



STGL, a SATO[®] SGL[®] Printer Protocol
Programmer's Reference Manual

Thermal Series Printers

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1 *Introduction*

About This Manual

This manual explains the differences between Printer Protocol Interpreter SATO® Graphic Language (STGL) Utility and the SATO printer language. Use this manual with your Administrator's Manual for complete printer-protocol operation.

Bi-Directional Communication

Thermal printers have several bi-directional protocols, which allow the host to establish a two-way communication with the printer. It allows the host to request printer status and operational information.

NOTE: Bi-directional communication is available through the serial, parallel IEEE-1284, USB, and Ethernet interfaces.

To enable bi-directional communication the following conditions must be met:

- STGL emulation must be active.
- Set *Comm. Protocol* to **Status 3** or **Status 4** in the *Application > STGL Setup* menu to enable bi-directional communication.

NOTE: The interface in which the status is returned is the same interface in which the data is received.

NOTE: If the Windows driver is used in combination with STGL, do not use bi-directional communication, use the Standard communication protocol setting.



Return Status Port

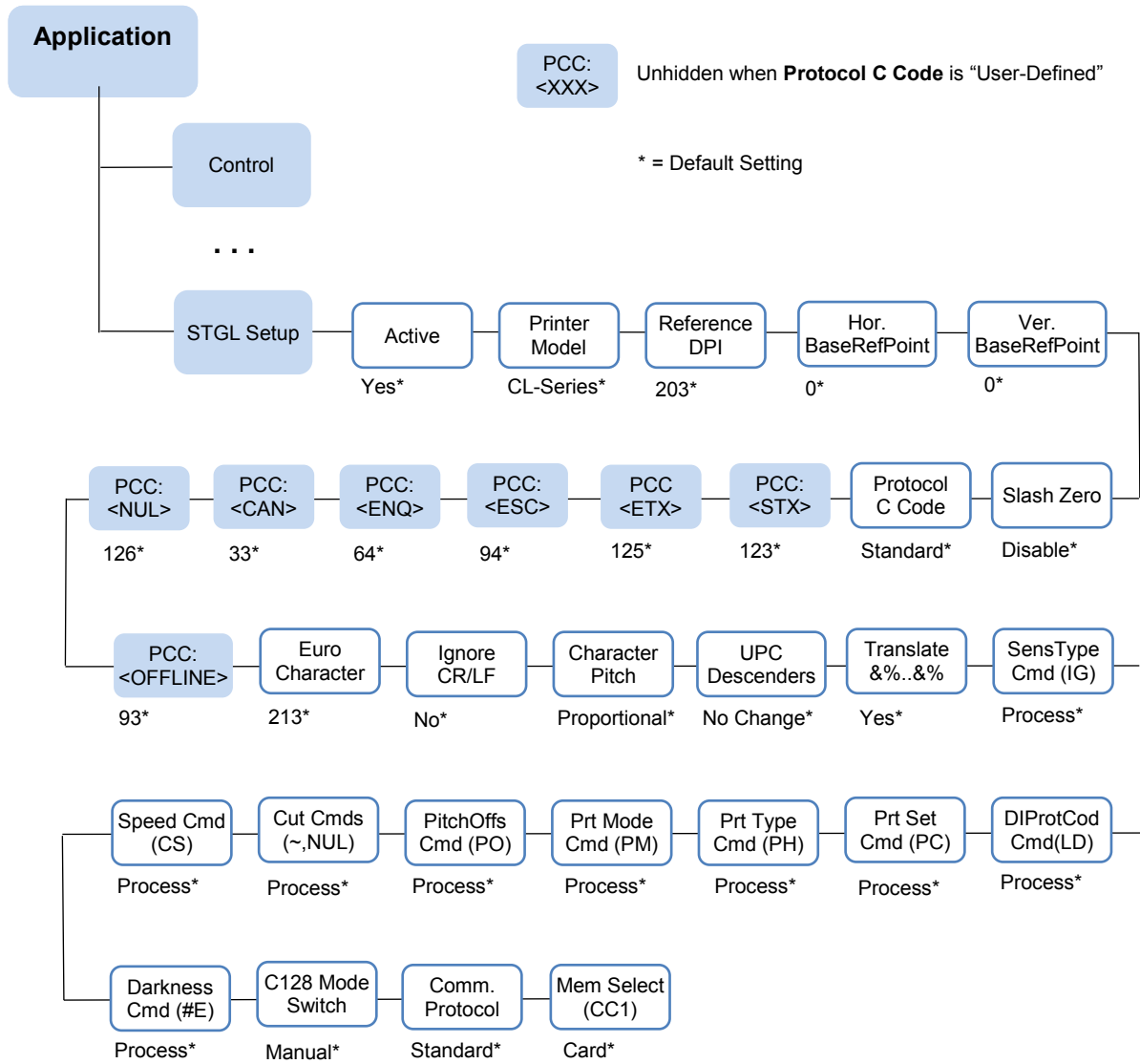
For *Comm. Protocol* **Status 2** to **Status 5**, configure the return status port using *System > Printer Mgmt > Ret. Status Port* menu.

NOTE: The return status port does not need to be the same as the active host interface on which data is received. For example, it is possible to receive data on the serial port, and send out the status through the Ethernet interface. Using Ethernet only, it is possible to return status through the port through which data was received (data port), but it is also possible to use another port for returning status (status port).

The port number for the status port can be set through the menu *System > Printer Mgmt > Status Port Number*.

STGL Setup Menus

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



STGL Setup Menus

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

| Application > STGL Setup > Active | |
|---|--|
| Indicates if the STGL parser should process all incoming data, or that all data should be passed to the bottom emulation. | |
| Yes | STGL is active, process SATO commands. |
| No | STGL is inactive, used to print pure text. |
| Factory Default | Yes |

| Application > STGL Setup > Printer Model | |
|--|--------------------------------------|
| This setting indicates whether or not to emulate certain legacy models. These models have the following differences: Bolder M-Font and Larger WB-Font. | |
| CL-Series | Emulate current CL-Series models. |
| CL-Legacy | Emulate older legacy printer models. |
| Factory Default | CL-Series |

| Application > STGL Setup > Reference DPI | |
|---|--|
| When parameters are defined as number of dots, these values translate to the actual printhead resolution as necessary. Graphics and downloaded bitmaps will not be scaled since this usually does not result in an image that is acceptable to users. | |
| 203 | Incoming parameters are assumed to be in 300 DPI. On a 300 DPI printer, they will be scaled. |
| 305 | Incoming parameters are assumed to be in 305 DPI. On a 203 DPI printer, they will be scaled. |
| M8450 1xDotExp | Compatibility with a M8450 printer, parameters area assumed to be in 300 DPI. |
| M8450 2xDotExp | Compatibility with a M8450 printer, parameters area assumed to be in 150 DPI. |
| M8450 3xDotExp | Compatibility with a M8450 printer, parameters area assumed to be in 100 DPI. |
| Factory Default | 203 |

Application > STGL Setup > Hor. BaseRefPoint

This setting changes the horizontal base reference point for all subsequent label jobs. Its effect is identical to the <ESC>A3 Base Reference point command.

| | |
|-----------------|--------|
| Minimum | -9999 |
| Maximum | 9999 |
| Factory Default | 0 dots |

Application > STGL Setup > Ver. BaseRefPoint

This setting changes the Vertical base reference point for all subsequent label jobs. Its effect is identical to the <ESC>A3 Base Reference point command.

| | |
|-----------------|--------|
| Minimum | -9999 |
| Maximum | 9999 |
| Factory Default | 0 dots |

