

MICRImage
CHECK READER
COMMAND REFERENCE MANUAL

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REVISIONS

Rev Number	Date	Notes
1	20 Oct 00	Initial Release
2	27 Jun 01	Front Matter: Removed UL statement from agency approvals. Software License removed. Section 1: Completely revised. Section 2: Editorial changes, added commands SWI and PR12. Section 3: Added commands SE, LE, DM, EM, BLK, UNBLK. Section 4: Added commands: TI Cn, TI Fn, TI N[string], TI G[n], TI T[#], TI Cn Fn N[string] T[#], TC and IS. Section 5: Completely revised, now called Ethernet Interface. Appendices A, B, C – no change. Appendix D: Added Extended Error Codes Removed Appendix for Downloading.
3	25 Apr 02	Sec 2: SWA Command – Host Port Parameters: RS-231 changed to RS-232; Image Output Port: RS-233 changed to RS-232; Added Doc Size Limits PR-30 –33. Sec 4: Added BCn, Bar Code Commands. Sec 5: Added PR13 – DNS 1 IP Address – PR19 – FTP File Directory. Appendix D: Deleted EEC 114; Added EEC 115, 116, 214, 232, 313, 595-598; Changed 310.
4	20 Dec 02	Sec 2: Added to note after Table 2-1; changed baud rate to 8 speeds; Table 2-4, Error and Status Codes, completely revised; Added “or Modem” to note after Table 2-7; Clarified MICR Output Port and File Transfer Protocol; Added SWF Command and Table 2-8 and multi-scan notes; To SWF added extended status digits; Added Suppress MICR and Multi-Scan paragraphs; Added DPI values and note to Table 2-9 about TIFF spec; To PR34 added amplitude qualifier; Added MICR Line Technical Options; Clarified PR35; Sec 3: Clarified EM; Sec 4: Clarified TI, SF; added AI Command; Sec 5: Changed Ethernet MICR Config to Ethernet or Modem Network Config; Changed Ethernet Debug to Network Debug; added Ethernet Only to PR0, PR1, PR2, PR3, PR4 PR5; added Modem PPP Only to PR16, PR17, PR18.
5	03 Mar 03	Editorial. Sec 4: Modified AI. Sec 6: added examples PR34, 35. Added PR36.

(Cont'd)

REVISIONS (Cont'd)

6	12 May 03	Front Matter: Added ISO line to logo, added new Tech Support phone number; Sec 2: Added Transfer Progress Messages, Sec 3: Cmd DM, added scan information; Sec 5: Added Ethernet Debug entries, added XU and XD Cmds.
7	21 Aug 03	Section 2: Added Enhanced Reading parameters to Table 2-8 and description of Enhanced Reading in SWF Command.

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Figure 1-1. MICRImage Check Reader

SECTION 1. COMMANDS OVERVIEW

This manual describes the use of all the commands and programmable options available for the MICRImage Reader. The MICRImage commands can be classified into two general groups: Configuration Commands and Operational Commands.

CONFIGURATION COMMANDS

As the name implies, these commands are used to configure the MICRImage Reader. These commands can also be accessed using Insta-change checks and the MICRbase Setup Program for Windows (see below). Additionally, all the parameters and options controlled by the configuration commands can be factory set as specified by the user when ordering.

The current list of configuration commands follows for the standard unit (see Section 2 for a complete description of these commands):

- SWA – Switch A command
- SWB – Switch B command
- SWC – Switch C command
- SWD – Switch D command
- SWE – Switch E command
- SWF – Switch F command
- HW – Hardware command
- FC – Format Change command
- SA – Save Configuration command
- PR12 – Filename Configuration
- PR20 – PR29 - Snippets
- PR30 – PR33 - Doc Size Limits
- PR34 – PR35 – MICR Line Technical Options

The current list of configuration commands follows for the Ethernet and Modem Options (see Section 5 for a complete description of these commands):

- PR0 – MICR IP Address Fixed Value
- PR1 – MICR IP Address Source
- PR2 – MICR IP Subnet Mask Fixed Value
- PR3 – MICR Subnet Mask Source
- PR4 – Gateway IP Address Fixed Value
- PR5 – Gateway IP Address Source
- PR6 – FTP IP Address Fixed Value
- PR7 – FTP IP Address Source
- PR8 – FTP User ID Fixed Value
- PR9 – FTP User ID Source
- PR10 – FTP Password Fixed Value
- PR11 – FTP Password Source
- PR13 – DNS1 IP Address
- PR14 – DNS2 IP Address
- PR15 – DMS IP Address Source
- PR16 – Phone #
- PR17 – User ID
- PR18 – User Password
- PR19 – FTP File Directory

OPERATIONAL COMMANDS

Operational commands provide access to additional parameters and options that control the operation of the MICRImage reader.

The current list of general operational commands follows (see Section 3 for a complete description of these commands):

- VR – Version command
- RS – Reset command
- LE – LED command
- DM – Disable MICR command
- EM – Enable MICR command
- BLK – Block Command
- UNBLK – Unblock Command

The following are operational commands that are image specific (see Section 4 for a complete description of these commands):

- TG – TIFF tag command
- TI – Transmit Image command
- FM – File Memory command
- SI – Store Image command
- SF – Send next image File command
- TC – Set file and timer counter command
- IS – Image Status command
- AI – Append Image command
- BC – Bar Code command

COMMAND LINE SYNTAX

Unless otherwise noted, commands are “free form” in that spaces may be inserted between parameters, numbers, and file names (but not between digits). These spaces are ignored. Spaces within a string are retained.

Lower case letters are converted to upper case letters except in strings. Strings must end with ‘]’ or <CR>. If ‘\’ is used in a string, the character that follows it replaces the ‘\’. For example, if the command line has the string: Hello[World\] and \\us\], the resulting string will be: Hello [World] and \us\.

All commands must end with <CR>.

INSTA-CHANGE CHECKS

The Insta-Change check is a MICR encoded document that contains commands and options used to set configuration parameters in the MICRImage Reader. Multiple commands and options may be contained on one Insta-Change check. Also, multiple Insta-Change checks may be required to configure some of the parameters.

When used, the Insta-Change checks are run through the MICR Reader the same as a standard check, and the options to be used are automatically configured. When the Insta-Change check is run through the MICR Reader and read successfully, the LED indicator will blink green. If the LED indicator turns red, the read is not successful. Try again or use a different Insta-Change check. To obtain Insta-Change checks, notify a MagTek representative and specify what option will be used.

MICRBASE SETUP PROGRAM FOR WINDOWS

The MICRbase setup program (P/N 22000021) allows the user to control all the programmable options available in the MICRImage Reader.

The program provides a graphical, user-friendly interface that hides the complexities involved in manually entering MICRImage commands. The user is no longer required to know the specific commands or the detail data associated with each command. However, the program still allows manual entry of commands for advanced users. For more detailed information, refer to the MICRbase Setup Program Reference Manual (P/N 99875102).

The MICRbase setup program may also be downloaded from the Internet at www.magtek.com under Software/Demo Programs.

SECTION 2. CONFIGURATION COMMANDS

Configuration commands are used to setup configuration parameters in the MICRImage Reader. A complete description of these commands follows:

SWITCH COMMANDS

These commands control internal “software” switches used to configure the MICRImage reader. The switch commands include SWA, SWB, SWC, SWD, SWE, SWF, SWI, HW, FC, PR12, and SA commands.

When sending configuration data for a software switch, 8 ASCII bits must always be provided (“0”= hex 30, and “1”=hex 31). The MICRImage will execute the command but it will not reply.

For example, to execute the SWA command with configuration data, send the command as follows:

```
SWA 01010101<CR>
```

To make a switch command permanent, follow the switch command with the SA command (Save command) as follows:

```
SWA 01010101<CR>  
SA <CR>
```

If a switch command is sent without configuration data, MICRImage will reply with the current settings for that switch.

SWA COMMAND – HOST PORT PARAMETERS

This command controls the communication parameters for the RS-232 Host port. The parameters for this command are listed in Table 2-1.

Note

The MICRImage includes an RS-232 auxiliary port that can be configured in a similar manner using the SWD command.

Table 2-1. SWA Command – Host Port Parameters

BITS								FUNCTION
7	6	5	4	3	2	1	0	
					0	0	0	Baud Rate: 57600
					0	0	1	Baud Rate: 38400
					0	1	0	Baud Rate: 115200
					0	1	1	Baud Rate: 1200
					1	0	0	Baud Rate: 2400
					1	0	1	Baud Rate: 4800
					1	1	0	Baud Rate: 9600
					1	1	1	Baud Rate: 19200
	0		0	0				Data, Stop Bits, Parity: 8, 1, None
	1		0	0				Data, Stop Bits, Parity: 8, 2, None
	0		0	1				Data, Stop Bits, Parity: 8, 1, Even
	1		0	1				Data, Stop Bits, Parity: 8, 1, Odd
	0		1	0				Data, Stop Bits, Parity: 7, 1, Even
	1		1	0				Data, Stop Bits, Parity: 7, 2, Even
	0		1	1				Data, Stop Bits, Parity: 7, 1, Odd
	1		1	1				Data, Stop Bits, Parity: 7, 2, Odd
		0						CTS/DSR: Use
		1						CTS/DSR: Ignore
0								Intercharacter Delay: No
1								Intercharacter Delay: Yes

Note

The new settings for the serial port will not become effective unless SWA has been saved and until the RS command is executed.

Baud Rate

The Baud Rate is one of eight speeds at which the MICRImage communicates with the host. The lowest speed is 1200 baud, and the highest is 115200.

Data, Stop Bits, and Parity

Data refers to the number of data bits used to transmit every character; the options available are 7 or 8. Stop Bits refer to the number of bits used to indicate the end of transmission for every character; the options available are 1 or 2. Parity refers to a means of detecting bit-level transmission errors for every character; the options available are None, Even or Odd.

CTS/DSR

When CTS/DSR (Clear to Send/Data Set Ready) is set to Ignore, the MICRImage sends data to the host without waiting for the CTS and DSR signals to be active. When CTS/DTS is set to Use, the MICRImage waits for the CTS and DSR signals to be active before sending data.

Inter-character Delay

The inter-character delay is used to increase the time between characters transmitted from the MICRImage. The delay between characters is 13 ms for baud rates of less than 9600 and approximately 1ms for baud rates of 9600 and higher.

SWB COMMAND – MESSAGE FORMAT PARAMETERS

The SWB command controls the message format, shown in Table 2-2.

