IntelliStripe 70

HYBRID INSERTION READER

TECHNICAL REFERENCE MANUAL

Part Number 99875254-2

JUNE 2003

MAGTEK®

REGISTERED TO ISO 9001:2000

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REVISIONS

Rev Number	Date	Notes
1	31 Mar 03	Initial Release
2	13 Jun 03	Removed TTL throughout; Front Matter: added ISO line to logo, changed Tech Support phone number, added new warranty statement, added new Fig 1-1; Sec 1: Removed TTL, added chassis only, added design meets EMV Level 1, added P/N 21170009 to configurations, added in Standard Features: offered unit without mounting posts, changed Specifications operating temperature to "–25 °C to 70 C°" , changed height dimensions to reflect latest engineering changes.

Limited Warranty

MagTek, Inc. warrants that the Product described in this document is free of defects in materials and workmanship for a period of one year from the date of purchase where the date of purchase is defined as the date of shipment from MagTek. During this warranty period, MagTek shall, at their option, repair or replace without charge for either parts or labor, any failure, malfunction, defect or nonconformity which prevents the product from performing in accordance with MagTek's published technical specifications and manuals.

This warranty does not apply to wear of the magnetic read head. This warranty shall not apply if the product is modified, tampered with, or subject to abnormal working conditions. This warranty does not apply when the malfunction results from the use of the Product in conjunction with ancillary or peripheral equipment where it is determined by MagTek that there is no fault in the Product itself.

Notification by the Customer to MagTek of any condition described above should be directed to the Customer's MagTek Sales Representative or to MagTek's Help Desk at (651) 415-6800. If the Product is to be returned from the Customer to MagTek, a returned material authorization (RMA) will be issued by MagTek. The Customer shall be responsible for shipping charges to MagTek, (20801 S. Annalee Ave., Carson, CA 90746). MagTek shall be responsible for shipping charges back to the Customer.

Repair or replacement as provided under this warranty is the exclusive remedy. This warranty is in lieu of all other warranties, express or implied.

UL/CSA

This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

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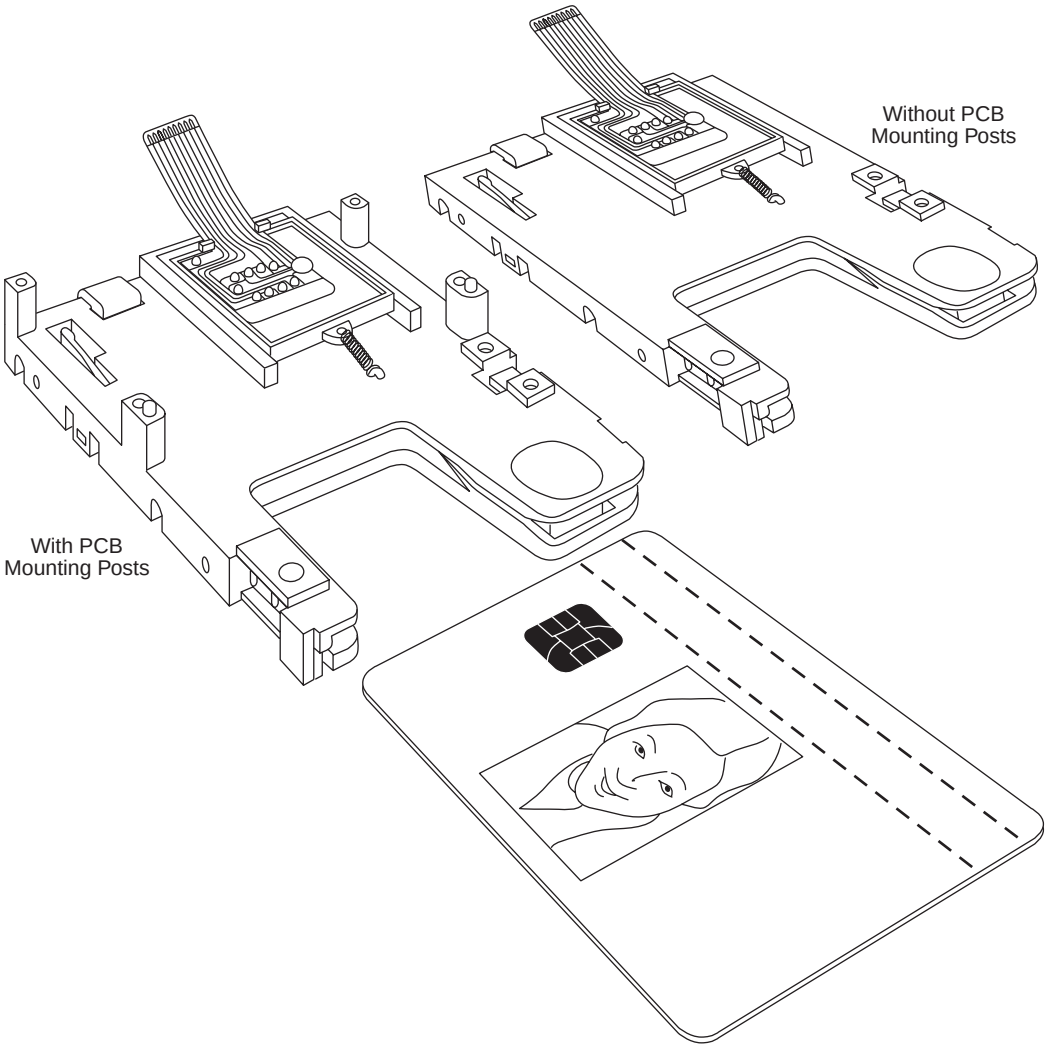

