MR62e OSDP Reader Interface

Installation and Specifications

1. General:

The MR62e OSDP reader interface provides a network connected interface to control two physical barriers using OSDP readers and provides a solution for the OEM integrator for interfacing to OSDP readers and door hardware. The on-board Ethernet with PoE/PoE+ support enables easy installation. The MR61e supports up to four OSDP readers configured as paired or alternate readers.

⚠ Note: For UL, the Power Sourcing Equipment (PSE) such as a PoE/PoE+ enabled network switch and/or PoE/PoE+ power injectors must be UL Listed under UL294B.

One serial 2-wire RS-485 communication port is available that can accommodate up to four OSDP readers. Four Form-C relay outputs may be used for door strike control or alarm signaling. The relay contacts are rated at 2 A @ 30 Vdc, resistive and are in a dry contact configuration. Six inputs are provided that may be used for monitoring the door contacts, exit push buttons, and alarm contacts. Input circuits can be configured as unsupervised or supervised. The MR62e requires PoE, PoE+ or local 12 Vdc for power. The MR62e may be mounted in a 3-gang switch box; a mounting plate is supplied with the unit or be mounted in an enclosure; the supplied mounting plate has mounting holes that match the MR50 mounting footprint.

2. MR62e Hardware:
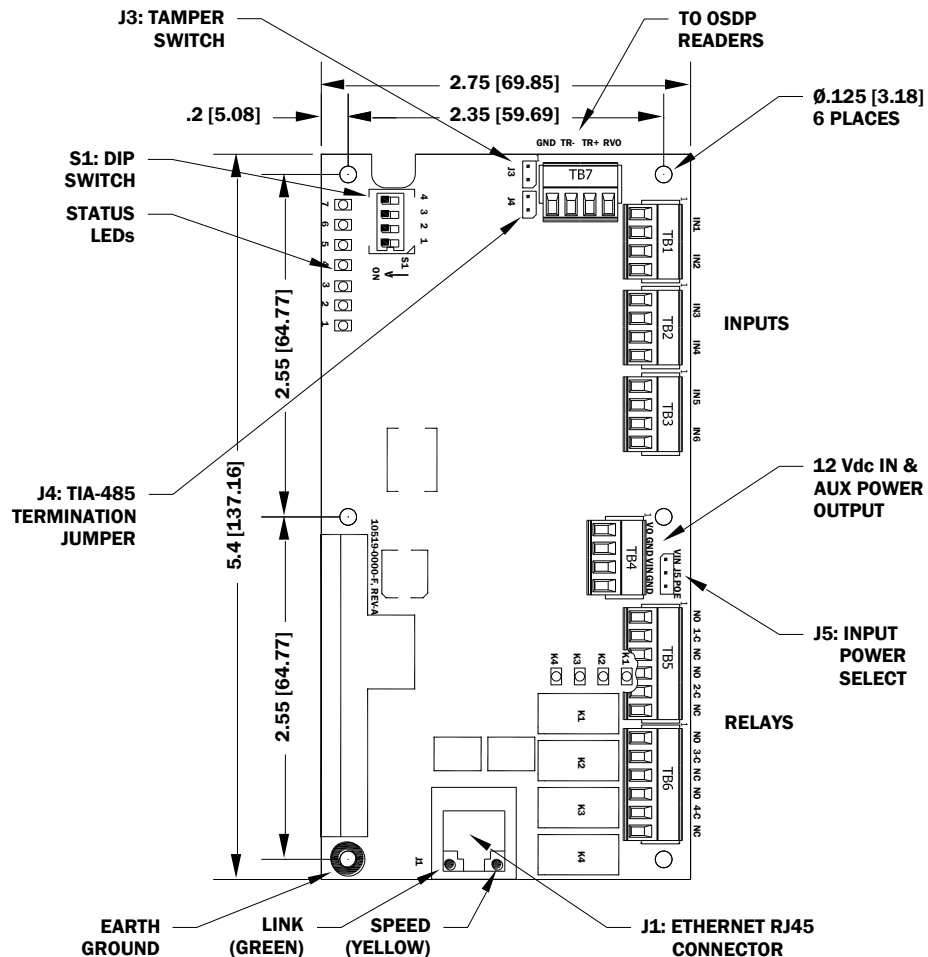
MR62e Layout

3. MR62e Terminal Blocks and Jumpers/Jacks:

MR-51E CONNECTIONS		
TB1-1	IN1	Input 1
TB1-2	IN1	
TB1-3	IN2	Input 2
TB1-4	IN2	
TB2-1	IN3	Input 3
TB2-2	IN3	
TB2-3	IN4	Input 4
TB2-4	IN4	
TB3-1	IN5	Input 5
TB3-2	IN5	
TB3-3	IN6	Input 6
TB3-4	IN6	
TB4-1	VO	Auxiliary Power Output – 12 Vdc
TB4-2	GND	Auxiliary Power Output Ground
TB4-3	VIN	Input Power – 12 Vdc (from local power supply)
TB4-4	GND	Input Power Ground
TB5-1	NO	Relay K1 – Normally Open Contact
TB5-2	1-C	Relay K1 – Common Contact
TB5-3	NC	Relay K1 – Normally Closed Contact
TB5-4	NO	Relay K2 – Normally Open Contact
TB5-5	2-C	Relay K2 – Common Contact
TB5-6	NC	Relay K2 – Normally Closed Contact
TB6-1	NO	Relay K3 – Normally Open Contact
TB6-2	3-C	Relay K3 – Common Contact
TB6-3	NC	Relay K3 – Normally Closed Contact
TB6-4	NO	Relay K4 – Normally Open Contact
TB6-5	4-C	Relay K4 – Common Contact
TB6-6	NC	Relay K4 – Normally Closed Contact
