

Sensor Interface Module User Guide

Hydronix Part no: HD0303
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CUSTOMER RESPONSIBILITY

The customer in applying the product described in this documentation accepts that the product is a programmable electronic system which is inherently complex and which may not be completely free of errors. In doing so the customer therefore undertakes responsibility to ensure that the product is properly installed commissioned operated and maintained by competent and suitably trained persons and in accordance with any instructions or safety precautions made available or good engineering practice and to thoroughly verify the use of the product in the particular application.

ERRORS IN DOCUMENTATION

The product described in this documentation is subject to continuous development and improvement. All information of a technical nature and particulars of the product and its use including the information and particulars contained in this documentation are given by Hydronix in good faith.

Hydronix welcomes comments and suggestions relating to the product and this documentation

ACKNOWLEDGEMENTS

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Revision history

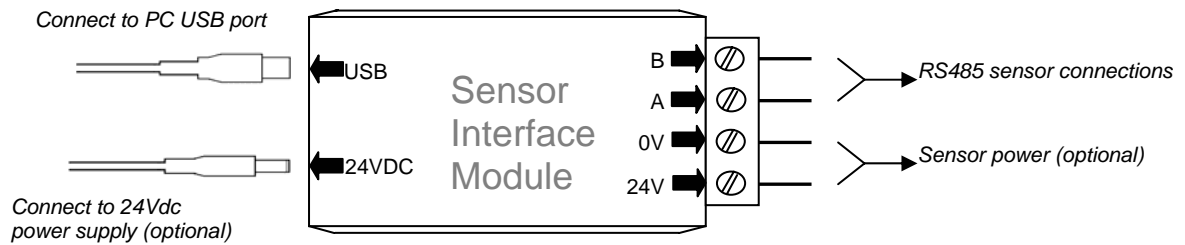
Revision No.	Date	Description of change
1.0.0	Feb 2007	First edition
1.1.0	Apr 2007	Error fixed on page 13, colour designation for sensor cable.

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The Sensor Interface Module (SIM01) provides a simple method of interfacing Hydronix sensors to a PC or laptop without the necessity of using a serial port. The supplied driver allows the Sensor Interface Module to appear as a virtual com (serial) port which can then be selected in any Hydronix software application.

The SIM01 does not require power as it is powered by the USB port. If sensor power is required, for example when testing the sensors in the laboratory or on the bench, then the plug-in DC power supply in the SIM01 kit can be used. If however the sensor is already powered, then only the RS485 serial communication wires A and B need to be connected. In this case the spare terminal block can be used.



Kit Contents

- A – USB-RS485 Sensor Interface Module
- B – 1.5m USB cable
- C – 1m sensor cable
- D – Spare terminal block
- E – Sensor power supply (24V DC)
- F – Bag and carry strap



Order Options:

Basic kit: Part#: SIM01-B
Comprises: A, B and D only, plus CD for USB driver installation
Use: Onsite connection to sensor.

Full kit (shown above): Part#: SIM01-A
Comprises: All the above plus CD for USB driver installation
Use: Laboratory/Bench and onsite connection to sensor.

Note that only one SIM01 can be connected to a single PC at any one time.

The sensor interface module connects to a USB port on any desktop PC or laptop. The module may also be connected through a powered or unpowered USB hub. As with all USB devices cables should be less than 5m in length. If possible, the USB cable supplied by Hydronix should be used and the Sensor Interface Module connected directly into a USB port on the computer.

Installing the drivers

The SIM01 driver files are supplied on the CD that comes with the SIM01, and are also available for download from the Hydronix website www.hydronix.com. The drivers may be installed directly from the supplied CD, or alternatively the files may be copied to an empty folder on the hard disk of the PC.

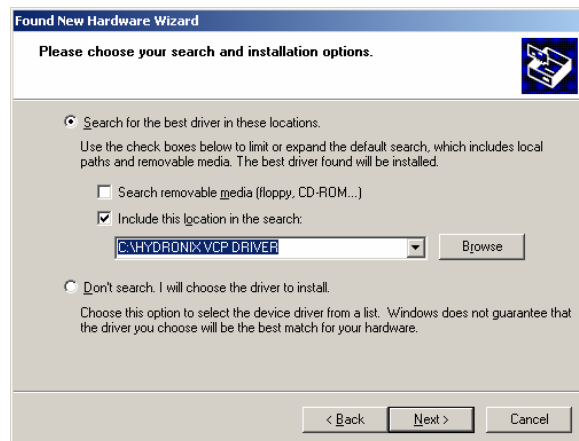
The **Add New Hardware** wizard will be run **twice** during the installation. The first wizard will install the USB driver, the second will install the virtual com port driver.

