

# **NON ENCRYPTING PINPAD INSTALLATION AND OPERATION MANUAL**

**Manual Part Number: 99833004 Rev 5**

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**MAGTEK<sup>®</sup>**

**REGISTERED TO ISO 9001:2000**

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### REVISIONS

Rev Number	Date	Notes
1	1990	Initial Release
2	28 Feb 98	Completely Reformatted; In the Title, changed "Technical Description" to "Installation and Operation Manual"; Added part numbers, specs to Sec 1; Added Sec 2 Installation; Added Sec 3 Commands; Added Appendix A, Pin List.
3	28 Apr 98	Changed Warranty to 90 days.
4	9 Aug 01	Front Matter, Agency page: Added FCC Compliance Statement, added CE Class A Statement, Added UL and CUL statement. Changed Warranty to 1 year.
5	10 Apr 03	Front Matter: added ISO line to logo, changed Tech Support phone number, added new warranty statement, changed warranty from 90 days to 1 year.

## **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.

### **FCC WARNING STATEMENT**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of 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.

### **FCC COMPLIANCE STATEMENT**

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.

### **CANADIAN DOC STATEMENT**

This digital apparatus does not exceed the Class A 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 la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### **CE STANDARDS**

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

### **UL/CSA**

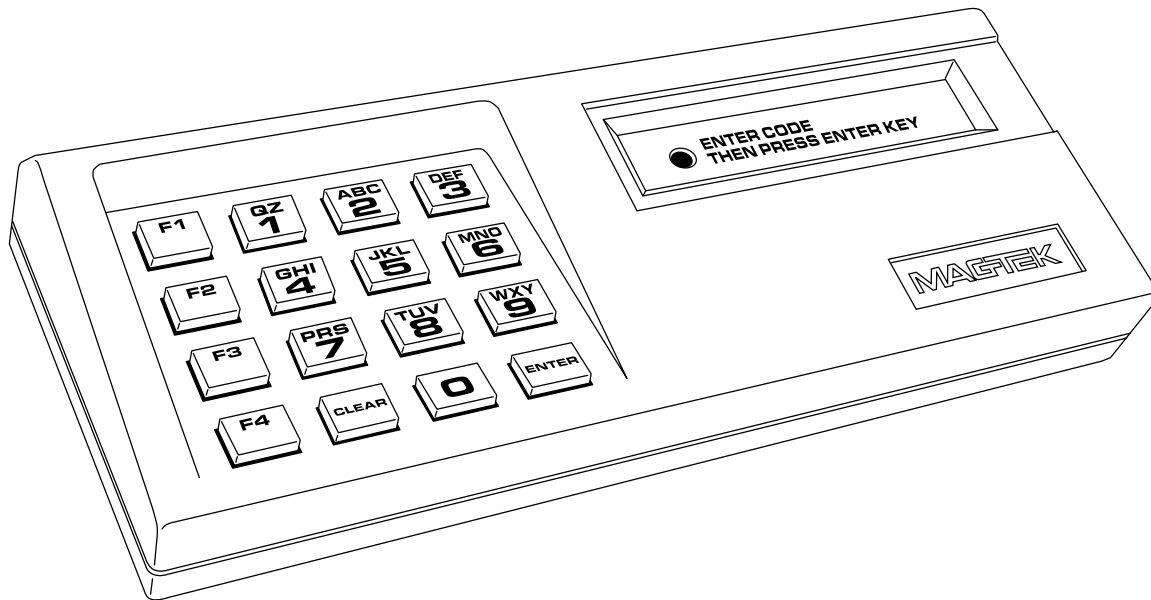
This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

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**Figure 1-1. Non Encrypting PINPad**

## SECTION 1. FEATURES AND SPECIFICATIONS

The MagTek Non-Encrypting PINPad is a general-purpose keypad which converts key closures into equivalent ASCII characters, and then communicates them using an RS-232 protocol. Part numbers and descriptions are as follows:

<b>Part Number</b>	<b>Description</b>
30015021	PINPad, Non Encrypting W/Cord, Readers
30015022	PINPad, Non Encrypting W/Cord, MCAT & PINPAL

The PINPad has ten numeric keys (0 through 9), and two keys which function as Clear and Enter. Function keys (F1-F4) are reserved for future use. Operation of the PINPad is controlled by a set of simple ASCII character commands. These commands select the operating mode, and control the LED on the face of the PINPad.

