CoPilot Communications Manual

Revision 23

February 6, 2020

Squid Ink Manufacturing, Inc.
7041 Boone Avenue North
Brooklyn Park, MN 55428
(800) 877-5658
www.squidink.com

Every possible care has been taken to ensure the accuracy of this communications manual. All information contained in this manual is correct to the best of our knowledge and belief but cannot be guaranteed. Furthermore, we reserve the right to make improvements and enhancements to this manual and / or the devices described herein without prior notification.

We appreciate suggestions and criticisms for further improvement. Please send your comments to:
mbramm@squidink.com

Overview

This document describes the communications protocol associated with the CoPilot printer. It may be used by anyone wishing to interface to a CoPilot printer (or network of printers). This document is provided as information only and Squid Ink shall not be liable for any direct or indirect damage or loss resulting from making use of the information provided herein. In general, Squid Ink can only provide limited technical support to customers who intend to use a PLC as the host computer.

Number Convention

In this document, numbers in the format 0x00 represent values in hexadecimal. Numbers in the format 00000000 represent values in binary. All other numbers represent values in decimal, unless stated otherwise.

Command Convention

All commands sent to the printer and all responses received from the printer end with the Line Feed character (ASCII 10, Hexadecimal 0x0A, Control+J) and is represented by "<LF>" throughout this manual.

All commands in this manual are displayed as a series of hexadecimal values on the first line, followed by the ASCII characters on the second line, with names of each portion of the command below that, as shown here:

To read the Version number, send:

0x56	0x0A
V	<LF>
Command	End

Commands may be sent as all hexadecimal values, all ASCII characters, or a mixture of the two. It all depends on how the computer and programming language you are using require the commands to be built.

All printer responses will start with "ACK-" and end with the Line Feed character, as shown here:

The printer will respond with:
`ACK-##.##.##<LF>`
where the three "##" values are the major, minor and revision numbers (all will be 2-digits).

See the last page for a complete ASCII chart.

TCP/IP COMMUNICATIONS PROTOCOL

Description	Command	Data
Enable Print Complete Acknowledgement	A	
Disable Print Complete Acknowledgement	a	
Build Message (use with 'N' command)	B	
Build Message (stand-alone)	BUILD_MESSAGE	File name
Read Build Time	b	
Get Print Build Time	GET_PRINT_BUILD_TIME	
Read Auto Data Status	C	
Write Auto Data Record	D	Auto Data Record
Get Auto Data String	GET_AUTO_DATA_STRING	
Write Working File Name	N	File name
Read Last Message Built	n	
Write Ink Level	O	Value
Read Ink Level	o	
Create Print Bitmap	P	
Print Now	p	
Write System Date and Time	T	Date and time
Read System Date and Time	t	
Read Disk Usage	U	
Get Printer Software Version	V	
Get Printer Firmware Version	GET_FIRMWARE_VERSION	
Get Printhead Software Version	GET_PRINTHEAD_VERSION	
Get Manual Speed	GET_MANUAL_SPEED	
Set Manual Speed	SET_MANUAL_SPEED	Value
Get Print Direction	GET_PRINT_DIRECTION	
Set Print Direction	SET_PRINT_DIRECTION	Value
Get Print Delay	GET_PRINT_DELAY	
Set Print Delay	SET_PRINT_DELAY	Value
Get Encoder Status	ENCODER	QUERY
Set Encoder Status	ENCODER	Value
Get Encoder Speed	GET_ENCODER_SPEED	
Get Peak Encoder Speed	GET_PEAK_ENCODER_SPEED	
Reset Peak Encoder Speed	RESET_PEAK_ENCODER_SPEED	
Get Encoder Timeout	GET_ENCODER_TIMEOUT	
Set Encoder Timeout	SET_ENCODER_TIMEOUT	Value
Get Encoder Divider	GET_ENCODER_DIVIDER	
Set Encoder Divider	SET_ENCODER_DIVIDER	Value
Read Print Status	PRINT_TRIGGER	QUERY
Write Print Status	PRINT_TRIGGER	OFF, ON
Get Repeat Print	GET_REPEAT_PRINT	
Get Manual Repeat Print	GET_MANUAL_REPEAT_PRINT	
Set Manual Repeat Print	SET_MANUAL_REPEAT_PRINT	Value
Get Spit Settings	GET_SPIT_SETTINGS	
Set Spit Settings	SET_SPIT_SETTINGS	Value
Get Spit Active	GET_SPIT_ACTIVE	
Read Production Counter	PRODUCTION_COUNTER	QUERY
Write Production Counter	PRODUCTION_COUNTER	Various
Read Serial Number	READ_SERIAL_NUMBER	
Get Printer Name	PRINTER_NAME	QUERY
Get Active Counters	GET_ACTIVE_COUNTERS	Printhead #
Get Counter Info	GET_COUNTER_INFO	Counter #, Printhead #
Set Counter Info	SET_COUNTER_INFO	Counter #, Value, Printhead #
Get Ink Version	GET_INK_VERSION	
Get Date Display Format	GET_DATEFORMAT	
Set Date Display Format	SET_DATEFORMAT	Format

See the second to the last page for additional notes about TCP/IP communications and FTP directories.

ENABLE PRINT COMPLETE ACKNOWLEDGEMENT

This command is used to enable the Print Complete acknowledgement.

To enable the Print Complete acknowledgement, send:

0x41	0x0A
A	<LF>
Command	End

The printer will respond with the following when this command is issued:

```
ACK-Print Complete Enabled<LF>
```

Once enabled, the printer will respond with the following after each print:

```
ACK-Print Complete<LF>
```

Notes:

- This function is not stored when the printer is powered off, so it will be OFF when the printer is powered on.
- This function is automatically disabled when the connection to the printer is closed. If you close the connection, you must re-enable this function after re-establishing a connection.

DISABLE PRINT COMPLETE ACKNOWLEDGEMENT

This command is used to disable the Print Complete acknowledgement.

To disable the Print Complete acknowledgement, send:

0x61	0x0A
a	<LF>
Command	End

The printer will respond with the following when this command is issued:

```
ACK-Print Complete Disabled<LF>
```

BUILD MESSAGE

This command is used to build the message previously set using the “Write Working File Name” command.

To build the message, send:

0x42	0x0A
B	<LF>
Command	End

If successful, the printer will respond with:

```
ACK-Build FILENAME Complete...<LF>
```

where “FILENAME” is the name of the working file previously set using the “Write Working File Name” command.

If you haven’t previously set the working file using the “Write Working File Name” command, the printer will respond with the:

```
ACK-Error! No file name set using N command!<LF>
```

If the file cannot be built for any reason, the printer will respond with:

```
ACK-Error building 'FILENAME'!<LF>
```

BUILD MESSAGE
This command is used to build the designated message.

To build the message named “Test”, send:

0x42 0x55 0x49 0x4C 0x44 0x4D 0x45 0x53 0x53 0x41 0x47 0x45 0x3D 0x54 0x65 0x73 0x74	0x0A
BUILD_MESSAGE=Test	<LF>
Command	End

If successful, the printer will respond with:
`ACK-Build FILENAME Complete...<LF>`
where “FILENAME” is the name of the message to be built.

