MODEL MT-211232
RS-232 SWIPE READER, 1 OR 2 TRACK, BUFFERED/UNBUFFERED MODES
INSTALLATION AND OPERATION MANUAL

Manual Part Number 99821103 Rev 5

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MAGTEK®

REVISIONS

Rev Number	Date	Notes
1	1994	Initial Release
2	18 Jun 98	Reformatted entire manual. Added programs for testing. Added PINPad interface, new illustrations, and engineering drawings.
3	25 Jul 01	Front Matter: Added to Agency page: FCC Class B, UL and CUL, CE Class B. Added Copyright 2001
4	29 Jul 02	Front Matter: Added Copyright 2002, new logo. Section 2: Changed Tables 1-2 through 1-5 to 2-2 through 2-5. Corrected Table 2-6 and 2-7 to clarify switch settings. Corrected HyperTerminal Setup and Test for switch settings by adding note to table. Appendix A. Completely revised MS-DOS Edit section and HyperTerminal Test section.
5	8 Apr 03	Front Matter: added ISO line to logo, changed Tech Support phone number, added new warranty

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This device complies with Part 15 of the FCC Rules. Operation of this device 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.

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This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de las classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par les ministère des Communications du Canada.

CE STANDARDS

Testing for compliance to CE and was performed by an independent laboratory. The unit under test was found compliant to Class B.

UL/CSA

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

TABLE OF CONTENTS

FIGURES

TABLES

Figure 1-1. RS-232 Swipe Reader

SECTION 1. FEATURES AND SPECIFICATIONS

The Model MT-211232, 2-Track, RS-232 Swipe Reader, is a compact magnetic stripe card reader which conforms to standards of ANSI (American National Standards Institute) and ISO (International Organization for Standardization).

The Reader is compatible with the PC AT/PS-2 series of personal computers or any computer with an RS-232 interface. A card is read by sliding it, stripe down and facing the LED side, through the slot either forward or backward.

Two blocks of sixteen switches select the RS-232 communication parameters and the user protocol. A two-color LED (Light Emitting Diode) indicator on the Reader panel provides the operator with continuous status of the Reader operations.

Part numbers for the Readers and a brief description of each follow:

Part Number	Description
21088005	Track 1 - power supply included
21088006	Track 2 - power supply included
21088007	Tracks 1 and 2 - power supply included
21088008	Tracks 2 and 3 - power supply included
21088017	Track 1 - power supply not included
21088018	Track 2 - power supply not included
21088019	Tracks 1 and 2 - power supply not included
21088020	Tracks 2 and 3 - power supply not included

One of the following adapter cables is required:

Part Number	Description
21083528	9 pin with control signals
21083529	9 pin without control signals
21083530	25 pin with control signals
21083531	25 pin without control signals
21083568	25 pin for dumb terminals
21083534	25 pin "Y" cable, no control signals
21083543	25 pin "Y" cable, with control signals

FEATURES

Major features of the Swipe Reader are as follows:

- Hardware Compatible with AT/PS-2 PC or any computer or terminal with an RS-232 interface
- Software Compatible with Procomm (Customer provided - Windows version 3.0 or higher, or DOS version 2.0 or higher; or other RS-232 communications programs may be used)
- RJ-11 port for interface with PINPad (see Appendix A).
- Switch Selectable Baud Rate
- Switch Selectable Parity
- Switch Selectable Buffered or Unbuffered Mode
- On/Off switches for STX (Start of Text), ETX (End of Text), ESC (ESCAPE) framing characters
- On/Off switch for CR (Carriage Return)
- Two way card reading
- Reads encoded data that meets ANSI/ISO standards
- External power supply
- Power Supply Adapter (Part Number 64300021 - included)
- ASCII Message Format
- Two-color LED; green for good read, red for error

MODES OF OPERATION

The two modes of operation are unbuffered and buffered. The switch setting to select the mode is shown in Section 2. A test of the Inquiry and Release commands is also provided in Section 2.

Unbuffered Mode

In the unbuffered operating mode, data from the Reader is automatically sent to the host without being requested. When a card is passed through the Reader, data is transmitted immediately and is not retained.

The Reader does not need to receive commands from the host in order to transmit data. However, the Reader does respond to an Inquiry Command by sending an ASCII "R". (See Host to Reader Commands and Reader to Host Commands in Section 3.) An example of the use of an Inquiry Command would be to determine whether the power is on at a remote MT-211232.

Buffered Mode

In the buffered operating mode, the Reader stores the card data in a memory buffer and does not transmit any data to the host until an Inquiry Command is received. Upon receipt of an Inquiry Command, data is transmitted to the host. If no data is present in the memory buffer, only the ASCII "R" will be transmitted. Data is not cleared from the memory buffer until a Release Command is received. The Reader cannot read another card until the buffer is cleared, and the green LED is lit. Refer to Section 3, Table 3-1, for Buffer Commands I and R.

CONFIGURATION

The Reader, LED Indicator, RJ11 Jack, pin numbers for the 9-pin connector, and the Power Adapter are shown in Figure 1-2.
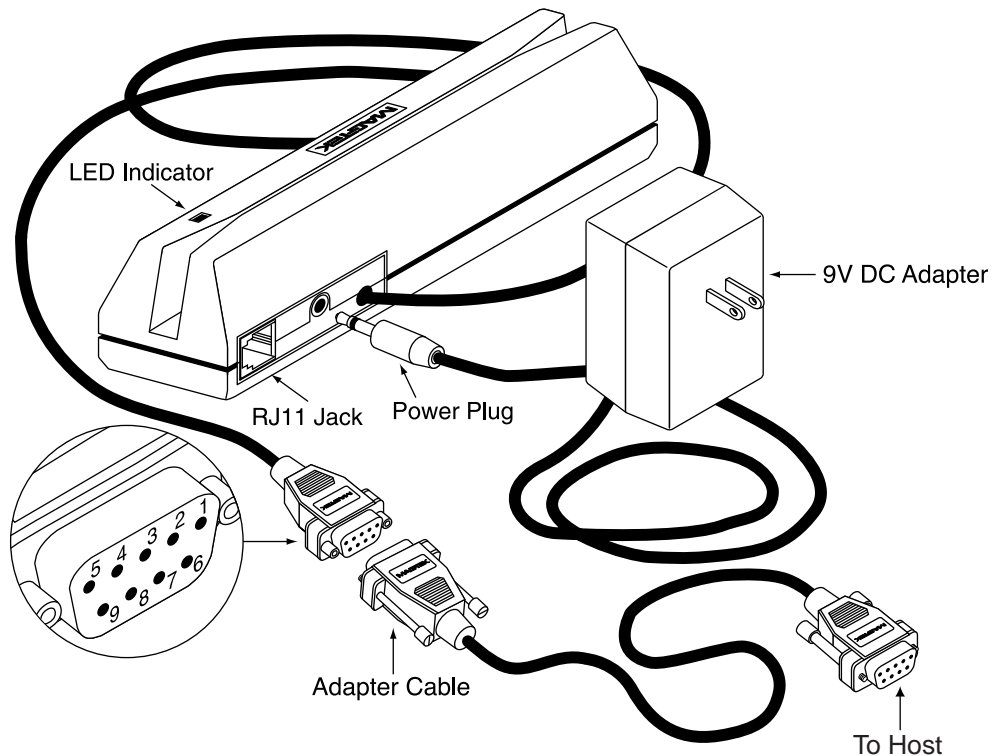
Figure 1-2. Reader Cable and Power Adapter

SPECIFICATIONS

Table 1-1 lists the specifications for the MT211232, RS-232 Swipe Reader, 2 Track. Figure 1-3 shows the dimensions.

