

MS240/241
Programmable
Magnetic
Stripe
Reader

General Advisory

Improper handling, storage, environmental influences and /or product modification can lead to problems during use.

This is particularly true if repairs and maintenance work are not performed by trained personnel.

We reserve the right to make technical modifications in accordance with technological advancements as they occur.

FCC Information

This device 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 device is operated in a commercial environment. This device 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 or her own expense.

TABLE OF CONTENTS

INTRODUCTION	1
READER CONFIGURATION MANAGER	4
Beeps and Delays	7
Keyboard Wedge	7
RS232	9
Magnetic Reader	10
Data Editing	16
SPECIFICATIONS	19
TROUBLESHOOTING	21
WARRANTY	23

INTRODUCTION

The MS240 is a family of magnetic stripe readers specifically designed for reading ID, credit, membership, or other types of cards that contain magnetic stripe data.

The MS240 comes in five interfaces: **PS/2**, **AT**, **RS232**, **USB**, and **TTL Wand**.



MS240



MS241

Normal Operation

The MS240/241 is designed to read magnetic stripe data. If the MS240/241 has not been altered from its factory default, it will output the data in its original format.

The PS/2, AT, USB, and TTL readers output data as if the data had been typed on the host computer's keyboard, and can be viewed in any text editor such as Notepad or Word. The RS232 reader outputs the data through the computer serial port like a modem, in ASCII format, and thus requires a program such as HyperTerminal to view the data.

The MS240/241 reads up to three tracks of data. Normally bank cards utilize only the first two tracks, of which the second track contains appropriate data for most credit card purchases. The third track is usually present only on driver licenses.

The MS240/241 reader is compliant with ISO 7811, AAMVA, and CA DMV formats.

Following are the the various model numbers / interfaces available for the MS240/241 and the specifics of each.

MS240A

The Undecoded (or TTL, or Wand) MS240A requires an external decoder in order to communicate with your computer. Decoders are built into Wedge devices and many POS (Point of Sale) keyboards, such as the Unitech KP3700.

The MS240A cannot be configured via Scanner Configuration Manager. Any modification of the output data must be done in the external decoder.

MS240-2

The RS232 (Com Port) interface should only be used when your software is designed to accept com port input. The MS240-2 has a built-in decoder and outputs the scanned data in ASCII Code. MS240-2 input requires special software such as HyperTerminal (9600 bits per second, 8 data bits, No parity, 1 stop bit, No flow control) in order to view the output.

Note: The MS240-2 will require an optional 5V 300mA power supply unless your computer's com port supplies power (unlikely).

MS240-3

The MS240-3 AT keyboard wedge interface has a "Y" interface cable with an AT male plug on one end and an AT female plug on the other. The cable end with the male plug is inserted into your computer's keyboard port and your keyboard is plugged into the female plug.

The MS240-3 operation should be "plug and play". The MS240-3 has a built-in decoder that outputs the scanned data in Scancode keyboard format. Your computer will treat your MS240-3's input as it would normal keyboard input.

Note: If you are using a laptop computer or a USB keyboard (ie. you are not using an AT keyboard), then your MS240-3 will need to be configured as a "Keyboardless Wedge" (see "Device" in the "Scanner Configuration Manager" section).

MS240-3PS2

The PS/2 Keyboard Wedge interface is the most popular and straightforward. The MS240-3PS2 has a “Y” interface cable with a PS/2 male plug on one end and a PS/2 female plug on the other. The cable end with the male plug is inserted into your computer’s keyboard port (not the mouse port!) and your keyboard is plugged into the female plug.

The MS240-3PS2 operation should be “plug and play”. The MS240-3PS2 has a built-in decoder that outputs the read data in Scancode keyboard format. Your computer will treat your MS240-3PS2’s input as it would normal keyboard input.

Note: If you are using a laptop computer or a USB keyboard (ie. you are not using a PS/2 keyboard), then your MS240-3PS2 will need to be configured as a “Keyboardless Wedge” (see “Device” in the “Scanner Configuration Manager” section).

MS240-4

The USB interface is becoming popular and relatively foolproof. Your MS240-4 uses the standard USB driver that has been included in the Windows Operating System since Windows 98 SE. The MS240-4 operation should be “plug and play”. The MS240-4 has a built-in decoder that outputs the scanned data in HID keyboard format. Your computer will treat your MS240-4’s input as it would normal keyboard input.

Note: Mac OS10 users might need to update their USB driver.

