Operator's Guide

AeroMate™ WSC – 2x4 Analog Router

Non-Incendive, Intrinsically Safe for
Class I, Group C & D Hazardous Locations

Introduction

The 2x4 Analog Router provides two analog inputs and four analog outputs. Inputs are configurable for 4-20 mA, +5Vdc or +10 Vdc input ranges. The 4-20 mA input load resistor is 249 ohms. A logic controlled +12 Vdc power source is available to power sensors.

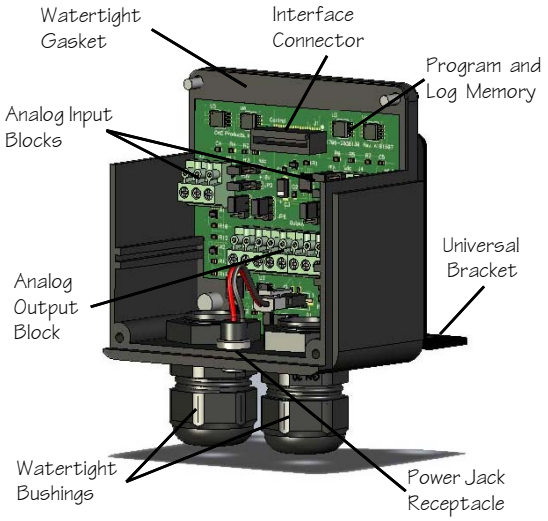
Analog outputs are jumper and menu configurable for +5Vdc or +10 Vdc output ranges. Menu settings must match physical jumper settings for proper operation. All inputs and outputs are scalable using zero, span and range settings. A scale setting translates to arbitrary units.

The 2x4 Analog Router may be used as a stand alone current and voltage translator or as a functional component in conjunction with other sensors and controls within a wireless, networked control system.

vTagNet™ technology provides a virtual wire tag system to send numeric analog data (nTag) to other analog outputs. Numeric or analog tag (nTag) numbers are assigned as negative numbers from -001 to -016.

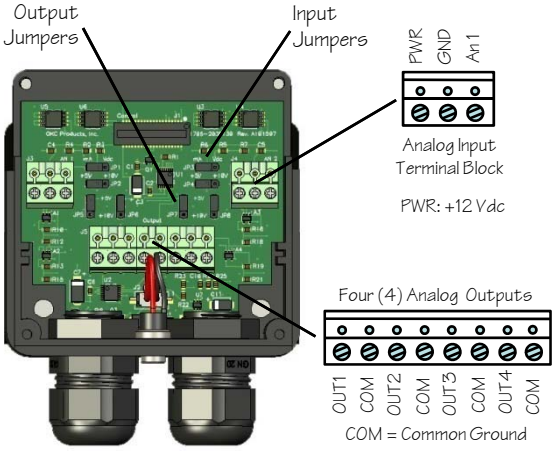
The 2x4 Analog Router's application program may be modified using the ChartWriter™ programming utility or completely re-programmed as required.

2x4 Analog Module



The 2x4 Analog Router module includes two analog inputs, four analog outputs, an external power jack receptacle, ½" cable bushings, a universal 2" pipe or motor valve mount, and rear panel gasket.

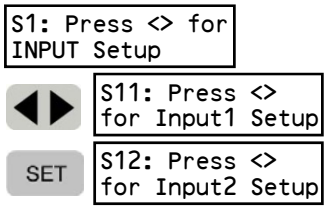
Input Connections



There are two horizontal jumpers for each input that provide mA/Vdc and +5V/+10V selections. There is one vertical jumper for each output that provides either a +5Vdc or +10 Vdc output range. Connection terminal blocks are removable and may be oriented for inline or right angle terminations.

Analog Input Setup

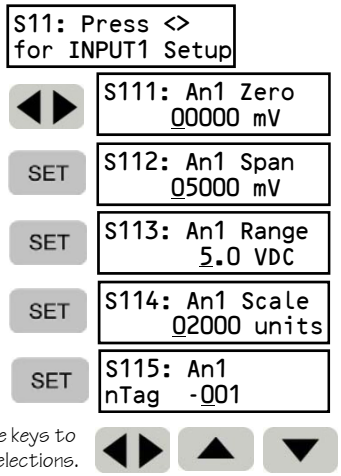
Menu displays allow setup and configuration for each of the two analog inputs. Analog inputs can accept current or voltage output type sensors including those used for pressure, flow, temperature and level measurement. The 1st press of the SET key displays the INPUT setup menu. Press the key shown to the left of each display below to access sub-menus.