Table 1-1. Specifications

OPERATING

Reference Standards	ANSI/ISO/CDL/AAMVA
Power Input	9 Volt, 300 mA DC Adapter (Included), 110 VAC, 60 Hz
Power Consumption	100mA at 9VDC with PINPad; 45mA at 9VDC without PINPad
Recording Method	Two-frequency coherent phase (F2F)
Message Format	ASCII
Card Speed	3 to 50 IPS at 75 BPI, 3 to 50 IPS at 210 BPI
MTBF	Electronics: 30,000 hours. Head: 1,000,000 passes, except for units with Track 2 only; Head: 300,000 for units with Track 2 only

MECHANICAL

Dimensions	Length 6 1/2", Width 1 3/4", Height 1 5/8"
Weight:	Reader 7 oz. Adapter: 11oz.
Cable length	6' (with interface cable)
Connector	9 pin D female, requires an interface cable.

ENVIRONMENTAL

Temperature	
Operating	0°C to 55°C (32°F to 131°F)
Storage	-30°C to 70°C (-22°F to 158°F)
Humidity	
Operating	10% to 90% noncondensing
Storage	Up to 100% noncondensing
Altitude	
Operating	0-10,000 ft. (0-3,048 m.)
Storage	0-50,000 ft. (0-15,240 m.)
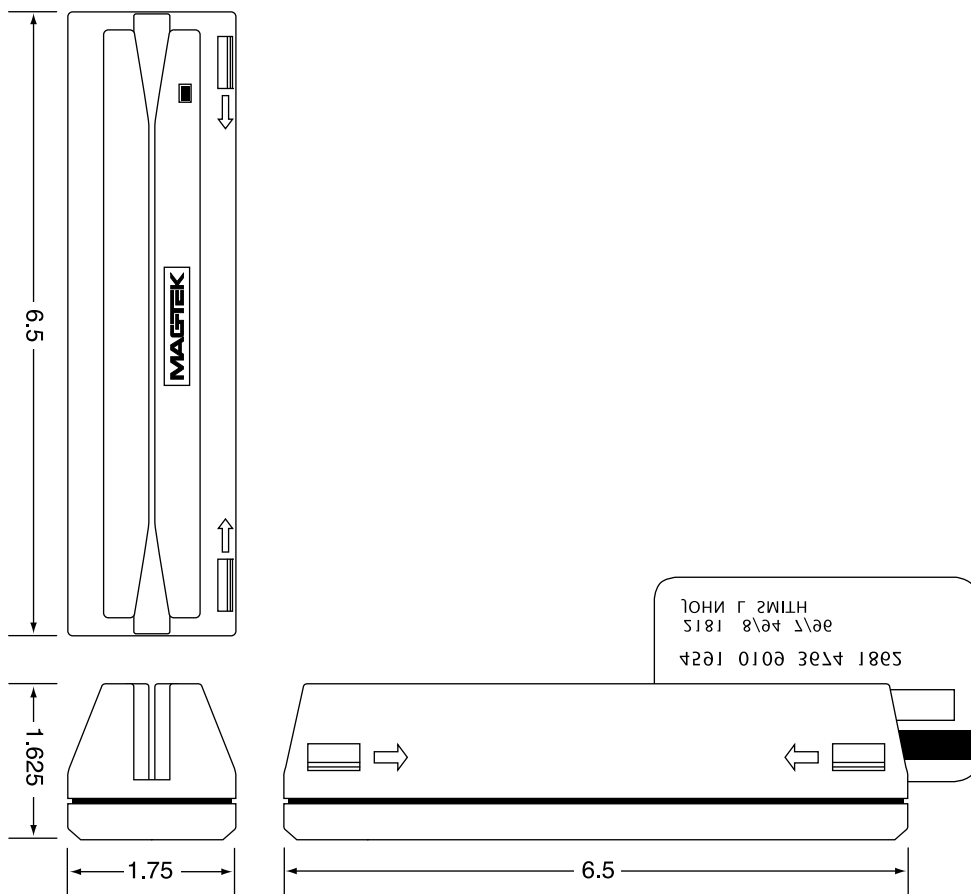
Figure 1-3. Dimensions

SECTION 2. INSTALLATION

The hardware installation consists of plugging in the appropriate cables for the selected configuration, setting the switches, and installing the required software.

READER CABLE PIN LISTS

Three different cable configurations are shown in Figure 2-1. The cables are hard wired to the Readers. A 9-pin connector connects to an adapter cable that in turn connects to a terminal or PC.
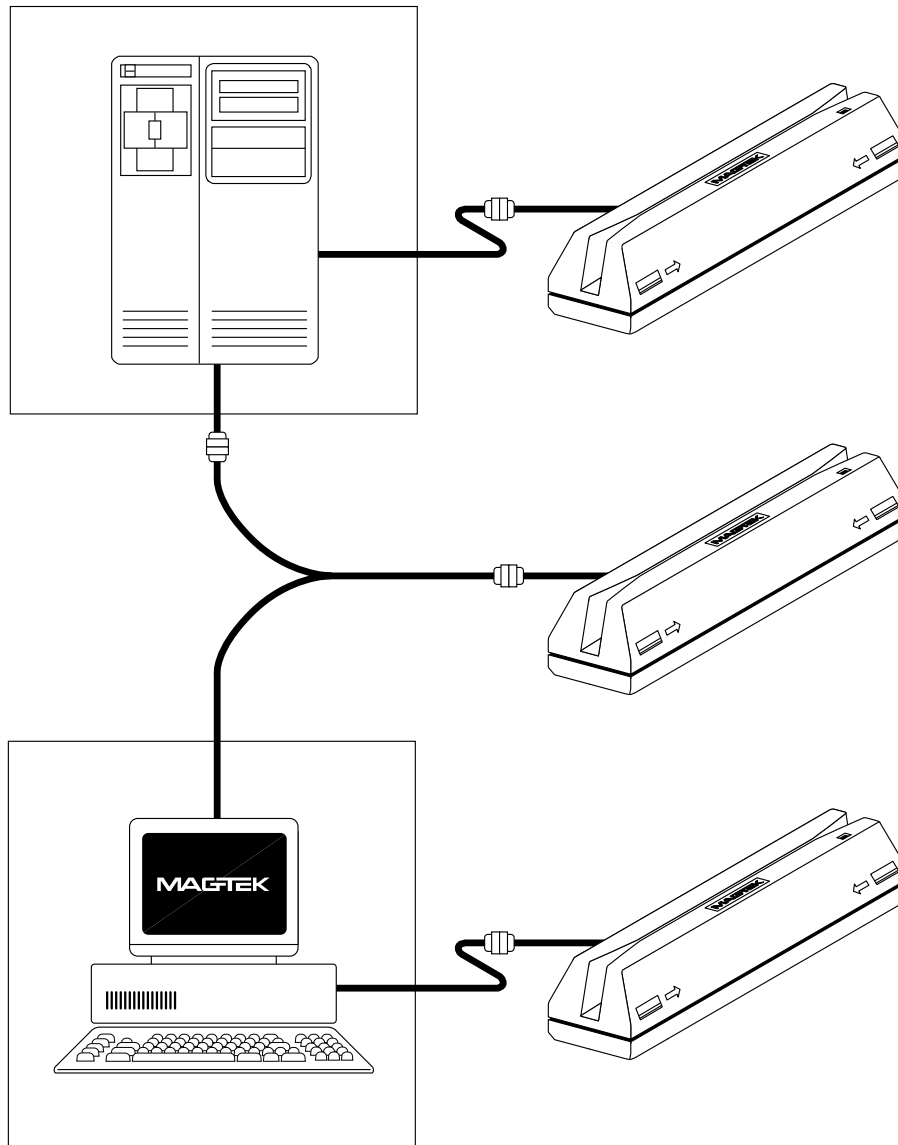
Figure 2-1. Reader Connections - Three Configurations

