



Printer Protocol Interpreter MGL™
*Programmer's Reference Manual for MGL,
a Monarch® MGL™ Printer Protocol Interpreter*

Thermal Series Printers

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1 Introduction

About This Manual

This manual explains the differences between the Printer Protocol Interpreter Monarch Graphic Language (MGL) Utility and the Monarch® Printer Control Language II (MPLC II).

Use this manual with your *Administrator's Manual* of complete printer-protocol operation.

Printer Configuration

The printer has two ways of configuring operational parameters:

- use the LCD menu settings
- use the host supplied configuration packet.

The configuration packet modifies the current configuration values as if the user manually changed them on the front panel. However, the changes will not be saved to NOVRAM. It is the user's responsibility to save the appropriate configuration and the power-up configuration.

Front Panel Menu

Table 1 shows the menu structure of the Monarch 98xx printer series and the Printronix MGL equivalent (if applicable).

Table 1 Front Panel Menu

| Main Menu → | Description | Printronix Setting |
|---------------|---|--|
| Cancel All | Cancels all host data. | Use the standard cancel option. |
| Print Mode | Puts the printer online. | Use the standard method to go online. |
| Batch Entry | Enters batch data during batch processing. | Not supported. |
| Repeat Batch | Repeats the last batch. | <i>Application ></i> <i>MGL Setup ></i> |
| Batch Options | Enters batch options for batch processing. | Not supported. |
| Setup | Enters the Setup submenu. (See Main Menu → Setup below). | |
| Scripts | Enters the Scripts submenu. | Not supported. |
| Diagnostics | Enters the Diagnostics submenu. Password is required. | Not supported. |

Table 1 Front Panel Menu

| Main Menu → Setup → | Description | Printronix Setting |
|---|---|--|
| Supply | Enters the Supply submenu. (See page 6.) | |
| Contrast | Sets LCD contrast. | <i>System > Control > LCD Brightness</i> |
| Defaults | Enters the Defaults submenu. See Main Menu → Setup → Defaults on page 8. | |
| Network | Enters the Network submenu. | <i>Use the Network section of the menus.</i> |
| Port Settings | Enters the Port Settings submenu. | <i>Use the Host IO section of the menus.</i> |
| Flash Memory | Enters the Flash Memory submenu. See Main Menu → Setup → Flash Memory on page 11. | |
| Verifier | Enters the Verifier submenu. | <i>Not supported.</i> |
| RFID | Enters the RFID submenu. See Main Menu → Setup → RFID on page 8. | |
| Main Menu → Setup → Supply | Description | Printronix Setting |
| Supply Type | Sets the media supply type. | <i>Media > Handling > Media Handling</i> |
| Ribbon | Sets the ribbon type used. | <i>Media > Handling > Print Mode</i> |
| Speed | Sets the printer speed. | <i>Media > Speed > Print Speed</i> |
| Feed Mode | Sets the Feed mode, either continuous or on- demand. | <i>Media > Handling > Media Handling</i> |
| Backfeed | Sets backfeed to either Off, On, or Extended. | |
| Positioning | Enters the Positioning submenu. See Main Menu → Setup → Supply → Positioning on page 7. | |



Table 1 Front Panel Menu

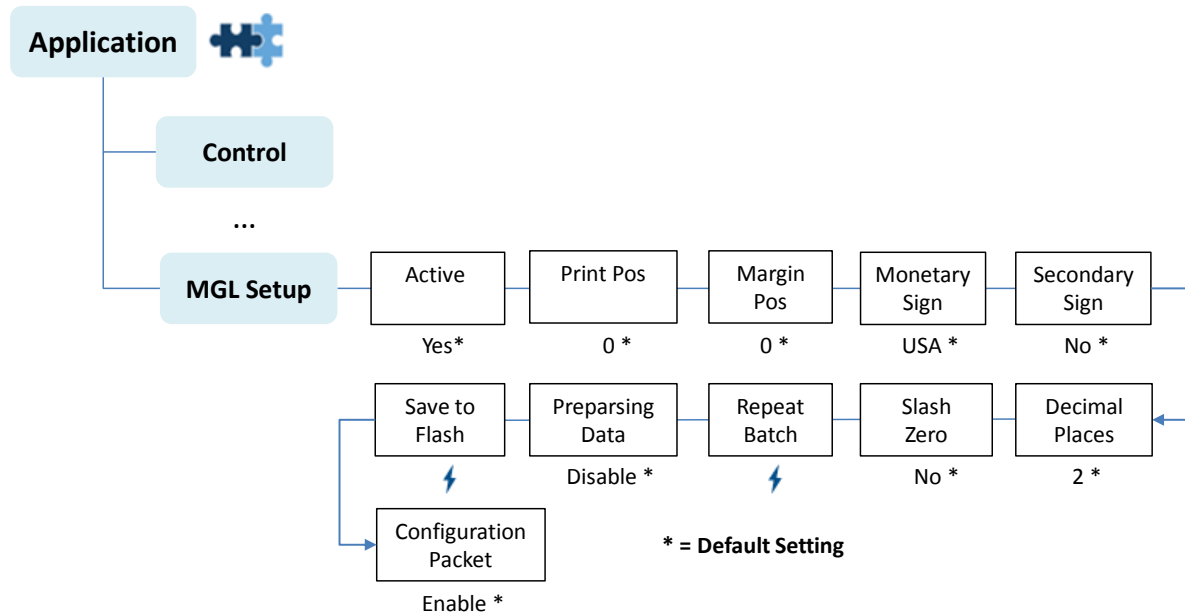
| Main Menu → Setup → Supply | Description | Printronix Setting |
|---|--|--|
| Separators | Sets separators either to No, Yes, or Long. | <i>Application > MGL Setup > Separators</i> |
| Skip Index | Sets Skip Index to either No or Yes. To emulate Skip Index “Yes”, set Sensors > Calibrate > Gap Windowing to “Enable” and Media > Image > Page Clip to “Disable”. | <i>Sensors > Calibrate > Gap Windowing ----- Media > Image > Page Clip</i> |
| Knife Ctrl | Sets the Knife Control parameter. | <i>Not supported.</i> |
| Error Action | Sets the action taken when there is a verifier error or RFID tag error. | <i>Use the standard Printronix error handling.</i> |
| Main Menu → Setup → Supply → Positioning | Description | Printronix Setting |
| Print Pos | Adjusts the print position -450 to 450. | <i>Application > MGL Setup > Print Pos</i> |
| Supply Pos | Adjusts the supply position -300 to 300. | <i>Media > Top of Form > TOF Adjust Dist</i> |
| Margin Pos | Adjusts the margin position -99 to 99. | <i>Application > MGL Setup > Margin Pos</i> |
| Cut Position | Adjusts the cut position -300 to 300. | <i>Media > Image > Paper Feed Shift</i> |
| Dispense Position | Adjusts the dispense position 50 to 200. | <i>Media > Image > Paper Feed Shift</i> |
| Backfeed Distance | Adjusts the backfeed distance 10 to 200. | <i>Media > Image > Paper Feed Shift</i> |

Table 1 Front Panel Menu

| Main Menu → Setup → Defaults | Description | Printronix Setting |
|---|--|---|
| Monetary Sign | Sets the monetary sign (price fields). Support depends on the availability of the sign in the fonts used. | <i>Application > MGL Setup > Monetary Sign</i> |
| Secondary Signs | Sets the secondary sign (price fields). Support depends on the availability of the sign in the fonts used. | <i>Application > MGL Setup > Secondary Sign</i> |
| Decimal Places | Sets the default number of decimal places (price fields). 0 to 3. | <i>Application > MGL Setup > Decimal Places</i> |
| Slashed Zero | Turn on slash zero printing. Options: Yes, No. | <i>Application > MGL Setup > Slashed Zero</i> |
| Powerup Mode | Sets the power up mode behavior. | <i>System > Control > Power-Up State</i> |
| Prompt Set | Defines the prompt for the keypad. | Not supported. |
| Flash Storage | Sets Flash Storage to disabled or enabled. | Not supported. |
| Main Menu → Setup → Flash Memory | Description | Printronix Setting |
| Format Flash | Formats the flash memory. | System > |
| Unused Flash | Displays the amount of unused flash. | System > |
| Pack Flash | Optimizes the flash memory. | System > |
| Main Menu → Setup → RFID | Description | Printronix Setting |
| Write Attempts | Sets the number of retries to write a tag. | RFID > |
| Signal Adjust | Signal strength. | RFID > |
| RF Power | Sets RF power. | RFID > |
| Write Power | Sets write power. | RFID > |
| Clear Data | Clears tag data. | RFID > |
| Print Config | Executable menu to print RFID configuration ... | Configs > |
| Protocol | Sets write format protocol. | RFID > |

MGL SETUP Menu

The MGL Setup submenu is found by selecting the Application icon  within the Settings  section in the User Interface. The MGL Setup submenu will only be present when the *Application > Control > Active IGP Emul* is set to MGL.



