

GENOVATION

**MacroMaster232
Advanced Mode User Guide**

**Revision 5.10
September 2009**

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1: Introduction to Advanced Mode

Advanced Mode ROM editing allows the default behavior of the MiniTerm to be modified -- providing, in effect, a semi-custom MiniTerm to be designed outside of the factory. The end-user still has the same redefinition capabilities as before, which allows for tailoring the key macros and general properties to their liking.

Version 4 of the MiniTerm family introduces a new world of customization and programmability.

- Ability to edit **any** ROM (flash memory) setting in the MiniTerm by allowing the modification of all ROM (flash memory) parameters.
- Eight **new** programmable user-interface **screens** allow for a scripted set of user<=>MiniTerm interactions without programming any host software.

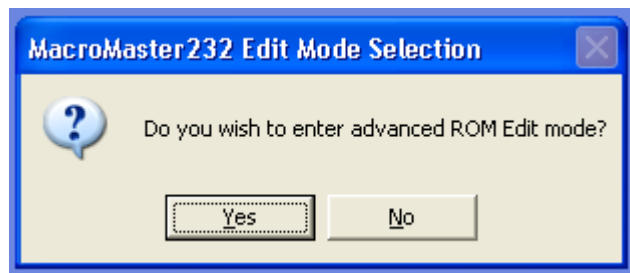
Prior to using MacroMaster232's "Advanced Mode", you must first do the following:

- Install the MiniTermPro package software.
- Install at least one MiniTerm 9xx family device, firmware v4 or later.
- Familiarize yourself with using and programming your MiniTerm.

This document applies to all Genovation v4 or newer MiniTerms, whether USB or RS232.

Enabling Advanced (ROM) Edit Mode

Method 1: In version 5.10 and later, to launch MacroMaster232 in Advanced mode, press and hold down the left Ctrl key then use your mouse to click and open MacroMaster in the normal manner. You should see the following prompt (sometimes it may be hidden behind other windows):



Select Yes. You will need to use the Ctrl key every time unless you choose to use method 2, below.

Method 2: Locate the folder that your MiniTermPro package was installed in. It should be similar to:

Start >> Programs >> Genovation >> MiniTermPro

Locate the file MacroMaster232.ini. You may edit it with Notepad. This short file normally looks like this:

```
[ CONFIGURATION ]
Keypad_Layout=2
Advanced_Enable=0
```

Change the Advanced_Enable value to 1.

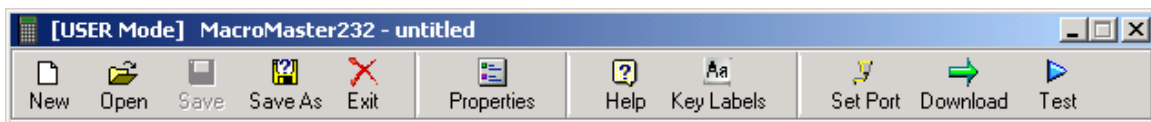
```
[ CONFIGURATION ]
Keypad_Layout=2
Advanced_Enable=1
```

Restart MacroMaster232 by launching:

Start >> Programs >> Genovation >> MiniTermPro >> MacroMaster232

User Properties Page

In normal User Mode the button bar and Properties page look like this. Note the [USER Mode] prefix in the title bar.



MiniTerm USER Properties

Operating Mode

True Terminal Mode

Line Edit Mode

Mask User Input

Tail Character: 13 (decimal)

RS232 Settings

Baud Rate: 9600

Word Format: 8,N,1

Green LED

Off

Level Indicator

Host/Macro Control

Power Indicator

Red LED

Off

Level Indicator

Host/Macro Control

Power Indicator

Character Pacing

Pacing (ms): 2

Download Delay

Delay (ms): 0

Command Prefix

Prefix (decimal): 64

Key Beep

Key Beep (ms): 40

USB Host Mode

Default (USB Virtual COM)

PC Keyboard (USB HID)

Key Rollover

How many keys can be pressed down simultaneously?

1

2

Choose Card Reader Type:

None

Barcode/RFID

Magnetic Card

Barcode/RFID Reader

Enable Start Character

Start Char: 9

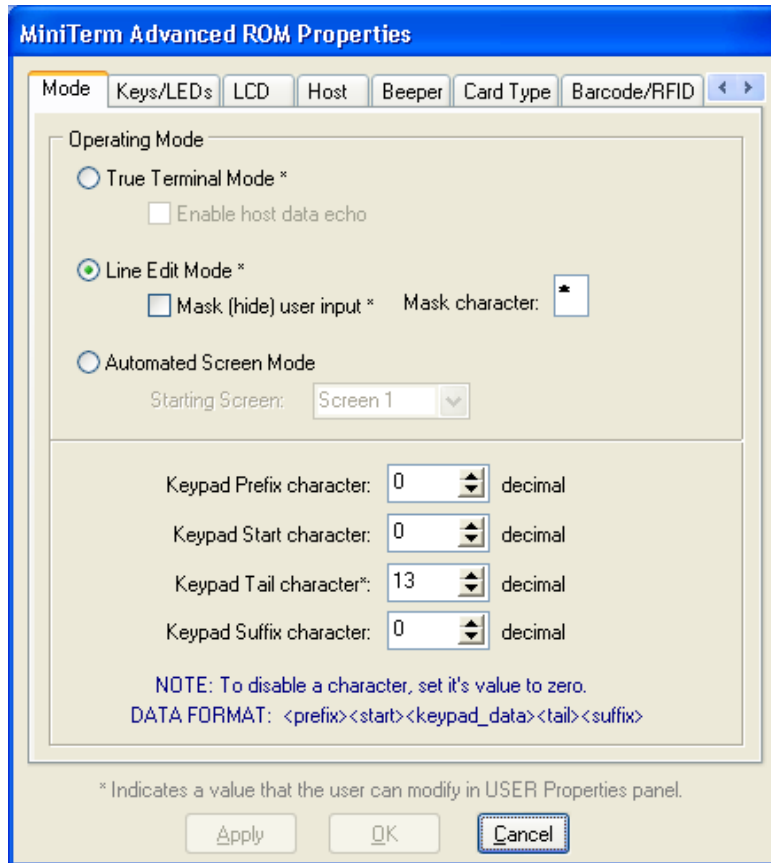
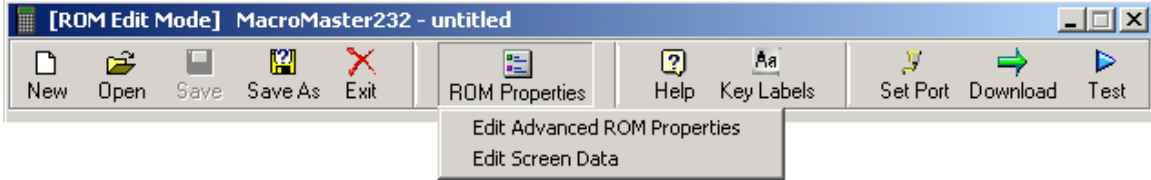
Enable End Character

End Char: 13

Apply OK Cancel

Advanced (ROM Edit) Properties Page

In Advanced user mode, the button bar and the first Properties page look like this:



Note that the prefix in the title bar has changed to [ROM Edit Mode]. This indicates that the editing is now taking place on the ROM (flash) directly. In the Advanced ROM Edit mode, there are far more parameters available to adjust.

