



CX-8525

**Installation and Operation
Manual**

FCC Compliance: 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Compliance: Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

UL: The reader is intended to be powered from a limited power source output of a previously certified power supply.

CE Compliance: Hereby, Indala, declares that this proximity reader is in compliance with essential requirements and other relevant provisions of Directive 1999/5/EC.

Notice: The CX-8525 reader requires the use of linear, series pass, regulated power supplies. Use of other types of power supply can result in reduced read range. The use of switching power supplies is not recommended.

Do not use the reader's power supply for other equipment, particularly when operating switched inductive loads such as motor control relays and solenoids (i.e., magnetic locks, latch or strike). Doing so will affect the reader operation. Use a separate dedicated power supply for Indala proximity readers.

Because this technology is based on radio frequency and because nearby environmental sources of electrical interference may affect the performance of the reader, below is a list of precautions that should be considered when installing or wiring the reader:

- **Metal affects radio signals. Do not cover the face of the reader with metal of any kind.**
- **Reduce or eliminate unwanted signals from external sources.**
- **Do not place the reader wiring bundled in conduit with AC power cables, lock power, or signal wiring. Where possible.**
- **Maintain all reader wiring a minimum distance of 12" (30 cm) away from other wiring such as AC power, computer data wiring, telephone wiring, or wiring to electric locking devices, etc.**
- **Avoid installing the reader in areas where sources of broad spectrum EMI noise may be present. Examples of EMI broad spectrum noise producers are motors, pumps, generators, AC-DC converters, uninterruptible power supplies, AC switching relays, light dimmers, computer monitors, and CRTs**
- **Do not install the reader within 3.5' (1.1 m) of computer**

Table of Contents

- 1.0 Product Specification 1
- 2.0 Introduction 2
 - 2.1 Features 2
 - 2.2 Theory of Operation 2
 - 2.3 Unpacking and Identifying Supplied Parts 3
- 3.0 Installation 3
 - 3.1 Mechanical Installation 3
 - 3.1.1 Gang Box Mounting (Preferred mounting Configuration) 3
 - 3.1.2 Wall Mounting 3
 - 3.2 Electrical Installation 3
 - 3.2.1 Reader Switch Settings 3
 - 3.2.2 Reader to Host Interface Cable Types and Lengths 4
 - 3.2.3 Earth Grounding 5
 - 3.2.4 Reader to Host Interface Wiring 5
- 4.0 Operation 5
 - 4.1 Presenting the Credential 5
 - 4.2 Data Output 6
- 5.0 Controls and Indicators 6
 - 5.1 LED and Beeper Control 6
- 6.0 Troubleshooting 7
- 7.0 Copyrights, Patents, and Trademark Credits 8
- 8.0 RMA (Return Material Authorization) 8
- 9.0 Contacting Customer Support 8

1.0 Product Specification

➤ Input Voltage:	10 - 14 VDC at reader
➤ Input Current/Power:	
○ Off Metal	75 mA 0.9 W
➤ Power Supply:	
○ Recommendation	Regulated linear power supply
➤ Read Range:	
○ With Indala Flexcard	Up to 5.0" (12.7 cm)
➤ LED Indicator	Three colors standard (red, green, amber)
➤ Audio Tone	Standard, independently controllable
➤ Read Time (26 bit)	200 ms (from read to data output)
	Programming
	Switch selectable:
	10 or 12 digit output
	Unsupervised Magnetic Stripe F/2F
	Supervised Magnetic Stripe F/2F
	Silent Supervised Magnetic Stripe F/2F
➤ Frequency:	
○ Exciter Field	130 kHz
➤ Operating Temperature Range:	-30° C to +65° C (-22° F to +149° F)
➤ Storage Temperature	-40° C to +85° C (-40° F to +185° F)
➤ Material:	Polycarbonate UL 94V0 rated
➤ Weight (typical):	5.1 oz. (144.6 g)
➤ Dimensions:	4.75"H x 2.9"W x .9"T
	(12.07cm x 7.37 cm x 2.29 cm)
➤ Output Formats:	Magnetic Stripe F/2F, Wiegand
➤ Approvals:	UL294/cULus, FCC Certification – United States, Canada Certification, CE Mark-Europe, Australia C-Tick, New Zealand/EMC

Read range is stated in an undisturbed electrical environment, with card presented parallel to reader, and reader installed in accordance with Indala instructions. Power supply, reader, and controller must be on the same ground, connected to earth.

2.0 Introduction

The CX-8525 reader is a modular, miniaturized and rugged low power radio frequency reader designed for applications where Magnetic Stripe F/2F output is required. The CX-8525 reader mounts on a USA standard single electrical gang box or on any flat surface. Reader to host cable, Request to Exit, Door Switch, and LED monitoring is available in Supervised and Silent supervised modes. The CX-8525 reader also includes an internal tamper switch for extra security. Control lines are provided for host control of all three LEDs and the beeper.

