# THARO Programming Language

## Command Reference

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# Command / Data Types

The THARO Programming Language (TPL) is a high-level printer control language using simple ASCII text. It is ideally suited for label printing.

Some notable features are:

> ➢ Data fields are stored and NOT processed in memory until the printing instruction is received.
> ➢ Images, Fonts, and Label Formats can be downloaded and stored internally, and can be recalled and printed at a later date.

There are three basic types of commands: Setup, Control, and Label Formatting Commands. These can be identified by position in the command sequence or by a prefix.

| Type | Prefix | Position | |
|------|--------|----------|---|
| Setup | ^ | Above the ^Q Separator | |
| Control | ~ | Above the ^Q Separator | |
| Label Format | (none) | Below the ^Q Separator | |

data {
 :  } Control/Setup Commands
 :
 ^Q
 :  } Label format Commands
 :
 @
}

*NOTE*: **(H-400/H-600 Series ONLY)** Some of the commands are labeled as for the H-400 and H-600 Series printers ONLY. The H-400 Series includes the H-427 and H-436. The H-600 Series includes the H-626 and H-634. These commands will not function on other printers.

*NOTE*: Arithmetic commands are not allowed in the V Series printers.

*NOTE*: When downloading a database to the Printer memory, there is a 98 character limit in each database field.

# Command Syntax

> ➢ No special characters are needed to create a label format. Any text editor may be used to enter commands.

> ➢ Where <CR> is shown, it may be a CR, LF, or CR/LF.

> ➢ For readability, parameters may be aligned with SPACES, TABS, or additional ZEROS in numeric parameters.

> ➢ Parameters are separated with a comma (,) or semicolon (;).

> ➢ Comment lines can be included by coding a semicolon (;) in the first position.

> ➢ Optional parameters are shown in command definitions within brackets [].

# Setup Commands

Setup commands contain the printer control instructions, label configuration instructions, and downloading instructions

## ^Ax – Printing Mode

The ^Ax command determines if the printer is Direct Thermal or Thermal Transfer. This command enables or disables the Ribbon Out sensor.

**Parameters**:  Set x = D for Direct Thermal Mode (disables Ribbon Out sensor) or
Set x = T for Thermal Transfer Mode (enables Ribbon Out sensor).

**Command Format / Usage**:

*^AT <CR>*    Puts the printer into Thermal Transfer Mode and enables the Ribbon Out sensor

## ^Bx – Backward Length

The ^Bx command immediately moves the label stock backwards.

**Parameters**:  x = The length to move the label stock backwards in millimeters.

**Command Format / Usage**:

*^B10 <CR>*    Moves the label back 10mm

*NOTE***:** This command will generally not be used. It does not set a presentation position.

## ^Cx – Batch Size

The ^Cx command specifies the number of copies of the same label (no incrementing). Labels printed are expected to be identical in every way.

**Parameters**:  x = A positive numeric value with a maximum of 32767.

**Command Format / Usage**:

*^C5 <CR>*    Prints 5 copies per batch

*NOTE*: It is easy to confuse Number of Batches with Batch Size. When using variable data, such as an incremented field, the ^Px command (Number of Batches) will increment the field, while the ^Cx (Batch Size) command will print multiple identical labels without incrementing the field.

## ^D+dddd.hh – 4-digit Date Offset

The ^D+dddd.hh command is used to offset the date, for example, to place an expiration date on a label.

**Parameters**:   dddd = A 4 digit value for day shift
                   hh = A 2 digit value for hour shift from 0 to 23

**Command Format / Usage**:

*^D+1460.00 <CR>*    Adds 1460 days (4 years) to the current date for use as an expiration date

## ^D+V00.V01 – Variable Date Offset

The ^D+V00.V01 command is used to offset the date, for example, to place a variable expiration date on a label.

**Parameters**:   V00 = A numeric value containing the number of days to shift
                   V01 = A numeric value containing the number of hours to shift

**Command Format / Usage**:

*^D+V00.V01 <CR>*   If V00 = 030 and V01 = 00 then, this command would offset the date by 30 days.

*NOTE***: See ^T+hhh.mm on page 14 for Time commands**

## ^Dx – Number of Labels per Cut

The ^Dx command specifies the number of labels to print between cuts.

**Parameters**:   Set x = 0 to disable cutting or
                   x = A positive numeric value with a maximum of 32767.

**Command Format / Usage**:

*^D2 <CR>*    Cuts every other label.

*NOTE:* **Do not confuse this Control Command with the ^D used for Date.**

## ^Ex – Stop Position Setting

The ^Ex command specifies the Stop Position Setting in millimeters to feed the label to the proper point for peel operation or tear off.

**Parameters**:  x = 0.0 -  40.0.

**Command Format / Usage**:

*^E10.0 <CR>* Advances the label 10mm for tear off.

| m1 | JUL |
|---|---|

## ^FDEFAULT – Default Label Format in Memory

The ^FDEFAULT command, when used with ^Fname command (page 9) sets a format named DEFAULT as the label format that will be ready to print when the printer is powered on and the keyboard is connected.

**Parameters**:   *None*

**Command Format / Usage**:

^FDEFAULT  Sends a label format to the printer memory named DEFAULT.  When the printer is powered on, the label format named DEFAULT will be loaded into memory and be available for printing.  The keyboard must be connected to the printer when the printer is powered on.

## ^Fname <CR> data – Download Label Format

The ^Fname <CR> data command is used to download a label format into FLASH memory. After the download is completed, the printer will beep once.

**Parameters**:   name = The name of the format.
            data = The formatting commands for the label to be downloaded.

**Command Format / Usage**:



Specifies TEST as the name of the format to be downloaded.
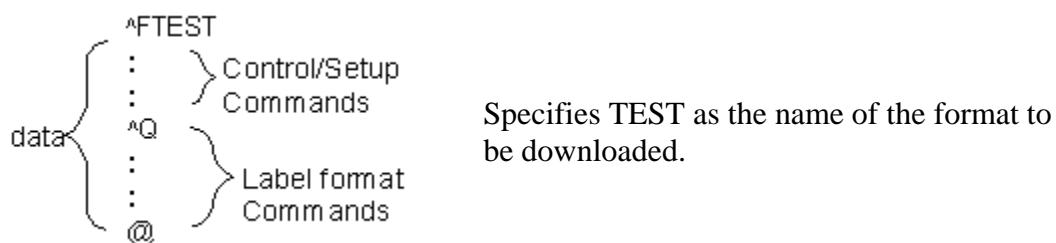
*NOTE:* The format name can be up to 19 characters, and must consist of A-Z, a-z, 0-9, and punctuation.

## ^Gn – Sensor Mode

The ^Gn command sets the mode for the printer sensor.

**Parameters**:  n = a positive number which determines the specific sensor mode.

        0 = Reflect

        1 = See through

        2 = Auto mode

**Command Format / Usage**:

*^G1*    Sets the printer sensor to see through mode.

## ^Hx – Print Darkness

The ^Hx command is used to specify the heat setting of the printer. This determines how dark the label will print.

**Parameters**:  x = A positive numeric value with a maximum of 19.

**Command Format / Usage**:

*^H6 <CR>*    Sets the Print Darkness to 6.

*NOTE:* Generally, the lower the value of x, the longer the print head will last.

## ^Kname – Recall Label Format

The ^Kname command is used to recall a label format from the printer's FLASH memory.

**Parameters**:   name = The name of the label to be recalled.

**Command Format / Usage**:

                              Specifies TEST as the name of the format to be recalled, and prints 2 copies.

```
^KTEST
  :
  :      } data
  @
  :
  :      } Control/Setup command
 ~P2
```

If the format to be printed contains variable fields, simply place the data between the ^Fname command and the @ command.

*Example:*

| Example A | Description | Result |
|---|---|---|
| ^KTEST<br>0123<br>Book<br>01234540124<br>12.59<br>@<br>~P1 | **Recall label format without changing the label format**<br>**C0 = 0123  V00=Book**<br>**V01= 01234540124**<br>**V02= 12.59**<br><br>**Print the last label** | Serial #: 0123<br>Product #: Book<br>Price   : $12.59<br><br>JUN/20/2003::16:11:27<br><br>0  12345 40124  4 |

## ^Lx,y[,z±] – Label Length

The ^Lx,y(,z±) command is used to specify the length of the label. (length, gap length, [plain paper feed length])

**Parameters**:  For *Die Cut Label* –
        x = Label length in millimeters
        y = Gap length in millimeters
     For *Plain Paper* –
        x = Label length in millimeters
        y = 0 (constant)
        z = Feed paper length in millimeters
     For *Black Mark Label* –
        x = Label length in millimeters
        y = Black mark width in millimeters
        z = Black line to top of form position
            z+ = When the position is outside the black mark
            z- = When the position is within the black mark
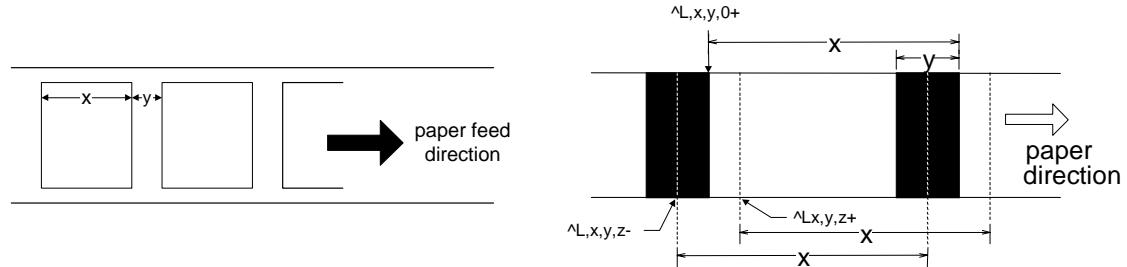


**Command Format / Usage**:

*L25,3 <CR>*   Sets the length of the label to 25mm and the gap length to 3mm.

## ^Mx – Forward Length

The ^Mx command immediately moves the label stock forward.

**Parameters**:  x = The length to move the label stock forward in millimeters.

**Command Format / Usage**:

*^M10 <CR>*   Moves the label ahead 10mm

*NOTE***:** This command will generally not be used. It does not set a presentation position.