READER CONFIGURATION MANAGER

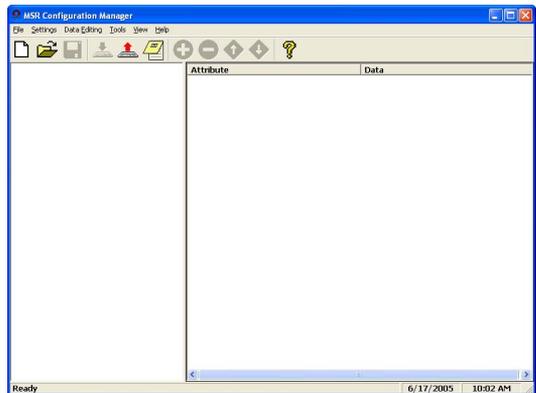
Reader Configuration Manager software is the simplest and most foolproof way to configure your magnetic card reader settings.

Start It Up

After loading and starting RCMSetup.exe, the icon to the right will appear on your desktop:



Click on the RCM icon and the following screen will appear:



As you can see, you are presented with a blank work area and a row of icons across the top. Following is an explanation of each of the icons:



Above, from left to right, are the standard Windows icons for “New Document”, “Open File”, and “Save File”.

Reader Configuration Manager saves configuration settings in .cfg files, so you can have access to a variety of different reader configurations that you’ve set up.

To reset the reader back to **factory default**, click on the “New Document” icon and download the unmanipulated setting to the reader (see below).



The above icons, from left to right, represent download settings (from computer to keyboard), and upload settings (from reader to computer). The third icon opens a Test Pad (Notepad) where you can view the actual reader output.



The above four icons are used in the “Data Editing” feature of RCM. From left to right they are the “Add a Formula” icon, the “Remove a Formula” icon, and the right-hand two are the “Move Formula” icons that move selected formulas up or down in relation to each other. For more information on data editing, see page 16.

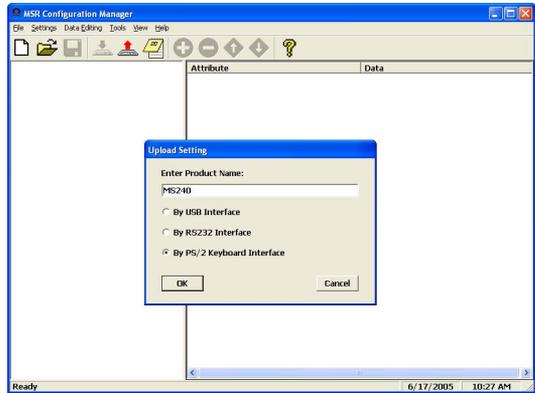


Help is just a click away.

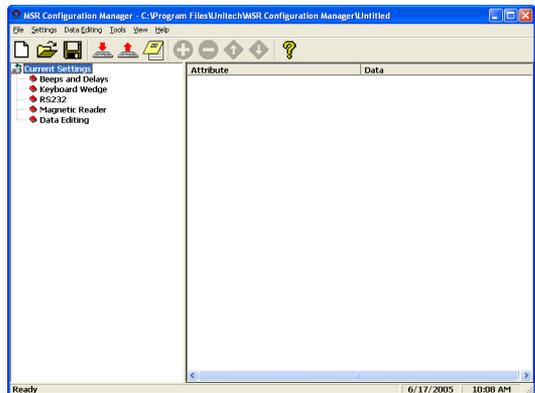
First Look

Click the upload icon (see page 4) and the following pop-up screen will appear:

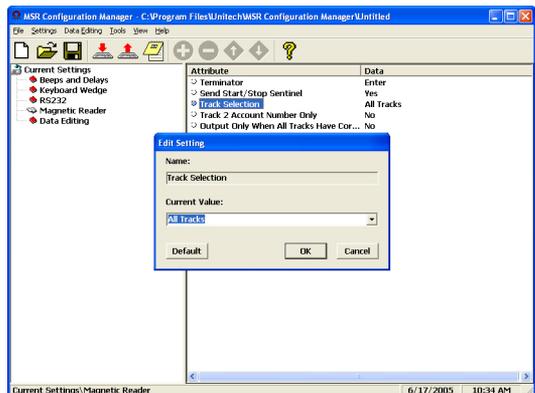
Enter the reader product number (MS240, for example), and click “OK”. The LED on the reader will flash during the upload process.



The screen to the right appears. Click on any of the selections under “Current Settings” to view its “Attributes”.



Double-click on any of the “Attributes” to edit that attribute. This is done via a drop-down menu. After selecting your configuration settings, click on the Download icon (see page 4). The LED on the reader will flash during the download process. Afterwards, you may be prompted to do an optional “Quick Test”.



