

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

---

# **Model 100/101 Wiegand Swipe Reader Installation Guide**

---



**1155 Broken Sound Parkway NW  
Boca Raton, Florida 33487  
(561) 998-6100**

Part Number: 460385001 Rev. A  
September 1998

**This publication may contain examples of data reports used in daily business operations. Examples include fictitious names of individuals and companies for illustration only; any similarity to names and addresses of actual business enterprises and persons is entirely coincidental.**

**This document is distributed on an *as is* basis, without warranty either expressed or implied. Successful implementation depends solely upon the customer's ability to integrate each product into the total inventory of "in-house" products. While each offering has been reviewed for its compatibility and maintainability, no assurance of successful installation can be given.**

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

Copyright 1998 CASI-RUSCO  
All Rights Reserved  
Printed in the USA

<p><b>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.</b></p>
--

# Contents

Introduction .....	1
Product Features .....	1
Installation Overview .....	2
Connecting the Reader .....	3
Pinouts .....	3
Wiring Diagrams .....	3
Mounting .....	8
Guidelines .....	8
Hardware Requirements .....	8
Testing the Reader .....	10
Technical Specifications .....	11
Functional Specifications .....	12

# Figures

Figure 1:   Wiring Diagram, Model 100 Wiegand Swipe  
              to Micro/5 ..... 4

Figure 2:   Wiring Diagram, Model 101 Wiegand Swipe  
              to Micro/2 or Micro/4 ..... 6

Figure 3:   Mounting Template for the Model 100/101 Wiegand  
              Swipe Reader..... 9

# Introduction

This manual is an installation guide for the Model 100/101 Wiegand Swipe Reader. The Model 100/101 is designed to read the binary encoded pattern of Wiegand wires embedded in an access badge. The badge is read by sliding the badge through the reader badge slot. The reader will produce a corresponding logic level pulse train at its outputs as the card is passed through the slot. A single red LED is illuminated when the reader is powered on. The LED remains red upon an invalid badge read. This LED changes to green to indicate a valid badge read. Reader power is provided by the microcontroller.

The Model 101 Reader includes an amp card for interfacing with Micro/4 or Micro/2 systems without a junction box.

## Product Features

The CASI-RUSCO Model 100/101 Wiegand Swipe Reader offers:

- Sealed, rugged, weather-resistant housing for indoor or outdoor use.
- Flat-surface or vertical mounting secured with two #10 fasteners.
- Maintenance-free operation.
- Simple installation.
- Simple operation.
- Dependable, long-life service.
- Bi-color LED status indicator.
- If “local” powered (instead of micro), voltage can be 5 to 12 volts.

# 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 8.
3. Test the reader. Refer to [“Testing the Reader”](#) on page 10.

# Connecting the Reader

Connect the Model 100 to the micro as a 5V reader and set the reader type to the appropriate Wiegand badge format 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.