## ^OCn – Applicator Mode (H-426 and H-434 ONLY)

The ^OCn command enables Applicator Mode by moving the stripper sensor signal to the cutter port

**Parameters:**  Set n = 1 to enable Applicator Mode, or
Set n = 0 to disable Applicator Mode

**Command Format / Usage:**

*^OC1<CR>*    Enable Applicator Mode in the printer.

## ^Ox – Stripper Sensor/Applicator

The ^Ox command is used to enable or disable the Stripper Sensor or Applicator

**Parameters**:  Set x = 0 to disable the Stripper Sensor and Applicator
Set x = 1 to enable the Stripper Sensor.
Set x = 2 to enable the Applicator
**Command Format / Usage**:

*^O0 <CR>*    Disables the Stripper Sensor
*^O1 <CR>*    Enables the Stripper Sensor
*^O2 <CR>*    Enables Applicator Mode **(H-400/H-600 Series ONLY)**

*Note: When using the H-600 Series printer, be sure to look at the ^XSET,REWINDER command on page 17 to enable the rewind also.*

## ^Px – Number of Batches

The ^Px command is used to specify the number of batches to be printed. (incremented)

**Parameters**:  x = A positive numeric value with a maximum of 32767.

**Command Format / Usage**:

*^P5 <CR>*    Prints 5 batches

*NOTE*: It is easy to confuse Number of Batches with Batch Size. When using variable data, such as an incremented field, the ^Px command (Number of Batches) will increment the field, while the ^Cx (Batch Size) command will print multiple identical labels without incrementing the field.

Example:    ^P10    This will set Batches to 10 and Batch Size to 2, which will increment
^C2    the label 10 times, and print 2 copies of each label.

## ^PAn – Auto Print

The ^PAn command specifies the number of batches to print, then immediately starts printing the labels upon receiving all counters and variables.

**Parameters**:   n = 1 - 30000.

**Command Format / Usage**:

*^PA5 <CR>*   Immediately prints 5 batches

## ^PI – Auto Print Indefinitely

The ^PI command is used to immediately start printing upon receiving all counters and variables, and continue printing indefinitely, until the printer is turned off, or the cancel button is pressed.

**Parameters**:   No Parameters.

**Command Format / Usage:**

*^PI <CR>*      Starts printing indefinitely

## ^Q – Begin Label Formatting

Indicates the start of the label formatting commands.

**Parameters**:    'M' will cause the printer to print a mirror image of the label.
                'I' will cause the printer to print an inverse image of the label.
                      (white on black instead of black on white)
**Command Format / Usage**:

*^Q <CR> Prints the label normally*
*^QM <CR> Prints a mirror image of the label*
*^QI<CR> Prints an inverse image of the label.*

## ^Rx – Row Column Adjustment

The ^Rx command is used to set the left margin (in dots).

**Parameters**:   x = A positive numeric value with a maximum of 399.

**Command Format / Usage**:

*^R20 <CR>*   Sets the left margin 20 dots from the left edge.

## ^Sx – Speed Setting

The ^Sx command is used to specify the print speed in inches per second.

**Parameters**:   x = 2-7 for the H-427
                     2-6 for the H-426, H-436, H-626, V-426
                     2-4 for the H-434, H-634, V-424 Plus and V-434 Plus
                     2-3 for the V-433

**Command Format / Usage**:

*^S3 <CR>*      Sets the print speed to 3

## ^T+hhh.mm – Time Offset

Similar to the ^D+hhh.mm command, the ^T+hhh.mm command is used to offset the current time by a specified value.

**Parameters**:   hhh = a 3 digit value for hours.
                 mm = a 2 digit value for minutes from 00 to 59.

**Command Format / Usage**:

*^T+012.00 <CR>*      Adds 12 hours to the current time.

*NOTE***: See ^D+V00.V01 on page 8 for the Date offset command**

## ^XGET,CONFIG – Returns Printer Configuration

The ^GET,CONFIG command will return  printer configuration data using Windows HyperTerminal and serial communications.  This is similar to a printer self test label.

**Parameters**:  None

**Command Format / Usage**:
Send this command to the printer via bidirectional communication such as the serial port through Windows HyperTerminal.  The printer will return the configuration back to HyperTerminal.

## ^XGET,TPHRESISTANCE – Checks for bad printhead dots

The ^XGET,TPHRESISTANCE command checks the resistance of each dot on the printhead and returns the results back to the PC.

**Parameters**:  None

**Command Format / Usage**:

Send this command to the printer via bidirectional communication such as the serial port through Windows HyperTerminal.  Measure TPH Dot will be displayed on the LCD panel along with a number counting up as the printhead is checked.  The printer will return the results back to the PC as shown in the image below.
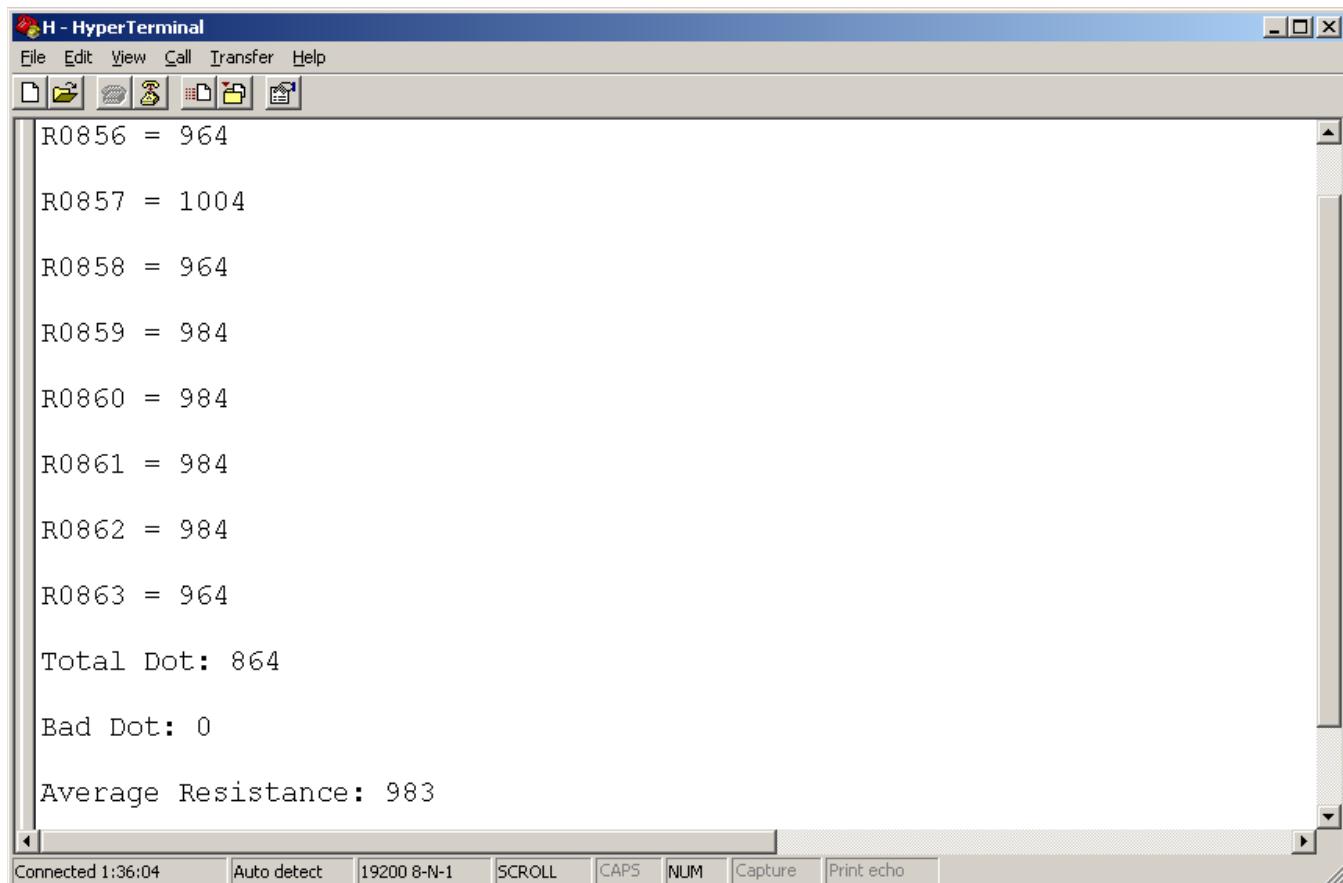


```
R0856 = 964

R0857 = 1004

R0858 = 964

R0859 = 984

R0860 = 984

R0861 = 984

R0862 = 984

R0863 = 964

Total Dot: 864

Bad Dot: 0

Average Resistance: 983
```

# ^Wxx – Label Width Setting

The ^Wxx command specifies the width of the label to be printed.

**Parameters**:   x = The width of the label in millimeters.

**Command Format / Usage**:

*^W100 <CR>* Sets the label width to 100mm

# ^XSET,BACKFEED,n – Set Backfeed

The ^XSET,BACKFEED,n command sets the distance to backfeed the label.

**Parameters**:   n = the distance to backfeed

## ^XSET,BUZZER,n – Set Buzzer

The ^XSET,BUZZER,n command is used to turn the printer's buzzer on or off.

**Parameters**:   Set n = 0 for Off or
            Set n = 1 for On.

**Command Format / Usage**:

*^XSET,BUZZER,1 <CR>*     Turns on the printer's buzzer

## ^XSET,CODEPAGE,p1 – Set Codepage

The ^XSET,CODEPAGE,pn command is used to determine which codepage to use. (850 or 852)

**Parameters**   Set p1 = 0 for codepage 850(Multilingual) or
            Set p1 = 1 for codepage 852(Slavic).

**Command Format / Usage**:

*^XSET,CODEPAGE,p0 <CR>*        Sets the Codepage to 850

## ^XSETCUT,MODE,n

*The ^XSETCUT,MODE,n command is reserved for future use.*

## ^XSET,DOUBLECUT,offset – Doublecut

The ^XSET,DOUBLECUT,offset command allows the printer to cut twice per label

**Parameters:**   Set offset = 0 to disable doublecut
            Set offset to mm to cut. (This must be less than the length of the label).

**Command Format / Usage:**

*^XSET,DOUBLECUT,10<CR>*        Cuts each label at 10mm from the leading edge, and again
                         at the gap.