Settings

Following is a detailed discussion of each of the settings, their attributes, and the effects each of these will have on data output from your Unitech magnetic stripe reader.

Beeps and Delays

The three attributes for “Beeps and Delays” are: “Beep Tone”, “Intercharacter Delay”, and “Interblock Delay”.

Beep Tone

Select a value from “None” to “High” to set the loudness of the tone, or select “Low to High” or “High to Low” to set the characteristic of the tone.

Default is “Medium”.

Interblock Delay

Interblock delay is the time duration that can be inserted between one block of data and another. This function is analogous to the time duration required between dialing a phone number’s country code and the phone number itself. The interblock delay can be inserted via RCM’s Data Editing function (see page 16).

Default is “10 ms”.

Intercharacter Delay

Intercharacter delay is the time duration between data characters sent from the reader to the computer. Intercharacter delay is usually inserted when the data flow must be slowed down to accommodate a slower computer.

Default is “1 ms”.

Keyboard Wedge

Your Unitech reader contains a built-in data decoder that translates raw magnetic stripe input into Keyboard Scan Code, or ASCII Code in the case of RS232 interface readers, with the result that magnetic stripe data exits the reader as if you had typed the text.

The four keyboard wedge parameters are listed on the following page.

Keyboard Wedge, continued

Function Code

Function Code determines how function code characters from the magnetic stripe reader are output.

- If **Yes** is selected, then read function codes will output as if their corresponding function keys were pressed. For instance - scanning an F1 label will display a “Help” pop-up box, F3 will display a “Find” pop-up box, etc.
- If **No** is selected, the read function codes will output special character strings defined by Unitech for non-print character output.

Default is “Yes”.

Caps-Lock

The Caps-Lock function determines how the Caps Lock key controls the case of alphabetical characters. The three options below are available:

- **Auto Trace** automatically determines the Caps Lock key status of your keyboard and informs the decoder accordingly.
- **Lower Case** manually coordinates the physical state of the Caps Lock key with the Caps Lock state of the decoder. For example, if the Caps Lock LED of your keyboard is not lit, then “Lower Case” should be selected.
- **Upper Case** is the same as Lower Case (above) except that it applies to the upper case state. If the Caps Lock LED on your keyboard is lit, then “Upper Case” should be selected.

Default is “Auto Trace”.

Language

Your Unitech reader can output characters using eleven different language sets, including:

Danish	French	Norwegian	Swiss
U.S. English	German	Swedish	Alt Key Mode
U.K. English	Italian	Spanish	

Default is “U.S.”

Use Numeric Keypad

The ASCII Code for numeric input from the keypad part of the keyboard is different from that of the upper row of the keyboard proper. Some accounting programs specifically require keypad input, and for that reason, the reader decoder can output read data as either keypad or keyboard (upper row) output.

Default is “No”

RS232

The RS232 input characteristics of the MS240/241 (see page 2) can be modified according to the following four parameters:

Baud Rate

Baud Rate (bits per second) refers to the speed of the data from the MS240/241. Normally, the baud rate of the host RS232 port should match that of the input device.

Default is “9600 Baud”.

Parity

Parity is an archaic technique used to detect data transmission errors by adding an extra bit to each character. This scheme has been supplanted in modern communication devices by “error correction”.

Default (and the current universal standard) is “No Parity”.

Data Bit

Data bit refers to the number of bits per byte that are dedicated to data (minus start/stop bits).

Default (and the current universal standard) is “8 Data Bits”.

Receive Terminator

A user-definable Receive Terminator can be inserted at the end of input data. Pre-defined receive terminators include:

- <t>: Tab
- <r>: Carriage Return
- <n>: Line Feed
- <d>: Any Digit
- <a>: Any Letter
- <*>: Interblock Delay (see page 7)
- <“>: “ (quotation mark)
- <dd>: Character in Hexadecimal Notation
- <<>: < (less-than sign)
- <>>: > (greater-than sign)

The above special characters must be bracketed by < > symbols as shown.

Function codes (F keys, cursor up, Enter, etc.) can also be inserted via hexadecimal code (accessible in a linked menu) and must include surrounding brackets (<>).

Letters and numbers should be entered directly by keyboard input without surrounding brackets (<>).

Default is “None”.

Magnetic Reader

The Magnetic Stripe Reader configuration parameters differ from bar codes mainly in that magnetic cards adhere to only one standard defined by ANSI and ISO/IEC, while there are over a dozen different symbologies for bar codes.