Figure 1-1. IntelliStripe 70, Hybrid Insertion Reader

SECTION 1. FEATURES AND SPECIFICATIONS

The IntelliStripe 70 is a chassis-only hybrid insertion reader, which provides magstripe and smartcard functionality. The chassis is not equipped with electronics, which will complete the magstripe and smartcard interfaces.

The reader features a low-profile mechanical footprint which is ideally suited for integration into POS terminals, payphones, vending machines, kiosks, and fuel pumps.

CONFIGURATIONS

The part numbers, configurations, and tracks are shown in Table 1-1.

Table 1-1. Part Numbers, Configurations, and Tracks

Part Number	Configuration	Track Numbers
21170006	IntelliStripe 70 Hybrid Insertion Reader, No Side Pins, with Extended Flex Cable	Trk 1, 2, 3
21170008	IntelliStripe 70 Hybrid Insertion Reader with Extended Flex Cable	Trk 1, 2, 3
21170009	IntelliStripe 70 Hybrid Insertion Reader, No Side Pins, No PCB Posts, with Extended Flex Cable	Trk 1, 2, 3

STANDARD FEATURES

Standard features of the IntelliStripe 70 are as follows:

The product will provide the following features:

- Compact mechanical footprint. Ideally suited for use with POS terminals
- For low profile application, chassis is offered with no PCB mounting posts
- Ability to support “No Pin” and “Side Pin” mounting options
- Chassis and smartcard contacts design meet EMV Level 1 electro-mechanical requirements
- ISO 7816 8-contact smartcard connector with flex cable
- Landing switch on smartcard connector. (Detects card at rear/ landed)
- Spring-loaded side arm to hold the card securely in the smartcard position
- 2-track (track 1&2 and track 2&3) and 3-track magnetic stripe reading, using low profile 2-track and 3-track head-beam assemblies
- Beam mounted read head (Provides superior tracking of bowed or warped cards)
- Chassis Manufactured from polycarbonate glass-filled material and ABS.
- “Card flattening” feature, which ensures that bowed cards are funneled towards the smartcard contacts

OPTION

The following option may be selected: Mag-stripe can be configured to support all popular track combinations.