## ^XSET,INVISIBLE,Vnn – Hide Field

The ^XSET,INVISIBLE,Vnn command allows for non-printed variables to be used for calculations and string concatenations.

**Parameters**:   Vnn = the field to be hidden

**Command Format / Usage**:

*^XSET,INVISIBLE,V10 <CR>*          Makes the Variable: V10 invisible

## ^XSET,KEYBOARD,p1 – Set Keyboard

The ^XSET,KEYBOARD,p1 command specifies the language for the keyboard.

**Parameters**:   Set p1 = 0 for US or
Set p1 = 1 for UK or
Set p1 = 2 for French or
Set p1 = 3 for German or
Set p1 = 4 for Spanish or
Set p1 = 5 for Italian or
Set p1 = 6 for Finnish or
Set p1 = 7 for Dutch or
Set p1 = 8 for Belgian

**Command Format / Usage**:

*^XSET,KEYBOARD,0 <CR>*          Sets the keyboard locale to the US

## ^XSET,LANGUAGE,n – Set Printer Language

The ^XSET,LANGUAGE,n command sets the language for the RTC and the LCD

**Parameters:**   Set n = 0 for English or
Set n = 1 for German or
Set n = 2 for French or
Set n = 3 for Spanish or
Set n = 4 for Italian or
Set n = 5 for Simplified Chinese or
Set n = 6 for Traditional Chinese or
Set n = 7 for Turkish

**Command Format / Usage:**

*^XSET,LANGUAGE,0<CR>*          Sets the printer's language to English

## ^XSET,MEMORY,n – Memory Being Used (H-400/H-600 Series ONLY)

The ^XSET,MEMORY,n command instructs the printer to use the internal FLASH memory or a Compact FLASH card in the Compact FLASH slot.

**Parameter:** Set n = 0 to use the internal FLASH memory
Set n = 1 to use the Compact FLASH card

**Command Format / Usage:**

*^XSET,MEMORY,0*  Printer will use the FLASH memory in the printer.
*^XSET,MEMORY,1*  Printer will use the Compact FLASH card

## ^XSET,MULTIJOB,0 – Multi-Job/Single-Job

The ^XSET,MULTIJOB,0 command enables Single-Job printing or Multi-Job printing.

**Parameters:** 0 = Single Job- Only one job in the printer at a time
1 = Multi Job- More than one job in the printer at a time

**Command Format / Usage:**

*^XSET,MULTIJOB,0<CR>* Turns on Single-Job printing

## ^XSET,PASSWORD,p1,p2 – Password Protect Printer

The ^XSET,PASSWORD,p1,p2 command is used to password-protect the front panel of the printer.

**Parameters:** Set p1 = 1 to enable the password
Set p1 = 0 to disable the password
Set p2 = 4 digit password.

**Command Format / Usage:**

*^XSET,PASSWORD,1,1234<CR>* Enables the password: 1234

## ^XSET,REWINDER,n – H-600 Rewind Status

The ^XSET,REWINDER,n command is used to turn the H-600 rewind on or off.

**Parameters:** Set n = 0 to disable the rewind
Set n = 1 to enable the rewind

**Command Format / Usage**

*^XSET,REWINDER,0 <CR>* Disables the rewind
*^XSET,REWINDER,1 <CR>* Enables the rewind

## ^XSET,SLASHZERO,n – Slashed Zero

The **^XSET,SLASHZERO,n** command allows the printer to print a slashed zero. This applies to internal Triumvirate (CPI) fonts only.

**Parameters:**  Set n = 1 for slashed zero
Set n = 0 for no slash in the zeros

**Command Format / Usage:**

*^XSET,SLASHZERO,1<CR>*          Turns on Slashed Zeros

## ^XSET,SMARTBACK,n – Smart Backfeed

The ^XSET,SMARTBACK,n command enables smart backfeed in the printer. This prints the first portion of the second label so the first label can be presented, and the second label can finish printing without backfeeding.

**Parameters:**  Set n = 1 to enable, or
Set n = 0 to disable.

**Command Format / Usage:**

*^XSET,SMARTBACK,1<CR>*          Turns on Smart Backfeed

## ^XSET,TOPOFFORM,n – Top Of Form

The ^XSET,TOPOFFORM,n command enables or disables the top of form feature in the printer. This feature will tell the printer to either feed a blank label (ON) or immediately start to print without first feeding a blank label (OFF) upon power up or after opening and closing the print head.  Default is ON.

**Parameters:**  Set n = 0 top of form OFF
Set n = 1 top of form ON

**Command Format / Usage:**
*^XSET,TOPOFFORM,0<CR>*          Turns off the Top Of Form feature

## ^XSET,UNPROMPT,Vnn – Suppress prompt

The ^XSET,UNPROMPT,Vnn command hides the prompt for a specified variable field.

**Parameters**:  Vnn = The specified field

**Command Format / Usage**:

*^XSET,UNPROMPT,V10 <CR>*      Suppress' the prompt for Variable field: V10

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## ^XSET,USBETHERNET,n – USB/Ethernet Port Switch

The ^XSET,USBETHERNET,n command sets the port to use either USB or Ethernet. The Ethernet module and USB port share the same connection route.  If the USB port is set to active then the Ethernet module will be deactivated and visa versa.

**Parameters**:   n = 0 Sets the port to use USB
                  n = 1 Sets the port to use the Ethernet card.

**Command Format / Usage**:

*^XSET,USBETHERNET,1*     Enables the Ethernet module and disables the USB port.

*Note: An Ethernet card must be connected to use this command*

---

## ^XSETRTC,ISOWEEKNUM,n – ISO Week of the Year

The ^XSETRTC,ISOWEEKNUM,n command turns on the ISO week of the year option.

**Parameters:**   Set n = 1 for on or
                  Set n = 0 for off.

**Command Format / Usage:**

*^XSETRTC,ISOWEEKNUM,1<CR>*      Turns on the Iso Week of the Year option.

---

## ^XSETRTC,LANGUAGE,n – Sets Language for Real Time Clock

The ^XSETRTC,LANGUAGE,n command sets the language of the Real Time Clock.

**Parameters:**   Set n = 0 for English
                  Set n = 1 for German
                  Set n = 2 for French
                  Set n = 3 for Spanish
                  Set n = 4 for Italian.

**Command Format / Usage:**

*^XSETRTC,LANGUAGE,0<CR>*      Sets the RTC to English.

## ^Yp1,p2,p3,p4 – Serial Port Settings

The ^Yp1,p2,p3,p4 command is used to specify the Serial port settings on the printer when there is no front panel (V-series).

**Parameters**:  Set p1 = 48 for 4800bps or        (Baud Rate)
                     Set p1 = 96 for 9600bps or
                     Set p1 = 19 for 19200bps or
                     Set p1 = 38 for 38400bps or
                     Set p1 = 57 for 57600bps or
                     Set p2 = N for No Parity or        (Parity)
                     Set p2 = O for Odd Parity or
                     Set p2 = E for Even Parity
                     Set p3 = 7 or 8        (Data Bits)
                     Set p4 = 1 or 2        (Stop Bits)

**Command Format / Usage**:

*^Y96,N,8,1 <CR>*     Sets the serial port to 9600bps, No Parity, 8 Data Bits, and 1 Stop Bit

# Control Commands

Control commands cause the printer to take immediate action, such as clearing memory, feeding a label.

## ~B – Returns Firmware Version to the PC

The ~B command is used to return the model number and firmware version of the printer to the PC.  This can be done using the serial port and Windows Hyperterminal.

**Parameters:**  None

**Command Format / Usage**

With the printer connected through the serial cable, open the Windows HyperTerminal and send the ~B command.  The printer will return the model number and firmware version of the printer back to HyperTerminal.

## ~Dm,d,y,h,i,s – Set RTC Date/Time

The ~Dm,d,y,h,i,s command sets the Date and Time of the printer. A maximum of 20 different formats are supported on each label.

**Parameters**:

| | | | |
|------|------------------|---|--------------------------------|
| m    | month (01 to 12) | y | Year (last two digits of year) |
| mn1  | month (1 to 12)  | h | Hour (00 to 23)                |
| d    | Date (01 to 31)  | i | Minutes (00 to 59)             |
| dd1  | Date (1 to 31)   | s | Seconds (00 to 59)             |

**Command Format / Usage**:

*~D01,11,05,11,00,00 <CR>*  Sets the printer's real-time clock to 01/11/05 11:00:00AM

## ~Ea,name,size – Graphic Download to Memory

The ~Ea,name,size command is used to download a monochrome image into FLASH memory. The printer will beep once after the download is completed.

**Parameters**:  Set a = P for PCX file or B for BMP file.
name = unique name of image (up to 20 characters)
size = Size of image in bytes (maximum 512Kb)

**Command Format / Usage**:

| | |
|---|---|
| *~EB,TEST,524288 <CR>* | 1. Downloads a 512Kb graphic named TEST.BMP to the memory. |
| | 2. The image must then be downloaded to the printer. It can be |
| ^AT | copied through DOS for example "copy test.bmp lpt1:/b" |
| ^L25,3 | 3. Copy the formatting commands to the printer to call the image. |
| ^W84 | |
| ^R0 | |
| ^H2 | |
| ^S2 | |
| **^E.0** | |
| ~R106 | |
| ^C1 | |
| ^Q | |
| Y386,80,TEST | |
| @ | |

---

## ~G – Graphic Mode

The ~G command places the printer in the image receiving mode.

**Parameters**:  *None*

**Command Format / Usage**:

*~G <CR>*      Puts the printer in image receiving mode.

*NOTE*: Generally, the ~G command is used with Windows Drivers where entire image is a bitmap

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## ~H,TTF,filename,filesize<CR>data – Download TrueType Font (H-400/H-600 Series ONLY)

The ~H,TTF,filename,filesize,<CR>data command is used to download a TrueType font file to the printer memory.

**Parameters:**  filename = font name
              filesize = size of fonts in bytes
              data = TTF file

**Command Format / Usage**

~H,TTF,ZARIAL,262144<CR>font file data          Downloads the Arial font file named Z,
measuring 262144bytes in size to the printer

## ~Jn – Bitmapped Font Download

The ~Jn command is used to download a bitmapped font to the printer FLASH memory. The printer will beep once after the download is completed. The printer supports up to 26 downloaded fonts named with letters from A to Z.

