Model 4015 SDI-12 to Analog Converter
Instruction Manual 60-0004015-00

1.0 INTRODUCTION

1.1 *General description:*

The Model 4015 is used as an interface between an SDI-12 serial communications bus and an analog measurement system. The converter can either act as a SDI-12 master by polling a sensor on a timed basis or "listen only" as an external recorder polls the sensor. Each 4015 responds to a single SDI-12 address and parameter. Multiple 4015 converters can be used to translate several sensor parameters to individual analog outputs. The output of the converter is proportional to the "value" of the sensor response. Full scale and zero values can be programmed by the user to scale the analog output with respect to the raw sensor value.

The 4015 can be configured to provide a 0-1mA , 0-20mA , or 4-20mA current output with 0-5 volt output always available. The connection to the data transmitter or measurement system consists of continuous power (10 to 33VDC), ground, and a switched read voltage (5 to 33VDC) that enables the analog output. With the read terminal energized, power consumption increases to the sum of the current output (20mA max) and an additional 4 mA (max). With the read terminal de-energized, current drops to less than 500 uA.

All user programming is done over the SDI-12 bus.

1.2 *Specifications:*

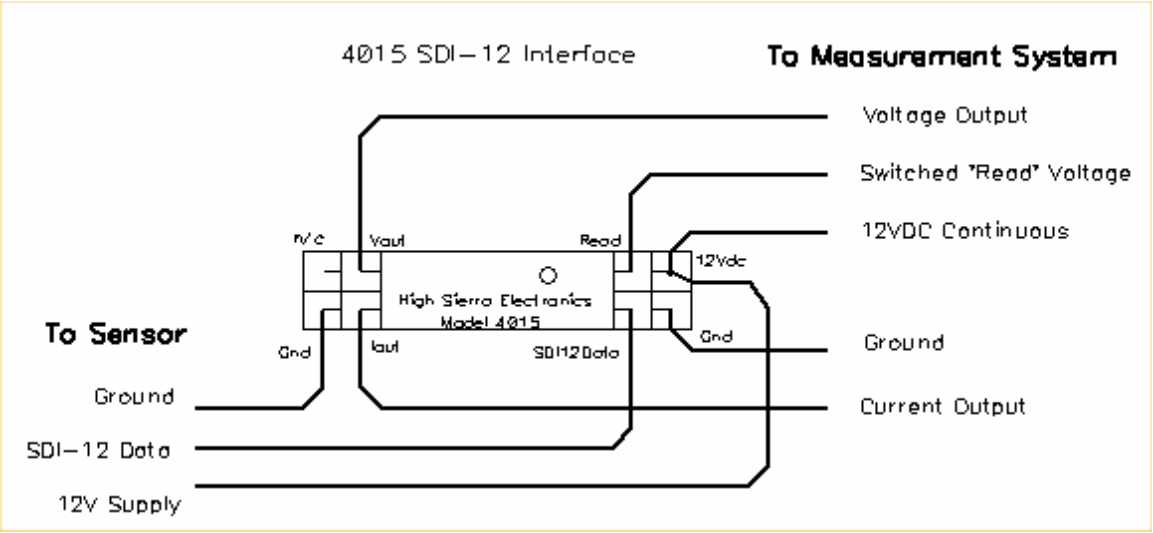
Size:	3.5"L X 0.75"W X 2.1"H
Weight:	1.9 oz.
Operating Temperatures:	-30 to 60 degrees Centigrade
Power requirements:	10 to 33 VDC
	8mA + Output current (max) during read.
Mounting:	DIN rail (35mm)
Connections:	Screw Terminal
Wire Size:	#24 - #14 AWG
Communication:	SDI-12 (version 1.1 compliant)
Output Resolution	12 bits
Accuracy	better than 0.1%

2.0 OPERATION

Programming of the 4015 is performed over the SDI-12 connection. If the data collection platform (master) for your system does not provide a "transparent" communications mode, connection can be provided using a Model 4021 SDI-12 to RS232 adaptor. The default device address for the 4015 is H (upper case).

The 4015 will poll the sensor (even in the listen only mode) when the "Poll" button is pressed.

2.1 CONNECTIONS



4015 *SDI-12 Commands*

The 4015 responds to all basic SDI commands. The 4015 is set at the factory for SDI-12 address H. This address is for extended commands and can be changed to any address except that being used for the sensor address. All command and response characters are in ASCII format, 1200 baud, even parity. Refer to www.sdi-12.org for complete SDI-12 specifications.

The 4015 will adjust its output when the specified sensor address and parameter is detected on the SDI-12 bus. If the desired parameter is not found, the 4015 will not update the output. In the event that the output is set to 4-20mA and the 4-20Alarm is enabled, the output will drop to zero mA when the desired parameter is not found.

The small 'a' denotes the device address.	Command	Response
Acknowledge Active: Returns a response acknowledging that the sensor unit is active.	**a!**	**a**
Send Identification: Returns SDI version, company name, sensor model #, sensor version #.	**aI!**	**a10highsierra_4015_00v_date_**
Address Query: Returns the address for sensor. Only one sensor may be on the buss for this query	**?!**	**a**
Change Address: Changes the address of the sensor unit.	**aAb!**	**b** **b** is the new sensor address.
EXTENDED COMMANDS (Unique to 4015)	Command	Response
Read Settings Status	**aXSTAT!**	**Reads back all settings**
Set Sensor Address to be monitored (or polled) by 4015	**aXADDRx!**	**a SDI address = x**
Set Sensor Parameter to be monitored (or polled) by 4015	**aXPARAn!**	**a Parameter = n**
Set Polling Time (seconds) or (zero seconds = Listen Only)	**aXTIMEssss!**	**a Poll Time = ssss (Listen Only)**
Set Zero Value **Value to create zero output level.** **nnn.dd is a floating point number.**	**aXZEROnnn.dd!**	**a Zero = nnn.dd**
Set Full Scale Value **Value to create full scale output level.** **nnn.dd is a floating point number.**	**aXFULLnnn.dd!**	**a Full Scale = nnn.dd**
Set Output Format	**aXOUT4-20!** **aXOUT0-20!** **aXOUT0-1!**	**a 4-20mA** **a 0-20mA** **a 0-1mA**
Enable 4-20mA Alarm In 4-20mA mode, current drops to 0mA if parameter is not found.	**aXALON!**	**a 4-20 Alarm On**
Disable 4-20mA Alarm No change in output is Parameter is not found.	**aXALOF!**	**a 4-20 Alarm Off**
Set Output Value **(0 to 4095)**	**aXVALUnnnn!**	**a DAC Value = nnnn**
Read Sensor Now Causes 4015 to poll sensor	**aXREAD!**	

3.0 RETURNS

Call us for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: globalw@globalw.com.

Be prepared to describe the problem being experienced including specific details of the application and installation and any additional pertinent information.

In the event that the equipment needs to be returned to the factory for any reason, please call to obtain a RMA # (Return Material Authorization). Do not return items without a RMA # displayed on the outside of the package.

Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure the shipment, as the warranty does not cover damage incurred during transit.

When calling for tech support, please have the following information ready;

1. Model #.
2. Unit serial number.
3. P.O.# the equipment was purchased on.
4. Global Water's sales number or the invoice number.
5. Repair instructions and/or specific problems relating to the product.

4.0 WARRANTY

Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence or accident. It is expressly agreed that this

warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

The warranty begins on the date of the product’s invoice.