RELATED DOCUMENTS

The IntelliStripe 70, Hybrid Insertion Reader will read cards that meet the standards defined by ISO (International Standards Organization):

ISO 7816 - Identification Cards – Integrated circuits with contacts
ISO 7811 - Identification Cards – Mag-stripe Cards, Tracks 1-3
ISO 7810 - Identification Cards – Physical Specifications (ID-1 Cards)

SPECIFICATIONS

The specifications of the Reader are listed in Table 1-2, and the overall dimensions are shown in Figure 1-2.

Table 1-2. Specifications

DATA FORMAT SPECIFICATIONS	
Reader Configuration	Data Format Specifications*
Track 1,2	ISO/ANSI/AAMVA/CDL/ 210bpi on TK2 formats
Track 2,3	ISO/ANSI/AAMVA/CDL formats
Track 1,2,3	ISO/ANSI/AAMVA/CDL formats
* ISO (International Standards Organization), ANSI (American National Standards Institute), AAMVA, (American Association of Motor Vehicle Administrators), CDL (California Drivers License)	
OPERATIONAL	
Card Speed:	3 IPS (7,62cm/sec) to 50 IPS (127cm/sec)
Recording Method	Two-frequency coherent phase (F2F)
MTBF	Head: 1,000,000 passes (500,000 Insertion Cycles) SC contacts: 1,000,000 passes
ELECTRICAL	
Voltage	Not Applicable
Current	Not Applicable
MECHANICAL	
Dimensions (no side pins)	
Depth	104.1 mm (4.1”)
Width	66.0 mm (2,6”)
Height	22.2 mm (.875”)
Dimensions (side pins)	
Depth	104.1 mm (4.1”)
Width	73.7 mm (2,9”)
Height	22.2 mm (.875”)
Dimensions (No PCB Posts)	
Height	18.5 mm (.729”)
Weight:	45.3 g (1.6 oz)
ENVIRONMENTAL	
Temperature	
Operating:	-25°C to 70° C (-13° F to 158 °F)
Storage:	-40° C to 70° C (-40 °F to 158° F)
Humidity	
Operating:	5% to 95% noncondensing
Storage:	5% to 95% noncondensing
Altitude	
Operating:	0-10,000 ft. (0-3,048 m.)
Storage:	0-50,000 ft. (0-15,240 m.)

