

Operator's Guide

AeroMate™ WSC - 4x4 Switch Router



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

U.S. Patent Numbers 6,194,793 and 6,462,507
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Introduction

The 4x4 Switch Router provides four independent switch sensing inputs and four independent, low side power switch outputs. All inputs and outputs are user configurable for active High or active Low operation.

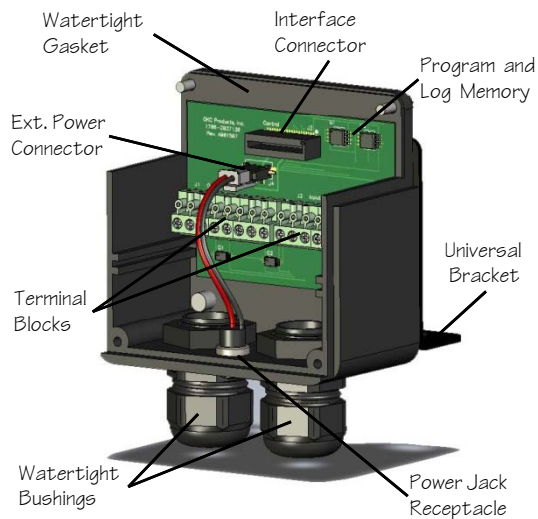
The 4x4 Switch Router may be used as an independent switch translator or as a functional component in conjunction with other sensors and controls within a wireless, networked control system.

vTagNet™ technology provides a virtual wire tag system to connect switch input generated events (eTag) to output switch actions (aTag) by allowing users to assign corresponding tag numbers as needed.

Switch events are automatically recorded and logged. Up to 1129 log records are stored before older records are deleted and replaced in a revolving data log. Log record retrieval using a PC laptop computer requires the optional Wireless XBee Kit installed and a XBee-PRO PKG-U USB adapter.

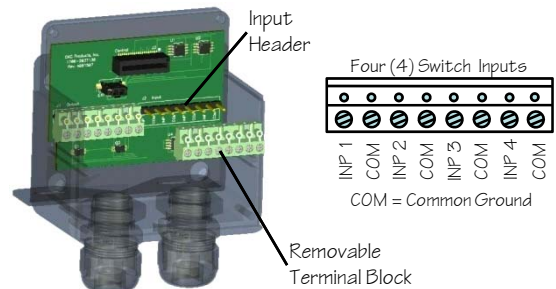
The 4x4 Switch Router's application program may be modified using the ChartWriter™ programming utility or completely re-programmed as required.

4x4 Switch Module

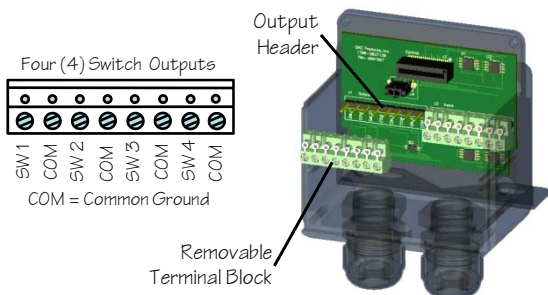


The 4x4 Switch module includes four switch inputs, four switch outputs, an external power jack receptacle, 1/2" cable bushings, a universal 2" pipe or motor valve mount, and rear panel gasket.

Input Connections



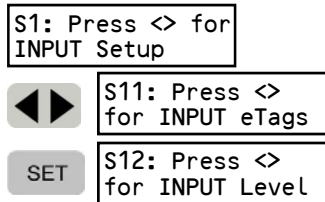
Output Connections



Switch Input Setup

Switch inputs allow hookup to dry contact switches or logic inputs with voltages up to 30 Vdc. Each input is 15 kV static protected and de-bounced to minimize multiple triggering associated with noisy switches.

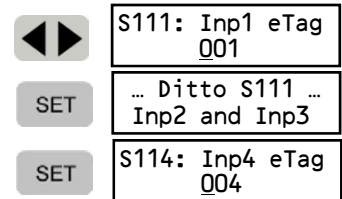
To access the switch input setup menu, press the SET key, then press the Page (<>) key to access the INPUT setup submenus.