The cables attached to the Readers have a 9-pin connector. The Pin list for this connector is provided in Table 2-1. There are four adapter cables that can be connected from the Reader cable to the PC serial port. The adapter cables are selected based on whether control signals are required and whether the PC serial port is a 9- or 25-pin connector. The adapter cables are described in the tables below.

Table 2-1. 9-Pin Connector Pin Numbers

Pin Number	Signal	Description
1		Reserved for Y Cable
3	TXD	Transmitted Data, RS-232 Signal. Transmits data from the Reader to the Host.
2	RXD	Received Data, RS-232 Signal. Receives data from the Host to the Reader.
4*	DTR	Data Terminal Ready, RS-232 Signal. Transmits a signal to the Host to indicate that the Reader is active, i.e., power is on.
5	GND	Ground
6*	DSR	Data Set Ready, RS-232 Signal. Receives a signal from the Host to indicate that the Host is active, i.e., power is on.
7*	RTS	Request to Send, RS-232 Signal. Sends a signal to the Host to indicate that the Reader is ready to transmit data.
8*	CTS	Clear to Sent, RS-232 Signal. Receives a signal from the Host that allows data to be transmitted.
9		Reserved for Y Cable

*The control signals on pins 4 and 6 and 7 and 8 are not supported in this unit and are wired as indicated if switches 7B and 8B are on.

ADAPTER CABLE PIN LISTS

When using a cable with control signals, switch B7 and B8 must be set to off. The Reader will not be in the ready mode unless the PC is ready to accept the data. The PC can check to see if the Reader is active. Tables 2-2 and 2-3 describe the cables with control signals.

When using a cable without control signals, switch B7 and B8 must be set to on. Unless error conditions exist, the Reader is ready to read cards at all times. The Reader does not check to see if the PC is ready to accept data. Tables 2-4 and 2-5 describe the cables with control signals.

Table 2-2. Adapter Cable with Control Signals, 9-pin to 9-pin

For PC: AT	
Connector: 9-pin to 9-pin	
Part Number: 21083528	
Switches: B7 and B8 OFF	
Reader End	**PC End**
RXD 2	TXD 3
TXD 3	RXD 2
DTR 4	DSR ⌐ 6 CTS └ 8
GND 5	GND 5
DSR 6⌐ CTS 8┘	DTR 4
RTS 7	CD 1

Table 2-3. Adapter Cable with Control Signals, 9-pin to 25-pin

For PC: XT and PS/2	
Connector: 9-pin to 25-pin	
Part Number: 21083530	
Switches: B7 and B8 OFF	
Reader End	**PC End**
RXD 2	TXD 2
TXD 3	RXD 3
DTR 4	CTS ⌐ 5 DSR └ 6
GND 5	GND 7
DSR 6⌐ CTS 8┘	DTR 20
RTS 7	CD 8

Table 2-4. Adapter Cable without Control Signals, 9-pin to 9-pin

For PC: AT	
Connector: 9-pin to 9-pin	
Part Number: 21083529	
Switches: B7 and B8 ON	
Reader End	**PC End**
RXD 2	TXD 3
TXD 3	RXD 2
GND 5	GND 5
No Connection	RTS ⌐ 7 CTS └ 8
No Connection	CD ⌐ 1 DTR ├ 4 DSR └ 6

9

Table 2-5. Adapter Cable without Control Signals, 9-pin to 25-pin

For PC: XT PS/2	
Connector: 9-pin to 25-pin	
Part Number: 21083531*	
Switches: B7 and B8 ON	
Reader End	PC End
RXD 2	TXD 2
TXD 3	RXD 3
GND 5	GND 7
No Connection	RXD ⌐4 CTS ⌐5
No Connection	DSR ⌐6 CD ⌐8 DTR ⌐20

*P/N 21083568 "Dumb Terminal Cable" is the same **as 21083531, except the 25-pin connector is male.**

Y CABLES

There are two configurations of Y Cables. The differences are described below

Y Cable Part Number 21083534

This cable is shown in Figure 2-2 and has the following characteristics:

- Does not allow control signals between Host and terminal
- Supports PINPad
- Supports Reader in buffered mode
- Switches 7B and 8B must be on
- There must be a working cable between the host and the terminal

Y Cable Part Number 21083543

This cable is shown in Figure 2-3 and has the following characteristics:

- Allows control signals between Host and terminal
- Does not support PINPad
- Does not support Reader in buffered mode
- Switches 7B and 8B must be on
- There must be a working cable between the host and the terminal