If the designated message does not exist on the printer, the printer will respond with the:
`ACK-Error! Message FILENAME does not exist!<LF>`

If the file cannot be built for any reason, the printer will respond with:
`ACK-Error building 'FILENAME'!<LF>`

Notes:
- This command was first implemented in version 02.02.09 of the software.
- The ‘=’ character is optional.

READ BUILD TIME
This command is used to read the amount of time it took the printer software to build the message (using the ‘B’ command). This includes loading the .ORION message file and rendering all of the static data for the message into the print bitmap.

To read the build time, send:

0x62	0x0A
b	<LF>
Command	End

The printer will respond with:
`ACK-# ms<LF>`
where “#” (which may be 1-5 digits) is the amount of time in milliseconds.

GET PRINT BUILD TIME
This command is used to read the message render time from the FPGA. This is the time from when the printer is triggered until the data hits the FPGA, which includes copying the print bitmap to the print buffer and rendering the dynamic data (counters, times, dates, Auto Data, etc.).

To measure the print render time, send:

0x47 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x42 0x55 0x49 0x4C 0x44 0x5F 0x54 0x49 0x4D 0x45	0x0A
GET_PRINT_BUILD_TIME	<LF>
Command	End

The printer will respond with:
`ACK-PRINT_BUILD_TIME=#us<LF>`
where “#” is the build time (in microseconds).

Notes:
- This command was first implemented in version 02.01.02 of the software.
- The time value will be 0 microseconds if the printer has not been triggered since the message was loaded, or the FPGA registers could not be read.

READ AUTO DATA STATUS

This command is used to read the status of Auto Data transfers.

To read the status, send:

0x43	0x0A
C	<LF>
Command	End

If the printer is accepting Auto Data, it will respond with:
`ACK-Auto Data XON<LF>`

If the printer is not accepting Auto Data, it will respond with:
`ACK-Auto Data XOFF<LF>`

WRITE AUTO DATA RECORD

This command is used to write an Auto Data record to the printer. Each field in the record must be followed by the tilde character (~) unless the field length(s) match the Auto Data length(s) exactly. For example, if you have three Auto Data fields and they are 6, 8 and 10 characters long, you could either send:

0x44	0x66 0x69 0x72 0x73 0x74 0x20 0x73 0x65 0x63 0x6F 0x6E 0x6d 0x20 0x20 0x74 0x68 0x69 0x72 0x64 0x20 0x20 0x20 0x20 0x20	0x0A
D	"first␣second␣␣third␣␣␣␣␣" (not including quotes)	<LF>
Command	Data	End

or:

0x44	0x66 0x69 0x72 0x73 0x74 0x7E 0x73 0x65 0x63 0x6F 0x6E 0x6d 0x7E 0x74 0x68 0x69 0x72 0x64 0x7E	0x0A
D	first~second~third~	<LF>
Command	Data	End

The first method can be used if you want complete control over where the text is printed. For instance, if you want right-justified or centered text, you can add the appropriate number of spaces where you want. The second method is easier to use if you don't care about right-justified or centered text. You also don't have to worry about padding each field to the required length. However, the tilde character is counted as one of the characters of the data field, so you will need to increase the length of the Auto Data field by 1 to make room for the tilde character.

If you want to print the same record multiple times, you can insert a number (2 - 65535) just before the Line Feed character (0x0A) to indicate the number of times you would like that record to be printed. For example, to print the above record 5 times, you would send:

0x44	0x66 0x69 0x72 0x73 0x74 0x20 0x73 0x65 0x63 0x6F 0x6E 0x6d 0x20 0x20 0x74 0x68 0x69 0x72 0x64 0x20 0x20 0x20 0x20 0x20 0x35	0x0A
D	"first␣second␣␣third␣␣␣␣␣5" (not including quotes)	<LF>
Command	Data	End

or:

0x44	0x66 0x69 0x72 0x73 0x74 0x7E 0x73 0x65 0x63 0x6F 0x6E 0x6d 0x7E 0x74 0x68 0x69 0x72 0x64 0x7E 0x35	0x0A
D	first~second~third~5	<LF>
Command	Data	End

When the printer has printed the message the number of times you specified, it will stop printing (or move on to the next record in the buffer if more data has been sent to the printer).

If you include the caret character "^" just before the Line Feed character, this will indicate that this data is interruptible. This overrides any repeat value that may also be included as this feature allows the message to be repeated indefinitely. This means that a new Auto Data record will interrupt the current one and will start being printed immediately instead of being added to the buffer.

When the printer receives an Auto Data record and there is room in the printer's queue, it will respond with:
`ACK-Auto Data Received<LF>`

When the printer receives an Auto Data record and there is no room in the printer's queue, it will respond with:
`ACK-Auto Data XOFF<LF>`

When the printer receives an Auto Data record consisting of "_CLEAR_ADQ_" (with no other data and no tilde at the end), it will respond with:
`ACK-Auto Data Received - Auto Data queue cleared<LF>`

Notes:

- This command was first implemented in version 02.01.02 of the software.
- The ability to use the caret character "^" was first implemented in version 02.01.13 of the software.
- You cannot print the tilde character ("~") in an Auto Data record.
- When no number is placed after the data, the message will only be printed once. This is the case no matter if the message is configured for One-Shot mode or not.
- When you tell the printer to print the data more than once, the only way to get it to stop is by sending a record consisting of "_CLEAR_ADQ_" (with no other data and no tilde at the end).
- If the message being printed is configured for "One-Shot" mode, a repeat value at the end of the record will be ignored. The message (and data) will only be printed once, no matter what the repeat value is. The trigger is disabled after the data is printed. It will be re-enabled when the next record is received. Since the trigger gets disabled, using Repeat Print mode will not work when One Shot mode is enabled.
- You may send up to 32 fields in an Auto Data record.
- Each Auto Data field may contain up to 255 characters.
- If you want to send multiple Auto Data records to the printer, send them one at a time and make sure you receive "ACK-Auto Data Received" after each one. If you receive "ACK-Auto Data XOFF", the printer did not accept your record. In this case, send the TCP/IP "C" command every few seconds to check the status. When you receive "ACK-Auto Data XON" from the "C" command, you can start sending Auto Data records again.
- When a message is configured for "One Shot" mode, the queue is not used. This allows new Auto Data records to immediately overwrite existing ones, instead of being added to the queue.
- The Auto Data queue can hold a maximum of 16384 bytes. Records are stored in the queue exactly as they are received, including the Line Feed character. If the record is too large to fit in the buffer, it will not be received. Once the buffer is full, XOFF is set. Once the data is reduced to 75% of the buffer, XON will be set. This allows larger blocks of data to be sent instead of constantly toggling XON/XOFF.
- In order to encode Unicode characters into QR Code barcodes, the Unicode characters must first be converted to UTF-8 before being sent. For example, if you want to send a command like "DApples~Oranges~" in Chinese, you might think you could send "D苹果~橙子~" but that won't work. Instead, you must convert the "苹果" and "橙子" strings into UTF-8 hexadecimal bytes, then send a command like this:

0x44	0xE8 0x8B 0xB9 0xE6 0x9E 0x9C 0x7E 0xE6 0xA9 0x99 0xE5 0xAD 0x90 0x7E	0x0A
D	苹果~橙子~	<LF>
Command	Data	End