These instructions are based on Windows XP, but other operating systems are similar.

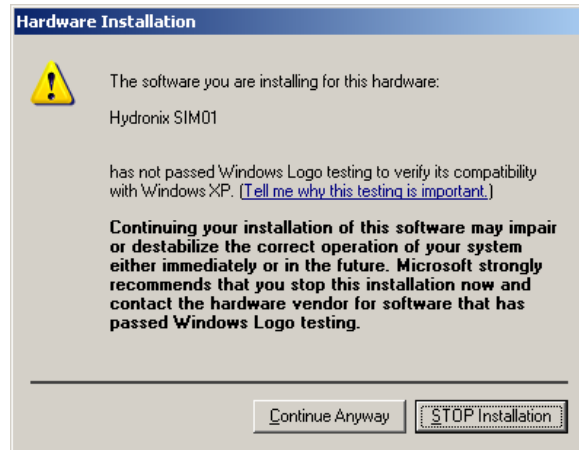
- Connect the Sensor Interface Module to a free USB port on the computer.
- The **Found New Hardware** wizard will appear as shown.
- Select the option **'Install from a list or specific location (Advanced)'**, then click 'Next'.



- Select the option **'Include this location in the search:'**
- Click the **'Browse'** button and select the folder where the driver files are located.
- Click **'Next'**. The **'Installation'** window will appear and copy the files.



- If a 'Warning' window appears during installation, click on 'Continue anyway'



- When the 'Completed' window appears, click on 'Finish'

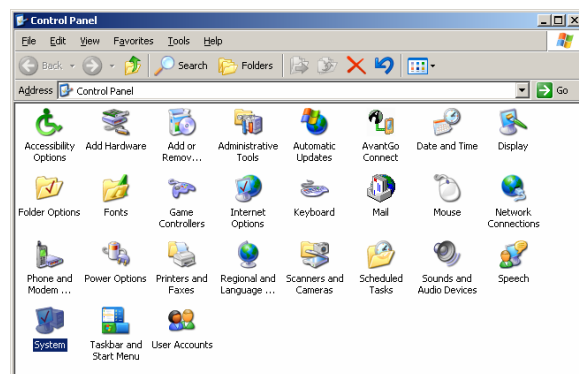


The 'Add new hardware' wizard will appear again. To install the virtual com. port driver, the procedure is exactly the same as above.

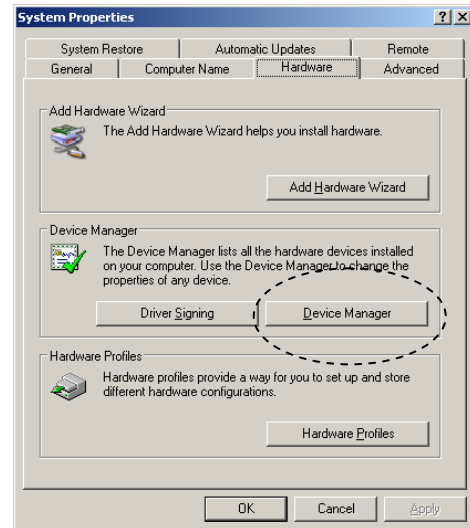
Checking installation and virtual com port number

To check that the installation has worked correctly, click on 'Control Panel' in the 'Start' menu.

- Double click the 'System' icon.



- Click on the **'Hardware'** tab and the **'Device Manager'** button.



- In Device Manager, select **'Universal Serial Bus controllers'**.

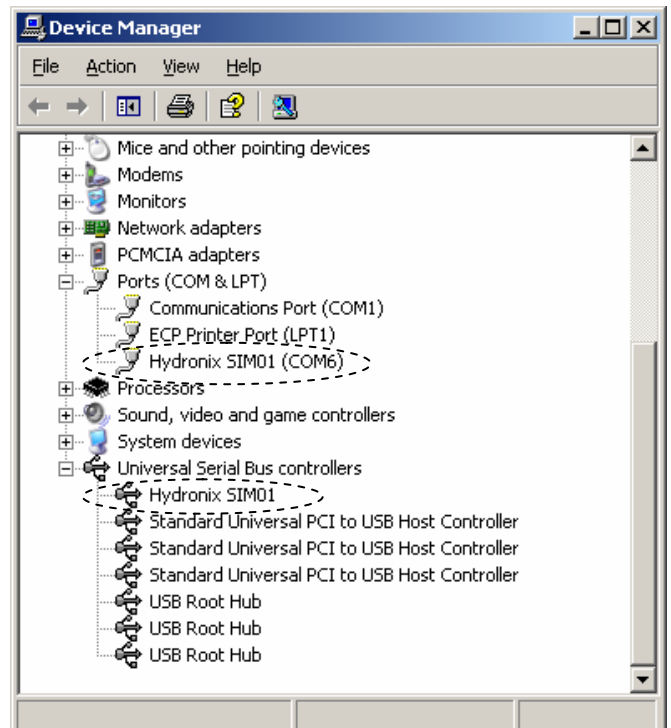
Check that **'Hydronix SIM01'** is listed without any error or warning icons.