MGL SETUP Submenus

IMPORTANT The MGL Setup submenu will only be present when the Active IGP Emulation menu *Application > Control > Active IGP Emul* is set to MGL.

| Application > MGL Setup > Active | |
|--|---|
| Indicates if the MGL parser will process all incoming data, or that all data will be passed to the bottom emulation. | |
| Yes | MGL is active, process MPCL II packets. |
| No | MGL is inactive; data is processed by bottom emulation. |
| Factory Default | Yes |

| Application > MGL Setup > Print Pos. | |
|--|-----------|
| Changes the vertical row offset for all subsequent jobs. See Print Adjust page 62. | |
| Minimum | -450 dots |
| Maximum | +450 dots |
| Factory Default | 0 dots |

| Application > MGL Setup > Margin Pos | |
|--|----------|
| Changes the horizontal column offset for all subsequent jobs. Margin Adjust page 63. | |
| Minimum | -99 dots |
| Maximum | +99 dots |
| Factory Default | 0 dots |

| Application > MGL Setup > Monetary Sign | | |
|---|---|--|
| Selects the default sign used by price fields. All options found in the Monarch printers are available. However, setting support depends on the availability of the selected monetary sign in the selected font. If the sign is not available then the dash character will print. | | |
| Character Set | None USA UK Japan Germany France Spain Italy Sweden | Finland Austria India Russia Korea Thailand China Euro-Dollar |
| Factory Default | USA | |

| Application > MGL Setup > Secondary Sign | |
|--|---|
| Determines if the secondary sign is printed with price fields. | |
| No | No secondary sign is printed with price fields. |
| Yes | Secondary sign is printed with text fields (if applicable). |
| Factory Default | No |

| Application > MGL Setup > Decimal Places | |
|---|---|
| Determines the number of decimal places printed with price fields. The host supplied data must take this setting into account when providing data for a price field. Example 1: Decimal places is 0, host sends "3000" then output is 3000 Example 2: Decimal places is 2, host sends "3000" then output is 30.00 | |
| Minimum | 0 |
| Maximum | 3 |
| Factory Default | 2 |

| Application > MGL Setup > Slash Zero | |
|---|------------------------------|
| Determines how the number "0" will print. | |
| No | Zero prints without a slash. |
| Yes | Zero prints with a slash. |
| Factory Default | No |

| Application > MGL Setup > Repeat Batch | |
|---|-------------------------|
| This executable menu repeats the last received batch. If no batch is received after power-up, no action is taken. | |
| Press ENTER | Repeats the last batch. |

Application > MGL Setup > Preparing Data

When the preparer is enabled, the host data will be scanned for the <ENQ> character to send status information back to the host. For more information see Inquiry Request page 65.

| | |
|-----------------|--|
| Disable | The preparer will not be active. |
| Enable | The preparer will look for the <ENQ> character and send status back to the host. |
| Factory Default | Disable |

Application > MGL Setup > Save to Flash

Forms, CD schemes and graphics are not automatically saved to FLASH. This executable menu saves these objects to FLASH when its device is set to flash or NVM RAM.

| | |
|-------------|---------------------------------|
| Press ENTER | Moves the RAM files into FLASH. |
|-------------|---------------------------------|

Application > MGL Setup > Configuration Packet

Allows the printer to enable or ignore printer configuration settings changed by the host.

| | |
|-----------------|---|
| Ignore | The configuration packet will be ignored. |
| Enable | The configuration packets will be accepted. |
| Factory Default | Enable |

2 Supported Commands

MPCL II Support

This chapter summarizes the MPCL II packet fields and the parameters that MGL supports.

Packet Control Characters

Table 2 Packet Control Characters

| Character | Description | Support | Reference |
|-----------|---|---------|---|
| { | Start of Header - when received, the MGL parser switches into Packet Parse mode. | Full | |
| } | End of Header - when received and MGL is in Packet Parse mode, the MGL parser will switch out of Packet Parse mode. | Full | |
| | Field Separator - marks the end of a field in Packet Parse mode. | Full | |
| ' | Param Separator - separates the field parameters in Packet Parse mode. | Full | |
| “ ” | Quoted String - in Packet Parse mode, characters between the double quotes are parsed as a quoted string. These strings are used to specify data for alpha or barcode fields but can also be used for other parameters. | Full | See Fixed Versus Variable Data page 53. |
| ~ | Escape Character - enters non-printable data such as control characters and extended characters in quoted strings. | Full | |

Table 3 Configuration Packet

| Synopsis | Description | Support | Reference | |
|---|---|---------------------------------|--|---------|
| <p>{l,...}</p> <p>Example: {l,0,A,M,E A,0,0,0,1,0 B, 0,1,0,0,0,0 }</p> | <p>Configuration Packet -</p> <p>l is a packet identifier ... denotes one or more optional fields and their parameters. The synopsis of these entries will be terminated with the field separator.</p> | Partial | | |
| <p>#,a,d,u </p> <p>Example: {l,0,A,M,E}</p> <p>Adds a config to memory using English units.</p> | <p>Configuration Packet Parameters (optional)</p> | | Partial | |
| | # | ID | 0...TBD | Full |
| | a | Action | A= add configuration U=upload user configuration | Full |
| | d | Device | M=memory N=non-volatile RAM R=volatile ram N will be saved to flash when the device is set to N. Saving to flash is only done when the executable menu Save to Flash is selected. | Partial |
| u | Units | E=English M=metric G=dots | Full | |

Table 3 Configuration Packet

| Synopsis | Description | | Support | Reference |
|---|--|---|---------|-----------|
| <p>A,p,l,sp,sz,ss </p> <p>Example: {l,A,0,0,0,1,0}</p> <p>Sets power-up mode to online, uses no batch separator, uses slash zero and default symbol set.</p> | System Setup Field - A is the identifier for this field, the other parameters are listed below. | | Partial | |
| | p | Power-up mode 0=Online (default) 1=Offline | Full | |
| | 1 | Display Language 0..12 The display language must be chosen using <i>System > Control > Display Language</i> . | Ignored | |
| | sp | Batch Separators 0=No 1=Yes 2=Long Batch separators will be added based on customer request. | Full | |
| | sz | Slash Zero 0=Standard Zero 1=Slash Zero | Full | |
| | ss | Symbol Set 0..24 | Full | |

Table 3 Configuration Packet

| Synopsis | Description | | Support | Reference |
|---|---|--|---------|-----------|
| <p>B,t,r,f,p,c,s </p> <p>Example: {l,B,0,1,0,0,0}</p> <p>Uses black mark supply with ribbon in Continuous Feed mode with no adjustment for print and cut position, and with skip index disabled.</p> | <p>Supply Setup - B is the identifier for this field, the other parameters are listed below.</p> | | Partial | |
| | t | <p>Type</p> <p>0=Black Mark 1=Die Cut/edge aperture (default) 2=Continuous 3=Center Aperture</p> | Full | |
| | r | <p>Ribbon</p> <p>0=No Ribbon 1=Ribbon (default) 2=High Energy Ribbon</p> <p>Printronix only supports ribbon or direct, there is no difference between ribbon and high energy ribbon.</p> | Partial | |
| | f | <p>Feed Mode</p> <p>0=Continuous 1=On Demand</p> | Full | |
| | p | <p>Position</p> <p>-300 to 300</p> | Full | |
| | c | <p>Cut Position</p> <p>-300 to 30</p> <p>The printers will always cut in the same position.</p> | Ignored | |
| | s | <p>Skip Index</p> <p>0=Disable (default) 1=Enable</p> <p>To use skip index (print across pages), select this option using the Printronix menus available.</p> | Ignored | |

Table 3 Configuration Packet

| Synopsis | Description | | | Support | Reference |
|--|--|-----------------|--|---------|------------------------|
| <p>C,c,a,m,s,p </p> <p>Example: {I,C,0,0,0,60,0, }</p> <p>Uses default contrast, no adjustments for print and margin, sets print speed to 6 ips.</p> | <p>Print Control - C is the identifier for this field, the other parameters are listed below.</p> | | | Partial | |
| | c | Contrast | <p>-699 to 699 0 is the default.</p> <p>Contrast values are mapped to Printronix values, which will lead to loss of precision.</p> | Partial | |
| | a | Print Adjust | -450 to 450 | Full | Print Adjust page 62. |
| | m | Margin Adjust | -99 to 99 | Full | Margin Adjust page 63. |
| | s | Speed Adjust | <p>0=Auto, not supported maps to default ips. 20= 2 ips 25=2.5 ips, not supported maps to 3 ips (default) 40=4 ips 60=6 ips 80=8 ips 100=10 ips 120=12 ips</p> | Partial | |
| | p | Printhead Width | Always use 0. | Ignored | |
| <p>D,s,ss,d </p> <p>Example: {I,D,16,1,2, }</p> <p>Use Euro symbol, print secondary sign and use two decimals.</p> | <p>Monetary Formatting - D is the identifier for this field, the other parameters are listed below.</p> | | | Partial | |
| | s | Symbol | 0 to 16. Not all currency symbols are available in the fonts supported. | Partial | |
| | ss | Secondary Sign | <p>0=No secondary sign 1=Print secondary sign</p> | Full | |
| | d | Decimals | <p>0=No digits 1=One digit 2=Two digits 3=Three digits</p> | Full | |