  If you need help converting your Unicode string to UTF-8, you may want to use an online converter like http://www.endmemo.com/unicode/unicodeconverter.php.
- When sending Unicode data as UTF-8 bytes, make sure you set the Auto Data – Length value large enough for the number of bytes you are going to send. For instance, the first field in the previous example is "苹果", which is 2 symbols, but you are actually sending 6 bytes (0xE8 0x8B 0xB9 0xE6 0x9E 0x9C) to represent those 2 symbols. In this case, you will need to set the Auto Data – Length value to 7 or larger. If the value is too low, not all of your data will be encoded.
- Auto Data fields with multiple lines of data:
  - Starting with CoPilot software version 02.02.27 and Orion version 1.6.2 (build 499), Auto Data fields with multiple lines of text are now supported. The Auto Data Server in Orion will convert the two characters "\n" to a <CR> (Carriage Return) character (0x0D) before sending the data to the printer. The printer will then convert <CR> characters to <LF> characters when it builds the message. This way, the <LF> character is not sent to the printer in the TCP/IP command, so it won't be confused as the end of the command.
  - If you plan to send a multi-line Auto Data field to a Text element, you should (but don't have to) include multiple lines of text (with each line separated by the two characters "\n") in the Default Data when you create the Auto Data Template message. This allows the default placeholder to show multiple lines of text before Auto Data is sent to the printer, so that you can see how the message will look and plan to leave room for the multiple lines of text (and don't cause overlapped elements). The "\n" characters in the Default Data will be converted directly in the message.xml file.
  - Multiple lines of data can be sent to Text elements as well as Data Matrix and QR Code barcodes.

- In order to use graphic files with Auto Data:
  - The graphic files must exist on the printer in the "autodata" folder before you attempt to use them. To open an FTP connection to the "autodata" folder on the printer using Windows Explorer, enter "ftp://root:leader@192.168.2.3/autodata/" into the Address Bar. Be sure to change "192.168.2.3" to the IP Address of your printer. Note: "root" is the user name and "leader" is the password.
  - Graphic files must be Windows bitmaps (.bmp format) that are black and white (with 1-bit per pixel color palette), be a negative image (white image on black background), rotated 90 degrees counter-clockwise, and with filenames that are no longer than 256 characters.
  - You can print a graphic by sending the filename of the graphic as the data in a field of an Auto Data record. For instance, to print a graphic file named "Logo.bmp", you would send an Auto Data command like "DLogo.bmp~" followed by the Line Feed character (ASCII 10).

GET AUTO DATA STRING

This command is used to read the current (about to be printed) Auto Data record, matching the record sent to the printer (without the leading 'D').

To read the next Auto Data string to be printed, send:

0x47 0x45 0x54 0x5F 0x41 0x55 0x54 0x4F 0x5F 0x44 0x41 0x54 0x41 0x5F 0x53 0x54 0x52 0x49 0x4E 0x47	0x0A
GET_AUTO_DATA_STRING	<LF>
Command	End

The printer will respond with:
`ACK-AUTO_DATA_STRING={string}<LF>`
where "{string}" is the next Auto Data record to be printed. If the Auto Data queue is empty, "{string}" will also be empty.

Example:
If the following Auto Data records are sent to the printer and the printer is not configured for One Shot mode, these records will be stored in the Auto Data queue.
D123~456~<LF>
DABC~DEF~~<LF>

Before triggering the printer, the response will be: "ACK-AUTO_DATA_STRING=123~456~~<LF>"
After the first trigger, the response will be: "ACK-AUTO_DATA_STRING=ABC~DEF~~<LF>"
After the second trigger (empty queue), the response will be: "ACK-AUTO_DATA_STRING=<LF>"

Note:
- This command was first implemented in version 02.02.05 of the software.

WRITE WORKING FILE NAME

This command is used to write the working file name that is used with various other commands.

To write the working file name of “Peanut butter”, send:

0x4E	0x50 0x65 0x61 0x6E 0x75 0x74 0x20 0x62 0x75 0x74 0x74 0x65 0x72	0x0A
N	Peanut butter	<LF>
Command	File Name	End

If successful, the printer will respond with:
`ACK-File Name = Peanut butter<LF>`

If unsuccessful, the printer will respond with:
`ACK-Error setting file name to 'Peanut butter'!<LF>`

Notes:

- Be sure to change “Peanut butter” to the name of the message you would like to use, without any extension.
- File names on the CoPilot printer are case sensitive.
- The “Build Message” command will look for a message file with a “.orion” extension.
- The “Create Print Bitmap” command will create a bitmap with a “.bmp” extension.

READ LAST MESSAGE BUILT

This command is used to read the name of the last message that was built.

To read the last message built, send:

0x6E	0x0A
n	<LF>
Command	End

The printer will respond with:
`ACK-FILENAME.TXT<LF>`
where “FILENAME.TXT” is the name of the last message that was built.

WRITE INK LEVEL

This command is used to set the ink level (percentage). This is useful when the ink cartridge has been changed or replaced and allows the printer to keep track of how much ink it has left.

To set the ink level when there is only one printhead connected to the printer, send:

0x4F 0x3? 0x3? 0x3?	0x0A
O###	<LF>
Command	End

where “###” is always a 3-digit number in the range of “000” – “100”.

To set the ink level when there are two printheads connected to the printer, send:

0x4F 0x3? 0x3? 0x3? 0x20 0x3?	0x0A
O### #	<LF>
Command	End

where “###” is always a 3-digit number in the range of “000” – “100” and “#” is the printhead number “1” or “2”. Note the space character between the “###” and “#”.

If successful, the printer will respond with:
`ACK-Ink Level=###%<LF>`
where ### is always a 3-digit number and is a confirmation of the value received in the range of “000” – “100”.

If unsuccessful, the printer will respond with:
`ACK-Ink Level=Error<LF>`

Note:

- This command is only used on the CoPilot (not CoPilot 128P, CoPilot 256P or CoPilot 382P).

READ INK LEVEL

This command is used to read the current ink level(s) (percentage).

To read the ink level, send:

0x6F	0x0A
o	<LF>
Command	End

If there is only one printhead connected to the printer, the printer will respond with:
`ACK-Ink Level=###%<LF>`
where "###" is always a 3-digit number in the range of "000" – "100".

If there are two printheads connected to the printer, the printer will respond with:
`ACK-Ink Level=###% ###%<LF>`
where "###" is always a 3-digit number in the range of "000" – "100". The first value is the ink level for printhead 1 and the second value is printhead 2. Note the space between the two values.

If unsuccessful, the printer will respond with:
`ACK-Ink Level=Error<LF>`

CREATE PRINT BITMAP

This command is used to save the current print bitmap to the "/previews/" directory on the printer with the working file name previously set using the "Write Working File Name" command. Note that the actual bitmap will be created with a ".BMP" file extension. If you set the working file name to "ABC.123", a file named "ABC.123.BMP" will be created containing the bitmap data.

To create the print bitmap, send:

0x50	0x0A
P	<LF>
Command	End

If successful, the printer will respond with:
`ACK-Print preview successful<LF>`

If you haven't previously set the working file using the "Write Working File Name" command, the printer will respond with the:
`ACK-Error! No working file name set!<LF>`

If the file cannot be created for any reason, the printer will respond with:
`ACK-Print Bitmap Error FILENAME.BMP!<LF>`

Notes:

- A message must be built prior to using this command.
- The order of usage would be:
  - "NApples" (to set the working file name to "Apples").
  - "B" (to build the "Apples.orion" message file).
  - "P" (to create the print bitmap file(s) as "Apples1.bmp" and "Apples2.bmp" (on a dual-headed printer)).
- If the print bitmap is created before the message has been printed, it will show the initial values for all dynamic elements (time, date, counters, etc). After the printer is triggered and the dynamic elements get changed, you can simply issue additional "P" commands to get the latest print bitmap to see what was just printed.
- A bug in early versions of the printer software kept this from working correctly. Software version 02.01.02 has fixed this bug.

