

MR52 READER INTERFACE

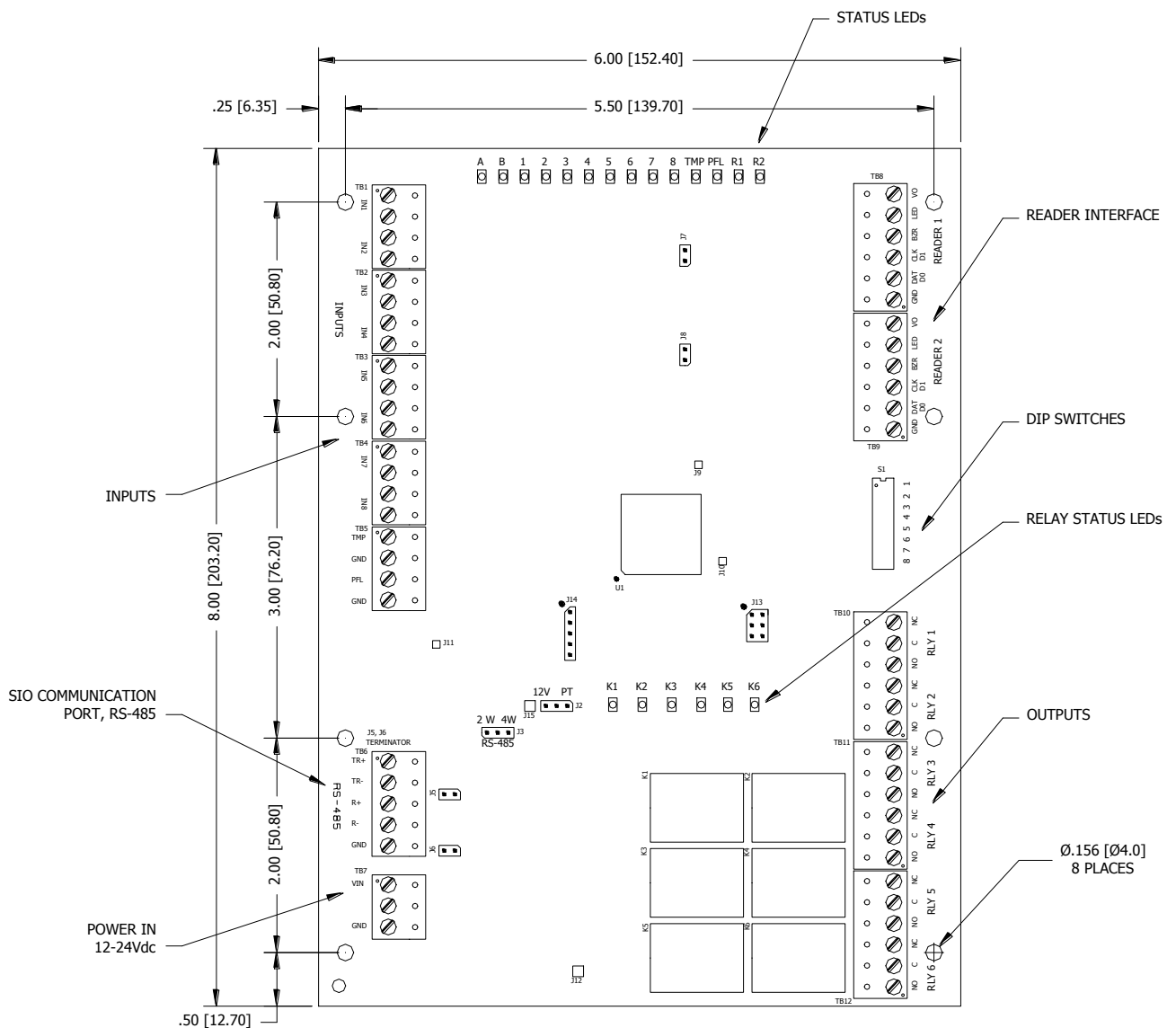
Installation and Specifications:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1. General:

The MR52 reader interface provides a solution to the OEM system integrator for interfacing to TTL/Wiegand/RS-485 type readers and door hardware. The MR52 can accept data from reader with clock/data, Wiegand or RS-485 signaling, provide a tri-stated LED control and buzzer control. Six form-C relay outputs may be used for strike control or alarm signaling. Eight supervised inputs are provided for monitoring the door contact, exit push button and alarm contacts. Communication to the MR52 is accomplished via a 2-wire RS-485 interface.

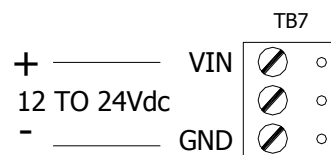
The MR52 requires 12 to 24Vdc for power. See the following figure for component location.



2. Supplying Power to the MR52:

The MR52 accepts 12 to 24Vdc for power on TB7. Locate the power source as close to the MR52 as possible. Make power connection with minimum of 18AWG wires.