Table 3 Configuration Packet

| Synopsis | Description | | Support | Reference |
|--|--|--|---------|-----------|
| <p>E, "s1", "s2", "s3"</p> <p>Example: {I,E,"~123~044~034~124~125","", ""}</p> <p>Set { as start of header. ", " as paramseparator, " as quoted string marker, as field separator and } end of header. Disable the status terminator and job/upload terminator.</p> | <p>Define Control Characters - E is the identifier for this field, the other parameters are listed below.</p> | | Full | |
| | "s1" | <p>Define Control Characters</p> <p>A quoted string with up to three decimal values between 0 and 255 that defines the packet control characters, and optional immediate command characters. These become active for the next package.</p> | Full | |
| | "s2" | <p>Status Terminator</p> <p>A quoted string with up to three decimal values between 0 and 255. An empty string disables sending this terminator sequence.</p> | Full | |
| | "s3" | <p>Job request and upload terminator</p> <p>A quoted string with up to three decimal values between 0 and 255. An empty string disables sending this terminator sequence.</p> | Full | |

Table 3 Configuration Packet

| Synopsis | Description | | Support | Reference |
|--|--|--|---------|-----------|
| <p>F,b,w,s,p,f </p> <p>Example: {I,F,3,1,0,0,1}</p> <p>Uses 9600 baud, an 8 bit word length, one stop bit, no parity, and DTR mode.</p> | <p>Communication Settings - F is the identifier for this field, the other parameters are listed below.</p> | | Full | |
| | b | <p>Baud Rate</p> <p>0=1200 1=2400 2=4800 3=9600 (default) 4=19200 5=38400 6=57600 7=115200</p> | Full | |
| | w | <p>Word Length</p> <p>0=7 bit word length 1=8 bit word length (default)</p> | Full | |
| | s | <p>Stop Bits</p> <p>0=1 stop bit (default) 1=2 stop bits</p> | Full | |
| | p | <p>Parity</p> <p>0 None (default) 1 ODD parity 2 EVEN parity</p> | Full | |
| f | <p>Flow Control</p> <p>0=None 1=DTR (default) 2=CTS 3=XON/XOFF</p> | Full | | |
| <p>G,a,p,d </p> <p>Example: {I,G,0,0,0}</p> | <p>Backfeed Control - G is the identifier for this field, the other parameters are listed below.</p> <p>Select Backfeed Control using options available on the printer.</p> | | | |
| | a | <p>Action</p> <p>0=disable backfeed (default) 1=enable backfeed 2=enable extended backfeed</p> | Ignored | |
| | p | <p>Dispense Position</p> <p>Adjusts the stopping point of the label 50 to 200 dots (default is 65 dots.)</p> | Ignored | |
| | d | <p>Backfeed Distance</p> <p>Amount to move label backwards. 10 to 200 dots (default is 65 dots).</p> | Ignored | |

Table 3 Configuration Packet

| Synopsis | Description | | | Support | Reference |
|--|---|--------|--|---------|---------------------|
| <p>M,b,d,s </p> <p>Example: {I,M,I,R,1530 }</p> <p>Stores the image buffer in volatile RAM and allocates 153K for it.</p> | <p>Memory Configuration - M is the identifier for this field, the other parameters are listed below.</p> | | | Partial | See Memory page 61. |
| | b | Buffer | <p>D=Downloadable fonts F=Format I=Image R=Receive T=Transmit V=Scalable Fonts</p> <p>Memory allocation for this section is not available. Use the flash available.</p> | Partial | |
| | d | Device | <p>N=Non-volatile RAM R=Volatile RAM F=Flash</p> <p>N will be saved to flash when the device is set to N. Saving to flash is only done when the executable menu Save to Flash is selected.</p> | Partial | |
| | s | Size | Buffer size in 1/10K ranges | Full | |

Font Packet

Table 4 lists support for the MPCL II font packet. This packet is used to upload True Type MPCL II configuration settings, and for downloading fonts.

Table 4 Font Packet Support

| Synopsis | Description | | | Support | Reference |
|--|--|---------|---|---------|--------------------|
| {W,#,a,d } Example: {W,0,M,R } Selects all fonts and uploads the font size information to the host. | Font Packet - W is the packet identifier followed by the packet parameters. | | | Partial | See Fonts page 59. |
| | # | Font ID | 0 to 9999 | Full | |
| | a | Action | A=Add C=Clear All (except in ROM) H=Upload size information M=Upload font memory usage | Partial | |
| | d | Device | F=Flash R=Volatile RAM Z=All Devices (for upload only) | Partial | |

Verifier Configuration Packet

Currently the verifier cannot be configured, this packet will be ignored.

Table 5 Font Packet Support

| Synopsis | Description | | | Support |
|------------------|--|-------------------|---|---------|
| {V,#,a,d,n ...} | Verifier Configuration Packet - V is the packet identifier followed by the packet parameters. | | | Ignored |
| | # | Format ID | 0 to 999 | Ignored |
| | a | Action | A=Add | Ignored |
| | d | Device | F=Flash T=Temporary | Ignored |
| | n | Name | 0 to 8 characters to name the verifier packet | Ignored |
| D, "cmd" | Verifier Commands - D is the field identifier. | | | Ignored |
| | "cmd" | Verifier Commands | N/A | Ignored |

Network Console Packet

This packet is ignored. Use the Printronix procedures to configure the network settings. See your User's Manual for network setup.

Table 6 Network Console Packet Support

| Synopsis | Description | | | Support |
|--|---|------------------|---|---------|
| {N,n,a,d,"n" ... Example: {N,1,A,T,"NC1" C,"init" C,"exit" } | Network Console Packet - N is the packet identifier followed by the packet parameters. | | | Ignored |
| | n | ID | 0 to 999 Number identifies the network console packet. | Ignored |
| | a | Action | A=Add | Ignored |
| | d | Device | T=Network Card | Ignored |
| | "n" | Name | 0 to 8 characters to name the console packet | Ignored |
| C,"cmd" Example: C,"init" | Command Field - C is the field identifier. | | | Ignored |
| | "cmd" | Console Commands | N/A | Ignored |

Format Packet

Table 7 lists support for MPCL II Format packet. This packet defines the layout of a format.