**Parameters**:   n = a character from A to Z to specify a font.

**Command Format / Usage**:

*~JK <CR>*      Specifies the next font to be downloaded will be named *K*

To download the font to the printer, send the ~Jn command to the printer. Then, copy the font to the printer.

*Example:*      C:>COPY CON LPT1:
                ~JK
                ^Z      (Ctrl Z)
                C:>COPY HVR0OE1A.SFP LPT1:/B

*NOTE*: The font to be downloaded to the printer must be a font compatible to an HP Soft Font, like that used in an HP Laser Jet II Plus (PCL-4). Also, note that the font identifier must be unique. If a font is downloaded, and assigned a letter that is already in use, the printer will show "REPEAT FILE NAME", and the download will not be accepted.

## ~Kn – Acknowledgement from RS-232

The ~Kn command is used to receive acknowledgement from the printer via Serial communications. When the command is enabled, A "Y"(0D0A) is returned after each label is printed. This is used to verify that each label is successfully printed.

**Parameters**:   Set n = 0 to disable acknowledgement, or
                  Set n = 1 to enable acknowledgement.

**Command Format / Usage**:

*~K1 <CR>*      Enables Serial Acknowledgement

## ~L,DBASE,x,y – Download DbaseIII File to Printer

The ~L,DBASE,x,y command is used to download a new dbaseIII file to the printer.

**Parameters**:   x = The name of the database to Download
                  y = The database size in bytes.

**Command Format / Usage**:

*~L,DBASE,new,670 <CR>*        Downloads a new database file named new with a size of 670 bytes.

---

## ~L,SERIAL,name,data – Download Serial Data

The ~L,SERIAL,name,data command is used to download a new serial file to the printer.

**Parameters**:   name = The name of the Serial File to Download
data = The starting value of the serial file to be downloaded.

**Command Format / Usage**:

*~L,SERIAL,new,12324567895 <CR>*    Creates a new serial file named new with a starting value of 1234567895

---

## ~MDEL – Clear The Printer Memory

The ~MDEL command clears everything in the printer's FLASH and DRAM memory.

**Parameters**:  *None*

**Command Format / Usage**:

*~MDEL <CR>*     Clears the printer's memory

*NOTE:* **Use caution with this command as ALL memory is cleared.**

---

## ~MDEL* – Clears All Memory Including Asian and TrueType fonts

The ~MDEL* command clears everything in the printer's FLASH and DRAM memory.

**Parameters**:  *None*

**Command Format / Usage**:

*~MDEL* <CR>*     Clears the printer's memory

*NOTE:* **Use caution with this command as ALL memory is cleared.**

## ~MDELx,name – Clear Memory Item

The ~MDELx,name command is used to delete individual files

**Parameters**:

Set x = A for Asian font
Set x = C for TrueType Font file
Set x = D for database
Set x = E for Bitmapped font file type.
Set x = F for label form file type
Set x = G for graphic file
Set x = S for Serial file
Set x = T for text file

name = The name of the file to be deleted.
Or when x=C  ID.  Where  ID is the TrueType font TTF ID (A~Z)

**Command Format / Usage**:

*~MDELG,Bus <CR>* Deletes a graphic named Bus from the printer's memory

## ~MDIR – Directory of Memory

The ~MDIR command sends a listing of the memory contents to the PC via the Serial interface.

**Parameters**: *None*

**Command Format / Usage**:

~MDIR <CR>      Returns directory and file size information of FLASH memory to the PC.

## ~MGETF,p1 – Format Upload

The ~MGETF,p1 command is used to upload a label format from the printer to the PC, via the serial interface. This will not affect the original file in the printer memory.

**Parameters**:  p1 = filename to be uploaded.

**Command Format / Usage**:

*~MGETF,TEST <CR>*      Uploads a file called TEST from the printer to the PC

## ~MGETS,name – Return Serial File Data

The ~MGETS,name command is used to return information about the serial file to the PC

**Parameters**:   name = The name of the serial file stored on the printer.

**Command Format / Usage**:
*~MGETS,new <CR>*            Returns the contents of the serial file "new" on the PC screen.

*NOTE***: For serial interface only**

## ~MGETT,name – Read File Saved on Printer Memory

The ~MGETT,name command is used to return a text file that is in the printer memory back to the PC through Windows HyperTerminal.

**Parameters**:   name = The name of the file stored on the printer.

**Command Format / Usage**:
*~MGETT,new <CR>*            Returns the contents of the file "new" that was sent to the printer using the ~MSETT command to the PC screen.

*NOTE***: For serial interface only through HyperTerminal.**

## ~MSETT,name<CR>nnnnnnnn<data> – Writes a .txt File to the Printer

The ~MSETT,name<CR>nnnnnnnn<data> command is used to send a text file to the printer memory.

**Parameters**:   name = The name of the saved text file.
                  nnnnnnnn = data size in bytes (maximum 8 digits)
                  data = data to be saved

**Command Format / Usage**:
*~MSETT,new<CR>00000015test format*            Saves a text file named new that has a file size of 15 bytes and contains the data "test format" to the flash memory of the printer.

*NOTE***: For serial interface only**

## ~Px – Print Last Label

The ~Px command repeatedly prints the indicated number of labels using the last label format. An incrementing/decrementing serialized number (^C0) will continue where it left off last.

**Parameters**:   x = a positive numeric value from 1 to 32767.

**Command Format / Usage**:

*~P5 <CR>*      Prints 5 batches starting from the last label format

## ~Q±n – Row Offset Adjustment

The ~Q±n command is used to set the vertical offset of the label in dots. This is used if the format is printing too high or too low on the label.

**Parameters**:   n = a numeric value from –100 to 100

**Command Format / Usage**:

*~Q-10 <CR>*  Sets the vertical offset 10 dots higher on the label than the default.

## ~Rx – Rotate Printing

The ~Rx command is used to rotate the label format 180 degrees.

**Parameters**:   x = label width in millimeters. 1 to 104 for the H-4xx printers.
                                        1 to 168 for the H-6xx printers.

**Command Format / Usage**:

*~R100 <CR>*          Rotates the format 180 degrees with a label width of 100mm

*NOTE*: To return to the original print direction, set the x value greater than 104 or 168

*Example*:

| Example | Description | Result |
|---|---|---|
| **^L40,2**<br>**^W50**<br>**^S6**<br>**^H10**<br>**~R50**<br>**^Q**<br>**AC,35,11,1,1,1,0,ROTATE**<br>**BB,20,45,2,5,50,0,1,1234567** | **Label size is 40 mm(h) x 50 mm(w); 2 mm gap**<br><br><br>**Rotate the label format 180  for printing** |  |

| | | |
|---|---|---|
| @ | | |
| ~R105<br>^Q<br>AC,20,10,1,1,1,0,ROTATE<br>BB,20,45,2,5,50,0,1,1234567<br>@ | Disable the rotate function on a 4"<br>printer | ROTATE<br><br>1234  5670 |

## ~S,CANCEL – Cancel Command

The ~S,CANCEL command cancels the print job.  It is the same as if the user pressed the cancel button on the front panel of the printer.

**Parameters**:  *None*

**Command Format / Usage**:

~S,CANCEL <CR>    Cancels the print job in the printer.

## ~S,CHECK <CR> aa,nnnnn – Printer Status Check (H-400/H-600 Series ONLY)

The ~S,CHECK <CR> aa,nnnnn command retrieves the printer status.

**Parameters:**  aa = printer status information  00 = Ready
01 = Paper out
02 = Paper jam or missed gap
03 = Ribbon out
04 = Print head open
05 = Rewinder Full
06 = Memory is full
07 = Filename cannot be found
08 = Filename is Repeat
09 = Syntax error
20 = Pause
21 = In Setting Mode
22 = In Keyboard Mode
50 = Printer is printing
60 = Processing Data

nnnnn = number of remaining labels / 00000 - 32000

**Command Format /Usage**

*~S,CHECK<CR> 03,4401*    Return is ribbon out with 4401 labels left to print

## ~S,DUMP – Puts the Printer in Dump Mode

The ~S,DUMP command puts the printer in dump mode for troubleshooting purposes.

**Parameters**:  *None*

**Command Format / Usage**:

~S,DUMP <CR>      Puts the printer in dump mode.  Dump mode is a function of the printer in which the printer will print the commands sent to it in an ASCII text form.

*Note: Cycle the power on the printer to take the printer out of dump mode.*

## ~S,FEED – Form Feed

The ~S,FEED command feeds the label stock to the next gap.

**Parameters**:  *None*

**Command Format / Usage**:

~S,FEED <CR>      Feeds the label stock to the next gap.

## ~S,PAUSE – Pause

The ~S,PAUSE command is used to send an immediate pause to the printer.

**Parameters**:  *None*

**Command Format / Usage**:
*~S,PAUSE <CR>*      Pauses printing

## ~S,RESET – Reset

The ~S,RESET command is used to reset the printer.  It is an immediate command..

**Parameters**:  *None*

**Command Format / Usage**:

*~S,RESET <CR>*      Resets the printer

## ~S,SENSOR – Sets Sensor Mode

The ~S,SENSOR command is used to autosense the gap in the label stock.  It is an immediate command.  It is the same as doing an Auto Sensing on the front panel of the printer.

**Parameters**:  *None*

**Command Format / Usage**:

*~S,SENSOR*    Autosenses the gap in the label stock.

## ~S,UNPAUSE – Un-Pause

The ~S,UNPAUSE command is used to reverse the effect of the ~S,PAUSE command when printing via Serial.

**Parameters**:  *None*

**Command Format / Usage**:

*~S,UNPAUSE <CR>*  Un-Pauses printing

## ~T – Test Print Head

The ~T command immediately prints a pattern for the user to determine if the print head is damaged.

**Parameters**:  *None*

**Command Format / Usage**:

*~T <CR>*        Prints a print head test page

*Example*:

| Example | Result |
|---------|--------|
| ~T |  |
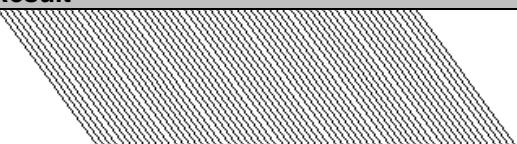
## ~V – Print Version Message

The ~V command prints the firmware version and feeds to the next label.