Each magnetic stripe can contain three distinct parallel tracks, each 0.110" (2.794mm) wide. Each track's unique characteristics are described below.

Track 1

The recording density of Track 1 is defined as 210 bits per inch. The character configuration (encoding) is 6 bits plus 1 parity (odd) bit, which yields 64 unique **alphanumeric** and symbolic characters. The maximum information content is 79 characters, with the format defined by the Format Code letter:

- **A** is defined by the card issuer and is for their exclusive use.
- **B** developed by the International Air Transportation Association (IATA) contains alphanumeric information for banking and finance. The standard sequence for format B is listed below.
- **C-M** are reserved for use by ANSI Subcommittee X3B10.
- **N-Z** are available for use by individual card issuers.

Following is track 1 output and an explanation of the components.

```
%B987654321012300^UNITECH/JOE^0512896745280?
```

%	B	PAN	^	CC	NAME	^	DATE	SC	PVV	DD	?	LRC
---	---	-----	---	----	------	---	------	----	-----	----	---	-----

%	<i>Start Sentinel</i> - 1 character - always “%” for Track 1
B	<i>Format Code</i> - 1 alphabetical character - in this case, “B”
PAN	<i>Primary Account Number</i> - up to 19 digits
^	<i>Separator</i> - 1 character - always “^” for Track 1
CC	<i>Country Code</i> - 3 digits (only for MasterCard)
NAME	<i>Cardholder Name</i> - 2 to 26 alphabetical characters - normally last name, then first name, separated by a “/”
^	<i>Separator</i> - 1 character - always “^” for Track 1
DATE	<i>Expiration Date</i> - 4 digits - YYMM format
SC	<i>Service Code</i> - 3 digits - defines transaction requirements
PVV	<i>PIN Verification Value</i> - 0 to 5 digits
DD	<i>Discretionary Data</i> - additional characters to fill out maximum record length
?	<i>End Sentinel</i> - 1 character - always “?” for all tracks
LRC	<i>Longitudinal Redundancy Check</i> - 1 check character

Track 2

The recording density of Track 2 is defined as 75 bits per inch.

The character configuration (encoding) is 4 bits plus 1 parity (odd) bit, which yields 16 unique characters (10 **numeric** digits plus 6 symbolic characters ;;<=>?).

The maximum information content, defined by the American Bankers Association (ABA), is 40 characters arranged in the format below.

Following is track 2 output and an explanation of the components.

;987654321012300=05121208967428?

; PAN = CC DATE SC PVV DD ? LRC
--

- ;** *Start Sentinel* - 1 character - always “;” for Track 2
- PAN** *Primary Account Number* - up to 19 digits
- =** *Separator* - 1 character - always “=” for Track 2
- CC** *Country Code* - 3 digits (only for MasterCard)
- DATE** *Expiration Date* - 4 digits - YYMM format
- SC** *Service Code* - 3 digits - defines transaction requirements
- PVV** *PIN Verification Value* - 0 to 5 digits
- DD** *Discretionary Data* - additional characters to fill out maximum record length
- ?** *End Sentinel* - 1 character - always “?” for all tracks
- LRC** *Longitudinal Redundancy Check* - 1 check character

Track 3

The recording density of Track 3 is defined as 210 bits per inch. The character configuration (encoding) is 4 bits plus 1 parity (odd) bit, which yields 16 unique characters (10 **numeric** digits plus 6 symbolic characters ;,<=>?).

The maximum information content, defined by the Thrift Industry (THRIFT-TTS), is 107 characters arranged in the format below.

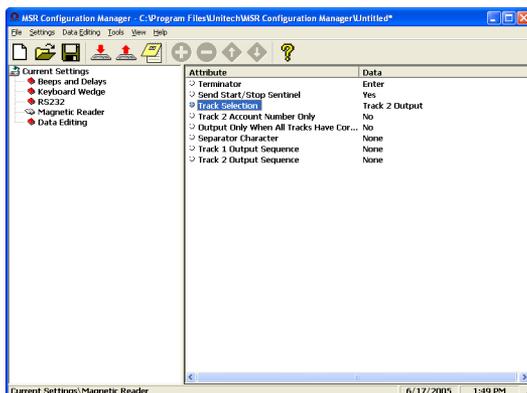
; FC PAN = CC CuC CE AA AR CB CL RC PINCP IC PANSR FSANSR SSANSR DATE CSN CScN FSAN = SSAN = RM CCD DD ? LRC