The following ASCII codes are transmitted to the host when the corresponding keys are pressed:

1. ASCII 0 to 9 (48-57) for keys 0 to 9
2. ASCII A (65) for the Enter key
3. ASCII B (66) for the Clear key

The PINPad has 2 basic modes of operation; BUFFERED MODE and DIGIT MODE.

The BUFFERED MODE stores up to 17 keys of information, and holds them until the Enter key is pressed. When the Enter key is pressed the operation is complete, and the PINPad defaults to idle mode until a command is sent to activate the BUFFER MODE again.

The DIGIT MODE simply transmits keys as they are pressed.

The communication interface is full duplex and employs an Acknowledged/Not Acknowledged (ACK/NAK) handshaking to reduce errors. The interface operates from power supplied through the same RJ-11 connector that contains transmit and receive signals.

The Specifications are as follows:

## SPECIFICATIONS

Dimensions:	
Length:	6.50" (16.5 cm)
Width:	2.87" (7.3 cm)
Height:	1.18" (3.0 cm) (without mounting feet)
Weight (with cord):	7.5 oz (212.6 grams)
Display:	LED
Connector:	RJ11 (4 pins)
Power Supply:	4.5VDC minimum, 5.5VDC maximum, 10mA
Communications Port:	Serial asynchronous full duplex 0-5V CMOS logic voltage level 0V = Logic 0, 5V = Logic 1
Input Voltages:	Vil: Min = -0.5V, Max = 0.9V Vih: Min = 1.9V, Max = 5.5V
Output Voltage:	Vol: Max= 0.45, Voh: Min = 2.4V
Baud Rate:	300 (Fixed)
Message Format:	ASCII (7 data bits, odd parity, 1 start bit, 1 stop bit)
Environmental	
Temperature:	60°F to 90°F, (15 °C to 32 °C) Operating; 32 °F to 122 °F (0 °C to 50 °C) Nonoperating
Relative Humidity	15% to 90%, Operating; 10% to 100% Nonoperating Both ranges noncondensing
MTBF:	Electronics: 30,000 hours



## SECTION 2. INSTALLATION

Install the Non Encrypting PINPad as described in this section. The pin list for the RJ-11 connector is described Appendix A. The PINPad can be used with the following MagTek equipment:

- PINPAL, Program and Test Cards Supplied
- Wedge Swipe Reader, Test Card Supplied
- RS-232 Swipe Reader (1 or 2 Track), Test Card Supplied
- MCAT, Program and Test Cards Supplied

One of the following adapter cables may be required for the RS-232 Swipe Reader:

- P/N 21083528 - For use with Control Signals; For PC AT, 9-pin to 9-pin.
- P/N 21083530 - For use with Control Signals; For PC XT and PS/2, 9-pin to 25-pin
- P/N 21083529 - For use without Control Signals (only RXD, TXD, and GND signals are connected); For PC AT, 9-pin to 9-pin
- P/N 21083531 - For use without Control Signals (only RXD, TXD, and GND signals are connected); For PC XT and PS/2, 9-pin to 25-pin

Contact the factory for PINPad use with other products.

The hardware installation is as follows for the products listed above.

1. Plug one end of the RJ-11 connector cable into the PINPad and the other end into the jack on the product being used (listed above). The pin list for the RJ-11 connector is shown in Appendix A.
2. Then apply power to the product being used. When power is applied, the LED on the PINPad will flash once. Power for the PINPad is taken from the other product. Test the installation for each product as follows:

### **PINPAL TEST**

To test the PINPad (P/N 30015022) with the PINPAL, perform the following steps:

1. Connect the Non Encrypting PINPad to the PINPAL as described above.
2. Connect Power to the PINPAL. The LED on the PINPad will flash red once. The display on the PINPAL will be:

**ENTER PROGRAM**

## **Non Encrypting PINPad**

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3. Swipe the Program Card. If the read was *not good* a display on the PINPAL will read:

**REENTER CARD**

If this appears, swipe the card again. If the read was good, the LED on the PINPad will be on, and the display on the PINPAL will be:

**ENT DATE mmdyy**

On the PINPad, enter the month, day, and year; for example January 22, 1998 will be 012298. Press ENTER on the PINPad, and the LED will go out, and the display on the PINPAL will be **ENTER CARD**.