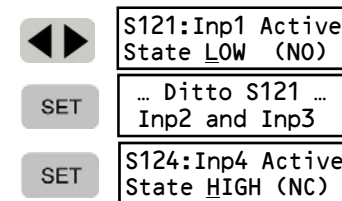
All four switch inputs have individual setup screens for entering event tag number and active event level. Use the Page key to access individual switch input eTag and active event level setup displays.

Switch Input Options

Each of the four input switch sensors are configurable to meet a wide range of applications. Switch input options determine what eTag is emitted when the switch input event is active and the active switch state.



Use these keys to change selections.



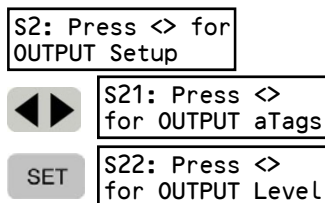
Use these keys to change selections.



Switch Output Setup

Switch outputs are low-side (NPN) switches capable of switching loads up to 30 Vdc at 2 Amperes. All four outputs have a common ground and should be used to "ground" the load connected to any specific SW connection terminal.

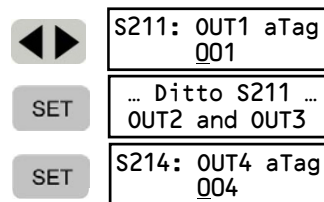
To access the switch output setup menu, press the SET key, then press the Page (<>) key to access the output setup submenus.



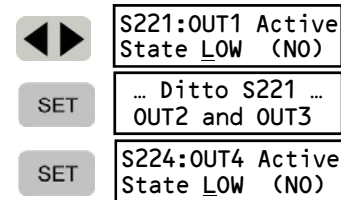
All four switch outputs have individual setup screens for entering action tag (aTag) number and active level. Use the Page key to access individual switch input aTag and active level setup displays.

Switch Output Options

Each of the four output switches are configurable to meet a wide range of applications. Switch output options determine what tag source causes the output switch action to occur and output switch action type.



Use these keys to change selections.

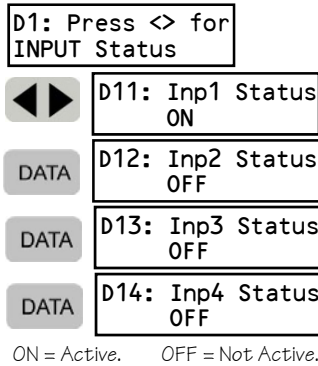


Use these keys to change selections.



Switch Input Status

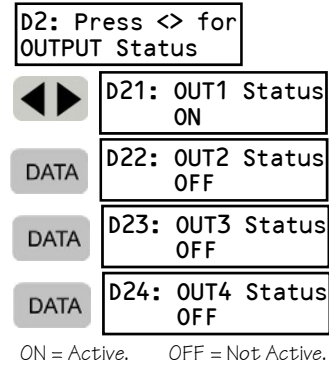
The current switch input status for all four (4) switch inputs are accessed using the DATA key. A "ON" status indicates the switch input is active. A "OFF" status indicates the switch input is inactive.



Event tags (eTag) assigned to switch inputs may be used to control switch outputs or other devices on the same network. An eTag becomes active when its associated switch input is in its active state.

Switch Output Status

The switch output status for all four (4) switch outputs are accessed using the DATA key. A "ON" status indicates the switch output is active. A "OFF" status indicates the switch output is inactive.

