
Model 551 Bar Code Swipe 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 551 Bar Code Swipe Reader. The Model 551 Bar Code Swipe Reader is a 12 volt reader that is designed to read and decode fixed format bar codes.

As the badge moves through the reader, the bar code pattern is decoded as a unique badge ID number. Reading occurs in either “swipe” direction for two popular bar codes: code 3 of 9 and Interleaved 2 of 5 (for recommended bar density, refer to page 10 for badge specifications).

Reader output will be F/2F format. Refer to the appropriate microcontroller manual for microcontroller switch settings.

Product Features

The CASI-RUSCO Model 551 Bar Code Swipe reader offers:

- Sealed, rugged, weather-resistant housing for indoor or outdoor use
- Ability to read bar code badges
- 12 V operation

When using a Micro/2, Micro/4, or Micro/5, the Reader:

- Can be mounted using a single gang box supplied by the installer
- Can be located up to 1,000 feet from the microcontroller.

Installation Overview

The following is a recommended sequence of steps for installing and setting up the reader.

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

Connecting the Reader

Connect the Model 551 to the micro as a 12 VDC reader and set the reader type to F/2F using the DIP switches on the appropriate reader board in the micro. Refer to the appropriate micro installation guide for details.

Pinouts

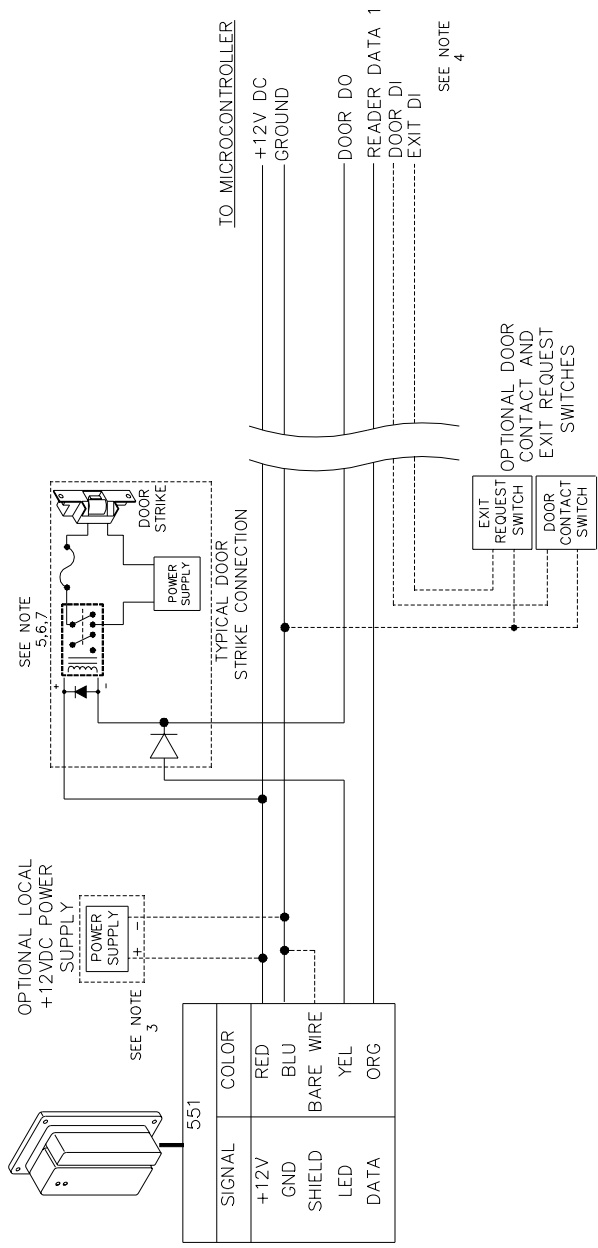
The table below shows the pinouts for connecting the reader to the microcontroller.