Table 2-2. SWB Command – Message Format

BIT								FUNCTION
7	6	5	4	3	2	1	0	
0							0	<LF>: No
0							1	<LF>: Yes
0						0		<CR>: No
0						1		<CR>: Yes
0					0			<ETX>: No
0					1			<ETX>: Yes
0				0				<ESC>: No
0				1				<ESC>: Yes
0			0					<STX>: No
0			1					<STX>: Yes
		0						Send Data After Error?: No
		1						Send Data After Error?: Yes
	0							Send Status After Data?: No
	1							Send Status After Data?: Yes
0			0	0	0	0	0	Comm Mode: 0 - Data Only
1			0	0	0	0	0	Comm Mode: 1 - Data <CR>
0			0	0	0	0	1	Comm Mode: 2 - Data -<LF>
0			0	0	0	1	1	Comm Mode: 3 - Data -<CR><LF>
0			0	1	0	0	0	Comm Mode: 4 - <ESC> Data
0			0	1	0	1	0	Comm Mode: 5 - <ESC> Data<CR>
0			1	0	1	0	0	Comm Mode: 6 - <STX> Data<ETX>
1			0	0	0	0	1	Comm Mode: 7 - Packet Mode (<STX>Data<ETX><LRC>)

Control Characters and MICR Data

Control Characters may be added to the MICR data message. The characters are always in the following locations:

<STX> <ESC> data <ETX> <CR> <LF>

The control characters, descriptions, and hex values are shown in Table 2-3.

Table 2-3. Control Characters

CONTROL CHARACTER	DESCRIPTION	HEX VALUE
<STX>	Start of Text	02
<ESC>	Escape	1B
<ETX>	End of Text	03
<CR>	Carriage Return	0D
<LF>	Line Feed	0A

For example, if <STX> and <CR> are set to YES, the message from the MICRImage will look like this:

<STX>data<CR>

Communication Modes

The selection of Comm Modes is a quick way of selecting multiple Control Characters. For instance, to send a carriage return/line feed pair after the data, you can specify Comm Mode 3.

Comm Mode 7, also known as Packet Mode, calculates an LRC (Longitudinal Redundancy Check), and appends it to the data message. Also, if a <NAK> (hex 15) character is received in this mode, the MICRImage will resend the last message.

Send Data After Error

The parameter Send Data After Error specifies whether the MICRImage will return data to the host after a read error. If YES is selected and the MICRImage reads a check with an error, the MICRImage will send the data back to the host. If NO is selected and the MICRImage finds an error, it will discard the data and nothing will be sent. The error conditions are listed in Table 2-4.

Table 2-4. Error and Status Codes

PRIORITY	CODE	TYPE	DESCRIPTION
10	01	Error	No MICR data: no transit and no account found
9	09	Status	Mexican check
8	08	Status	Canadian check
7	05	Error	No transit, bad character, bad length, bad check digit
6	07	Error	No account, bad character
5	04	Error	Bad character in check number
5	04	Status	No check number
4	12	Status	Short Account (maybe caused by mis-parsed check#)
3	03	Status	Low MICR signal, good read
2	10	Status	Business check
1	11	Status	Amount field present
0	00	Status	No error, check OK

Notes:

- The LED indicator will turn red on all error conditions.
- The absence of a check number is not considered an error.
- If a multiple error occurs, the error or status code with the highest priority is reported.
- All unreadable MICR characters are transmitted as an “?” ASCII character (hex 3F), except for Format 00xx (See Section 5).

Send Status After Data Parameter

The Send Status After Data Parameter makes the MICRImage append a two-digit error/status code to the end of the MICR data. For most formats (See Appendix A) the error/status code will always be preceded by a forward slash (/). The error/status codes are listed in Table 2-4.

For example, if a Canadian check (code 08) is read and had no errors, and the MICR data is “1234567890”, then the message from the MICRImage will look like this:

```
1234567890/08
```

The status code is always at the end of the data, not the end of the message. For example, using the above conditions, with the message format set to send <STX> and <ETX>, the message from the MICRImage will look like this:

```
<STX>1234567890/08<ETX>
```

SWC COMMAND – MISCELLANEOUS FUNCTION PARAMETERS

The SWC command controls miscellaneous parameters, shown in Table 2-5 and described below.

Table 2-5. SWC Command – Miscellaneous Parameters

BITS								FUNCTION
7	6	5	4	3	2	1	0	
							0	CMC-7 Character Set: No
							1	CMC-7 Character Set: Yes
					0	0		Invalid Commands: ?<CR>
					0	1		Invalid Commands : No Reply (Header Required)*
					1	0		Invalid Commands: No Reply (no header required)
					1	1		Ignore all Commands
				0				Active RTS: No
				1				Active RTS: Yes
			0					Data Header: No
			1					Data Header: Yes
		0						Card Data Message: Multiple
		1						Card Data Message: Single
	0							Compatible Replies
	1							Extended Replies**
0								Send only if MICR (Compatible)
1								'No MICR' Response**

*Header Required means all commands must be preceded by a GS character (Hex 1D).

**Setting these bits means the Reader may not be compatible with applications using previous MagTek MICR Products.

CMC-7 Character Set

If NO is selected, the MICR Reader will only read E13-B characters. When YES is selected, the MICR Reader will read both CMC-7 and E13-B characters (see Appendix B). However, the MICR Reader will only output raw data ("as is" on the check) for checks with CMC-7 characters.

Invalid Command Response

Invalid command response is the action the MICRImage takes upon receipt of a command it does not recognize. It can also be used to stop the MICRImage from receiving any more commands.

The first option “?<CR>” is the default. If the MICRImage receives an unrecognized command, it will return a question mark and carriage return to the host. The MICRImage will then return to an idle state and wait for further commands or check/credit card reads.

For the second option, “no reply - header required,” the MICRImage will only execute commands preceded by a GS ASCII character (hex 1D), and it will not reply to invalid

commands. When this option is selected, all messages received without a GS header will be transmitted “as received” through the RS-232 auxiliary port.

For the third option, “no reply,” the MICRImage will execute all valid commands, but it will not reply to invalid commands.

The fourth option, “ignore all commands,” causes the MICRImage to stop receiving any Host data and to ignore any further commands. Even the SA (Save) command is ignored and therefore this fourth option is only temporary. To make this option permanent or to reset it, you must use an Insta-Change check.

Active RTS

When this function is set to YES, the MICRImage will raise RTS and wait 5 seconds for CTS to become active before sending any data. If the 5 seconds expire and CTS is not active, the data message will be discarded and nothing will be sent.

Data Header

If YES is selected, a single character header precedes the data. For MICR data, the message is transmitted as follows:

```
`C' [data]
```

For card data, the header position on the message is controlled by the Card Data Message parameter (see below). Therefore, the message may be transmitted as follows:

If Multiple Message: `M' [TK1] `M' [TK2] `M' [TK3]

If Single Message: `M' [TK1] [TK2] [TK3]

It is important to note that the Data Header precedes the data and not the message. For example, if <STX>, <ETX> and Data Header are set to YES, a MICR data message will be transmitted as follows:

```
<STX> `C' [data] <ETX>
```

Card Data Message

This parameter determines the structure of the output message for the individual tracks when a credit card is read. If Multiple is selected, the Control Characters (see SWB, below) and Data Header (see Data Header, above) are added to each track individually. On the other hand, if Single is selected, all available tracks are lumped together into a single message. For example, if <STX>, <ETX> and Data Header are set to YES, the output message may be transmitted as follows:

If Multiple Message: <STX> 'M' [TK1] <ETX> <STX> 'M' [TK2] <ETX> <STX> 'M' [TK3] <ETX>

If Single Message: <STX> 'M' [TK1] [TK2] [TK3] <ETX>

Extended Replies

There are a number of commands in the standard MICR command set that do not provide any response when the operation is completed or with a simple '?<CR>' when an error occurs. By setting this option, commands that normally provide no response will return 'OK<CR>' if the command executes successfully. For commands that respond with a '?<CR>' to report an error, the extended reply is '?xxx<CR>' where xxx is a three-digit error code. See Appendix D for a complete listing of the error codes.

'No MICR' Response

For applications where both MICR and non-MICR encoded documents will be scanned, setting this option will provide a 'No MICR' response when no MICR characters are detected.

SWD COMMAND – AUXILIARY PORT PARAMETERS

The SWD command, shown in Table 2-6, controls the communication parameters for the RS-232 Auxiliary Port.

Table 2-6. SWD Command – Auxiliary Port Parameters

BITS								FUNCTION
7	6	5	4	3	2	1	0	
					0	0	0	Baud Rate: 57600
					0	0	1	Baud Rate: 38400
					0	1	0	Baud Rate: 115200
					0	1	1	Baud Rate: 1200
					1	0	0	Baud Rate 2400
					1	0	1	Baud Rate: 4800
					1	1	0	Baud Rate: 9600
					1	1	1	Baud Rate: 19200
	0		0	0				Data, Stop Bits, Parity: 8, 1, None
	1		0	0				Data, Stop Bits, Parity: 8, 2, None
	0		0	1				Data, Stop Bits, Parity: 8, 1, Even
	1		0	1				Data, Stop Bits, Parity: 8, 1, Odd
	0		1	0				Data, Stop Bits, Parity: 7, 1, Even
	1		1	0				Data, Stop Bits, Parity: 7, 2, Even
	0		1	1				Data, Stop Bits, Parity: 7, 1, Odd
	1		1	1				Data, Stop Bits, Parity: 7, 2, Odd
		0						CTS/DSR: Use
		1						CTS/DSR: Ignore
0								Intercharacter Delay: No
1								Intercharacter Delay: Yes

Note

The new settings for the Auxiliary port will not become effective until the RS command is executed.

Baud Rate

The baud rate is one of eight speeds at which the MICRImage communicates with the host. The lowest speed is 1200 baud, and the highest is 115200.

Data, Stop Bits, and Parity

Data refers to the number of data bits used to transmit every character; the options available are 7 or 8. Stop Bits refer to the number of bits used to indicate the end of transmission for every character; the options available are 1 or 2. Parity refers to a means of detecting bit-level transmission errors for every character; the options available are None, Even or Odd.

CTS/DSR

When CTS/DSR (Clear to Send/Data Set Ready) is set to Ignore, the MICRImage sends data at the Auxiliary Port without waiting for the CTS and DSR signals to be active. When CTS/DTS is set to Use, the MICRImage waits for the CTS and DSR signals to be active before sending data.

Inter-character Delay

The inter-character delay is used to increase the time between characters transmitted from the MICRImage. The delay between characters is 13 ms for baud rates of less than 9600 and approximately 1ms for baud rates of 9600 and higher.

SWE COMMAND – DATA TRANSFER PARAMETERS

The SWE Command controls parameters related to the transfer of image files. Image Transfer Options are as shown in Table 2-7.

Table 2-7. SWE Command – Data Transfer Options

BITS								FUNCTION
7	6	5	4	3	2	1	0	
								MICR/MSR Output Port
		0	0					Send via RS232 Host Port
		0	1					Send via Auxiliary Port
		1	0					Send via Network port (Telnet)
		1	1					Reserved
								Image Output Port
0	0							Send via RS-232 host port
0	1							Send via RS-232 auxiliary port
1	0							Send via Network Port (FTP)
								File Transfer Protocol (RS232 ONLY)
					0	0	0	Use length + binary
					0	0	1	Use XMODEM (128-byte Blocks)
					0	1	0	Use XMODEM-1K (1K-byte Blocks)
					0	1	1	YMODEM/YMODEM-G
					1	0	0	RAW BINARY

MICR/MSR Output Port

This parameter determines which port is used to send MICR and MSR data. If the Network Port option is chosen, but no Telnet connection has been established, data will be sent out the Host Port.