TB7-1	GND	Reader Power Ground
TB7-2	TR-	2-Wire RS-485 TR- (B) See Note 1 below
TB7-3	TR+	2-Wire RS-485 TR+ (A) See Note 1 below
TB7-4	RVO	12 Vdc Reader Power Output

Note 1: Terms A & B are from the RS-485 standard

Jumpers:

JUMPER	SET AT	DESCRIPTION
J1	N/A	Ethernet Connection with PoE/POE+ support
J2	N/A	Factory Use Only
J3	N/A	Tamper Switch (normally open contact) See section 14.
J4	N/A	RS-485 Termination, install only if the MR62e is at the end of the communication bus
J5	PoE	MR62e powered from the Ethernet connection
	VIN	MR62e powered from an external 12 Vdc power source connected to TB4-3 (VIN), TB4-4 (GND)
J6 – J13	N/A	Factory Use Only

4. DIP Switches:

The four switches on S1 DIP switch are used to configure the operating mode of the MR62e. DIP switches are read on power-up except where noted.

1	2	3	4	Definitions
OFF	OFF	OFF	OFF	Normal operating mode.
ON	X	OFF	OFF	After initialization, enable default User Name (admin) and Password (password). The switch is read on the fly, no need to reboot. See IT Security section for additional information
OFF	ON	OFF	OFF	Use factory default communication parameters.
ON	ON	OFF	OFF	Use OEM default communication parameters. Contact system manufacture for details. See Bulk Erase below.
ON	ON	OFF	OFF	Bulk Erase prompt mode at power up. See Bulk Erase section.

 All other switch settings are unassigned and reserved for future use. X = don't care.

Factory Default Communication Parameters:
Network: static IP address: 192.168.0.251
Subnet Mask: 255.255.0.0
Default Gateway: 192.168.0.1

5. Bulk Erase:

The bulk erase function can be used for the following purposes:
  ➢ Erase all configuration, sets MR62e to OEM setting (sanitize board).
  ➢ Restore to OEM default parameters.

Bulk Erase Steps: **Do not remove power during steps 4-6.**

1. Set S1 DIP switches to: 1 & 2 "ON", 3 & 4 "OFF".
2. Apply power to the MR62e.
3. Watch for LEDs 1 & 2 and 3 & 4 to alternately flash at a 0.5 second rate.
4. Within 10 seconds from applying power, change switches 1 or 2 to "OFF". If these switches are not changed, the MR62e will power up using the OEM default communication parameters.
5. LEDs 1 and 2 alternately flash at a 0.5 second rate while the memory is being erased.
6. Once the memory is eased, LED 1 will be on for about 3 seconds, then the MR62e will reboot.