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|--|--|-----------------|---|-----------|--|
| {F,#,a,d,u,l,w,"n"} ...} Example: {F,1,A,R,E,300,200, "TEXTILES" } | Format Packet - F is the packet identifier followed by the packet parameters. The ... following the first field separator denotes one or more format fields.. | | Partial | | |
| | # | Format ID | 0 to 999 to identify the format. | Full | |
| | a | Action | A=Add C=Clear H=Upload | Full | |
| | d | Device | F=Flash N=Non-volatile RAM R=Volatile RAM N will be saved to flash when the device is set to N. Saving to flash is only done when the executable menu Save to Flash is selected. | Partial | |
| | u | Unit of Measure | E=English M=Metric G=Graphic Dots | Full | |
| | l | Length | Range depends on selected unit of measure. | Full | |
| | w | Width | Range depends on selected unit of measure. | Full | |
| | "n" | Name | 0 to 8 characters to name the format. | Full | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|---|----------|---|---------|--|
| <p>T,#,w,m,r,c,g,f,hm, wm,cl,a,cr,fr,ss </p> <p>Example: T,2,10,V,250,50,0, 1,1,1,B,C,0,0,0 </p> <p>Defines a text field (field #2) with a variable length up to 10 characters. The field begins at row 250, column 50. There is no additional gap between characters, and the Standard font is used without additional magnification. The printing is black on white and centered. No field or character rotation is used. The internal symbol set is used.</p> | Text Field - T is the field identifier followed by the field parameters. | | | Partial | |
| | # | Field ID | 1 to 999 unique numbers to identify the field. | Full | |
| | w | Width | 0 to 2710 maximum number of printed characters | Full | |
| | m | Mode | F=Fixed Length V=Variable Length | Full | |
| | r | Row | Range depends on unit of measure and printhead density. | Full | |
| | c | Column | Range depends on unit of measure and printhead density. | Full | |
| | g | Gap | Number of dots between characters. | Full | |
| | f | Font | 1: Standard, mono-spaced | Full | See Fixed Versus Variable Data page 53 |
| | | | 2: Reduced, mono-spaced | Full | |
| | | | 3: Bold, mono-spaced | Full | |
| 4: OCRA, mono-spaced | | | Full | | |
| 5: HR1, mono-spaced | | | Full | | |
| 6: HR2, mono-spaced | | | Full | | |
| 10: CG Triumvirate Bold, proportional | | | Full | | |
| 11: CG Triumvirate 6 pt, proportional | Full | | | | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|---|--------------|--|---|---------------|--|
| T, #, w, m, r, c, g, f, hm, wm, cl, a, cr, fr, ss (continued) | f | Font | 15: CG Triumvirate 7 pt, proportional | Full | See Fixed Versus Variable Data page 53 |
| | | | 16: CG Triumvirate 9 pt, proportional | Full | |
| | | | 17: CG Triumvirate 11 pt, proportional | Full | |
| | | | 18: CG Triumvirate 15 pt, proportional | Full | |
| | | | 50: EFF Swiss Bold, scalable | Full | |
| | | | 70: Paxar 15 pt, proportional | Ignored | |
| | | | 71: Paxar 18 pt, proportional | Ignored | |
| | | | 72: NAFTA 15 pt, proportional | Ignored | |
| | | | 73: NAFTA 18 pt, proportional | Ignored | |
| | | | hm | Height Mag | |
| wm | Width Mag | 1 to 7 or 4 to 255 for scalable/ downloaded TrueType fonts. | Full | | |
| cl | Color | B, D R W or O for standard printer fonts. A N, B O, D W, E R, or F T for scalable fonts. | Full | | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|--|-------------|--------------------|--|-----------|--|
| T,#,w,m,r,c,g,f,hm, wm,cl,a,cr,fr,ss (continued) | a | Alignment | L=Left C=Center (mono-spaced only) R=Right (mono-spaced only) B=Midpoint E=Endpoint | Full | |
| | cr | Character Rotation | 0=Top of character points to top of field (Use for scalable font) 1=Top of character points to left of field 2=Top of character points to bottom of field 3=Top of character points to right of field | Full | |
| | fr | Field Rotation | 0=Top of field points to top of supply 1=Top of field points to left of supply 2=Top of field points to bottom of supply 3=Top of field points to right of supply | Full | |
| | ss | Symbol Set | 0 = Internal Symbol Set | Full | |
| | | | 1 = ANSI Symbol Set | | |
| | | | 100 = Macintosh | | |
| | | | 101 = Wingdings Should only be used with wingdings downloaded truetype fonts. | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|--|-------------|------------|---|-----------|--|
| T,#,w,m,r,c,g,f,hm, wm,cl,a,cr,fr,ss (continued) | ss | Symbol Set | 102 = UNICODE (user input) for particular mapping | Ignored | |
| | | | 103 = BIG5 (user input) for UNICODE mapping | Ignored | |
| | | | 104 = GB2312 (user input) for UNICODE mapping | Ignored | |
| | | | 105 = SJIS (user input) for UNICODE mapping Code Page 932 (Japanese Shift-JIS) | Ignored | |
| | | | 106 = GB2312 (user input) for GB23212mapping Code Page 936 (Simplified Chinese) | Ignored | |
| | | | 107 = BIG5 (user input) for BIG5 mapping Code Page 950 (Traditional Chinese) | Ignored | |
| | | | 437 = DOS Code Page 437 (Domestic) | Full | |
| | | | 850 = DOS Code Page 850 (International) | Full | |
| | | | 852 = DOS Code Page 852 (Latin 2) | Full | |
| | | | 855 = DOS Code Page 855 (Russian) | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|--|-------------|------------|---|-----------|--|
| T,#,w,m,r,c,g,f,hm, wm,cl,a,cr,fr,ss (continued) | ss | Symbol Set | 857 = DOS Code Page 857 (IBM Turkish) | Full | |
| | | | 860 = DOS Code Page 860 (MS-DOS Portuguese) | Full | |
| | | | 1250 = Code Page 1250 (Latin 2) | Full | |
| | | | 1251 = Code Page 1251 (Cyrillic) | Full | |
| | | | 1252 = Code Page 1252 (Latin 1) | Full | |
| | | | 1253 = Code Page 1253 (Greek) | Full | |
| | | | 1254 = Code Page 1254 (Turkish) | Full | |
| | | | 1255 = Code Page 1255 (Hebrew) | Full | |
| | | | 1256 = Code Page 1256 (Arabic) | Full | |
| | | | 1257 = Code Page 1257 (Baltic) | Full | |
| | | | 1258 = Code Page 1258 (Vietnamese) | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|---|--|----------|---|-----------|--|
| <p>B,#,w,m,r,c,t,d,h,t, a,fr </p> <p>Example: B,3,12,V,150,40,1, 2,80,7,L,0 </p> <p>Defines a bar code field (field #3) with 12 characters of variable length starting at row 150, column 40. A UPCA bar code with a density of 2 and a height of 80 is used. The check digit and number system are shown at the bottom. The bar code is left aligned without any field rotation.</p> | Barcode Field - B is the field identifier followed by the field parameters. | | Partial | | |
| | # | Field ID | 1 to 999 unique numbers to identify the field . | Full | |
| | w | Width | 0 to 2710 maximum number of characters | Full | |
| | m | Mode | F=Fixed Length V=Variable Length | Full | |
| | r | Row | Range depends on unit of measure and printhead density. | Full | |
| | c | Column | Range depends on unit of measure and printhead density. | Full | |
| | t | Type | 1 UPCA | Full | |
| | | | 2 UPCE | Full | |
| | | | 3 Interleaved 2 of 5 | Full | |
| | | | 4 Code 39 (no check digit) | Full | |
| | | | 5 Codabar | Full | |
| | | | 6 EAN8 | Full | |
| 7 EAN13 | | | Full | | |
| 8 Code 128 | | | Full | | |
| 9 MSI | | | Full | | |
| The data length is limited to 14. Monarch allows more. | | | | | |
| 10 UPCA +2 | Full | | | | |
| 11 UPCA +5 | Full | | | | |
| 12 UPCE +2 | Full | | | | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|---|-------------|---|---------------------------------|-----------|--|
| B,#,w,m,r,c,t,d,h,t, a,fr (continued) | t | Type | 13 UPCE +5 | Full | |
| | | | 14 EAN8 +2 | Full | |
| | | | 15 EAN8 +5 | Full | |
| | | | 16 EAN13 +2 | Full | |
| | | | 17 EAN13 +5 | Full | |
| | | | 22 POSTNET | Full | |
| | | | 23 Code 93 | Full | |
| | | | 31 Code 16K | Ignored | |
| | | | This barcode is not supported. | | |
| | | | 32 PDF417 | Full | |
| | | | 33 Maxi Code | Full | |
| | | | 35 Data Matrix (ECC-200) | Full | |
| | | | 36 Quick Response | Full | |
| | | | 40 Code 39 (MOD 43 check digit) | Full | |
| | | | 41 UPCA & Price CD | Full | |
| | | | 44 EAN13 & Price CD | Full | |
| 50 Interleaved 2 of 5 with Barrier Bar | Full | | | | |
| d | Density | Bar code density. Valid value depends on the selected barcode. | Partial | | |
| h | Height | Bar code height. Valid value depends on selected unit of measure and installed printhead. | Full | | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference |
|---|--|--|---------|-----------|
| B,#,w,m,r,c,t,d,h,t, a,fr (continued) | t | Text Appearance of text with barcodes. | Full | |
| | a | Alignment Field alignment L=Left C=Center (mono-spaced only) R=Right (mono-spaced only) B=Midpoint E=Endpoint | Full | |
| | fr | Field Rotation 0=Top of field points to top of supply 1=Top of field points to left of supply 2=Top of field points to bottom of supply 3=top of field points to right of supply | Full | |
| D,#,n Example: D,4,20 Defines a non-printable text field (field #4) with a maximum of 20 characters. | Non-Printable Data Fields - D is the field identifier followed by the field parameters. | | | |
| | # | Field ID 0 to 999 | Full | |
| | n | Number of Characters 0 to 2710 | Full | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|---|--------------------|---|---------|-----------|
| <p>C,r,c,g,f,hm,wm,cl, a,cr,fr,"",ss</p> <p>Example: C,30,10,0,1,1,1,B, L,0,0,"MADE IN USA",0 </p> <p>Defines a constant text field starting at row 30, column 10. No additional intercharacter gap. Standard font without additional magnification. Printing is black on white and left justified. No field or character rotation and "MADE IN USA" is printed. The internal symbol set is used.</p> | Constant Text Fields - C is the field identifier followed by the field parameters. | | | Full | |
| | r | Row | See Text Field page 24. | | |
| | c | Column | | | |
| | g | Gap | | | |
| | f | Font | | | |
| | hm | Height Magnifier | | | |
| | wm | Width Magnifier | | | |
| | cl | Color | | | |
| | a | Alignment | | | |
| | cr | Character Rotation | | | |
| | fr | Field Rotation | | | |
| | " | Fixed Data | Fixed characters to appear in the field. Maximum 2710 characters. | | |
| | ss | Symbol Set | See Text Field page 24. | | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|---|--------|---|---------|-----------|
| <p>L,t,r,c,a,l,w,"" </p> <p>Example: L,S,110,30,110,15 0,10,"" </p> <p>Defines a Horizontal line field as a segment starting at row 110, column 30 and ending at row 110, column 150. The line thickness is 10 dots.</p> | <p>Line Fields - L is the field identifier followed by the field parameters.</p> | | | Full | |
| | t | Type | <p>Type of line. Only vertical and horizontal lines are supported.</p> <p>Options: S = Segment. Choose starting point and ending point. V = Vector. Choose starting point, angle, and length.</p> | | |
| | r | Row | <p>Distance from bottom of print area to the starting point. Value range depends on unit of measure and printhead density.</p> | | |
| | c | Column | <p>Distance from left edge of the print area to line origin. Value range depends on unit of measure and printhead density.</p> | | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|---------------------------------|-------------|----------------|--|---------|-----------|
| L,t,r,c,a,l,w,"" (continued) | a | Angle/End Row | For segment type, it is the row location of end point. Measured from the bottom of the print area. Ranges are the same as the row ranges. For horizontal lines, this value must match the row parameter. For vector type, it is the angle of line. Options: 0, 90, 180, or 270. | Full | |
| | l | Length/End Col | For segment type, it is the column location of the end point, measured from the left edge of print area. The ranges are the same as the ranges for column. For vertical lines, this value must match the column parameter. For vector type, it is the length of the line in selected units. | | |
| | w | Thickness | The desired line thickness (1 to 99) measured in dots. | | |
| | "" | Pattern | Not used, always enter "" | | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|---|------------|---|---------|-----------|
| <p>Q,r,c,er,ec,t,"" </p> <p>Example: Q,240,30,270,150,3,"" </p> <p>Defines a box field starting at row 240, column 30. It ends at row 270, column 150 and has a thickness of 3 dots.</p> | Box Fields - Q is the field identifier followed by the field parameters. | | | Full | |
| | r | Row | Distance from the bottom of the print area to the lower left corner of the box. Value range depends on the unit of measure and printhead density. | | |
| | c | Column | Distance from the left edge of the print area to the lower left corner of the box. Value range depends on unit of measure and printhead density. | | |
| | er | End Row | Distance from the bottom of the print area to the upper right corner of the box. Value range depends on the unit of measure and printhead density. | | |
| | ec | End Column | Distance from the left edge of the print area to the upper right corner of the box. Value range depends on the unit of measure and printhead density. | | |
| | t | Thickness | The desired line thickness (1 to 99) measured in dots. | | |
| | "" | Pattern | Not used, always enter "" | | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|---|----------------------|---|---------|---------------------|
| V,# | Verifier Fields - V is the field identifier followed by the field parameters. | | | Ignored | |
| | # | Verifier Config ID | 1 to 999 to identify verifier configuration packet. | | |
| X,#,w,t Example: X,5,24,0 Defines an RFID Data Field (field #5) with exactly 24 ASCII Hex characters for a 96-bit RFID tag. | RFID Fields - V is the field identifier followed by the field parameters. | | | Ignored | |
| | # | Field ID | 1 to 999 Unique numbers to identify the field. | | |
| | w | Number of Characters | Range depends on the tag type used. | | |
| | t | Data Type | Options: 0 ASCII Hex - default (ASCII representation of Hex) 1 ASCII 2 ASCII Binary (ASCII representation of binary) 3 Hex | Ignored | |
| R,#,... Example: R,1,"MONARCH" "MONARCH" appears as fixed data in the field immediately defined before this option. | Format Options - R is the field identifier followed by the option type identifier. Depending on the option type, ... denotes one or more option parameters. Options must be defined immediately after the field to which they apply. | | | Partial | See Options page 65 |
| | # | Option Type | 1 Fixed Data Syntax: R,1,"" "" = 0 to 2710 characters to insert. Some characters have special meaning. See the Monarch manual for details. | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|-----------------------------|-------------|-------------|---|-----------|--|
| R,#,... (continued) | # | Option Type | 2 Data Type Restrictions Syntax: R,2,t t = Restriction Type Options: 1 Numeric only (0...9) 2 Letters only (A...Z, a...z) 3 Symbols only (printable characters other than letters or numbers) 4 Letters and numbers only 5 Numbers and symbols only 6 Letters and symbols only | Full | |
| | | | 3 Data Entry Templates Syntax: R,3,c "" c = Data Types "" = Template enclosed in double quotes | Ignored | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference |
|---------------------------------|-------------|-------------|---------|-----------|
| <p>R,#,... (continued)</p> | # | Option Type | Full | |
| | | | | |
| | | | Ignored | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|-----------------------------|-------------|-------------|--|-----------|--|
| R,#,... (continued) | # | Option Type | 6 Upload Field Data Syntax: R,6,d d = Device Options: H = Host The timing used to send the data back to the host is different because we send the data when we queue the pages or job to the engine. Monarch sends this information after a page or job prints. | Ignored | |
| | | | 20 Define Data Entry Prompt Syntax: R,20,"" "" = Prompt phrase | Ignored | |
| | | | 30 Pad Data Syntax: R,30,"" I = Location Options: L - Pad data to the left of the field. R - Pad data to the right of the field. "" = Pad character (0 to 255) enclosed in double quotes. | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|-----------------------------|-------------|-------------|---|-----------|--------------------------------------|
| R,#,... (continued) | # | Option Type | 31 Calculate Check Digit Syntax: R,31,g,s g = Enter "G" to generate the check digit. s = 1 to 10 check digit scheme. | Full | See Option 31 - Check Digits page 65 |
| | | | 42 Price Field Syntax: R,42,c c = Enter 1 to print the price field as defined by the monetary format field from the configuration packet. | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference | |
|-----------------------------|-------------|----------------|---|-----------|--|
| R,#,... (continued) | # | Option Type | 50 Barcode Density - use only with barcode fields. Syntax: R,50,n,w,g,ns,ws n = dot width of narrow element w = dot width of wide element g = 1 to 99, additional dot space between characters. ns = 1 to 99, additional dot space for the narrow barcode space. ws = 1 to 99, additional dot space for the barcode space. | Full | |
| | | | 51 PDF417 Security/ Truncation - use only with PDF417 barcode. Syntax: R,51,s,t s = 0 to 8, Security t = Truncation Options: S - Standard T - Truncated | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference |
|-----------------------------|-------------|-------------|---------|-----------|
| R,#,... (continued) | # | Option Type | Full | |