Image Output Port

This parameter determines which port is used to transfer image files. The options are the RS232 host port, the RS-232 Auxiliary port, or the Network port.

File Transfer Protocol

This parameter determines which file protocol is used to transfer image files via the RS232 Ports. The Network port always uses the FTP protocol. A description of the available RS232 Transfer options follows:

LENGTH + BINARY

In this protocol, the image file is transmitted as binary data. The length precedes the binary data in the form of a word count (1 word = 2 bytes). If the first byte received is null, the count is included in the next 3 bytes. If the first byte received is not null, the first and second bytes are the count. The byte order of the length is always MSB...LSB.

XMODEM

In this protocol, the image file is transmitted in blocks of 128 bytes. The protocol includes error detection information (CRC or checksum). All blocks must be acknowledged by the host, and if an error is detected, the host will request the block again.

XMODEM-1K

In this protocol, the image file is transmitted in blocks of 1K bytes. The protocol includes error detection information (CRC or checksum). All blocks must be acknowledged by the host, and if an error is detected, the host will request the block again.

YMODEM/YMODEM-G

This is a double mode protocol and is used to send multiple files in batch mode. The host instructs MICRImage whether to use YMODEM or YMODEM-G. In the YMODEM protocol, the image file is sent in blocks of 1K bytes, and all blocks must be acknowledged by the host. In the YMODEM-G protocol, the image files are also sent in blocks of 1K bytes, but the blocks are not acknowledged by the host.

BINARY

In this protocol, the image file is transmitted as binary data but no length is provided. The IS (Image Size) command can be used to query for the size of the image file.

SWF COMMAND – MICR OPTIONS

This command controls miscellaneous options shown in Table 2-8.

Table 2-8. SWF Command – MICR Options

Bits								Parameters
7	6	5	4	3	2	1	0	
							0	Normal Status
							1	Enable Extended Status
							0	Use MICR
							1	Suppress MICR
			0					No Transfer Progress Messages
			1					Transfer Progress Messages
				0	0			Enhanced Reading (ER) disabled
				0	1			ER enabled: compare first 2 reads
				1	0			ER enabled: compare any 2 reads
				1	1			ER enabled: compare all 3 reads
0	0	0						Reserved

Extended Status

The Extended Status Parameter works in conjunction with the *Send Status After Data Parameter* (See page 7). Both must be enabled for extended status to be active.

MICR Image Check Reader

Example Output:

T123456780A1234567C0345/0000

The Extended Status consists of four digits as follows:

1st Digit

- 0 – OK MICR
- 1 – Low MICR
- 2 – No MICR

2nd Digit

- 0 – Standard Check
- 1 – Business Check
- 2 – Mexican Check
- 3 – Canadian Check

3rd Digit

- 0 – No Status
- 1 – Amount Present
- 2 – Short Account
- 3 – Short Account + Amount Present
- 4 – No Check#
- 5 – No Check# + Amount Present
- 6 – No Check# + Short Account
- 7 – No Check# + Short Account + Amount Present

4th Digit

- 0 – No Errors
- 1 – Chk#
- 2 – Account
- 3 – Account + Chk#
- 4 – Transit
- 5 – Transit + Chk#
- 6 – Transit + Account
- 7 – Transit + Account + Chk#

Suppress MICR

If the Suppress MICR function is selected, the MICR line will not be transmitted or placed in tag 270. This function is used with documents that don't have a MICR line. To override this setting, see the 'EM' command.

Enhanced Reading (ER)

This option is available only in units manufactured after 9/01/03.

If ER is selected, the document is scanned three times: forward, reverse, and forward. The MICR lines produced are compared character by character and mismatches replaced by '?'. The resulting MICR line is the one that will be parsed, formatted, and transmitted.

In the first mode, the first forward scan is compared to the reverse scan and the result is transmitted. In the second mode, the three lines are compared in pairs and the first pair found that matches perfectly is transmitted. In the third mode, all three MICR lines are compared and the result transmitted.

Transfer Progress Messages

If the Transfer Progress Messages function is selected, the following messages will be sent to the host indicating the progress of network communications.

DIAL	-Dialing
NETLOG	-Logging into network
NETCOM	-Connected to network
FTPLOG	-Logging into FTP server
FTPCON	-Connected to FTP server
DISCON	-Disconnected
F=filename	-file being transferred

SWI COMMAND – IMAGE PARAMETERS

The SWI Command, shown in Table 2-9, controls the image parameters.

Table 2-9. SWI Command – Image Parameters

BIT								FUNCTION
7	6	5	4	3	2	1	0	
						0	0	200 DPI (Default)
						0	1	Reserved
						1	0	Reserved
						1	1	Reserved
					0			Reserved – Set to 0
				1				Auto-save image
				0				SI command saves image
			1					Auto-send image
			0					TI command sends image
								Image Type
0	0	0						Compressed Bitonal (B/W) CCITT-G4
1	0	0						Bitonal (B/W) (1 Bit/Pixel)
1	0	1						4 Level Grayscale (2 Bits/Pixel)*
1	1	0						16 Level Grayscale (4 Bits/Pixel)
1	1	1						256 Level Grayscale (8 Bits/Pixel)

*This option is not defined in the Base TIFF Specification and may cause problems for some TIFF viewers.

Image Type

This option selects the number of bits used for each pixel, or in other words, the number of shades of gray. The bitonal image is compressed using CCITT-G4, a lossless compression (no loss of image quality), resulting in file sizes approximately 10K. Grayscale images are not compressed and will be significantly larger (e.g., a personal check using 8-bit Grayscale will create a file size of approximately 640K).

HW COMMAND – HARDWARE PARAMETERS

This command controls miscellaneous hardware options shown in Table 2-10.

Table 2-10. HW Command

7	6	5	4	3	2	1	0	PARAMETERS
							0	Y Option: Disable
							1	Y Option: Enable
					0			Track 3: Disable
					1			Track 3: Enable
				0				Track 2: Disable
				1				Track 2: Enable
			0					Track 1: Disable
			1					Track 1: Enable
		0						ID Card decoding: Disable
		1						ID Card decoding: Enable
						0		EMF detect: Yes
						1		EMF detect: No
0	0							These bits are always set to 0

Disable/Enable Y Option

Enable this parameter when using a Y-cable to connect an additional device on the RS-232 Host Port. This parameter allows the MICRImage and the additional device to receive/transmit data from the Host.

One important consideration is to determine how the MICRImage should respond to all data received from the Host. This response is controlled by the Invalid Command Response parameter. (See SWC Command, above.)

Disable/Enable Tracks

Each Track can be enabled or disabled individually. The tracks are always transmitted in ascending order: TK1, TK2, TK3. For example, if TK1 and TK3 are enabled and TK2 is disabled, the reader will transmit TK1, TK3.

ID Card Decoding

The MSR has two modes of operation. In the first mode, ID Card decoding disabled, the MSR will only read ISO encoded cards. In the second mode, ID Card decoding enabled, the MSR will read and auto discriminate ISO, AAMVA, and CDL encoded cards. When a card is swiped, the LED indicator will turn red and indicate an error if any of the enabled tracks read is incompatible with the selected mode of operation. TK2 is a standard track for all types of cards.

EMF Detect

The EMF Detect option allows the MICR Reader, when idle, to monitor EMF interference in its immediate environment. If YES is selected, the LED indicator will blink red/green when the MICR Reader detects a signal with amplitude large enough to affect check reading. If NO is selected, the MICR Reader will not monitor nor indicate the presence of EMF interference.

FC – FORMAT CHANGE COMMAND

Formats are used by the MICRImage to process and transmit the MICR fields. The Format command allows the selection of a format from the Format List, Appendix A. The data for this command consists of 4 digits (ASCII characters 0-9). To execute, send the command as follows:

```
FC 6600<CR>      (with data)
or
FC <CR>          (without data)
```

When sending data, all 4 digits must be provided. The MICRImage will execute the command but it will not reply. The new settings become effective immediately. To make this command permanent, use the SA command described below.

If no data is provided, the MICRImage will respond with the current setting.

FILE NAMES

Each image that is transmitted or saved is given a unique file name. A file specification describes the content of a file name and may be given on the command line by using the 'N' parameter of the TI or SI command. See Section 4. If the 'N' parameter is not used in these commands, the file specification is taken from property 12. (See the PR12 command in Section 6 for the characters that may be used in a file specification.) If property 12 is empty, a default file name is used. If the file name specified already exists in internal storage, an extension is added to the file name to make it unique. For example, if the name to be created is IMAGE.TIF and it already exists, the name IMAGE_0.TIF will be created and used for the current image.

DOCUMENT SIZE LIMITS

Used to set minimum and maximum size limits for scanned documents. An improper scan can result in a short or skewed image. It is usually not desirable to transmit or save such an image. If size limits are set and the image falls outside those limits, the auto-send, auto-save, and append image operations will not be performed and an error will be returned. See PR30 – PR33 in Section 6.

MICR LINE TECHNICAL OPTIONS

Used to set MICR line signal characteristics to optimize low MICR detection. See PR34 – PR35 in Section 6.

SA – SAVE COMMAND

All changes are considered temporary until the Save command is executed. The Save command saves all changes to the MICRImage memory and makes them permanent. The MICRImage will execute the command but it will not reply. To execute, send the SA command followed by a carriage return as follows:

SA<CR>

SECTION 3. GENERAL OPERATIONAL COMMANDS

This section describes the Version command, Reset command, LED commands, Disable and Enable Module commands, and Block and Unblock commands.

VR – VERSION COMMAND

The Version command gives the current firmware revision in the MICRImage. To execute, send the VR command followed by a carriage return as follows:

```
VR<CR>
```

The MICRImage responds as follows:

```
Version [firmware revision]<CR>
```

SE – SERIAL NUMBER COMMAND

The Serial Number Command responds with the MICRImage unit serial number. To execute, send the SE command followed by a Carriage Return as follows:

```
SE<CR>
```

The MICRImage responds:

```
SE = [serial#]<CR>
```

RS – RESET COMMAND

The Reset command resets the MICR program, and it resets the serial port to the saved settings provided by SWA. To execute, send the RS command followed by a carriage return as follows:

```
RS<CR>
```

LE – LED COMMAND

The LE command is used to control the LED's color pattern, and the duration of the pattern.