TABLE 1: Pinouts

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

Wiring Diagrams

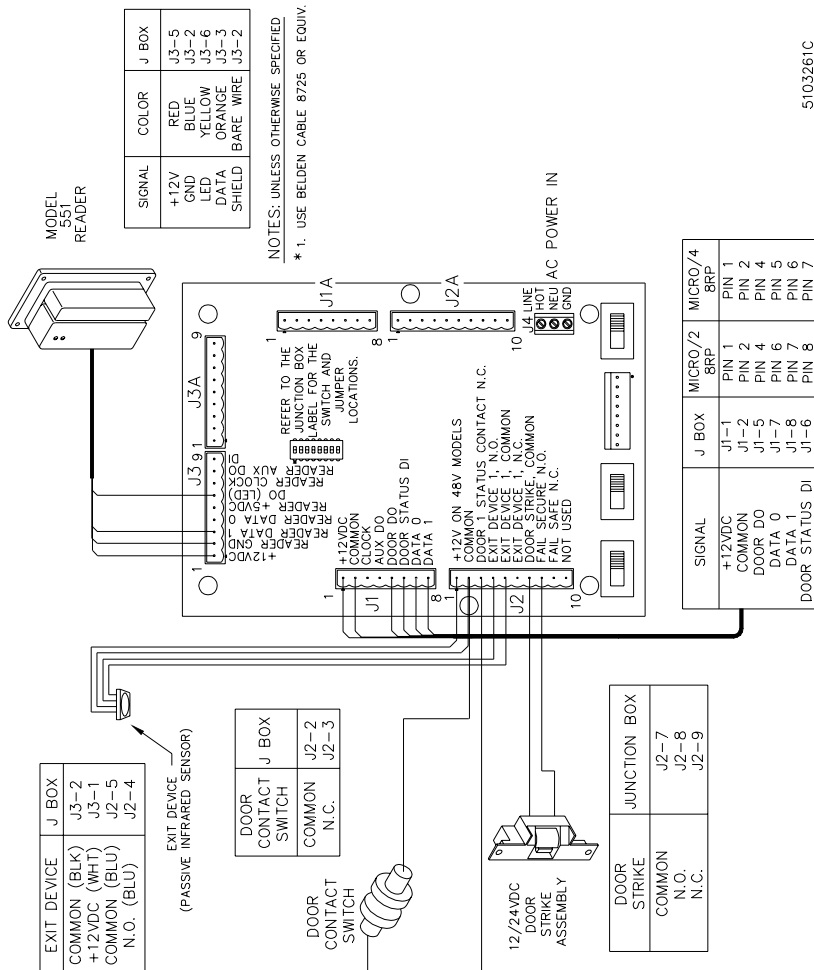
FIGURE 1: Wiring Diagram, Model 551 Bar Code Swipe to Micro/5



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 +12 V 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). Keep the wiring from power supply to reader 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, supplied by the installer 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 provided by the installer.

FIGURE 2: Wiring Diagram, Model 551 Bar Code Swipe to Micro/2 or Micro/4



Mounting

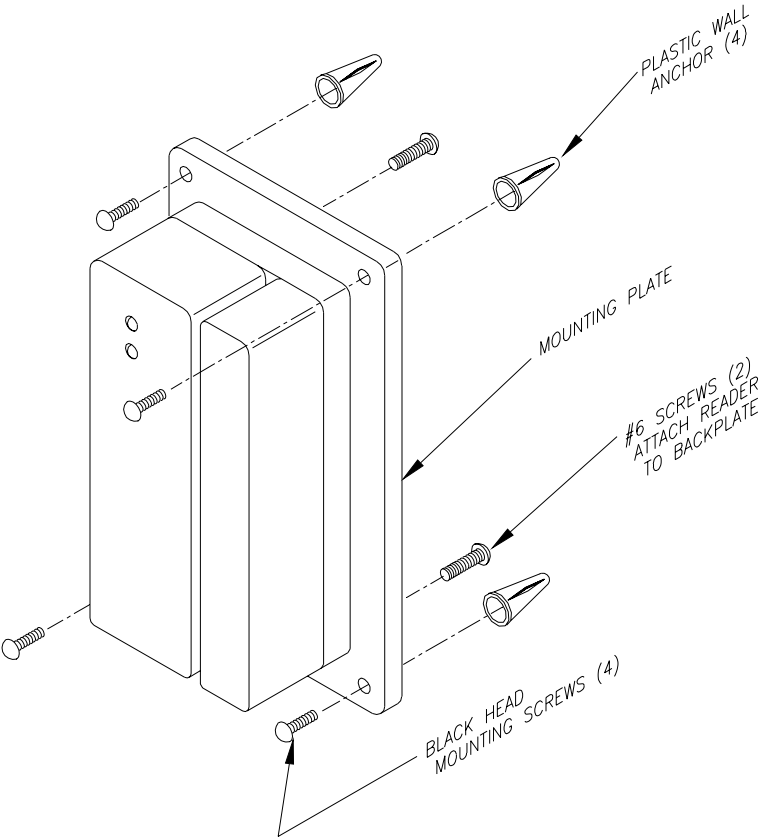
Guidelines

1. The Model 551 can be mounted inside any hollow wall with a rigid mounting box.
2. Depending on the configuration of your system, refer to Figure 1, “Wiring Diagram, Model 551 Bar Code Swipe to Micro/5,” on page 4 or Figure 2, “Wiring Diagram, Model 551 Bar Code Swipe to Micro/2 or Micro/4,” on page 6 for the appropriate recommended wiring instructions.
3. Attach the reader housing to the rigid mounting box with two screws (installer-supplied). If direct wall surface mounting is preferred, securely mount the Reader using #4 screws. For direct wall surface mounting, wall panel thickness must be at least 0.125 inches.

