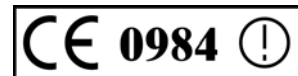


# MCR-403 InStar Reader Quick Reference

This Quick Reference is designed for the experienced installer as a basic reference while installing MCR-403 readers to ensure all connections are made properly. For detailed information on installing an MCR-403 reader, see the [MCR-403 InStar Proximity Reader Product Manual](#) (P/N 01588-001). This document may be downloaded from the Farpointe Data website at [www.pyramidseries.com](http://www.pyramidseries.com). Click on the Support button, then click on the Technical Documentation link. The Product Manual is located in the Pyramid Series Proximity section.

The MCR-403 reader is compliant with the following organizations:



(See Footnote <sup>1</sup>)



## 1.0 Indala Compatibility

The MCR-403 is designed to read all of Indala's ASP formatted cards and tags, including the ASC-121T card, ISO-30 card, and ASK-116 key tag. The MCR-403 can also read Keri Systems's KC-10X/26X cards, MT-10X/26X cards, and PKT-10X/26X tags. The MCR-403 is intended primarily for use with Indala's 26-bit Wiegand ASP formatted credentials. Due to data structure and frequency incompatibilities, the MCR-403 can not read Indala cards programmed with the ASP+, ECR, or ESP format structures.

	Indala Formats					Keri Systems
	ASP Standard	ASP Custom	ASP+	ECR	ESP	Proximity Format
<b>MCR-403 InStar Reader</b>	Yes 26-Bit Wiegand	Yes <sup>a</sup> non 26-bit Wiegand formats	NO	NO	NO	Yes
<b>Credentials</b>	ASC-121T ISO-30 ASK-116	ASC-121T ISO-30 ASK-116	N/A	N/A	N/A	KC-10X/26X MT-10X.26X PKT-10X.26X

a. For non 26-bit Wiegand formats, place the MCR-403 into Pass-Thru format. The MCR-403 will then output credential data as a 32-bit string of Wiegand formatted data.

The MCR-403 can output card data in either the industry standard 26-bit Wiegand format, or in a "Pass Thru" 32-bit Wiegand format. For further information on the Wiegand format, see the [Pyramid Series Wiegand Data Format](#) document (P/N 01546-002). This document may be downloaded from the Farpointe Data website at [www.pyramidseries.com](http://www.pyramidseries.com). Click on the Support button, then click on the Technical Documentation link. This document is located in the Reference Documentation section.

## 2.0 Cable Requirements

All readers operate with up to 500 feet (152 m) of cable, using seven-conductor<sup>2</sup>, shielded, stranded cable. Per Wiegand specification, AWG 24 (such as Belden 9537) is the minimum gauge required for data transfer in a 500-foot run length. However, the proper wire gauge to use must be determined by the current draw requirements of the reader, the length of the cable run, and the voltage being applied to the reader.

If the reader is to be operated at 5 VDC, 5 VDC must be available at the reader (long cable runs have a voltage drop due to the resistance in the cable). A larger gauge of wire (having less resistance) or a separate power supply near the reader may be required to ensure 5 VDC is available at the reader.

## 3.0 Grounding

Shield (Drain) continuity must run from the reader to the access panel. Shield (Drain) and reader ground must be tied together at the access panel and connect to an earth ground in one place.

## 4.0 Power/Voltage

A reader may be powered by the access panel, so the reader is powered on when the access panel is powered on. However the best case is to power the readers by a separate linear power supply. When powered, verify the voltage at the reader meets the reader's requirements.

- 5 to 14 VDC @ 95 mA typical
- For best results, Farpointe Data recommends 12 VDC

## 5.0 Read Range

Read range is measured in a clean RF and electrical environment using an Indala ASC-121T Proximity Card presented in parallel to the reader surface with the reader operating at 12 VDC. The read range is less for ISO-30 and ADK-116 cards and for readers operating at 5 VDC.

- Read Range - up to 4 inches (10 cm)

Farpointe Data recommends a good quality, regulated, linear power supply be used with all proximity readers. Read range will be reduced if a reader is located in electrical or RF noisy environments such as mounted near a computer monitor, powered by a switching power supply, or in a mounting location lacking a good earth ground.