The color pattern has four segments. Each color segment can be green, red, or amber (the amber is produced by turning red and green on). The definition of the color pattern is better described using a byte, where two bits control an individual segment, and each bit controls a color (on or off):

Segment 1		Segment 2		Segment 3		Segment 4	
Red	Green	Red	Green	Red	Green	Red	Green
0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

For example, to setup a color pattern where the LED illuminates green-red-green-red, the byte value would be “01100110” (decimal 102). The decimal value of this byte is used with the LE command. In this example, the LE command is executed as follows:

LE 102<CR>

Table 3-1 lists common color patterns with their values and descriptions:

Table 3-1. LED Control

Color Pattern	Color Value (Decimal)	Description
Off/Off/Off/Off	0	LED Off
Green/Green/Green/Green	85	Steady Green
Red/Red/Red/Red/	170	Steady Red
Amber/Amber/Amber/Amber	255	Steady Amber
Green/Green/Off/Off	80	Blink Green Slow
Red/Red/Off/Off	160	Blink Red Slow
Amber/Amber/Off/Off	240	Blink Amber Slow
Red/Red/Green/Green	165	Blink Red/Green Slow
Green/Off/Green/Off	68	Blink Green Fast
Red/Off/Red/Off	136	Blink Red Fast
Amber/Off/Amber/Off	204	Blink Amber Fast
Red/Green/Red/Green	153	Blink Red/Green Fast
Red/Green/Off/Off	144	Fast Red/Green Off
Green/Green/Green/Red	86	Green + Fast Red
Red/Red/Red/Green	169	Red + Fast Green

Once the color pattern is defined, the pattern is repeated for a default interval of 3 seconds. A different time period can be specified using the LE command and providing a new value in seconds, up to 65. For example, to setup a 5 second interval for the color pattern above, the LE command is executed as follows:

LE 85 , 5<CR>

Note

The total time for each color pattern is 0.4 seconds (i.e. each segment lasts 0.1 seconds).

DM – DISABLE MICRIMAGE COMMAND

This command disables the document reading function and turns off the LED. Communications are not affected, and Insta-change checks may still be scanned, but the MICR line will not be sent.

DM<CR> Insta-change checks only may be scanned
DMX<CR> No scans at all

EM – ENABLE MICRIMAGE COMMAND

This command enables the document reading function, and the LED will turn green. To execute, send the EM command followed by a carriage return as follows:

EM<CR>

One of the following optional parameters may be used:

- | | |
|---|---|
| N | Suppresses MICR for next scan regardless of SWF. Afterwards, revert to SWF. |
| M | Detect MICR for next scan regardless of SWF. Afterwards, revert to SWF. |

Example: EMN<CR>

BLK – BLOCK COMMAND

The BLK Command allows an application on any port to temporarily block command processing on all other ports for a set period of time, by default 10 seconds, or until the UNBLK command is sent. Optionally the duration (in seconds) can be specified as 'BLK n' where n can range from 0 to 65. Setting the duration to 0 will allow blocking with no timeouts.

BLK<CR>	10-second timeout
BLK 15<CR>	15-second timeout

UNBLK – UNBLOCK COMMAND

The UNBLK command allows the MICRImage to continue processing input from all available ports.

UNBLK<CR>

SECTION 4. IMAGE SPECIFIC COMMANDS

This section describes the commands available for the transmission, storage and management of images.

Some important characteristics of the images generated by MICRImage are:

- The default image resolution used is 200 dpi.
- Images are compressed according to ITU T.6, also referred to as CCITT Group 4.
- The images are stored using the TIFF file format.
- The TIFF format contains a number of descriptive fields of data (“tags”) each tagged with a number (up to 65534). Many of these tags are predefined and contain items such as image length, height, and compression method.
- The TIFF format also allows the inclusion of an unlimited amount of private or special-purpose information utilizing a number of user defined tags. MICRImage provides commands that allow programming of these TIFF tags.

The following TIFF tags are included in every image file. Tag # 270 can be modified using MICRImage commands.

Tag #	Tag Name	Content
270	IMAGE DESCRIPTION	Contains formatted MICR line unless changed by the user.
271	MAKE	“MagTek, Inc.”
272	MODEL	“MICRImage RS232 [unit’s serial number]”
305	SOFTWARE	[firmware version]

The following TIFF tags are available and can be programmed using the MICRImage commands:

Tag #	Tag Name	Content
269	DOCUMENT NAME	User specified.
285	PAGE NAME	User specified.
306	DATE/TIME	User specified.
315	ARTIST	User specified.
316	HOST COMPUTER	User specified.
333	INK NAMES	User specified.
337	TARGET PRINTER	User specified.
33432	COPYRIGHT	User specified.
32768 to 65534	Undefined	User specified.

TG – TIFF TAGS COMMAND

This command stores the specified data in the tag section of the TIFF file for the last image scanned. The following optional parameter may be used repeatedly:

Tn=string] Set tag n to "string".

Example: TG T315=Fred] T337=Laserjet<CR>

An existing tag can be deleted by setting it to a null string as follows:

TG T315=]<CR> will delete Tag 315. All user tags are deleted when a new document is scanned or an image is saved.

If this command is used without parameters, the current tags are listed.

Example: TG<CR> may return:

```
271 MagTek, Inc.  
272 MICRImage RS232 (12345678)  
305 Version MI_00.00.00
```

Note

If the image is "locked" (see TI command), the TG command with parameters is ignored and will return an error.

The TIFF format allows multiple strings under the same Tag #. The strings are separated by '^' as follows:

TG T337=TED^FRED^JOE]<CR>

These separators are converted to ASCII NUL in the Tag.

TI – TRANSMIT IMAGE COMMAND

This command instructs the MICRImage to transmit the current image just captured using the image transfer options selected in SWE. To execute, send: TI<CR>.

The following optional parameters may occur in any order:

C0	Transmit image through the host RS232 port
C1	Transmit image through the auxiliary RS232 port

C2	Transmit image through the network port using FTP
F0	Use the LENGTH + BINARY protocol *
F1	Use the XMODEM protocol*
F2	Use the XMODEM-1K protocol*
F3	Use the YMODEM/YMODEM-G protocol*
F4	Use the BINARY protocol*
	*RS232 only

Nfilename *specification*] Specify the file name using the same special characters and rules described in PR12 – File Name Specification (See Section 6). If this parameter is not used, the file name given by PR12 will be used or a default file name if PR12 is empty.

Tn=string] Set tag n to “string”.

(snippet) Send the specified portion of the image (See SNIPPETS page 34).

Sn where n is 0-9 specifying PR20-PR29 which contain snippets or any of the above parameters. See Predefined Snippets in Section 6.

Example: TI C1 F2 (T100L300) T315=Fred] T337=Laserjet] N MyImage.tif<CR>

Note

Once the current image has been transmitted, the image becomes “locked” and cannot be appended with additional images using the AI command and only the Cn and Fn parameters will be accepted. Others will be ignored.

FM – FILE MEMORY COMMAND

When images are being stored in the internal storage memory, the MICRImage keeps a record on the following:

- Each image stored is assigned an ascending count number.
- MICRImage keeps a pointer on the next image to be retrieved
- The images are retrieved first in, first out.
- MICRImage also keeps tabs on the number of stored images, and the amount of memory remaining.

The FM command is used to obtain the current file memory status. To execute, send the FM command as follows:

FM<CR>

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The MICR image will reply with the current file memory status as follows:

a , b , c <CR>

Where 'a' is the number of the next image to be retrieved, 'b' is the number of stored images, and 'c' is the number of bytes remaining. Status 'a' will be zero (0) whenever the internal storage memory is empty or after the last image has been sent out.

The FM command accepts any one of the following optional parameters:

ERASE All files are erased from internal storage. This may take up to 45 seconds. The response is the memory status as described above.

Example: FM ERASE<CR> will return 0 , 0 , 1048576<CR>.

DELETE name, ... Deletes the named files from internal storage and returns the file status as described above if successful. This does not make the storage available for new files, however. When the last file is deleted, the storage is erased. If a named file is not found, the command is aborted and an error is returned. The names may be separated by spaces or by a comma.

Example: FM DELETE img23.tif , myimage.tif<CR> may return 1 , 3 , 234567<CR>.

R Resets the file pointer to "1" (first file). The response is the memory status as described above.

Example: FM R<CR> may return 1 , 5 , 987654<CR>.

LIST Sends the file names and their sizes in bytes as follows:
Name , size<CR>.

Example:

FM LIST<CR> may return
IMAGE1.TIF , 5678<CR>
IMAGE2.TIF , 6543<CR>

SI – STORE IMAGE COMMAND

This command instructs MICRImage to store the current image just captured into internal storage memory. The stored image is assigned an ascending count number. Also, when this operation is completed, MICRImage always replies with an updated file memory status.

To execute, send the SI command as follows:

```
SI<CR>
```

The MICR image will reply with the current file memory status as follows:

```
a , b , c <CR>
```

Where ‘a’ is the number of the next image to be retrieved, ‘b’ is the number of stored images, and ‘c’ is the number of bytes remaining. Status ‘a’ will be zero (0) whenever the internal storage memory is empty or after the last image has been sent out.

Note

If there is no current image available to store (no check has been read), or if the internal memory is full, the MICRImage will return an error.

The SI command also allows the same parameters used with the TI command except Cn and Fn, and their functionality is exactly the same (for details see the TI command above). Some examples using the SI command with these parameters follow:

```
SI NIMAGE1.TIF<CR>
```

```
SI T306=10/22/99] NIMAGE.TIF] SO<CR>      to save the current image as file  
“IMAGE.TIF” with Tag 306 as given and consisting of the snippet(s) given by PR20.
```

Note

Once the current image is stored into the internal storage area, the current image memory is cleared. To access the image, use the SF command.

SF – SEND NEXT IMAGE FILE COMMAND

The SF command is used to send the next image file (from internal storage memory) using the image transfer options selected in SWE.

To execute, send the SF command as follows:

```
SF<CR>
```

The following optional parameters may be used in any order:

- Cn Comm port as described in the TI command.
- Fn Transfer protocol as described in the TI command.
- A Send all remaining files. If the transfer protocol is XMODEM or XMODEM-1K, only the next file is sent.
- N name, ...] Sends the named files. The names may be separated by a comma or spaces. If a named file is not found, the command is aborted and an error is returned. If the transfer protocol is XMODEM OR XMODEM-1K, only the first named file is sent

Example: SF C0 F3 N myimage.tif yurimage.tif<CR>

TC – SET FILE TIMER/FILE COUNTER COMMAND

This command is used to set two internal counters in the MICRImage whose values may be inserted into file names using the TI and SI commands. They both set to zero at power-on. The following optional parameters may be used in any order:

- Tn Sets the file timer to n seconds. This value is incremented each second. The maximum value is 4,294,967,295 which rolls over to zero.
- Cn Sets the file counter to n. The maximum value is 65,535 which rolls over to zero. The current value is used when a new file name is created and is then incremented.

Example: TC T1000 C50<CR>

If this command is used without parameters, the current values are returned.