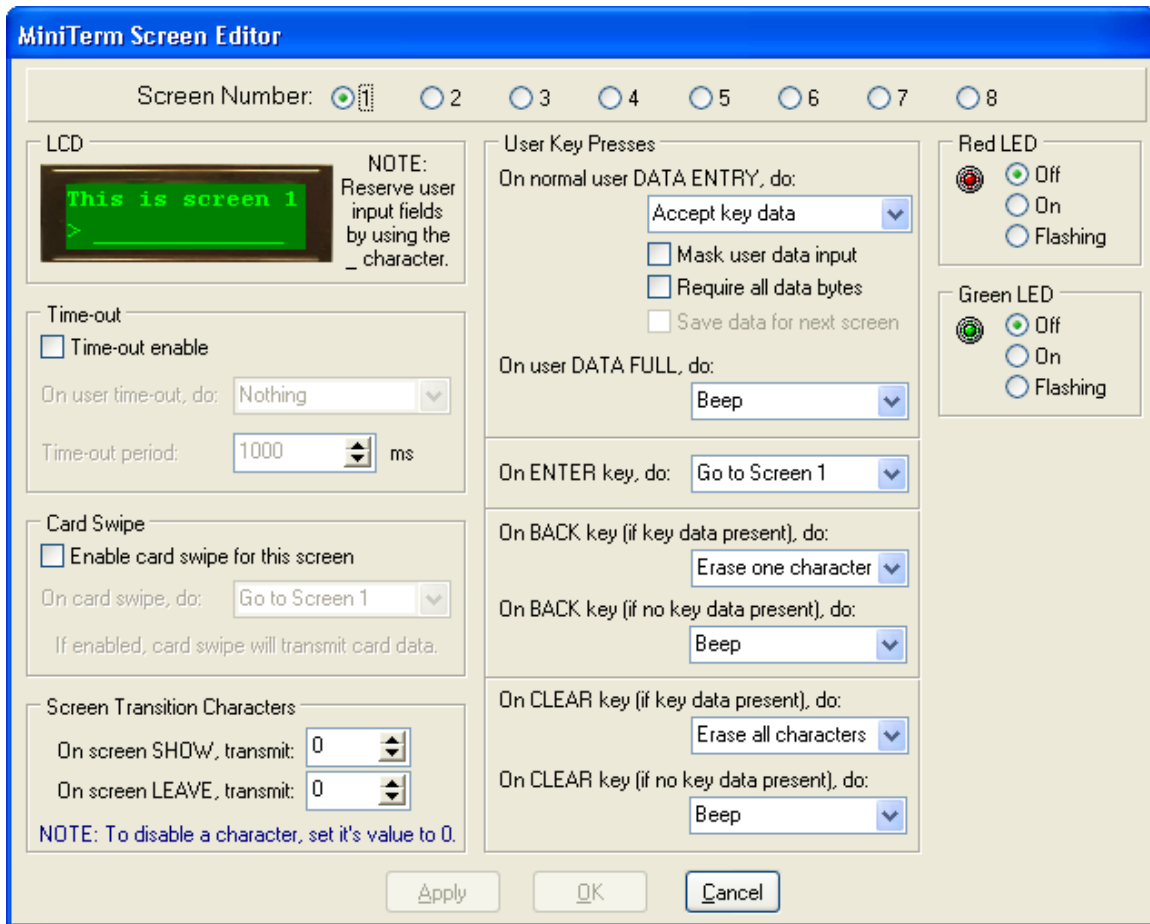
	User Mode (default)	ROM Mode (default)
Storage method	External EEPROM	Internal ROM (flash memory)
Key macro space	100 bytes/level 200 bytes/key	100 bytes/level 200 bytes/key
User parameter data	32 bytes	32 bytes
Advanced parameter data	None	128 bytes
Screen data	None	512 bytes

Parameter	User Mode (default)	ROM Mode (default)
Operating Modes	Line Edit mode, True Terminal mode. (Default = Line Edit)	Line Edit mode, True Terminal mode, Screen mode. (Default = Line Edit)
Starting Screen #		Yes (screen 1)
Mask User Input Avail	Yes (off)	Yes (off)
Settable Mask Char		Yes (0x2a = *)
Line Edit Prefix Char		Yes (0 = disabled)
Line Edit Start Char		Yes (0 = disabled)
Line Edit Tail Char	Yes (0x0d = CR)	Yes (0x0d = CR)
Line Edit Suffix Char		Yes (0 = disabled)
Parameter	User Mode (default)	ROM Mode (default)
Key Rollover	Yes (2)	Yes (2)
Character Pacing	Yes (2)	Yes (0)
Green LED Control	Yes (power indicator)	Yes (power indicator)
Red LED Control	Yes (level indicator)	Yes (level indicator)
Parameter	User Mode (default)	ROM Mode (default)
LCD Sign-on Message		Yes (Genovation MiniTerm)
Sign-on Display Time		Yes (1 second)
LCD Cursor Style		Yes (underline + blink)
LCD Scroll/Wrap Mode		Yes (off/off)
Character Translation		Yes (off)
Parameter	User Mode (default)	ROM Mode (default)
HID Host Mode	Yes (0 = disabled)	Yes (0=disabled)
Host Type		Yes (cable auto-detect)
Host Baud Rate	Yes (9600)	Yes (9600)
Host Word Format	Yes (8 N 1)	Yes (8 N 1)
Host Command Prefix	Yes (0x40 = @)	Yes (0x40 = @)
Parameter	User Mode (default)	ROM Mode (default)
Power-on Beep Time		Yes (10ms)
Key press Beep Time	Yes (40ms)	Yes (40ms)
Error Beep Time		Yes (200ms)
Card Read Ok Beep Time		Yes (100ms)
Parameter	User Mode (default)	ROM Mode (default)
Card Reader Baud Rate		Yes (9600)
Card Word Format		Yes (8 N 1)
Card Read OK Message		Yes (Card Read OK!)
Card OK Message Time		Yes (1 second)
Card prefix char		Yes (0 = disabled)
Card start char	Yes (0 = disabled)	Yes (0 = disabled)
Card end char	Yes (0x0d = CR)	Yes (0x0d = CR)
Card suffix char		Yes (0 = disabled)
Mag Card Field Separator	Yes (0x09 = TAB)	Yes (0x09 = TAB)
Mag Card Tracks	Yes (1 and 2)	Yes (1 and 2)
Parameter	User Mode (default)	ROM Mode (default)
ECR post-processing		Yes (0=disabled)

Note that when User data file is present (not erased) it always has precedence over the equivalent ROM data. The User data file is either wholly present or erased. Its parameters cannot be selectively enabled.

Screen Edit Page

The Screen edit page looks like this:



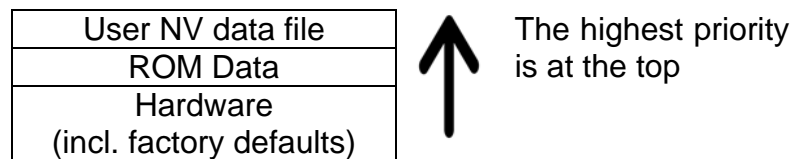
Parameter	User Mode (default)	ROM Mode (default)
Screen Message	n/a	Yes
Screen Time-out Enable	n/a	Yes
Screen Time-out Action	n/a	Yes
Screen Card Enable	n/a	Yes
Screen Card Action	n/a	Yes
Screen Green LED Mode	n/a	Yes
Screen Red LED Mode	n/a	Yes
Screen Keypad Input	n/a	Yes
Mask User Input	n/a	Yes
Require All Data	n/a	Yes
Key Data Full Action	n/a	Yes
Enter Key Action	n/a	Yes
Backspace Key Action	n/a	Yes
Clear Key Action	n/a	Yes
Save keys for next screen	n/a	Yes
On screen show char	n/a	Yes
On screen leave char	n/a	Yes

Keypad Key Values

Key macros are edited in the same manner as in the User mode. By editing the key data in ROM mode, you can set the default key table.

Priority

The purpose for allowing you, the system integrator, to modify the ROM table, is to enable you to setup a fallback configuration that suits your customers. If you choose to provide your customers with MacroMaster/RSLoad they can further personalize their MiniTerms. The ROM customization options are more comprehensive than the end-user options.



It is important to understand the priority of the parameters discussed above. If there is a User data file present, then

- i. Where the parameter exists in the ROM *and* in the User data file, the User value has priority.
- ii. Where the parameter *only* exists in ROM, the ROM value is used.

⇒ ***Please refer to the diagrams in the next section (The Operating Modes Page) for additional guidance.***

For example, if the ROM operating mode is set to Line Edit, but the User data file setting is True Terminal, then the device will boot into True Terminal. If the User data file is not present, then the device will boot into Line Edit mode.

A similar and related example, if the ROM operating mode is set to Mask User Input, but the User data file setting is not Mask User Input, then the device will boot into not Mask User Input mode. If the User data file is not present then the device will boot into Mask User Input mode.

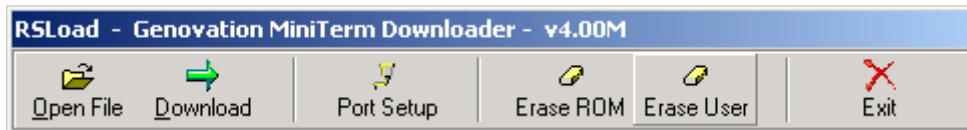
Now, if the device boots into Mask User Input mode (regardless of reason), the mask character will be the ROM mask character value. This is because there is no way to change the Mask character in the User mode. The default value for the Mask Character is star (*), but it can be anything you wish. For example, you might prefer an octothorpe (#).

The default state of the MiniTerm is no User data file present (erased). The default ROM operating mode is Line Edit. The default ROM Masking mode is off. The default ROM Mask Character is the star (asterisk).