The analog input data are connected to or shared with other devices using numeric tags (nTag). The nTag may be thought of as an address – analog data are sent from sources (inputs) to destinations (outputs) that share the same address. The range of nTag addresses is -001 to -016.

Input Setup Menu

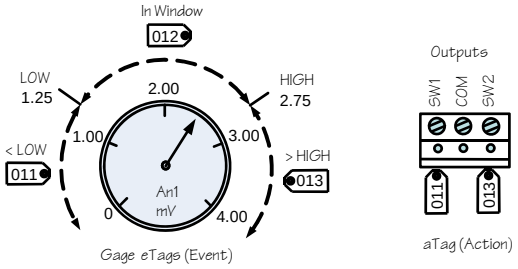
Each input sub-menu allows for independent scaling of the analog values. Range must match the input's hardware jumper selections.



Numeric tags (nTag) may be assigned to each input. nTags range from -001 to -016. A zero (-000) nTag disables data sharing for the specific input.

Digital Switch Gage

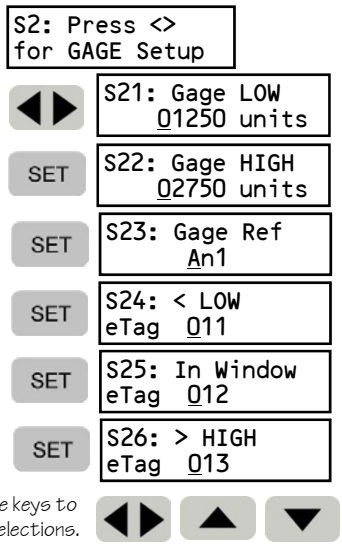
vTagNet technology allows associating measurement set point events with output switch actions. This is done using a switch gage analogy where "LOW" and "HIGH" set points define "< LOW", "In Window" and "> HIGH" regions for event tag assignments.



As shown above, selecting analog input An1 as the measurement source reference (Ref) and assigning output switch action tags to match switch gage event tags provide a versatile digital switch gage setup. Although the switch outputs shown above are not physically located in the 2x4 Analog Router, vTagNet provides the means to remotely control such outputs.

Gage Setup

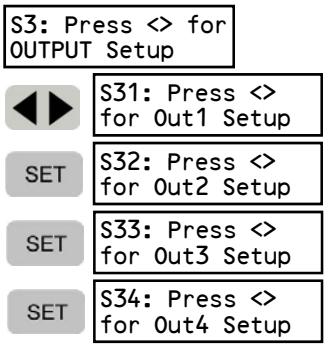
GAGE setup menu provides a primary measurement source (Ref). Selections include None, An1 and An2.



A zero eTag disables its associated event detection.

Analog Output Setup

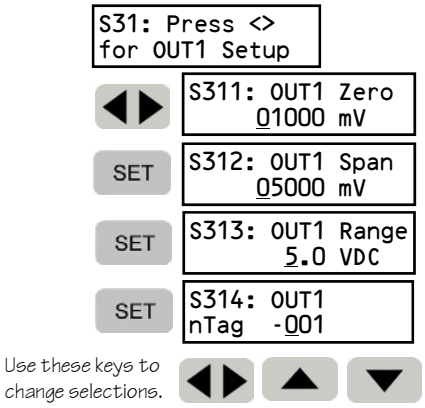
Menu displays allow setup and configuration for each of the four analog outputs. The 1st press of the SET key displays the OUTPUT setup menu. Press the key shown to the left of each display below to access sub-menus.



The analog outputs may be connected to local analog inputs or other devices using numeric tags (nTag). The nTag number may also be thought of as an address that routes data to destinations with the same address.

Output Setup Menu

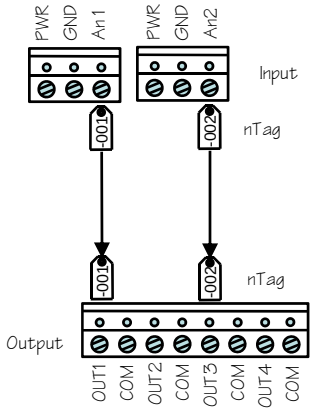
Each output sub-menu allows independent scaling of the voltage outputs. Output scaling includes zero offset, output span and maximum voltage range. Range must match the output's hardware jumper selection. Displays shown below are representative of all four output setup menus.



Numeric tags (nTag) may be assigned to each output. nTags range from -001 to -016. A zero (-000) nTag disables the specific analog output.