Example: TC<CR> may return
 TC=T1003,C50<CR>

IS – IMAGE STATUS COMMAND

This command instructs the MICRImage to transmit the status of the current image in local memory. To execute, send the command as follows:

IS<CR>

The MICRImage responds with a status string formatted as follows:

```
abc , size , fn<CR>
```

where

a = image status (N-None, S-Scanned, L-Scanned/Locked)

b = compression(N-None, G-compressed)

c = image type (0-None, 1,2,4,8 bit)

size = image size in # of bytes

fn = image filename (noname- name not determined yet)

Example responses:

```
NN0 , 0 , noname<CR>          - No image in memory
SG1 , 5333 , noname<CR>       - Scanned B/W image (5333 bytes) in memory
LG1 , 5333 , file7.tif<CR>    - Same image after being sent (image is now locked)
```

One of the following optional parameters may be used:

- F Returns the status information as described above for the next file to be transmitted by the SF command.
- D Returns the length and height in pixels of the current image.
- K Kills (cancels) the current image. This is done automatically whenever an image is saved in internal storage or a new document is scanned.

Examples: IS F<CR> may return
LG1 , 9726 , MYIMAGE . TIF<CR>

IS D<CR> may return
1208 , 540<CR>

IS K<CR> returns NN0 , 0 , noname<CR>

AI – APPEND IMAGE COMMAND

The AI command can be used to append additional documents to the same bi-tonal compressed file. The user is not prompted for the next scan. This command may be canceled by typing cntl-X. The following optional parameters may be used:

MICRImage Check Reader

- R Rescan. This will cancel the previous scan unless it has been followed by an IS or TI command.
- K Kill the current file.

The formatted MICR line is placed in tag 270 whether it has errors or not.

Any number of scans can be appended limited only by the size of the file buffer. If the file buffer overflows, an error is returned and the entire file is canceled.

- Examples: AI<CR> To append the next document scanned.
AIR<CR> To cancel the previous scan.
AIK<CR> To kill the current file.

Note

Tags added after this command as well as existing tags will be associated with the appended image.

SNIPPETS

A snippet is a rectangular area within an image. To specify a snippet, enclose it in parentheses as follows: (T_n B_n L_n R_n) where T, B, L, and R are the top, bottom, left, and right borders of the area and n is the distance of the border from an edge of the image. If n is positive, it represents the distance from the bottom or right edge; if negative, from the top or left edge. An integer represents pixels, a number containing a decimal point represents inches, and a number with a comma in place of the decimal point represents centimeters. There are 200 pixels per inch. These four parameters are all optional and may occur in any order.

Note

When a snippet is specified, the resulting file will be uncompressed grayscale with 1, 2, 4, or 8 bits per pixel as given in SWI.

Multiple snippets may appear on the same command line. The commands that may use snippets are: TI, SI, and BC. For example:

TI (T375 B325 L500 R100)<cr> specifies a snippet 51 pixels high by 401 pixels long.

SI (L2.0) (R-1,8)<cr> specifies two snippets: (the right-most 2 inches) and (the left-most 1.8 cm).

If snippets are defined using MICRBase or property commands PR20 – PR29 (see Section 6), they may be referred to on the command line by number using the ‘Sn’ parameter where n is 0-9. For example:

BC1 S5<cr> specifies the pre-defined snippet #5 (PR25) to be scanned for bar code 39.

Note

These ten pre-defined snippets (PR20-PR29) are limited to two snippets each or any other valid command parameters, totaling 45 characters or less.(See Section 6.)

BCn – BAR CODE COMMAND

The bar code command may be used to scan one or more snippets for a specified bar code symbol. Each snippet is scanned three times: top edge, middle, bottom edge (horizontal) or left edge, middle, right edge (vertical). The required parameter n must be one of the following:

- 1 Bar code 39. Send all characters including check character.
- 2 Bar code 39. Send all characters except check character if valid, else error.
- 3 Bar code Interleaved 2 of 5. Send all characters including check character.
- 4 Bar code Interleaved 2 of 5. Send all characters except check character if valid, else error.
- 5 Bar code 128. Send all characters except check character if valid, else error.

The following optional parameters may occur in any order:

V Scan vertically. The default is horizontal if the snippet is wider than it is high or vertical if higher than it is wide.

(Snippet. See snippet description. Multiple snippets are allowed. The first valid bar code symbol encountered terminates the command.

Sn where n=0 – 9. Pre-defined snippet (PR20 – PR29). See snippet description and Section 6.

Examples:

BC5 S3 (T200 B150 L800 R300)<cr> Use bar code 128, scan predefined snippet(s) given in PR23, then scan the new snippet.

BC2 V S8<CR> Use bar code 39, force vertical scan of all snippets in PR28.

SECTION 5. NETWORK INTERFACE

The Network interface allows for the following:

- Transfer of images to a host using FTP (file transfer protocol)
- Telnet communication between the MICR and a host
- Configuration of Ethernet parameters from DHCP (Dynamic Host Configuration Protocol) or fixed (nonvolatile) MICR memory
- Log in to network using modem and PPP. Configuration of some parameters using IPCP.

NETWORK IMAGE FTP

Images can be transferred to a host by using FTP. This is accomplished by using the image transfer commands TI and SF in coordination with the SWE configuration command. See the documentation that describes these commands for more details.

NETWORK TELNET COMMUNICATIONS

In addition to RS232 communications, a host can communicate with a MICR using Telnet. During the Telnet session the host acts as the client and the MICR is considered the server. The host is responsible for establishing the Telnet connection and only one host can connect to the MICR at any one time. Using Telnet, the host can send commands and receive responses as well as MICR and MSR data depending on the configuration.

ETHERNET OR MODEM NETWORK CONFIGURATION

The MICR needs a number of parameters to be set up in order to communicate using the Network interface. Ethernet parameters include the MICR IP Address, MICR IP Mask, Gateway/Router and DNS IP Address. Modem parameters include Phone number, User ID and Password. Both interfaces use FTP IP Address, FTP User ID, FTP Password, and FTP File Directory. These parameters are generally loaded when the MICR powers up or is reset. These parameters can be obtained from nonvolatile memory within the MICR (fixed), or optionally with the Ethernet interface using DHCP, or a combination of both methods. Note that in order to obtain any parameter using DHCP, the MICR IP Address must be obtained by DHCP. It is critical that the MICR is configured properly in order to obtain these parameters correctly. See the documentation that describes these parameters for more details.

NETWORK CONFIGURATION PROPERTIES

The properties needed to configure the unit for network communications are:

PR0 – PR11 and PR13 – PR19. See Section 6.

NETWORK DEBUG COMMANDS

PING – Send ECHO Packet Command

The PING command allows the user to check on the Ethernet or Modem connection by having the MICRImage send a number of ECHO packets to the FTP server and measure the time required for a response back.

PING<CR>

The MICRImage responds:

```
Pinging FTSPSRV with 64 bytes of data
Reply rcvd from [192.11.12.13]: time=3ms.
Reply rcvd from [192.11.12.13]: time=2ms.
Reply rcvd from [192.11.12.13]: time=1ms.
Reply rcvd from [192.11.12.13]: time=2ms.
Packets: Sent 4, Rcvd 4
```

Optionally you can specify the IP address in the command. For example:

PING 192.12.11.123<CR>

ED – Ethernet Debug Command

Provides information about the Network parameters currently being used by the MICRImage. This is especially useful when verifying the dynamic configuration using DHCP. Also can provide debug trace for further troubleshooting. The list of ED commands is as follows:

```
ED<CR>      OUTPUT NETWORK INFO
ED1<CR>     ENABLES FTP DEBUG MESSAGES
ED2<CR>     ENABLES PPP DEBUG MESSAGES
ED3<CR>     ENABLES BOTH FTP AND PPP DEBUG
```

For example, the MICRImage responds to ED<CR> with:

```
Link detected.
CHKSCN -> MAC=001A10000002
CHKSCN -> IP addr=192. 37. 11.220, Subnet mask=255.255.255.0
ROUTER -> IP addr=192. 37. 11. 70, Subnet mask=255.255.255.0
FTSPSRV -> IP addr=192. 37. 12.205, Subnet mask=255.255.255.0
DHCPSV -> IP addr=192. 37. 11. 20
```

XU – PPP Dial Up (Modem Only) Command

Connects to network. Stays connected after file transfer. Modem will timeout-disconnect if no activity detected in 2 minutes.

XD – Modem Disconnect (Modem Only) Command

Hangs up phone connection.

DHCP SERVER CONFIGURATION

To utilize the DHCP configuration for MICRImage with Ethernet, the server must be set up appropriately. Please refer to the documentation for your particular DHCP device for more details. The server should already be configured to handle the individual IP address and subnet mask. Check to make sure the Router/Gateway option #3 is also activated if required.

To dynamically configure the FTP parameters, three user-defined options must also be set up. These are:

179 FTP Username	type String, Max Length=16
180 FTP Password	type String, Max Length=16
181 FTP SERVER ADDRESS	type String, Max Length=100

SECTION 6. PROPERTY COMMANDS

The following properties are nonvolatile (permanently saved in FLASH memory). The "SA" command must be used to save these properties whenever they are changed.

The command format to change a property is:

PRn=string<CR> where n is the property number and string is the new value. For example, PR5=1<CR> sets property 5 to 1. An error is returned if the string is not a valid value for the given property.

If the command is sent without a value, the current setting is returned. For example, PR5<CR> may return PR5=1<CR>.

PR0 – MICR IP Address Fixed Value (Ethernet Only)

This sets the fixed IP address for the MICR unit. For example:

PR0=192.11.12.127<CR>

PR1 – MICR IP Address Source (Ethernet Only)

PR1=0 - sets unit to configure MICR IP using DHCP
PR1=1 - sets unit to use fixed value (see PR0)

Note

This must be set to DHCP if any other configuration is to be obtained via DHCP.

PR2 – MICR IP Subnet Mask Fixed Value (Ethernet Only)

This sets the fixed IP subnet mask used by the MICR unit. For example:

PR2=255.255.255.0<CR>

PR3 – MICR Subnet Mask Source (Ethernet Only)

PR3=0 - sets unit to configure the subnet mask using DHCP
PR3=1 - sets unit to use fixed value (see PR2)

PR4 – Gateway IP Address Fixed Value (Ethernet Only)

This sets the fixed IP address for the gateway/router. For example:

PR4=192.11.12.127<CR>

PR5 – Gateway IP Address Source (Ethernet Only)

- PR5=0 - sets unit to configure the gateway IP using DHCP option 3
- PR5=1 - sets unit to use fixed value (see PR4)

PR6 – FTP Name/IP Address Fixed Value

This sets the name or fixed IP address for the FTP server. The maximum allowable length is 100 characters. For example:

PR6=192.11.12.127<CR>

or

PR6=ftp.checks.com<CR>

PR7 – FTP IP Address Source

- PR7=0 - sets unit to config the FTP server IP using DHCP option 181 (Ethernet only)
- PR7=1 - sets unit to use fixed value (see PR6)

PR8 – FTP User ID Fixed Value

This sets the user ID used for the FTP server. The maximum allowable length is 16 characters. For example:

PR8=MICRIMAGE<CR>

PR9 – FTP User ID Source

- PR9=0 - sets unit to config the FTP User ID using DHCP option 179 (Ethernet only)
- PR9=1 - sets unit to use fixed value (see PR8)

PR10 – FTP Password Fixed Value

This sets the fixed password used for the FTP server. The maximum allowable length is 16 characters. For example:

PR10=CHECKREADER<CR>

PR11 – FTP Password Source

- PR11=0 - sets unit to config the FTP password using DHCP option 180 (Ethernet only)
- PR11=1 - sets unit to use fixed value (see PR10)

PR12 – File Name Specification

To configure this property, an ASCII string of valid filename characters must be used. Leading spaces are ignored. The maximum number of characters is 32. Additionally, MICRImage uses the following list of special character options to insert predefined sequences in the filename:

- '*' = raw MICR line
- '?' = parsed MICR line according to the FC command
- '>' = current file counter
- '<' = current file timer in seconds
- ':' = unit's serial number
- ' ' (space) = replaced with underline '_'

Note

Use the TC command to set the initial values of the file count and time.

