

Specifications

INPUT:

Magnetic Stripe Cards, high or low coercivity, EMPI I, EMPI II or ABA format.

CARD SIZE:

CR-80, 2.125" x 3.375" x .030", Track 1 or 2
(53.97mm x 85.73 mm x 0.762 mm)

CR-60, 2.328" x 3.250" x .030", Track 1 or 2
(59.13 mm x 82.55 mm x 0.762 mm)

OUTPUT:

Standard Wiegand 5-wire format with optional second LED control line.

DISTANCE:

200 feet (61 m) with #22 AWG wire (0.325 mm)
500 feet (153 m) with #18 AWG wire (0.823 mm)

TEMPERATURE RANGE:

-31° to 150°F (-35° to +66°C)

POWER:

35 mA at 5 VDC

READ SPEED:

8 to 50 IPS in either direction.

DIMENSIONS:

Reader : 6.00" (L) x 1.35" (H) x 1.75" (W)
(152.4 mm x 34.29 mm x 44.45 mm)

Adapter Plate: 7.00" (L) x 2.75" (W)
(177.80 mm x 69.85 mm)

LED:

Two Colors - Red and Green

FCC Compliance Statement:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

□ 3110-6444 W/P P /T Reader, White

□ 3110-6445 W/P P /T Reader, Black

□ 3110-6446 W/P P /T W/heater bar Reader, White

□ 3110-6447 W/P P /T W/heater bar Reader, Black

□ 3110-6448 W/P P /T Connectorized Reader, White

□ 3110-6449 W/P P /T Connectorized Reader, Black

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Card Reader kit consists of:

1-Reader assembly
1-Installation Kit 2270-0018 or 2270-0611
1-Instructions 2280-3961
1-Instructions 2280-4189
(For Heater, Model 6446 or 6447)

General

The Model 644 Pass-Through Reader Card Reader reads magnetic stripe cards that have been encoded with EMPI I or EMPI II encrypted card numbering format or standard ABA numbering format.

Cards are read in either direction and the information transmitted to any host access controller that can supply a 5 VDC operating voltage to the reader, and that can accept the standard Wiegand 26 or 34-bit format or Clock and Data format. The card reading slot of the Model 644 Reader is set at an angle to match the natural angle of the wrist when holding a card. This angle must be considered when mounting the reader for maximum user convenience.

The reader can be wall or door frame mounted, horizontal or vertical, to suit the user.

The 644 card readers are **weather resistant**, although they should be mounted to preclude ice build up. The 6446 and 6447 have a heater bar to help prevent ice build up.

The **644-S Custom Reader** will have a prom that will read a custom ABA format

Before Installing

1. Reader installation and wiring must conform to applicable local codes, ordinances, and regulations.
2. The host controller must supply 5 VDC operating voltage to the reader. The voltage as measured at the reader must be between 3.2 to 5.5 VDC.
3. The maximum recommended reader distance from the host is:
 - 200 feet (61 m) with #22 AWG 6-wire cable
 - 500 feet (153 m) with #18 AWG 6-wire cableUnshielded wire is acceptable, however some host controllers require tighter standards.
4. Reader options are selected by a rotary switch located on the front of the reader circuit board.
5. With EMPI cards, the proper 8 or 16-bit "Comparison Number" must be entered into memory of the host access controller (similar to a site or facility code). These numbers, as well as the "Job Code" number used when reordering EMPI Cards, will be found printed on the label of your EMPI Card carton. Details are found in the Comparison Number Check Section.

Mounting

1. Mount the reader either horizontally or vertically on:
 - A single-gang handy box.
 - A flat surface (wall, etc.) with or without the adapter plate.
 - On a structural door frame (mullion).
2. When mounting, consider the angle of the reader card slot in relationship to the natural angle of the wrist when holding the card. This usually means the card slot points away from the door. As an example, if mounted on the right side of a door the slot points right of away from the door. If mounted on the left the card slot points left. On a horizontal mounting, the card slot can point either up or down dependent upon user convenience and height from the floor. Typical mounting and recommended reader height from the floor is shown in FIG 1.