2.1 Features

- Immediate audio and visual confirmation of card read, host control not necessary.
- Independently controlled audio tone.
- Three LED indicators. (Red, Green, Amber)
- Switch selectable output formats:
 - 12 digits for legacy systems or 10 digits for current systems.
 - 26 Bit Wiegand
 - Supervised Magnetic Stripe F/2F
 - Silent Supervised Magnetic Stripe F/2F
- Internal Tamper Switch
- Mounting on USA standard single gang electrical box or on any flat surface.
- Indoor/outdoor operation.
- Attractive, contemporary styling.

2.2 Theory of Operation

When the reader is powered, a low-power radio frequency (RF) field is continuously transmitted by the Reader (see Figure 1). When a card is presented within the field of the reader, the microchip, embedded in the card, is activated and transmits a unique identification (ID) number back to the CX-8525 reader. The reader decodes and converts this data to the pre-determined Wiegand, or Magnetic Stripe F/2F output format and sends this code to an external controller through a data cable. With this information, the controller determines what action is to be taken as a response to the card presentation. In Supervised Mode the reader sends a message to the host that contains the status of the Door Switch, Green LED, Request to Exit, and beeper while monitoring the data line for host acknowledgement of message received. During Supervised and Silent Supervised operation, loss of connection with the controller will cause the reader to enter Degraded Mode. Entering Degraded Mode with the reader in Supervised Mode will cause the red LED to flash every two seconds and the Beeper to sound every thirty seconds. Entering Degraded Mode while in Silent Supervised Mode will cause the reader to not respond to card presentation and show no signs that the system has been degraded.

2.3 Unpacking and Identifying Supplied Parts

Unpack the equipment and become familiar with the components. The following list describes the contents of the package.

Package Contents: CX-8525 Reader
Connector pigtail
Exterior mounting gasket
Installation guide

3.0 Installation

3.1 Mechanical Installation

3.1.1 Gang Box Mounting (Preferred mounting Configuration)

The CX-8525 is designed to operate on a single USA gang box. If mounting directly on a metal surface other than a gang box, insert a minimum 3/8" non-conductive spacer between the reader and the metal to prevent interference.

3.1.2 Wall Mounting

To mount the CX-8525 to a wall, drill a 0.375 hole for the reader cable. Feed the cable through the hole. Place the reader against the wall and mark the location for the mounting holes. Drill the proper size mounting holes (for 6-32 screws) at the marked location. Using 6-32 screws attach the reader back plate to the wall. Assemble the reader onto the back plate and install the security screw.

3.2 Electrical Installation

3.2.1 Reader Switch Settings

The CX-8525 reader has several output modes that can be set via the four position switch located on the back of the reader under the back plate. The following table lists the valid switch settings for each reader configuration.

Reader Configuration	SW 1	SW 2	SW 3	SW 4
Unsupervised 10 digit Output	OFF	OFF	OFF	OFF
Unsupervised Legacy 12 digit output	ON	OFF	OFF	OFF
Supervised 10 digit Output	OFF	ON	OFF	OFF
Supervised Legacy 12 digit output	ON	ON	OFF	OFF
Silent Supervised 10 digit Output	OFF	ON	ON	OFF
Silent Supervised Legacy 12 digit output	ON	ON	ON	OFF
Wiegand 10 digit output	OFF	OFF	OFF	ON
Wiegand Legacy 12 digit output	ON	OFF	OFF	ON

3.2.2 Reader to Host Interface Cable Types and Lengths

The CX-8525 reader requires a minimum voltage of 10.0 VDC at the reader. Voltage drops, caused by the cable resistance, can be made up by increasing the power supply voltage. **DO NOT SET THE POWER SUPPLY VOLTAGE TO HIGHER THAN 14 VDC!**

Refer to the table below to determine the recommended wiring type at various maximum distances. Because of system data termination differences, contact your system manufacturer for its exact requirements. Installation should be in accordance with National Electric Code ANSI/NFPA 70.

Cable Type	Maximum Cable Length
24 AWG (0.60 mm), ten conductor, with an overall foil shield, Belden 9540 or equivalent	500' (152 m)
22 AWG (0.80 mm), ten conductor, with an overall foil shield, Alpha 1299/10C or equivalent	500' (152 m)

3.2.3 Earth Grounding

Connect the Power Supply and Controller directly to an earth ground. An earth ground can be established by driving a copper clad ground rod into the earth. Make certain the DC resistance between your established earth ground and the system ground is 50 Ohms or less.

3.2.4 Reader to Host Interface Wiring

The following table lists the connector to host wiring.