Application > STGL Setup > Slash Zero

This parameter allows you to print the numeral "0" with or without the slash.

| | |
|-----------------|----------------------------------|
| Disable | Zero is printed without a slash. |
| Enable | Zero is printed with a slash. |
| Factory Default | Disable |

| Application > STGL Setup > Protocol C Code | |
|--|---|
| Protocol Control Codes are the special control characters that prepare the printer to receive instructions. For example, the <ESC> character tells the printer that a command code will follow and the <ENQ> character asks for the printer status. See Table 1. | |
| Standard | Use the predefined Standard (non-printable) Protocol Control Codes. |
| Non Standard | Use the predefined Non-Standard (printable) Protocol Control Codes. |
| User Defined | New menu options in the form “PCC: <XXX>” will be unhidden to define hex-values for each Protocol Control Code Character. |
| Factory Default | Standard |
| IMPORTANT | The <ESC>LD command (Custom Protocol Command Codes Download) will place the menu-setting in User-Defined mode, and overrides the user-defined character codes in the menu with the defined characters in the command. |

Table 1 Protocol Control Codes

| Control Char | Standard | Non-Standard | Description |
|--------------|----------|--------------|---------------------------------|
| STX | 0x02 | 0x7B = { | Start of Data |
| ETX | 0x03 | 0x7D = } | End of Data |
| ESC | 0x1B | 0x5E = ^ | Command code to follow |
| NULL | 0x00 | 0x7E = ~ | Cutter command |
| ENQ | 0x05 | 0x40 = @ | Get printer status, Bi-Com mode |
| CAN | 0x18 | 0x21 = ! | Cancel print-job, Bi-Com mode |
| Off-Line | 0x40 | 0x5d =] | Take printer offline |

| Application > STGL Setup > PCC: <STX> | |
|---|-----|
| This menu to select the STX character is unhidden when the menu Protocol C Code is set to “User-Defined”. | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 123 |

| Application > STGL Setup > PCC: <ETX> | |
|---|-----|
| This menu to select the ETX character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 125 |

| Application > STGL Setup > PCC: <ESC> | |
|---|-----|
| This menu to select the ESC character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 94 |

| Application > STGL Setup > PCC: <ENQ> | |
|---|-----|
| This menu to select the ENQ character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 64 |

| Application > STGL Setup > PCC: <CAN> | |
|---|-----|
| This menu to select the CAN character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 33 |

| Application > STGL Setup > PCC: <NUL> | |
|---|-----|
| This menu to select the NUL character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 126 |

| Application > STGL Setup > PCC: <OFFLINE> | |
|---|-----|
| This menu to select the OFFLINE character is unhidden when the menu Protocol C Code is set to "User-Defined". | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 93 |

| Application > STGL Setup > Euro Character | |
|---|------------|
| This selection allows the user to specify the hexadecimal code for the character which is replaced with the Euro Character. | |
| Minimum | 0 |
| Maximum | 255 |
| Factory Default | 213 (0xD5) |

| Application > STGL Setup > Ignore CR/LF | |
|---|--|
| This selection tells the printer to strip out all carriage return/line feed pairs (CRLF) from the data stream, except for Graphics and 2D bar code data. It is used primarily to maintain compatibility with earlier models of SATO printers. | |
| No | Allow CR/LF in the data stream. |
| Yes | Remove all CR/LF from the data stream. |
| Factory Default | No |

| Application > STGL Setup > Character Pitch | |
|---|----------------------------------|
| This selection allows you to set the default character pitch for the proportional Matrix & Auto Smoothing Fonts to either fixed character spacing or proportional character spacing. This command is overridden by the <ESC>PR or <ESC>PS Character Pitch Commands. | |
| Proportional | Print with proportional spacing. |
| Fixed Pitch | Print with fixed-pitch spacing. |
| Factory Default | Proportional |

| Application > STGL Setup > UPC Descenders | |
|--|--|
| Allows the user to force UPC/EAN barcodes to print with or without descenders. | |
| No Change | Use default behavior, matching Sato. |
| Always | Force UPC/EAN to print with Descenders. |
| Never | Force UPC/EAN to print without Descenders. |
| Factory Default | No Change |

| Application > STGL Setup > Translate &%..&% | |
|---|--|
| This setting allows replacing of the string &%CC&% by one single control character with a hex value equal to that of string CC. | |
| No | Hex Transparency option disabled. |
| Yes | Hex Transparency option enabled. |
| Factory Default | No |
| IMPORTANT | This option might be extended in the future to use user-defined introducers. |

| Application > STGL Setup > SensType Cmd(IG) | |
|---|--|
| Determines whether the Sensor Type Command is processed or ignored. | |
| Process | Process the Sensor Type Command. This command is used to select the Reflective/Transmissive/No Sensor. |
| Ignore | Ignore the Sensor Type Command. |
| Factory Default | Process |

| Application > STGL Setup > DIProtCodCmd(LD) | |
|--|--|
| Determines whether the downloading of user-defined Protocol Control Codes is processed or ignored. | |
| Process | Process the downloading of Protocol Control codes. |
| Ignore | Ignore the downloading of Protocol Control codes. |
| Factory Default | Process |

| Application > STGL Setup > Prt Set. Cmd(PC) | |
|---|---|
| Determines whether the Printer Setting Command is processed or ignored. | |
| Process | Process the Printer Setting Command. Allows changing several configuration options. |
| Ignore | Ignore the Printer Setting Command. |
| Factory Default | Process |

| Application > STGL Setup > Prt Type Cmd(PH) | |
|--|--|
| Determines whether the Print Type Command is processed or ignored. | |
| Process | Process the Print Type Command. Selects the Thermal Transfer or Direct Thermal print type. |
| Ignore | Ignore the Print Type Command. |
| Factory Default | Process |

| Application > STGL Setup > Prt Mod Cmd(PM) | |
|--|--|
| Determines whether the Print Mode Command is processed or ignored. | |
| Process | Process the Print Mode Command. Selects continuous, cut, tear-off or peel-off print modes. |
| Ignore | Ignore the Print Mode Command. |
| Factory Default | Process |

| Application > STGL Setup > PitchOffsCmd(PO) | |
|---|-----------------------------------|
| Determines whether the Pitch Offset Command is processed or ignored. When this command is processed, it affects <i>the Media > Image > Paper Feed Shift</i> menu. | |
| Process | Process the Pitch Offset Command. |
| Ignore | Ignore the Pitch Offset Command. |
| Factory Default | Process |

| Application > STGL Setup > Cut Cmds (~,NUL) | |
|---|---|
| Determines whether the Cut Commands are processed or ignored. SATO printers cut after each page per default when the Cut option is enabled. With STGL, the default behavior is not to cut after each label, but only upon receipt of a cut command. | |
| Process | Process the Cut commands. |
| Ignore | Ignore all Cut Commands. |
| Factory Default | Process |
| IMPORTANT | If cutting is required after each label, the <i>Media > Handling > Media Handling</i> should be set to "Cut." In addition, this menu should be set to "Ignore". |

| Application > STGL Setup > Speed Cmd (CS) | |
|---|----------------------------------|
| Determines whether the Print Speed Command is processed or ignored. | |
| Process | Process the Print Speed Command. |
| Ignore | Ignore the Print Speed Command. |
| Factory Default | Process |

| Application > STGL Setup > Darkness Cmd (#E) | |
|--|-----------------------------------|
| Determines whether the Darkness (Intensity) Commands are processed or ignored. | |
| Process | Process the Darkness #E commands. |
| Ignore | Ignore all Darkness #E Commands. |
| Factory Default | Process |