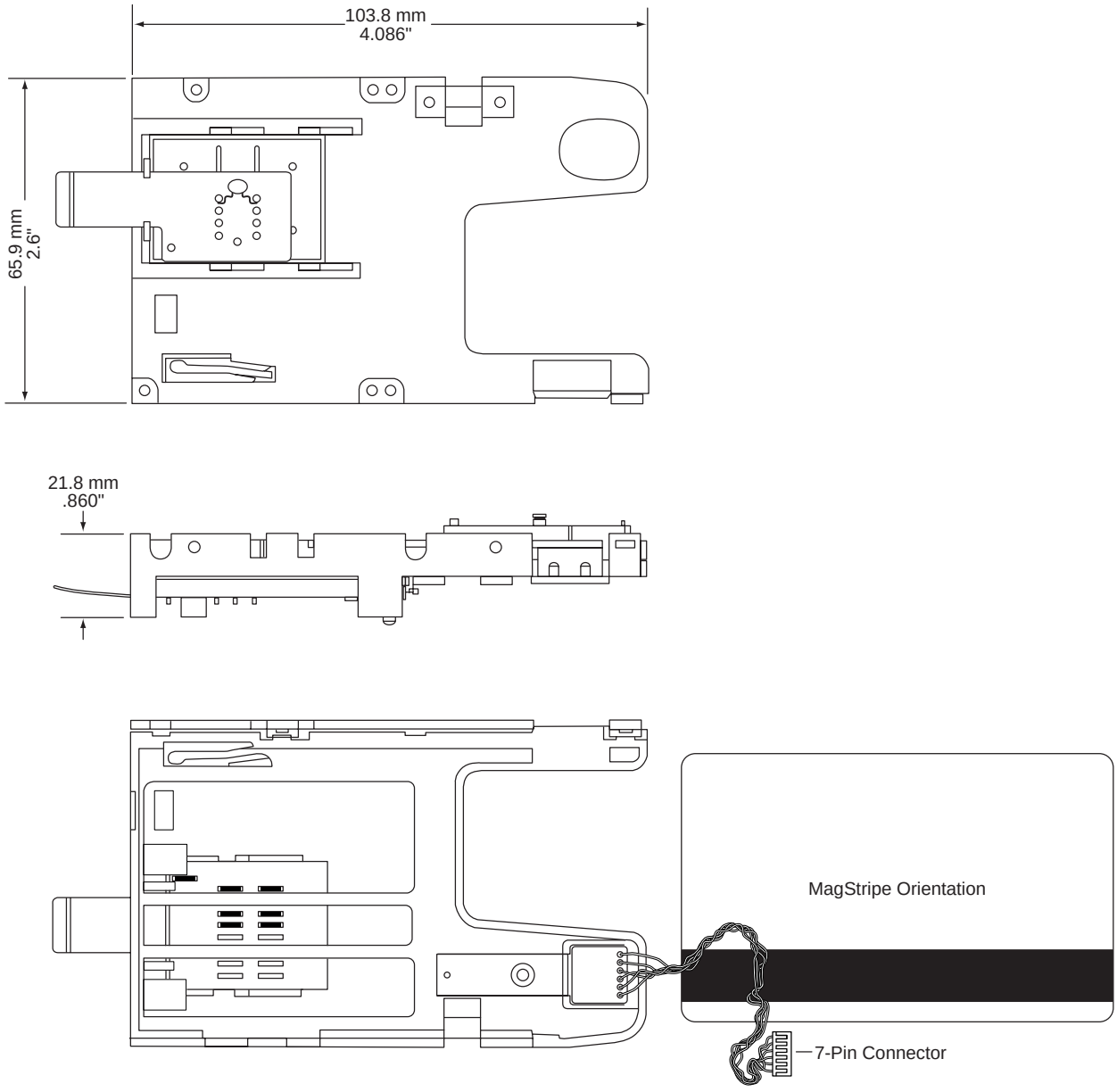

Figure 1-2. Overall Dimensions

SECTION 2. INSTALLATION

The Installation of the IntelliStripe 70 Hybrid Insertion Reader includes mechanical and electrical connections.

COMPONENTS

The components of the IntelliStripe 70 are shown and Figure 2-1.