Erasing the User Data File

There are two methods to erase the User data file.

1. Method 1: Using RSLoad.exe, select Erase User.

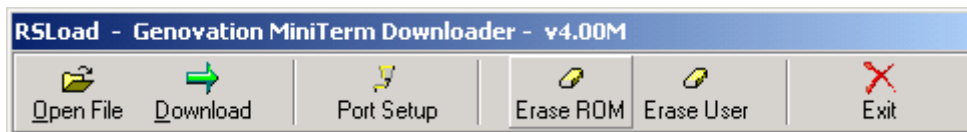


2. Method 2: Disconnect the MiniTerm from its power source. Press and hold two keys down on the MiniTerm. Plug the power into the MiniTerm. Release the two keys.

Erasing the ROM

Although it sounds like a frightening prospect, it is safe to erase the parameters you have downloaded into the ROM (flash) memory. There is a safe set of factory defaults that will be used in this case. To erase the ROM settings back to factory default there is only one method:

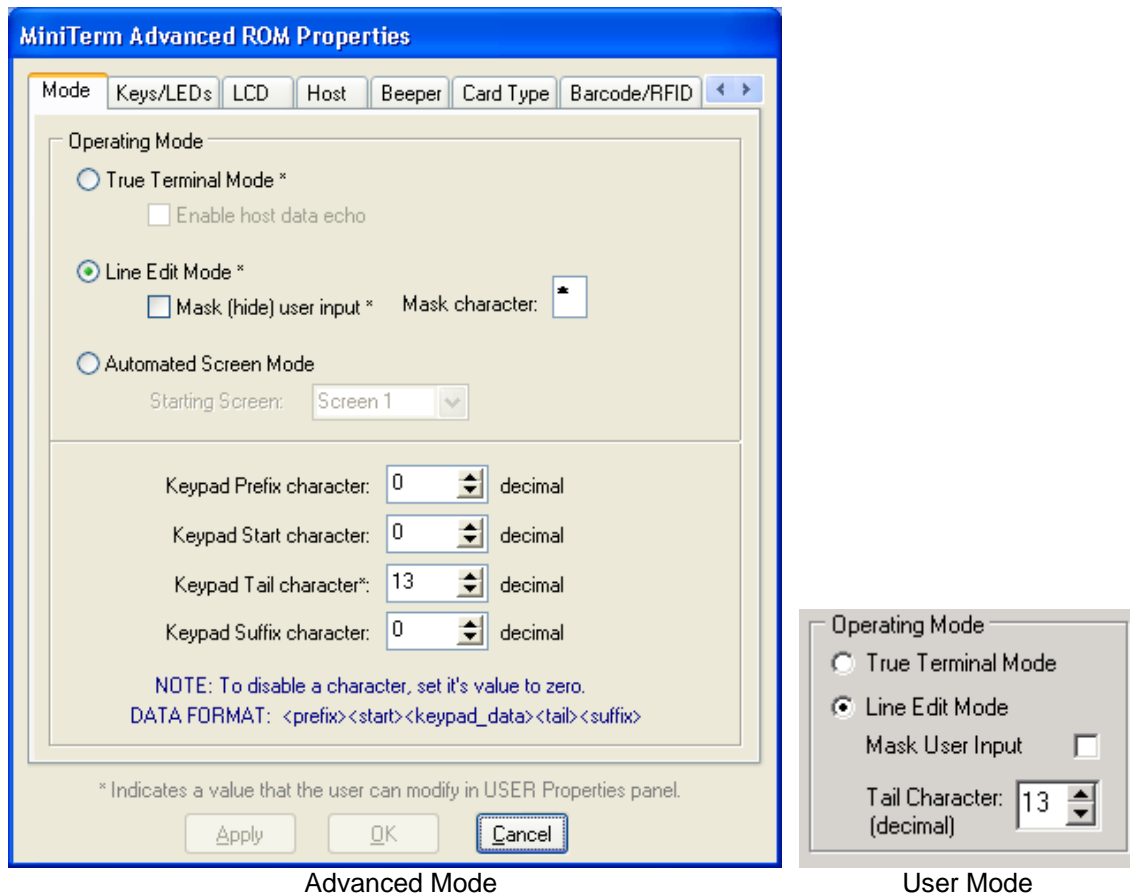
1. Method 1: Using RSLoad.exe, select Erase ROM.



NOTE: Normally you should erase both so that you are starting from a set of known conditions. Wait a few moments between each erase for the keypad to reboot.

2. The ROM Edit Mode Properties Pages

The Operating Modes Page



Advanced Mode

User Mode

The MiniTerm determines the operating mode in the following manner.

- i. If the Automated Screen Mode ROM parameter is active, then the unit boots up into Screen Mode. Screen mode is a pre-determined set of prompts that are scripted in advance and run automatically on the MiniTerm. Refer to later sections for more information.
- ii. If Screen Mode is not selected, then the device checks for a User data file. If there is a User data file, then the User operating mode is selected (Line Edit or True Terminal). If the User data file is present and Masking is enabled, then the user data will be disguised with the Mask character. This mask character is a star (*) by default, but it will be whatever value is set in the ROM mask character property.
- iii. If there is no User data file, then the Advanced (ROM) value is used (Line Edit or True Terminal). If Masking is enabled, then the user data will be disguised with the Mask character. This mask character is a star (*) by

default, but it will be whatever value is set in the ROM mask character property.

The Line Edit data packet transmitted to the host is formatted as follows:

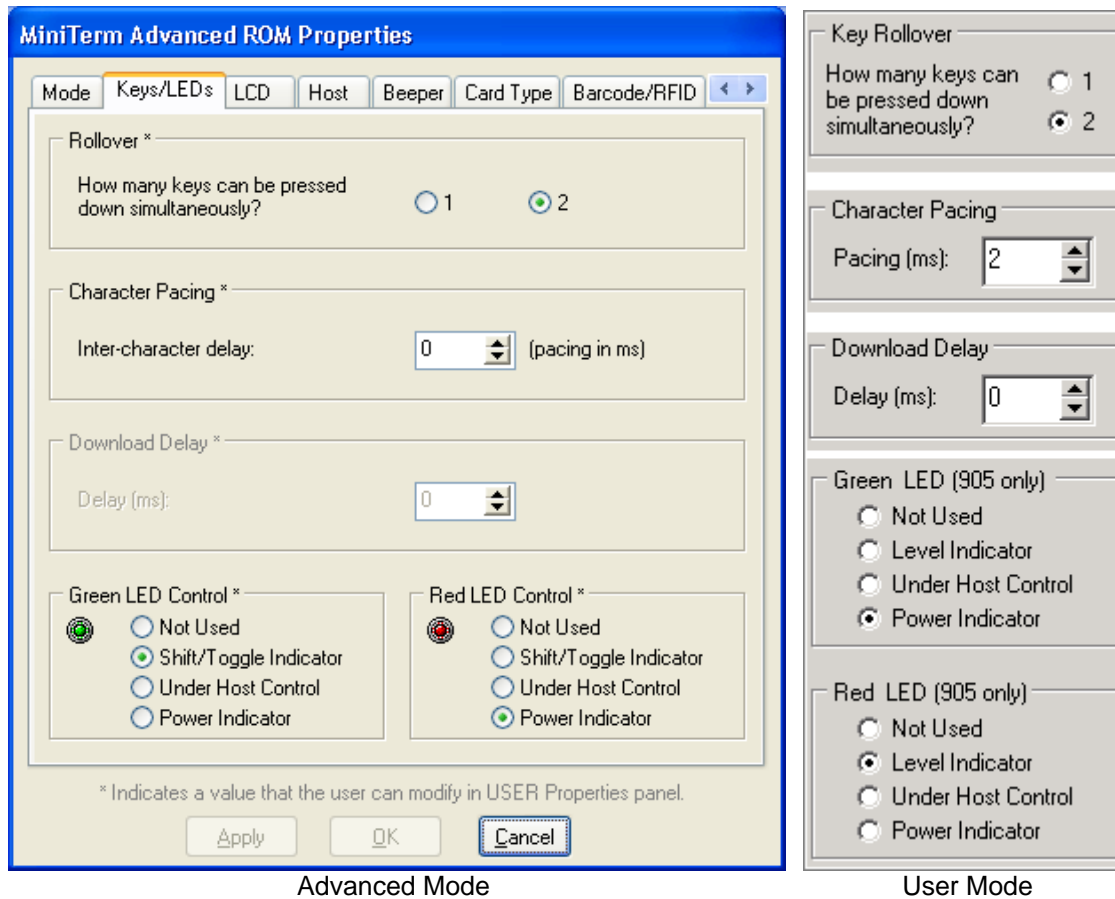
```
<prefix char> <start char> <user key data> <tail char> <suffix char>
```

The default ROM values for prefix, start and suffix are all zero (disabled). The default ROM value for the tail is CR (0x0D). Therefore, if the user typed in 1, 2, 3 and ENTER, then the data packet would be:

```
ASCII:      123<cr>
HEX:        31 32 33 0D
```

The User data file can modify only the tail. The ROM editor can change any of the values. If the User data file is present, the User tail character will be used instead of the ROM one.

