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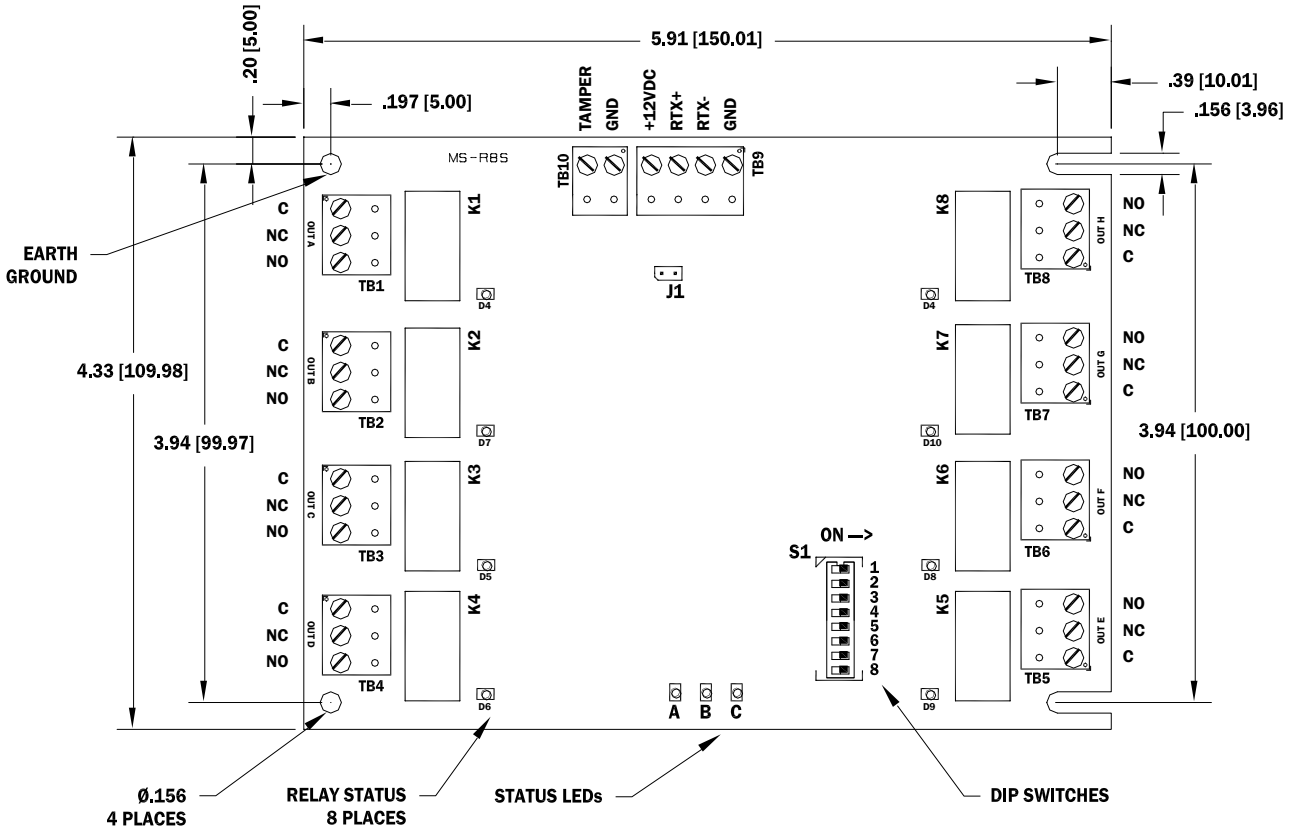
MS-R8S PROCESSOR

Installation and Specifications:

1. General:

The MS-R8S is part of Mercury Security's bridging hardware technology for replacing the Software House R8 module that provides output relays when migrating to the Mercury platform.
Mercury's MS-R8S board has eight Form-C contact relays. In addition, one dedicated input is provided for cabinet tamper switch monitoring. The MS-R8S requires 12 Vdc for power.



2. Terminal Blocks:

Terminal Block	Terminal	Description	Status LED
TB1-1	OUT A: C	Relay K1 - Common Contact	D4
TB1-2	OUT A: NC	Relay K1 - Normally Closed Contact	
TB1-3	OUT A: NO	Relay K1 - Normally Open Contact	
TB2-1	OUT B: C	Relay K2 - Common Contact	D7
TB2-2	OUT B: NC	Relay K2 - Normally Closed Contact	
TB2-3	OUT B: NO	Relay K2 - Normally Open Contact	
TB3-1	OUT C: C	Relay K3 - Common Contact	D5
TB3-2	OUT C: NC	Relay K3 - Normally Closed Contact	
TB3-3	OUT C: NO	Relay K3 - Normally Open Contact	
TB4-1	OUT D: C	Relay K4 - Common Contact	D6
TB4-2	OUT D: NC	Relay K4 - Normally Closed Contact	
TB4-3	OUT D: NO	Relay K4 - Normally Open Contact	