| Application > STGL Setup > Code 128 Mode Switch | |
|---|---|
| Code 128 subset switching compatibility with older Sato printers. | |
| Manual | Application is responsible for deciding when to switch Code 128 subsets (A,B,C). |
| Automatic | Encodes C128 barcode data using automatic mode switching which results in smaller barcodes. |
| Factory Default | Proportional |

| Application > STGL Setup > Comm. Protocol | |
|---|--|
| This setting defines the protocol used for serial communication. This printer supports bi-direction communication through Serial, Parallel, USB, and Ethernet interfaces. | |
| Standard | The standard communication protocol is used as configured in the <i>Host IO > Serial > Data Protocol</i> menu. |
| Status 3 | SATO communication status 3 protocol. |
| Status 4 | SATO communication status 4 protocol. |
| Status 2 | SATO communication status 2 protocol. |
| Factory Default | Standard |
| IMPORTANT | When using a protocol other than Standard over the serial interface, the <i>Host IO > Serial > Data Protocol</i> should be set to DTR. Any other Serial Data Protocol would interfere with the SATO Status-Protocol. |

| Application > STGL Setup > Mem Select (CC1) | |
|---|---|
| Determines how the “a” parameter within the STGL CCa command refers to the memory type. | |
| Card | The “a” parameter refers to memory type as follows: 1 = External Memory Cartridge 2 = Flash ROM |
| Memory | The “a” parameter refers to memory type as follows: 1 = Flash ROM 2 = External Memory Cartridge |
| Factory Default | Card |

2 Supported Commands

General Commands

| Command | Command Description | Support | Reference |
|------------------------------------|-----------------------|---------------|-----------|
| A | Start Code | Full | page 22 |
| A1aaaabbbb | Media Size | Full | page 23 |
| A Z | Form Feed | Full | page 22 |
| AOa | Auto Online | Not Supported | |
| AR | Normal Print Length | Full | page 22 |
| A3H-aaaa-Vbbbb | Base Reference Point | Full | page 24 |
| Babbcccd | Bar Codes | Partial | page 24 |
| BDabbcccd | Bar Codes | Partial | page 24 |
| BKaabbccdeeefffn...n | PDF417 | Partial | page 24 |
| BLn...n | Postbar | Not Supported | |
| BPn...n | Postnet | Partial | page 24 |
| BQabcc, (ddeeff,) g (hhhh) n | QR Codes | Full | page 24 |
| BTabbccddee | Bar Codes | Full | page 24 |
| BVa,b,c,ddddddddd,ee e,fff,gg.g | Maxicode | Full | page 24 |
| BWaabbb | Bar Codes Expansion | Full | page 25 |
| BXaabbccddeeeffghh | Data Matrix | Full | page 24 |
| C | Repeat Label | Full | page 25 |
| CLa | Ignore CR/LF | Not Supported | |
| CSa | Print Speed Selection | Full | page 25 |
| Dabbcccd | Bar Codes | Full | page 25 |
| DCxx...x | Data Matrix | Full | page 25 |
| DNk,n~n | Data Command | Full | page 25 |
| DSmmm,n~n | Data Commands | Full | page 25 |

| Command | Command Description | Support | Reference |
|-----------------|-----------------------------------|----------------|------------------|
| Eaaa | Line Feed | Full | page 25 |
| EP | Print End Position | Not Supported | |
| EUaaabbn~n | EAN/UCC Composite Symbol | Full | page 25 |
| EX0 | Expanded Print Length | Full | page 25 |
| Faaaabcccddee | Sequential Numbering | Full | page 25 |
| FC | Print Circle | Partial | page 25 |
| FT | Print Triangle | Partial | page 25 |
| FWaaHbbbb | Horizontal Line | Full | page 25 |
| FWaabbVcccHdddd | Box | Full | page 25 |
| FWccVddd | Vertical Line | Full | page 25 |
| FXaaabcccddeeee | Data Matrix | Full | page 26 |
| Gabbbccc(data) | Custom Graphics | Full | page 26 |
| GMaaaaa | BMP File | Full | page 26 |
| GPaaaaa | PCX File | Full | page 26 |
| Haaaa | Horizontal Position | Full | page 26 |
| IDaa | Store Job ID | Full | page 26 |
| IP0nn | EPC Code Write Designation | Full | page 26 |
| IP1 | EPC Code Read Designation | Full | page 26 |
| J | Journal Print | Full | page 26 |
| Kab90cc | Recall Custom Designed Characters | Full | page 26 |
| Laabb | Character Expansion | Full | page 26 |
| LAa | Display Language | Not Supported | |
| LHa | Zero Slash | Not Supported | |
| M | Font Type | Full | page 26 |
| OA | Font Type | Full | page 26 |
| OB | Font Type | Full | page 26 |
| OL | Online Printer Status Change | Not Supported | |
| Paa | Character Pitch | Full | page 27 |
| PR | Fixed Font Spacing | Full | page 27 |
| PS | Proportional Font Spacing | Full | page 27 |

| Command | Command Description | Support | Reference |
|-------------------------|---|----------------|------------------|
| Qaaaaaa | Print Quality | Full | page 27 |
| RDabb,ccc,dddn..n...n | Font Type | Full | page 27 |
| RFaabbbn...n | Recalls and prints custom fonts and logos | Not Supported | |
| RK | RFID Write | Full | page 27 |
| RMaaaa,bbbb | Mirror Image | Full | page 27 |
| RZ | Message Print Register | Not Supported | |
| S | Font Type | Full | page 27 |
| Tabcc(data) | Store Custom Designed Characters | Full | page 27 |
| TMx | EPC Trade mark Print | Partial | page 28 |
| U | Font Type | Full | page 28 |
| Vbbbb | Vertical Position | Full | page 28 |
| WBa | Font Type | Full | page 28 |
| WDHaaaaVbbbbXcccc Ydddd | Copy Image Area | Full | page 28 |
| WKnn..n | Job Name | Full | page 28 |
| WLa | Font Type | Full | page 28 |
| XM | Font Type | Full | page 28 |
| XS | Font Type | Full | page 28 |
| XU | Font Type | Full | page 28 |
| X20 | Font Type | Not Supported | |
| X21 | Font Type | Not Supported | |
| X22 | Font Type | Not Supported | |
| X23 | Font Type | Not Supported | |
| X24 | Font Type | Not Supported | |
| XBa | Font Type | Full | page 28 |
| XLa | Font Type | Full | page 28 |
| Z | Stop Code | Full | page 28 |
| %a | Rotate | Full | page 28 |
| \$a,b,c,d | Vector Font | Partial | page 28 |
| \$(data) | Data for Vector Font | Partial | page 29 |
| #Ea | Print Darkness | Full | page 29 |

| Command | Command Description | Support | Reference |
|------------|-------------------------------|---------|-----------|
| (aaaa,bbbb | Reverse Image | Full | page 29 |
| & | Store Form Overlay | Full | page 29 |
| / | Recall Form Overlay | Full | page 29 |
| 0 (zero) | Replace Data | Full | page 29 |
| *a | Clear Print Job(s) and Memory | Partial | page 29 |
| @ | Off-Line | Full | page 29 |
| ~aaaa | Cut Job | Full | page 29 |
| ~Aaaaa | Cut | Full | page 29 |
| ~B | Cut Last | Full | page 29 |
| 2D10 | PDF417 | Full | page 29 |
| 2D12 | MicroPDF417 | Full | page 29 |
| 2D20 | Maxicode | Full | page 29 |
| 2D30 | QR Code Mode2 | Full | page 30 |
| 2D31 | QR Code Mode1 | Full | page 30 |
| 2D32 | Micro QR Code | Full | page 30 |
| 2D50 | DataMatrix | Full | page 30 |

Supported General Commands

A – Start Code

Begins all print jobs.