For example, if the desired filename must include the word "image", followed by the file count, and then followed by the extension ".tif", send the command as follows:

```
PR12=image>.tif<CR>
```

PR13 – DNS 1 IP Address (Ethernet Only)

This sets the IP address for the DNS 1 server:

```
PR13=100.100.100.100<CR>
```

PR14 – DNS 2 IP Address (Ethernet Only)

This sets the IP address for the DNS 2 server:

```
PR14=100.100.100.101<CR>
```

PR15 – DNS IP Address Source (Ethernet Only)

```
PR15=0          - sets unit to configure the DNS1 and DNS2 servers using DHCP option.  
PR15=1          - sets unit to use fixed values in PR13 and PR14.
```

PR16 – Phone (Modem PPP Only)

This sets the user phone number to be dialed by the modem (maximum of 30 characters):

```
PR16= 714-853-1212<CR>
```

PR17 – User ID (Modem PPP Only)

This sets the user ID (maximum of 40 characters):

```
PR17= GOBLIN<CR>
```

PR18 – User Password (Modem PPP Only)

This sets the user password (maximum of 40 characters). The user password is a 'hidden' parameter so only '*' will be output for each character.

```
PR18=PAHSWURD<CR>
```

```
PR18<CR>
```

```
PR18=*****<CR>
```

PR19 – FTP File Directory

This sets the FTP file directory(maximum of 32 characters):

```
PR19=/IMAGES(CR)
```

PR20 through PR29 – Predefined Snippets

These properties may contain one or two snippets as described in Section 4 under Snippets, as well as any command parameters that are valid for the TI, SI, and BC commands. (See these commands for details.) In effect, these properties may be viewed as extensions of those command lines. For example, given the following preset properties:

```
PR20 = (T320 B300 L900 R50) (T415 B350 L900 R300)<CR>
```

```
PR28 = C1 NIMAGE.TIF] T333 = MY TAG]<CR>
```

The following commands could be used:

BC5 SO<CR> to decode the two barcode 128 symbols defined in PR20.
TI F3 S8<CR> to send the current image named IMAGE.TIF containing the tag “MY TAG” to the auxiliary port using the YMODEM protocol.

The limit for each of these properties is 45 characters.

PR30 – Minimum Length

Sets the minimum length for a document in pixels. A value of zero disables this limit. If the scanned document is shorter than this length, an error is returned.

PR30=1175<cr>

PR31 – Minimum Height

Sets the minimum height for a document in pixels. A value of zero disables this limit. If the scanned document is less than this height, an error is returned.

PR31=530<cr>

PR32 – Maximum Length

Sets the maximum length for a document in pixels. A value of zero disables this limit. If the scanned document is longer than this length, an error is returned.

PR32=1250<cr>

PR33 – Maximum Height

Sets the maximum height for a document in pixels. A value of zero disables this limit. If the scanned document is higher than this height, an error is returned.

PR33=560<cr>

PR34 – MICR Threshold

Sets the MICR line noise threshold. Range 0 – 255. The useful range is approximately 8 – 25. Lower values will allow lower amplitude characters to be read but also will make reading more susceptible to errors caused by EMF noise. Default is 15.

PR34=15<cr>

PR35 – MICR Amplitude Scale

Sets the MICR line low-amplitude detection threshold. Range 0 – 255. Default is 128 which equates to approximately 42% signal amplitude as described in the X9 MICR Standards. Higher numbers raise the threshold.

PR35=128<cr>

PR36 – Modem Initialization (Modem PPP Only)

Used to initialize the modem.

PR36=S7=50<cr> Set max time to wait for connection

APPENDIX A. FORMAT LIST

For check reading, the MICRImage provides the flexibility to format the MICR fields and build a specific output string that will be transmitted to the Host. These output strings are referred to as Formats. The MICRImage has a built-in list of Formats (described below) from which the user may select one to become the active Format every time a check is read. The Formats may be selected using the FC command (Section 2, Configuration Commands) or Insta-Change Checks provided by MagTek.

Each Format is assigned a 4-digit number. The first two digits indicate the Format number, and the last two digits are specific parameters used for various functions by each Format. For example, in Format "0415", the "04" refers to Format number 4 and the 15 refers the maximum number of characters allowed for the account field.

Note

The formats listed in this section apply only to U.S. and Canadian checks. The MICR line on checks from other countries will not be broken or parsed as described in these formats.

A complete description for each Format follows.

Fmt 00xx: Raw Data Format - sends the entire MICR line - where:

- xx - specify what symbol set to use. Choose from the table
- Add xx + 16 - change multiple spaces to one space
- Add xx + 32 - Remove all spaces

Examples:

```

MICR LINE:  T122000218T  1234 5678 9U  1321
             FC0001 - t122000218t  1234 5678 9o  1321
(+16) FC0017 - t122000218t 1234 5678 9o 1321
(+32) FC0033 - t122000218t123456789o1321.
    
```

xx	Transit	On-Us	Amount	Dash	Error
00	T	U	\$	-	?
01	t	o	a	d	?
02	T	O	A	D	?
03	T	U	\$	-	*
04	T	U	\$	0	?
05	T	U	\$	0	*
06	t	o	a	0	?
07	T	U	\$	none	?

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Fmt 01xx: Parsed Text Format

FC0100 - Parsed text with dashes
FC0101 - Parsed text, replace dashes with "d"
Field Labels - TR-transit, AC-account #, CK-check #, AM-amount, TP-tpc,
EP-epc
Example: - PTTR444455556;AC 999-222-3;CK11045

Fmt 02xx: Parsed Text Format with Error Labels

FC0200 - Parsed text with dashes
FC0201 - Parsed text, replace dashes with "d"
Error Labels - PE-parsed error, NE-no error, TR-transit error,
CK-chk # error, TC-transit check digit error,
AM-amount error, OU-on us/account# error, TP-tpc error
Examples: - PTTR444455556;AC999-222-3;CK11045/PENE
- PTTR111?11111;AC123456/PETR ("?" = unreadable character)

Fmt 03xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- keep spaces and dashes

Fmt 04xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 05xx: [acct #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 06xx: [acct #]

- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 07xx: [acct #]

- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- remove spaces and dashes

Fmt 08xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 09xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 10xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros

Fmt 11xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field

Fmt 12xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled

Fmt 13xx: [transit] 'T' [acct #] 'A' [check #] '000'

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled

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Fmt 14xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled

Fmt 15xx: [bank #] [acct #]

- [bank #]: - all characters in the field
- keep spaces and dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 16xx: [bank #] [chk dgt] [acct #]

- [bank #]: - all characters in the field
- keep spaces and dashes
- [chk dgt]: - all characters (one character long)
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 17xx: [transit] [acct #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- keep spaces and dashes

Fmt 18xx: [acct #] "/" [check #]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- keep spaces and dashes
- [check #]: - all characters in the field

Fmt 19xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 20xx: [transit] [acct #] <CR> [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 21xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 22xx: [bank #] [acct #] [check #]

- [bank #]: - all characters in the field
- keep dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- replace spaces and dashes with zeros
- [check #]: - all characters in the field

Fmt 23xx: [error #] [transit] [acct #] [check #] 'S'

- [error #]: - one digit, always present
- '0' read OK
- '1' read error: bad char, empty field, invalid length, validation
- [transit]: - always 9 characters, zero filled
- keep dashes
- [acct #]: - always xx characters, trailing spaces;
when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- remove spaces and dashes

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Fmt 24xx: [transit] 'T' [acct #] 'A' [check #] 'C' [amount] '\$'

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- [amount]: - all characters in the field

Fmt 25xx: 'M' 'C' [transit] 'D' [acct #] 'E' [check #]

- [transit]: - all characters in the field
- remove dashes and keep spaces (contig spcs = 1 spc)
- if the field is empty, remove 'C'
- [acct #]: - include leading characters
- maximum of xx characters; when xx=00 all characters are sent
- remove dashes and keep all spaces
- if the field is empty, remove 'D'
- [check #]: - all characters in the field
- if the field is empty, remove 'E'

Fmt 26xx: [acct #]

- [acct #]: - work with characters in acct and transit fields
- a window of xx characters; xx must be greater than 00
- remove spaces and dashes

Fmt 27xx: [acct #]

- [acct #]: - work with characters in the acct field only
- a window of xx characters; xx must be greater than 00
- remove spaces and dashes

Fmt 28xx: [acct #]

- [acct #]: - work with characters in the acct field only
- a window of xx characters; xx must be greater than 00
- minimum of 6 digits, fill with zeros if necessary
- remove spaces and dashes

Fmt 29xx: 'C' '/' [transit] '/' [acct #] '/' [check #] '/' [status]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - maximum of 6 digits
- [status]: - this is a programmable option that must be enabled (See Table 2-4).

Fmt 30xx: [zero fill] [transit] [acct #]

- [zero fill]: - if length of (transit+account) is less than xx;
xx must be greater than 00
- [transit]: - all characters in the field
- remove dashes
- [acct #]: - all characters in the field
- remove spaces and dashes

Fmt 31xx: [transit] '/' [acct #] '/' [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - maximum of 10 digits
- remove spaces and dashes
- if no check number, remove preceding slash ('/')

Fmt 3200: '^' [transit] '^' [acct #] '^' [check #] '^' [status]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - all characters in the field
- remove spaces and dashes
- [check #]: - all characters in the field
- remove spaces and dashes
- [status] : - this is a programmable option that must be enabled (See Table 2-4).

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Fmt 3300: '=' [transit] '=' [acct #] '=' [check #] '=' [status]

- [transit]: - all characters in the field
- remove dashes
- [acct #] : - maximum of 14 digits
- remove spaces and dashes
- [check #]: - maximum of 8 digits
- remove spaces and dashes
- [status]: - this is a programmable option that must be enabled (See Table 2-4).

Fmt 34xx: [transit] [acct #] [zero fill]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - all characters in the field
- remove spaces and dashes
- [zero fill]: - zero filled up to xx; xx must be greater than 00

Fmt 3500: MA [aux] B [epc] C [tran] D [acct] E [chk] F [tpc] G [amt]

This format is defined specifically for Target Test Checks. A description of the Target Test Check must be loaded in the exception table.

