

**Specifications Release 5**

**Part Numbers: USB-SDI12-Pro / USB-SDI12-Post / USB-RS485-Pro**



**Model: USB-485-Pro**



**Model : USB-SDI12-Post**



**Model: USB-SDI12-Pro**



**USB-SDI12-AG1**

**Introduction**

The USB-SDI12-Pro and USB-485-Pro are the keynes Controls media converters for use with the SDI-12 and RS485 networks. The media converters incorporate status LED indicators that show when commands are sent, data is received. A power indicator is included to show that a PC USB port is providing 9.5 V DC or greater.

Model USB-SDI12-Post has spring loaded posts for fast bare wire network connection but does not support an external power supply connection. It is fast to install and use especially for diagnostics in the field.

The media converter connects to a Windows PC via a USB Type B connector mounted on the bottom of the unit. Any length Type B USB cable can be used for communications, therefore giving the User the ability to assign a cable length most appropriate for the device use.

**Short Circuit Protection**

An automatically resetting fuse projects the network +12 V DC and Gnd power connections from short circuit errors. If a fault condition is detected then the power indicator switches off and fuse protects the device from damage. The fuse resets and 3 seconds

**Automatic Device Driver Installations**

The media converters automatically install Microsoft accredited Windows device drivers upon the installation into a USB port. The drivers automatically install so long as Internet connection is available. FTDI chip set used in this product range.

The media converters are fully integrated with the Free issue Q-LOG Data Acquisition and Display Software.

**FTDI Windows 10 Drivers**

You can download the driver from <https://www.drivereasy.com/knowledge/how-to-download-and-update-ftdi-drivers-in-windows/>

**WARRANTY**

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## Network Installation

1. Insert the square type B USB plug into the base of the media converter.
2. Connect the media converter to a PC USB port. Upon installation the LED status indicators will flash on and off,
3. Identify the Comm port assigned to the media converter by the operating system. Use the Windows Device Manager software Ports (COM & LPT)
4. Connect the intelligent sensor, or interface on to the left hand side port of the device. This is labeled pins 1 to 4.
5. Connect the intelligent sensor, or interface on to the left hand side port of the device. This is labeled pins 1 to 4.
6. The device is now installed and ready for use.

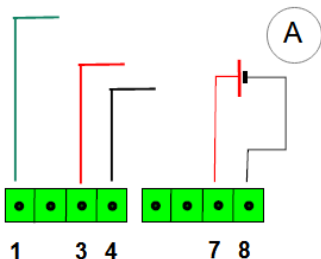
Type B USB Connector



The square connector goes into the base of the media converter.



## SDI-12 Network Connection

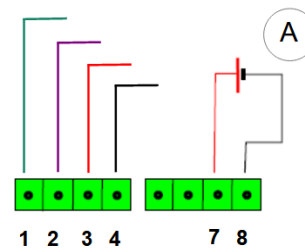


The SDI12 bare cables fasten directly into the spring loaded terminal posts.

- 3 = + 9 to 12 V DC (Red)
- 2 = 0V (Blue)
- 1 = SDI12 Data (Yellow)



## RS485 Network Connection



1 = SDI12 2 = Not Used 3 = +12V DC 4 = Gnd/0V

A = External DC + 12 V Power Supply

1 = + RS485 2 = -RS485 3 = +12V DC 4 = Gnd / 0V

## USB Type B port

The latest generation of USB media converters from Keynes Controls have a built-in USB type B port for communications to the PC.

The USB Type B port enables the User to assign the cable length between the media converter and the controlling PC.

ARGES Tryptophab™ Sensor

## Network Connection Pin-out

The following commands are used to take readings from the barometer sensors.