The Keys/LEDs Page



The User data file can override all of the parameters on the Keys/LED page.

Key Rollover: This property sets how many keys can be pressed at the same time. The default is two. This means that after one key is pressed and held down another key can be detected. If you select the one-key rollover option then when one key is held down, no other keys can be detected.

Character Pacing: This property controls the time delay in between each ASCII byte sent. If you program a key with more than one byte of data (String), then the MiniTerm will send the each byte and then delay for the time set in this property. For Example: Let's assume that a key is programmed to send a string of ASCII bytes "HELLO". The MiniTerm will send the following:

```
H delay E delay L delay L delay O delay
```

Because this slows down all of the data coming from the MiniTerm, you should consider inserting delays directly into the macro(s) instead.

Download Delay: This property is similar to the above “Character Pacing” property. This property controls the time delayed between each byte sent to the MiniTerm during a download. This value need only be adjusted if errors occur during the download process. Download delay is generally never needed and it not active on the ROM properties page. It can be adjusted in RSLoad.ini if needed.

LED Control (Serial/Virtual Serial mode): This property determines the behavior of the green and red LEDs on those MiniTerm models that include them.

- Not Used disables the LED completely.
- Shift/Toggle (Level) Indicator uses the LED to show that the MiniTerm keypad is on level 2.
- Under Host Control puts the LED in the mode where the host software can turn it off and on using the @L command.
- Power Indicator turns the LED on always.

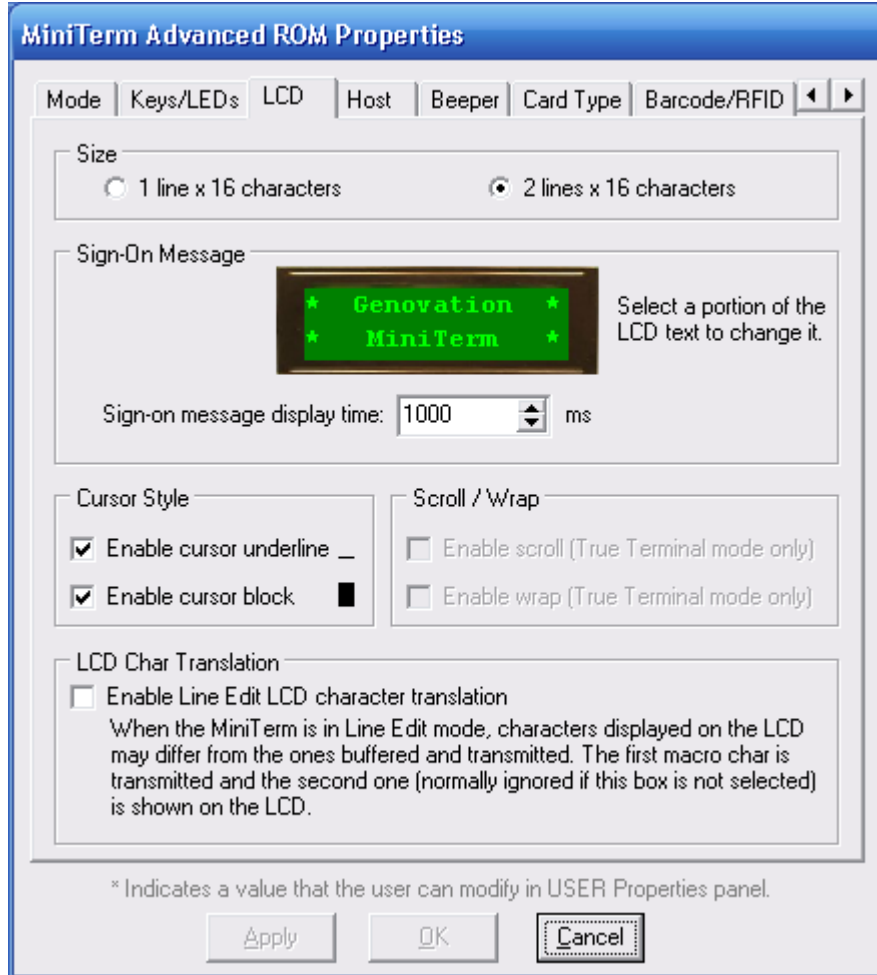
LED Control (HID mode): If the User data file USB Host Mode property is set to PC Keyboard, then a second set of options appears for the LEDs. This property determines the behavior of the green and red Led’s on those MiniTerm models that include them.

- Not Used disables the LED completely.
- Level (Shift/Toggle) Indicator uses the LED to show that the MiniTerm keypad is on level 2.
- CapsLock Indicator turns the LED on when the host PC has CapsLock active.
- NumLock Indicator turns the LED on when the host PC has NumLock active.
- Power Indicator turns the LED on always.

In both modes the LEDs are also briefly used to indicate a successful card swipe or data movement during downloads. If you need to use one or both of these signals for GPIO (general purpose input/output), such as opening a door, then contact the factory for a custom MiniTerm version).

Note: In automated Screen Mode, the LEDs are controlled on a per-screen basis. Consult the Screen Edit sections later in this manual for more information.

The LCD Page



Advanced Mode

None of the parameters on this page are adjustable on the User Properties panel.

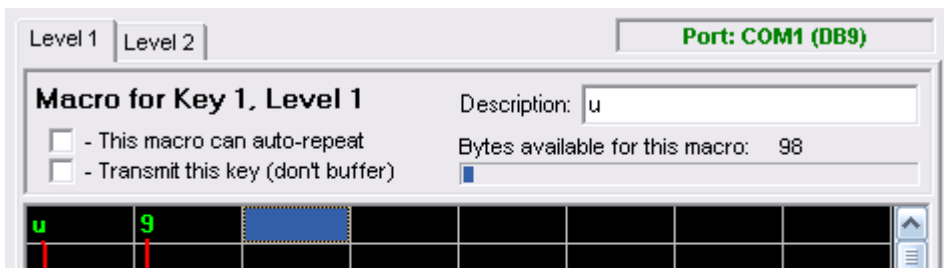
The Size property should match the device you are programming. For example, Models 900 and 904 should use the 1 x 16 LCD and the 905 should use the 2 x 16 LCD.

The Sign-On Message is displayed when the MiniTerm turns on (and is retrieved by RSLoad to ID the MiniTerm for the programmer). You can set the message and the amount of time that it is displayed. The message is edited as two separate 16 line wide components.

The Cursor Style allows you to enable/disable the two components that make up the LCD cursor: the underline portion and the blink portion. They can be individually configured.

The Scroll/Wrap parameter controls what happens when the LCD cursor ventures beyond the end of a line. In Wrap mode the cursor returns to the beginning of the same line (like a carriage return). In Scroll mode, the cursor moves to the start of the next line (like a line feed). If the cursor was on the last (or only) line of the LCD, then scrolling will erase the top (or only) line of text.

The Enable Line Edit Character Translation feature allows the MiniTerm to display different characters to the user than the ones actually transmitted. With this enabled, the first character in a macro is transmitted and the second character in a macro is displayed for the user. The most common use of this feature is to allow the MiniTerm to be backward-compatible with the Genovation 623 RS232 keypad.