4. Swipe the Test Card, and a display similar to the following will appear:

**1234567890123456**

5. Press ENTER on the PINPad and the next sixteen characters will be displayed on the PINPAL, or press ENTER until all the characters have been displayed. Pressing ENTER after that will redisplay the characters from the beginning. Each time ENTER is pressed, the LED will briefly go out, then light until clear is pressed or the display goes off.

6. Press Clear and the screen will return to:

**ENTER CARD**

## **WEDGE SWIPE READER TEST**

This test uses a Wedge Reader connected to the PC keyboard jack. Since the Reader is connected to the keyboard, the data from the Reader will be presented to the PC just as if someone typed the characters on the keyboard. To test the PINPad (P/N 30015021) with the Swipe Reader, perform the following steps:

1. Connect the Non Encrypting PINPad to the Wedge Swipe Reader as described above.
2. Unplug the keyboard connector on the PC. While observing the LEDs on the Swipe Reader and the PINPad, plug the male connector on the Swipe Reader into the keyboard connector. The LED on the Swipe Reader will blink approximately 5 times, and the LED on the PINPad will blink once.
3. For a Windows screen, select **Microsoft Word**, then **File**, then **New**. Data on the tracks will be printed on this page when a card is swiped. Other programs may be used for this test.

4. Swipe a card through the Swipe Reader.
5. Data on the card will be similar to the following:

**%ABCDEFGHIJKLMNOPQRSTUVWXYZ111111111111111111111111111111111111?  
;222?**

6. Press **Clear** and the PINPad is ready for operation.

**RS-232 SWIPE READER SETUP AND TEST**

To install the PINPad (P/N 30015021), Swipe Reader, and PC, perform the following steps:

1. Connect the Non Encrypting PINPad to the RS-232 Swipe Reader as described above.
2. Connect the 9-pin female end of the Swipe Reader cable to the male connector on the adapter cable (P/N 21083528 for this test, see below for other options).
3. Connect the female end of the adapter cable to the PC serial port.
4. Connect the power adapter into wall power and into the Swipe Reader. The green LED on the Swipe Reader will turn on and remain on, and the red LED on the PINPad will flash once.

This test requires Windows 95 with the HyperTerminal program with a Model MT-211232 RS-232 Swipe Reader (single or dual tracks only) connected to a PC Communications Port. With this model, one of four adapter cables is required. The adapter cables are:

With Control Signals:

For PC AT, 9-pin to 9-pin, P/N 21083528, set switches B7 and B8 on the swipe reader to off.

For PC XT and PS/2, 9-pin to 25-pin , P/N 21083530, set switches B7 and B8 on the swipe reader to off.

Without Control Signals (at the Reader end of the adapter, only RXD, TXD, and GND signals are connected):

For PC AT, 9-pin to 9-pin, P/N 21083529, set switches B7 and B8 on the swipe reader to on.

For PC XT and PS/2, 9-pin to 25-pin , P/N 21083531, set switches B7 and B8 on the swipe reader to on.

## **Non Encrypting PINPad**

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The adapter used in this test is P/N 21083528. Switches B7 and B8 are set to off.

A 9VDC 300mA Power Adapter is also required for this test.

The Communication Port is set for 9600 baud, even parity, 1 stop bit and 7 data bits. Check the Reader manual for switch orientation and settings. For this test, switches are set as follows:

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

\*With Switch B oriented above Switch A, UP is ON for Switch B, and DOWN is ON for Switch A.

## **HyperTerminal Setup**

On Windows 95, the HyperTerminal setup is as follows:

1. Click on **Start**, then highlight **Programs**, then highlight **Accessories**, then click on **HyperTerminal**.
2. When the dialog box appears, double click on **Hypertrm.exe**.
3. When the **Connection Description** dialog box appears, enter the name **test**, and click on **OK**.
4. When the **Phone Number** dialog box appears, in **Connect Using** select the **Com Port** the device is connected to, and click **OK**.
5. When the **Port Settings dialog box appears**, select the following:

**Bits per second: 9600**  
**Data bits: 7**  
**Parity: Even**  
**Stop bits: 1**  
**Flow Control: Hardware**

Click on **OK**.

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

- Click on **OK**, then click on **OK** again.
- Swipe a card and the card displayed on the PC screen will be similar to the following:

```
%ABCDEFGHIJKLMN O PQRSTUVWXYZ11111111111111111111111111111111  
1111111111111111?;2222222222222222222222222222222222222222  
222222222222?
```

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

For the PINPad to be activated, the PC must send the following message to the Swipe Reader: <STX>g<ETX>

**Note**

*This message cannot be typed on the keyboard to send to the Reader, because there can be no delays between characters in transmission. The message can be formatted and sent with HyperTerminal, Procomm, or a similar program.*

To define the commands needed to test the PINPad, use the DOS EDIT Program, and follow the steps below.