Pin Number	USB-SDI12-Pro	USB-SDI12-Post	USB-RS485-Pro
1	SDI-12 Data	Yellow SDI-12 Data	+RS485
2	Not Used	Black 0V	-RS485
3	+ 12V DC	Red (+9 to 12V DC)	+ 12V DC
4	0V / Gnd		0V / Gnd
5			
6			
7	External + 12V DC		External + 12V DC
8	Gnd / 0V		Gnd / 0V

## SDI-12 Communications

1200 Baud, 7 Data , No Parity, 1 Stop bit

Pin Number

- 1 = SDI-12 Data
- 2 = Not Used
- 3 = +12 V DC
- 4 = 0 V/ Gnd

## RS-485 Communications

1200 Baud, 7 Bit, Even Parity, 1 Stop

## Technical Specifications

Description	
1 x USB Type B	User assigned cable length
1 x Network Port	SDI12 or RS485 Port
1 x External Power Port	9.5 to 16 V DC - 1 Amp (Excludes USB-SDI12-Post model)
1 x Power Indicator LED	USB Supply Level exceeds 9.5 V DC / Short circuit detection
Direct Connection Power	Maximum current 150 mA without external source
External Power	1 x External supply 9.5 - 16 V DC
Short Circuit Protection	Automatic reset - network + 12 V DC to Gnd
Opto-isolation	1000 V DC SDI-12 Data to Gnd
Connector	2 x 4 way - 3.5 mm pitch screw lock.
Chip Set	FTDI - uses Windows 10 Microsoft Accredited Driver

## Physical Dimensions

All of the models have the following external dimensions:

- A = 46 mm**
- B = 78 mm**
- C = 35 mm**
- D = 22 mm**

## Status LED Indicators

All of the media converters contain 3 independently operating status LED indicators.

The Transmit LED only illuminates when the PC sends commands across the network. The receive LED indicator illuminates upon detecting information being sent to the host PC from a sensor.

The Power indicator is illuminated only when the host PC USB port is operating to the correct technical specification. On detecting a short circuit between the network power and 0V / Gnd connection the indicator LED will power off. The Power indicator is also used to check if the network cable has been installed correctly.

## USB Type B Connection Port

Type-B connectors are at the other end of a typical USB cable that plugs into a peripheral device, such as a smartphone, a printer or a hard drive and are commonly available from many sources.

USB Type B plugs are typically found at one end of a USB A/B cable





**Example Sensor Connections**

**Interface card to RS485 Network**

USB-485-Pro media converter



**ARGES Chemical Sensors**



**Vibrating wire interfaces - VibWire-301**



Vibrating Wire Test System

The example above demonstrates how to connect one of the sensor signal conditioning cards to a USB-485-Pro media converter. Plug-and-play operation with Microsoft approved driver software. The driver software is already pre-installed on many variations of the Windows operating system. Automatic download and installation occurs when a suitable internet connection is available.

The media converter supports 3rd party intelligent sensors as well as the Keynes Controls product range.

The image below shows the USB-SDI12-ARGES media converter connected to a Windows PC being used for water quality monitoring with the QLOG applications software.



The example above shows how one of the Keynes Controls single channel VibWire-301 vibrating wire sensor interface cards is connected to a Windows PC using a USB-SDI12-Pro media converter and expansion block.

**USB-SDI12-AG1 Media Converter**

The **USB-SDI12-AG1** media converter has been designed to simplify the use of the ARGES range chemical sensors. The USB-SDI12-AG1 has a bayonet self-aligning sensor connection and the usual USB interface for direct connection to a USB port on a Windows PC.

The USB-SDI12-AG1 can power the ARGES sensors and multiparameter housings directly from the PCB USB port. No external supply is required.

**Windows PC USB Ports**

The media converter plugs into a USB port on a PC, see the image below.



The Keynes Controls Q-LOG software only supports the Microsoft Windows operating system.

**Q-LOG Data Acquisition, Configuration and Display Software**

Q-LOG is the Keynes Controls Data Recording and Display software and has been designed solely for use with intelligent sensors and interfaces. The software





operates as a stand-alone package and requires the use of an SDI-12, or RS-485 media converter. Q-LOG enables PC based systems to be created and tested. The software is free issued with the Keynes Controls instrumentation.

Common Keynes Controls device identifier strings.