Terminal Block Continued:

Terminal Block	Terminal	Description	Status LED
TB5-1	OUT E: C	Relay K1 - Common Contact	D9
TB5-2	OUT E: NC	Relay K1 - Normally Closed Contact	
TB5-3	OUT E: NO	Relay K1 - Normally Open Contact	
TB6-1	OUT F: C	Relay K2 - Common Contact	D8
TB6-2	OUT F: NC	Relay K2 - Normally Closed Contact	
TB6-3	OUT F: NO	Relay K2 - Normally Open Contact	
TB7-1	OUT G: C	Relay K3 - Common Contact	D10
TB7-2	OUT G: NC	Relay K3 - Normally Closed Contact	
TB7-3	OUT G: NO	Relay K3 - Normally Open Contact	
TB8-1	OUT H: C	Relay K4 - Common Contact	D11
TB8-2	OUT H: NC	Relay K4 - Normally Closed Contact	
TB8-3	OUT H: NO	Relay K4 - Normally Open Contact	

Terminal Block	Terminal	Description
TB9-1	GND	Power Ground / Signal Ground
TB9-2	RTX-	RS-485 Transmit / Receive – (TR-)
TB9-3	RTX+	RS-485 Transmit / Receive + (TR+)
TB9-4	12V	Power Input - +12 VDC
TB10-1	GND	Tamper Switch Ground
TB10-2	TMP	Tamper Switch Input

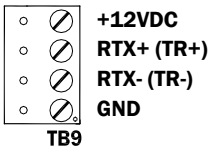
3. Supplying Power to the MS-R8S:

The MS-R8S requires 12 Vdc for power.

TB9 pin 1: Ground

TB9 pin 4: +12 VDC

Locate power source as close to the unit as possible. Connect power with minimum of 18 AWG wires.

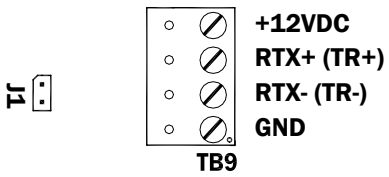


Observe POLARITY!

4. Communication Wiring:

The MS-R8S communicates to the MS-ICS intelligent controller via a 2-wire RS-485 interface. The interface allows multi-drop communication on a single bus of up to 4,000 feet (1,200 m). Shielded cable of 24 AWG with characteristic impedance of 120 ohm is specified for the RS-485 interface.

The last devices on each end of the cable should have the terminator installed (install jumper J1).

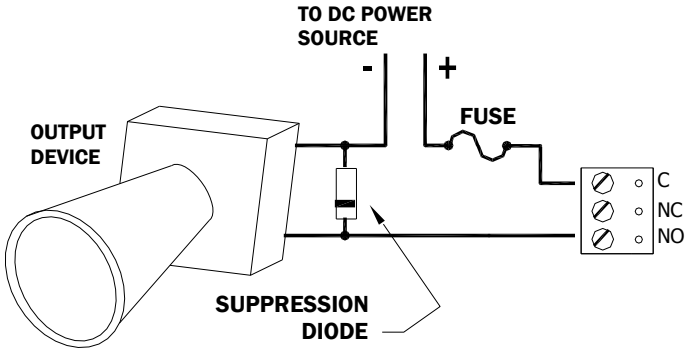


5. Relay Wiring:

The MS-R8S provides eight Form-C contact relays for controlling door strikes or other devices. Relay contact rating: 2 A @ 30 Vdc maximum.

⚠ Excessive load switching causes contact wear and premature failure. Inductive load switching causes EMI (electromagnetic interference) which may interfere with normal operation of the equipment. To minimize premature contact failure and to increase system reliability, a contact protection circuit must be used. Locate the protection circuit as close to the load as possible (less than 12 inches [30 cm] recommended). The circuit's effectiveness decreases if it is located further away.

Use sufficiently large gauge wire for the load current to avoid voltage loss.

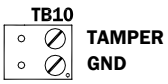


Suppression Diode Selection:

Diode current rating: > 1 x load current.
Diode break down voltage: 4x load voltage.
For 12 Vdc or 24 Vdc load, use diode 1N4002 (100 V / 1 A) or equivalent.

6. Cabinet Tamper Switch Input Wiring:

Connect TB10 terminals to the cabinet tamper switch. The cabinet tamper switch must be a normally closed contact. Do not use EOL resistor(s). Install a jumper wire to these terminals if a cabinet tamper switch is not used.



7. DIP Switch:

Switches 1 to 5 select the device address. Switch 6 and 7 select the communication baud rate. Switch 8 enables encrypted communication. All other configuration settings are set via host software.