- ;** *Start Sentinel* - 1 character - always “;” for Track 3
- FC** *Format Code* - 2 alphabetical characters
- PAN** *Primary Account Number* - up to 19 digits
- =** *Separator* - 1 character - always “=” for Track 3
- CC** *Country Code* - 3 digits
- CuC** *Currency Code* - 3 digits
- CE** *Currency Exponent* - 1 digit
- AA** *Amount Authorized Per Cycle* - 4 digits
- AR** *Amount Remaining This Cycle* - 4 digits
- CB** *Cycle Begin (Validity Date)* - 4 digits - YYMM format
- CL** *Cycle Length* - 2 digits
- RC** *Retry Count* - 1 digit - number of remaining PIN tries
- PINCP** *PIN Control Parameters* - 6 digits
- IC** *Interchange Control* - 1 digit
- PANSR** *PAN Service Restriction* - 2 digits - describes the account
- FSANSR** *FSAN Service Restriction* - 2 digits - see FSAN below
- SSANSR** *SSAN Service Restriction* - 2 digits - see SSAN below
- DATE** *Expiration Date* - 4 digits - YYMM format
- CSN** *Card Sequence Number* - 1 digit
- CScN** *Card Security Number* - 9 digits
- FSAN** *First Subsidiary Account Number* - variable number of digits
- =** *Separator* - 1 character - always “=” for Track 3
- SSAN** *Second Subsidiary Account Number* - variable number of digits
- =** *Separator* - 1 character - always “=” for Track 3
- RM** *Relay Marker* - 1 digit
- CCD** *Crypto Check* - 1 digit
- DD** *Discretionary Data* - additional characters to fill out maximum record length
- ?** *End Sentinel* - 1 character - always “?” for all tracks
- LRC** *Longitudinal Redundancy Check* - 1 check character

Setting Magnetic Reader Parameters

Reader Configuration Manager, shown right and outlined in detail below, enables the output from the MS240/241 to be modified to the user's requirements.

In a POS environment, where only credit cards and bank cards are read, normally only Track 2 is selected.



Terminator

The Terminator is a command that follows after the bar code data. Four different terminators can be selected here: "Enter", "Return (on numeric keypad)", "Field Exit or Right Control", or "None". To define a different terminator, use the "Data Editing" function (see page 16). Default is "Enter".

Send Start/Stop Sentinel

Each magnetic stripe track begins with a start character and ends with a stop character (and an LRC character).

The start character for track 1 is a % (percent sign), and for tracks 2 and 3 is a ; (semi colon).

The stop character for all three tracks is a ? (question mark).

Selecting the "No" option for this parameter strips the start/stop sentinels for each track from the output data.

Default is "Yes"

Track Selection

Select only one, all, or any combination of the available tracks.

Selections include:

- All Tracks
- Track 1 and Track 2
- Track 1 and Track 3
- Track 2 and Track 3
- Track 1 Output
- Track 2 Output
- Track 3 Output

Default is "All Tracks".

MS240/241 Manual

Magnetic Reader, continued

Track 2 Account Number Only

If only track 2 is enabled (see previous page), only the account number from track 2 and the start/stop sentinels are output.

If tracks other than track 2 are enabled, this parameter actually outputs all the other track's data, the account number from track 2, and their start/stop sentinels.

Default is "No".

Output Only When All Tracks Have Correct Data

A useful function for insuring data integrity, this function can cause trouble when the card reader tries to read more tracks than are on the card.

Default is "No".

Separator Character

Insert one character between each track's output.

Pre-defined characters include:

- <t>: Tab
- <n>: Line Feed
- <d>: Any Digit (not applicable to this function)
- <a>: Any Letter (not applicable to this function)
- <*>: Interblock Delay (not applicable to this function)
- <">: " (quotation marks)
- <dd>: character in hexadecimal notation
- <<>: <
- <>>: >

The above special characters must be bracketed by < > symbols as shown.

Function codes (F keys, Cursor up, Enter, etc.) can also be inserted via hexadecimal code (accessible in a linked menu) and must include surrounding brackets (<>).

Letters and numbers should be entered directly by keyboard input without surrounding brackets (<>).

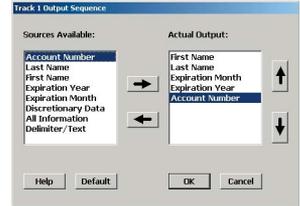
Default is "None".