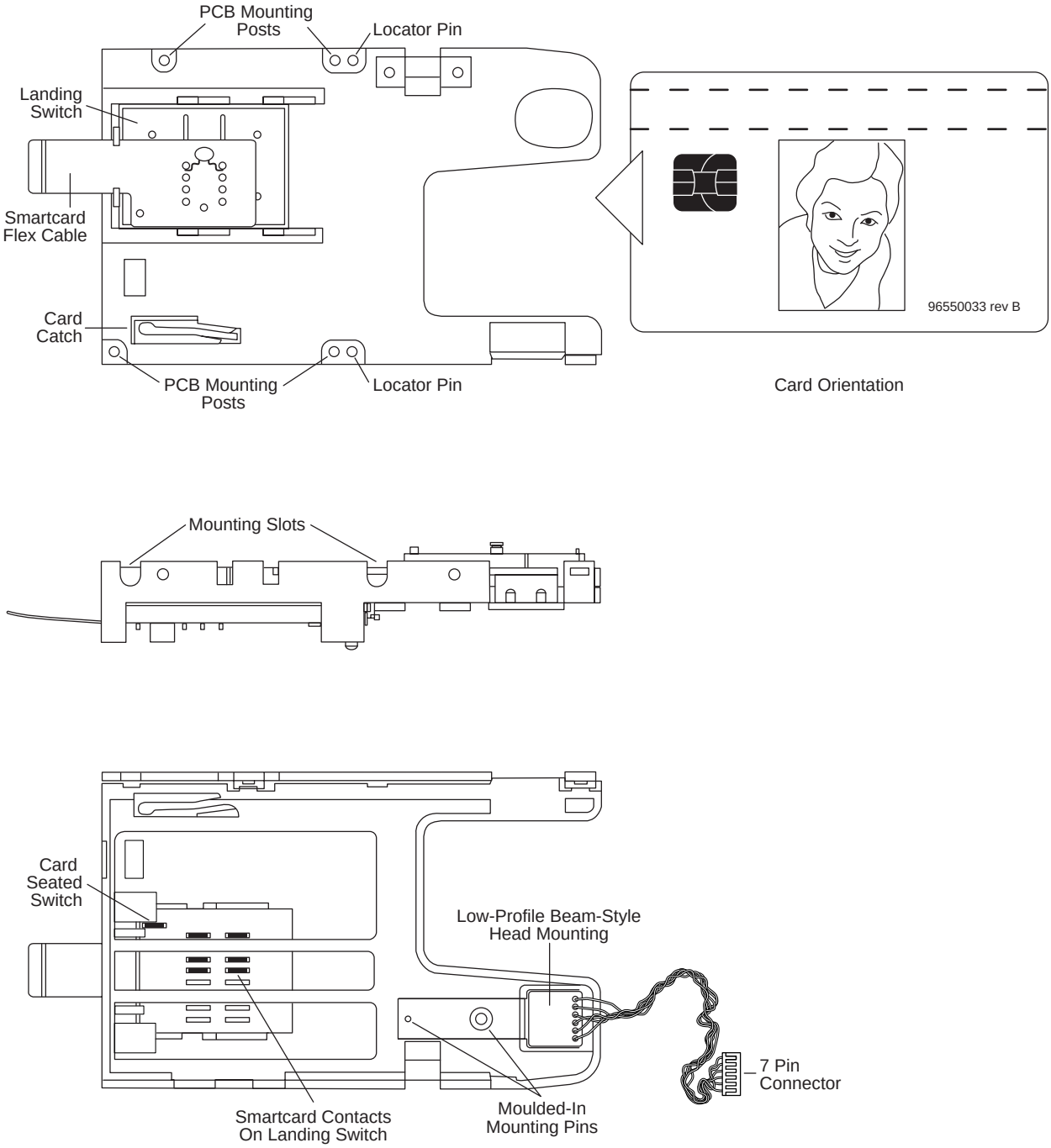

Figure 2-1. Components of the IntelliStripe 70

Card Seated Switch

A Card-Seated switch is operated when a card is fully inserted into the Reader (card is at the fully rearward position). The Card-Seated switch is an integral feature of the Smartcard Connector Block and detects when the card has properly "landed" (seated) on the smartcard contacts. The card-seated signal at the interface I/O connector is normally open and is grounded when the card is fully inserted into the Reader.

On insertion of the card, there may be some spurious transitions (mechanical switch bounce) at the Card Seated output, which do not exceed 4 ms. These transitions occur before the ICC chip contacts stabilize (stable contact with ICC pads) within a maximum of 40 ms from the stable state of the Card Seated output.

The first transition from the Card Seated output on withdrawal of the card is guaranteed to occur 1 ms before the ICC contacts lift. During the period between the two events, the contact resistance can increase to (but not exceed) 100 ohms for C1, C5, and C8 contacts, and 500 ohms for C2, C3, C4, and C8 contacts. For C7 the limit is 700 ohms.

Subsequent to the first transition from the Card Seated sensor, there can be additional transitions because of the mechanical bounce of the Card Seated switch contacts.