Table 7 Format Packet Support

| Char | Description | | Support | Reference |
|-----------------------------|-------------|---|---------|-----------|
| R,#,... (continued) | # | Option Type 60 Increment/Decrement Syntax: R,60,o,a,l,r o = Operation Options: I = Increment D = Decrement a = amount to increase or decrease (0 to 999) l = 0 to 2710, left most position of the field to include in the operation. If omitted, operation starts at index 0. r = 0 to 2710, right most position or field to include in the operation. If omitted, then the entire field is included. | Full | |
| | | 61 Re-image Field - use to redraw a constant field that may be damaged by a dynamic field. Syntax: R,61 | Full | |
| | | 62 Bypass Barcode - omits barcode from verifier scan. Syntax: R, 62 | Ignored | |

Table 7 Format Packet Support

| Char | Description | | | Support | Reference |
|--|--|--------------|--|---------|-----------|
| R,#,... (continued) | # | Option Type | 63 Lock Tag - prevents the data from an RFID tag to be reprogrammed. Syntax: R,63,c c = Code, one ASCII character within 0 to 255. | Ignored | |
| G,#,r,c,m,o Example: G,57,0,0,0,0 Defines a graphic field that is identified by number 57. The image begins at 0,0. The imaging mode is 0 and there is no rotation. | Graphic Field - G is the field identifier followed by the field parameters. | | | Full | |
| | # | Graphic ID | 1 to 999, identifies the graphic to use. | | |
| | r | Row | Distance between the bottom of the print area on the supply to the bottom of the graphic image. Value depends on selected unit of measure and printhead used. | | |
| | c | Column | Distance between the left edge of the print area on the supply and the left edge of the graphic. Value depends on selected unit of measure and printhead used. | | |
| | m | Imaging Mode | 0 to TBD | | |
| | fr | Orientation | 0 to TBD | | |

Check Digit Scheme Packet

Table 8 Check Digit Scheme Support

| Synopsis | Description | | | Support | Reference |
|---|--|-----------|---|---------|-----------|
| <p>{A,#,a,d,m,w,al,"" }</p> <p>Example:</p> <p>{A,1,A,R,10,5,P,"65432" }</p> <p>Adds check digit scheme number 1 to the printer's memory. The modulus is 10, the maximum number of characters in the field is 5. The check digit is calculated by using the Sum of Products; the string of digits used in the calculation is "65432."</p> | Check Digit Scheme Packet - A is the packet identifier followed by the packet parameters. | | | Full | |
| | # | Scheme ID | 1 to 10, the scheme identifier used by the check digit option to select a scheme. | | |
| | a | Action | A=Add | | |
| | d | Device | F=Flash R=Volatile RAM Saving to flash is only done when the executable menu Save to Flash is selected. | | |
| | m | Modulus | Used to divide the sum of products or the sum of digits. | | |
| | w | Width | 0 to 2710, maximum number of characters the field will contain. | | |
| | al | Algorithm | D=Sum of Digits P=Sum of Products | | |
| | "" | Weights | 0 to 2710, string of digits used for calculation. A weight string is a group of two or more numbers that is applied to a field. The number of digits in this string should equal the number in width parameter. | | |

Graphic Packet

Table 9 lists MPCL II graphic packet support. Once defined, a graphic can be used in a format using the graphic field.