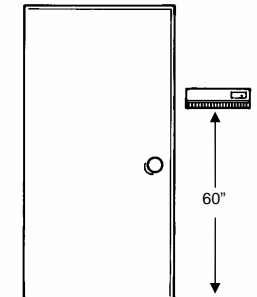
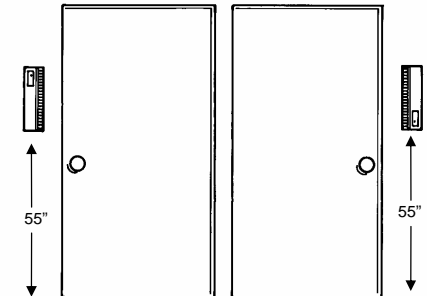


Figure
1

3. The reader base plate determines which direction the reader card slot will point. If the reader base plate is mounted with its release latch down, the reader card slot will point left. If mounted up, the reader slot points right.

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REV B.2
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Comparison Number Check

- When using the EMPI I or EMPI II encrypted card format, each user organization, or location is assigned a unique sequential number called a "Job Code" which is used to administer that card account and to reorder cards.
- The "Job Code" is also used to generate a unique, random, never repeated elsewhere, 16-bit number. For added security, this number and the card ID number is encoded on the EMPI Card in an encrypted format. When the EMPI Card is read, the reader converts this number into the "Comparison Number".
- If the host controller accepts 34-bits, enter into host memory the full 16-bit "Comparison Number" found on the label of your EMPI Card carton.
- If the host controller accepts 26-bits, enter into host memory the 8-bit "Comparison Number" found on the label of your EMPI Card carton.

Installation Instructions

CAUTION

Before touching any internal reader parts, touch a grounded surface to discharge static electricity from your body.

- Mount the adapter plate, or the reader base plate to a suitable flat surface or handy box considering both height from the floor and the reader card slot angle for user convenience.
- The adapter plate is generally used in wall mounting but can be omitted if space is limited. See FIG 2.

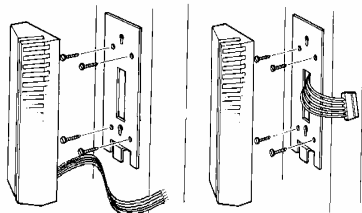


Figure 2.

- When required, use either the adapter plate or base plate as a template to establish drill hole locations. If using the #6-32 self-tapping sheet metal screws provided, use a 3/32" diameter drill. If desired, suitable molly fasteners, etc., (not provided) can be used. Use the center rectangular hole in the plate as a guide to remove sufficient material for wire and connector clearance. See FIG 3.

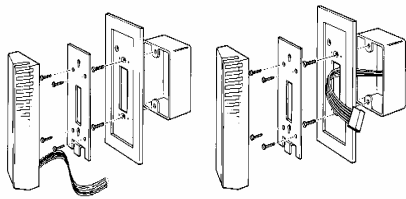


Figure 3.

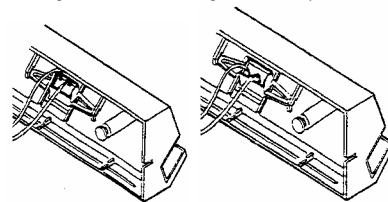
- Pull an appropriate length and gauge of 5 or 6-wire conductor cable between host and reader (or connector).
#22 AWG up to 200 feet
#18 AWG up to 500 feet
- Connectorized - Models 6448 and 6449**
Connect the wires of the 5-wire cable connector assembly to the cable end at the reader location. Connections can be crimped or made with twist-on wire nuts. Do not plug the connector into the reader yet.
- Pigtail Cable - Models 6444, 6445, 6446 and 6447**
Connect the wires of the 6-conductor cable assembly to the cable end at the reader location. Connections can be crimped or made with twist-on wire nuts.
- Connect the other end of the cable to the host controller being sure to follow the appropriate color code and wire lead functions.

FUNCTION	WIRE COLOR
+5 VDC	RED
COMMON	BLACK
Data "1" Output	WHITE
Data "0" Output	GREEN
LED control line A	BROWN
LED control line B (opt)	YELLOW
HEATER BAR*	BLUE*

* - Models 6446/6447: The two BLUE wires connect to the HEATER BAR, which must be powered by a 24 VAC or 24 ADC source.

Head Track Adjustment

The reader head track location may be changed in the field by snapping out the head/gimbal assembly, rotating the assembly 180 degrees, and re-installing the assembly in the reader case.