MECHANICAL MOUNTING

Mounting options for the Reader are as follows:

Side Mounting Pins only
Side Mounting Slots only

Side Mounting Pins

There are four molded pins, two are located on each side of the chassis. Dimensions for mounting with pins are shown in Figure 2-2.

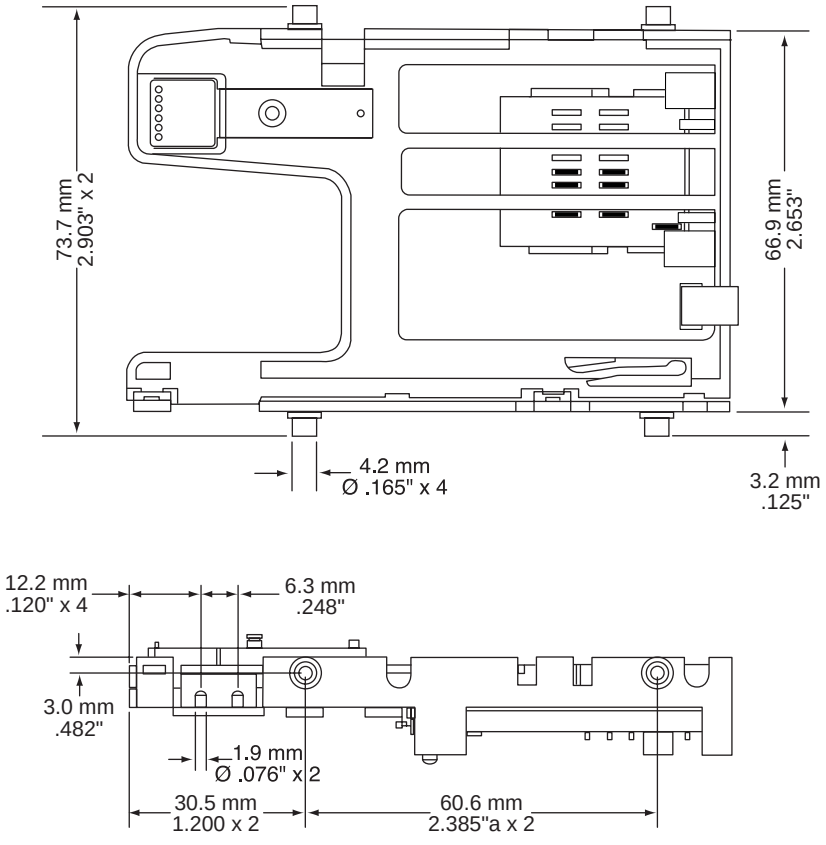

Figure 2-2. Dimensions for Mounting with Pins

Side Mounting Slots

Four molded slots are available when pins are not provided. The slots are positioned inline with the centerline of the pins. The holes are for M3 or #4 self-tapping screws. Dimensions for mounting with slots are shown in Figure 2-3.