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
			OFF	OFF	OFF	OFF	OFF	Address 0
			OFF	OFF	OFF	OFF	ON	Address 1
			OFF	OFF	OFF	ON	OFF	Address 2
			OFF	OFF	OFF	ON	ON	Address 3
			OFF	OFF	ON	OFF	OFF	Address 4
			OFF	OFF	ON	OFF	ON	Address 5
			OFF	OFF	ON	ON	OFF	Address 6
			OFF	OFF	ON	ON	ON	Address 7
			OFF	ON	OFF	OFF	OFF	Address 8
			OFF	ON	OFF	OFF	ON	Address 9
			OFF	ON	OFF	ON	OFF	Address 10
			OFF	ON	OFF	ON	ON	Address 11
			OFF	ON	ON	OFF	OFF	Address 12
			OFF	ON	ON	OFF	ON	Address 13

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
			OFF	ON	ON	ON	OFF	Address 14
			OFF	ON	ON	ON	ON	Address 15
			ON	OFF	OFF	OFF	OFF	Address 16
			ON	OFF	OFF	OFF	ON	Address 17
			ON	OFF	OFF	ON	OFF	Address 18
			ON	OFF	OFF	ON	ON	Address 19
			ON	OFF	ON	OFF	OFF	Address 20
			ON	OFF	ON	OFF	ON	Address 21
			ON	OFF	ON	ON	OFF	Address 22
			ON	OFF	ON	ON	ON	Address 23
			ON	ON	OFF	OFF	OFF	Address 24
			ON	ON	OFF	OFF	ON	Address 25
			ON	ON	OFF	ON	OFF	Address 26
			ON	ON	OFF	ON	ON	Address 27
			ON	ON	ON	OFF	OFF	Address 28
			ON	ON	ON	OFF	ON	Address 29
			ON	ON	ON	ON	OFF	Address 30
			ON	ON	ON	ON	ON	Address 31
	OFF	OFF						115,200 BPS
	OFF	ON						9,600 BPS
	ON	OFF						19,200 BPS
	ON	ON						38,400 BPS
OFF								Encrypted communication not required
ON								Encrypted communication required

8. Status LEDs:

Power-up: All LED's OFF

Initialization: Once power is applied, initialization of the module begins

When initialization is completed, LEDs A, B and C are briefly sequenced **ON** then **OFF**

Run time: After the above sequence, the LEDs have the following meanings:

A LED: Heartbeat and On-Line Status:
Off-line: 1 sec rate, 20% **ON**
On-line:
Non-encrypted communication: 1 sec rate, 80% **ON**
Encrypted communication:
.1 sec **ON**, .1 sec **OFF**, .1 sec **ON**, .1 sec **OFF**, .1 sec **ON**, .1 sec **OFF**, .1 sec **ON**, .3 sec **OFF**

A LED Error Indication:
Waiting for application firmware to be downloaded: .1 sec **ON**, .1 sec **OFF**

B LED: SIO Communication Port Status:
Indicates communication activity on the communication port

C LED: Cabinet Tamper. Flashes every 3 seconds

9. Specifications:

The processor is for use in low voltage, class 2 circuit only.

The installation of this device must comply with all local fire and electrical codes.

Primary power:	12 Vdc ±10%, 350 mA maximum
Outputs:	8 relays, Form-C contacts, 30 Vdc @ 2 A, resistive
Input:	1 unsupervised, dedicated for cabinet tamper
Communication:	2-wire RS-485. 9600, 19200, 38400, or 115200 bps

Cable requirements:

Power:	18 AWG, 1 twisted pair
RS-485:	24 AWG, 120 ohm impedance, twisted pair with shield, 4,000 ft. (1,200 m) maximum
Outputs:	As required for the load

Mechanical:

Dimension:	4.3" (109 mm)W x 5.9" (150 mm)L x .65" (16.5 mm)H
Weight:	4.5 oz. (123.5 g) nominal (w/o terminal blocks)

Environmental:

Temperature:	-55 °C to +85 °C, storage
	0 °C to +50 °C, operating
Humidity:	5% to 95% RHNC

Warranty

Mercury Security warrants the product is free from defects in material and workmanship under normal use and service with proper maintenance for one year from the date of factory shipment. Mercury Security assumes no responsibility for products damaged by improper handling or installation. This warranty is limited to the repair or replacement of the defective unit.

There are no expressed warranties other than set forth herein. Mercury Security does not make, nor intends, nor does it authorize any agent or representative to make any other warranties, or implied warranties, and expressly excludes and disclaims all implied warranties of merchantability or fitness for a particular purpose.

Returns must be accompanied by a Return Material Authorization (RMA) number obtained from customer service, and prepaid postage and insurance.

Liability

The Interface should only be used to control exits from areas where an alternative method for exit is available. This product is not intended for, nor is rated for operation in life-critical control applications. Mercury Security is not liable under any circumstances for loss or damage caused by or partially caused by the misapplication or malfunction of the product. Mercury Security's liability does not extend beyond the purchase price of the product.