10

**To Terminal
(25 Pin Male)**

TXD 2   RXD 3   GND 7

1 In From Terminal

2 RXD From Host

**Reader
(9 Pin Male)**

3 TXD To Host

5 Ground

9 Out To Term

RXD 2   TXD 3   GND 7

**To Host Cable
(25 Pin Female)**
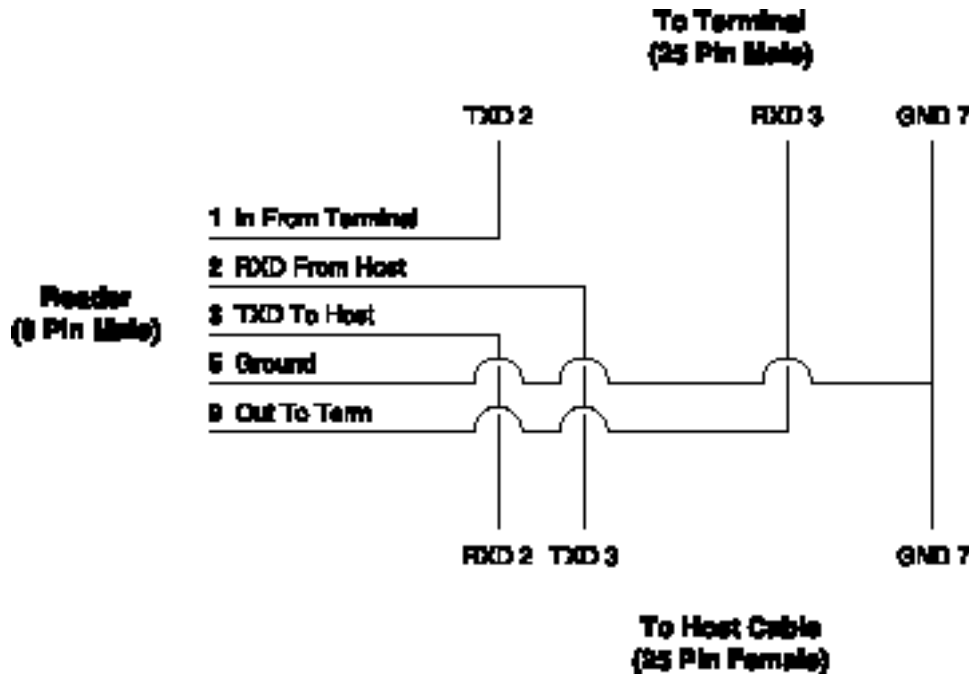
Figure 2-2. Y Cable Part Number 21083534

**To Terminal
(25 Pin Male)**

TXD 2   RXD 3   GND 7   4   5   6   8   20

1 In From Terminal

**Reader
(9 Pin Male)**

3 TXD To Host

5 GND

RXD 2   TXD 3   GND 7   4   5   6   8   20

**To Host Cable
(25 Pin Female)**
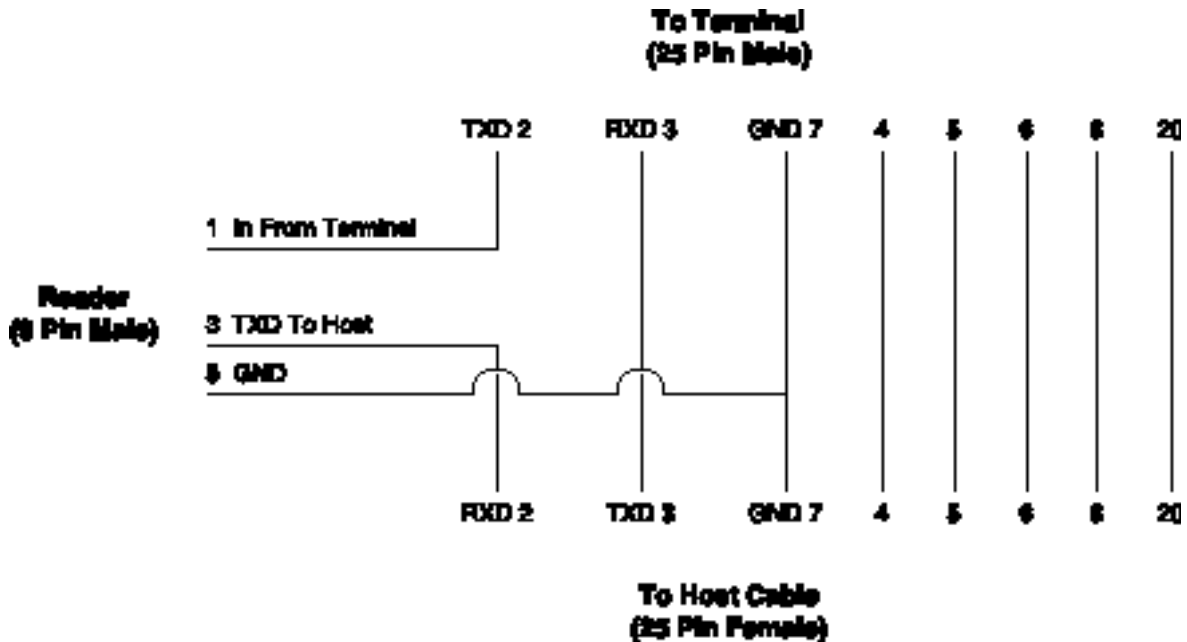
Figure 2-3. Y Cable Part Number 21083543

11

POWER ADAPTERS

For standard 110 volt AC operation, the MT-211232 must be powered by the 9 volt DC adapter supplied with the unit. For 220 volt operation, a 220 volt/AC 9volt DC conversion adapter (suitable for international use), part number 64300065, must be provided instead of the 9 volt adapter supplied.

For users who wish to supply their own power supply, requirements are:
Output Voltage 7.5 to 15 VDC, filtered @ 300 mA, regulated or unregulated, to a 3.5 mm Mono Plug, positive to tip, negative to shank.

SWITCH SETTINGS

There are two blocks of switches; they are labeled A and B. The blocks are located on the bottom of the Reader.   Each switch block contains eight switches.   Figure 2-4 shows the switches and the ON/OFF positions. The switches settings shown in the illustration are not necessarily the default settings. Ensure power is off before setting the switches to ensure the switches are properly loaded.
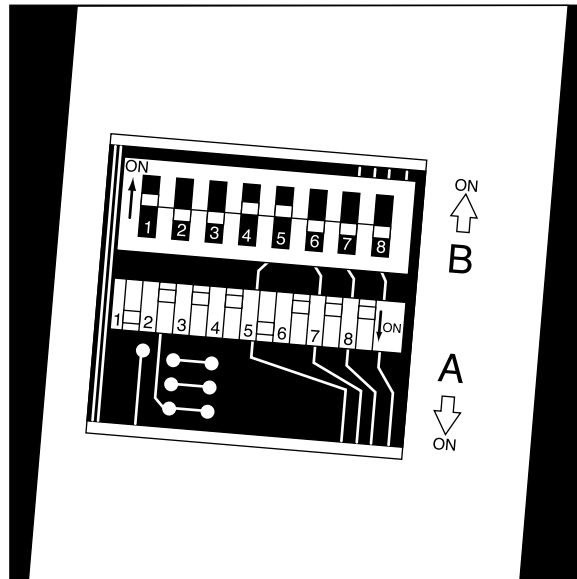
Figure 2-4. Switches

Block A Switches

Switches A1, A2,
and A3:   These switches set the baud rate, or the rate at which data is transmitted
                 between the Reader and the Host. Table 2-6 lists the parity settings and
                 switch settings.