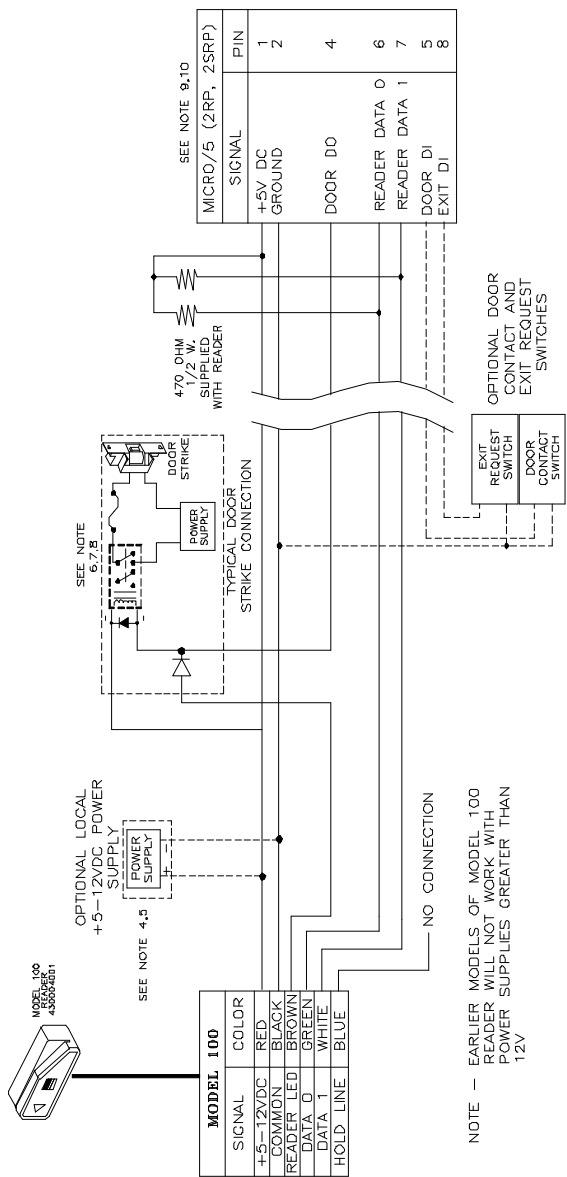
**TABLE 1: Pinouts**

Signal	Wire Color
5 to12 volts DC	Red
Ground	Black
LED	Brown
Data 0	Green
Data 1	White
Hold	Blue

## Wiring Diagrams

Refer to the following pages for wiring diagrams to [Micro/5](#) and [Micro/2](#) or [Micro/4](#).

FIGURE 1: Wiring Diagram, Model 100 Wiegand Swipe to Micro/5



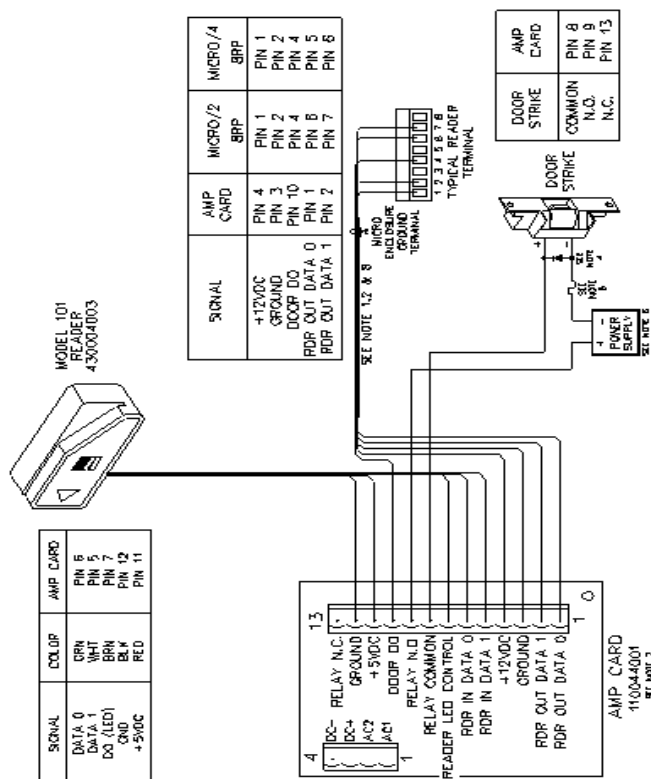
510291004A



Notes: Unless otherwise specified:

1. Shielded cable is recommended in electrically noisy environments. Belden 8725 or equivalent cable is recommended.
2. If using shielded cable, connect all shields together at the micro end. There should be no shield connections at the reader.
3. Maximum recommended cable length is 500 feet.
4. Local power supply may be used in cases of excessive voltage drop through cables. This may be caused by excessive cable length or smaller-than-recommended wire gauge.
5. If using local power supply, do not connect the 5V line from the microcontroller to the reader. However, the negative side of the power supply must be connected to the micro ground. Keep wiring from the power supply to the reader less than 50 feet.
6. Blocking diodes may be 1N4148 or similar (installer supplied) and located in a secured area.
7. Protection diodes may be 1N4002, 1N4003 or 1N4004 (installer supplied) for the door strike assembly.
8. Fuse, power supply, door strike and relay are provided by the installer.
9. This reader cannot be used with a Micro/5 8RP board since it is a Wiegand type reader.
10. The Model 100/101 WILL NOT function as a 12V reader. The Micro/5 reader board must be set to 5V function. Refer to the *Micro/5 Installation Guide*.
11. Reader Data 0 and reader Data 1 should not be paired in cable.

**FIGURE 2: Wiring Diagram, Model 101 Wiegand Swipe to Micro/2 or Micro/4**



510261003A

**Notes: Unless otherwise specified:**

1. Shielded cable is recommended in noisy environments. Belden 8725 or equivalent cable is recommended.
2. If using shielded cable, connect all shields together at the micro end. There should be no shield connections at the reader.
3. Maximum recommended cable length is 1000 feet.
4. Protection diodes may be 1N4002, 1N4003 or 1N4004 (installer supplied) for the door strike assembly.
5. Install a one-amp fuse (installer supplied).
6. Power supply to be provided by installer/customer.
7. Amp card is included with the Model 101 Reader.
8. Reader Data 0 and reader Data 1 should not be paired in cable.