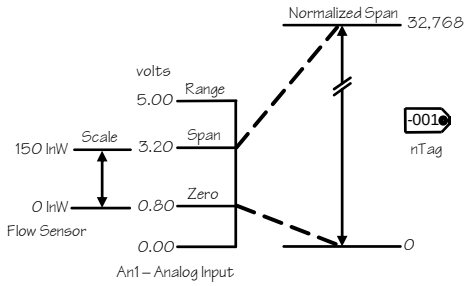
vTagNet Connections

vTagNet technology allows connecting any analog input (nTag) to any analog output (nTag) simply by assigning tag numbers to the associated input and output. The following illustration shows only one of the many input to output connection configurations that are possible without any custom programming required.



Analog Input Normalization

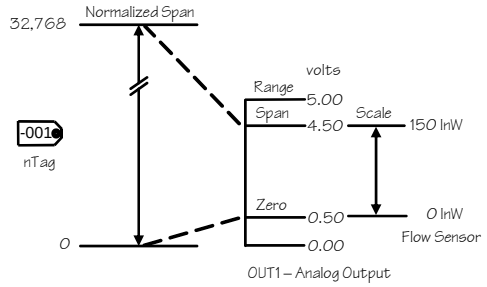
Numeric tags transport data as normalized, 15-bit signed values. Data normalization allows independent data scaling both at the data source and at a data output without sacrificing resolution. A common, low resolution form of data normalization is taking the percentage of a number where data are normalized to a value of 100. Normalizing to a 15-bit value (32,768) provides a much higher degree of resolution and is commonly used in industrial automation and control.



The above diagram illustrates how the voltage output from a flow sensor may be scaled and then normalized for transport as nTag number -001.

Analog Output Normalization

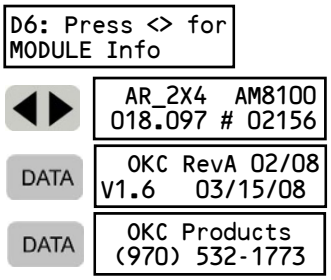
Analog outputs assigned an nTag number receive data as a 15-bit normalized value without any indication of the zero, span and range of the source data's measurement. Since the nTag's data has been normalized, data integrity is maintained even though the output's zero, span and range is arbitrarily assigned to suit the local output requirements. The only item about the data source that is required is the scale and unit of measurement.



The above diagram illustrates how normalized data may be formatted at the output side to meet various data interface requirements without sacrificing data integrity.

Module Information

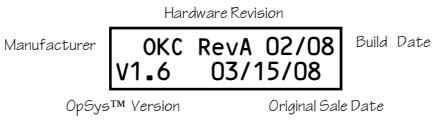
Module information displays show device identification and sales data for warranty service. Module information displays are "system displays" and can not be modified or altered using the ChartWriter™ utility. This display information is programmed into each unit by the manufacturer, at the time of shipment or sale.



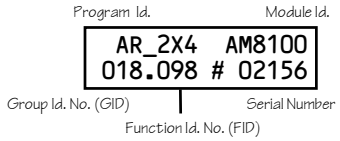
Other user guides are supplied with each unit that focus on Control Panel operation, Power Module use and features and Wireless Networking, respectively. Visit and register on the OKC eSupport site for more detailed information. http://support.okcproducts.com/

Important Device Information

Each application module has important device related information saved in its non-volatile memory that can be accessed through the LCD display interface. Manufacturing and sales information is included in a single display as shown below.



Device information is also included in a single display as shown below. A "business card" sized information card is provided with each unit so that the device information may be noted for future reference.



Accessories

Part Number	*Accessory Description*
9203-2002110	Pipe Mounting Kit 2-1/4 U-Bolt with extra 5/16" nuts . Uses universal mounting plate.
2503-1370315	Watertight Bushing. 1/8 NPT, Black Nylon. Direct thread into enclosure.
9203-2032150	Power Jack Assembly. 2.5mm Receptacle. Complete wired assembly.
4160-2032120	Universal Mounting Bracket. Black Zinc Plated #16 GA Steel. 2" Pipe or motor valve mount.
1980-2032400	Wireless XBee Kit. Maxstream 2.4 GHz Module. 300 ft. (100m) Line of Sight range.
1980-2032401	Wireless XBee-Pro Kit. Maxstream 2.4 GHz Module. 4000 ft. (1.2km) Line of Sight range.
9200-0852251	Ext. 2 W Solar Panel w/ stand. 8.5 Vdc @ 235 mA charging. 12 ft. Power Jack cable provided.