Table 2-6. Baud Rate Settings

Baud Rate	SW1	SW2	SW3
150	ON	ON	ON
300	OFF	ON	ON
600	ON	OFF	ON
1200	OFF	OFF	ON
2400	ON	ON	OFF
4800	OFF	ON	OFF
9600	ON	OFF	OFF
19200	OFF	OFF	OFF

Switches A4 and A5: Table 2-7 shows the parity settings.

Table 2-7. Parity Settings

PARITY SENT	SWA4	SWA5	RECEIVED PARITY CHECK
ODD	ON	ON	ODD
EVEN	OFF	ON	EVEN
ONE (MARK)	ON	OFF	IGNORED
ZERO (SPACE)	OFF	OFF	IGNORED

Switch A6:   This is an optional switch that sends the START OF TEXT (STX) framing
             characters when set to the ON position. If this character is not desired, set switch
             6 to OFF.

Switch 7A: This is an optional switch that sends the ESCAPE (ESC) character when set to the
             ON position. If this character is not desired, set switch 7 to the OFF position

Switch A8:   This is an optional switch that sends the END OF TEXT (ETX) framing
             characters when set to the ON position. If this character is not desired, set switch
             8 to OFF.

Block B Switches

Switch B1:   This is an option switch that sends the Carriage Return (CR) when set to the ON
             position. If this control character is not desired, set Switch 1 to the OFF position.

13

Switch B2:   This switch sets the operating mode (BUFFERED or UNBUFFERED). Switch 2 should be set to the ON position for the buffered mode. Switch 2 should be set to the OFF position for the unbuffered mode.

Switch B3:   This switch is factory set to OFF and should not be changed.

Switch B4:   This switch is factory set to ON for ESC I and ESC R Commands (See Section 3 for a description of these commands).

Switch B5:   This switch is factory set to ON and must not be changed.

Switch B6:   This switch is factory set to OFF and should not be changed.

Switch B7:   In the ON position, this switch jumpers the REQUEST TO SEND (RTS) and CLEAR TO SEND (CTS) control signals together.

Switch B8:   In the ON position, this switch jumpers the DATA TERMINAL READY (DTR) and DATA SET READY (DSR) control signals together. If the host is going to implement the DATA SET READY (DSR) control signal, this switch should be set to the OFF position.

READER INSTALLATION

Install the Reader as follows:

1.   Connect the serial cable from the Reader to the adapter cable and the adapter cable to the PC serial port.

2.   Turn on power to the computer.

3.   Open Procomm, HyperTerminal (described below), or other communication program.

4.   Connect the power adapter 3.5 mm Mono plug to the Reader jack, and plug the adapter into a 120 VAC wall socket.   The green LED on the Reader should light; if it does not, recheck the cable connections, check switches B7 and B8, and if necessary, notify technical personnel.

5.   Ensure the switch settings on the Reader match those on the PC communications port. If, for example, the values set in the Reader switches are baud rate 9600, parity Even, 7 data bits, and 1 stop bit, the PC port should match these values (see HyperTerminal Setup below).

14

6.   Swipe a card through the Reader.

7.   If the green LED goes out momentarily, then goes ON, the Reader is working and properly connected; proceed to the next step. If the LED comes on red momentarily, there is an error. The card was swiped incorrectly, or the unit is not working, or is not properly connected. Check the cabling, reset the unit by disconnecting and connecting the power plug, try another card, and call technical support if there is still an error.

8.   If there were no errors during installation, test the red light by swiping the card approximately half way. The Red LED should go ON momentarily (and an "E" should appear on the screen, depending on the program).

9.   Swipe another card. If the green LED goes OFF, then ON, the unit is ready for operation.

HyperTerminal Setup and Test

Any RS-232 communication program can be used to check the communication between the Reader and the PC. The Windows 95 HyperTerminal program is used here. Setup the program as follows:

1.   For this test, set the switches as follows:

Switch Number	1	2	3	4	5	6	7	8
Switch A	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
Switch B	ON	OFF	OFF	ON	ON	OFF	*	*

*For appropriate switch settings, see Tables 2-2 through 2-5.

2.   From Windows 95, click on **Start**, then highlight **Programs**, then highlight **Accessories**, then click on **HyperTerminal**. (If HyperTerminal is not visible, click on **Communications** then **HyperTerminal**.)

3.   When the dialog box appears, double click on **Hypertrm.exe**.

4.   When the **Connection Description** dialog box appears, type the name **test**, and click on **OK**.

5.   When the **Phone Number** dialog box appears, in **Connect Using** select the **Com Port** the device is connected to, and click **OK**.

6.   When the **Port Settings dialog box appears**, select the following:

Bits per second: 9600

15

Data bits:	**7**
Parity	**Even**
Stop bits:	**1**
Flow Control:	**Hardware**

Click on **OK.**

7.   Click on **File**, then **Properties**, then in the Name **Test Properties**, click on **Settings**.

8.   Click on **ASCII Setup**, then ensure that **ASCII receiving Append line feeds to incoming line ends** and **Wrap lines that exceed terminal width** are checked. To have the characters continuously wrap, leave the box unchecked for **Echo typed characters locally.** To have the characters start a new line when the card is swiped, check the box: **Send line ends with line feeds**.

9.   Click on **OK**, then click on **OK** again.

10.   Swipe a card, and the card displayed on the PC screen will be similar to the following:

        %ABCDEFGHIJKLMNOPQRSTUVWXYZ11111111111111111111111111111111 1111111111111?;2222222222222222222222222222222222222222222222222222?

The "%" symbol represents the beginning of Track 1, and the ";" represents the beginning of Track 2. The "?" represents the end of a Track.

TEST OF INQUIRY AND RELEASE COMMANDS

Use the HyperTerminal setup to test the Inquiry and Release Commands. Place the Reader in the buffered mode by setting Switch B-2 in the ON position. Perform the following steps.

1.   Unplug and plug in the power plug to reset the Reader.

2.   With the green LED on, swipe a card. The LED should go off.

3.   Press the **Esc** key, then capital **I** (Ensure capital letters are used because the program is case sensitive). The screen display should be similar to the one above.

4.   Each time the **Esc** and **I** keys are pressed, the display will appear.

5.   To Clear the buffer, press the **Esc** key then capital **R**. The LED should go on (Green), and nothing else will appear on the Screen.

6.   Press **Esc** and **I** again and an "R" will appear on the screen.

Reset Switch B2 to the OFF position if the unbuffered mode is to be used.

SECTION 3. OPERATION

Included in this section are Indicators, Card Read, Reader to Host Message Format, Host to Reader Commands, a timing diagram of transmission, and the top assembly drawing of the Reader.

INDICATORS

A card may be swiped through the Reader slot when the green LED is lit. The magnetic stripe must face toward the front (the side with the LED and arrows) and may be swiped from either direction.

In the unbuffered mode (SWB2 OFF), the green LED will go out momentarily when a properly encoded card is swiped through the Reader. The green LED will reappear when all valid information is transmitted to the computer and the Reader is ready to accept another card. In the buffered mode (SWB2 ON), when a card is swiped, the green LED will go off and remain off until a Release Command is received (See Buffer Mode Commands below).