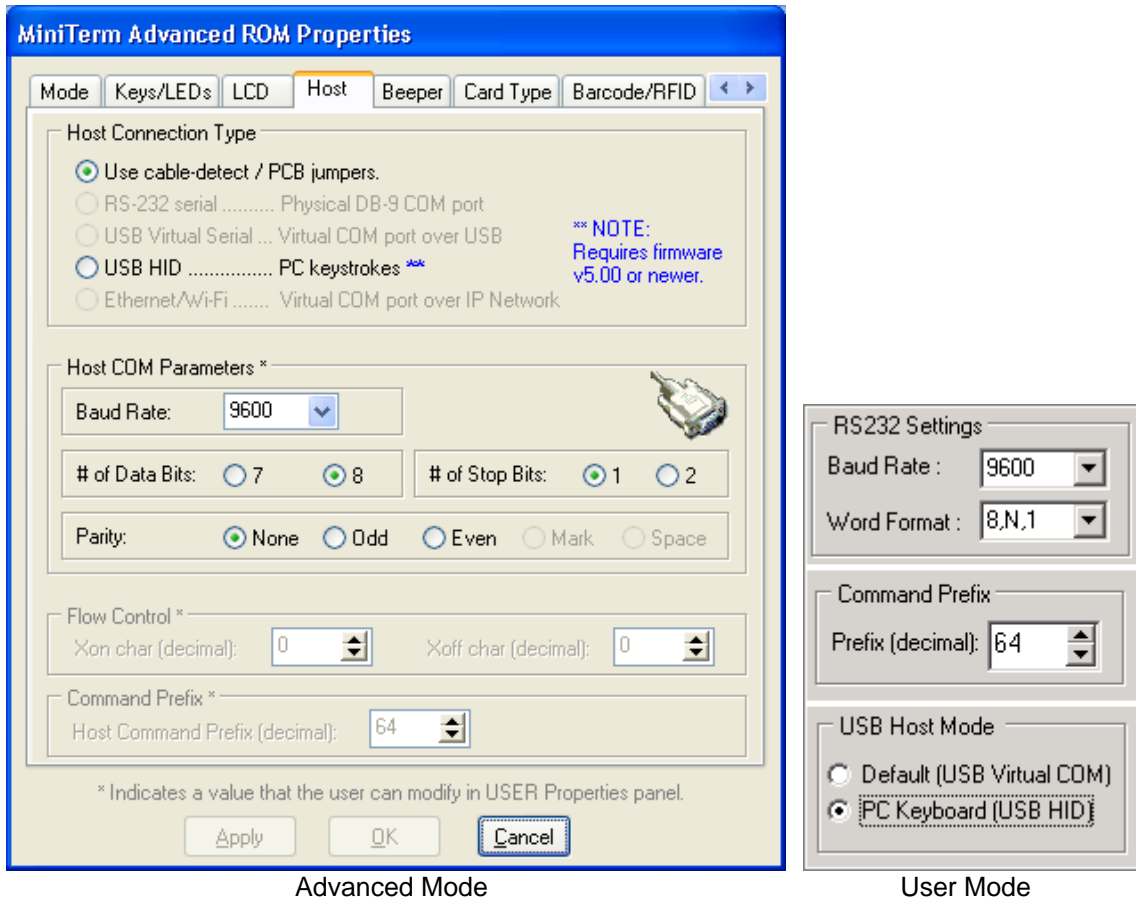


This character appears on the LCD

This character is transmitted

The Host Page

The host connection mode is shown briefly on power-up following the Sign-On message (for the duration of the sign-on message time period).



You can select HID mode or cable-detect/PCB jumpers. Normally this is set at the factory.

RS232 Settings:

This property controls the MiniTerm serial COM port communications settings such as baud rate, # of data bits, parity and # of stop bits.

NOTE: The *RSLoad* download application uses the default RS232 settings of 9600 baud, 8N1. If you change the host settings you will have to change *RSLoad* to match.

The RS232 parameters are ignored in USB Virtual Serial applications. In Ethernet applications these parameters are used to communicate with the internal Ethernet device server.

Command Prefix:

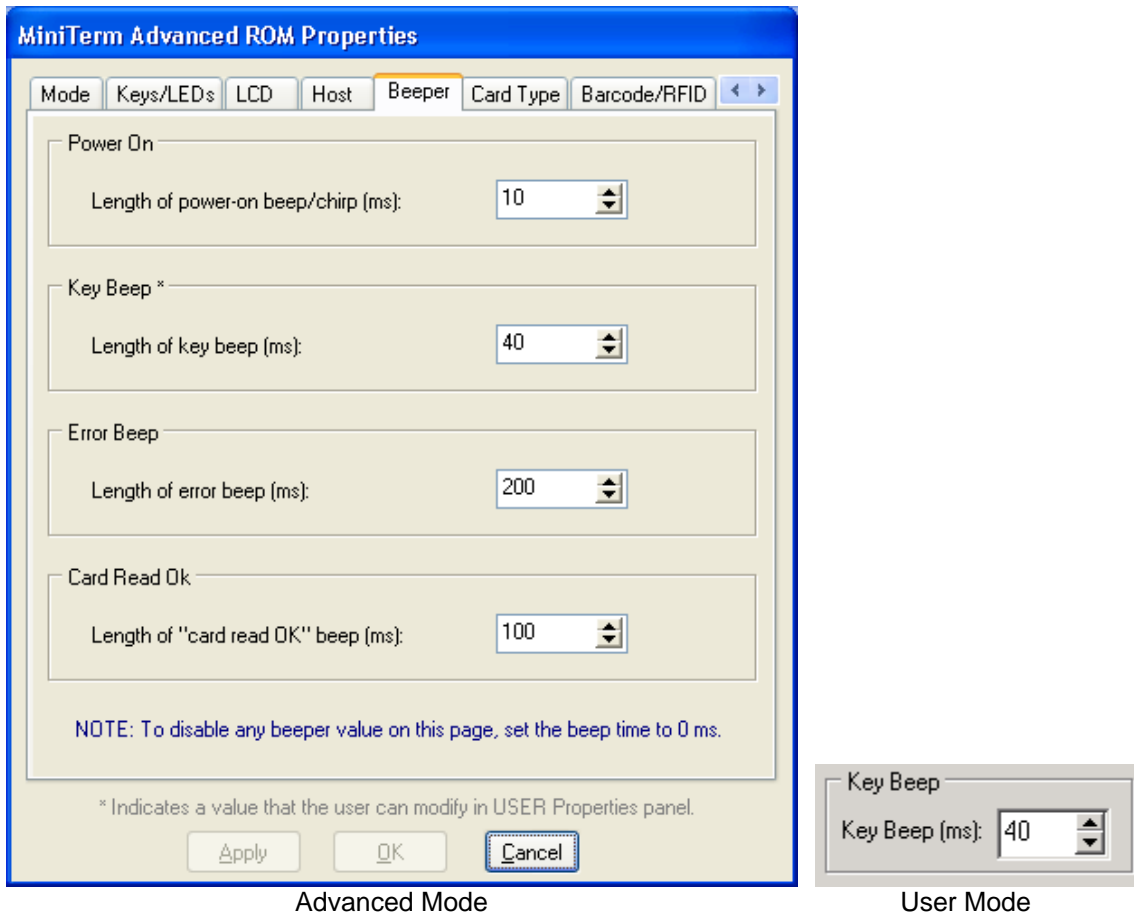
This property controls Command prefix byte which is sent from the host application to the MiniTerm as part of any in-line command to control various keypad functions like clearing the LCD display, changing the LCD cursor type, moving the LCD cursor position, activating the internal beeper or alarm, etc.

NOTE: Changing the Command Prefix will render the RSLoad application inoperable. Contact the factory for more information.

Flow Control:

Flow control has been deprecated in this version of the device since most hosts (PCs) would not honor the flow control protocol in a timely manner.

The Beeper Page



This page allows for customization of the audio properties of the MiniTerm. The User Properties panel only allows for modifying the Key Beep.

Power On Beep: There is short chirp emitted from the speaker at power-on. You can tailor this beep to your liking. Setting the value to zero silences it.

Key Beep: This property controls the internal beeper that will sound when a key is pressed. This gives the user an audible feedback when entering key data. The "Key Beep (ms)" property allows you to control the length of the beep, in milliseconds. A value of zero disables the key beep.

Error Beep: The error beep sounds when the user attempts to key data beyond the allowed input field or if the user attempts to backspace or clear data when no key data is present.

Card Read OK: This beep sounds on a successful card swipe/read.

The Card Type Page

MiniTerm Advanced ROM Properties

Mode Keys/LEDs LCD Host Beeper **Card Type** Barcode/RFID

Card Reader Type *

None Barcode/RFID Magnetic Card Ext. Wedge

Card Reader COM Parameters

Baud Rate: 9600

of Data Bits: 7 8 # of Stop Bits: 1 2

Parity: None Odd Even Mark Space

Card Read OK Message

Card read OK message display time: 1000 ms

* Indicates a value that the user can modify in USER Properties panel.

Apply OK Cancel

Choose Card Reader Type: None Barcode/RFID Magnetic Card

Advanced Mode User Mode

This page defines the general settings for a card reader, regardless of type.

Card Reader Type

This setting only modifies the form view. It does not establish which card reader can be connected internally or externally to the MiniTerm. Card readers (barcode, magnetic, RFID, etc) vary in their electrical specification (E.g. voltage) and the type is selected generally via internal hardware at the factory.