Connector Pin	Description	Pigtail Wire Color
1	+12 VDC	RED
2	GROUND	BLACK
3	RED LED CONTROL	CLUE
4	GREEN LED CONTROL	BROWN
5	YELLOW LED CONTROL	ORANGE
6	DATA 0	GREEN
7	DATA 1 / F/2F	WHITE
8	BEEPER CONTROL	VIOLET
9	KEYING PIN	
10	DOOR DIGITAL INPUT	YELLOW
11	REX DIGIAL INPUT	GRAY

4.0 Operation

When power is first applied to the reader, it will flash the red, amber, and green LEDs and sound the beeper once.

4.1 Presenting the Credential

To obtain maximum read range, present the card to the reader keeping the credential parallel to the reader, move it slowly toward the face of the reader until a read confirmation is obtained. This is the point at which the credential is read and the data is transmitted to the controller. To read the credential again, remove it from the antenna field and present it again. During normal use, the credential can be presented to the antenna at any angle, although this will result in a reduced read range.

4.2 Data Output

The CX-8525 reader is capable of outputting either Magnetic Stripe F/2F or Wiegand formatted data. For further information please call technical support at (800) 646-3252 or (408) 361-4700.

5.0 Controls and Indicators

5.1 LED and Beeper Control

- The red, amber, green LEDs and the Beeper can be controlled by grounding their control lines.

Connector Pin	Signal	Pigtail Wire Color
3	Red LED Control Line	Blue
4	Green LED Control Line	Brown
5	Amber LED Control Line	Orange
8	Beeper Control Line	Violet

6.0 Troubleshooting

If the reader does not function properly when installed according to instructions, please complete this form and fax it to (408) 361-4726 before calling (800) 646-3252 for technical assistance. International customers call (408)361-4700:

FAX

From: _____ To: Technical Support
Phone: _____ Date: _____
Fax: _____ Fax: (408) 361-4726
Product S/N: _____ Model: _____
Sales order No. _____ (S/O on Reader label)

Dead Reader

1. Is the reader wired according to instructions? Yes No
2. Is the recommended power supply being used? Yes No
3. Is the DC voltage correct at the reader? Yes, _____ volts No
4. Is the DC current correct? Yes, _____ mA No
5. What is the cable length between the power supply and the reader? _____ feet
6. Is the cable type according to specifications? Yes No

Short Read Range

1. Is the reader wired according to instructions? Yes No
2. Is earth ground connected according to instructions? Yes No
3. Is the cable shield connected according to instructions? Yes No
4. Is the recommended power supply being used? Yes No
5. Is the DC voltage correct at the reader? Yes, _____ volts No
6. Is the DC current correct? Yes, _____ mA No
7. Is there a CRT (computer monitor) nearby? Yes, _____ feet No
8. Is the card presentation according to instructions? Yes No
9. Card model: _____

Data Incorrect or Non-existent

1. At reader power up, did reader exhibit *SelfTest* ? Yes No
2. Upon card presentation, did reader exhibit *QuickFlash* ? Yes No
3. If you answered Yes to question 1 and 2, put the reader into line test mode as detailed in section 7.5 "Verifying Data at Host".
4. Is the reader wired according to instructions? Yes No
5. Is earth ground connected according to instructions? Yes No
6. Is the cable shield connected according to instructions? Yes No
7. Is there a CRT (computer monitor) nearby? Yes, _____ feet No
8. Is the card presentation according to instructions? Yes No
9. What is the reader format? _____ (Can be found on Reader label)

7.0 Copyrights, Patents, and Trademark Credits

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Products are covered by United States patent 4818855, Canadian patent 1253591, and other patents pending worldwide.

8.0 RMA (Return Material Authorization)

Returned merchandise will be accepted at the factory for repair, exchange or credit, at Indala's election, with an approved Return Material Authorization (RMA) number obtained from Indala Customer Service prior to returning any product. The customer is to include serial numbers, formats, card ID numbers, and correct facility codes with the items to be returned. The customer is to provide a description of the specific problem. We require a minimum of 100 cards/tags/transponders for all RMA requests for replacement. This minimum does not apply to "Returns" for Credit Only.

For readers returned and not covered by the warranty (due to age, misuse and/or damage), a quote for repairs will be issued, and no work will be performed until a valid purchase order is received. Readers left over 30 days without a repair authorization and a purchase order will be returned with evaluation charges and shipping costs applied.

9.0 Contacting Customer Support

Please answer all questions in Section 10.0 "Troubleshooting" and have your answers ready before you call the Technical Support number listed below:

Corporate Headquarters

6850 B Santa Teresa Blvd.
San Jose, CA 95119-1205
Tel (408) 361-4700, Main
Tel (800) 646-3252, Technical Support
Fax (408) 361-4726

European Office:

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