PRINT NOW
This command instructs the printer to print the message just as if the external trigger had been used.

To print the current message, send:

0x70	0x0A
p	<LF>
Command	End

If not supported, the printer will respond with:
`ACK-This command is not supported on this printer`

If successful, the printer will respond with the following after the print is complete:
`ACK-Print Now!`

WRITE SYSTEM DATE AND TIME
This command is used to write the system date and time.

To write the system date of February 17, 2014 with the time of 12:00 noon, send:

0x54 0x30 0x32 0x2F 0x31 0x37 0x2F 0x32 0x30 0x31 0x34 0x20 0x31 0x32 0x3A 0x30 0x30 0x3A 0x30 0x30	0x0A
T02/17/2014 12:00:00	<LF>
Command	End

where the data is formatted in "`MM/DD/YYYY HH:MM:SS`". The "`:SS`" portion of the data may be omitted, in which case "`:00`" will be used.

If successful, the printer will respond with:
`ACK-DateTime = MM/DD/YYYY HH:MM<LF>`

If unsuccessful, the printer will respond with:
`ACK-Error! Current DateTime = MM/DD/YYYY HH:MM<LF>`

READ SYSTEM DATE AND TIME
This command is used to read the system date and time.

To read the system date and time, send:

0x74	0x0A
t	<LF>
Command	End

The printer will respond with:
`ACK-DateTime = MM/DD/YYYY HH:MM:SS<LF>`

Note:
- The original response did not include the seconds. It was changed to include the seconds in version 02.01.08 of the software.

READ DISK USAGE
This command is used to read information about the SD Card (MMC).

To read the disk usage, send:

0x55	0x0A
U	<LF>
Command	End

The printer will respond with (actual data will vary):
`ACK-Size=3199.00 MB,Used=1811.00 MB,56.61% Free<LF>`

GET PRINTER SOFTWARE VERSION

This command is used to read the software version of the printer.

To read the software version of the printer, send:

0x56	0x0A
V	<LF>
Command	End

The printer will respond with:
ACK-##.##.##<LF>
where the three "##" values are the major, minor and revision numbers (all will be 2-digits).

GET PRINTER FIRMWARE VERSION

This command is used to read the firmware version of the printer.

To read the firmware version of the printer, send:

0x47 0x45 0x54 0x5F 0x46 0x49 0x52 0x4D 0x57 0x41 0x52 0x45 0x5F 0x56 0x45 0x52 0x53 0x49 0x4F 0x4E	0x0A
GET_FIRMWARE_VERSION	<LF>
Command	End

The printer will respond with:
ACK-##.##.##<LF>
where the three "##" values are the major, minor and revision numbers (all will be 2-digits).

GET PRINTHEAD SOFTWARE VERSION

This command is used to read the software version of the printhead(s).

To read the software version of the printhead(s), send:

0x47 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x48 0x45 0x41 0x44 0x5F 0x56 0x45 0x52 0x53 0x49 0x4F 0x4E	0x0A
GET_PRINTHEAD_VERSION	<LF>
Command	End

If there is only one printhead connected to the printer, it will respond with:
ACK-##.##.## <LF>
where the three "##" values are the major, minor and revision numbers (all will be 2-digits). Note the two spaces after the version number and before the Linefeed character.

If there are two printheads connected to the printer, it will respond with:
ACK-##.##.## | ##.##.##<LF>
where the three "##" values are the major, minor and revision numbers (all will be 2-digits). The version information to the left of the "|" character is for printhead 1. The version information to the right of the "|" character is for printhead 2. Note the space character before and after the "|" character.

If no printheads are connected to the printer, printers other than the CoPilot 500 or CoPilot Max will respond with:
ACK- N/A | N/A <LF>
CoPilot 500 and CoPilot Max printers will respond with:
ACK- ERROR | ERROR<LF>.

If the printheads are connected but they can't be read, it will response with:
ACK- ERROR | ERROR<LF>.

GET MANUAL SPEED
This command is used to read the manual speed (in feet per minute) set by the user.

To read the manual speed, send:

0x47 0x45 0x54 0x5F 0x4D 0x41 0x4E 0x55 0x41 0x4C 0x5F 0x53 0x50 0x45 0x45 0x44	0x0A
GET_MANUAL_SPEED	<LF>
Command	End

The printer will respond with:
`ACK-GET_MANUAL_SPEED=#<LF>`
where "#" is a string containing a value in the range of "1" – "135".

SET MANUAL SPEED
This command is used to set the manual speed (in feet per minute).

To set the manual speed to 75 feet per minute, send:

0x53 0x45 0x54 0x5F 0x4D 0x41 0x4E 0x55 0x41 0x4C 0x5F 0x53 0x50 0x45 0x45 0x44 0x20 0x37 0x35	0x0A
SET_MANUAL_SPEED 75	<LF>
Command	End

If successful, the printer will respond with:
`ACK-SET_MANUAL_SPEED=#<LF>`
where "#" is a string containing the Speed value just set (in the range of "1" – "135").

Note:
- Valid values are "1" – "135".

GET PRINT DIRECTION
This command is used to read the current print direction of all connected printheads.

To read the print direction, send:

0x47 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x44 0x49 0x52 0x45 0x43 0x54 0x49 0x4F 0x4E	0x0A
GET_PRINT_DIRECTION	<LF>
Command	End

If the printer only has 1 printhead connected to it, it will respond with:
`ACK-GET_PRINT_DIRECTION={direction}<LF>`
where "{direction}" is a string containing the print direction ("L-R" or "R-L").

If the printhead has 2 printheads connected to it, it will respond with:
`ACK-GET_PRINT_DIRECTION={direction1} {direction2}<LF>`
where "{direction1}" is a string containing the print direction ("L-R" or "R-L") for printhead 1 and "{direction2}" is a string containing the print direction ("L-R" or "R-L") for printhead 2.

SET PRINT DIRECTION

This command is used to set the print direction. On a single-headed printer, only one direction is required. On a dual-headed printer, both directions are required.

To set the print direction to Right to Left for printhead 1 on a single-headed printer, send:

0x53 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x44 0x49 0x52 0x4E 0x43 0x54 0x49 0x4F 0x4E 0x31 0x20 0x52 0x2D 0x4C		0x0A
SET_PRINT_DIRECTION R-L		<LF>
Command		End

To set the print direction to Right to Left for printhead 1 and Left to Right for printhead 2 on a dual-headed printer, send:

0x53 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x44 0x49 0x52 0x4E 0x43 0x54 0x49 0x4F 0x4E 0x31 0x20 0x52 0x2D 0x4C 0x20 0x4C 0x2D 0x52		0x0A
SET_PRINT_DIRECTION R-L L-R		<LF>
Command		End

If successful, the printer will respond with:
`ACK-SET_PRINT_DIRECTION=0<LF>`

If unsuccessful (invalid value or not enough data), the printer will respond with:
`ACK-SET_PRINT_DIRECTION=-1<LF>`

Notes:

- Valid values are “L-R” and “R-L”.
- Early versions of software only worked with one printhead (that’s all that was supported). The second printhead was added in version 02.00.32 of the software.