**Parameters**:  *None*

**Command Format / Usage**:

~V <CR>        Returns the firmware version

*Example*:

| Example | Result |
|---------|--------|
| ~V | # # # H-426 # # # |
|  | # # # VER. X.XX # # # |

## ~X7 – Print Database Information

The ~X7 command prints a test label displaying the database data stored in the printer's memory, as well as available memory in the printer.

**Parameters**:  *None*

**Command Format / Usage**:

*~X7 <CR>*      Prints number of Databases in memory and Free Memory Space in bytes.

## ~X8 – Print Serial Files Information

The ~X8 command prints a test label displaying the number and names of serial files stored in the printer's memory, as well as available memory in the printer.

**Parameters**:  *None*

**Command Format / Usage**:

*~X8 <CR>*      Prints number of Serial Files in memory and Free Memory Space in bytes.

## ~Xn – Available space & object names

The ~Xn command prints the available space in the printer memory in bytes and object names.

**Parameters**:  Set n = 1 Print label format names and available space in memory.
Set n = 2 Print graphic names and available space in memory.
Set n = 3 Print Bitmapped font names and available space in memory.
Set n = 4 Print the name of the label formats, graphics, fonts, and available space in memory.
Set n = 5 Print Asian font names and available space in memory
Set n = 6 Display the total printed length on the LCD

**Command Format / Usage**:

*~X1 <CR>*    Prints the format names in memory and available space in memory.

---

## ~Z – Reset Printer – (Non-immediate)

The ~Z command resets the printer. The command is non-immediate. The printer will finish any jobs that precede this command. Does not affect FLASH memory.

**Parameters**:  *None*

**Command Format / Usage**:

*~Z <CR>*    Resets the printer

# Label Formatting Commands

Label formatting commands define the field data, such as Line, Rectangle, Barcode, Text and images.

**Setting the X and Y values**:
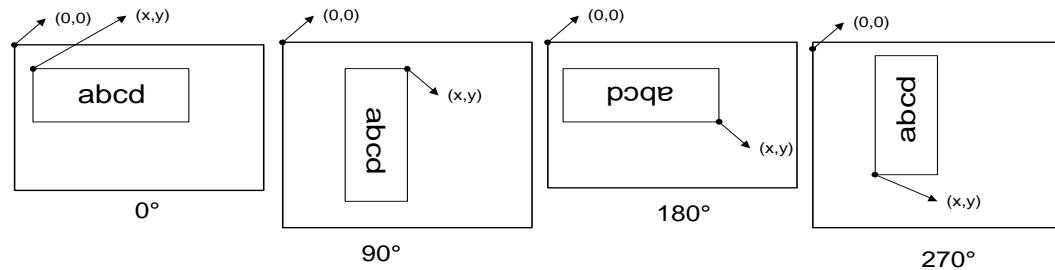


## At,x,y,x_mul,y_mul,gap,rotation,data  - Text (internal Fonts)

The At,x,y,x_mul,y_mul,gap,rotation,data command is used to print text using internal fonts.

**Parameters**:  t = an alpha character from A to L to specify a font. (see table)
x = Top Left Horizontal position of text (in dots)
y = Top Left Vertical position of text (in dots)
x_mul = Horizontally magnified up to 8 times as large
y_mul = Vertically magnified up to 8 times as large
gap = Additional Distance to add between characters (in dots)
rotation = Add 'I' to field orientation for the field to print inverse(white on black)
        0 = normal
        1 = rotated 90 degrees
        2 = rotated 180 degrees
        3 = rotated 270 degrees
data = A string up to 239 characters long, that can be a Constant, Date/Time information, a serial variable, or variable data

**Command Format / Usage**:

*AA,10,10,3,3,10,0,TEST <CR>*          Prints the word TEST starting at 10,10 and multiplying the font by a factor of 3, and an additional gap of 10

| Font | Points | Font Style | Font | Points | Font Style |
|------|--------|-----------|------|--------|-----------|
| 203DPI | | | 300DPI | | |
| A | 6 | CG Triumvirate | A | 4 | CG Triumvirate |
| B | 8 | CG Triumvirate | B | 5.3 | CG Triumvirate |
| C | 10 | CG Triumvirate | C | 6.7 | CG Triumvirate |
| D | 12 | CG Triumvirate | D | 8 | CG Triumvirate |
| E | 14 | CG Triumvirate | E | 9.3 | CG Triumvirate |
| F | 18 | CG Triumvirate | F | 12 | CG Triumvirate |
| G | 24 | CG Triumvirate | G | 16 | CG Triumvirate |
| H | 30 | CG Triumvirate | H | 20 | CG Triumvirate |
| I | 16x26 dots for US ASCII 8 bit | | I | 24 | CG Triumvirate |
| | | | J | 10.7x17.3 dots for US ASCII 8 bit | |
| K | | OCR-B | K | | OCR-B |
| L | | OCR-A | L | | OCR-A |
| | | | | | |

## ATt,x,y,w,h,g,r,r1,r2,data – TrueType Font (external) (H-400/H-600 Series ONLY)

The ATt,x,y,w,h,g,r[I],r1,r2,data command is used to print downloaded TrueType fonts.

**Parameters:** t = TrueType Font name (values are A through Z).
  x = Top Left Horizontal position of text (in dots)
  y = Top Left Vertical position of text (in dots)
  w = width (in dots) Accepted values:0 to 1800
  h = height (in dots) Accepted values:8 to 1800
  g = space of character (in dots) Accepted values:8 to 1800
  r = orientation/contrast
    Add 'I' to field orientation for the field to print inverse(white on black)
                0 = normal
                1 = rotated 90 degrees
                2 = rotated 180 degrees
                3 = rotated 270 degrees
  r1 = reserve function for future use  Default value is 0
  r2 = Use Windows-like font spacing (0=no 1=yes)
  data = A string up to 239 characters long, that can be a Constant, Date/Time
      information, a serial variable, or variable data

### Command Format / Usage:

*ATA,10,10,20,20,0,0,0,1,TEST <CR>*Prints the word TEST with a font that has been
                downloaded to the printer named A, a horizontal
                coordinate of 10, a vertical coordinate of 10, a width of 20
                dots and height of 20 dots, character space of 0, normal
                rotation using Windows-like font spacing.

## AT,x,y,w,h,g,r,r1,r2,data – TrueType Font (internal) (H-400/H-600 Series ONLY)

The AT,x,y,w,h,g,r[I],r1,r2,data command is used to print the internal TrueType font.

**Parameters:** x = Top Left Horizontal position of text (in dots)
y = Top Left Vertical position of text (in dots)
w = width (in dots) Accepted values:8 to 1800
h = height (in dots) Accepted values:8 to 1800
g = space of character (in dots) Accepted values:0 to 1800
r = orientation/contrast
  Add 'I' to field orientation for the field to print inverse(white on black)
        0 = normal
        1 = rotated 90 degrees
        2 = rotated 180 degrees
        3 = rotated 270 degrees
r1 = reserve function for future use  Default value is 0
r2 = Use Windows-like font spacing (0=no 1=yes)
data = A string up to 239 characters long, that can be a Constant, Date/Time
    information, a serial variable, or variable data

### Command Format / Usage:

*AT,10,10,20,20,0,0,0,1,TEST <CR>* Prints the word TEST with a horizontal coordinate of 10, a vertical coordinate of 10, a width of 20 dots and height of 20 dots, character space of 0, normal rotation. using Windows-like font spacing

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## Barcodes

Bt,x,y,narrow,wide,height,rotation,readable,[length]<CR>data – Barcode

The Bt,x,y,narrow,wide,height,rotation,readable,[len<CR>] data command is used to print standard barcodes.

**Parameters:**  t = Bar Code Type
x = Bottom Left Horizontal Position
y = Bottom Left Vertical Position
narrow = x dimension; a positive numeric value (in dots) with a maximum of 10
wide = width of barcode
height = height of barcode
Set rotation = 0 for 0, 1 for 90, 2 for 180, or 3 for 270 degrees.
readable = 0 for off, 1 for below left, 2 for above left, 3 for below center, 4 for above center, 5 for below right, 6 for above right.
data = bar code data

### Command Format / Usage:

*BA,41,41,2,4,102,0,0,1234567890 <CR>*    Prints a Code 39 Barcode

| t | Code | Sample | t | Code | Sample |
|---|------|--------|---|------|--------|
| A | Code 39 | CODE39 | N | I 2 of 5 | 4321 |
| A2 | Code 39 w/Check Digit | | N2 | I 2 of 5 with UPC A Check digit | |
| B | EAN 8 | 1234 5670 | O | Codabar | ABCD |
| C | EAN 8 – Add On 2 | 1234 5670 12 | P | Code 93 | CODE 93 |
| D | EAN 8 – Add On 5 | 1234 5670 12345 | Q | Code 128 (Auto) | |
| E | EAN 13 | 1 234567 890128 | Q2 | Code 128 (subset A/B/C) | |
| F | EAN 13 – Add On 2 | 1 234567 890128 12 | Q3 | Code 128 (Auto w/ len) | CODE 128 |
| G | EAN 13 – Add On 5 | 1 234567 890128 12345 | Q4 | Code 128 (subset A/B/C w/ len) | |
| H | UPC A | 1 23456 78901 | R | UCC 128 | (12) 34567890 |
| I | UPC A – Add On 2 | 1 23456 78901 2 12 | S | Postnet | |
| J | UPC A – Add On 5 | 1 23456 78901 2 12345 | T | DUN 14 ONLY 90 | |
| K | UPC E | 0 234567 3 | U | EAN 128 | EAN 128 |
| L | UPC E – Add On 2 | 0 234567 3 12 | V | RPS 128 | |
| M | UPC E – Add On 5 | 0 234567 3 12345 | W | China Post Code | |
| 50 | GS1 DataBar Omnidirectional | (01)01234567890128 | 51 | GS1 DataBar Truncated | (01) 01234567890128 |
| 52 | GS1 DataBar Stacked | (01)01234567890128 | 53 | GS1 DataBar Stacked Omnidirectional | (01)01234567890128 |
| 54 | GS1 DataBar Limited | (01)01234567890128 | 55 | GS1 DataBar Expanded | 0123456789012 |
| 56 | GS1 DataBar Expanded Stacked | 0123456789012 | | | |
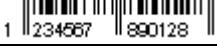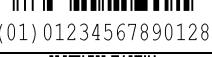
# PDF 417
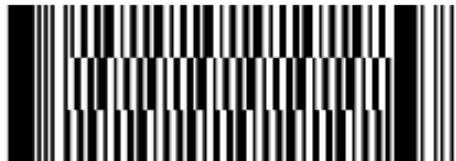


**PBx, y, w, h, r, c, ec, len [, rotation] <CR> data**

The PBx,y,w,h,r,c,ec,len[,rotation] command is used to print a PDF 417 barcode by specifying the height and width dimensions of the barcode.

