

**CASI-RUSCO...*Security Solutions for the 21<sup>st</sup> Century***

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# **Model 110 Magnetic Stripe Reader Installation Guide**

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The customer accepts full maintenance responsibility. (A full scope of software and hardware maintenance contracts are available to the customer.)

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**WARNING**

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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# Introduction

This manual is an installation guide for the Model 110 Magnetic Stripe Reader. The Model 110 Magnetic Stripe Reader is a 12 volt reader that is designed to read magnetic striped badges encoded to an ABA standard on track 2.

As the badge moves through the reader, the magstripe data is decoded as a unique badge ID number. Reading occurs in either “swipe” direction.

Reader outputs the badge ID number in F/2F format. Your micro must be able to support a reader that outputs F/2F format.

## Product Features

The CASI-RUSCO Model 110 Magnetic Stripe Reader offers the following:

- Sealed, rugged, weather-resistant housing for indoor or outdoor use
- Ability to read magnetic stripe badges
- 12V operation
- Can be located up to 1,000 feet from the microcontroller.

# Installation Overview

Recommended installation sequence:

1. Connect the reader. Refer to “Connecting the Reader” on page 3.
2. Mount the reader. Refer to “Mounting the Reader” on page 7.
3. Test the reader. Refer to “Testing the Reader” on page 9.

# Connecting the Reader

Connect the Model 110 to the micro as a 12VDC reader and set the reader type to F/2F using the DIP switches on the appropriate reader board in the micro.

## Reader Pinouts

The table below shows the pinouts for the Model 110 Reader. Refer to the appropriate micro installation guide for details on connecting to the micro.

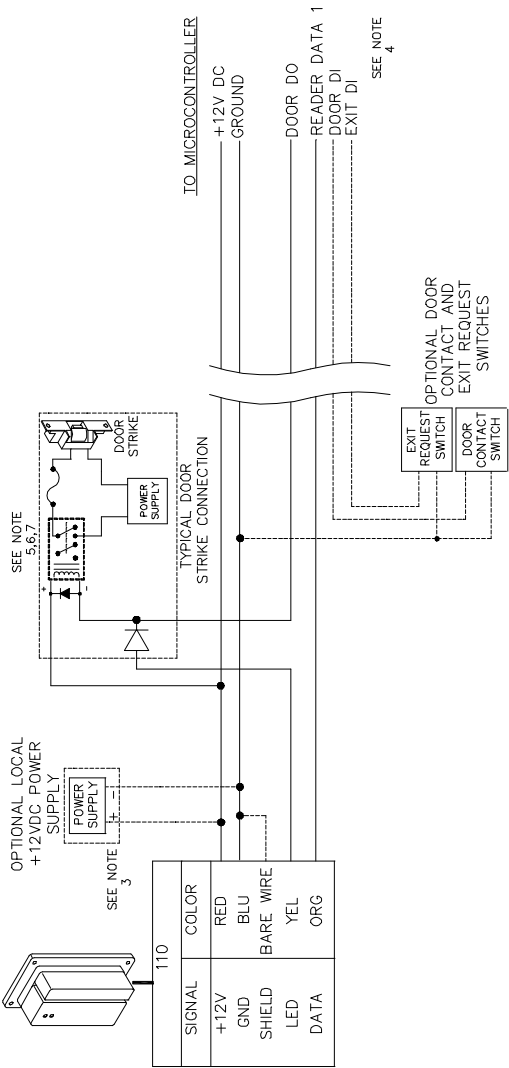
**TABLE 1: Reader Pinouts**

Signal	Wire Color
+12V	Red
Ground	Blue
LED	Yellow
Data	Orange
Shield (Connect to Ground)	Bare wire

## Wiring Diagrams

The following pages contain the diagrams for wiring to a Micro/5, Micro/4, and Micro/2.