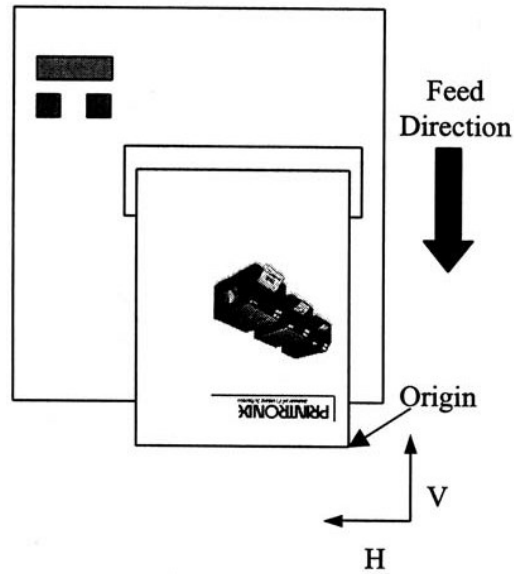
A Z – Form Feed

Feeds a blank tag or label.

AR – Normal Print Length

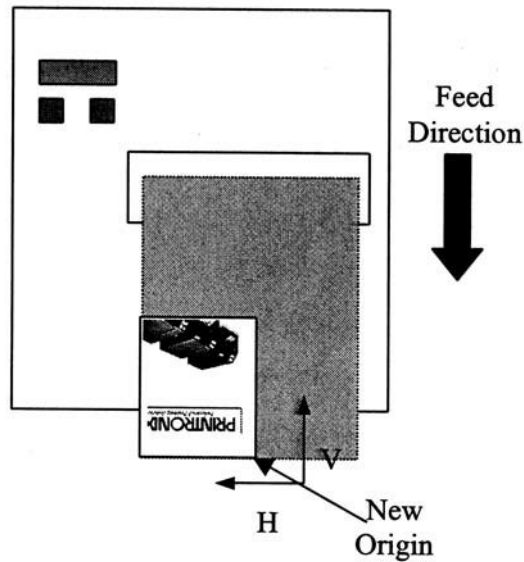
This command resets the printer to the Standard print length (7 inches).

Sato printers print labels similar to Printronix Thermal printers top-first, with the label-edge aligned to the left side of the printer when viewed from the front. The coordinate origin of the label is per default located at the bottom- right.



A1aaaabbbb – Media Size

This command can be used to set the media size. It moves the default origin towards the left, and causes the page-bitmap to clip at the specified length. Without this command, the width is equal to the maximum width, and the length is the maximum length. The maximum length on SATO printers is by default 7 inches (<ESC>AR cmd), can be expanded to 49.2 inches with the <ESC>EX0 command.

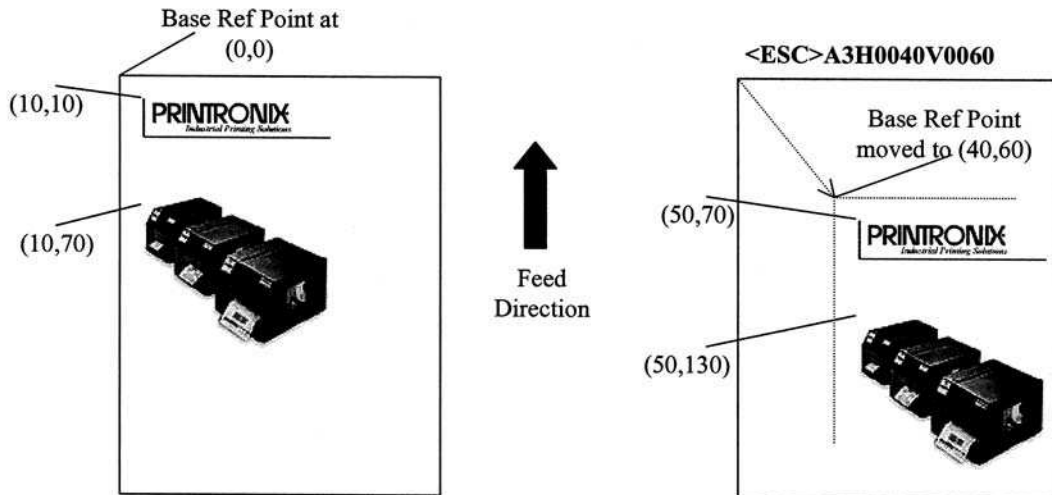


NOTE: STGL has the ability to set the maximum physical page-length in the Media-Size menu. This value is used when no AR, EX0 or A1 command is present in the host data. On continuous media, the actual printed page length depends on the size of the printed data. The printer will feed as long as there is data to print, up to a maximum of the current physical page length. On gapped media, the feed length is determined by the gap detection.

A3H-aaaa-Vbbbb – Base Reference Point

Establishes a new base reference point position in dots for the current label.

The base reference command repositions the page-bitmap inside the page created with the Media Size command by adding a horizontal and vertical offset to every positioning command. This offset is relative to the current Media Origin.



Babbcccd – Bar Codes

Prints a 1:3 ratio bar code.

BDabbcccd – Bar Codes

Prints a 2:5 ratio bar code.

BKaabbcddeefffn...n – PDF417

Prints PDF417 2-D symbols.

BPn...n – Postnet

Prints Postnet bar codes.

BQabcc, (ddeeff,) g(hhhh)n – QR Code

Prints QRCode bar codes.

BTabbccddee – Bar Codes

Variable ratio.

BXaabbcddeefffghh – Data Matrix

Data Format. Specifies the format of the Data Matrix 2-D symbology.

BVa,b,c,ddddddddd,eee, f f f,gg..g – Maxicode

Prints 2-D Maxicode symbols per AIM I.S.S. specifications.

BWaabbb – Bar Codes Expansion

Works together with the BT command to specify an expansion factor and the bar code height.

C – Repeat Label

Prints a duplicate of the last label printed.

CSa – Print Speed Selection

Specifies a unique print speed in inches/seconds through software for a particular label.

Dabbcccd – Bar Codes

Prints 1:2 ratio bar code.

DCxx...x – Data Matrix

Prints Data. Prints data using Data Matrix format specified in BX Data Format command.

DNk,n~n

Data for 2-D Barcode commands.

DSmmm,n~n

Data for 2-D Barcode commands.

Eaaa – Line Feed

Provides the ability to print multiple lines of the same character size without specifying a new print position for each line.

EUaaabbn~n – EAN/UCC Composite Symbol

Prints barcodes using <ESC>EU command.

EX0 – Expanded Print Length

Expands the print length to 9999 dots. See A1aaaabbbb – Media Size on page 23.

Faaaabcccddee – Sequential Numbering

Allows the printing of sequencing fields (text, bar codes) where all incrementing is done within the printer.

FC – Print Circle

Prints a circle. Patterns are not supported

FT – Print Triangle

Prints a triangle. Patterns are not supported.

FWaaHbbbb – Horizontal Line

Prints a horizontal line.

FWaabbVcccHdddd – Box

Prints a box.

FWccVddd – Vertical Line

Prints a vertical line.

FXaaabccdddeee – Data Matrix

Sequential Numbering. Prints sequential numbered Data Matrix 2-D symbols.