**Parameters**:   x = Bottom Left Horizontal Position
                    y = Bottom Left Vertical Position
                    w = Width (x dimension) of the narrowest element (bar or space) in the barcode
                    h = Height (y dimension) of each barcode row in the symbol (Dots)
                    r = Number of barcode rows, from 3 to 90. Set r = 0 for All
                    c = Number of barcode columns, from 1 to 10. Set c = 0 for All
                    ec = Error correction level (from 0 to 8)
                    len = Number of encoded data bytes, including carriage returns, and line feed
                    rotation = 0 for 0 degrees, 1 for 90 degrees, 2 for 180 degrees, 3 for 270 degrees

**Command Format / Usage**:

*PB20,20,2,10,6,10,0,140,0 <CR> 12345678901234567890*        Prints PDF417 Barcode

**Px, y, w, hm, r, c, ec, len[, rotation] <CR> data**

The Px,y,w,hm,r,c,ec,len[,rotation] command is used to print a PDF 417 barcode by specifying the width and height multipliers.

**Parameters**:   x = Bottom Left Horizontal Position
                    y = Bottom Left Vertical Position
                    w = Width (x dimension) of the narrowest element (bar or space) in the barcode
                    hm = Height Multiplier (x dimension * hm = y dimension) of each row. (in dots)
                    r = Number of barcode rows, from 3 to 90. Set r = 0 for All
                    c = Number of barcode columns, from 1 to 10. Set c = 0 for All
                    ec = Error correction level (from 0 to 8)
                    len = Number of encoded data bytes, including carriage returns, and line feed
                    rotation = 0 for 0 degrees, 1 for 90 degrees, 2 for 180 degrees, 3 for 270 degrees

**Command Format / Usage**:

*P20,20,2,5,6,10,0,140,0 <CR> 12345678901234567890*          Prints PDF417 Barcode

**PCx,y,w,h,r,c,ec,max_len[,rotation] <CR> &\*data&\***

The PCx,y,w,h,r,c,ec,max_len[, rotation]  command is used to print a PDF417 barcode by specifying the maximum number of characters.

**Parameters**:   Same as the Px command except for:
          max_len = Max number of encoded data bytes

**Command Format / Usage**:

PC20,20,2,10,6,10,0,140,0 <CR>          Prints PDF417 barcode

---

## Maxicode
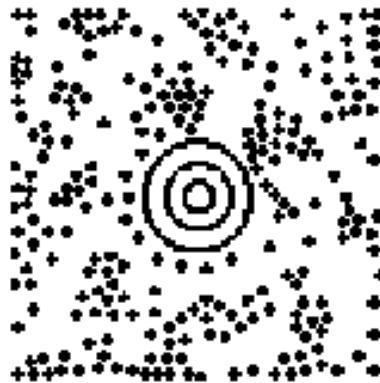


**M[B]x, y, sno, nos, mode, ccode, zip, class, rotation[, len] <CR> data**

The M[B]x,y,sno,nos,mode,ccode,zip,class,rotation<CR>data command is used to print 2-dimensional maxicode barcodes on the label.

**Parameters**:   B: Use with the len variable when data contains control characters
          x = Bottom Left Horizontal position of barcode
          y = Bottom Left Vertical position of barcode
          sno = Symbol Number, in set of symbols (from 1 to 8)
          nos = Number of symbols in set of symbols. (from 1 to 8 sets)
          mode = Mode of Maxicode (2, 3, 4 or 6)
          ccode = 3 digit country code
          zip = 9 digit Postal Code (padded zeros for 5 digit zip codes)
          class = service class, (3 digits numeric)
          rotation = 0 for 0 degrees, 1 for 90 degrees, 2 for 180 degrees, 3 for 270 degrees
          data = Alpha Numeric data up to 84 characters

**Command Format / Usage**:

*MB305,142,1,1,4,000,442129815,333,0 <CR> 1234567890*          Prints Maxicode Barcode

## Datamatrix
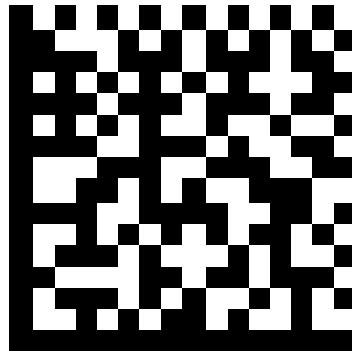


**X[R][B]x,y,narrow,rotateR,len <CR> data**

The X[R][B]x,y,narrow,rotateR,len command is used to print 2-dimensional Datamatrix barcodes on the label. *Note: R after rotate will create a rectangular Datamatrix*

**Parameters**:  R = Used only if rotation is needed
B = Used with R, only if the data contains control characters
x = Bottom Left Horizontal Position of the Barcode
y = Bottom Left Vertical Position of the Barcode
narrow = Barcode Multiplier (numeric value from 1 to 8)
rotate = 0 for 0 degrees, 1 for 90 degrees, 2 for 180 degrees, 3 for 270 degrees. If an R is used after the degree number, a rectangular Datamatrix will be created.
len = Length of the data
data = Barcode data (maximum of 500 characters)

### Command Format / Usage:

*XRB142,102,8,0,9 <CR> 123465790*Prints a Datamatrix Barcode

## GS1 Databar

Bt,x,y,narrow,wide,height,rotation,readable,[length] data<CR>

The Bt,x,y,narrow,wide,height,rotation,readable,[len<CR>] data command is used to print GS1 Databar barcodes.

**Parameters**:  t = Bar Code Type

               t=50 = GS1 Databar Omnidirectional
               t=51 = GS1 Databar Truncated
               t=52 = GS1 Databar Stacked
               t=53 = GS1 Databar Stacked Omnidirectional
               t=54 = GS1 Databar Limited
               t=55 = GS1 Databar Expanded
               t=56 = GS1 Databar Expanded Stacked
               x = Bottom Left Horizontal Position
               y = Bottom Left Vertical Position
               narrow = x dimension; a positive numeric value (in dots) with a maximum of 10
               wide = width of barcode
               height = height of barcode
               Set rotation = 0 for 0, 1 for 90, 2 for 180, or 3 for 270 degrees.
               readable = 0 for off, 1 for below left, 2 for above left, 3 for below center, 4 for
               above center, 5 for below right, 6 for above right.
               data = bar code data

**Command Format / Usage**:

*B50,41,41,2,4,102,0,0,1234567890 <CR>*   Creates a GS1 Databar Omnidirectional Barcode

## C#x,y,±value,z – Counter Link Serial File

The C#x,y,±value,z command is used to increment the value stored in a serial file and print it on the label.

**Parameters**:   x = Index number
                  y = Name of the serial file
                  value = number to increment/decrement by
                  Set z = B for a numeric value from 0 to 9 for Decimal, or
                  Set z = A for hexadecimal, or
                  Set z = C for Full Alpha Numeric (0~9 & A~Z)

**Command Format / Usage**:

*C#0,new,+1,B <CR>* Increments the "new" serial file by 1 in decimal

*Example*:

| | |
|---|---|
| ~L,SERIAL,new,1234567895 | *creates new serial file called new and stores 1234567895* |
| ^L60,0,0<br>^P5<br>^Q<br>C#0,new,+1,B<br>AG,50,137,1,1,0,0,^C0<br>@ | *Defines label size.*<br>*Sets number of copies to 5.*<br>*Starts label formatting.*<br>*Increments ^C0 ("new") by +1 in decimal*<br>*Prints the incremented number in font: "G"*<br>*Starts printing.* |

| PRINT RESULT |
|---|
| 1234567895 |
| 1234567896 |
| 1234567897 |
| 1234567898 |
| 1234567899 |

*NOTE*: Turning the printer off, or starting a new batch will NOT restart the counter. It will continue to increment where it left off.

## Cx,ys,±value,prompt – Serial Number Setting

The Cx,ys,±value,prompt command is used to determine the settings of a serial file.

**Parameters**:  x = a positive numeric value from 0 to 9 to specify a serial file
Set y = none for normal decimal sequence, or
Set y = A for hexadecimal sequence, or
Set y = C for alphanumeric sequence.
s = Start value of the serial variable
±value = incrementation value of serial file
prompt = used to specify a starting value at runtime.

**Command Format / Usage**:

*C0,000,+1,0 <CR>*    Increments by 1 in decimal, starting with 0.

---

## Daa|bb|dd – Define Date Layout

The Daa|bb|dd command sets the date format that will be printed with ^D command. A maximum of 20 different date formats are supported for a single label.

**Parameters**:  aa = Year: y2 for 2 digit, y4 for 4 digit
bb = Month
me = Month in 3 Character Format
mn = Month in numbers
dd = 2 digit day
jj = 3-digit Julian day of the year
jj2 = 2-digit year followed by the 3-digit Julian day of the year
wy1 = 1 digit week of year
wy2 = 2 digit week of year
w1 = 3 letter abbreviation for day of week
wn = Day of week as number
w2 = Day of week as complete name
m2 = Month of year as complete name
m1 = Month of year as 3 letter abbreviation
| = Separator

**Command Format / Usage**:

*Djj2*
*AC,58,34,1,1,0,0,Julian Date YYDDD: ^D   Returns:  Julian Date YYDDD: 04325*

| Change the date formatting | Result |
|---|---|
| Dy4-me-dd | 2000-MAY-29 |
| Dy4/mn/dd | 2000/05/29 |
| Dmn\|dd\|y4 | 05\|29\|2000 |
| Dy4 | 2000 |
| Dme | MAY |
| Ddd | 09 |
| Dy4,me | 2000-MAY |
| Dme-dd | MAY-29 |
| dd1 | 9 |
| mn1 | 5 |
| w1 | MON |

## Filedb,find,x,y – Find Specific Database Record

The Filedb,find,x,y command is used to find a database record

**Parameters:** x = fieldname
  y = compare data

**Command Format / Usage:**

*V01,10,Input TOSTNUM*
*V#LINKDB,TOSTCITY,V00*
*Filedb,FIND,TOSTNUM,V01*      Finds the value of variable V01 in the
                        Field 'TOSTNUM'

## Filedb,move,x – Moves a pointer to a specific Database Record

The Filedb,move,x command is used to move to a database record.