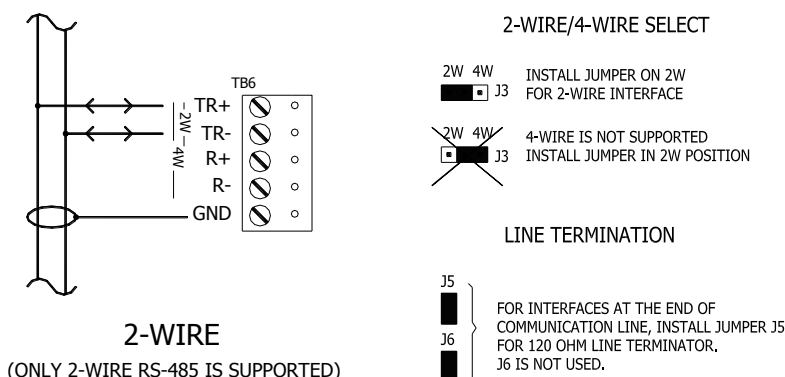
Observe POLARITY on VIN!



3. Communication Wiring (SIO Communication Port):

The MR52 communicates to a Mercury Security intelligent controller (EP2500 for example) via a 2-wire RS-485 interface. The MR52 allows for multi-drop communication on a bus of up to 4,000 feet (1,200 m). Use twisted pair(s) (minimum 24AWG) with shield for communication. See specifications section.

Install jumpers according to the selected configuration.



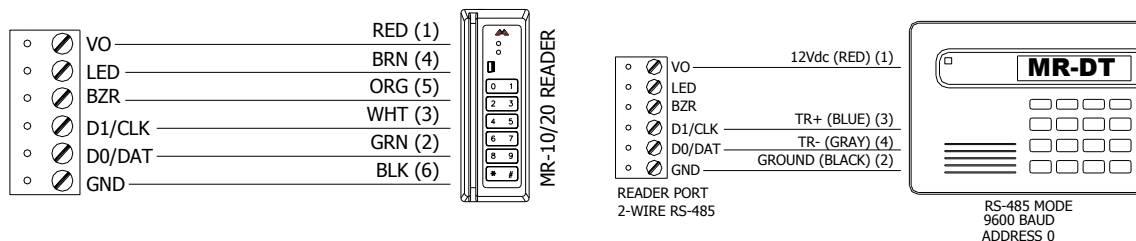
4. Reader Wiring:

Each reader port supports a reader with TTL or RS-485 interface. Power to the reader is selectable: 12Vdc, or input voltage passed through (PT), 125mA maximum per reader port. This selection is made via jumper J2 and is made for both reader ports. For the selection of 12Vdc, the MR-52 must be powered by a 20Vdc minimum source. For readers requiring a different voltage or current capability, they must be powered separately.

To fully utilize each reader port, a 6-conductor cable (18AWG) is required when TTL signaling is used. RS-485 signaling requires two 2-conductor cables. One cable for power (18AWG) and one cable for communication (24AWG). Reader port configuration is set via host software.

12V PT	READER POWER
	12Vdc IS AVAILABLE ON READER PORTS (VIN ≥ 20Vdc)
	VIN POWER IS "PASSED THROUGH" TO READER PORTS

J2 - READER POWER SELECT

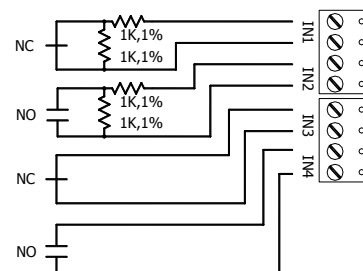


DATA1/DATA0 – CLOCK/DATA

2-WIRE RS-485

5. Alarm Contract Wiring:

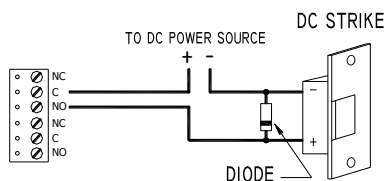
Inputs 1 to 8 may be configured to use or not to use End-Of-Line (EOL) resistors, and for normally open or normally closed contacts. Input TMP is used for monitoring cabinet tamper and PFL input is used power failure monitoring. These two inputs are for contact closure monitoring only. They do not use EOL resistor(s). Input configuration is set via host software.



6. Control Output Wiring:

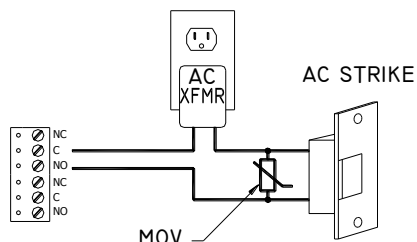
Six form-C contact relays are provided for controlling door strikes or other devices. Load switching can cause abnormal contact wear and premature contact failure. Switching of inductive loads (strike) also causes EMI (electromagnetic interference) which may interfere with normal operation of other equipment. To minimize premature contact failure and to increase system reliability, contact protection circuit must be used. The following two circuits are recommended. Locate the protection circuit as close to the load as possible (within 12 inches [30cm]), as the effectiveness of the circuit will decrease if it is located further away.

Use sufficiently large gauge of wires for the load current as to avoid voltage loss.