Gabbccc(data) – Custom Graphics

Allows the creation and printing of graphic images using a dot-addressable matrix. This image format is available in SATO printers, and is supported by STGL.

GMaaaa – BMP File

Downloads BMP file to the internal graphics image memory. Standard BMP file format, only black and white non-compressed BMP files are supported. This image format is available in SATO printers, and is supported by STGL.

GPaaaa – PCX File

Standard PCX file format. Downloads PCX file to the internal graphics image memory. This image format is available in SATO printers, and is supported by STGL.

Haaaa – Horizontal Position

From the base reference point, the number of dots horizontally.

IDaa – Store Job ID

Stores the Job ID number.

IP0nn – EPC Code Write Designation

Writes to the RFID tag without moving the paper unless there is printable data on the same label. This follows the syntax for legacy Sato printers.

IP1 – EPC Code Read Designation

The UHF RFID read command. This follows the syntax for legacy Sato printers.

J – Journal Print

Provides the ability to print text line by line.

Kab90cc – Recall Custom Designed Characters

Recalls for printing a custom character stored by the Tabcc(data) command.

Laabb – Character Expansion

Expands characters in both directions up to 12 times (all except raster and vector fonts).

M – Font Type

Specifies the 13W x 20H dot matrix font.

OA – Font Type

Specifies the OCR-A font dot matrix.

OB – Font Type

Specifies the OCR-B font dot matrix

Paa – Character Pitch

Designates the number of dots between characters (all except raster fonts).

PR – Fixed Font Spacing

Returns the rpinter to fixed character spacing mode.

PS – Proportional Font Spacing

Places the printer in the proportional character spacing mode.

Qaaaaa – Print Quality

Specifies the total number of labels to print.

RDabb,ccc,ddd,nn...n – Font Type

Specifies the internal AGFA raster fonts. The STGL Agfa fonts will match the SATO raster font characteristics. Using the SATO <ESC>RD command, one of two Agfa fonts can be selected. It allows specification of both width and height of the font (in dots or as point-size) and whether it should be printed in bold/normal. The font-style can be either CG Times (16 999 dots or P08 - P72) or CG Triumvirate (16 -1 999 dots or P08 - P72).

RK – RFID Write

Specifies data to be written into RFID tags.

<ESC>RK1,a,b,D16,c..c – RFID Write

a RFID tag Error Ignore. Valid range is from 0-9.
0-Disable (default when value is omitted)
1-Enabled
2-9 Auto retry on tag error.

This command is ignored for STGL. The error handling for all RFID commands on all supported emulations is set according to the RFID menu on the front panel. Using the RFID menu, the user can set the error handling, number of retries, and tag type.

b Write Protector Designation. Valid range is from 0 to 1.
0-Fixed (default)

D Writing Data Size Recognition Character. Writes data size in number of characters. Valid data size is 16 characters.

16 or 24 Specification of Writing Data Size. Valid data size is 16 or 24 characters.

c..c EPC data (fixed at 16 characters). Valid range is 0 to 9 or A to F only.

Example <ESC>RK1,0,0,D16,ABCDEF1234567543

RMaaaa,bbbb – Mirror Image

Prints mirror image of data.

S – Font Type

Specifies the 8W x 15H dot matrix font.

Tabcc(data) – Store Custom Designed Characters

Creates and stores custom characters or images in the printer's memory.

TMx – EPC Trade Mark Print

Specifies printing of an EPC trademark logo on a tag label.

U – Font Type

Specifies the 5W x 9H dot matrix font.

Vbbbb – Vertical Position

From the base reference point, the number of dots vertically.

WBa – Font Type

Specifies the 18W x 30H dot matrix font.

WDHaaaaVbbbbXccccYdddd – Copy Image Area

To copy an image to another location of the label.

WKnn..n – Job Name

Stores the job name.

WLa – Font Type

Specifies the 28W x 52H dot matrix font.

XM – Font Type

Specifies the 24W x 24H dot matrix font.

XS – Font Type

Specifies the 17W x 17H dot matrix font.

XU – Font Type

Specifies the 5W x 9L dot matrix font.

XBa – Font Type

Specifies the 48W x 48H dot matrix font.

XLa – Font Type

Specifies the 48W x 48H dot matrix font.

Z – Stop Code

Ends all print jobs.

%a – Rotate

Fixed Base Reference Point.

\$a,b,c,d – Vector Font

Specifies printing of the unique SATO vector font. The SATO vector font allows for printing of the Helvetica Bold font in both proportional and fixed-pitch spacing, with a user-defined size of 50x50 – 999x999 dots.

SATO can also print this font in 10 different font variations. STGL only supports variation 0 and 8 (Standard and Italic, Agfa font #92244). The other variations (several types of Outlined, Gray, Shadow, and Mirrored fonts) will print in the standard variation.

\$(data) – Vector Font Data

Data for vector fonts. See \$a,b,c,d – Vector Font on page 28.

#Ea– Print Darkness

Specifies a new print darkness setting.

(aaaa,bbbb – Reverse Image

Reverse image from black to white and vice versa.

& – Store Form Overlay

Stores a specified label image in the printer's volatile form overlay memory.

/ – Recall Form Overlay

Recalls the label image from the printer's form overlay memory for printing.

0 (zero) – Replace Data (Partial Edit)

Provides the ability to replace a specified area of the previous label with new data.

***a – Clear Print Job(s) and Memory**

Clears individual memory and buffers. When parameter "a" is not specified, the command aborts all jobs received prior to this command.

NOTE: Without parameter "a", this command is not supported. When parameter "a" is included, it specifies the memory section to be cleared. See Expanded Memory Functions on page 32.

@ – Off-Line

Signals the printer to go off-line after the completion of a print job.

~aaaa – Cut Job

Cuts labels at a specified interval in a print job.

~Aaaaa – Cut

Specifies the number of labels to print between each cut.

~B – Cut Last

Cuts any printed labels that remain in the printer.

2D10 – PDF417

Command for PDF417 symbology.

2D12 – MicroPDF417

Command for MicroPDF417 symbology.

2D20 – Maxicode

Command for Maxicode symbology.

2D30 – QR Code Mode2

Command for QR Code Mode2 symbology.

2D31 – QR Code Mode1

Command for QR Code Mode1 symbology.

2D32 – Micro QR Code

Command for Micro QR Code symbology.

2D50 – DataMatrix

Command for DataMatrix symbology.

Calendar Option Commands

The commands to set and use the real time clock (RTC) as defined in the SATO manual are fully supported by STGL if there is an RTC. Clock and calendar commands are not functional if RTC is not installed.

| Command | Command Description | Support | Reference |
|---------------|---------------------|---------|-----------|
| WA (elements) | Calendar Print | Full | page 30 |
| WPabbb | Calendar Increment | Full | page 30 |
| WTaabbccdee | Calendar Set | Full | page 30 |

Supported Calendar Option Commands

WA(elements) – Calendar Print

Prints the data and/or time field (up to 16 characters) from the printer's internal clock.

WPabbb – Calendar Increment

To add a value to the printer's current date and/or time.

WTaabbccdee – Calendar Set

To set the time and date of the printer's internal clock.