**Parameters:** x = number in database
  x = FIRST
  x = LAST
  x = NEXT
  x = PRIOR

**Command Format / Usage**

*FILEDB,MOVE,3*          Moves to be the third record
*FILEDB,MOVE,FIRST*        Moves to be the first record
*FILEDB,MOVE,NEXT*        Moves to be the next record

## Filedb,open,x – Opens Database

The Filedb,open,x command opens one database per format

**Parameters:**  x = the name of the database

**Command Format / Usage:**

*Filedb,OPEN,customer*          Opens a database named "customer"

---

## Gwxxx…x – Graphic Row

The Gwxxx…x command sends dot rows of graphic data to the printer to compose an image after the ~G command.

**Parameters**:   w = size of image data is bytes. (ASCII code of 1 to 255) (ASCII 2 = 50 Decimal)
Each Gwxx. command prints 1 row of graphic data.

**Command Format / Usage**:

| Example | Description |
|---|---|
| ^L20,2<br>^W50<br>^R20<br>~G<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A | ; Left margin = 20 dots<br>; Place printer into graphic input mode<br>**For this example, ASCII "(" character is 40 decimal (= 40 bytes). Total 14 lines, so the graphics height is 1.75mm (14 dots)** |
| G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>G(AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA<br>A<br>@ | **Result**<br><br>‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖ |

*NOTE*: This and the ~G command create an immediate graphic image. It can NOT be used with any other format command. These are only to be used when creating a Windows driver.

---

## Hx,y,row_count,col_count,row_width,col_width,line_width – Table

The Hx,y,row_count,col_count,row_width,col_width,line_width command is used to draw a table on the label.

**Parameters**:  x = Top Left Horizontal Position (dots)
                 y = Top Left Vertical Position (dots)
                 row_count = number of rows
                 col_count = number of columns

**Command Format / Usage**:

*H10,10,3,3,10,10,2 <CR>*     Prints a 3x3 table at 10,10 with 10x10 cells and a line
                              thickness of 2

---

## La,x,y,x1,y1 – Draw Line

The La,x,y,x1,y1 command is used to define a line to be printed on the label.

**Parameters**:  Set a = o for Overwrite line, or
                 Set a = e for Exclusive line
                 x = Top Left Horizontal Position
                 y = Top Left Vertical Position
                 x1 = Bottom Right Horizontal Position
                 y1 = Bottom Right vertical Position

**Command Format / Usage**:

*Lo,10,10,50,12 <CR>*     Prints a line 40 dots long and 2 dots wide, starting at 10,10

*NOTE*: Diagonal lines are not supported

---

## Qx,y,width,height <CR> data<CR> – Pattern Draw

The Qx,y,width,height command is used to specify the size of a graphic, and is followed by the graphic data. Since PCX and BMP are known formats, it is usually better practice to store the graphics in FLASH memory, rather than defining the graphic in the format.

**Parameters**:  x = Bottom Left Horizontal Position (in dots)

y = Bottom Left Vertical Position (in dots)
width = width of graphic (in bytes)
height = height of graphic (in dots)

**Command Format / Usage**:

| Example | Result | |
|---|---|---|
| ^L,20,0,0<br>^W40<br>^S6<br>^D5<br>^Q<br><br>Q40,10,2,8<br>GGGGGGGGGGGGGGGG<br>@ | 0100011101000111<br>0100011101000111<br>0100011101000111<br>0100011101000111<br>0100011101000111<br>0100011101000111<br>0100011101000111<br>0100011101000111<br>HEIGHT = 8 DOTS<br>←1 BYTE→←1 BYTE→<br>←WIDTH = 2 BYTES→<br>G : 01000111 (binary) | 8dots<br>←2mm→ |
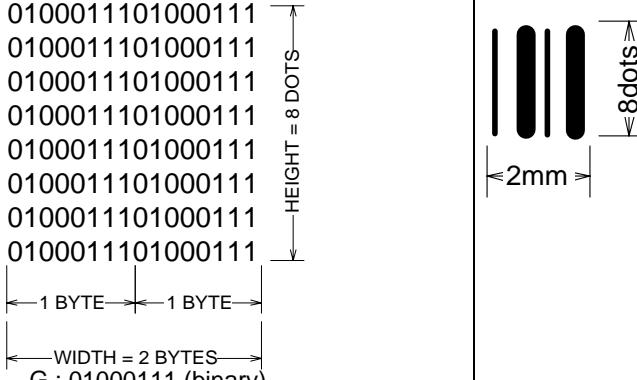
*NOTE*: Most Windows/DOS editors use a <CR><LF> pair instead of a single <CR>. When this happens, the Q command will see the <LF> as part of the data stream.

## Rx,y,x1,y1,lrw,ubw – Draw Rectangle

The Rx,y,x1,y1,lrw,ubw command is used to draw a rectangle on the label.

**Parameters**:   x = Top Left Horizontal Position
              y = Top Left Vertical Position
              x1 = Bottom Right Horizontal Position
              y1 = Bottom Right Vertical position
              lrw = Thickness of left and right border (in dots)
              ubw = Thickness of top and bottom border (in dots)

**Command Format / Usage**:

| Example | Description | Result |
|---|---|---|
| ^H10 | ; Darkness = 10 | |
| ^S6 | ; Speed = 6 inch/second | |
| ^L50,2 | ; Label height = 50mm, gap = 2 mm | |
| ^W70 | ; Label width= 70mm | |
| ^Q | ; End of Settings | |

| R20,20,120,120,8,8 | ; (x,y) = (20,20), (x1,y1) = (120,120) | | |
|---|---|---|---|
| @ | lrw = 8 dots, dbw = 8 dots | | |

## Th|m|s – Time Formatting

The Th|m|s command is used to specify a format for the printer's ^T time command.

**Parameters**:   h = specifies hours (00-23)
m = specifies minutes (00-59)
s = specifies seconds (00-59)
| = separator (can be any character with an ASCII code from 32 to 63

**Command Format / Usage**:

*Th:m <CR>*   Sets the time format to the current hour and minute.

## V#ADD,name,size,prompt – Descriptive Variables

The V#ADD,name,size,prompt command allows for naming a when-printed field. This is desirable when populating multiple fields from an external file.

**Parameters:**   Set name = the descriptive name for the variable
Set size = the maximum number of characters for the variable field
Set prompt = the desired prompt for user input

**Command Format / Usage:**

*V#ADD,weight,5,Enter Weight<CR>*     Prompts user with "Enter Weight", 5 characters maximum, and stores the entered value in a variable called weight

## V#ADDCHKSUM,Vnn – MOD 10 Check Digit

The V#ADDCHKSUM,Vnn command is used to add a MOD 10 Check Digit to a variable field.

**Parameters**:   Vnn = Identifier of the variable to be added

**Command Format / Usage**:

*V#ADDCHKSUM,V05 <CR>*     Adds Checksum to a field named V05

## V#DEFAULT,Vnn,default_value – Variable Default Value

The V#DEFAULT,Vnn,default_value command is used to assign a default value to a variable. This is useful for calculations as fixed values because calculation commands require variables rather than fixed values.

**Parameter:**    Vnn = the variable to assign the default value to
Default_value = the value to assign to the variable

**Command Format / Usage:**

*V#DEFAULT,V01,1<CR>*    Sets V01 to 1 in the event a value is not assigned to it.

## V#LINKDB,x,y – Substitutes Variable Database data

The V#LINKDB,x,y command is used

**Parameters:**  x = file name
y = variable

**Command Format / Usage:**

*V#LINKDB,PHONE,V00*    Substitutes the data in the PHONE field with data from Variable 00.

## V#RENAME,name,x – Renames variables

The V#RENAME,name,x command renames the variable name to the original variable name.

**Parameter:**    name = rename the variable with an 8 character maximum
x = variable number

**Command Format / Usage**

*V#RENAME,weight,V00*    Renames variable V00 to weight.

## V#SET,FLOATFORMAT,n,round_type,Vnn – Decimal Calculation

The V#SET,FLOATFORMAT,n,round_type,Vnn command is used to allow calculations on numbers containing decimal places.

**Parameter:**  n = number of decimal places to print
Round_type = O for round off, U for round up, D for round down
Vnn = variable item (V00 – V60)

**Command Format / Usage:**

*V#SET,FLOATFORMAT,0,U,V06<CR>*     Displays the contents of V06 rounded up with 2 decimal places

## V#SET,THOUFORMAT,Vnntd[o] – Numeric Separation

The V#SET,THOUFORMAT,Vnntd command is used to display numbers using different characters for decimals and separators. This is useful for displaying numbers in European format.

**Parameter:**  Vnn = Variable item (V00-V60)
T = Thousands separator (0=disable)
D = Decimal character
O = Optional character to add to the end of the string

**Command Format / Usage:**

*V#SET,THOUFORMAT,V05.,<CR>*     Displays the contents of the variable V05 in the format: 999.999,99

## V#STRCPY,Vxx,Vyy – Copy Variables

The V#STRCPY,Vxx,Vyy command is used to copy the contents of one variable into another variable.

**Parameter**:  Vxx = name of first variable
Vyy = name of second variable

**Command Format / Usage**:

*V#STRCPY,V01,V02 <CR>*     Copies the contents of V02 to V01

## V#STRSET,Vnn,Vnn – Combines Multiple Variables

The V#STRSET,Vnn,Vnn command is used to combine the contents of multiple fields into a separate field.

**Parameter**:   Vnn = number for first variable
                 Vnn = number for second variable

**Command Format / Usage**:

*V#STRSET,V01,ABC^C0^V00 <CR>*     Combines the contents of a variable field named
V01, a literal value, a counter, and a second variable field named V00 into a separate field.