Product	ID string
VibWire-201-Pro	13KEYNESVWRDOA001
VibWire-101 VW sensor interface	13KEYNESCOVW101A011
VibWire-108 VW sensor interface	13KEYNESCOVW108A016
PIEZO-RM water level sensor	13KEYNESCOPIRESR001
Barom-SDI-12 barometer	13KEYNESCOBAROMR003
I-P-I	13KEYNESCOIPINCL005
AquaDAT sensor interface	13KEYNESCOAQUADAT008
Single channel strain gage	13KEYNESCOSTRAIN027

**Q-LOG Devices List Window.**

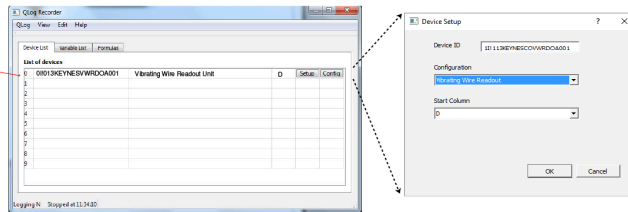
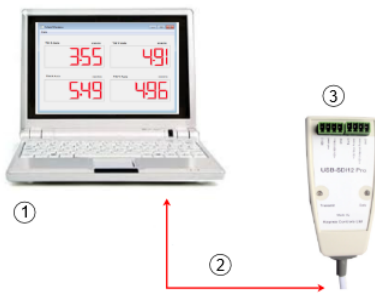


Fig-16

Image opposite demonstrates how the VibWire-301 is identified in Q-LOG. All the devices that are detected on a network are shown here.

## Windows PC based Data Acquisition Systems

The simplest Windows PC based vibrating wire sensor solution is shown below. A Windows PC running Q-LOG and an isolated USB media converter..



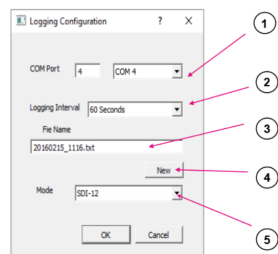
1. Windows PC running Q-LOG
2. USB Data Link
3. Optional Media Converter

Part Number: USB-SDI12-Pro (SDI12 Network)  
USB-485-Pro (RS485 Network)

The Keynes Controls media converters can power the VibWire-301 directly from a laptop / Desktop USB Port without the use of an external power supply.

## Configuration

The measurements are recorded into unique time stamped text files that can be read by a spreadsheet. Information is easy to understand and process.



**Q-LOG Network Configuration Window**

## Q-LOG Software Download

**Configuring a media converter for use with Q-LOG**

**USB Media Converter in Operation**

[https://keynes-controls.co.uk/wp-content/uploads/2024/10/QLogSetup50\\_20241028-install.7z](https://keynes-controls.co.uk/wp-content/uploads/2024/10/QLogSetup50_20241028-install.7z)

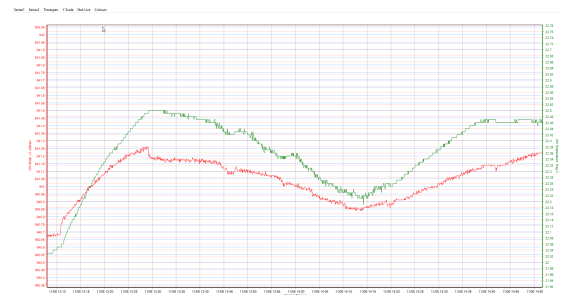
<https://youtu.be/Brjg9K8qaQ>

<https://youtu.be/XuMptEUErwc>

## Q-LOG Data Display

The Q-LOG software can be used to:

1. Display Results in - Hz / Digits / Engineering Units
2. Real-time Charts - Dual Y Axis .
3. User Defined Panel meters
4. Sensor Configuration and testing



**Q-LOG Panel Meter Selection Window**

The dual axis real-time charts makes comparing sensor signals for physical phenomena an easy task.

## Data Acquisition and Testing

The Q-LOG software is an ideal tool for testing measurement systems in the workshop before installation on site, Sensors can be configured, test measurements made, results displayed for easy analysis.

Confidence can be made in the measurements before any installation onto data recorders or site wide monitoring systems.

## Configuration Settings

1. Enter Comm Port identified for USB media converter
2. Data Recording Sample Rates  
- (1, 5, 10 Secs, 1 to 10 minutes, 1 and 6 Hours )
3. Time stamp Log Filename
4. New Button  
- Automatically create a new time stamped log file.
5. Network Type Selection - SDI-12 / RS-485.