6. Input Power:

The MR62e is powered by one of two ways (jumper selected, J5):
  • Power is supplied via the Ethernet connection using PoE or PoE+.
  • Local 12 Vdc power supply, TB4-3 (VIN), TB4-4 (GND).
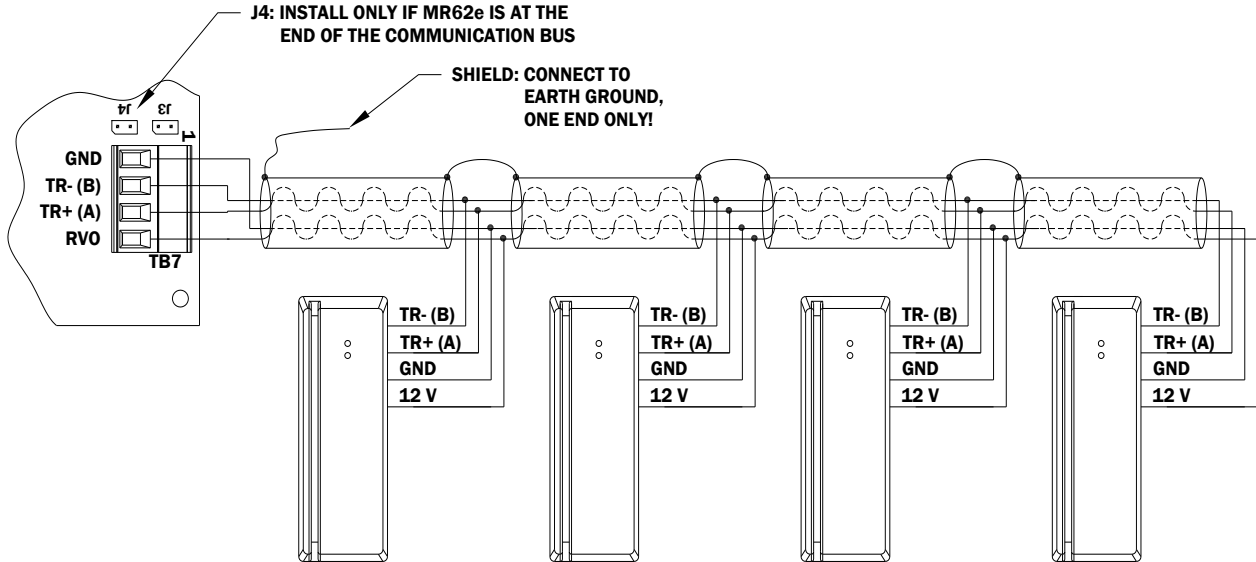
7. Communication Wiring:

Communication between the EP controller and the MR62e is Ethernet (10Base T/100Base-TX).
It is not recommended to connect the MR62e to a public intranet.

8. OSDP Reader Wiring:

TB7 has connections for the 2-wire RS-485 OSDP communication bus and 12 Vdc to power the OSDP readers. Up to four OSDP readers are supported on the MR62e. This 12 Vdc output is limited to .5 A. maximum. The OSDP reader wiring diagram below shows the use of a 2-pair cable for data and power. If this cable cannot support the voltage/current requirements, a 1-pair cable of sufficient gauge must be used for power. See specification section.

The RS-485 termination jumper, J4, is only installed if the MR62e is at one end of the communication bus. Only devices at each end of the communication bus are terminated, never install termination to more than two devices on the communication bus.

⚠ When powering any remote device(s) by the MR62e, care must be taken not to exceed the maximum current available. Cable gauge must also be evaluated. See specifications section for details.

J4: INSTALL ONLY IF MR62e IS AT THE END OF THE COMMUNICATION BUS

SHIELD: CONNECT TO EARTH GROUND, ONE END ONLY!