---

## V#STRSUB,Vxx,Vyy,first,length – Copy Substring

The V#STRSUB,Vxx,Vyy,first,length command is used to copy a substring of one variable into
another variable

**Parameters**:   Vyy = The name of the variable to get the substring from
                 Vxx = The name of the variable to copy the substring to
                 first = first position
                 length = number of characters to copy

**Command Format / Usage**:

*V#STRSUB,V01,V02,1,2 <CR>*     Copies the first 2 characters of V02 to V01

---

## V#SET,UNPROMPT,x – Disable Prompt for a Variable Field

The V#SET,UNPROMPT,x command will not prompt the user to enter variable data at print
time.

**Parameters:**  variable number

**Command Format / Usage:**

        *V#SET,UNPROMPT,V00*     Variable V00 will not have a prompt at print time

---

## Vt,x,y,x_mul,y_mul,gap,rotation,data – Text (Downloaded Fonts)

The Vt,x,y,x_mul,y_mul,gap,rotationinverse,data command is used to Print a text field using a
bitmapped font that has been downloaded to the printer.

**Parameters**:   t = an alpha character from A to Z specify the font.
                 x = Top Left Horizontal position of text (in dots)
                 y = Top Left Vertical position of text (in dots)
                 x_mul = Horizontally magnified up to 8 times as large
                 y_mul = Vertically magnified up to 8 times as large
                 gap = Distance to add between characters (in dots)
                 rotation - Add 'I' to field orientation for the field to print inverse(white on black)

$$0 = \text{normal}$$
$$1 = \text{rotated 90 degrees}$$
$$2 = \text{rotated 180 degrees}$$
$$3 = \text{rotated 270 degrees}$$

data = A string up to 239 characters long, that can be a Constant, Date/Time information, a serial variable, or variable data

**Command Format / Usage**:

*VK,10,10,3,3,10,0,TEST <CR>*     Prints the word TEST in a downloaded font "K" at 10,10

---

# Vxx,length,prompt[, jnl] – Define Variable Field

The Vxx,length,prompt command is used to specify variable data fields.

**Parameters**:   xx = a positive numeric value to identify a field. (up to 30 variable fields when downloading to the printer memory)
length = number of characters (up to 98)
prompt = prompt for variable value (maximum 20 character). This will be displayed on the LCD in stand-alone mode.
j = designates the beginning of justification specifications
Set n = l for Left
Set n = c for Center
Set n = r for Right
l = the length of the entire string in millimeters.

**Command Format / Usage**:

*V01,10,VNAME1,jr20 <CR>*     Sets a variable field named 01, right justified, 20mm wide, and give the prompt: VNAME1

*NOTE***: There is a maximum number of 60 variables. Maximum 30 variables when downloading to the printer memory**

---

# V#OP+,V00,V01,V02 – Addition

The V#OP+,V00,V01,V02 command is used to add the contents of V01 and V02 and store the result in V00.

**Parameters**:   V00 = variable to store the result of the addition.
V01 & V02 = variables to add together

**Command Format / Usage**:

*V#OP+, V00, 10, V02 <CR>*     Adds 10 to the contents of V02 and stores the result in V00
V00 = V01 + V02

## V#OP-,V00,V01,V02 – Subtraction

The V#OP-,V00,V01,V02 command is used to subtract the contents of V02 from V01 and store the result in V00.

**Parameters**:  V00 = variable to store the result of the subtraction.
V01 & V02 = variables to subtract

**Command Format / Usage**:

*V#OP-, V00, 10, V02 <CR>*          Subtracts 10 from the contents of V02 and stores the result in V00
V00 = V02 – 10

## V#OP*,V00,V01,V02 – Multiplication

The VOP*,V00,V01,V02 command is used to multiply the contents of V01 and V02 and store the result in V00,

**Parameters**:  V00 = variable to store the result of the division
V01 & V02 = variables to multiply together

**Command Format / Usage**:

*VOP*,V00,V01,V02 <CR>*          Multiplies V01 and V02, and stores the result in V00
V00 = V01 * V02

## V#OP/,V00,V01,V02 – Division

The V#OP/,V00,V01,V02 command is used to divide the contents of V01 by V02 and store the result in V00.

**Parameters**:  V00 = variable to store the result of the division
V01 & V02 = variables to divide

**Command Format / Usage**:

*V#OP/,V00,V01,10 <CR>*          Divides the contents of V01 by 10 and stores the result in V00
V00 = V01 / V02

## V#OP%,V00,V01,V02 – Remainder

The V#OP%,V00,V01,V02 command is used to divide V01 by V02, and store the remainder in V00.

**Parameters**:   V00 = variable to store the remainder in
                V01 & V02 = variables to divide

**Command Format / Usage**:

*V#OP%,V00,V01,2 <CR>*                Divides the contents of V01 by 2 and stores the remainder
                                         in V00. This is used to determine if a variable is an odd or
                                         even number. If V00 = 0, the number is even. If V00 = 1,
                                         the number is odd.
                                         V00 = V01 % V02

---

## Wx,y,mode,type,ec,mask,mul,len,rotate – QR Code

The Wx,y,mode,type,ec,mask,mul,len,rotate command is used to create the QR Code symbology.

**Parameters:**  x = horizontal position of left bottom of barcode in dots.
              y = vertical position of left bottom of barcode in dots.
              mode =  Data mode character set.
                      1 = numeric data mode
                      2 = Alpha numeric data mode
                      3 = 8-bit data mode
                      4 = Kanji data mode
                      5 = Mixing data mode (any of the modes 1 through 4).
              type (model) = 1 (original)
                              2 (enhanced)
              ec = error correction.
                      L = Low
                      M = Medium
                      Q = Medium high
                      H = High
              mask = 0 through 7 (8 = auto)
              mul = cell multiplier, 1 through 8.
              len = data length
              rotate = 1 = 90 degrees
                      2 = 180 degrees
                      3 = 270 degrees

**Command Format / Usage:**

*W10,10,2,1,L,8,5,36,0<CR> 0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ*

The above commands print a QR Code

## Yx,y,name – Recall Graphic

The Yx,y,name command is used to position a graphic, stored in FLASH memory, on a label.

**Parameters**:   x = Top Left Horizontal Position
y = Top Left Vertical Position
name = name of downloaded graphic
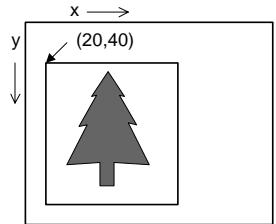
**Command Format / Usage**:

*Y20,40,GRAPHIC1 <CR>*     Prints a graphic on the label format at 20,40

## @ - Print Label

The @ command is used to terminate the label formatting mode and start printing the label.

**Parameters**:   *None*

**Command Format / Usage**:

*@ <CR>*        Ends label formatting and starts printing

# Appendix A - Examples

## Constructing a format using TPL commands

To create a format using Tharo Programming language, a specific sequence of command combinations must be followed.

| | |
|---|---|
| Control and Setup Commands | Defines label specifications and setup options |
| ^Q | Specifies the start of Label Formatting Commands |
| Label Format Commands | Defines the label format |
| @ | Terminates and Prints the Label. |

*NOTE*: Control and Setup Commands will not work if placed in the Label Format Commands.

**Example**

*Text Internal font C, and Downloaded font K*

| Example | Result | Rotate printing | Result |
|---|---|---|---|
| ^L50,0,2<br>^W50<br>^S6<br>^H10<br>^R10<br>^C1<br>^Q<br>VK,10,10,1,1,1,0,PRINTER<br>Dmn/dd/y2<br>AC,10,50,1,1,1,0,^D<br>Th :m | PRINTER<br>AUG/27/00<br>08:39 | ^L50,0,0<br>^W50<br>^S6<br>^H10<br>^Q<br>AC,100,30,1,1,1,0,ROTATION 0<br>AC,40,20,1,1,1,1,ROTATION 90<br>AC,260,150,1,1,1,2,ROTATION 180<br>AC,290,200,1,1,1,3,ROTATION 270<br>@ | ROTATION 0<br>ROTATION 90<br>ROTATION 180<br>ROTATION 270 |
| AC,10,100,1,1,1,0,^T<br>@ | | | |
| **Adjusting the character spacing**<br>^L30,0,0<br>^W50<br>^S6<br>^H10<br>^Q<br>AC,10,10,1,1,10,0,PRINTER<br>AC,10,100,1,1,1,0,PRINTER<br>@ | Result<br><br>P R I N T E R<br><br><br>PRINTER | | |

# Appendix B – Barcode Details

## Code 128 Subsets

*BQ2,X,Y,NARROW,WIDE,HEIGHT,ROTATION,READABLE,[LENGTH]<CR>DATA*

Code 128 Subset A: Includes the standard uppercase alphanumeric keyboard characters, control and special characters.

Code 128 Subset B: Includes the standard uppercase and lowercase alphanumeric keyboard characters and special characters.

Code 128 Subset C: Used for double density encoding of numeric data (the set of 100 digit pairs from 00 through 99).

| Example | |
|---|---|
| Subset A: BQ2,8,8,2,5,40,0,0,AAPPLE | To select Code 128 Subset A, place an ASCII A before the data to be encoded |
| Subset B: BQ2,8,8,2,5,40,0,0,BAPPLE | To select Code 128 Subset B, place an ASCII B before the data to be encoded |
| Subset C: BQ2,8,8,2,5,40,0,0,C&G1234 | To select Code 128 Subset C and encode a FNC1, place an ASCII C and a &G before the data to be encoded. |
| Special characters handling: BQ4,8,8,2,5,40,0,0,19 C&G0100012345678905 | To encode FNC1 into a Code 128 Subset C, send the ASCII &G. *Note: Because <CR> is a valid character in Code 128, it is recommended that the [length] command be used. The "19" in this example illustrates that there are 19 characters to be encoded.* |

| ASCII | 2 Character | Code A | Code B | Code C |
|---|---|---|---|---|
| 96 | &A | FNC3 | FNC3 | -NA- |
| 97 | &B | FNC2 | FNC2 | -NA- |
| 98 | &C | SHIFT | SHIFT | -NA- |
| 99 | &D | Code C | Code C | -NA- |
| 100 | &E | Code B | Code B | Code B |
| 101 | &F | FNC4 | FNC4 | Code A |
| 102 | &G | FNC1 | FNC1 | FNC1 |

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