GET PRINT DELAY

This command is used to read the current “Head to Photocell” distance (in columns).

To read the “Head to Photocell” distance, send:

0x47 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x44 0x45 0x4C 0x41 0x59		0x0A
GET_PRINT_DELAY		<LF>
Command		End

If the printer only has 1 printhead connected to it, it will respond with:
`ACK-GET_PRINT_DELAY=#<LF>`
where “#” is a string containing the print delay value just set for the printhead (in the range of “1” – “24000”).

If the printer has 2 printheads connected to it, it will respond with:
`ACK-GET_PRINT_DELAY=#,#<LF>`
where “#” to the left of the comma is a string containing the print delay value just set for printhead 1 (in the range of “1” – “24000”) and “#” to the right of the comma is a string containing the print delay value just set for printhead 2 (in the range of “1” – “24000”).

SET PRINT DELAY

This command is used to set the print delay (in columns).

To set the print delay for printhead 1 to 100 columns and printhead 2 to 200 columns, send:

0x53 0x45 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x5F 0x44 0x45 0x4C 0x41 0x59 0x20 0x31 0x30 0x30 0x2C 0x32 0x30 0x30		0x0A
SET_PRINT_DELAY 100,200		<LF>
Command		End

If successful, the printer will respond with:
`ACK-SET_PRINT_DELAY=0<LF>`

If unsuccessful, the printer will respond with:
`ACK-SET_PRINT_DELAY=-1<LF>`

Notes:

- Valid print delay values are “1” – “24000”.
- If there is only one printhead connected to the system, you don’t need to include the comma or the print delay value for printhead 2.

GET ENCODER STATUS

This command is used to read the encoder status.

To read the encoder status, send:

0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x3D 0x51 0x55 0x45 0x52 0x59		0x0A
ENCODER=QUERY		<LF>
Command		End

The printer will respond with:
`ACK-ENCODER={value}<LF>`
where “{value}” is “ON” or “OFF”.

SET ENCODER STATUS

This command is used to set the encoder status.

To set the encoder to On, send:

0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x3D 0x4F 0x4E		0x0A
ENCODER=ON		<LF>
Command		End

The printer will respond with:
`ACK-ENCODER={value}<LF>`
where “{value}” is “ON” or “OFF”.

Note:

- Valid values are “ON” and “OFF”.

GET ENCODER SPEED

This command is used to read the current speed registered by the encoder (in feet per minute).

To read the speed read by the encoder, send:

0x47 0x45 0x54 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x53 0x50 0x45 0x45 0x44	0x0A
GET_ENCODER_SPEED	<LF>
Command	End

The printer will respond with:
ACK-ENCODER_SPEED=###<LF>
where "###" is a 3-digit value representing the speed read by the encoder (in feet per minute).

Note:

- If the speed can't be read, it will return 0.

GET PEAK ENCODER SPEED

This command is used to read the peak encoder speed. The printer will respond with the fastest speed the encoder has detected (in columns per second) since the printer has been powered on, or since the last time a RESET_PEAK_ENCODER_SPEED command was issued.

To read the peak encoder speed, send:

0x47 0x45 0x54 0x5F 0x50 0x45 0x41 0x4B 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x53 0x50 0x45 0x45 0x44	0x0A
GET_PEAK_ENCODER_SPEED	<LF>
Command	End

If successful, the printer will respond with:
ACK-PEAK_ENCODER_SPEED=#<LF>
where "#" is the peak encoder speed.

Note:

- This command was first implemented in version 02.02.15 of the software.

RESET PEAK ENCODER SPEED

This command is used to reset the peak encoder speed to 0.

To reset the peak encoder speed to 0, send:

0x52 0x45 0x53 0x45 0x54 0x5F 0x50 0x45 0x41 0x4B 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x53 0x50 0x45 0x45 0x44	0x0A
RESET_PEAK_ENCODER_SPEED	<LF>
Command	End

The printer will respond with:
ACK-PEAK_ENCODER_RESET<LF>

Note:

- This command was first implemented in version 02.02.15 of the software.

GET ENCODER TIMEOUT
This command is used to read the current encoder timeout value.

To read the encoder timeout value, send:

0x47 0x45 0x54 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x54 0x49 0x4D 0x45 0x4F 0x55 0x54	0x0A
GET_ENCODER_TIMEOUT	<LF>
Command	End

The printer will respond with:
`ACK-GET_ENCODER_TIMEOUT=#<LF>`
where "#" is the current encoder timeout value in milliseconds.

Note:
- This command was first implemented in version 02.01.08 of the software.

SET ENCODER TIMEOUT
This command is used to set the encoder timeout value.

To set the encoder timeout value to 1 second, send:

0x53 0x45 0x54 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x54 0x49 0x4D 0x45 0x4F 0x55 0x54 0x20 0x31 0x30 0x30 0x30	0x0A
SET_ENCODER_TIMEOUT 1000	<LF>
Command	End

If successful, the printer will respond with:
`ACK-SET_ENCODER_TIMEOUT=1000<LF>`

If unsuccessful, the printer will respond with:
`ACK-Error! Unable to set encoder timeout<LF>`

Notes:
- Valid values are "0" – "86400". 0 indicates an infinite timeout and values 1-86400 indicate the timeout value (in milliseconds).
- This command was first implemented in version 02.01.08 of the software.

GET ENCODER DIVIDER
This command is used to read the current encoder divider value.

To read the encoder divider value, send:

0x47 0x45 0x54 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x44 0x49 0x56 0x49 0x44 0x45 0x52	0x0A
GET_ENCODER_DIVIDER	<LF>
Command	End

If successful, the printer will respond with:
`ACK-ENCODER_DIVIDER=#<LF>`
where "#" is the current encoder divider value.

If unsuccessful, the printer will respond with:
`ACK-Error! Unable to get encoder divider<LF>`

Note:
- This command was first implemented in version 02.01.08 of the software.

SET ENCODER DIVIDER

This command is used to set the encoder divider value. The raw pulse train from the encoder will be divided by this value before being used for printing. This allows you to adjust the width of the print without having to change the physical speed of the encoder.

To set the encoder divider value to 4, send:

0x53 0x45 0x54 0x5F 0x45 0x4E 0x43 0x4F 0x44 0x45 0x52 0x5F 0x44 0x49 0x56 0x49 0x44 0x45 0x52 0x20 0x34		0x0A
	SET_ENCODER_DIVIDER 4	<LF>
	Command	End

If successful, the printer will respond with:
`ACK-SET_ENCODER_DIVIDER=4<LF>`

If unsuccessful, the printer will respond with:
`ACK-Error! Unable to set encoder divider<LF>`

Notes:

- Valid values are “3” – “60”.
- If an invalid value is set, it will be adjusted automatically, but will not be reflected in the response. If you need to determine what the adjusted value is, use the GET_ENCODER_DIVIDER command.
- This command was first implemented in version 02.01.08 of the software.

READ PRINT STATUS

This command is used to read the print status (whether or not the printer will print when triggered).