Table 9 Graphic Packet Support

| Synopsis | Description | | | Support | Reference |
|--|--|-----------------|--|---------|---------------------|
| <p>{G,#,a,d,u,r,c,m," ... }</p> <p>Example: {G,99,A,R,G,0,0,0,"99Wire" }</p> <p>Adds a graphic image identified by number 99 to volatile RAM. The graphic uses dot measurement. The image will be placed according to the row and column parameters in the graphic field. The imaging mode is 0 and the image is called 99 Wire.</p> | Graphic Packet - G is the packet identifier followed by the packet parameters. The ... represents one or more fields to define the graphic. | | | Partial | See Images page 60. |
| | # | Graphic | 1 to 999, unique number to identify the graphic. | Full | |
| | a | Action | A=Add | Full | |
| | d | Device | F=Flash N=Non Volatile RAM R=Volatile RAM T=Temporary Storage N will be saved to flash when the device is set to N. Saving to flash is only done when the executable menu Save to Flash is selected. | Partial | |
| | u | Unit of Measure | G (Graphic Dots) is the only valid option for Graphics. | Full | |
| | r | Row | Distance between the bottom of the graphic image area and the first bitmap line. | Full | |
| | c | Column | Distance between the left edge of the graphic image area and the left edge of the first bitmap line. | Full | |

Table 9 Graphic Packet Support

| Synopsis | Description | | | Support | Reference |
|--|--|-----------|---|---------|---------------------|
| | m | Mode | Enter 0. | Full | See Images page 60. |
| | " " | Name | 0 to 8 characters enclosed in double quotes. | Full | |
| <p>B,r,c,a,"" </p> <p>Example: B,39,56,H,"3FFFFF0" </p> <p>Defines a bitmap graphic line. The line begins 39 dots from the bottom, and 56 dots from the left edge of the graphic area. Hex representation is used.</p> | <p>Bitmap Field - B is the field identifier followed by the field parameters.</p> | | | Full | |
| | r | Row | Distance (in dots) from the graphic image's bottom margin to the bitmap line. | | |
| | c | Column | Distance (in dots) from the graphic image's left edge to the bitmap line. | | |
| | a | Algorithm | H=Hex Representation R=Run Length Encoding | | |
| | " " | Data | 0 to 2710, character string made up of hex or run length encoding. Do not put spaces or other characters between the numbers. | | |

Table 9 Graphic Packet Support

| Synopsis | Description | | | Support | Reference |
|---|---|-----------|--|---------|-----------|
| <p>N,d,c,a,"" </p> <p>Example: B,39,56,H,"3FFFF FF0" N,0,1,H,"00000E 00000" </p> <p>Defines a next bitmap graphic field beginning on row 40. The row count increments by 1. Hex representation is used.</p> | Next Bitmap Field - N is the field identifier followed by the field parameters. | | | Full | |
| | d | Direction | Insert bitmap line before or after the current row. 0=Insert After 1=Insert Before | | |
| | c | Amount | Amount of new row adjustments in dots. Using 0 overwrites the same line. | | |
| | a | Algorithm | H = Hex Representation R = Run Length Encoding | | |
| | "" | Data | 0 to 2710 Character string made up of hex or run length encoding. Do not put spaces or any other character between the numbers. | | |
| <p>D,d,a,c </p> <p>Example: B,117,24,H, "03FFFFFFFFF FFFFFFFFC" D,0,1,2 </p> <p>Defines a duplicate field that is imaged after the bitmap line. This field duplicates the preceding bitmap line twice (at row 118 and 119).</p> | Duplicate Bitmap Field - D is the field identifier followed by the field parameters. | | | Full | |
| | d | Direction | Inserts duplicate before or after the current row. 0 = Insert After 1 = Insert Before | | |
| | a | Amount | 0 to 999 Amount of row adjustments in dots. Using 0 overwrites the same line 'c' times. | | |
| | c | Count | Number of times to duplicate the line. | | |

Table 9 Graphic Packet Support

| Synopsis | Description | Support | Reference |
|----------|---|---------|-----------|
| | Compliance Graphic Packet - You can use constant text, line, or box fields in a graphic packet to create a compliance label overlay. See page 23 for more information. | Full | |

Batch Packet

Table 10 lists MPCL II batch packet support. Use this packet to print one or more copies of a format, and to supply data for that format.

Table 10 Batch Packet Support

| Synopsis | Description | | | Support |
|---|--|-----------|---|---------|
| {B,#,i,q } Example: {B,1,N,1 } Defines a batch header that uses format #1 and reimages all fields using the online data. One label is printed with this batch. | Batch Packet - B is the packet identifier followed by the packet parameters. The ... represents one or more optional fields to control the batch. | | | Full |
| | # | Format ID | Format number to print. | |
| | c | Imaging | N=New reimage all fields. U=update only fields that get new data. Other fields remain the same. | |
| | q | Quantity | 0 to 32000 | |

Table 10 Batch Packet Support

| Synopsis | Description | | Support |
|---|---|--|---------|
| <p>E,f,s,cc,p,ct,ci,vm,cd </p> <p>Example: E,0,1,4,2,1,4,1,2 </p> <p>Defines a batch control field. Continuous feed mode is used and a separator prints between batches. Four tags have the same image with two identical parts on one tag. The knife cuts after every four tags. A verifier is enabled and the printer detects when the I/O or data cables are disconnected.</p> | <p>Batch Control Field - E is the field identifier followed by the field parameters.</p> | | Partial |
| | f | <p>Feed Mode 0=Continues 1=On Demand</p> | Full |
| | s | <p>Separator 0=No Separator 1=Single Length Separator 2=Double Length Separator</p> | Full |
| | c | <p>Copies 0 to 999, number of labels with the same image.</p> | Full |
| | p | <p>Parts 0 to 5, number of identical parts on one label.</p> <p>This option will only be added based on customer requests</p> | Ignored |

Table 10 Batch Packet Support

| Synopsis | Description | | | Support |
|---|-------------|---------------|---|---------|
| E,f,s,cc,p,ct,ci,vm,cd (continued) | ct | Cut Type | 0 Does not cut (default). 1 Cuts before, during, and after the last tag (printed tags left between the printhead and knife). 2 Cuts in strips, not each tag (printed tags left between the printhead and knife). 3 Cuts before, during, and after the last tag (no printed tags left between printhead and knife). 4 Does not cut before the first tag, cuts each tag and after the last tag (printed tags left between the printhead and knife). 5 Cuts in strips, not each tag (no printed tags left between the printhead and knife). | Full |
| | ci | Cut Interval | 0 to 32000, number of labels to print before cutting. Multiple quantity. | Full |
| | vm | Verifier Mode | 0=Disable 1=Enable | Ignored |
| | cd | Cable Detect | 0=Off 1=I/O Cable Detect 2=I/O and Data Detect | Ignored |

Table 10 Batch Packet Support

| Synopsis | Description | | | Support |
|---|--|----------|--|---------|
| <p>#,"" </p> <p>Example: 1,"Size 12" </p> <p>"Size 12" prints in field #1</p> | Batch Data Field - provides data for selected field. | | | Full |
| | # | Field ID | 1 to 999, identifies the field in which the data should be inserted. | |
| | " | Data | 0 to 2710 characters. The data to appear in the field. | |
| <p>C,"" </p> <p>Example: 3,"Blue" </p> <p>C," my favorite color." </p> <p>"Blue, my favorite color." prints in field #3.</p> | Continuation Data Field - C is the identifier for this field. | | | Full |
| | " | Data | The data to be appended to the currently selected field. | Full |

Packet Description

MPCL II fields and their parameters are enclosed in packets. A packet is defined as parameters between the start of header ({), and the end of header (}). The packet type is determined by the first letter following the start of header. Packets can have several fields, separated by the field separator (|). These fields can have several parameters separated by the parameter separator (,). Some parameters are optional. If a field has five optional parameters and the user only wants to use the fifth parameter, the user must supply all parameters but leave the unused parameters empty.

For example ;{I, A,,,,, 15}

All white space is ignored when parsing packet data, except when data is within double quotes.

Default Parameter Settings

If parameters are omitted, MPCL II will provide default values for these parameters. MGL will also provide the same default values.

Fixed Versus Variable Data

When a fixed variable field specifies that 20 characters are expected, but less than 20 characters are provided, an error is generated. This is not true for variable text fields. When more than the expected data is provided, both cases generate an error.

Binary Data

Binary data is entered using the escape character (~) inside a double quoted string. Non-digits immediately following the ~ character is always inserted in the data. E.g. to insert a double quote character use ~", in this case it will not be seen as a quoted string end marker.

When followed by one to three digits, binary data will be parsed as a decimal ASCII code. The value of the code may not exceed 255. E.g. if '~662' is sent, the sequence will be ignored. The sequence '~7' or '~07' or '~007', will be replaced with the <BEL> character. Use this method to insert function codes or extended characters.