The “DeviceType” value in the .ROM file can be used to set the card reader type, BUT it cannot account for the electrical issues. The voltage translation is set internally in hardware and should be set by the factory. DeviceType is encoded in decimal in the .ROM file as follows:

DeviceType Setting	Decimal Value
Not specified (use jumpers)	0
Internal card reader	1
External (wedge) card reader	2
Packetization required	+128

Packetization is generally required so that the MiniTerm can surround the card data with the proper delimiters. The card reader should be set to have a starting character of STX (0x02) and an ending character of ETX (0x03). These characters will be removed by the MiniTerm and replaced with the prefix/start/end/suffix values set by the .ROM file. In addition, a magnetic card reader requires a 0xA2 at the start of track1 and a 0xA3 at the start of track 2.

If Packetization is not used, then do NOT include the 128 value in the DeviceType setting. The card reader data will be forwarded directly through the MiniTerm with no modification. In this case you will probably need start and end characters for the keypad data.

Card Reader COM Parameters

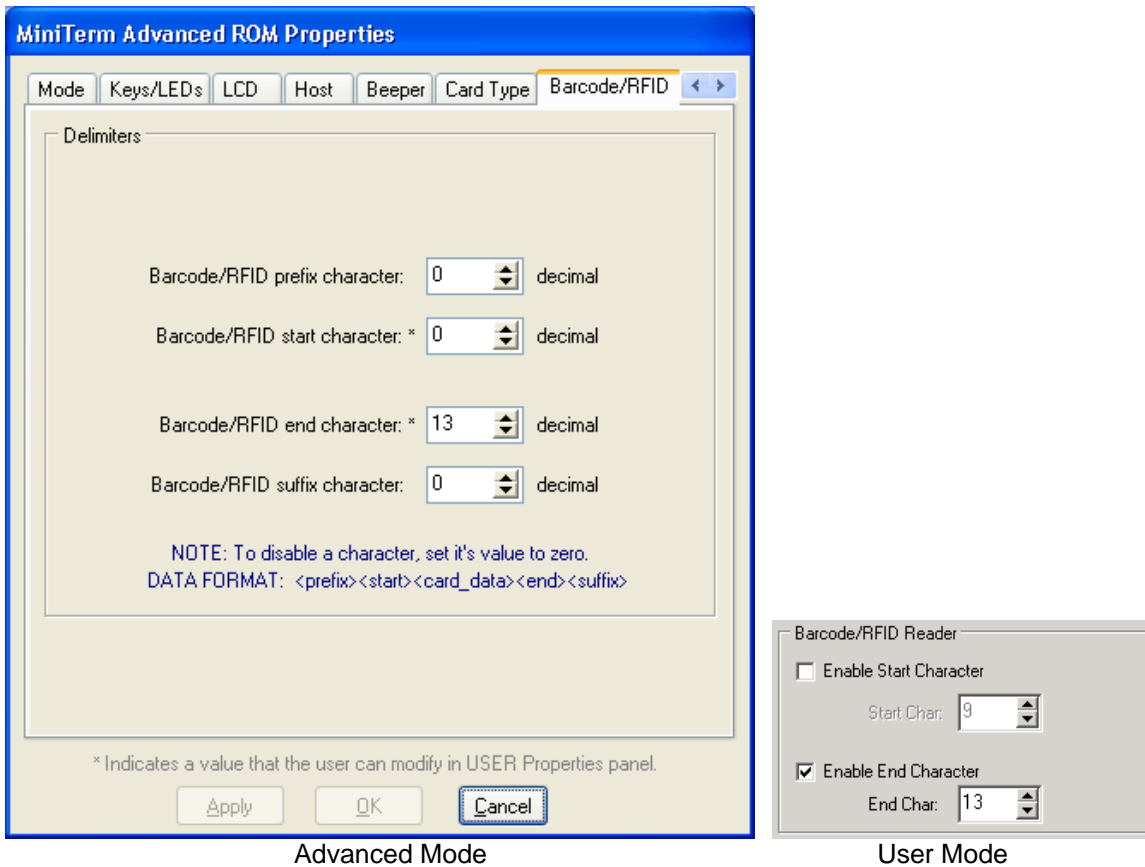
This property controls the MiniTerm's second serial COM port communications settings such as baud rate, # of data bits, parity and # of stop bits.

Card Read OK Message

The Card Read OK message is displayed following a successful card read/swipe. You can set the message and the amount of time that it is displayed. The message is edited as two separate 16 line wide components. The beep that is associated with the Card Read OK message is edited on the Beeper page.

Note: In automated Screen Mode, the messages are controlled on a per-screen basis. Consult the Screen Edit sections later in this manual for more information.

The Barcode/RFID Page



This page establishes the delimiters used for a barcode reader/scanner or an RFID card reader (operating in packetized mode). The data is transmitted to the host in the format:

```
<prefix char> <start char> <card data> <end char> <suffix char>
```

In user mode the start and end characters can be modified.

In all cases, setting a delimiter to zero disables it.

The Magnetic Card Reader Page

The image shows the 'MiniTerm Advanced ROM Properties' dialog box with the 'Mag Card' tab selected. The 'Track Selection' section has 'Process Track(s):' with checkboxes for 'Track 1' and 'Track 2', both of which are checked. The 'Delimiters' section contains five dropdown menus: 'MCR prefix char:' (0), 'Start sentinel char: *' (0), 'End sentinel char: *' (13), 'Field separator char: *' (9), and 'MCR suffix char:' (0). Each dropdown menu has a small text box to its right explaining the character's function. A note at the bottom states: 'NOTE: All values decimal. To disable a character, set it's value to zero. DATA FORMAT: <prefix><start><card_data/field seps><end><suffix>'. At the bottom are 'Apply', 'OK', and 'Cancel' buttons.

Advanced Mode

The image shows the 'MiniTerm Advanced ROM Properties' dialog box with the 'Mag Card' tab selected, in 'User Mode'. The 'Track Selection' section has 'Process Track(s):' with checkboxes for 'Track 1' and 'Track 2', both of which are checked. The 'Delimiters' section contains three dropdown menus: 'Start Sentinel Char:' (NONE), 'End Sentinel Char:' (CR), and 'Field Separator Char:' (TAB). Each dropdown menu has a small text box to its right explaining the character's function. The 'MCR prefix char:' and 'MCR suffix char:' fields are not visible in this mode.

User Mode

This page establishes the delimiters used for a magnetic card reader (operating in packetized mode). The data is transmitted to the host in the format:

```
<prefix char> <start sentinel> <card data/field separators> <end sentinel> <suffix char>
```

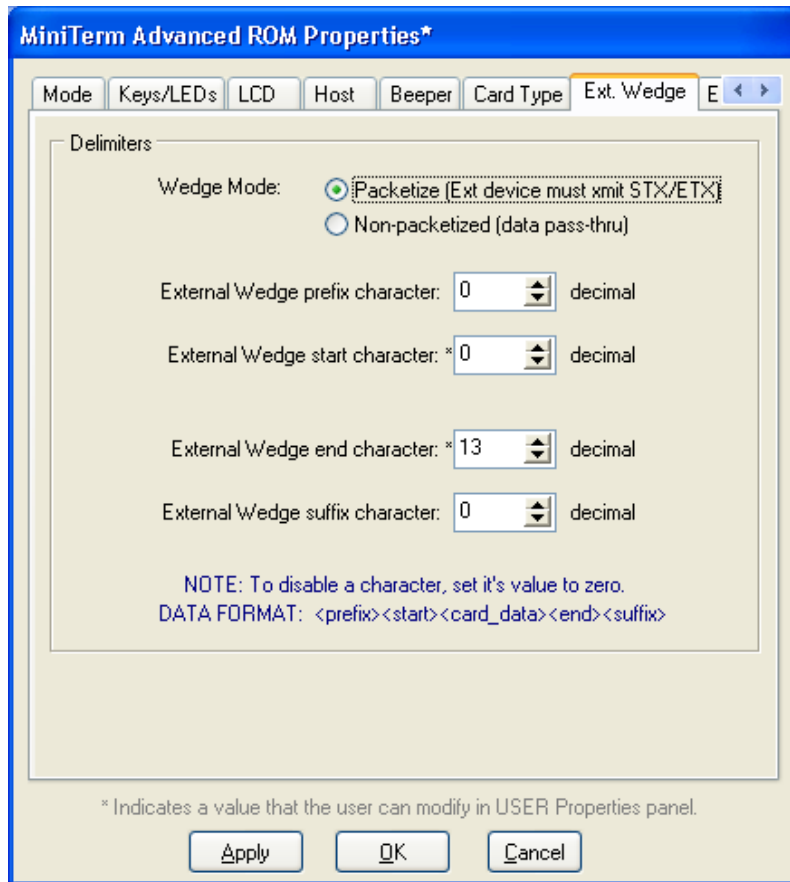
Normally a magnetic card track includes:

- A Start Sentinel
- Card data (which can contain many fields, each separated by the Field Separator)
- An End Sentinel

The MiniTerm allows you to substitute values or silence the Start Sentinel, the Field Separator and/or the End Sentinel. In addition, a prefix character and a suffix character can surround this data. You can also select which of the two tracks of data you would like to transmit to the host.