Magnetic Reader, continued

Track 1 Output Sequence

Track 1 output sequence can be easily re-arranged to whatever sequence the user requires. Track 1 parameters include:

- Account Number
- Last Name
- First Name
- Expiration Year
- Expiration Month
- Discretionary Data
- All Information
- Delimiter / Text



Default is “None”.

Highlight a parameter (such as “Account Number”) in the “Sources Available” area and click on the top horizontal arrow (shown right) to move it to the “Actual Output” area. Use the lower horizontal arrow to remove selections from the Actual Output area.



Use the up and down arrows to move selected parameters up or down in relation to the other parameters.



When the selected parameters are in the desired sequence, click the “OK” button.



Track 2 Output Sequence

Track 2 output sequence is arranged in the same manner as the Track 1 output sequence (above). Track 2 parameters include:

- Account Number
- Expiration Year
- Expiration Month
- Discretionary Data
- All Information
- Delimiter / Text

* Note that track 2 does not contain last name and first name data.

Default is “None”.

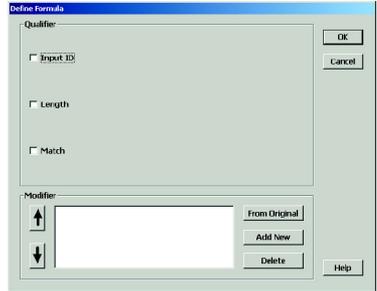
Data Editing

Data Editing is a powerful function that can give you tremendous control over how data is exported from the reader.

After clicking on “Data Editing” the data editing icons become active. Click on the icon with the blue circle and white plus sign.



The “Define Formula” pop-up box to the right appears, which is divided into two sections: “Qualifier” and “Modifier”.



Qualifier

The Qualifier section defines the conditions that must be present for the mag stripe data to be modified, such as which track it must be from (Track I, Track II, etc.) or what characters (defined by a match string) the mag stripe data must contain.

When the conditions of the Qualifier are met, the data is then modified according to the rules defined in the “Modifier”, below.

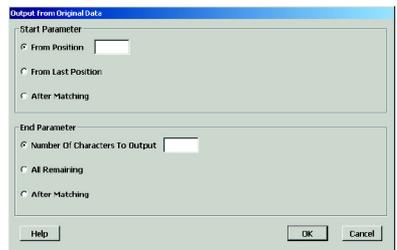
Modifier

The Modifier section contains three selections: “**From Original**”, “**Add New**”, and “**Delete**”.

From Original extracts the desired data from each track.

The **Start Parameter** defines the beginning of the string of data that is to be output. The start parameter can either be defined by position starting from the beginning (“From Position”), or a specific number of characters from the end of the string (“From Last Position”), or a specified number of characters before or after a user-defined character string (“After Matching”).

The **End Parameter** defines the end of the string of data that is to be output. Three options are available: “Number Of Characters To Be Output”, “All Remaining”, and “After Matching”. The first two are self-explanatory. “After Matching” defines the end as a specified number of characters before or after a user-defined character string.



Data Editing, continued

Even if the original bar code data is not modified, if additional characters are to be added (see “Add New”, below) the original Start Parameter must be defined as From Position “1” and the End Parameter defined as “All Remaining”, otherwise, none of the original data will be output.

Add New adds characters (printing and non-printing) to the data output from the reader.

These characters can be added before and/or after the actual scanned data (see “Move Up / Move Down”, below). Pre-defined characters include:

- <t>: Tab
- <r>: Carriage Return
- <n>: Line Feed
- <d>: Any Digit (data editing)
- <a>: Any Letter (data editing)
- <*>: Interblock Delay (data editing)
- <">: “ (quotation marks)
- <dd>: character in hexadecimal notation
- <<>: < (less than)
- <>>: > (greater than)

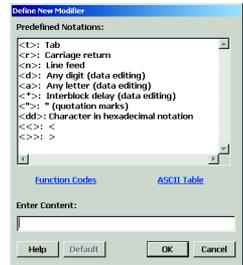
Characters must be bracketed by < > symbols.

Letters and numbers should be represented in hexadecimal format (accessible in a linked menu). For instance, the lower-case letter “t” should be entered as <74> and the numeral 5 should be entered as <35>.

Function codes (F keys, Cursor up, Enter, etc.) can also be inserted via hexadecimal code (accessible in a linked menu).