## 6.0 Reader Wiring

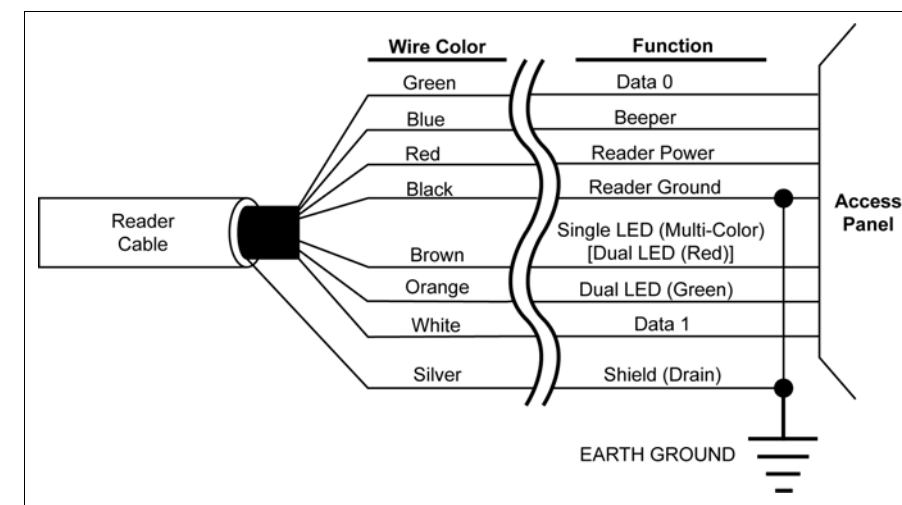


Figure 1: Reader Wiring Connection

## 7.0 Reader Mounting

Three holes need to be drilled to mount the MCR-403 reader (see Figure 2). One large hole (1 inch – 25 mm) accommodates the beeper and reader cable. Two small pilot holes for #6 screws (1/8 inch – 3 mm) are for mounting the reader on the mullion, door frame, or wall surface.

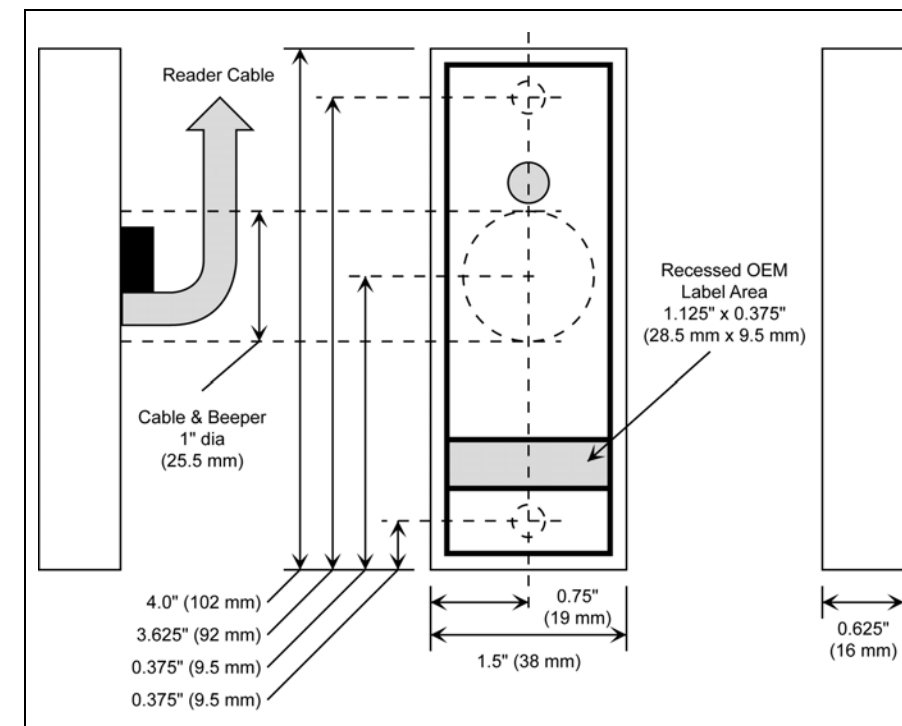


Figure 2: MCR-403 Mounting Diagram

1. This product can be used without license conditions or restrictions in all European Union member countries including Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, and The United Kingdom; as well as other non-EU countries including Iceland, Norway, and Switzerland.