- [aux], [epc], [tran], [chk], [tpc], [amt]:
- all characters in the field
- keep spaces and dashes
- [acct]: - all characters in the field
- keep spaces and remove dashes

Fmt 36xx: Read OK : [transit] [acct #] [check #] '/'
Read error: '0' '/'

- [transit]: - all characters in the field
- remove spaces and dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- remove spaces and dashes

Fmt 37xx: [ABA] [chk dgt] [acct #]

- [ABA], [chk dgt]:
 - all characters in the field
 - keep spaces and dashes
- [acct #]:
 - work with characters in the acct field only
 - window of xx characters; xx must be greater than 00
 - remove spaces and dashes

Fmt 38xx: 'T' [transit] 'A' [acct #] 'C' [check #]

- [transit]:
 - all characters in the field
 - keep dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - include leading characters
 - keep spaces and dashes
- [check #]:
 - all characters in the field

Fmt 39xx: [transit] <CR> [acct #]

- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and keep dashes

Fmt 40xx: [country code] [transit] [acct #]

- [country code]:
 - '1' for US checks
 - '2' for Canadian checks
- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - maximum of xx characters; when xx=00 all characters are sent
 - remove spaces and dashes

Fmt 4100: 'S' 'T' [transit] 'A' [acct #] 'C' [check #]

- [transit]:
 - all characters in the field
 - remove dashes
- [acct #]:
 - all characters in the field
 - place a slash ('/') after 10th character
 - if 10 characters or less, precede with a slash ('/')
 - remove spaces and dashes
- [check #]:
 - always 6 characters, zero filled
 - remove spaces and dashes

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Fmt 42xx: US check : [transit] [acct #]

Can check: '9' [transit] [acct #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - always xx characters; zero filled;
when xx=00 all characters are sent.
- remove spaces and dashes

Fmt 43xx: [check #] <CR> <CR> [transit] <CR> [acct #]

- [check #]: - maximum of 6 digits
- remove spaces and dashes
- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 44xx: [transit] [acct #]

- [transit]: - all characters in the field
- if Canadian check, replace dash with a space
- [acct #]: - always xx characters, trailing spaces,
when xx=00 all characters are sent
- remove spaces and dashes

Fmt 45xx: [transit] <CR> [acct #] <CR> [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces, dashes and leading zeros
- [check #]: - all characters in the field

Fmt 46xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- remove spaces and dashes

Fmt 47xx: [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field

Fmt 48xx: [transit] 'T' [acct #] 'A'

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 49xx: [transit] '/' [acct #] '/' [check #] '/' [check type]

- [transit]: - always 9 characters, zero filled
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - maximum of 9 digits
- [check type]: - personal checks ('1'); commercial checks ('2')

Fmt 50xx: 'T' [transit] 'T' 'O' [acct #] 'O' [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field

Fmt 51xx: '=' [transit] '=' [acct #] '='

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

MICRImage Check Reader

Fmt 52xx: 'T' [transit] 'T' [acct #] 'A' [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces

Fmt 53xx: '/' [transit] '/' [acct #] '/' [check #] '/' [tpc] '/' [status] '/'

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- [tpc]: - all characters in the field
- [status]: - this is a programmable option that must be enabled (See Table 2-4)

Fmt 54xx: [transit] [acct #] [check #] [status]

- [transit]: - always 12 characters, zero filled
- remove dashes
- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 12 characters, zero filled
- remove dashes and spaces
- [status]: - this is a programmable option that must be enabled (See Table 2-4)

Fmt 55xx: 'C' '/' [acct #] '/' [transit] '/' [check #] '/' 0000000000

- [acct #]: - always xx characters, zero filled;
when xx=00 all characters are sent
- remove spaces and dashes
- [transit]: - all characters in the field
- remove dashes
- [check #]: - always 6 characters, zero filled
- remove dashes and spaces

Fmt 56xx: [transit] <CR> [acct #] <CR> [check #] <CR> [amount]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces
- [amount]: - all characters in the field
- remove dashes and spaces

Fmt 57xx: [acct #] <CR> [amount]

- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [amount]: - all characters in the field
- remove dashes and spaces

Fmt 58xx: [short transit] [acct #] ':'

- [transit]: - 3 rightmost characters
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 59xx: [transit] [acct #] <TAB> [check #] [amount]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 9 characters, zero filled
- remove dashes and spaces
- [amount]: - all characters in the field
- remove dashes and spaces
- insert decimal point ('.') before 2nd rightmost digit

MICRImage Check Reader

Fmt 60xx: [transit] '/' [acct #] '/' [check #] '/' [check type]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - maximum of 10 characters
- remove spaces and dashes
- if no check #, remove preceding slash ('/')
- [check type]:- personal checks ('1'); commercial checks ('2')

Fmt 61xx: [transit] <TAB> [acct #] <TAB> [check #] <TAB>

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces, dashes and leading zeros
- [check #]: - all characters in the field

Fmt 62xx: 'T' [transit] 'T' [acct #] 'A' [check #] 'S' [status]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces
- [status]: - this is a programmable option that must be enabled (See Table 2-4).

Fmt 63xx: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 4 characters, zero filled
- remove spaces and dashes

Fmt 64xx: [transit] [acct #] [check #] [amount]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - always xx characters, trailing spaces;
when xx=00 all characters are sent
- keep spaces and dashes
- [check #]: - always 6 characters (N is on quick-init check), trailing spaces
- remove spaces and dashes
- [amount]: - all characters in the field
- remove spaces and dashes
- insert decimal point ('.') before 2nd rightmost digit

Fmt 65xx: '!' [transit] '/' [acct #] '/' [check #] '/' [amount]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces
- [amount]: - all characters in the field
- remove dashes and spaces

Fmt 66xx: [transit] [acct #] <CR> '7' '1' <CR>

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes

Fmt 67xx: <CR> <CR> [check #]

- [check #] : - maximum of xx characters; when x=00 all characters are sent
- remove spaces and dashes

MICRImage Check Reader

Fmt 68xx: [transit] <TAB> [acct #] <TAB> [check #] <TAB> [amount] <TAB>

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces
- [amount]: - all characters in the field
- remove dashes, spaces and leading zeros
- insert decimal point ('.') before 2nd rightmost digit

Fmt 69xx: Read OK : [transit] [acct #] [check #]

Read error: '0' '/'

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - always xx characters, trailing spaces;
when xx=00 all characters are sent
- remove spaces and dashes
- [check #]: - always 6 characters, zero filled
- remove dashes and spaces

Fmt 70: [transit] ',' [acct #] ',' [check #] ',' [amount]

- [transit]: - all characters in the field
- keep dashes
- [acct #]: - always N characters (N is on quick-init check), space filled
- remove spaces and dashes from the account
- [check #]: - always 8 characters, zero filled
- remove dashes and spaces
- [amount]: - all characters in the field
- remove dashes and spaces
- if amount is not present, remove last ','

Fmt 71: [acct #] '?' [check #]

- [acct #]: - work with a window of N characters in the acct field
- always N characters (N is on quick-init check), zero filled
- remove spaces and dashes
- [check #]: - maximum of 4 characters
- remove spaces and dashes

Fmt 72: [transit] <TAB> [acct #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of N characters (N is on quick-init check)
- remove spaces and dashes

Fmt 73: [transit] <CR> [acct #] <CR> [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - maximum of N characters (N is on quick-init check)
- remove spaces and dashes
- [check #]: - all characters in the field
- remove dashes and spaces

Fmt 74: [transit] [acct #] [check #]

- [transit]: - all characters in the field
- remove dashes
- [acct #]: - always N characters (N is on quick-init check), zero filled
- remove spaces and dashes
- [check #]: - always 8 characters, zero filled
- remove spaces and dashes

Fmt 75xx: [transit] <CR> [acct #] <CR> [check #] <CR> [status]

- [transit]: - always 9 characters, zero filled
- keep dashes; remove spaces
- [acct #]: - maximum of xx characters; when xx=00 all characters are sent
- remove dashes and spaces
- [check #]: - maximum of 12 characters
- remove dashes and spaces

MICRImage Check Reader

Fmt 76xx: 'T' [transit] 'A' [acct #] 'C' [check #] 'M' [raw data]

- **[transit]:** - all characters in the field
- remove dashes and spaces
- **[acct #]:** - maximum of xx characters; when xx=00 all characters are sent
- remove dashes and spaces
- **[check #]:** - all characters in the field- remove dashes and spaces
- **[raw data]:** - translate MICR symbols to t,o,a,d

Fmt 7700: The Flexible Format

Select this format to activate a preloaded Flexible Format. The Flexible Format is a feature that allows the user to create custom MICR formats. The Flexible formats can be easily created and downloaded using the Windows based MICRbase program provided by MagTek (P/N 22000021). For more detailed information refer to Section 7 in the MICRbase reference manual (P/N 99875102).

APPENDIX B. CHECK READING

The characters printed on the bottom line of commercial and personal checks are special. They are printed with magnetic ink to meet specific standards. These characters can be read by a MICR Reader at higher speeds and with more accuracy than manual data entry. Two MICR character sets are used worldwide; they are: E13-B and CMC-7. The E13-B set is used in the US, Canada, Australia, United Kingdom, Japan, India, Mexico, Venezuela, Colombia, and the Far East. The CMC-7 set is used in France, Spain, other Mediterranean countries, and most South American countries.

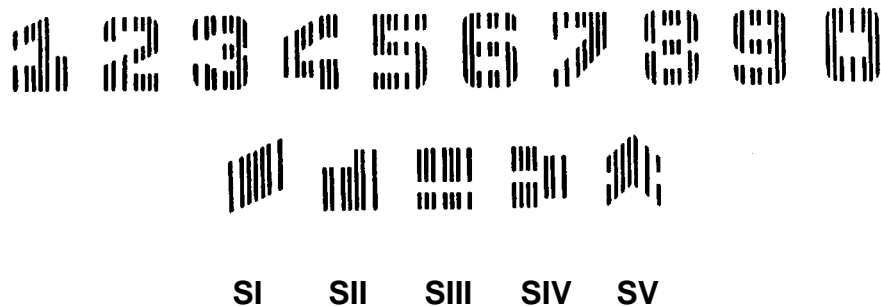
E13-B CHARACTER SET

The MICR font character set E13-B includes digits 0 through 9 and four symbols. The numbers found on U.S. checks are of the E13-B character set. The numbers and symbols of E13-B are as follows:

1	6	
2	7	⋮ Transit symbol
3	8	⋯ Dash Symbol
4	9	⋮ On-U.S. Symbol
5	0	⋮ Amount Symbol

CMC-7 CHARACTER SET

The numbers and symbols of the CMC-7 character set are as follows:



The nonnumeric CMC-7 characters are translated by the MICR Reader as shown in Table B-1.