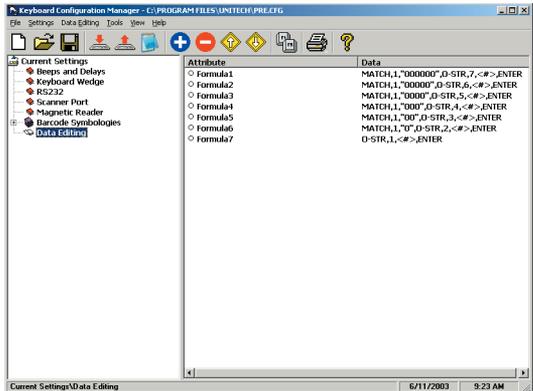
Delete deletes existing modifier strings.

Move Up / Move Down moves the modifiers up and down in relation to each other. The top modifier will be performed first and each one down the list will be performed in sequence. The original data (modified or unmodified) will be output according to its position in the modifier sequence.



Arrange Formulas

After the formulas have been created, they must be arranged in the optimum sequence by selecting formulas and using the “Move Formula” icons (see page 5). This sequence is usually according to their qualifier - from least likely to occur to most likely to occur.



In the example pictured above, a series of formulas are designed to output all the data in a mag stripe that follows a series of “0”s. For instance, if the actual mag card data is “000045678”, the desired output would be “45678” (the original minus all the 0s occurring at the beginning of the string). If there are six 0s (Formula 1), then the output starts at the seventh position. If there are five 0s (Formula 2), then the output starts at the sixth position, etc. If, instead, we were to place the qualifier for two 0s above (before) the qualifier for six 0s, then the formula stipulating two 0s would activate even if there were six 0s in the mag card data because the qualifier would stop looking for 0s after it had found two. In this case, all qualifiers with three or more 0s would be disregarded, which would not be a desirable result.

The “Everything Else” Formula

If a formula is entered into the Data Editing area, then all read mag card data will be evaluated according to this formula. If the read mag card data does not satisfy the requirements of the Qualifier (see page 16), then no data is output. Practically speaking, the reader has been set up to read only mag stripe data defined by the Qualifier. You will not be able to read other mag stripes. The answer to this problem is to end the sequence of formulas with a formula that has no Qualifier and whose Modifier includes all the read data (starts at position 1 and outputs “all remaining”). An example of this can be seen as Formula 7 above.

SPECIFICATIONS

MAGNETIC READER

Formats:	ISO 7811, AAMVA, & CA DMV
Swipe speed:	3 to 55 inches per second, bi-directional
Card width:	0.010 to 0.050 inches (0.254 to 1.27mm)
Slot width:	0.055 inches (1.37mm)

MECHANICAL

Dimensions:	Length - 39.37" (100mm) Width - 1.38" (35mm) Height - 1.30" (33mm)
Weight:	9 oz. (255 grams) with cable
Case material:	ABS plastic
Cord:	72" (183cm) straight (not coiled)

INTERFACE

Connector:	PS/2, RS232, TTL, USB (see next page for pinouts)
------------	--

ELECTRICAL

Voltage:	5 Volts DC $\pm 10\%$
Power consumption:	TTL - 1.1 mA per track while reading Decoded - 3 tracks - Keyboard - 30mA approx. USB (keyboard) - 40mA approx. RS232 - 40mA approx.
Power Supply:	5 VDC/350mA (required for RS232 version only)

DECODER

Symbologies:	Codabar, Code 11, Code 32, Code 39 (Standard and Full ASCII), Code 93, Code 128, Delta Code, EAN-8, EAN-13, Label Code IV and V, MSI Code, Plessey Code, Standard 2 of 5, UPC-A, UPC-E
Configuration:	Via Reader Configuration Manager software (downloadable from www.ute.com)
Data Editing:	Almost unlimited

ENVIRONMENTAL

Temperature:	Operating - 32° to 131° F (0° to 55° C) Storage - -22° to 158° F (-30° to 70° C)
Humidity:	0% to 95% RH non-condensing
Magnetic head life:	1,000,000 passes, minimum
Rail and cover life:	1,000,000 passes, minimum
Read rate:	Less than 1 error in 100,000 bits on cards conforming to ISO 7811 1-5 (not operator induced)
Warranty:	1 year

PINOUTS

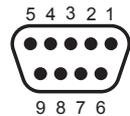
Keyboard Interface (6 pin mini-DIN male)

Pin 1	Data (Connect to PC Data)
Pin 2	Reset (Connect to PC Reset)
Pin 3	Ground
Pin 4	+5V DC Input
Pin 5	Clock (Connect to PC Clock)
Pin 6	N/C



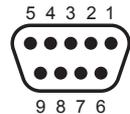
RS232 Interface (DB9 female)