3 *Immediate Commands*

Immediate commands only work if the immediate command character is set using the Define Control Characters field of the configuration packet. In Table 11, the immediate command character is set to ^. Setting this command character installs the preparsing that handles the immediate commands.

Table 11 lists MPCL II immediate command support.

Table 11 Immediate Command Support

| Command | Description | Support |
|---------|--|---------|
| ^CA | Cancels all batches in the queue. | Full |
| ^CB | Cancels the current batch. | Partial |
| ^DD | Disables the MPCL data escape character (~) and inhibits MPCL from acting on any data escape sequence from the host. | Full |
| ^DCd | Sets the MPCL data escape character to the ASCII value given by the d parameter. The value can be any ASCII character. | Full |
| ^EA | Aborts an error condition. | Full |
| ^ER | Resets the error. | Full |
| ^FD | Feeds a label when the printer is idle. | Full |
| ^FF1 | Formats Flash Memory | Ignored |
| ^FF2 | Returns the amount in bytes of available flash memory. | Full |
| ^GD | Disables conversion of formats designed in 203 dpi density dot units to 300 dpi density. | Ignored |
| ^GE | Enables the conversion of formats designed in 203 dpi dot units (not English or Metric) to 300 dpi. | Ignored |
| ^ID | Disables the Immediate Command feature by turning off the Immediate Command escape character. | Full |

Table 11 Immediate Command Support

| Command | Description | Support |
|----------------|--|----------------|
| ^ICd | Sets the Immediate Command escape character to ASCII values given by the 'd' parameter. This value can be any ASCII character. | Full |
| ^MC | Returns the customer ID or RPQ version to the host. (00 to 99) | Full |
| ^MD | Returns the printhead dot density to the host. 00 = 203 dpi 01 = 300 dpi | Full |
| ^MI | Returns the customer ID or RPQ revision level to the the host. (00 to 99) | Full |
| ^MM | Returns the model number to the host. 11 = M9403, 16 = M9850, 17 = 9825, 18 = 9855, 19 = 9860 | Full |
| ^MP | Returns the prototype number to the host. (00 to 99) | Full |
| ^MR | Returns the revision number to the host. (00 to 99) | Full |
| ^MV | Returns the version number to the host. (00 to 99) | Full |
| ^PR | Resets the printer. This command takes five seconds to complete, and then the printer is ready to receive data. It is the same as powering the printer off then on again. NOTE: The command should be used only when the printer is not printing data. | Full |
| ^RB | Repeats the last printed batch, printing the same number of labels as specified in the original batch. NOTE: The printer ignores this command if printing or processing data. | Full |
| ^RS | Resynchronizes supply when the supply roll is changed. NOTE: The printer ignores this command if printing data. | Ignored |

Table 11 Immediate Command Support

| Command | Description | Support |
|----------------|---|----------------|
| ^SD | Disables the status polling feature by turning off the status polling control character. | Full |
| ^SCd | Sets the status polling control character to the ASCII value given by the 'd' parameter. The value of 'd' can be any ASCII character. | Full |
| ^SFa | Loads script with host response. | Ignored |
| ^SFb | Loads script without host response. | Ignored |
| ^SFc | Enables script. | Ignored |
| ^SFd | Disables script. | Ignored |
| ^SFe | Uploads script version information. | Ignored |
| ^SFf | Deletes script. | Ignored |
| ^SFg | Turns on ENQ status polling before it reaches the script. | Ignored |
| ^SFh | Turns off ENQ status polling before it reaches the script (9825/985x/9860). | Ignored |
| ^SFi | Turns on immediate commands before it reaches the script. | Ignored |
| ^SFj | Turns off immediate commands before it reaches the script. | Ignored |
| ^TP | Prints a test label set. NOTE: Printer ignores this command if printing or processing data. | Ignored |

4 *Fonts and Images*

Fonts

Standard MGL uses scalable fonts to replace resident fonts. To emulate fixed- pitch fonts, MGL prints scalable fonts in fixed-pitch mode. Some of the proprietary fonts are not supported.

Table 12 Font Substitution Table

| ID | Description | Agfa Typeface |
|-----------|--|----------------------|
| 1 | Standard, monospaced | Courier |
| 2 | Reduced, monospaced | Gothic |
| 3 | Bold, monospaced | Triumvirate Bold |
| 4 | OCRA, monospaced | OCRA |
| 5 | HR1, monospaced | OCRB |
| 6 | HR2, monospaced | OCRB |
| 10 | CG Triumvirate Bold, proportional | Triumvirate |
| 11 | CG Triumvirate 6 pt, proportional | Triumvirate |
| 15 | CG Triumvirate 7 pt, proportional | Triumvirate |
| 16 | CG Triumvirate 9 pt, proportional | Triumvirate |
| 17 | CG Triumvirate 11 pt, proportional | Triumvirate |
| 18 | CG Triumvirate 15 pt, proportional | Triumvirate |
| 50 | EFF Swiss Bold, scalable | Triumvirate |
| 70 | Paxar 15 pt, proportional (icon glyphs) | Not Supported |
| 71 | Paxar 18 pt, proportinoal (icon glyphs) | Not Supported |
| 72 | NAFTA 15 pt., proportional (icon glyphs) | Not Supported |
| 73 | NAFTA 18 pt., proportional (icon glyphs) | Not Supported |

Downloaded Fonts

MPCL II supports downloading of true type fonts. Special tools support the user in managing printer downloaded fonts.

Images

Images are created using the graphic packet. This packet does not define the dimensions of the image, it only provides information for a graphic ID to identify an image, the origin of the image on the page, and where to store it.

MPCL II only supports one custom bitmap image format, which MGL fully supports. The bitmap image data is either sent in ASCII hex format or by using run length encoding. These bitmap fields contain information such as where a line of dots should be plotted using a starting row and column, and the plot data in a selected format. An image is created using several of these plot field lines.

The graphic package is also used to design overlays, called compliance labels by Monarch. Constant fields used in format packets (lines, boxes and constant text field) define the image.

IMPORTANT Do not use bitmap fields in compliance labels or an error will generate.

Monarch printers support several devices to store an image. MGL will only support RAM, temporary, and Flash devices.