To read the print status, send:

0x50 0x52 0x49 0x4E 0x54 0x5F 0x54 0x52 0x49 0x47 0x47 0x45 0x52 0x3D 0x51 0x55 0x45 0x52 0x59		0x0A
	PRINT_TRIGGER=QUERY	<LF>
	Command	End

If the printer is configured to print when triggered, it will respond with:
`ACK-PRINT_TRIGGER=ON<LF>`

If the printer is configured not to print when triggered, it will respond with:
`ACK-PRINT_TRIGGER=OFF<LF>`

If the printer is unable to determine the print status (which should only occur during startup), it will respond with:
`ACK-PRINT_TRIGGER=NULL<LF>`

WRITE PRINT STATUS
This command is used to write the print status (whether or not the printer will print when triggered).

To tell the printer to print when triggered, send:

0x50 0x52 0x49 0x4E 0x54 0x5F 0x54 0x52 0x49 0x47 0x47 0x45 0x52 0x3D 0x4F 0x4E		0x0A
PRINT_TRIGGER=ON		<LF>
Command		End

If successful and the printer will print when triggered, it will respond with:
`ACK-PRINT_TRIGGER=ON<LF>`

If a message is in the process of being printed, it will respond with:
`ACK-Error! Currently printing, unable to change trigger state<LF>`

To tell the printer not to print when triggered, send:

0x50 0x52 0x49 0x4E 0x54 0x5F 0x54 0x52 0x49 0x47 0x47 0x45 0x52 0x3D 0x4F 0x46 0x46		0x0A
PRINT_TRIGGER=OFF		<LF>
Command		End

If successful and the printer will not print when triggered, it will respond with:
`ACK-PRINT_TRIGGER=OFF<LF>`

If the printer is unable to determine the print status (which should only occur during startup), it will respond with:
`ACK-Error! Could not set Print Trigger!<LF>`

GET REPEAT PRINT
This command is used to determine whether or not the currently loaded message is configured for Repeat Print.

To read the repeat print status, send:

0x47 0x45 0x54 0x5F 0x52 0x45 0x50 0x45 0x41 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54		0x0A
GET_REPEAT_PRINT		<LF>
Command		End

The printer will respond with:
`ACK-GET_REPEAT_PRINT={value}<LF>`
where “{value}” is “True” or “False”.

Note:
- This command was first implemented in version 02.01.08 of the software.

GET MANUAL REPEAT PRINT
This command is used to read the status of the “Software Repeat Print Switch”.

To read the status of the “Software Repeat Print Switch”, send:

0x47 0x45 0x54 0x5F 0x4D 0x41 0x4E 0x55 0x41 0x4C 0x5F 0x52 0x45 0x50 0x45 0x41 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54		0x0A
GET_MANUAL_REPEAT_PRINT		<LF>
Command		End

The printer will respond with:
`ACK-GET_MANUAL_REPEAT_PRINT=#<LF>`
where “#” is “0” or “1”.

Notes:
- A value of “0” indicates disabled and a value of “1” indicates enabled.
- This command was first implemented in version 02.01.08 of the software.

SET MANUAL REPEAT PRINT

This command is used to set the status of the "Software Repeat Print Switch". When enabled, this will duplicate the effect of a toggle switch or covered photocell. This is used to repeat print without an external trigger.

To enable the "Software Repeat Print Switch", send:

0x53 0x45 0x54 0x5F 0x4D 0x41 0x4E 0x55 0x41 0x4C 0x5F 0x52 0x45 0x50 0x45 0x41 0x54 0x5F 0x50 0x52 0x49 0x4E 0x54 0x3D 0x41	0x0A
SET_MANUAL_REPEAT_PRINT=1	<LF>
Command	End

The printer will respond with:
`ACK-SET_MANUAL_REPEAT_PRINT=4<LF>`

Notes:

- Valid values are "0" and "1". Any value other than "1" will be taken as "0".
- This command was first implemented in version 02.01.08 of the software.

GET SPIT SETTINGS

This command is used to read the spit configuration for the specified printhead.

To read the spit configuration, send:

0x47 0x45 0x54 0x5F 0x53 0x50 0x49 0x54 0x5F 0x53 0x45 0x54 0x54 0x49 0x4E 0x47 0x53 0x20 0x3?	0x0A
GET_SPIT_SETTINGS #	<LF>
Command	End

where "#" is the printhead number ("1" or "2").

The printer will respond with:
`ACK-GET_SPIT_SETTINGS={mode},{quantity},{delay},{timeout},{period}<LF>`
where:

"{mode}" is a single-digit number indicating the spit mode, where:
- '0' = Off
- '1' = Column
- '2' = Ghost All
- '3' = Ghost

"{quantity}" is the number of columns ejected per spit cycle ("1" – "15").
"{period}" is the time (in seconds) between spit cycles ("1" – "30").
"{delay}" is the time (in milliseconds) after printing stops and spitting begins ("1" – "15000").
"{timeout}" is the time (in seconds) spitting begins until the spit function turns off until the next trigger ("1" – "86399").

If the printer is unable to read the spit configuration at this time, it will respond with:
`ACK-Error! Unable to get spit settings<LF>`

Note:

- If the printhead number is omitted, the printer will respond with the spit settings for printhead 1.

SET SPIT SETTINGS

This command is used to set the spit configuration.

To set the spit configuration to Column mode, spitting 2 columns every 3 seconds, with 3 seconds between spit cycles and ending 15 seconds after printing has stopped, send:

0x53 0x45 0x54 0x5F 0x53 0x50 0x49 0x54 0x5F 0x53 0x45 0x54 0x54 0x49 0x4E 0x47 0x53 0x3D
0x31 0x2C 0x32 0x2C 0x33 0x2C 0x33 0x30 0x30 0x30 0x2C 0x31 0x35 0x30 0x30 0x30 0x2C 0x3? 0x0A

SET_SPIT_SETTINGS=1,2,3,3000,15000,# <LF>

Command End

where "#" is the printhead number ("1" or "2").

The printer will respond with:

`ACK-SET_SPIT_SETTINGS Success<LF>`

If the printer is unable to read the spit configuration at this time, it will respond with:

`ACK-Error! Unable to set spit settings<LF>`

Notes:

- The first value is the spit mode. Set this to a single-digit number, where:
  '0' = Off
  '1' = Column
  '2' = Ghost All
  '3' = Ghost
- The second value is the spit quantity. Set this to the number of columns ejected per spit cycle ("1" – "15").
- The third value is the spit period. Set this to the time (in seconds) between spit cycles ("1" – "30").
- The fourth value is the spit delay. Set this to the time (in milliseconds) after printing stops and spitting begins ("1" – "15000").
- The fifth value is the spit timeout. Set this to the time (in seconds) spitting begins until the spit function turns off until the next trigger ("1" – "86399").
- The last value is the printhead number ("1" or "2"). If the printhead number is omitted, the printer will respond with the spit settings for printhead 1.

GET SPIT ACTIVE

This command is used to determine whether or not either printhead is currently spitting.

To check if either printhead is currently spitting, send:

0x47 0x45 0x54 0x5F 0x53 0x50 0x49 0x54 0x5F 0x41 0x43 0x54 0x49 0x56 0x45 0x0A

GET_SPIT_ACTIVE <LF>

Command End

The printer will respond with:

`ACK-GET_SPIT_ACTIVE=#<LF>`

Where "#" is a single-digit number indicating whether either printhead is currently spitting, where:

'0' = Neither printhead is currently spitting.
'1' = At least one of the printheads is currently spitting.