GND
TR- (B)
TR+ (A)
RVO
TB7

TR- (B)
TR+ (A)
GND
12 V

TR- (B)
TR+ (A)
GND
12 V

TR- (B)
TR+ (A)
GND
12 V

TR- (B)
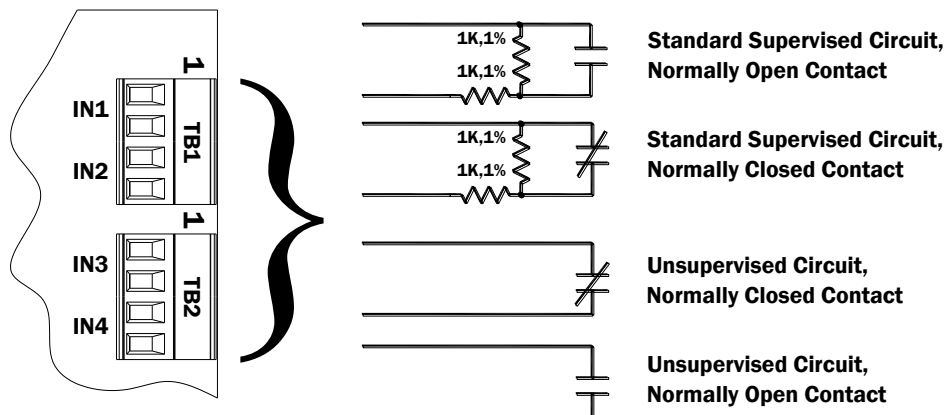TR+ (A)
GND
12 V

Typical OSDP Reader Wiring

9. Input Circuit Wiring:

Typically, these inputs are used to monitor door position, request to exit, or alarm contacts. Input circuits can be configured as unsupervised or supervised. When unsupervised, reporting consists of only the open or closed states.

When configured as supervised, the input circuit will report not only open and closed, but also open circuit, shorted, grounded*, and foreign voltage*. A supervised input circuit requires two resistors be added to the circuit to facilitate proper reporting. The standard supervised circuit requires 1K Ohm, 1% resistors and should be located as close to the sensor as possible. Custom end of line (EOL) resistances may be configured via the host software.

* Grounded and foreign voltage states are not a requirement of UL 294 and therefore not verified by UL.

The input circuit wiring configurations shown are supported but may not be typical:

IN1
IN2
TB1

IN3
IN4
TB2

1K,1%
1K,1%
Standard Supervised Circuit, Normally Open Contact

1K,1%
1K,1%
Standard Supervised Circuit, Normally Closed Contact

Unsupervised Circuit, Normally Closed Contact

**Unsupervised Circuit, Normally Open Contact**

10. Relay Circuit Wiring:

Four Form-C contact relays are provided for controlling door lock mechanisms or alarm signaling. The relay contacts are rated at 2 A @ 30 Vdc, resistive and are in a dry contact configuration. When you are controlling the delivery of power to the door strike, the Normally Open and Common poles are used. When momentarily removing power to unlock the door, as with a mag lock, the Normally Closed and Common poles are used. Check with local building codes for proper egress door installation.

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.

⚠ It is possible for the MR62e to provide power for a 12 Vdc door strike providing the maximum current is not exceeded, see specification section.
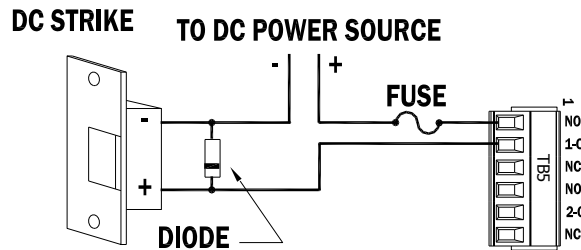
Diode Selection:

Diode current rating: 1x strike count
Diode breakdown voltage: 4x strike voltage
For 12 Vdc or 24 Vdc strike, diode 1N4002 (100V/1A) typical.

11. Status LEDs:

At power up, LED 1 turns ON then LEDs 2 through 7 are turned ON then OFF in sequence.

The following table describes the LED's in the Normal Running mode:

LED	DESCRIPTION
1	On-line, encryption disabled = 0.8 second ON, 0.2 second OFF
	On-line, encryption enabled = 0.1 second ON, 0.1 second OFF, 0.1 second ON, 0.1 second OFF0.1 second ON, 0.1 second OFF0.1 second ON, 0.3 second OFF
	Off-line: 0.2 second ON, 0.8 second OFF
	Waiting for application firmware to be downloaded: .1 sec ON, .1 sec OFF
2	Input IN1 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
3	Input IN2 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
4	Input IN3 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
5	Input IN4 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
6	Input IN5 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
7	Input IN6 Status: OFF = Inactive, ON = Active, Flashing = Fault. See note 2
J1-YELLOW	Ethernet speed: OFF = 10 Mb/S, ON = 100 Mb/S
J1-GREEN	OFF = No Link, ON = Good Link, Flashing = Ethernet Activity

Note 2: If this input is defined, every three seconds the LED is pulsed to its opposite state for 0.1 second, otherwise, the LED is off.

12. IT Security:

When installing the MR62e, it is important to ensure that it is done in a secure manner.

Upon installation, the user accounts to the web configuration page should be created with secure passwords, and that all DIP switches are in the off position for the normal operating mode. The MR62e is shipped from the factory with a default login account, which is enabled when DIP 1 is moved from OFF to ON. The default login user name and password will be available for five minutes once enabled. Therefore, it is important that at least one user account is defined, and the DIP switches are set to OFF before the MR62e is commissioned. It is also highly recommended not to configure the MR62e with an IP address that is accessible from the public Internet.

