

EM Reader Installation and Operation Guide

1.0 Overview

1.1 Introduction

The EM Reader is designed to read and report EM compatible 4000 and 4100 series “read only” credentials in 26 bit Wiegand format. The reader supports credentials programmed in either F/32 or F/64 data rates and data coded as Manchester. A bi-color LED and beeper provide visual and audible confirmation of power and data delivery to the host.

1.2 Unpacking and Identifying Supplied Parts

Unpack the contents and become familiar with the components. The following items will be included with the EM readers:

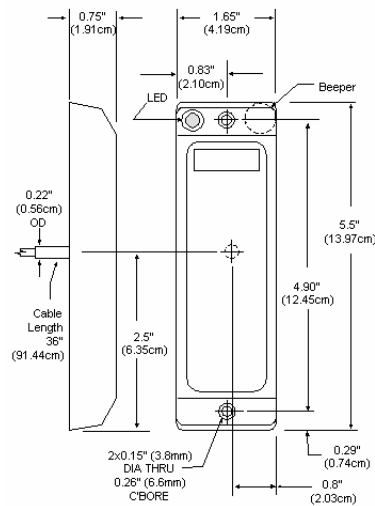
1. Installation guide
2. EM Reader
3. Housing label cover

2.0 Installation

2.1 Mechanical Installation

2.1.1 Mounting

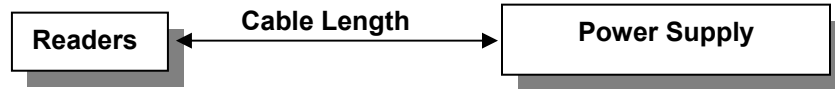
EM readers mount to a door frame by drilling two holes sized for 6-32, or M-3 sheet metal or thread-forming screws 4.92” (125mm) separation. Locate and drill a 0.375” (0.95 cm) hole for the reader cable. See drawing below for details.



Route the cable through the center hole to the controller. Using the two 6-32 or M-3 screws attach the reader to the two mounting holes.

2.2 Power Supply Cable Types and Maximum Lengths

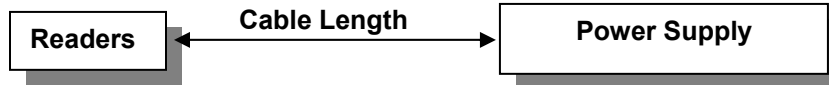
The EM Reader requires a minimum voltage of 8.0 VDC. Voltage drops caused by the cable resistance, can be made up by increasing the power supply voltage (*DO NOT SET THE POWER SUPPLY VOLTAGE TO HIGHER THAN 14 VDC*). The following are the recommended cable types and maximum cable lengths for cable connecting the power supply to the reader (*DO NOT USE CABLES WITH GAUGES SMALLER THAN 24 AWG*):



Cable Type	Maximum Cable Length
24 AWG (0.60mm), three conductors, with an overall foil shield, Belden 9533 or equivalent.	200' (61 m)
22 AWG (0.80mm), two conductors, with an overall foil shield, Alpha 5192 or equivalent.	300' (91 m)
18 AWG (1.20mm), two conductors, with an overall foil shield, Alpha 5836 or equivalent.	500' (152 m)

2.2.1 Reader to Host Interface Wire Types and Lengths

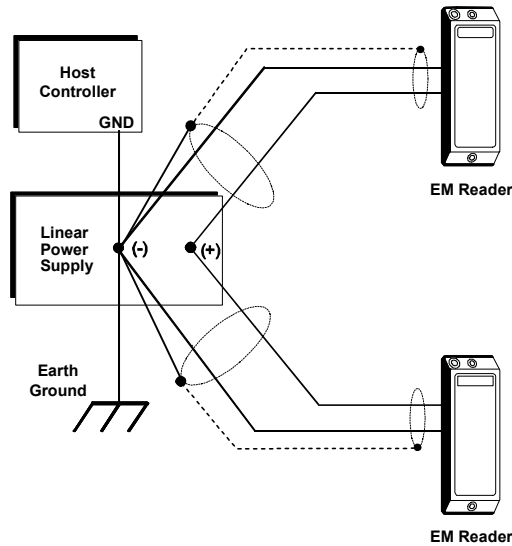
Refer to the table below to determine the recommended wiring type at various maximum distances. Variation in distance requires different wire gauges, Because of system data termination differences, contact your system manufacturer for its exact requirements, Installation to be in accordance with National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