READ PRODUCTION COUNTER

This command is used to read the production counter value (the total number of times the printer has printed since being powered on).

To read the production counter, send:

0x50 0x52 0x49 0x44 0x55 0x43 0x54 0x49 0x4F 0x4E 0x5F 0x43 0x4F 0x55 0x4E 0x54 0x45 0x52 0x3D 0x51 0x55 0x45 0x52 0x59	0x0A
PRODUCTION_COUNTER=QUERY	<LF>
Command	End

If successful, the printer will respond with:
`ACK-PRODUCTION_COUNTER=#<LF>`
where "#" is a string consisting of a 32-bit integer value ("0" – "4294967295").

If unsuccessful, the printer will respond with:
`ACK-PRODUCTION_COUNTER=ERROR<LF>`

WRITE PRODUCTION COUNTER

This command is used to set the value of the production counter (the total number of times the printer has printed since being powered on).

To set the value of the production counter, send:

0x50 0x52 0x49 0x44 0x55 0x43 0x54 0x49 0x4F 0x4E 0x5F 0x43 0x4F 0x55 0x4E 0x54 0x45 0x52 0x3D 0x3?	0x0A
PRODUCTION_COUNTER=#	<LF>
Command	End

where "#" is a string consisting of a 32-bit value ("0" – "4294967295").

If successful, the printer will respond with:
`ACK-PRODUCTION_COUNTER=#<LF>`
where "#" is a string consisting of a 32-bit value ("0" – "4294967295") and is a confirmation of the value received.

If the printer is unable to determine the production counter value, it will respond with:
`ACK-PRODUCTION_COUNTER=ERROR<LF>`

READ SERIAL NUMBER

This command is used to read the serial number of the printer.

To read the serial number, send:

0x52 0x45 0x41 0x44 0x5F 0x53 0x45 0x52 0x49 0x41 0x4C 0x5F 0x4E 0x55 0x4D 0x42 0x45 0x52	0x0A
READ_SERIAL_NUMBER	<LF>
Command	End

The printer will respond with:
`ACK-Serial Number={serial_number}<LF>`
where "{serial_number}" is a string containing the serial number.

GET PRINTER NAME

This command is used to read the name of the printer.

To read the printer name, send:

0x50 0x52 0x49 0x4E 0x54 0x45 0x52 0x5F 0x4E 0x41 0x4D 0x45 0x3D 0x51 0x55 0x45 0x52 0x59	0x0A
PRINTER_NAME=QUERY	<LF>
Command	End

If successful, the printer will respond with:
`ACK-PRINTER_NAME={Printer_name}<LF>`
where "{Printer_name}" is the name of the printer (up to 30 characters). If the name of the printer has not been set, "{Printer_name}" will be blank (0 characters).

If unsuccessful, the printer will respond with:
`ACK-Error! Could not access printer name<LF>`

GET ACTIVE COUNTERS

This command is used to read a list of the defined counters in the message that is currently being printed.

To read the list of counters for a printhead, send:

0x47 0x45 0x54 0x5F 0x41 0x43 0x54 0x49 0x56 0x45 0x5F 0x43 0x4F 0x55 0x4E 0x54 0x45 0x52 0x53 0x20 0x3?	0x0A
GET_ACTIVE_COUNTERS #	<LF>
Command	End

where "#" is the printhead number ("1" or "2").

If the message that is currently being printed contains counters, the printer will respond with:
`ACK-GET_ACTIVE_COUNTERS=#,#,...#<LF>`
Where "`#,#,...#`" is a list of counters in ascending order.

If the message that is currently being printed does not contain any counters, the printer will respond with:
`ACK-GET_ACTIVE_COUNTERS NONE ACTIVE<LF>`

Notes:

- This command was first implemented in version 02.00.26 of the software.
- The printhead number was first implemented as a 0-based value. It was changed to a 1-based value in version 02.01.08 of the software.

GET COUNTER INFO

This command is used to read information about the specified counter in the message that is currently being printed.

To read the information for counter #1 for printhead #1, send:

0x47 0x45 0x54 0x5F 0x43 0x4F 0x55 0x4E 0x54 0x45 0x52 0x5F 0x49 0x4E 0x46 0x4F 0x20 0x31 0x20 0x31	0x0A
GET_COUNTER_INFO {counter} {printhead}	<LF>
Command	End

where:

"{counter}" is the counter number.
"{printhead}" is the printhead number ("1" or "2").

If the message that is currently being printed contains the specified counter, the printer will respond with:
`ACK-GET_COUNTER_INFO={start},{stop},{current},{direction},{type},{name}<LF>`
where:

"{start}" is the Start value for this counter (see the Notes below for valid values).
"{stop}" is the Stop value for this counter (see the Notes below for valid values).
"{current}" is the Current value for this counter (see the Notes below for valid values).
"{direction}" is the direction that the counter is counting ("Up" or "Down").
"{type}" is the type of counter ("Numeric", "Alpha" or "Alphanumeric").
"{name}" is the name of the counter (as assigned by the user in Orion).

If the message that is currently being printed does not contain the specified counter, the printer will respond with:
`ACK-Error! No information for counter #<LF>`

Notes:

- Valid Start, Stop and Current values can be in any of these ranges, depending on the type of counter: "0" – "4294967295", "A" – "ZZZZZZ" or "0" – "ZZZZZZ".
- This command was first implemented in version 02.00.26 of the software.
- The printhead number was first implemented as a 0-based value. It was changed to a 1-based value in version 02.01.08 of the software.
- The counter name will be blank if the user has not assigned a name to the counter (in Orion).

SET COUNTER INFO

This command is used to set the current value of the specified counter in the message that is currently being printed.

To set the current value of counter #1 for printhead #1 to 10000, send:

0x53 0x45 0x54 0x5F 0x43 0x4F 0x55 0x4E 0x54 0x45 0x52 0x5F 0x49 0x4E 0x46 0x4F 0x20 0x31 0x20 0x31 0x30 0x30 0x30 0x30 0x20 0x31	0x0A
SET_COUNTER_INFO {counter} {value} {printhead}	<LF>
Command	End

where:

"{counter}" is the counter number.
"{value}" is the new counter value (see the Notes below for valid values).
"{printhead}" is the printhead number ("1" or "2").

If the message that is currently being printed contains the specified counter, the printer will respond with:
`ACK-SET_COUNTER_INFO Successful, New value is {value}<LF>`

If the message that is currently being printed does not contain the specified counter, the printer will respond with:
`ACK-Error! Unable to set counter #<LF>`

Notes:

- Valid values can be in any of these ranges, depending on the type of counter: "0" – "4294967295", "A" – "ZZZZZZ" or "0" – "ZZZZZZ".
- This command was first implemented in version 02.00.26 of the software.
- The printhead number was first implemented as a 0-based value. It was changed to a 1-based value in version 02.01.08 of the software.

GET INK VERSION

This command is used to read the version of the ink parameters being used by the printer.