Expanded Memory Option Commands

NOTE: Information writes to Flash Memory or SD card if installed.

| Command | Command Description | Support | Reference |
|-------------------------------|---|---------|-----------|
| BJ(aa..abb..b | Start TrueType Font Storage | Full | page 32 |
| BJDccccccdddee...e | Download Bitmapped TrueType Font Data | Full | page 32 |
| BJ) | End TrueType Font Storage | Full | page 32 |
| BJFaaaaaaa | Initialize Memory Card | Full | page 33 |
| BJRabbccddeeeeff..f | TrueType Font Recall | Full | page 33 |
| BJS | Expanded Memory Status | Ignore | |
| BJTaa,bb,cc,dd,ee,fff,gg..g | TrueType Font Recall | Full | page 33 |
| CCa | Memory Area Select | Full | page 33 |
| GCaaa | Recall BMP Graphic | Full | page 33 |
| Glabbbccdddee...e | Store Custom Graphics | Full | page 33 |
| GRccc | Recall Custom Graphics | Full | page 33 |
| GTaaa,bbbn..n..n | Store BMP Graphics | Full | page 33 |
| Plaaa,bbbb,Plaaa,bbbbb,cc...c | Store PCX Graphics File | Full | page 33 |
| PYaaa | Recall PCX Graphics File | Full | page 33 |
| K1abbn..n | Recalls 16Wx16H User-defined Characters | Full | page 33 |
| K2abbn..n | Recalls 24Wx24H User-defined Characters | Full | page 33 |
| k1abbn..n | Recalls 16Wx16H User-defined Characters | Full | page 33 |
| k2abbn..n | Recalls 24Wx24H User-defined characters | Full | page 33 |
| YR,aaa/D,bb,cc..c | Recall Format/Field | Full | page 34 |
| YS,aaa/Nbb,cc | Store Format/Field | Full | page 34 |
| &R,aa | Recall Form Overlay | Full | page 34 |
| &S,aa,bbbb,cccc | Store Form Overlay | Full | page 34 |
| *a,bbb | Clear Card Memory | Full | page 34 |

Supported Expanded Memory Option Commands

BJ(aa..abb..b – Start TrueType Font Storage

Prepares the Expanded Memory to accept TrueType font data.

Expanded Memory Functions

SATO printers with expanded memory installed can store the following items for later use. Each item is addressable with a unique number, specifying a memory location in a specific section reserved for the same object types.

- 999 SATO graphic files Location # 001 - 999
- 999 BMP or PCX files Location # 001 - 999
- 999 Formats Location # 001 - 999
- 99 Form-Overlays Location # 01 - 99
- 100 Bit-Mapped TrueType Fonts Location # 00 - 99

On SATO printers, these objects can be stored in two selectable designated memory areas:

1. PCMCIA Expanded Memory Card
2. Internal Expanded Flash-ROM

In STGL, the SD card (when installed) is used for #1 PCMCIA Expanded Memory Card and #2 FLASH memory otherwise. If the SD card is not installed, then the command to select the memory area (<ESC>CC a) will be ignored and FLASH memory will be used exclusively. Images and objects will be saved using the following names:

| | | |
|------------------------|--------------|------------------------------|
| TrueType bitmap fonts | STGL_tnn.bmp | where nn is the ID, 00-99 |
| BMP images | STGL_nnn.bmp | where nnn is the ID, 001-999 |
| PCX images | STGL_nnn.pcx | where nnn is the ID, 001-999 |
| Custom graphics images | STGL_nnn.img | where nnn is the ID, 001-999 |
| Formats | STGL_nnn.fmt | where nnn is the ID, 001-999 |
| Overlays | STGL_nnn.ovl | where nnn is the ID, 001-999 |

Examples

ppi4_t03.bmp (in flash) TrueType bitmapped font at location 03.

ppi4_012.pcx (in flash) PCX image at location 12.

Users can view the FLASH contents by using the System > Flash File Edit > Print File List feature and view the SD card contents by using the System > SD File Edit > Print File List feature. This shows the STGL files present in the file systems using the names listed above.

BJDccccdddee...e – Download Bit Mapped TrueType Font Data

Downloads the bitmapped TrueType font data to the memory area specified.

BJ) – End TrueType Font Storage

Ends the bitmapped TrueType font storage process. See Expanded Memory Functions on page 32.

BJFaaaaaaa – Initialize Memory Card

Initializes the Memory Area and formats it for use. See Expanded Memory Functions on page 32.

BJRabbccddeeeeff..f – TrueType Font Recall

Recalls a previously stored bitmapped TrueType font for use. See Expanded Memory Functions on page 32.

BJTaa,bb,cc,dd,ee,ff,gg..g – TrueType Font Recall

Recalls a previously stored bitmapped TrueType font for use. See Expanded Memory Functions on page 32.

CCa – Memory Area Select

Selects the memory area for all following Expanded Memory commands. CC1 selects the SD card and CC2 selects the internal FLASH.

GCaaa – Recall BMP Graphic

Recalls BMP graphic files stored in Expanded Memory. See Expanded Memory Functions on page 32.

Glabbbccdddee...e – Store Custom Graphics

Stores a graphic image in the memory card to be called later for printing on a label. See Expanded Memory Functions on page 32.

GRccc – Recall Custom Graphics

Recalls for printing the graphic image stored by the GI command. See Expanded Memory Functions on page 32.

GTaaa,bbbb,nn...n – Store BMP Graphics

Stores BMP files in Expanded Memory. See Expanded Memory Functions on page 32.

K1abbn..n – Recalls 16Wx16H User-Defined Characters

Recalls 16Wx16H user-defined characters and prints the string in horizontal orientation.

K2abbn..n – Recalls 24Wx24H User-Defined Characters

Recalls 24Wx24H user-defined characters and prints the string in horizontal orientation.

k1abbn..n – Recalls 16Wx16H User-Defined Characters

Recalls 16Wx16H user-defined characters and prints the string in vertical orientation.

K2abbn..n – Recalls 24Wx24H User-Defined Characters

Recalls 24Wx24H user-defined characters and prints the string in vertical orientation.

Plaaa,bbbb,Plaaa,bbbb,cc...c – Store PCX Graphics File

Stores a PCX graphics file. See Expanded Memory Functions on page 32.

PYaaa – Recall PCX Graphics File

Recalls a PCX graphics file. See Expanded Memory Functions on page 32.

YR,aaa/D,bb,cc...c – Recall Format/Field

To recall a field from a format previously stored in the memory card.

YS,aaa/Nbb,cc – Store Format/Field

To store a field in a format in the memory card. See Expanded Memory Functions on page 32.

&R,aa – Recall Form Overlay

Recalls a label image previously stored in Expanded Memory. See Expanded Memory Functions on page 32.

&S,aa,bbbb,cccc – Store Form Overlay

Stores a label image in Expanded Memory. See Expanded Memory Functions on page 32.

***a,bbb – Clear Card Memory**

Clears individual memory and buffer areas. See Expanded Memory Functions on page 32.

Printer Configuration Commands

| Command | Command Description | Support | Reference |
|------------------------|---------------------------------|----------------|------------------|
| IGa | Sensor Type | Full | page 34 |
| LD,a,b,c,d,e,f,g,i,j j | Download Protocol Command Codes | Full | page 34 |
| PCaa,bbPCF,a,.....z | Printer Setting | Partial | page 34 |
| PHa | Print Type | Full | page 34 |
| PMa | Print Mode | Full | page 35 |
| POabcc | Pitch Offset | Ignored | |

Supported Printer Configuration Commands

IGa – Sensor Type

Selects the sensor type.

LD,a,b,c,d,e,f,g,i,j j – Download Protocol Command Codes

Downloads a user defined set of Alternate Protocol Command Codes. See Protocol C Code on page 11.

PCaa,bbPCF,a,.....z – Printer Setting

Sets the default printer configuration in Flash ROM. The host commands to modify configuration settings will modify the current configuration values as if the user changed them manually on the front panel. They will however not be saved to NOVRAM as the SATO printer does. It will be the user's responsibility to save the appropriate configuration as well as the power-up configuration.