Pin 1	N/C
Pin 2	TXD (Transmit Data)
Pin 3	RXD (Receive Data)
Pin 4	N/C
Pin 5	GND (Ground)
Pin 6	N/C
Pin 7	CTS (Clear to Send)
Pin 8	RTS (Request to Send)
Pin 9	VCC (+5V DC Input)



TTL (Wand) Interface (DB9 female - squeeze release)

Pin 1	N/C
Pin 2	Data
Pin 3	N/C
Pin 4	N/C
Pin 5	N/C
Pin 6	N/C
Pin 7	Ground
Pin 8	N/C
Pin 9	+5V DC Input



USB Interface (4 pin male)

Pin 1	+5V DC Input
Pin 2	Data -
Pin 3	Data +
Pin 4	Ground



TROUBLESHOOTING

Most problems that you might encounter with your reader can be solved using the following procedures:

- **Try reading other cards.** If your reader can read other cards, but cannot read your particular card, first check to see if other cards from the same issuer have similar problems.

- **Reset to Factory Default.** While the Reader Configuration Manager program is active, click the “new file” icon (see page 4) and the “download to reader” icon (see page 4) to reset your reader back to factory default.
Caution: This procedure will erase special configurations that you would have created. You might want to save them first.

- **Test the scanner on other ports.** Unitech products are built to the highest standards, and a perceived reader malfunction may actually be a malfunction in the host computer. Test the reader on the host’s other ports if possible or, if necessary, on other systems to verify that the problem is actually in the reader, and not in the host computer.

Problems and Solutions

Problem: No output from reader.

If the reader appears to read (beeps after a swipe), but does not output data, try reading into a word processor application or Notepad session to see if it's a software problem.

Try the reader on other ports to see if it's a computer port problem.

If your reader is connected by RS232 interface, make sure that the correct com port is selected. Test your reader in HyperTerminal, making sure that "Bits per second" = 9600, "Data bits" = 8, "Parity" = None, "Stop bits" = 1, and "Flow control" = None.

Problem: Reader Configuration Manager cannot upload or download.

Reader Configuration Manager can currently upload and download only in the Windows operating system (NT excluded).

If you have a different OS, or the download function doesn't work, install RCM on a different Windows-based (NT excluded) computer and try uploading/downloading from it.

Problem: Reader reads properly, but bank cannot accept credit card information.

At least 90% of the time, banks require only unadulterated Track II input to process a credit card transaction.

If this does not solve the problem, have your POS software developer swipe a working credit card through a properly configured reader directly into a text editor (Notepad works great). Have them X out the sensitive info if necessary and send you the text file. Compare this data string with yours, using the information on page 10 in this manual to determine what the problem might be.

WARRANTY

Limited Hardware Warranty

The Limited Warranty terms described below are solely applicable to the Customer of Unitech Electronics (afterwards simply referred to as Unitech) products. This warranty applies to equipment only. All consumables and accessories are exempted.

Unitech warrants its products to be delivered free from defects in material and workmanship, from the date of purchase. All equipment except for cables, batteries, power supplies, and RF cards are warranted for a period of twelve months (beginning from the month of delivery). Some products may have longer warranties, but all products (except for cables, batteries, power supplies, and RF cards) carry at least a one year warranty. All cables, batteries, power supplies, and RF cards external to dedicated Unitech products carry a ninety day warranty.

During this warranty period Unitech will, at its sole discretion, replace or repair free of charge any product(s) which, in its opinion, is/are defective. Any merchandise that is to be returned must have a valid Return Merchandise Authorization (RMA) number clearly indicated on the outside of the returned package and on the accompanying packing list. Unitech cannot be held responsible for any package returned without an RMA number. To obtain an RMA number, please contact Unitech's Customer Service Department or a Sale Representative.

The Customer is responsible for packing the defective product properly, and for the cost of shipping the defective product to Unitech. Unitech is responsible for the cost of shipping back the product which is repaired or replaced. If any charges are borne by the Customer, the invoice for the repaired or replaced product(s) will be sent to the Customer based on the Customer's payment terms.

In the event that the product has been modified without Unitech's consent or if the product failure is the result of misuse, abuse, willful neglect or misapplication, Unitech has no obligation to repair or replace the product.

Except as expressly mentioned above, the hardware and accompanying written materials (including the user's manual) are provided "as is" without warranty of any kind, including the implied warranties of merchant ability and fitness for a particular purpose, even if Unitech has been advised of that purpose. In no event will Unitech be liable for any direct, indirect, consequential or incidental damages arising out of the use of or inability to use such product(s), even if Unitech has been advised of the possibility of such damages.