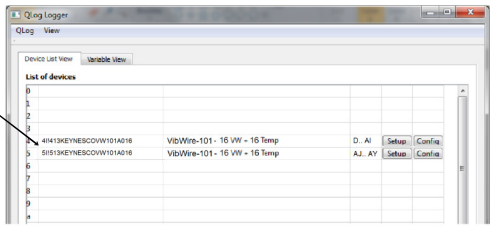
Q-LOG Vibrating Wire Panel Meter Window



The simple pull-down menu configuration system used within Q-Log means large systems can be designed, deployed and updated on-site without any prior knowledge of programming applications.

The image opposite shows the LCD panel meter display for a single VibWire-101 instrument in Q-Log.

VibWire-101 units identified on an SDI-12 network.

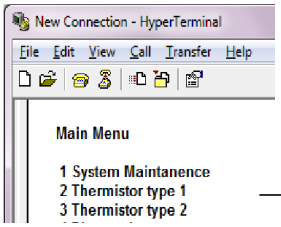


Terminal Port Connection

Null modem cable

VibWire-101

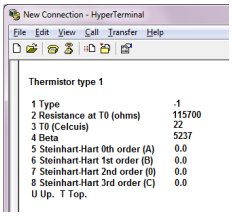
Terminal Port Menu System



The VibWire-101 configured using a simple pull down menu system accessed via the 'Terminal Port'

All the inputs can be individually setup and the results supplied in Engineering SI units. No programming is required to configure this device.

The menu system can be used with any terminal emulator software which is often freely available with a PC operating system. **Token-2** and **Hyper-terminal** are two common freely available examples



Thermistor Type-1 Option

Network Systems Integration

The image below demonstrates how multiple VibWire-101 based systems are connected together on a network in order to remove any interference caused by earth loop effects.

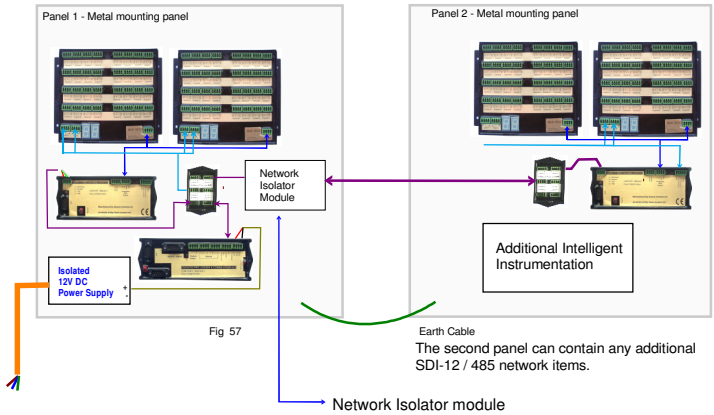


Fig 57

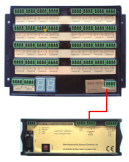
Earth Cable

The second panel can contain any additional SDI-12 / 485 network items.

Network Isolator module
Part No: **NP_Isolator-Pro**

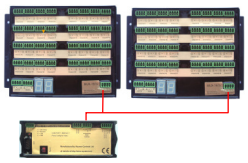
Expansion Options

Basic system expansion options using the MUX-16/32 Expansion unit.



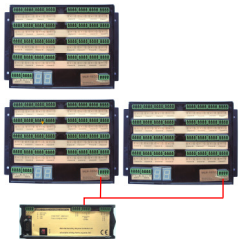
Options for

16 x Freq + 16 x Temp
32 x Freq
32 x Temp



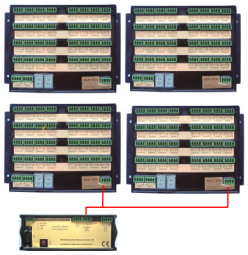
Options for

32 x Freq + 32 x Temp
64 x Freq
64 x Temp



Options for

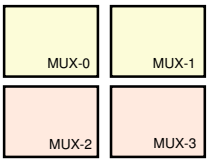
48 x Freq + 48 x Temp
64 x Freq + 32 x Temp
32 x Freq + 64 x Temp
96 x Freq
96 x Temp



Options for

64 x Freq + 64 x Temp
96 x Freq + 32 x Temp
32 x Freq + 96 x Temp
128 x Freq
128 x Temp

Sample Commands for the VibWire-101



Description

4 x MUX-16/32 units for

64 x 2 wire Thermistor (Temp) MUX-0 MUX-1
64 x 2 wire VW sensor frequency MUX-2 MUX-3

Sample SDI-12 Logger Commands

MUX-0	[D] aM2! aD4! aD5! aD6! aD7!	'Temperature results MUX-0 Chan-0 .. 15'
	[T] aM3! aD4! aD5! aD6! aD7!	"Temperature results MUX-0 Chan-16 ..31'
MUX-1	[AJ] aM4! aD4! aD5! aD6! aD7!	'Temperature results MUX-1 Chan-0 .. 15'
	[AZ] aM5! aD4! aD5! aD6! aD7!	'Temperature results MUX-1 Chan-16 ..31'
MUX-2	[[BP] aM6! aD0! aD1! aD2! aD3!	'Frequency results MUX-2 Chan-0 .. 15'
	[CF] aM7! aD0! aD1! aD2! aD3!	'Frequency results MUX-2 Chan-16 ..31'
MUX-3	[CV] aM8! aD0! aD1! aD2! aD3!	'Frequency results MUX-3 Chan-0 .. 15'
	[DL] aM9! aD0! aD1! aD2! aD3	'Frequency results MUX-3 Chan-16 ..31'

The sample commands shown above, are used by any SDI-12 network data logger or SDI-12 data acquisition system to make measurements using the VibWire-101. This example is used to read 64 x temperature and 64 frequency input.

Refer to the User Manual for the MUX-16/32 units for the equivalent RS-485 commands.

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