The user can modify all of these values except for the prefix and suffix characters.

The External Wedge Page



Advanced Mode

None of the parameters on this page are adjustable on the User Properties panel.

An external device can be connected to the MiniTerm and its data can be forwarded (wedged) to the host. The external device can be treated like an internal card reader (packetized) with the specified delimiters, or it can be used in pass-thru mode (not packetized).

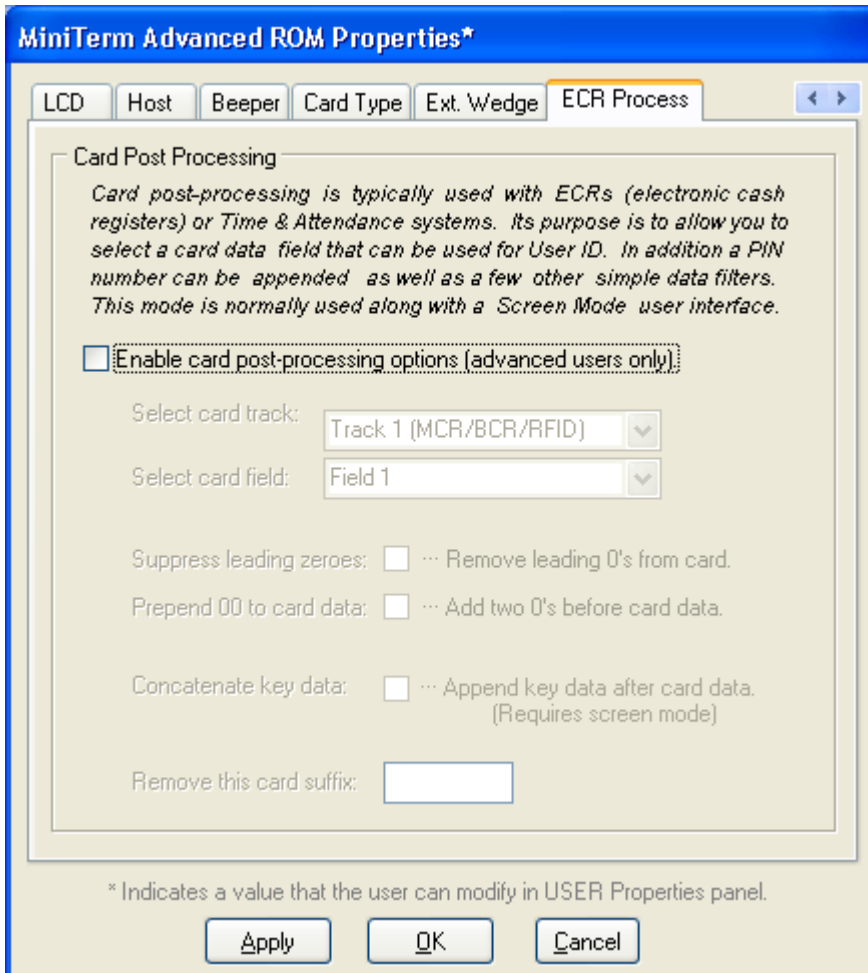
In packetized mode the data is transmitted to the host in the format:

```
<prefix char> <start char> <external data> <end char> <suffix char>
```

In user mode the start and end characters can be modified.

In all cases, setting a delimiter to zero disables it.

The ECR Post-Processing Page



The data read from a card can be post-processed and appended to keypad (PIN) data. This allows for a single string of numbers composed of card+key data. An Electronic Cash Register (ECR) or PC can then use this composite number to identify a unique customer at point-of-sale or a unique employee ID # for time punches.

Track Selection

A magnetic card normally has two tracks of data and each track will have several fields. For instance a driver's license may contain the following:

	Field 1	Field 2	Field 3	Field 4	Field 5
Track 1	State	City	Name	Address	DOB
Track 2	ID #	DL #	Exp date		

If you wanted to isolate the driver's license number (DL#), then you would select track 2, field 3. If you are using barcode or RFID cards, then you should choose track 1, field 1.

Quite often the card data field may be larger than needed and is padded on the left with leading zeroes. For example an ID number might be 12345, but on the card it is represented by 00012345. You can strip the leading zeros off by checking the "Suppress leading zeroes" checkbox.

If you need to add a couple of zeroes onto the front of the card data, you can prepend two of them (00) by checking the "Prepend 00 to card data" checkbox.

"Concatenate key data" is used when you want to combine a card swipe with a keyed in PIN number. To use this you will also need to create a few screens in Screen Mode in order to prompt the user to swipe their card and then key in a pin.

Finally, if the card data has numbers at the end that should be removed, then you can strip them off by specifying a suffix to remove. For instance if the card data was 123456789 but the last 3 digits (789) were not desired, then you can fill in the "Remove this card suffix box" with 789. Your resulting card data would be 123456.

Here is a list of the complete data elements you can create, in order: Most elements can be disabled if desired.

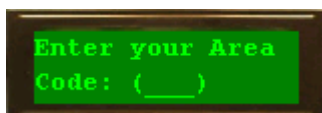
- On Show screen mode character for the card swipe screen
- **Card prefix byte**
- **Card start byte**
- **Prepended 00 characters**
- **Suppress leading zeroes**
- **Card field data from user card swipe**
- **Suppress card data suffix**
- Card end byte
- Card suffix byte
- On Leave screen mode character for the card swipe screen
- On Show screen mode for the key character data screen
- Key data prefix byte
- Key data start byte
- **User entered key data**
- **Key data tail byte**
- Key data suffix byte
- On Leave screen mode character for the key data screen

3. Screen Edit Mode

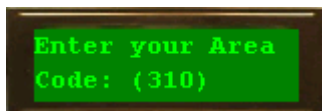
Introduction

Automated Screen Mode is an advanced variation of the Line Edit mode. In Screen Mode, a series of prompts can be scripted in advance in order to gather multiple fields of input from the user, but without the need to program this interaction on the host. This results in a faster, more controlled environment for customer point-of-service.

Here is an example:



Prompt customer for area code. Here, the LCD mode is set to echo the characters that the customer types to the LCD.



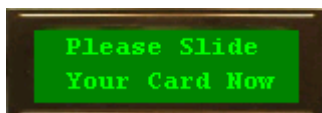
User enters 3 1 0. When the customer presses ENTER, the data is transmitted to the host with the proper delimiters. Then the next screen is automatically presented to the customer.



Prompt the customer for the rest of their phone number. In this example, the LCD mode is adjusted automatically to mask (hide) the user input for confidentiality.



The customer enters their phone number. When the customer presses ENTER, the data is transmitted to the host with the proper delimiters. Then the next screen is automatically presented to the customer.



The customer slides their loyalty card through the card reader. The card data is transmitted to the host with the proper delimiters. Then the next screen is automatically presented to the customer.



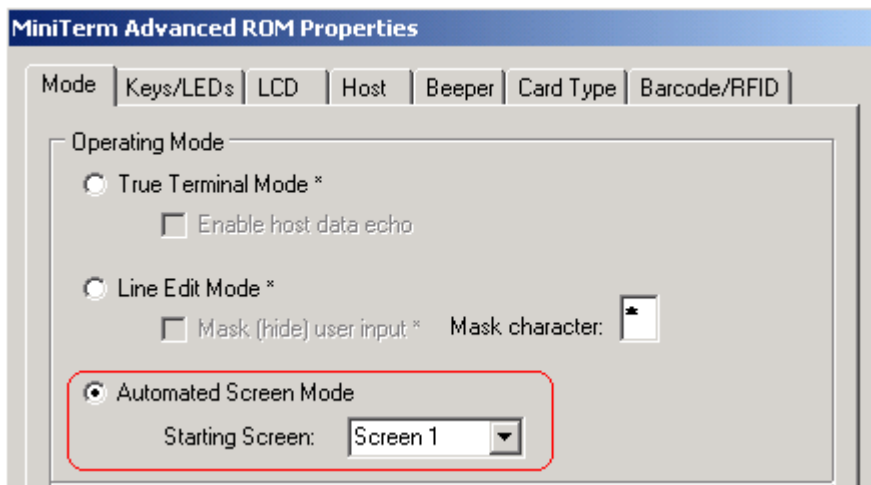
The thank you message is shown for a brief period and then the screen returns to the first one (area code).