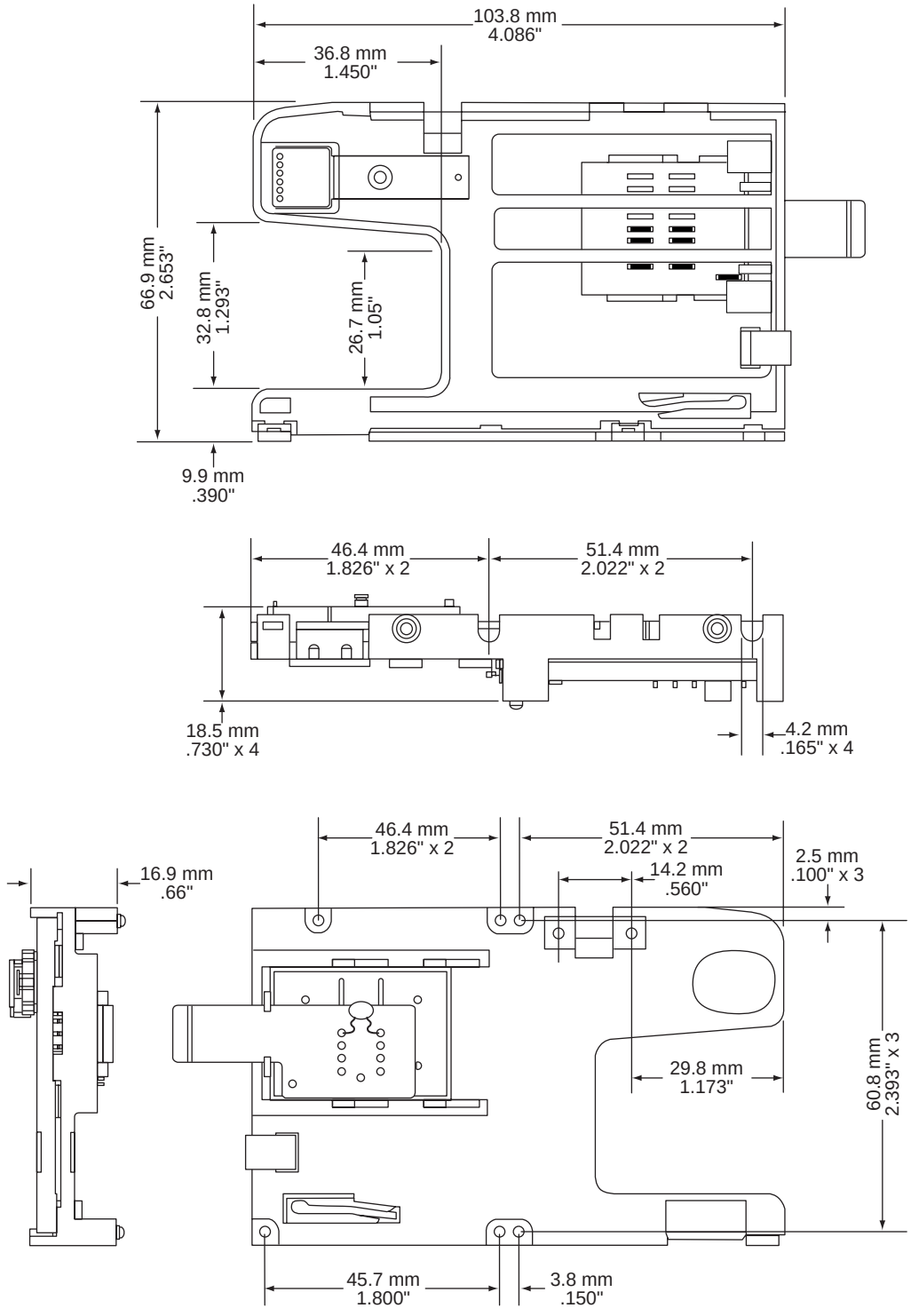

Figure 2-3. Dimensions for Mounting with Slots

PCB Mounting Posts

The PCB Mounting Posts are located on the upper side of the Reader. Mounting Posts may be used for chassis or PCB mounting. The Posts are designed to accept M3 or #4 self- tapping screws torqued to 4.0 in-lbs.

Note

PCB mounting posts are not available on P/N 21170009.

SMART CARD CONNECTOR

The IntelliStripe 70 contains a 10-pin smartcard connector with switch, which connects to the user's PCB assembly through a flex cable. The location of the flex cable is shown in previous illustrations and identified in Figure 2-1.

Table 2-1 lists the I/O Flex Cable pin numbers, Signal names, and the I/O direction with respect to the Reader (IN is in to the Reader, and OUT is out of the Reader). Figure 2-4 shows the pin orientation of the flex cable. Pins are numbered from 1 to 10 as indicated in the illustration.