# Mounting

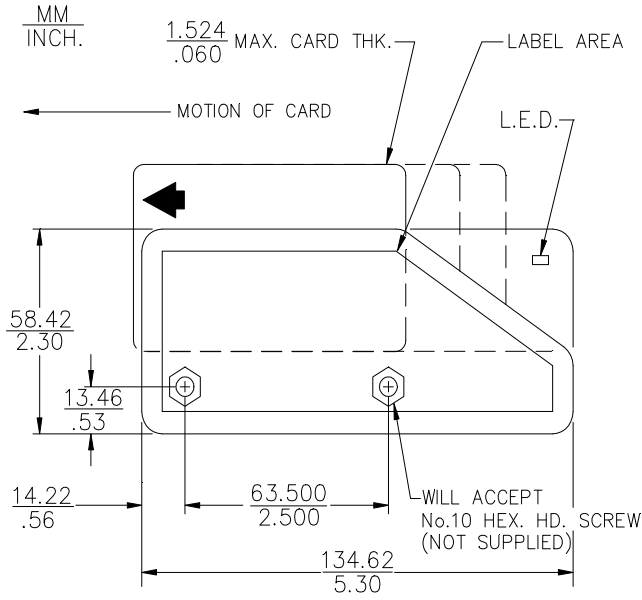
## Guidelines

1. The Model 100/101 can be mounted directly onto a wall for vertical use.
2. Depending on the configuration of your system, refer to [Figure 1, “Wiring Diagram, Model 100 Wiegand Swipe to Micro/5,”](#) on page 4 or [Figure 2, “Wiring Diagram, Model 101 Wiegand Swipe to Micro/2 or Micro/4,”](#) on page 6 for the appropriate recommended wiring instructions. If wiring a Model 100 Reader to a Micro/2 or Micro/4 system using a junction box, refer to the appropriate installation manual.
3. If direct wall surface mounting is preferred, securely mount the reader using #10 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. Mounting hardware, as required.

**FIGURE 3: Mounting Template for the Model 100/101 Wiegand 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 with known validity. 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 LED turns green immediately indicating a valid bar code. The LED stays green 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 LED turns green momentarily to indicate the bar code was read correctly. The system will not unlock the door.

# Technical Specifications

**Operating Temperature Range:** -40° C to +70° C

**Humidity Range:** 5% to 95%, noncondensing

**Physical Dimensions:** 2.3 inches (58mm) x 5.36 inches (135mm) x 1.7 inches (43mm)

**Power Requirements:** 5 to 12 volts DC at maximum 30 mA

**Color:** Black

**Badge Specifications:** Up to 0.060mm (suggest 0.055mm or less)

**Cabling:** CASI-RUSCO recommends Belden 8725 (or equivalent). Maximum recommended distance from the micro to the reader is 500 feet. With a junction box or amp card (supplied with Model 101 Reader), the maximum distance is 1000 feet. Using smaller gauge wire will result in shorter maximum distance. 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.

## Parts List:

- Model 100/101 Wiegand Swipe Reader  
Assembly Kit ..... P/N 430004001
- Model 101 Wiegand Swipe Reader  
Assembly Kit with Amp Card ..... P/N 430004003

# Functional Specifications

The Model 100/101 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:** The reader contains a digitally buffered circuit in which the bi-polar readhead signal is separated into discrete 1 and 0 data outputs. When a valid badge is swiped successfully through the reader, the LED turns green, and the door strike is released.

**Standard Features:** The Model 100/101 Reader can read any Wiegand format badge.

**Compatibility:** The Model 100/101 Wiegand Swipe Reader is a 5V reader and can be added to any Micro/2 or Micro/4 system using an amp card or junction box or any Micro/5 with a 2RP or 2SRP board.

**Output:** Wiegand format

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

**Security:** The readhead and circuitry are fully encapsulated providing tamper and environmental security.

**Power Requirements:** The Model 100/101 Wiegand Swipe Reader is a 5V reader and will also function with a supply voltage of up to 12 volts. However, because the data 0 and data 1 lines are clamped to 5 volts, it will not function as a 12V reader. An amp card or junction box must be used with Micro/2 and Micro/4. The Micro/5 reader board must be set for the 5V function.

**Indicators:** One single bi-color (red/green) LED.



## **NOTES**

## **NOTES**