There are many more features. The user does not need to use the enter key. The user can backspace to correct individual characters or the entire field can be cleared. LEDs can be used to catch the customer's eye.

Eight screens are available for you to storyboard your customer interaction. Any screen can move to any other screen (or stay on same one) based on:

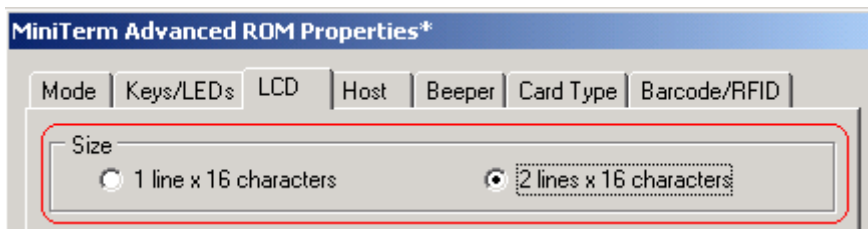
- User key input
- Card data swipe
- A predetermined time-out

Selecting Screen Mode



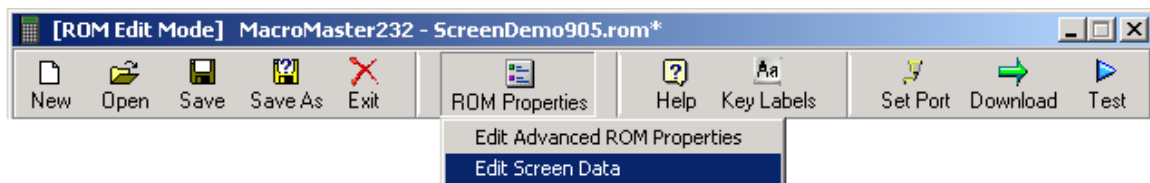
Screen Mode is selected by setting the Operating Mode parameter on the Mode page to Automated Screen Mode. Choose your opening screen (1 to 8). This is also where you can set your Mask character if you use one.

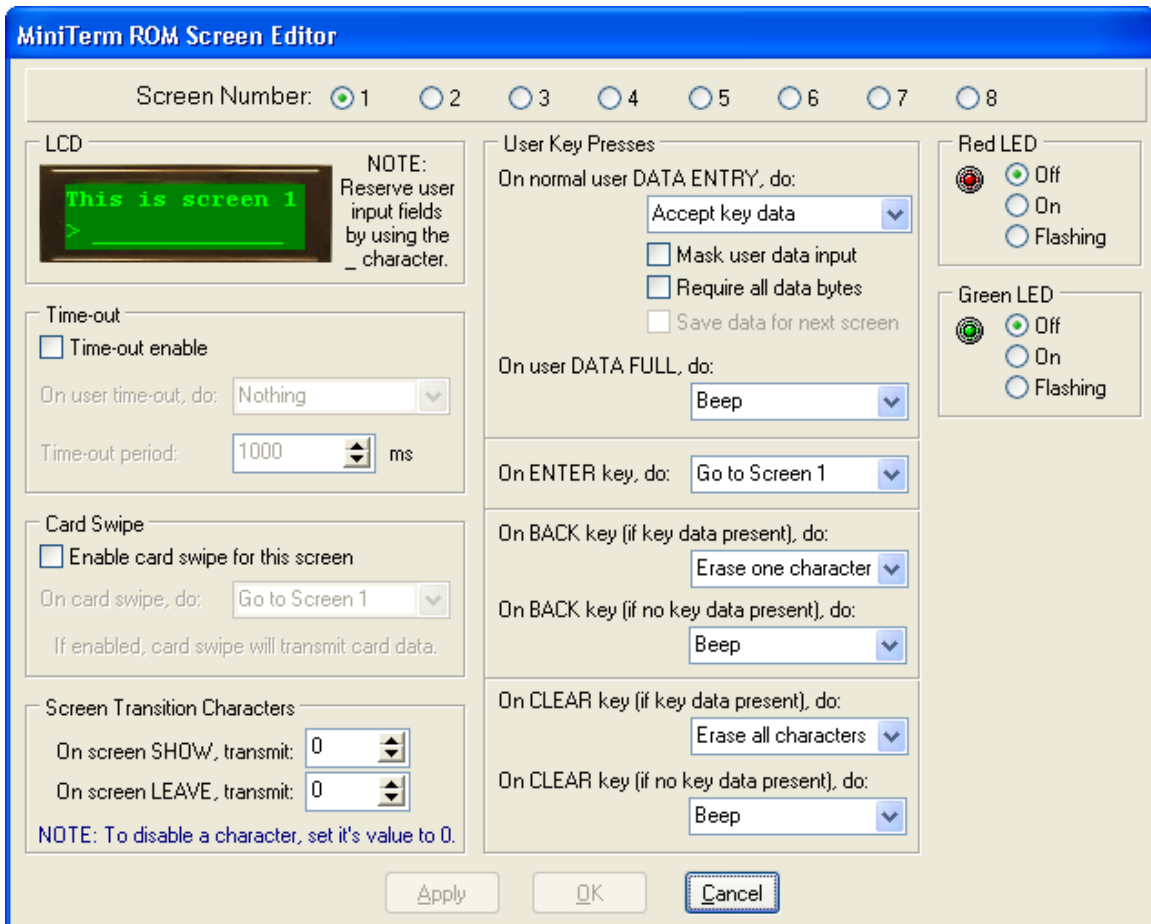
Recall that the LCD size is set on the LCD Page.



The Screen Editor

The Screen Editor is accessed from the main menu.





Screen Number

This number determines which one of the eight screens (which of the 8 pages) is currently being edited.

LCD

Shows one or two lines of up to 16 characters that are used to prompt the user. If you need user input on the screen, use the underscore character for the spots that the user should (or must) fill in.

Time-Out

If this screen should time-out after a given period, enter that time here. When the time-out period expires you can navigate to another screen, clear all the user data or simply beep the user.

Card Swipe

If you accept card data for the screen (perhaps in addition to or instead of key data), then you must Enable it. On successful card swipe the data will be sent to the host (using the delimiters set on the Card Reader properties page) and then you can navigate to another screen.

LED Control

You can set the green and red LEDs individually to be on, off or flashing for the duration of the screen. When a card is swiped the LEDs will both toggle states briefly.

User Key Presses

When the user presses a key, you can use it to cause navigation to another screen or process/accept it as in Line Edit mode. You can select to capture the user data and optionally mask the LCD value with the mask character.

If you accept partial data input, leave the "Require all data bytes" checkbox empty. If the user needs to fill in all characters then check this box.

When all data characters are filled in, you can navigate automatically to another screen (without the need for the user to use an Enter key) or if the user tries to type more, beep at them. If you accept the use of the Enter key, then that can be the trigger to navigate to another screen. In any case the data will be sent to the host (using the delimiters specified on the Operating Mode properties page).

If you have defined a key as a Backspace key (0x08) then that key can be used to erase one or all characters or navigate to another (previous) screen.

If you have defined a key as a Clear (delete) key (0x7F) then that key can be used to erase one or all characters or navigate to another (previous) screen.

Screen Transition Characters

In order for your software to track the user as he/she moves from screen to screen, you can set characters that are sent to the host when the user enters a screen and/or leaves a screen. The On Show character, if enabled, is transmitted as soon as the user enters the screen. The On Leave character, if enabled, is transmitted when the user leaves the screen but after any data is sent as a result of that screen.

For a screen that simply presents a message to the user, but collects no user key or card data, the screen could be configured to relay that information to the host:

- On show character (user is presented with the screen).
- On Leave character (screen times out or user transitions to another screen).

For a screen incorporating user keypad input the data generated would be (assuming all optional delimiters are enabled):

- On Show character
- Keypad prefix character
- Keypad start character
- User supplied keypad data
- Keypad tail character
- Keypad suffix character
- On Leave character

For a screen incorporating user card input the data generated would be (assuming all optional delimiters are enabled):

- On Show character
- Card prefix character
- Card start character
- User card swipe/scan data
- Card end character
- Card suffix character
- On Leave character