To further enhance network security, options are available to disable Zeroconf discovery, as well as the web configuration module itself.

13. Specifications:

The MR62e is for use in low voltage, Class 2 circuits only.

Power Input: PoE (12.95 W), compliant to IEEE 802.3af
or
PoE+ (25 W), compliant to IEEE 802.3at
or
12 Vdc $\pm$ 10 %, 1.7 A maximum

⚠ For UL, the Power Sourcing Equipment (PSE) such as a PoE/PoE+ enabled network switch and/or PoE/PoE+ power injectors must be UL Listed under UL294B. Wiring for the 12V input shall not extend more than 30m from the product.

Power Output: PoE: VO (TB4-1) and RVO (TB7-4), combined: 12 Vdc @ .66 A maximum
PoE+ or 12 Vdc: VO (TB4-1) 12 Vdc @ 1 A maximum, RVO, (TB7-4) 12 Vdc @ .5 A maximum

  Output: Four relays, Form-C contacts rated at 2 A @ 30 Vdc

  Inputs: Six unsupervised/supervised, End of Line resistors, 1k/1k ohm, 1%, ¼ watt standard

Reader Interface:

  Power: 12 Vdc @ .5 A maximum (RVO, TB7-4)

  Communication: 2-Wire RS-485, OSDP protocol, four devices maximum

Cable Requirements:

  Communication: Ethernet, Category 5, minimum

  External Input Power: 1 twisted pair, 18 AWG (if required)

  Alarm Inputs: 1 twisted pair per input, 30 ohm maximum

  Relay Outputs: As required for the load

  Reader Data and Power* RS-485/power: 2 twisted pair with shield, 24 AWG, 120 ohm impedance 4000 foot (1220 m) maximum.
or
RS-485: 1 twisted pair with shield, 24 AWG, 120 ohm impedance, 4000 foot (1220 m) maximum
and
power: 1 pair 18 AWG*
* Type of cable(s) and gauge determined by length and voltage/current requirements. Local power source may be required

Environment:

  Temperature: -55 to +85 °C, storage
    0 to +70 °C, operating

  Humidity: 5 to 95 % RHNC

Mechanical:

  Dimension: 5.5 in. (140 mm) W x 2.75 in. (70 mm) L x 0.96 in. (24 mm) H without bracket
5.5 in. (140 mm) W x 3.63 in. (92 mm) L x 1.33 in. (34 mm) H with bracket

Weight:	4 oz. (112 g) without bracket
	5 oz. (142 g) with bracket

UL294, 6th edition Performance Levels:

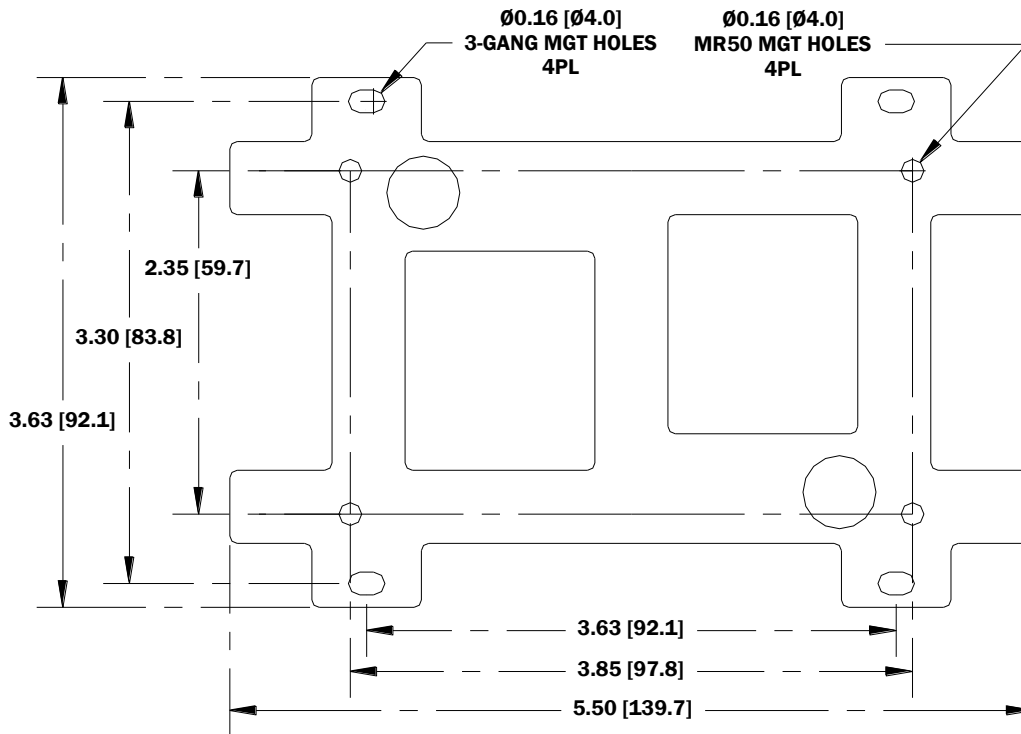| Feature	Level
Standby Power	I
Endurance	IV
Line Security	I
Destructive Attack	I