Track I

Head wires toward face of reader

Track II

Head wires away from face of reader

- On Models 6448 and 6449 only, plug the cable connector assembly into the back of the reader (the plug is designed to fit only one way). On all other models, the cable should already be connected.
- Align the two protruding retainer pins in the underside of the reader assembly with the corresponding holes in the reader base plate. FIG 4.

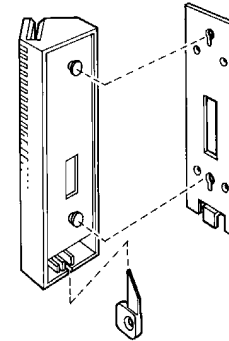


Figure 4

- Fully insert these pins into base plate holes and gently slide the reader assembly in the direction of the base plate latch (approximately 1/4" or 6.35 mm) until the latch locks against the latch release stop.

Releasing Reader from Base Plate

- To release the reader assembly from the reader base plate, insert the latch release tool into the reader assembly release slot, making sure the tip of the tool rides on top of the latch. When fully inserted, the tip of the tool will depress the latch sufficiently to clear the release stop. FIG 5.

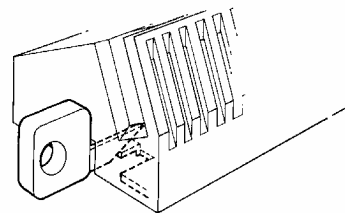


Figure 5.

- While holding the release tool in this position, slide the reader assembly forward (approximately 1/4" or 6.35 mm) and lift the reader off its base.
- Disconnect (or unplug) the cable connector assembly from the back of the reader.

Options

Reader options are selected by a 16 position rotary switch located at the top of the reader circuit board.

NOTE: For Model 644-S, Custom proms have a custom ABA format and may not follow the table below.

The options control the card type accepted (ABA or EMPI) as well as the output format.

Switch Position	Function
0	Northern card to 32 bit Wiegand (FC=16 bits, ID=16 bits)
1	ABA card, all bits raw data - clock and data
2	Reserved for Custom Prom
3	ABA card all bits raw data, except leading 0's stripped - clock & data
4	ABA card all ABA digits, plus 10 leading & 10 trailing 0's - clock & data output
5	ABA card all ABA digits, plus 10 leading & 10 trailing 0's - Wiegand output
6	ABA card convert last 4 ABA digits in first field to binary and output as 26 bit Wiegand
7	ABA card convert last 7 ABA digits in first field to binary and output as 26 bit Wiegand
8	EMPI card to 26 bit Wiegand
9	EMPI card to 34 bit Wiegand
A	ABA card, convert last 9 ABA digits in first field to binary and output as 34 bit Wiegand
B	Basic MS raw output - all bits Wiegand in order received
C	ABA to 26 bit Wiegand (FC=8 bits, ID=16 bits)
D	ABA to 34 bit Wiegand (FC=16 bits ID=16 bits)
E	ABA to 34 bit Wiegand (Mercury compatible) (FC=12 bits, ID=20 bits)
F	ABA to 26 bit Wiegand (Mercury compatible) (FC=8 bits, ID=16 bits)

Self Test

On power-up, the reader does a self test sequence. Observe that the reader LED flashes green four times.

If the reader does not complete self test or continues with short double flashes, verify wire connections and voltage.

If the reader completes the self-test by flashing the LED but will not read cards the following steps apply:

- Check that the voltage at the red and black wires is between 3.2 and 5.5 volts DC.
- Read card for the proper format as selected. The LED should wink dark momentarily.
- Try another card.
- See Diagnostic Test section.

Diagnostic Test

- The Model 644 Pass-Through Card Reader is factory calibrated and not field serviceable.
- Direct substitution with a known good reader is the best way to isolate the problem.
- Measure the voltage drop at the reader between the RED (Positive) and the BLACK (Common) wire. It should measure between 3.2 and 5.5 VDC. Low voltage is a common source of problems.
- Verify that the card used to test is a known good card, and is authorized in host memory. Verify the reader options are set correctly for that particular host, and the proper site code has been recorded in host memory.
- Verify the wiring, continuity, and connections between reader and host. If possible, switch the reader input wiring at the host to another known good input terminal and retest.
- If the problem still can not be resolved, contact your HID Authorized dealer for assistance.

Attaching Reader to Base Plate