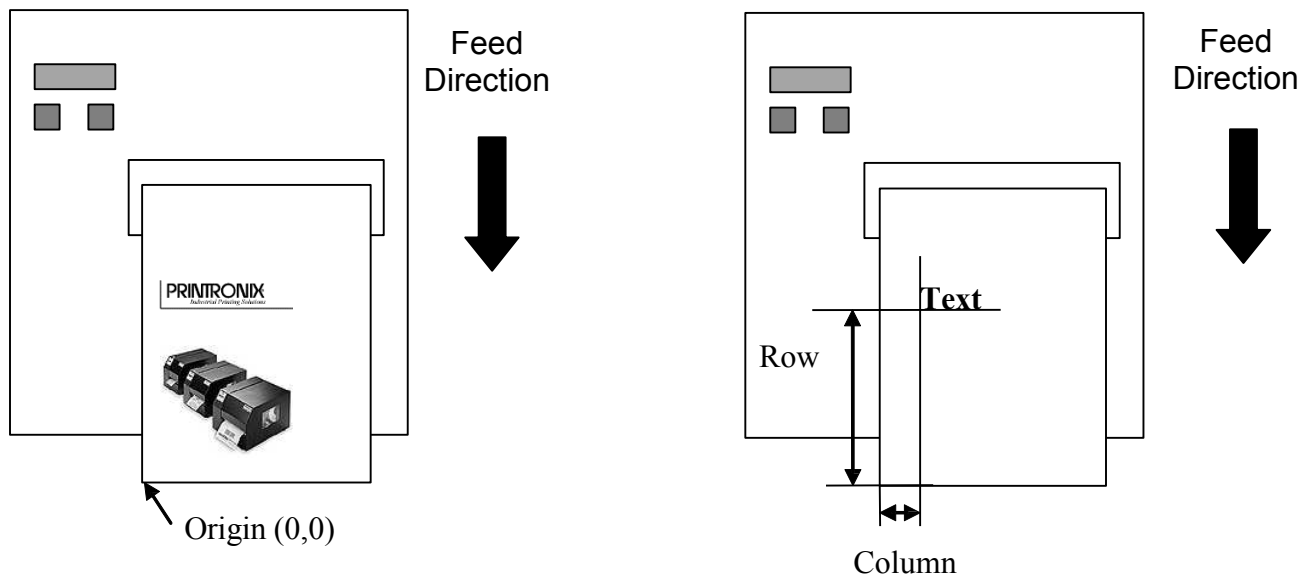
5 *Memory and Print Area*

Memory

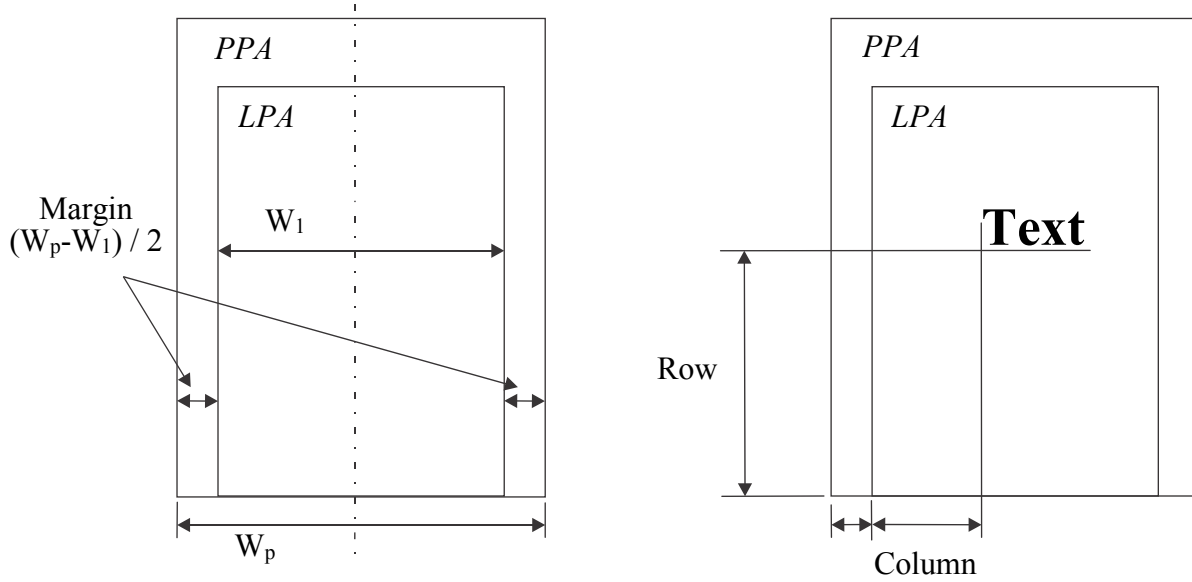
Monarch printers reserve memory for fonts, formats, images, host receive buffer, host transmit buffer, and vector fonts. This memory can be reserved in RAM or in Flash. MGL does not support this memory allocation scheme due to differences in memory management. MGL does allow downloading of fonts and images to these memory devices until the memory is full. The only exception is the receive buffer; MGL ensures that the printers are capable of receiving this amount of data. The maximum value for the receive buffer is 128K, the default is 64K. This buffer can only be reserved in RAM.

Print Area

Monarch does not use the same orientation as Printronix printers. The origin of the physical print area (PPA) is located at the bottom left corner of the label. In default rotation, text fields are readable as they exit the printer. The dimension of the PPA depends on the density and width of the printer. Fields are offset from the origin using a row and column parameter.

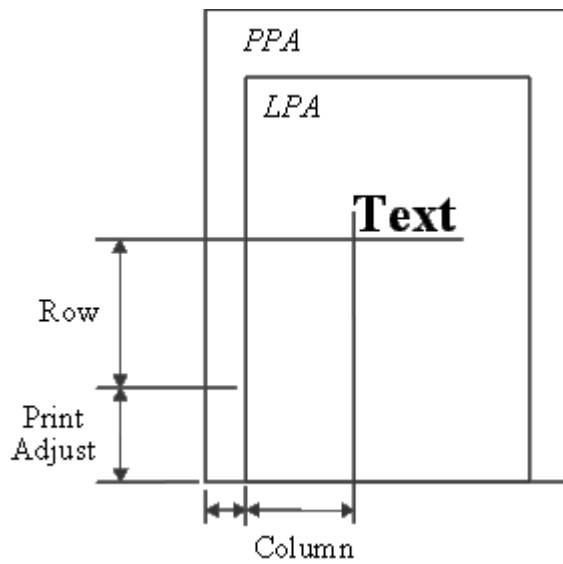


The format packet is used to design the layout of a format. The format contains parameters to set the logical print area (LPA). The LPA may not exceed the dimensions of the PPA, otherwise an error will generate. The column origin of the LPA will be offset from the center of the PPA. The row origin will not change due to the LPA definition.



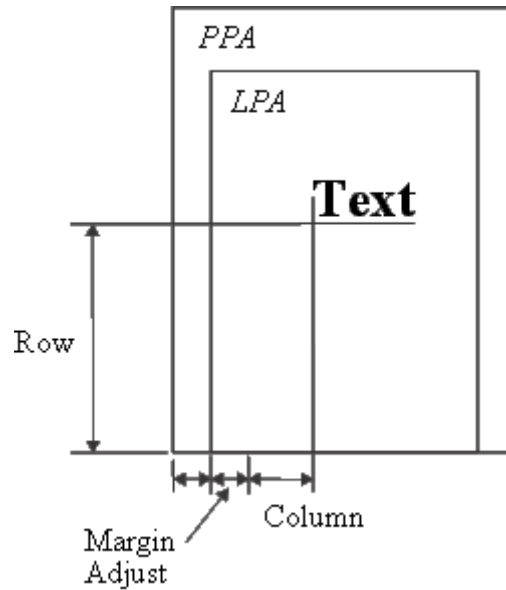
Print Adjust

The print adjust setting is used to move the row origin as shown below.



Margin Adjust

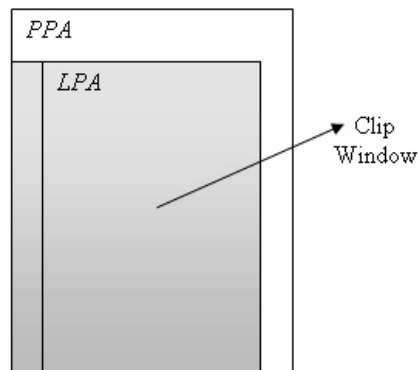
The margin adjust setting is used to move the origin of the column, not the margin of the LPA. This difference is apparent when the clipping window is described (see page 63).



Clip Window

MPCL II uses a strict layout policy. If one field draws outside the clip window, an error generates and the printer will not print the label unless the error has been acknowledged (by pressing any of the three control buttons). This does not depend on the origin of the field. If any part of a field falls outside the clip window an error will generate. When the error is acknowledged, using the enter or cancel button, the format will still print. The areas of a field that fall outside the clip window will not print.

The clip window is defined by the left and bottom edge of the PPA and the right and top edge of the LPA.



6 *Options and Status Protocols*

Options

Options added to a field are performed in the order they are added. The result of one option can overwrite the data of a previous option. Options that are not valid for a field will generate an error.

Option 31 - Check Digits

This option can either be assigned to a variable text field or a barcode. The calculated check digit will be appended to the data for the field. For example, if a field has a width of 10 digits, and 9 digits are given for the field, the check digit will be appended as the 10th digit. If 10 digits are already given, the check digit will be calculated on the first 9 digits, and the 10th digit will be overwritten by the check digit. If less than 9 digits are given, for instance, four, the check digit is calculated over the four digits and the check digit will be added as the 5th digit.

NOTE: For this option to work, the selected check digit scheme needs to be defined first. See Check Digit Scheme Packet page 45.

Protocols

MGL supports two status protocols supported by MPCL II: inquiry request and job request.

Inquiry Request

This protocol is enabled when immediate commands are enabled. The parser will scan for the defined <ENQ> character in the data stream.

<ENQ> is defined using the define control character field of the configuration packet. 0x05 is the default setting.

If <ENQ> is found, a three byte response will be sent to the host. The first byte will be the defined <ENQ> character. Table 13 page 66 describes the bits of the second status byte.

Table 13 Second Status Byte

| Bit | Description | Support |
|-----|----------------------------|---------|
| 0 | Online | Full |
| 1 | Active | Full |
| 2 | Busy | Full |
| 3 | Online Data Error | Full |
| 4 | Operator Correctable Error | Full |
| 5 | Hardware Failure | Full |
| 6 | Always ON | Full |
| 7 | Always OFF | Full |

Table 14 describes the bits of the third status byte.

Table 14 Third Status Byte

| Bit | Description | Support |
|-----|---------------------------|---------|
| 0 | Online Error | Full |
| 1 | Stock Error | Full |
| 2 | Ribbon Error | Full |
| 3 | Waiting to Dispense Label | Full |
| 4 | Format Error | Full |
| 5 | Low Battery | Ignored |
| 6 | Always ON | Full |
| 7 | Always OFF | Full |

Preparser Considerations

When the preparser is enabled, problems may arise with other Printronix protocols such as PTX-SETUP or TN.

IMPORTANT Only activate the preparser if none of these protocols are used in conjunction with MGL.

A **Contact Information**

Printronix Auto ID Customer Support Center

IMPORTANT Please have the following information available prior to calling the Printronix Customer Support Center:

- Model number
- Serial number (located on the back of the printer)
- Installed options (i.e., interface and host type if applicable to the problem)
- Configuration printout: Refer to the *Administrator's Manual*.
- Is the problem with a new install or an existing printer?
- Description of the problem (be specific)
- Good and bad pictures that clearly show the problem (faxing or emailing of these pictures may be required)

| | |
|--|--|
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