Hardware Requirements

1. Installer-supplied rigid mounting box for installation in hollow walls.
2. One each (installer-supplied) diode 1N4004 for DC powered door strike and relay.
3. Installer-supplied power supply for door strike.
4. Junction box, when no 12 VDC source is available for door strike.
5. Mounting hardware, as required.

FIGURE 3: Mounting for the Model 551 Bar Code Swipe 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 imprinted with known bar code 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 bar code. The green LED remains on as long as the door DO remains active (to indicate access authorization) and the system will unlock the door.
5. Check that the door controlled by the Reader is locked. Swipe the invalid badge through the Reader. The green LED lights momentarily to indicate the bar code was read correctly. 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:

2.4 in(H) x 4.6 in(W) x 1.4 in (D)

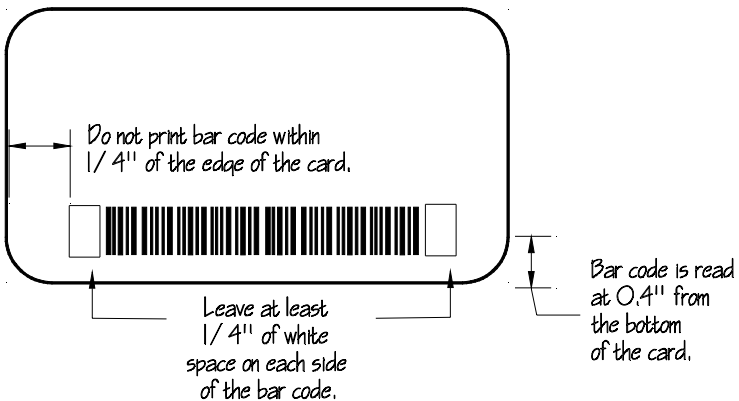
61 mm (H) x 117 mm (W) x 36 mm (D)

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

Color: Black

Badge Specifications:

FIGURE 4: Positioning the Bar Code on the Badge



- For standard high-resolution readers, use an x-dimension of approximately 10 mils (size of small bar).
- Infrared-readable bar codes should be printed to be readable at 940nm wavelength. Dot-matrix printers must use carbon-content ribbons in order to produce infrared-readable codes.

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

The optical system used in the reader is designed to decode bar code symbols with minimum bar and space widths of 0.013 inches. Read rate will be significantly reduced by bars and spaces not complying with this specification.

Character Quality and Density: High quality printing methods must be used to print bar code symbols on the badge. Laser jet print is readable. Do **not** use dot matrix print. All characters must be numeric. Do **not** use alpha characters.

The recommended bar code symbol density for Code 39 (3 of 9) is five (5) characters per inch. For Interleaved 2 of 5, recommended density is nine (9) characters per inch.

Deviation from these specifications will result in poor or no recognition of the bar code character string.

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.

Reader Components:

Model 551 Bar Code Swipe Reader Assembly Kit, P/N 430131001

Functional Specifications

The Model 551 is of contemporary design. Its 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 551 Reader can read either visible bar codes or bar codes covered with a security strip (Dataguard) that prevents photocopying of the bar code.

Compatibility: The Model 551 Bar Code Swipe Reader is a 12 volt reader and can be added to any Micro/2, Micro/4 or Micro/5 controller.

Output: F/2F format

Character String Length: The 551 will send the exact number of digits read from the bar code including any check digits. The maximum number of digits will be 18. It is necessary to verify that the bar code format that is to be used will work correctly with the CASI-RUSCO micro and CASI-RUSCO host software.

In general, if the bar code number and its check digit (if any) is between 4 and 12 digits long, the badges should work on any combination of micros and host software. The Picture Perfect host and Micro/5-PX or Micro/5-PXN will support up to 16 digits.

NOTE: The check digit will appear on the host as part of the badge number.

Indicators: One red LED, one green LED

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