FIGURE 1: Wiring Diagram, Model 110 Magnetic Stripe to Micro/5

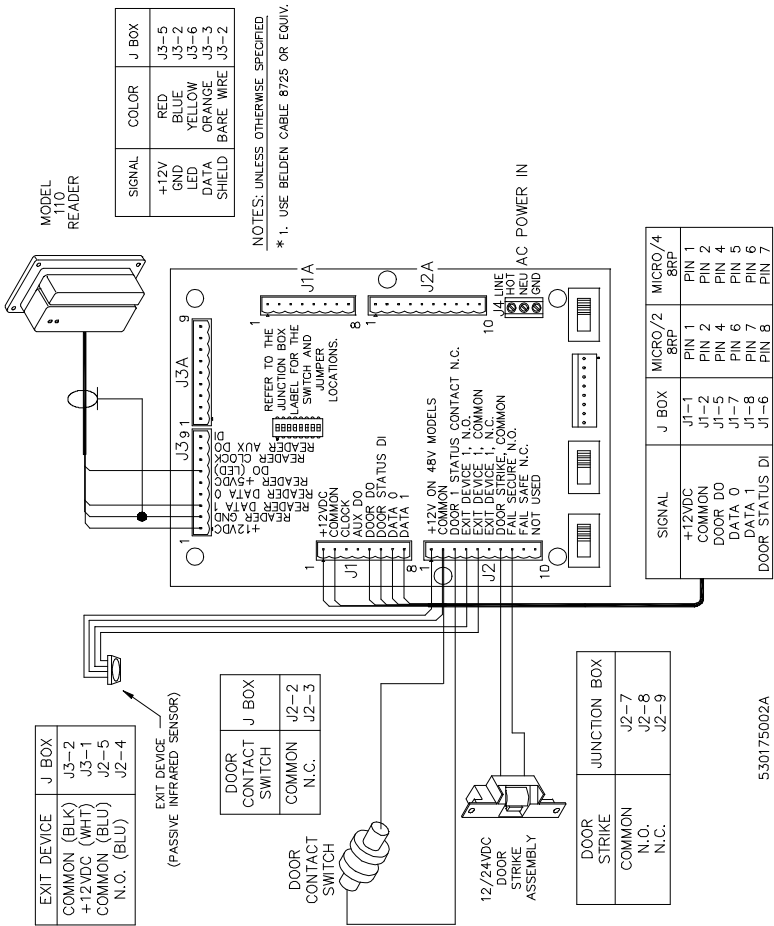




**NOTES (Unless otherwise specified):**

1. Shielded cable is recommended in electrically noisy environments.
2. If using shielded cable, connect all shields together at the micro end. No shield connections at the reader.
3. If using a local power supply, do not connect +12V line from the microcontroller to the reader. However, the negative side of the power supply must be connected to the micro (pin 2 on the reader port). The power supply to reader wiring distance must be less than 50 feet.
4. Refer to the appropriate system manual to determine whether this connection is required for door switch operation.
5. Blocking diodes may be 1N4148 or similar (installer supplied) and located in a secured area.
6. Protection diodes may be 1N4002, 1N4003, or 1N4004 (installer supplied) for the door strike assembly.
7. Fuse, power supply, door strike, and relay are installer supplied.