If Hydronix SIM01 is not listed then it is likely that the first stage of the installation failed.

- Select **'Ports (COM & LPT)'**.

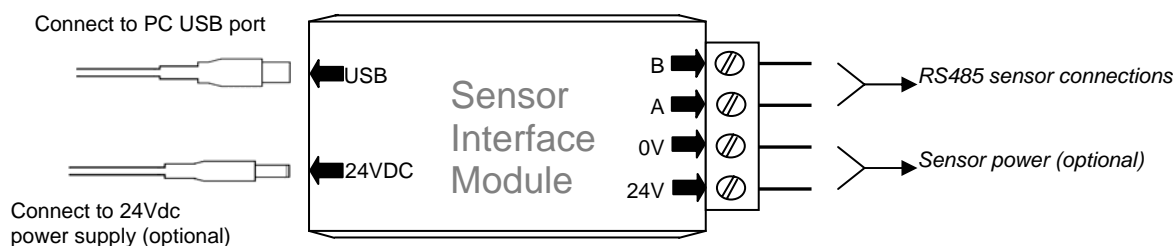
Check that **'Hydronix SIM01'** is listed without any error or warning icons. The COM port number created is listed here.

If Hydronix SIM01 is not listed then it is likely that the second stage of the installation failed.



- Make a note of the COM number listed as this is the COM port to select when using Hydronix utilities such as Hydro-Com software.
- If the installation failed, the drivers can be removed by right clicking the entry in the 'Device Manager' and selecting 'Uninstall'. Alternatively, from the 'Control Panel', select 'Add/Remove Programs'. Find the Hydronix SIM01 drivers and click on 'Change/Remove'.

To communicate with the PC only two wires are required from the sensor, the RS485 A and B signals. The virtual Com port is created once the USB lead is connected between the SIM01 and the PC. This can then be selected in any Hydronix software such as Hydro-Com.



SIM01 Sensor Cable Connections

The SIM01 sensor cable supplied with the kit is wired as follows:

SIM01	Colour	Corresponding pin on MIL-Spec connector
B	Yellow	G
A	Green	F
0V	Blue	B
24V	Red	A



Indicators

The Sensor Interface Module has four indicators to show that it is working correctly.



24V	Red	This light will be on if power is detected, either using the external power supply in the kit or from plant power assuming that the power connections are made.
USB OK	Orange	Indicates that the Sensor Interface Module is correctly connected to a host PC and that the driver is installed and running
Transmit	Green	Indicates that data is being sent from the host PC to the sensors
Receive	Green	Indicates that data is being sent from the sensors to the host PC

External power supply

The external power supply in the kit can be used worldwide simply by changing the mains plug head to one of the supplied variants. The power supply input is rated 100V – 240VAC, 50/60Hz.

Note that the external power supply should only be used to power up to a maximum of 3 sensors.