PHa – Print Type

Selects the thermal printing method.

PMa – Print Mode

Selects desired backfeed operation.

Legacy Commands

| Command | Command Description | Support | Reference |
|---------|-----------------------|---------|-----------|
| AX | Expanded Print Length | Full | page 35 |
| N | Rotate | Full | page 35 |
| R | Rotate | Full | page 35 |

Supported Legacy Commands

AX – Expanded Print Length

This command sets the printer to the Expanded print length (14 inches). EX0 is the recommended replacement.

N – Rotate, Moving Base Reference Point

Sets the original base reference point and returns printing to normal orientation. % is the recommended replacement.

R – Rotate, Moving Base Reference Point

Rotates the printing of all subsequent images by 90 degrees counterclockwise each time it is used. Also moves the base reference point, % is the recommended replacement.

Downloadable Fonts

The Sato printer allows downloading and storing of TrueType fonts as Bitmap. By default, since Printronix printers have internal FLASH, STGL supports downloading of bitmapped TrueType fonts to FLASH. Sato's memory card manager utility (MC manager) must be used to convert files in TrueType font format (.tff extension) to the proprietary bitmap formats that SATO printers use to download the fonts.

ID for the fonts is not assigned via the command. The printer assigns the first unused ID itself. For instance, if fonts with IDs 00 and 01 already exist, a new downloaded font is assigned ID 02.

How the SATO printer re-issues IDs of deleted fonts is unknown. For example, a new download on a printer where fonts 1 and 2 were deleted after installing fonts 0 to 3 resulted in assigning ID 2 to the new font. Downloading another font did not result in re-using ID number 1, but ID number 4. To obtain IDs in the order they were downloaded (starting at 00), always initialize the flash memory before downloading, and then download all the required fonts.

STGL uses the first unused ID.

Custom Designed Characters

Allows for the creation, storage, and printing of custom characters, such as special fonts or logos. Up to 50 individual characters may be stored in the custom character volatile memory. Allowable sizes include 16x16 and 24x24 dot matrices.

Image Manipulation

Three commands are available to manipulate a rectangular area of the page bitmap. It can *copy* an area to another section on the page, *reverse* an area and *mirror* an area.

3 *Printer Configuration*

SATO printers have four ways of configuring the operational parameters printer settings:

- Dip switches
- Potentiometers
- LCD menu settings
- Commands in the data stream.

The host commands to modify configuration settings will modify the current configuration values as if the user changed them manually on the front panel.

NOTE: Unlike the SATO printers, the modified configuration settings will not be saved to NOVRAM. It is the user's responsibility to save the appropriate configuration and the power-up configuration.

Configuration Setting Compatibility

The available printer control menu settings is used and non-existent settings are added to a new STGL menu to emulate all settings that can be supported.

The following sections list the SATO configuration setting along with a description of its behavior on SATO printers, and the corresponding Printronix menu setting.

Potentiometers

- SATO setting: PRINT
Potentiometer to adjust print darkness.
Printronix setting: Media > Image > Print Intensity
- SATO setting: OFFSET
Potentiometer to adjust the amount of backward/forward feed for dispenser/ cutter/tear-off bar position (+/- 3.75 mm).
Printronix setting: Media > Image > Paper Feed Shift
- SATO setting: PITCH
Potentiometer to adjust home position of the label (+/-3.75 mm). Affects stop position of the label feed, print position, and dispense position.
Printronix setting: Media > Image > Vertical Shift

DIP Switches

- SATO setting: DSW1 Serial Port Settings
Printronix setting: Host IO > Serial menus
- SATO setting: DSW2-1
Print Mode Selection. Selects between direct thermal printing on thermally sensitive paper and thermal transfer printing using a ribbon.
Printronix setting: Media > Handling > Print Mode
- SATO setting: DSW2-2
Sensor Type Selection. Selects between the use of a label gap or a reflective Eye-Mark detector.

Printronix setting: *Sensors > Control > Gap/Mark Sensor*

- SATO setting: DSW2-4
Hex Dump Selection. Selects Hex Dump Mode.
Printronix setting: *Tools > Diagnostics > Hex Dump Mode*
- SATO setting: DSW2-6
Firmware Download. Places the printer in the Firmware Download mode for downloading new firmware into flash ROM.
Printronix setting: *Download Mode/PPM*
- SATO setting: DSW2-7
Protocol Code Selection. Selects the Standard or Non-Standard command codes used for protocol control.
Printronix setting: *Application > STGL Setup > Protocol C Code*
- SATO setting: DSW3-1, DSW3-2
Backfeed Sequence. Backfeed is used to correctly position the label for application and then retract the next label to the proper print position.
Possible modes are Continuous, Tear-Off Strip, Peel Off, and Cut.
Printronix setting: *Media > Handling > Media Handling*
- SATO setting: DSW3-3
Label Sensor Selection. Enables or disables the Label Sensor.
Printronix setting: *Sensors > Calibrate > Gap/Mark Sensor*
- SATO setting: DSW3-4
Back-Feed Selection. When Back-Feed is enabled, the printer positions the last printed label for dispensing and retracts it before printing the next label.
Printronix setting: *Media > Handling > Media Handling*
- SATO setting: DSW3-5
EXT Print Start Signal Selection. Allows an external device to initiate a label print for synchronization with the applicator.
Printronix setting: *Supported through GPIO*
- SATO setting: DSW3-6 External Signal Type Selection.
Printronix setting: *Supported through GPIO*
- SATO setting: DSW3-7
Both the polarity and signal type (level or pulse) of the external print synchronizing signal can be selected.
Printronix setting: *Supported through GPIO*
- SATO setting: DSW3-8
Repeat Print via External Signal. Allows the applicator to reprint the last label of the print job.
Printronix setting: *Supported through GPIO*

LCD Panel, Normal Mode

- SATO setting: PRINT DARKNESS
Used to adjust the amount of heat (i.e. power) applied to the head for printing.
Printronix setting: *Media > Image > Print Intensity*
- SATO setting: PRINT SPEED
Sets the print speed in inch/second.
Printronix setting: *Media > Speed > Print Speed*
- SATO setting: PITCH OFFSET
The label Pitch is the distance from the leading edge of a label and the leading edge of the next

label.

Printronix setting: *Media > Image > Vertical Shift*

- SATO setting: CANCEL PRINT JOB
If the printer has a print job(s) in memory, selecting YES will cause the job(s) to be cleared.
Printronix setting: “Cancel Data” option in Home Screen

LCD Panel, Advanced Mode

- SATO setting: Zero Slash
This setting determines if a zero is printed with a slash or without a slash.
Printronix setting: *Application > STGL Setup > Slash Zero*
- SATO setting: AUTO ONLINE
This setting determines the mode in which the printer powers up.
Printronix setting: *System > Control > Power-up State*
- SATO setting: PRINT OFFSET V PRINT OFFSET H
This setting changes the base reference point for all subsequent label jobs. Its effect is identical to the <ESC>A3 Base Reference point command.
Printronix settings:
Application > STGL Setup > Hor. BaseRefPoint
Application > STGL Setup > Ver. BaseRefPoint
- SATO setting: IGNORE CR/LF
This selection tells the printer to strip out all carriage return/line feed pairs (CRLF) from the data stream, including graphics and 2D bar codes. It is used primarily to maintain compatibility with earlier models of SATO printers.
Printronix setting: *Application > STGL Setup > Ignore CR/LF*
- SATO setting: CHARACTER PITCH
This selection allows you to set the default character pitch to either fixed character spacing or proportional character spacing. This command can be overridden by the <ESC>PR or <ESC>PS Character Pitch Commands.
Printronix setting: *Application > STGL Setup > Character Pitch*

LCD Panel, Card Mode

- SATO setting: CARD MODE
The Card Mode allows the operator to manage the Expanded Memory (PCMCIA Card or Internal Expanded Flash ROM). Typical operations are copying data between cards, formatting cards.
Printronix setting: Copying is supported by upload in PPM or through operations in the *System > SD File Edit* menus.