The red LED goes ON momentarily when an error occurs during a card read. If the unit was installed correctly, the error will probably be caused by not swiping the card correctly or the problem may be with the encoding on the card. Swipe the card again or try another card.

READER TO HOST MESSAGE FORMAT

Figure 3-1 shows the format in which data is transmitted after a card is read successfully. Track data is sent in the following order: SS, Track Data, ES.

<STX>	<ESC>	SS	CARD DATA	ES	<CR>	<ETX>

End of Text Character (03 Hex) Optional. Set Switch A8 to ON

Carriage Return Character (OD Hex) Optional. Set Switch B1 to ON.

End Sentinel Character (ASCII "?")

Card Data in ASCII Track Order (If an inquiry is sent but no card was read, an ASCII "R" will be sent to indicate ready.)

Start Sentinel Character. (ASCII "%" for ISO Track 1) (ASCII ";" for ISO Track 2)

Escape Character (1B Hex) Optional. Set Switch A7 to ON

Start of Text Character (02 Hex), Optional. Set Switch A6 to ON.

Figure 3-1. Reader to Host Message - Successful Read

Figure 3-2 shows the data format transmitted after a card is read unsuccessfully. If an error is detected, an E will be transmitted (if dual track, the error indicator for the higher density track will be transmitted first).

| <STX> | <ESC> | ERROR | <CR> | <ETX> |

End of Text Character
(03 Hex), Optional
Set Switch A8 to ON.

Carriage Return Character
(OD Hex), optional. Set
Switch B1 to ON.

ASCII "E" represents
Error.

Escape Character 1B Hex,
Optional, Set Switch A7 to ON.

Start of Text Character (02 Hex),
Optional. Set Switch A6 to ON.
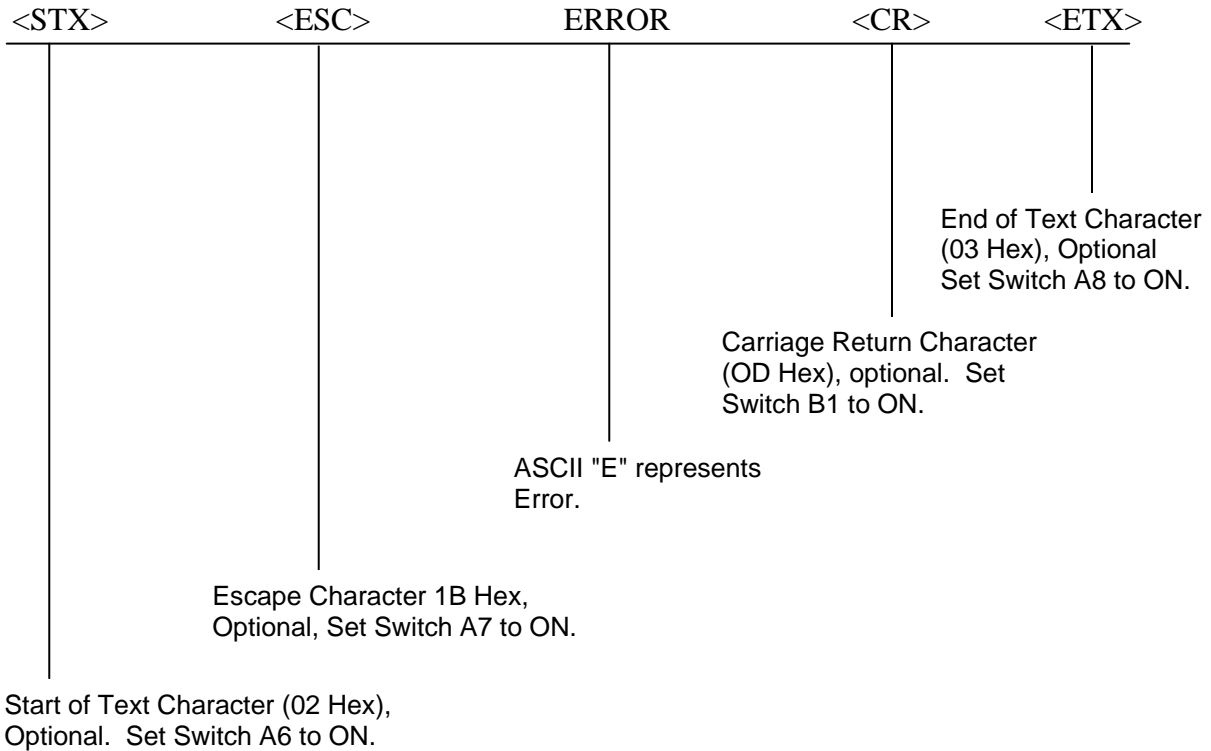
Figure 3-2. Reader to Host Message - Unsuccessful Read

HOST TO READER COMMANDS

All commands transmitted from the host to the Reader must be preceded by an ASCII "Escape"
<ESC> character. Characters that precede or follow the command sequence will not affect the
Reader's command interpretation. All ASCII characters must be transmitted in UPPER CASE
(for example, ASCII "I" and "R").

Buffer Mode Commands

Commands used in the buffer mode are described in Table 3-1.

19

Table 3-1. Buffer Commands I and R

Switch B2	Command	Description
ON	<ESC> "I "	Inquiry Command: In the buffered mode, requests the Reader to Transmit data, or "E" for error, or "R" for empty buffer. In the unbuffered mode transmits an ASCII "R".
ON	<ESC> "R"	Release Command: In the buffered mode, requests the Reader to clear the memory buffer of any data present. This command has no effect in the unbuffered mode.

TIMING

Transmission timing is shown in Figure 3-3. Each ASCII character is transmitted with 1 start bit, 7 data bits, 1 parity bit, and 1 stop bit. Logic levels conform to standard RS-232 levels; logic levels are "true" or "1" if the level is low. The levels are quiescently low.
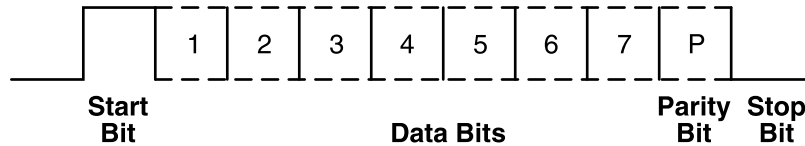

Figure 3-3. Transmission Timing

APPENDIX A. PINPAD INTERFACE

This appendix describes the MagTek PINPad interface to the MT-211232, 1 or 2 Track, Swipe Reader.

CONNECTOR

When a PINPad is used with the Reader, the interface is as shown in Figures A-1 and A-2.