2. Seven-conductor cable is necessary for dual LED, however less may be used with single LED. The P-400 only requires five-conductor cabling (such as Belden 9535).

## 8.0 Control Cards

Control cards are specially coded proximity cards that toggle MCR readers between specified modes of operation. To toggle between modes, simply present the control card to the reader within the first minute of powering the reader. The reader beeps and the LED flashes to indicate the card was read and the reader's operating mode has changed, but no data is sent to the access panel. Control cards must be ordered from your supplier.

### 8.1 MCR LED Mode Control Card

The MCR reader is capable of operating with access panels that can drive a reader's LED with either a single LED control line or with dual LED control lines. The MCR LED Mode Control Card is used to toggle the reader between single and dual LED control lines.

Ensure the reader is wired to the access panel according to the panel's LED wiring requirements. Power up the reader, and within one minute of operation present the LED Mode control card. The LED will flash Red indicating the card has been read. No data is sent to the access panel.

- If the reader is switching TO dual line LED mode, the reader will beep TWICE.
- If the reader is switching TO single line LED mode, the reader will beep ONCE.

### 8.2 MCR Pass Thru Control Card

Indala compatible readers can output card data in either the industry standard 26-bit Wiegand format, or in a "Pass Thru" 32-bit Wiegand format. As Indala's solution is based upon "format matching" technology, the appropriate output format for an MCR reader must be based upon the card's format. The MCR Pass Thru Control Card is used to toggle the reader between output formats.

The MCR-403's default format is matched to Indala's 26-bit Wiegand ASP format. When the Pass Thru format is enabled, the reader will output any ASP-formatted cards' data in a single 32-bit Wiegand string. The 32-bit number outputted by the MCR-403 does not include parity, facility code, or site code information, and the leading bit will always be set to "1."

Ensure the reader is correctly wired to the access panel. Power up the reader, and within one minute of operation present the Pass Thru control card. The LED will flash Red indicating the card has been read. No data is sent to the access panel.

- If the reader is switching FROM 26-bit Wiegand ASP format TO 32-bit Pass Thru format, the reader will beep TWICE.
- If the reader is switching FROM 32-bit Pass Thru format TO 26-bit Wiegand ASP format, the reader will beep ONCE.

## 9.0 Troubleshooting the Reader Installation

Problem	Possible Cause	Corrective Action
<b>The reader does not recognize a credential (no beep, no LED flash).</b>	1. One or more of the reader's wiring connections are incorrect.	• Power down the reader/access panel and verify the wiring connections are correct for the reader/access panel combination.
	2. The reader is not receiving proper power from the access panel.	• Verify the voltage supplied to the reader is between 5 and 14 VDC. <sup>a</sup>
	3. The reader is mounted too close to a device that radiates electromagnetic interference.	• Devices such as computer monitors radiate electromagnetic interference that affects read range. When possible, relocate either the reader or the device to provide a greater distance between the two.
	4. You are using an incorrect type of credential.	• Make sure you are using an access credential that is compatible with the reader.
<b>The reader has a short read range.</b>	1. The reader/access panel is not properly grounded.	• Ensure there is a quality earth ground connection made to the access panel. Refer to the access panel's documentation for information regarding the earth ground connection.
	2. The shield wire for the reader's cable has opened somewhere between the reader and the access panel.	• Verify the shield line from the access panel to the reader is one continuous, connected line. Refer to the access panel's documentation and verify the shield line is correctly connected to the access panel.
	3. The reader is mounted too close to a device that radiates electromagnetic interference.	• Devices such as computer monitors radiate electromagnetic interference that affects read range. When possible, relocate either the reader or the device to provide a greater distance between the two.
	4. The power supply is generating electromagnetic interference.	• The power supply on the access panel must be a regulated linear supply – do not use switching supplies as they are often sources of electromagnetic interference.

a. A supply voltage of 12 VDC at the reader is recommended for best operation.



2177 Leghorn Street  
 Mountain View, CA 94043-1605 USA  
 Tel: +1-650-964-2615 Fax: +1-650-988-6687  
 Web: www.pyramidseries.com  
 E-mail: sales@pyramidseries.com