**MS-DOS Edit Program**

All the commands and responses for the PINPad are listed and described in Section 3. If these commands have been defined previously, skip the steps here. Perform the following steps to program the test commands.

- From Windows 95, Click on **Start**, highlight **Programs**, and the **MS-Dos prompt**.
- At the command line type **edit**:

```
C:\WINDOWS>edit
```

- 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 in Section 3 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.



7. Press the number keys 123456576890. 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.
  
8. From the drop-down menu, select **Transfer**, then **Send Text File**, then select **Cmdb.txt**. The LED will go out, and PINPad will be inactivated. The above sequence will appear similar to the following (if the cursor is positioned after each step).
  
  

**%ABCDEFGHIJKLMNQRSTUvwxyz11**  
**1111111111111111?;22?**  
 <STX>g<ETX>K  
**1234567890**  
 <STX>h<ETX>K  
**0987654321**  
 <STX>a<ETX>K  
**S1472580369X**  
 <STX>b<ETX>K
  
9. When a sequence similar to the above appears on the screen, the test is complete.

**MCAT SETUP AND TEST**

Connect the Non Encrypting PINPad (P/N 30015022) to the MCAT as described in *MCAT Manual*, Part Number 99832005, Chapter 3, "Setting up the MCAT". Test the PINPad and the MCAT as described in that manual.

## **Non Encrypting PINPad**

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## SECTION 3. COMMANDS AND RESPONSES

### PINPAD COMMUNICATION RESPONSES

The PINPad sends a “K” (acknowledged) when it receives a command it recognizes. An “N” (not acknowledged) is sent when a faulty transmission is made (for example, parity error). The PINPad ignores all unrecognized commands.

If an “N” is sent in response to (or during) a transmission from the host, the PINPad will immediately reinitiate the transmission from the start of text (STX) character.

If a command requires a response of “N” or “K” during a transmission, the PINPad will interrupt its transmission at the point it receives the command, transmit the response, and then resume transmission. Transmission is full duplex, and command protocol has priority over character transmission.

### PINPad Commands

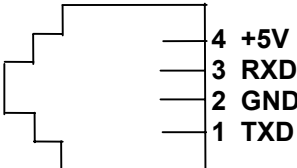
Command	Result
“a”	This command allows up to 17 keys to be buffered. All subsequent keys pressed after the 17th key are dumped (lost). Pressing the Enter key terminates the buffer operation and activates transmission of the stored characters. The LED remains lit during the operation. When a key is pressed, the LED goes out, and relights when the key is released. The transmitted characters are bracketed by an “S” and an “X” denoting start of text and end of text respectively. The LED goes out permanently when the Enter key is pressed.
“b”	This command turns the LED off and clears the DIGIT MODE if it is active (see DIGIT MODE below). This command does not cancel the BUFFER MODE.
“c”	This command causes the LED to flash.
“d”	RESERVED
“e”	RESERVED
“f”	RESERVED
“g”	This command executes the DIGIT MODE. The DIGIT MODE allows transmission of keys as they are pressed. If this command is sent following the “a” command, the PINPad will be set for DIGIT MODE and the LED will be lit. The same result can be achieved by sending the “h” command either before or after the “g” command.
“h”	Turns the LED on. It does not affect the mode of operation
“i”	Turns the LED off. It does not affect the mode of operation

## **Non Encrypting PINPad**

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# APPENDIX A. PIN LIST

The following connections are for the RJ-11 connector:



(view from outside of PINPad)

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

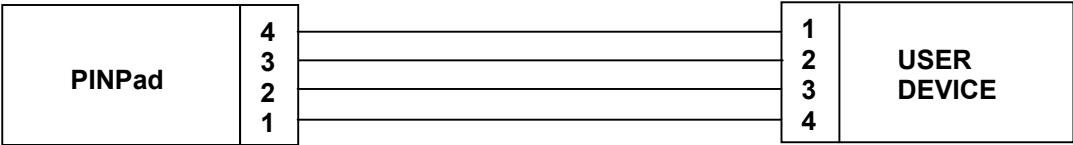


Figure A-2. PINPad to User Device Pin Connections

## **Non Encrypting PINPad**

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