The following connections are for the RJ-11 connector:

```
        ┌──────┐
      ──┤1  +5V
      ──┤2  RXD
      ──┤3  GND
      ──┤4  TXD
        └──────┘
```
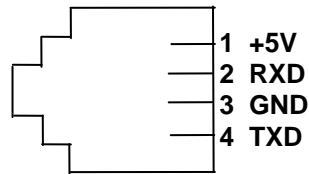
(view from outside of the Swipe Reader)

Figure A-1. Pin List for Modular Jack Mounted on PCB

```
┌──────────┬───┐        ┌───┬──────────┐
│          │ 4 │────────│ 1 │          │
│          │ 3 │────────│ 2 │  SWIPE   │
│  PINPad  │ 2 │────────│ 3 │  READER  │
│          │ 1 │────────│ 4 │          │
└──────────┴───┘        └───┴──────────┘
```
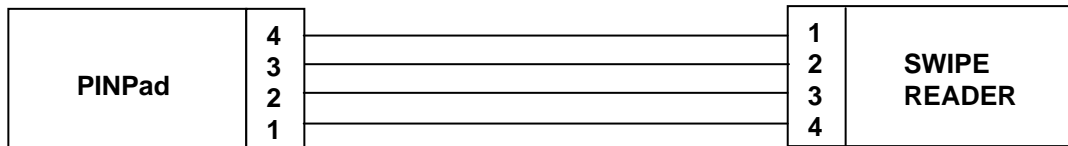
Figure A-2. PINPad to SWIPE READER Pin Connections

PROGRAMMING

The following programming information applies when a PINPad is connected to the Swipe Reader. Disconnect power from the Reader. Connect the PINPad to the Reader. Apply power to the Reader.

- Host to PINPad commands must be in the following format:

    (STX) + (PINPad command) + (ETX)

    These entries must be in rapid succession; they cannot be hand keyed in. (See the MS-DOS Edit Program below.)

- If there is no response when the PINPad button is pressed, perform the steps below.

- If the Reader is set in the buffered operating mode and the card data is present in the memory buffer, the Reader will not accept a PINPad command from the Host.

- Switch settings for card data format (STX, ETX, ESC, or CR) do not affect PINPad data.

MS-DOS Edit Program

Commands for PINPads cannot be hand-keyed in. This program may be used to enter Commands. Perform the following steps:
From Windows/95/98/2000/XP, Click on **Start**, highlight Programs, and the **MS-Dos Prompt**/

1. Install a floppy disk in drive A.
2. At the command line type **edit** <Enter>

C:\WINDOWS>edit <Enter>

3. An empty window will appear. To enter the initialize command, <STX>g<ETX>, type the following: **Ctrl-b**, then **g**, then **Ctrl-p**, then **Ctrl-c**. Since the Ctrl-c has a different meaning for the editor, the Ctrl-p allows the Ctrl-c to be entered into the string, and the Ctrl-p does not actually appear in the final string. Other commands may also be used, but this sequence will test the PINPad. On the screen there will be three characters: a happy face, the letter g, and a heart. In the text file these will appear as a block, the letter g, and another block (note that the letter g and any other letters, must be lower case).

4. Click on **File**, then **Save As**. Name the drive & file; use the extension of .**txt,** (for example, **a:\cmdg.txt).** Click **ok**.

5. Edit the g into an **a** and repeat step 4 (with a new name: cmda.txt).

6. Edit the a into a **b** and repeat step 4 (with a new name cmdb.txt).

7. Edit the b into a **h** and repeat step 4 (with a new name: cmdh.txt).

8. You should have 4 separate files on the floppy (cmdg.txt; cmda.txt; cmdb.txt & cmdh.txt)

9. To leave the Editor, select **File**, then **Exit**. At the DOS prompt type **exit** <Enter>.

22

Hyper Terminal Test

Ensure the Swipe Reader and Hyper Terminal are setup as described in Section 2. Ensure there is
a program for entering commands (see above). Follow these steps:

1. Open the Hyper Terminal screen, and swipe a card. The PC screen will be similar to the following:

%ABCDEFGHIJKLMNOPQRSTUVWXYZ11111111111111111111111111111111111111111 1111111111111111111111111?;2222222222222222222222222222222222222?

2. To check 2-way communications: **Type Esc I** (capital I); Response **R.**

3. From the drop-down menu, click on **Transfer,** then **Send Text File**, In **Look In** Box Select **3.5" Floppy(A:)**. highlight **cmdg.txt**, Click **Open.** The PC will display a **K** on the monitor.

4. On the PINPad, press the numbers 1234567890. Each number will appear on the PC screen as it is pressed. Press ENTER and CLEAR and A and B will appear.

5. From the drop-down menu, click on **Transfer**, then **Send Text File**, then highlight **cmdh.txt**, click on **open,** A **K** will again appear on the screen for acknowledge. The LED on the PINPad will light.

6. Press the number keys 1234567890, and as each number is pressed, the LED will go out, then light as the key is released.

7. From the drop-down menu, click on **Transfer**, then **Send Text File**, then highlight **cmda.txt** Click on open. Another K for acknowledge will appear.

8. Press the number keys 1234567890. The LED will go out and then light as the key is released.
The numbers will not appear on the screen until Enter is pressed. Observe the screen and press **Enter**.
The sequence of numbers will appear on the screen, framed with S and X (S1234567890X).

9. From the drop-down menu, click on **Transfer,** then **Send Text File**, then highlight **cmdb.txt**. click on **open**. The LED will be out, and PINPad will be deactivated.

10. The above sequence will appear similar to the following:
%ABCDEFGHIJKLMNOPQRSTUVWXYZ11111111111111111111111111111111111111111
1111111111111111?;222222222222222222222222222222222222222222222?RK1234567890A
BK1234567890KS1234567890XK