Table B-1. CMC-7 Nonnumeric Characters

CMC-7 Character	MICR Output
SI	A
SII	B
SIII	C
SIV	D
SV	E

CHECK LAYOUTS

Personal checks with MICR fields are shown in Figure B-1. Business checks are shown in Figure B-2. The digits 1 through 4 in the illustrations are described below under MICR Fields.

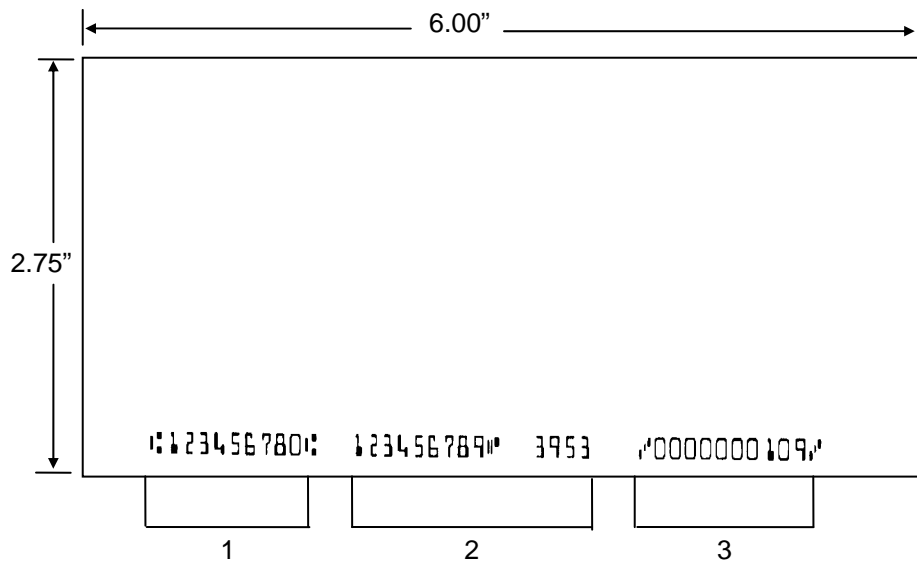


Figure B-1. Personal Checks

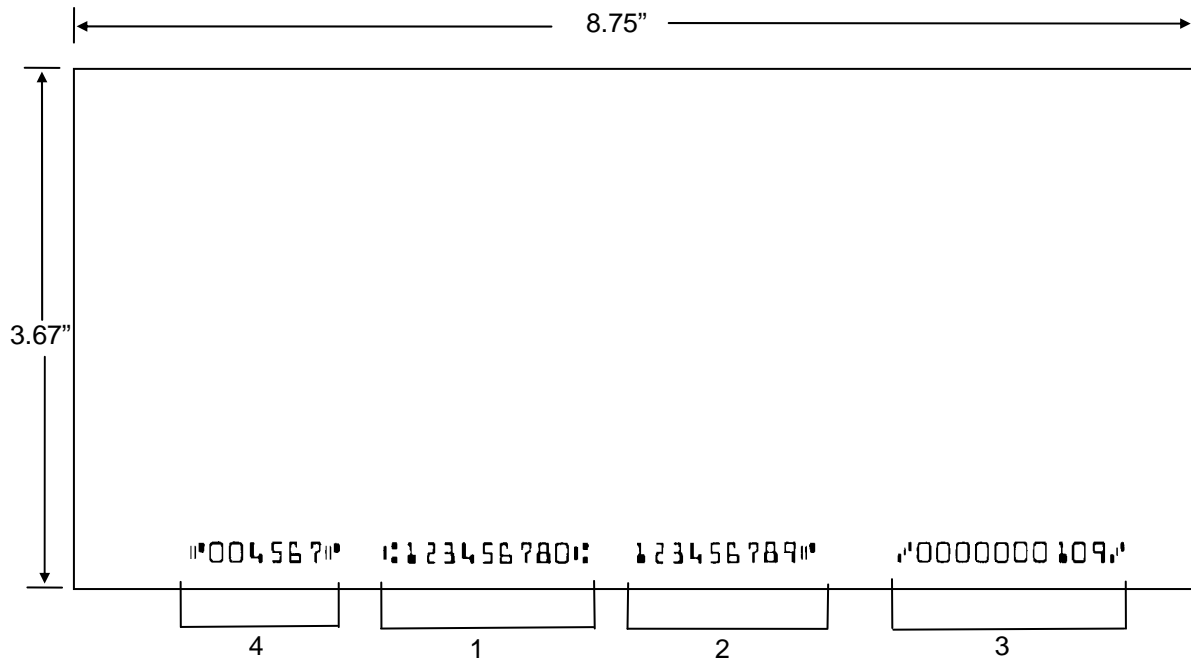


Figure B-2. Business Checks

MICR FIELDS

The numbers 1 through 4 refer to the numbers below the checks on the illustration and represent the 4 MICR fields.

1-Transit Field

The Transit field is a 9-digit field bracketed by two Transit symbols. The field is subdivided as follows:

- Digits 1-4 Federal Reserve Routing Number
- Digits 5-8 Bank ID Number (American Banking Association)
- Digit 9 Check Digit

2-On-Us Field

The On-Us field is variable, up to 19 characters (including symbols). Valid characters are digits, spaces, dashes, and On-Us symbols. The On-Us field contains the account number and may also contain a serial number (Check number) and/or a transaction code. Note that an On-Us symbol must always appear to the right of the account number.

3-Amount Field

The Amount field is a 10-digit field bracketed by Amount symbols. The field is always zero-filled to the left.

4-Auxiliary On-Us Field

The Auxiliary On-Us field is variable, 4-10 digits, bracketed by two On-Us symbols. This field is not present on personal checks. On business checks, this field contains the check serial number.

APPENDIX C. ASCII CODES

The following is a listing of the ASCII (American Standard Code for Information Interchange) codes. ASCII is a 7-bit code, which is represented here with a pair of hexadecimal digits. The decimal equivalent follows the hexadecimal value.

ASCII	Hex	Dec	ASCII	Hex	Dec	ASCII	Hex	Dec	ASCII	Hex	Dec
NUL	00	0	SP	20	32	@	40	64	`	60	96
SOH	01	1	!	21	33	A	41	65	a	61	97
STX	02	2	"	22	34	B	42	66	b	62	98
ETX	03	3	#	23	35	C	43	67	c	63	99
EOT	04	4	\$	24	36	D	44	68	d	64	100
ENQ	05	5	%	25	37	E	45	69	e	65	101
ACK	06	6	&	26	38	F	46	70	f	66	102
BEL	07	7	'	27	39	G	47	71	g	67	103
BS	08	8	(	28	40	H	48	72	h	68	104
HT	09	9	)	29	41	I	49	73	i	69	105
LF	0A	10	*	2A	42	J	4A	74	j	6A	106
VT	0B	11	+	2B	43	K	4B	75	k	6B	107
FF	0C	12	,	2C	44	L	4C	76	l	6C	108
CR	0D	13	-	2D	45	M	4D	77	m	6D	109
SO	0E	14	.	2E	46	N	4E	78	n	6E	110
SI	0F	15	/	2F	47	O	4F	79	o	6F	111
DLE	10	16	0	30	48	P	50	80	p	70	112
DC1	11	17	1	31	49	Q	51	81	q	71	113
DC2	12	18	2	32	50	R	52	82	r	72	114
DC3	13	19	3	33	51	S	53	83	s	73	115
DC4	14	20	4	34	52	T	54	84	t	74	116
NAK	15	21	5	35	53	U	55	85	u	75	117
SYN	16	22	6	36	54	V	56	86	v	76	118
ETB	17	23	7	37	55	W	57	87	w	77	119
CAN	18	24	8	38	56	X	58	88	x	78	120
EM	19	25	9	39	57	Y	59	89	y	79	121
SUB	1A	26	:	3A	58	Z	5A	90	z	7A	122
ESC	1B	27	;	3B	59	[	5B	91	{	7B	123
FS	1C	28	<	3C	60	\	5C	92	|	7C	124
GS	1D	29	=	3D	61	]	5D	93	}	7D	125
RS	1E	30	>	3E	62	^	5E	94	~	7E	126
US	1F	31	?	3F	63	_	5F	95	DEL	7F	127

APPENDIX D. EXTENDED ERROR CODES

The Extended Error Codes are available when the unit is configured for replies (see SWC).

Error Number	Description
100	Unknown command
101	Unknown parameter
102	Missing parameter
103	Illegal Character
104	Not a digit
105	Invalid digit
106	Short command or parameter
107	Parameter too long
108	Missing '='
109	Missing '.'
110	Illegal numeric format
111	Invalid numeric string
112	Invalid format
113	Value out of range
115	No bar code specified
116	Unknown bar code
120	Invalid port
121	Invalid protocol
122	Invalid tag
123	Invalid snippet
201	No image
202	Image already saved
203	Could not open file
204	No output port specified
205	Attempt to change system tag
206	Too many snippets
207	User did not scan
208	Command unusable with gray scale images
209	Not backside of document
210	Bad MICR line
211	Scanner jammed
212	Zero length for bar code
213	Point outside of image
214	File is locked
220	No MAC
221	Bad OTP

Error Number	Description
230	No property
231	Can't get property
232	Value cannot be changed
301	Store image
302	Erase Flash Sector
303	Set OTP Param
304	Out of heap space
305	XYMODEM abort
306	Unknown property type
307	Property not found
308	No serial #
309	Serial # not saved
310	Max file size exceeded. Unable to complete command
311	User abort
312	Unrecognized bar code
313	Image size
321	No flash memory
322	No flash ID
323	Out of flash space
324	Flash failure
325	Bad flash parameter
326	Flash ID not found
327	No more images
421	Service not available; closing control connection. (This can be a reply to any command if the service knows it must shut down.)
425	Can't open data connection.
426	Connection closed; transfer aborted.
450	Requested file action not taken. File unavailable. (For example, the file is already open.)
451	Requested action aborted: local error in processing.
452	Requested action not taken. Insufficient storage space in system.
500	Syntax error, command unrecognized. (This may include errors such as command line that's too long.)
501	Syntax error in parameters or arguments.
502	Command not implemented.
503	Bad sequence of commands.

Appendix D. Extended Error Codes

Error Number	Description
504	Command not implemented for that parameter.
530	Not logged in.
532	Need account for storing files.
550	Requested action not taken. File unavailable. (For example, the file was not found, you have no access.)
551	Requested action aborted: page type unknown.
552	Requested file action aborted. Exceeded storage allocation. (You exceeded the available space for the current directory or dataset.)
553	Requested action not taken. File name not allowed.
581	Modem – Parameter Error, check properties
582	Modem – No Carrier Detected
583	Modem – No Dial Tone
584	Modem – Busy
585	Modem – No Answer
590	Modem – Call/Connection Failed
595	FTP connection timed out
596	FTP failed to complete
597	Logged in but unable to start FTP
598	Dial / Login process failed
599	Unable to make connection

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