DIODE SELECTION:

DIODE CURRENT RATING $> 1 \times$ STRIKE CURRENT
 DIODE BREAK DOWN VOLTAGE: $4 \times$ STRIKE VOLTAGE
 FOR 12Vdc or 24Vdc STRIKE, DIODE 1N4002 (100V /1A) TYPICAL



MOV SELECTION:

CLAMP VOLTAGE $> 1.5 \times$ Vac RMS
 FOR 24Vac STRIKE, PANASONIC ERZ-C07DK470 TYPICAL

7. Jumper and DIP Switch Usage:

JUMPER	DESCRIPTION
J2	Reader Power Select 12V = 12Vdc at reader ports. *** See note below *** PT = VIN "Passed Through" to reader ports
J3	2-Wire/4-Wire Select, install in 2W position only
J5	RS-485 Termination, install in first and last units only
J6	Factory use only
J7	Factory use only
J8	Factory use only
J9	Factory use only
J10	Factory use only
J11	Factory use only
J12	Factory use only
J13	Factory use only
J14	Factory use only
J15	Factory use only

NOTE: The input power (VIN) must be 20Vdc minimum if the 12Vdc selection is to be used.

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
			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, See note 1 below.
	OFF	ON						9,600 BPS
	ON	OFF						19,200 BPS
	ON	ON						38,400 BPS
OFF								Encrypted communication not required See note 2 below.
ON								Encrypted communication required See note 2 below.

Note 1: Firmware revisions prior to 1.38.1, this setting is 2,400 BPS.

Note 2: Firmware revisions prior to 1.38.1, SW8 is not defined. Set to the OFF position.

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 through R2 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 SIO communication port

1 LED: Input Status: IN1

2 LED: Input Status: IN2

3 LED: Input Status: IN3

4 LED: Input Status: IN4

5 LED: Input Status: IN5

6 LED: Input Status: IN6

7 LED: Input Status: IN7

8 LED: Input Status: IN8

TMP: Cabinet Tamper

PFL: Power Fault

Input in the inactive state: OFF (briefly flashes ON every 3 seconds)

Input in the active state: ON (briefly flashes OFF every 3 seconds)

Input in a trouble state: Rapid Flash

R1 LED: reader port 1:

Clock/Data Mode: Flashes when data is received, either input

Data 0/Data 1 Mode: Flashes when data is received, either input

RS-485 Mode: Flashes when transmitting data

R2 LED: reader port 2:

Clock/Data Mode: Flashes when data is received, either input

Data 0/Data 1 Mode: Flashes when data is received, either input

RS-485 Mode: Flashes when transmitting data

K1 through K6 LEDs: Illuminates when output relay RLY 1 (K1) through RLY 6 (K6) is energized.

Every three seconds, LEDs **A** through **R2** are pulsed to their opposite state for 0.1 sec.

9. Specifications:

The Interface is for use in low voltage, class 2 circuits only.

Primary power:	12 to 24Vdc $\pm 10\%$, 550mA maximum (plus reader current) 12Vdc @ 450mA (plus reader current) nominal 24Vdc @ 270mA (plus reader current) nominal
Outputs:	6 outputs, Form-C, 5A @ 28Vdc, resistive
Inputs:	8 unsupervised/supervised, standard EOL: 1k/1k ohm, 1% 1/4 watt 2 unsupervised, dedicated for cabinet tamper and UPS fault monitoring
Reader interface:	
Reader power:	12Vdc $\pm 10\%$ regulated, 125mA maximum each reader (jumper selectable and input voltage (VIN) must be 20Vdc minimum) or 12 to 24Vdc $\pm 10\%$ (input voltage passed through) 125mA maximum each reader
Reader LED output:	TTL compatible, high > 3V, low < 0.5V, 5mA source/sink maximum
Reader buzzer output:	Open collector, 5Vdc open circuit maximum, 10mA sink maximum
Reader data inputs:	TTL compatible inputs or 2-wire RS-485
Communication:	RS-485, 2-wire 9600, 19200, 38400 or 115200bps
Cable requirements:	
Power:	18AWG, 1 twisted pair
RS-485:	24AWG, 120 ohm impedance, twisted pair with shield, 4,000' (1,200m) maximum
Alarm inputs:	1 twisted pair per input, 30 ohms maximum
Outputs:	As required for the load
Reader data (TTL):	6 conductors, 18AWG, 500 feet (150m) maximum
Reader data (RS-485):	24AWG, 120 ohm impedance, twisted pair with shield, 4,000' (1,200m) maximum
Mechanical:	
Dimension:	6" (152mm)W x 8" (203mm)L x 1" (25mm)H
Weight:	11 oz. (312g) nominal
Environment:	
Temperature:	-55°C to +85°C, storage 0°C to +70°C, operating
Humidity:	0% to 95% RHNC

Warranty:

Mercury Security Corporation 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 Corporation 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 Corporation 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.

Returned units are repaired or replaced from a stock of reconditioned units. Returns must be accompanied by a return authorization number (RMA) 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 Corporation 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 Corporation's liability does not extend beyond the purchase price of the product.