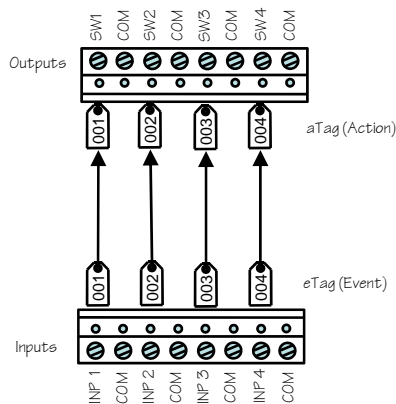


The minimum switch output hold time is controlled by the Network Update Interval or NUD. The NUD is set to 3 seconds in the operating system which imposes a minimum 3 to 6 second switch output hold time.

vTagNet Connections

vTagNet technology allows connecting any input event (eTag) to any output action (aTag) simply by assigning tag numbers to the respective inputs and outputs. The following illustrations show only a few of the many input to output control configurations that are possible without special or custom programming required.

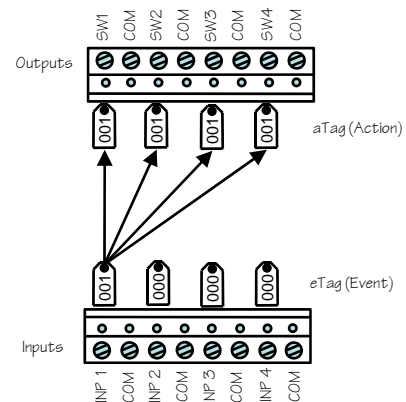
One-to-One connection scheme is illustrated below.



vTagNet Connections

Tags may be used to allow one input to control several outputs, even though each of the outputs are configured differently. Output SW1 may, for example, be configured as a Normally Closed (NC) switch whereas SW2 may be configured as a Normally Open (NO) switch. Whenever input switch INP1 changes from its inactive state to its active state, all tag related outputs will also assume their respective active state.

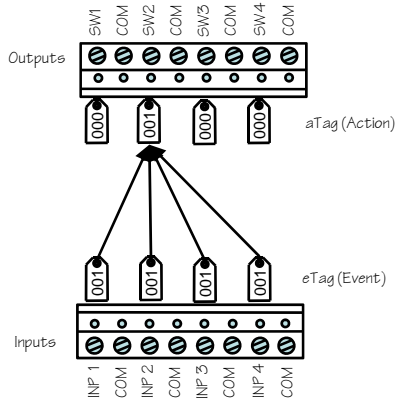
One-to-Many connection scheme is illustrated below.



vTagNet Connections

Tags may be also used to allow one output to be controlled by several inputs, even though each of the inputs are configured differently. Input INP1 may, for example, be configured as an active high switch input whereas INP3 may be configured as a Normally Open (NO) input. Whenever any of the input switches change from an inactive state to a active state, the tag related output will also assume its active state.

Many-to-One connection scheme is illustrated below.



System Setup

Modules communicate and share vTagNet data over a closed network identified by the PAN#. The PAN# must be set the same number for all the devices on the same network to work together.

S3: Press <>
for SYSTEM Setup

◀▶	DEV Link PAN# ED YES 1134
SET	NUD LUD YES 00300s
SET	DATE 05/14/08 TIME 17:02:19
SET	SET DEFAULTS Press UP/DOWN

Use these keys to
change selections.



Network Update (NUD) is the time interval over which vTagNet information is updated and shared with other devices. Once tag numbers have been assigned, set the NUD to "Yes" to activate vTagNet system updates. The default NUD setting is 3 seconds.

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.

Hardware Revision		Build Date	
Manufacturer	OKC RevA 11/07		
	V1.0		12/03/07
OpSys™ Version		Original Sale Date	

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.

Program Id.	Module Id.
SR_4X4	AM7100
018.097 #	02185
Group Id. No. (GID)	Serial Number
	Function Id. No. (FID)

Accessories

Part Number	Accessory Description
9203-2002110	Pipe Mounting Kit 2-1/4 U-Bolt with extra 5/16" nuts . Uses universal mounting plate.
2503-3231HEY	Watertight Bushing. ½ NPT, Black Nylon. Uses 2503-8463HEY nut.
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. (1.2 km) Line of Sight range.
9200-0852251	Ext. 2 W Solar Panel w/ stand. 8.5 Vdc @ 235 mA charging. 6 ft. Power Jack cable provided.