LCD Panel, Service Mode

- SATO setting: GAP [X.X V] EYE [X.X V] INPUT [X.X V]
This adjustment allows you to manually set the threshold voltage level, between the maximum and minimum light levels. If the value entered for the bottom line setting is “0.0V,” then the printer automatically calculates the setting when the first label is fed. This happens after the printer is powered on or the head is closed.
Printronix settings:
Sensors > Control > Gap/Mark Thresh
Sensors > Calibrate > Auto Calibrate
- SATO setting: ONLINE FEED
This selection specifies whether or not the printer automatically feeds a blank label when it is placed in the ONLINE mode.

Printronix setting: Supported through GPIO

- SATO setting: FEED ON ERROR
This selection specifies whether or not the printer feeds a blank label automatically when an error condition is cleared.
Printronix setting: Supported through GPIO
- SATO setting: REPRINT W/FEED
This selection specifies whether or not the printer will print the last printed label stored in memory when the FEED key is pressed in the Normal ONLINE mode.
Printronix setting: Supported through GPIO
- SATO setting: FORWARD/BACKFEED DISTANCE
This display only appears when Backfeed is enabled (DSW3-4 = OFF) 0 - 255 mm.
Printronix setting: *Media > Image > Paper Feed Shift*
- SATO setting: EURO CODE
This selection allows the user to specify the hexadecimal code for the character which is replaced with the Euro Character. Default is 0xD5.
Printronix setting: *Application > STGL Setup > Euro Code*
- SATO setting: SELECT LANGUAGE
This selection allows the user to select the character set used by the printer LCD menu (English, French, German, Spanish, Italian, and Portuguese).
Printronix setting: *System > Control > Display Language*
- SATO setting: PRIORITY SETTING
This selection allows the user to assign a priority for CS (Print Speed), #5 (Print Darkness), A3 (Base Reference Point), IG (Sensor Type), PM (Print Mode), and PH (Print Type). If LCD is selected, the setting established via the LCD display/menu system is used for incoming label job, regardless of any different command settings. If Command is selected, any commands in the label job takes precedence and is used for printing the job. The LCD display reflects the new setting.
Printronix setting: *Application > STGL Setup > (menus to ignore commands)*

LCD Panel, Counter Mode

- SATO setting: SELECT COUNTER
HD:Head Counter (should be reset when printhead is replaced).
Printronix settings: *TOOLS > Statistics > Head Print Dist*
DSP: Dispense Counter CUT: Cutter Counter
Printronix setting: *TOOLS > Statistics > Total Media Dist*
SATO setting: CNTR CLEAR
LIFE: Life Counter (cannot be reset)
Printronix setting: Head life counter stored with head (cannot be reset)

LCD Panel, Test Print Mode

- SATO setting: TEST PRINT MODE
This option allows you to print a test label.
Printronix settings:
Configs > Control > Print Config
Tools > Print Tests > Run Tests

LCD Panel, Default Setting Mode

- SATO setting: DEFAULT SETTING
Resets all printer configuration settings to their original default conditions.

Printronix setting: *Configs > Control > Load Config = "Factory"*

A ASCII Codes

| Char | Dec | Hex | Char | Dec | Hex | Char | Dec | Hex | Char | Dec | Hex |
|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| NUL | 0 | 00 | EM | 25 | 19 | 2 | 50 | 32 | K | 75 | 4B |
| SOH | 1 | 01 | SUB | 26 | 1A | 3 | 51 | 33 | L | 76 | 4C |
| STX | 2 | 02 | ESC | 27 | 1B | 4 | 52 | 34 | M | 77 | 4D |
| EXT | 3 | 03 | FS | 28 | 1C | 5 | 53 | 35 | N | 78 | 4E |
| EOT | 4 | 04 | GS | 29 | 1D | 6 | 54 | 36 | O | 79 | 4F |
| ENQ | 5 | 05 | RS | 30 | 1E | 7 | 55 | 37 | P | 80 | 50 |
| ACK | 6 | 06 | US | 31 | 1F | 8 | 56 | 38 | Q | 81 | 51 |
| BEL | 7 | 07 | | 32 | 20 | 9 | 57 | 39 | R | 82 | 52 |
| BS | 8 | 08 | ! | 33 | 21 | : | 58 | 3A | S | 83 | 53 |
| HT | 9 | 09 | + | 34 | 22 | ; | 59 | 3B | T | 84 | 54 |
| LF | 10 | 0A | # | 35 | 23 | < | 60 | 3C | U | 85 | 55 |
| VT | 11 | 0B | \$ | 36 | 24 | = | 61 | 3D | V | 86 | 56 |
| FF | 12 | 0C | % | 37 | 25 | > | 62 | 3E | W | 87 | 57 |
| CR | 13 | 0D | & | 38 | 26 | ? | 63 | 3F | X | 88 | 58 |
| SO | 14 | 0E | + | 39 | 27 | @ | 64 | 40 | Y | 89 | 59 |
| SI | 15 | 0F | (| 40 | 28 | A | 65 | 41 | Z | 90 | 5A |
| DLE | 16 | 10 |) | 41 | 29 | B | 66 | 42 | [| 91 | 5B |
| DC1 | 17 | 11 | * | 42 | 2A | C | 67 | 43 | \ | 92 | 5C |
| DC2 | 18 | 12 | + | 43 | 2B | D | 68 | 44 |] | 93 | 5D |
| DC3 | 19 | 13 | , | 44 | 2C | E | 69 | 45 | ^ | 94 | 5E |
| DC4 | 20 | 14 | - | 45 | 2D | F | 70 | 46 | _ | 95 | 5F |
| NAK | 21 | 15 | . | 46 | 2E | G | 71 | 47 | ` | 96 | 60 |
| SYN | 22 | 16 | / | 47 | 2F | H | 72 | 48 | a | 97 | 61 |
| ETB | 23 | 17 | 0 | 48 | 30 | I | 73 | 49 | b | 98 | 62 |
| CAN | 24 | 18 | 1 | 49 | 31 | J | 74 | 4A | c | 99 | 63 |

| Char | Dec | Hex | Char | Dec | Hex | Char | Dec | Hex | Char | Dec | Hex |
|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| d | 100 | 64 | k | 107 | 6B | r | 114 | 72 | y | 121 | 79 |
| e | 101 | 65 | l | 108 | 6C | s | 115 | 73 | z | 122 | 7A |
| f | 102 | 66 | m | 109 | 6D | t | 116 | 74 | { | 123 | 7B |
| g | 103 | 67 | n | 110 | 6E | u | 117 | 75 | | 124 | 7C |
| h | 104 | 68 | o | 111 | 6F | v | 118 | 76 | } | 125 | 7D |
| i | 105 | 69 | p | 112 | 70 | w | 119 | 77 | ~ | 126 | 7E |
| j | 106 | 6A | q | 113 | 71 | x | 120 | 78 | | 127 | 7F |

B *Contact Information*

Printronix 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 samples that clearly show the problem (faxing or emailing of these samples may be required)

| | |
|--|--|
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