Table 2-1. Pin List for Flex Cable

Pin Number	Signal Name	I/O Direction
1	Card Seated*	OUT
2	ICC-C8	Undefined**
3	ICC-C7 Data	IN/OUT
4	ICC-C6 Programmable Power	IN
5	ICC-C1 Power	IN
6	ICC-C2 Reset	IN
7	ICC-C5 Ground	IN
8	ICC-C3 Clock	IN
9	ICC-C5 Ground	IN
10	ICC-C4	Undefined**

* Card Seated (Pin 1) is a normally-open switch, which connects to Gnd when closed. The user design may need to provide an external pull-up resistor.

** Signals ICC-C8 and -C4 (pins 2 and 10) are undefined by ISO 7816. These contacts are often used with non-ISO memory-type cards.

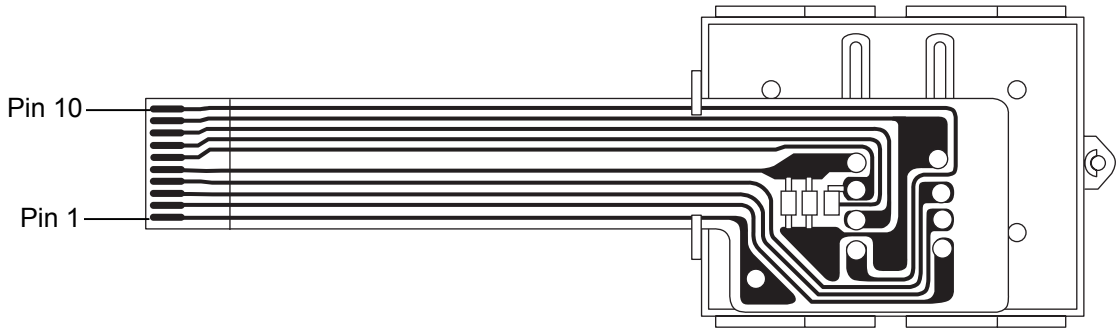

Figure 2-4. Pin Orientation - Flex Cable Side of Smartcard Connector

Flex Pin Dimensions

Dimensions for the flex cable are shown in Figure 2-5

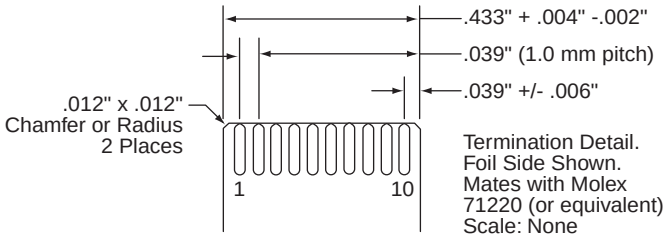

Figure 2-5. Flex Pin Dimensions and Mating Connector

Head Pin Connector

The connector for the head pins is shown in Figure 2-6. The pin listings are shown in Table 2-2, -3, and -4.

The mating connector is Molex 53048-0710.

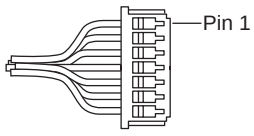

Figure 2-6. Head Pin Connector

Table 2-2. 3-Track Head Pin Listing

Pin	Signal	Color
1	TK 1	Red
2	TK 1	Red
3	TK 2	Green
4	TK 2	Green
5	TK 3	Yellow
6	TK 3	Yellow
7	Gnd	Black

Table 2-3. Track 2, 3 Head Pin Listing

Pin	Signal	Color
1	NC	
2	NC	
3	TK 2	Green
4	TK 2	Green
5	TK 3	Yellow
6	TK 3	Yellow
7	Gnd	Black

Table 2-4. Track 1, 2 Head Pin Listing

Pin	Signal	Color
1	TK1	Red
2	TK1	Red
3	TK 2	Green
4	TK 2	Green
5	NC	
6	NC	
7	Gnd	Black