To read the ink version, send:

0x47 0x45 0x54 0x5F 0x49 0x4E 0x4B 0x5F 0x56 0x45 0x52 0x53 0x49 0x4F 0x4E		0x0A
GET_INK_VERSION		<LF>
Command		End

The printer will respond with:
`ACK-INK VERSION=#<LF>`
where "#" is the ink version. If there was any sort of error, "#" will be "0".

Note:

- This command was first implemented in version 02.00.60 of the software.

GET DATE DISPLAY FORMAT

This command is used to read how the date is being formatted on the CoPilot display.

To read how the printer is displaying the date on the display, send:

0x47 0x45 0x54 0x5F 0x44 0x41 0x54 0x45 0x46 0x4F 0x52 0x4D 0x41 0x54		0x0A
GET_DATEFORMAT		<LF>
Command		End

If successful, the printer will respond with:
`ACK-GET_DATEFORMAT={format}<LF>`
where "{format}" is a string containing the date format.

If an error occurs, the printer will respond with:
`ACK-Error! Unable to get date format<LF>`

Notes:

- Valid values for the format are "ANSI" (for YYYY-MM-DD format), "MDY" (for MM-DD-YYYY format) and "DMY" (for DD-MM-YYYY format).
- This command was first implemented in version 02.02.31 of the software.

SET DATE DISPLAY FORMAT

This command is used to set how the date is formatted on the CoPilot display. This does not affect how the date is being printed by the printhead(s).

To have the printer display the date on the display in MM-DD-YYYY format, send:

0x53 0x45 0x54 0x5F 0x44 0x41 0x54 0x45 0x46 0x4F 0x52 0x4D 0x41 0x54 0x3D 0x4D 0x44 0x59		0x0A
SET_DATEFORMAT={format}		<LF>
Command		End

If successful, the printer will respond with:
`ACK-SET_DATEFORMAT={format}<LF>`
where "{format}" is a string containing the date format just set.

If an error occurs, the printer will respond with:
`ACK-Error! Unable to set date format<LF>`

Notes:

- Valid values for the format are "ANSI" (for YYYY-MM-DD format), "MDY" (for MM-DD-YYYY format) and "DMY" (for DD-MM-YYYY format).
- This command was first implemented in version 02.02.31 of the software.

Additional notes about TCP/IP communications

Communications between the printer and a terminal:

- The printers IP Address can be set manually or via DHCP. Be sure to check the IP Address of the printer when communicating with it.
- The default Subnet Mask is 255.255.255.0.
- The default Port is 4000.
- Data to be sent over CAT5 UTP cable.
- There is only one Ethernet port on the printer.
- Sending multiple commands in 1 string will not work. A minimum delay of 200 mSec between commands is recommended when not listening to the printer's response. If you listen to the printer's response, you may send the next command immediately.
- All commands to and responses from the printer will end in the Line Feed character.

Upon making a connection, the printer will respond with:

`Connected to Copilot printer<LF>`

Standard ASCII (Character Codes 0-127) Extended ASCII (Character Codes 128-255)

	0x	1x	2x	3x	4x	5x	6x	7x	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
x0	Ctrl-@ 000 Null	Ctrl-P 016 ► Data link esc	032	048 0	064 @	080 P	096 `	112 p	128 Ç	144 É	160 á	176 ░	192 └	208 ╨	224 α	240 ≡
x1	Ctrl-A 001 ☺ Start of header	Ctrl-Q 017 ◄ Dev. control 1	033 !	049 1	065 A	081 Q	097 a	113 q	129 ü	145 æ	161 í	177 ▒	193 ┴	209 ╤	225 β	241 ±
x2	Ctrl-B 002 ☻ Start of text	Ctrl-R 018 ↕ Dev. control 2	034 "	050 2	066 B	082 R	098 b	114 r	130 é	146 Æ	162 ó	178 ▓	194 ┬	210 ╥	226 Γ	242 ≥
x3	Ctrl-C 003 ♥ End of text	Ctrl-S 019 ‼ Dev. control 3	035 #	051 3	067 C	083 S	099 c	115 s	131 â	147 ô	163 ú	179 |	195 ├	211 ╙	227 π	243 ≤
x4	Ctrl-D 004 ♦ End of trans.	Ctrl-T 020 ¶ Dev. control 4	036 $	052 4	068 D	084 T	100 d	116 t	132 ä	148 ö	164 ñ	180 ┤	196 ─	212 ╘	228 Σ	244 ⌠
x5	Ctrl-E 005 ♣ Enquiry	Ctrl-U 021 § Negative ack.	037 %	053 5	069 E	085 U	101 e	117 u	133 à	149 ò	165 Ñ	181 ╡	197 ┼	213 ╒	229 σ	245 ⌡
x6	Ctrl-F 006 ♠ Acknowledge	Ctrl-V 022 ▬ Syncronize	038 &	054 6	070 F	086 V	102 f	118 v	134 å	150 û	166 ª	182 ╢	198 ╞	214 ╓	230 µ	246 ÷
x7	Ctrl-G 007 • Bell (ring)	Ctrl-W 023 ↨ End trans. BK	039 '	055 7	071 G	087 W	103 g	119 w	135 ç	151 ù	167 º	183 ╖	199 ╟	215 ╫	231 τ	247 ≈
x8	Ctrl-H 008 ◘ Backspace	Ctrl-X 024 ↑ Cancel	040 (	056 8	072 H	088 X	104 h	120 x	136 ê	152 ÿ	168 ¿	184 ╕	200 ╚	216 ╪	232 Φ	248 °
x9	Ctrl-I 009 ○ Horizontal tab	Ctrl-Y 025 ↓ End of medium	041)	057 9	073 I	089 Y	105 i	121 y	137 ë	153 Ö	169 ⌐	185 ╣	201 ╔	217 ┘	233 Θ	249 •
xA	Ctrl-J 010 ◙ Line feed	Ctrl-Z 026 → Substitute (eof)	042 *	058 :	074 J	090 Z	106 j	122 z	138 è	154 Ü	170 ¬	186 ║	202 ╩	218 ┌	234 Ω	250 ·
xB	Ctrl-K 011 ♂ Vertical tab	Ctrl-[027 ← Escape	043 +	059 ;	075 K	091 [	107 k	123 {	139 ï	155 ¢	171 ½	187 ╗	203 ╦	219 █	235 δ	251 √
xC	Ctrl-L 012 ♀ Form feed	Ctrl-\ 028 ∟ File separator	044 ,	060 <	076 L	092 \	108 l	124 |	140 î	156 £	172 ¼	188 ╝	204 ╠	220 ▄	236 ∞	252 ⁿ
xD	Ctrl-M 013 ♪ Carriage return	Ctrl-] 029 ↔ Grp separator	045 -	061 =	077 M	093]	109 m	125 }	141 ì	157 ¥	173 ¡	189 ╜	205 ═	221 ▌	237 ϕ	253 ²
xE	Ctrl-N 014 ♫ Shift out	Ctrl-^ 030 ▲ Rec. separator	046 .	062 >	078 N	094 ^	110 n	126 ~	142 Ä	158 Pts	174 «	190 ╛	206 ╬	222 ▐	238 ∈	254 ▪
xF	Ctrl-O 015 ☼ Shift in	Ctrl-_ 031 ▼ Unit separator	047 /	063 ?	079 O	095 _	111 o	127 ⌂ Delete (rubout)	143 Å	159 ƒ	175 »	191 ┐	207 ╧	223 ■	239 ∩	255 DEL