11. When a sequence similar to the above appears similar on the screen, the test is complete.

APPENDIX B. TOP ASSEMBLY DRAWINGS

The top assembly drawing for Track 2 and 3, Part Number 21088008, is typical of MT-211232 Swipe Reader, 1 or 2 Track. Part Number 21088020 is similar except it does not come with a power supply.
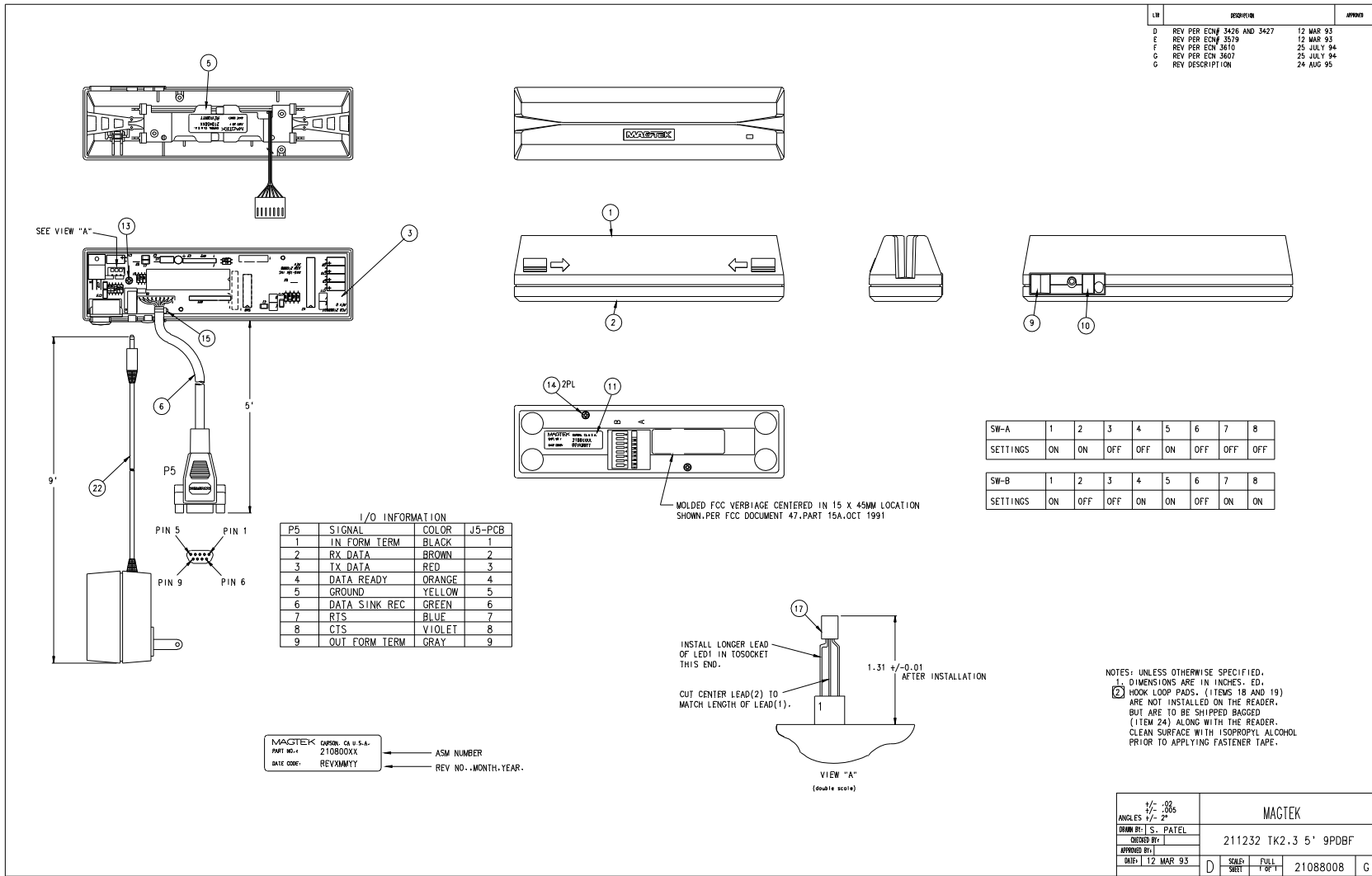
For switch settings, see Section 2, Installation, Tables 2-2 through 2-5.

Figure B-1. MT-211232 Top Assembly Drawing - Typical
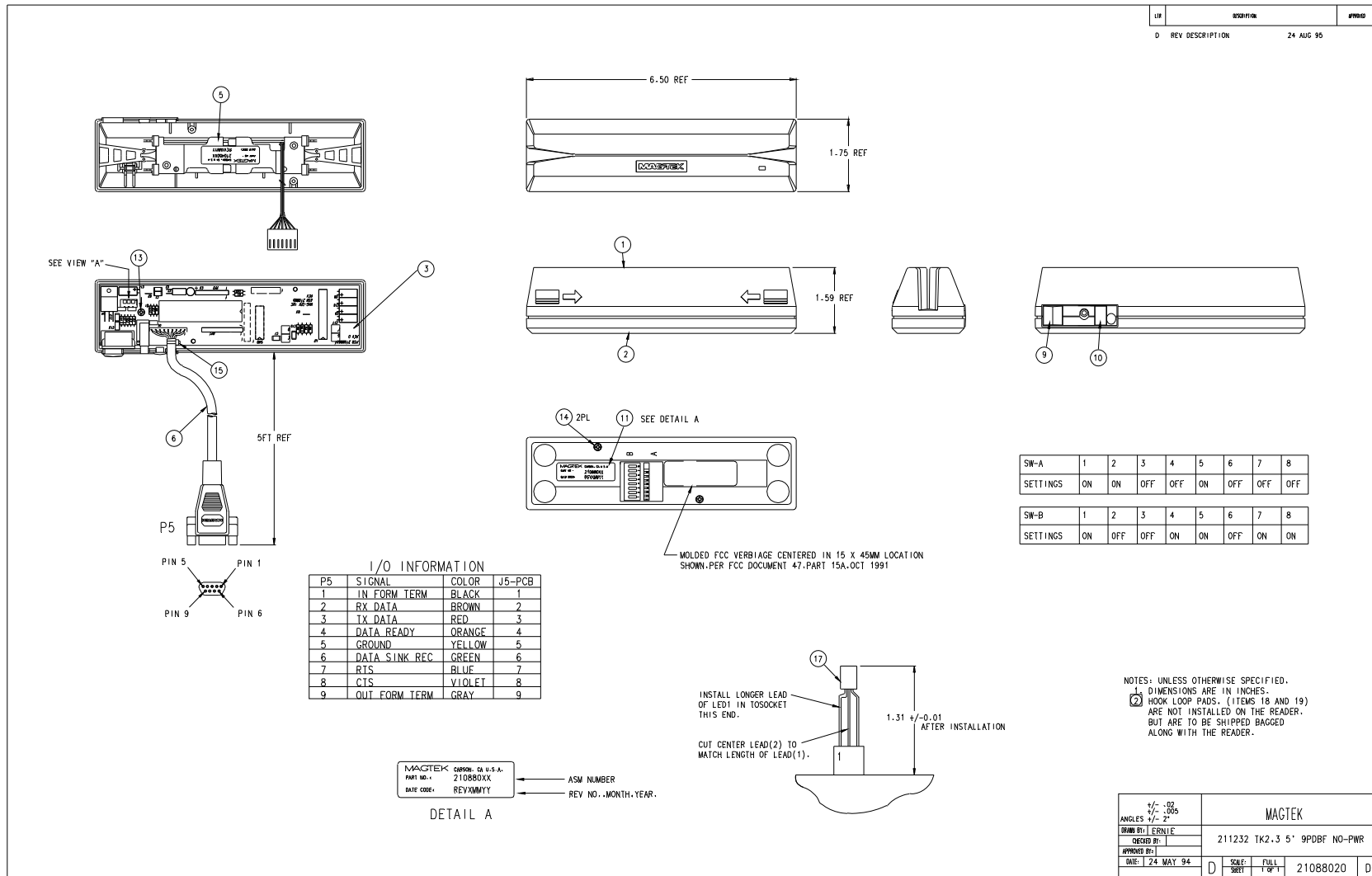
Figure B-2. MT-211232 Top Assembly Drawing - Without Power Supply

27