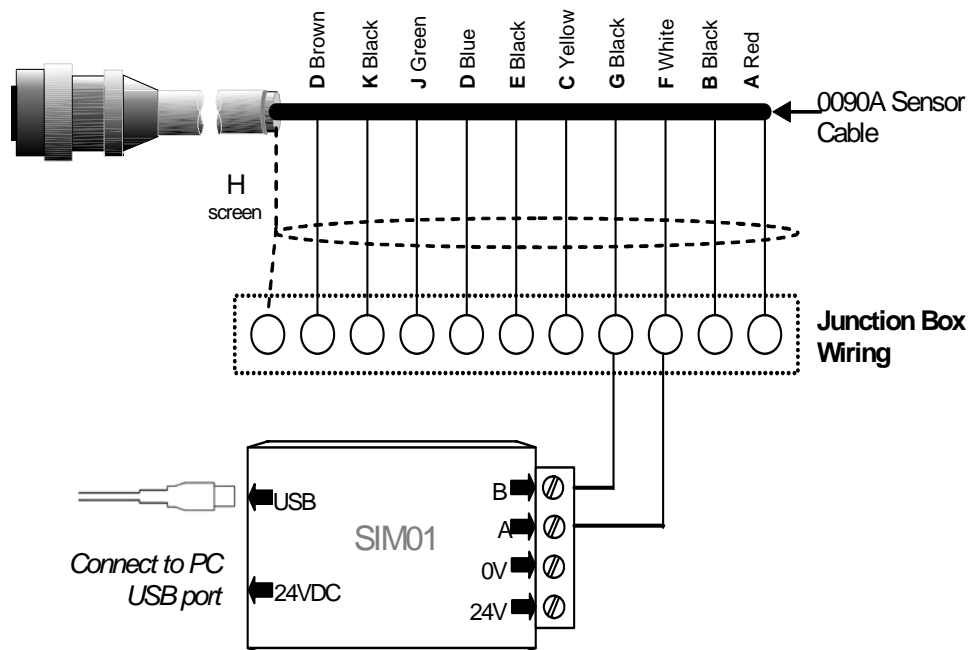
Connecting to a sensor on the bench

With use of the supplied power supply and sensor cable, it is easy to connect to a single sensor for basic bench tests or for configuration purposes.

- Power the sensor by connecting the supplied 24V power supply.
- Connect the sensor cable from the SIM01 to the sensor.
- Connect the USB cable from the PC to the SIM01. A virtual com port should now be created which can be used in the software.
- Open up Hydronix software such as Hydro-Com to monitor, configure, test diagnostics or calibrate the sensor. Ensure the correct com port is selected from the menu.

Connecting to a sensor on site

It is also easy to connect to a sensor or network of sensors that are already installed and powered on site. Up to 16 sensors can be connected on the network and used with the SIM01. For this only the RS485 A and B wires need to be connected to the SIM01, which may be available in the junction box. Use the spare terminal block supplied in the kit for this connection.



Chapter 4 System Fault Finding

For trouble shooting with any Hydronix sensor or software, please refer to their respective user guides or contact Hydronix technical support on support@hydronix.com.

For problems with the SIM01, please check the following:

Symptom: 'USB OK' light not on

Possible explanation	Check	Required result	Action required on failure
No virtual com port	Device Manager as described in chapter 2.	'Hydronix SIM01 (COM x)' should be shown in the Port (COM & LPT) section. 'Hydronix SIM01' should be shown in the 'Universal serial bus controllers' section.	Reinstall the driver as described in chapter 2.
USB not connected correctly	USB cable connected from spare USB port to SIM01		

Symptom: Computer does not communicate with the sensor

Possible explanation	Check	Required result	Action required on failure
No power to sensor when connected to site power	DC power at junction box.	+15Vdc to +30Vdc	Locate fault in power supply/wiring.
No power to sensor when using supplied power supply	Power supply connected to mains supply and into the SIM01	Red light on SIM01	Locate fault in power supply.
Incorrect serial Com Port selected on Hydro-Com	Com Port menu on Hydro-Com. All available Com Ports are highlighted on the pull down menu.	Switch to the correct Com Port	Hydro-Com uses com1-10. If assigned com port number is higher than 10 then it should be forced to a lower number using device manager.
Com port number is higher than 10 and is not available to use in Hydro-Com	The Com Port assignments in the PC's Device Manager window.	Renumber the Com Port used for communication with the sensor, to an unused port number between 1 and 10.	Check sensor addresses.
More than one sensor has the same address number	Connect to each sensor individually.	Sensor is found at an address. Renumber this sensor and repeat for all the sensors on the network.	Try an alternative RS485-RS232/USB if available.

Symptom: Only transmit light works during sensor search

Possible explanation	Check	Required result	Action required on failure
Sensor RS485 A and B are not connected correctly	RS485 A and B wires are connected correctly.	Correct polarity.	Connect the two wires correctly.
No power to sensor when connected to site power	DC power at junction box.	+15Vdc to +30Vdc	Locate fault in power supply/wiring.
No power to sensor when using supplied power supply	Power supply connected to mains supply and into the SIM01	Red light on SIM01	Locate fault in power supply.
More than one sensor has the same address number	Connect to each sensor individually.	Sensor is found at an address. Renummer this sensor and repeat for all the sensors on the network.	Try an alternative RS485-RS232/USB if available.

PC Interface:	USB compatible, requires less than 100mA
System requirements:	Pentium PC or 100% compatible with the following: <ul style="list-style-type: none">• USB port• Windows 98SE, ME 2000 or XP• Hard disk with 1MB free• CD Drive• 32 MB RAM
Optional external power supply:	24V, 1A max. Hydronix recommend only using the power supply supplied in the kit. This can power a maximum of 3 Hydronix sensors
RS485 interface:	Can connect to a maximum of 16 Hydronix sensors. Maximum input voltage range : 0 – 5 V
Operating temperature:	0 - 60°C; 91% relative humidity, non-condensing
Storage temperature:	- 10° C to 70°C
Environment:	The Sensor Interface Module should be used indoors in dry environments only. The enclosure is sealed to IP31
Dimensions:	95mm x 60mm x 28mm
Weight	75g

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