Cable Type	Maximum Cable Length
22 AWG (0.80mm), six or eight conductor, with an overall foil shield, Alpha 5196, 5198 or equivalent.	500' (152 m)
18 AWG (1.20mm), six or eight conductor, with an overall foil shield, Alpha 5386, 5388 or equivalent.	500' (152m)

2.3 Electrical Installation

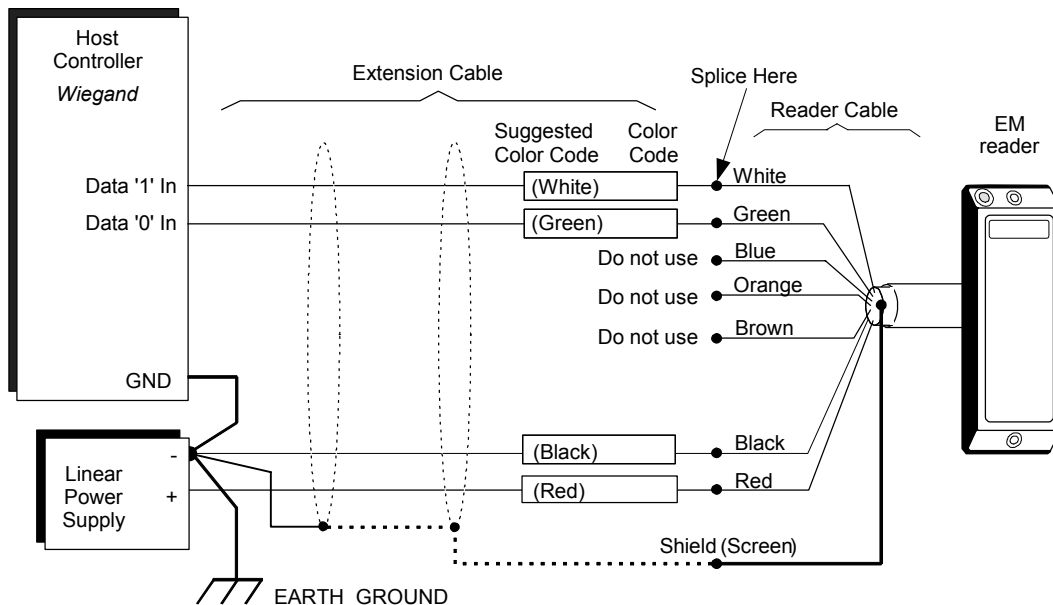
2.3.1. Grounding



Connect the reader 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. If direct connection to a ground rod is not possible, connect the reader to an earth-grounded cold water metal pipe (*do not connect to copper fire sprinkler system because it may have non-conductive couplings*) or steel frames (*building beams*) that connect to earth.

In single or multiple reader installations, connect all readers to a single earth ground reference point.

2.3.2. Reader to Host Interface Wiring



Notes:

- The system must have a single earth ground point.

- The Shield wire is not terminated within the reader.

3.0 Operation

When power is first applied to the reader, it performs an internal circuit *check*. If it is functioning properly, the reader will flash the Green LED, beep three times, enter ready mode, and display the Red LED.

3.1 Presenting the Card

To obtain maximum read range, present the card to the reader (keeping the card parallel to the reader), and move it toward the face of the reader until the reader beeps and flashes. This indicates that the card has been read and data has been transferred to the host.

Data Output

The Reader outputs in 26-bit Wiegand format only.

4.0 Specifications

Operating Voltage Range.....	8 VDC – 14 VDC
Absolute Maximum.....	14 VDC
Average Current VDC (maximum).....	80 mA
Read and Report Speed (Wiegand).....	500 mSec
Wiegand Data Pulse Widths.....	20µSec -- 100µSec (40.5µSec default)
Wiegand Data Interval.....	200µSec --10mSec (2mSec default)
Any Card Lockout Delay.....	500 mSec

5.0 Regulatory

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.