14. Additional Mounting Information:

Sources for the optional items shown below:

- 3-gang stainless steel blank cover. Available from:
  Leviton part number 84033-40
  Graybar part number 88158404

- Magnetic switch set: G.R.I. part number: 505

Side View:

OPTIONAL BLANK COVER W/SCREWS

OPTIONAL MAGNETIC TAMPER SWITCH

OPTIONAL 3-GANG JUNCTION BOX

TO ETHERNET NETWORK

MR51e WITH INCLUDED MOUNTING PLATE

FIELD WIRING
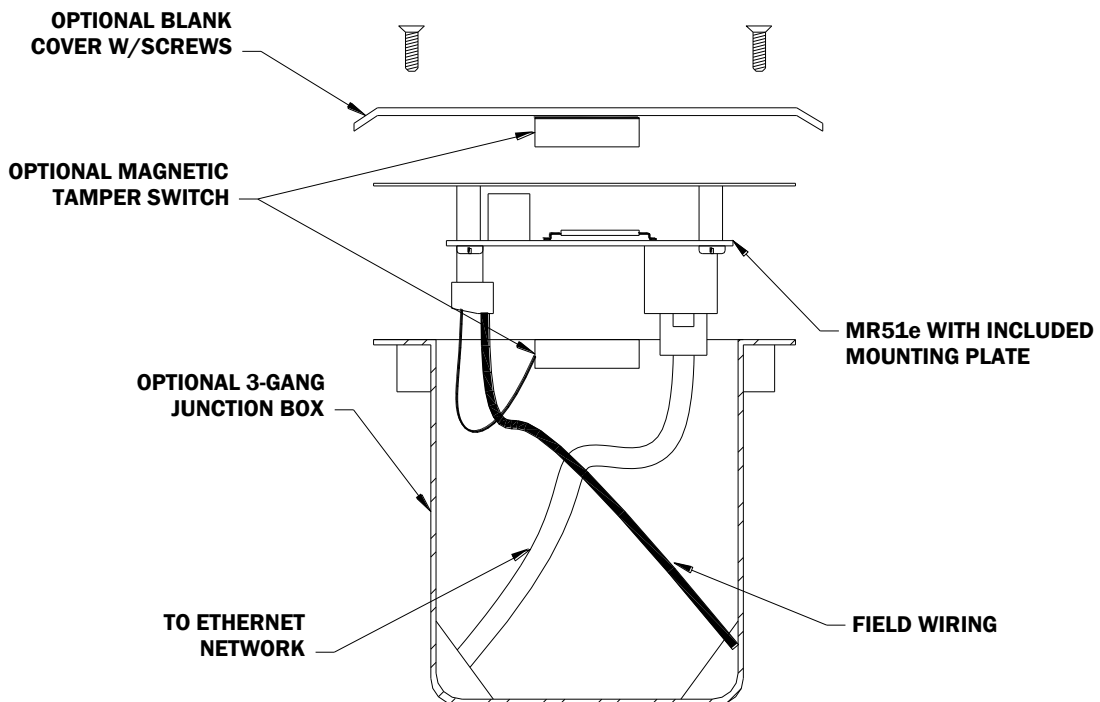
Mounting Plate Dimensions:

Ø0.16 [Ø4.0]
3-GANG MGT HOLES
4PL

Ø0.16 [Ø4.0]
MR50 MGT HOLES
4PL

2.35 [59.7]

3.30 [83.8]

3.63 [92.1]

3.63 [92.1]

3.85 [97.8]

5.50 [139.7]

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.

All 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.