**FIGURE 2: Wiring Diagram, Model 110 Magnetic Stripe to Micro/2 or Micro/4**



# Mounting the Reader

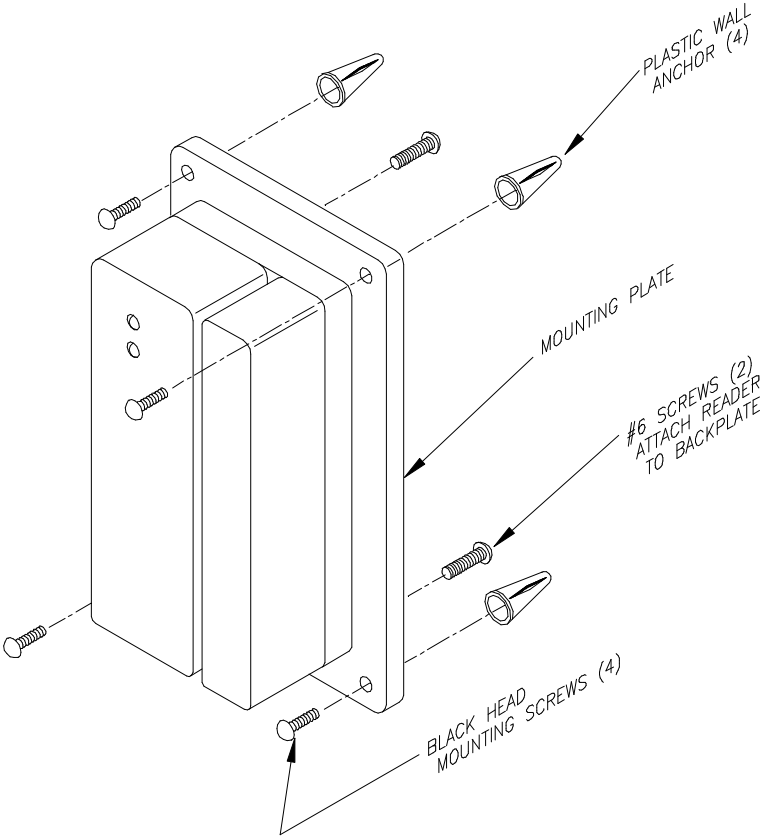
## Guidelines

1. The Model 110 can be mounted on any hollow wall.
2. Depending on the configuration of your system, refer to Figure 1, “Wiring Diagram, Model 110 Magnetic Stripe to Micro/5,” on page 4 or Figure 2, “Wiring Diagram, Model 110 Magnetic Stripe to Micro/2 or Micro/4,” on page 6 for the appropriate recommended wiring instructions.
3. Attach the reader backplate to the wall with four screws (supplied).

## Hardware Requirements

1. One each (installer-supplied) diode 1N4004 for DC powered door strike and relay.
2. Installer-supplied power supply for door strike.
3. Junction box, when no 12VDC source is available for door strike.

**FIGURE 3: Mounting for the Model 110 Magnetic Stripe Reader**



# Testing the Reader

Follow the steps below to verify that the reader is working correctly.

1. Check all cabling and electrical connections from the reader to the microcontroller.
2. Verify that the microcontroller is properly configured. Refer to the appropriate CASI-RUSCO microcontroller manual.
3. Select two (2) test badges encoded with known badge identification numbers. Set the CASI-RUSCO system for one of the badges to be valid, and the second badge to be invalid (suspended, overdue, or lost).
4. Check that the door controlled by the reader is locked. Swipe the valid badge through the reader. The green LED will light immediately indicating a valid badge read. The green LED remains on as long as the door DO remains active (to indicate activated door strike).
5. Check that the door controlled by the reader is locked. Swipe the invalid badge through the reader. The system will not unlock the door.

# Technical Specifications

**Operating Temperature Range:** -40° F to 185° F (-40° C to 85° C)

**Humidity Range:** 5% to 95%, non-condensing

**Physical Dimensions:** 2.75 in (H) x 5.5 in (W) x 1.75 in (D)

70 mm (H) x 140 mm (W) x 45 mm (D)

**Power Requirements:** 12VDC at a nominal current of 85 mA (maximum 150 mA).

**Color:** Black

**Badge Specifications:** ABA track 2 at 75 bits/inch

The thickness of the badge must be kept within a range of 0.010 inches minimum and 0.045 inches maximum.

**Cabling:** CASI-RUSCO recommends Belden 8725 (or equivalent). Maximum distance from the micro to the reader is 1000 feet. One end of the cable shield must be grounded at the microcontroller, using grounding posts provided inside the cabinet. The other end must be floated at the reader. This method of grounding ensures a low impedance shunt path for any high frequency noise induced on the data or power lines to the reader.

**Pigtail Length:** Approximately 3 feet

## Parts List:

- Model 110 Magnetic Stripe Reader
- Plastic backplate, black
- Mounting hardware

Refer to the CASI-RUSCO Product Catalog for part numbers and ordering information.

# Functional Specifications

The Model 110 Reader's weatherproof black housing can be flush mounted to a wall surface for either a vertical or horizontal swiping motion.

**Product Operation:** When a valid badge is swiped successfully through the reader, the green LED lights, and the door strike is released. The red LED is power on only.

**Standard Features:** The Model 110 Reader can read magstripe badges encoded on track 2 using ABA standard 75 bits/inch.

**Compatibility:** Interfaces to all CASI-RUSCO systems.

**Output:** F/2F format

**Character String Length:** The Model 110 will send the exact number of digits read from the magstripe including any check digits. The maximum number of digits will be 18. It is necessary to verify that the magstripe format that is to be used will work correctly with the CASI-RUSCO micro and CASI-RUSCO host software. Note **Picture Perfect** and Micro/5-PX or Micro/5-PXN microcontrollers will support up to 16 digits.

**Indicators:** One red LED, one green LED

## **NOTES**



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