Abstract

This document describes the text communications protocol that can be used with Zipher machines. The protocol is intended to allow simple communication between Zipher machines and other devices.
<table>
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<th>Revision</th>
<th>Author</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
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<tr>
<td>1.00</td>
<td>Ben Yeomans</td>
<td>21st January 2003</td>
<td>Original</td>
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<td>Ben Yeomans</td>
<td>16th June 2004</td>
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<td>Matthew Faithfull</td>
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<td>Ben Yeomans</td>
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<td>Added Line Select commands</td>
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<td>Phil Hart</td>
<td>9th July 2009</td>
<td>Documented CLN and SLN commands that were added in August 2006 but not documented.</td>
</tr>
<tr>
<td>1.09</td>
<td>Phil Hart</td>
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<td>Added FMP command</td>
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<tr>
<td>1.10</td>
<td>Mat Tivey</td>
<td>18th February 2011</td>
<td>Updated description of JDI command to reflect the actual implementation</td>
</tr>
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<td>Mat Tivey</td>
<td>25th February 2011</td>
<td>Fixed example for LDU command (returns id not ACK)</td>
</tr>
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<td>1.12</td>
<td>Kerri Brown</td>
<td>9th May 2011</td>
<td>Added GTD and TAD commands.</td>
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<td>Jeff Froggatt</td>
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</tr>
<tr>
<td>1.14</td>
<td>Jeff Froggatt</td>
<td>11th February 2013</td>
<td>Corrections to Async message documentation.</td>
</tr>
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<td>Jeff Froggatt</td>
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<tr>
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<td>Added GJL, GJF and GJD commands.</td>
</tr>
<tr>
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<td>Jeff Froggatt</td>
<td>11th June 2013</td>
<td>Updated GJL, GJF and GJD commands.</td>
</tr>
<tr>
<td>1.18</td>
<td>Jeff Froggatt</td>
<td>10th October 2013</td>
<td>Removed reference to QUE command in table of commands as this was previously replaced with the OUT command.</td>
</tr>
<tr>
<td>1.19</td>
<td>Jeff Froggatt</td>
<td>31st October 2013</td>
<td>Added CMD commands for Bark (8610) project</td>
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<tr>
<td>1.20</td>
<td>Helcio Mayor</td>
<td>9th July 2014</td>
<td>Added SPD and GPD commands for 2300</td>
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<td>1.21</td>
<td>Jeff Froggatt</td>
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Introduction

This document describes the text communications system that can be used to communicate with a Zipher printer. The text protocol works over RS232 connections and (in software releases from June 2006) TCP/IP connections. The protocol is master-slave with the host machine considered as the master, and responsible for initiating any communications.

Conventions Used in this Document

All character values described in this document are text values. ANSI (1 byte per character) strings only are supported by the default text communications protocol, although a Unicode version is also available (see below).

Binary values are not used in this communications system; sending the string “65” means sending the character for ‘6’ followed by the character ‘5’.

The term “PackML” in this document refers to the “Automatic Mode Machine States Definition Version 2.1” by the OMAC Motion for Packaging Working Group, PackML Subcommittee. This document is available from http://www.omac.org/.
Running the Text Communications system

From CLARiTYConfig, Upload the parameters from the CLARiTY unit and open the System collection. There will be collections for “ComPort1” and “ComPort2”. Within these collections is a “Usage” entry which can be set as follows:

0. Deactivated
1. Text Communications System
2. Binary Communications System

Care should be taken if CLARiTYConfig is connected via a serial cable, as it is possible to shut out the CLARiTYConfig connection by changing it to “Deactivated” or “Text Communications System”. If this happens and it is not possible to reconnect by other means (Ethernet or the other serial port) the serial port settings can be restored to their default values (ComPort1 = Binary Communications System, ComPort2 = Deactivated) via the CLARiTY user interface. To do this, enter the Tools screen, then press the Setup button followed by Control, Communications and finally Reset serial ports.

Running the text communications system on both serial ports at the same time is not supported and attempting to do so may cause problems with CLARiTY.

When connecting a device to the text communications system, the first thing to ensure is that the serial port of the device to be connected is configured to match the configuration of the serial port on the CLARiTY unit. The settings should be:

- Bits per second (Baud rate): As configured in CLARiTYConfig
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow Control: As configured in CLARiTYConfig

If necessary, the Hyperterminal program, which ships with most versions of Microsoft Windows, can be used to test the text communications system.

The text communications system works best as a request/response protocol, where the device connected to the CLARiTY unit sends a command to the unit, and then waits for a response before sending another command. In some cases it is possible to send a command before the previous command has completed, but in most cases this will result in the second command failing.

To ensure that the commands you need are available and that the correct protocol mode is in use enter the Tools screen, the press the Diagnostics button followed by Control, Communications and finally select the Communication port that is set to use Text Communications.

The Text Comms Protocol item will now display the mode in use and installed version of the Text Comms Protocol. For example Zipher ASCII Comms, the version 1 ASCII protocol or Zipher UNICODE Comms v2, the version 2 UNICODE protocol. To determine which commands are available in the installed version of the protocol see the table below.

To switch between ASCII and UNICODE modes use CLARiTY Configuration Manager to set System/TextCommsParameterFile to the file name for the protocol definition file, either ZipherASCIICommsProtocol.xml or ZipherUNICODECommsProtocol.xml.

More recent software releases (from June 2006) also support the Text Communications Protocol via TCP/IP. This can be activated by using CLARiTYConfig to set the System/TCPIP/TextCommunications/NetworkPort parameter to a non-zero value. The Text Communications system will then wait for connections on the TCP port specified. Take care to avoid using the same port number as other services that may be in operation, such as Binary Communications (usually port 3001) or Master/Slave mode (usually port 3002).
Communications Sessions

A communications session comprises a set of commands or requests and responses. The carriage return character (ANSI character code 13 decimal / 0x0D hexadecimal) terminates each command or request, and also has the function of resetting the parser. This means that the carriage return character will stop parsing the current data even if the data has partially matched a command or request. The Carriage Return-Line Feed sequence (0x0D 0x0A) is also accepted as a terminator; the line feed character will simply be ignored.

Henceforth in this document, the carriage return character will be written <CR>

Most commands return either the default success response or the default failure response depending on whether or not the command was successfully executed.

The default success response is:
ACK<CR>
The default failure response is:
ERR<CR>

The examples given below use the character » to indicate data sent to the printer, and « to indicate data being received from the printer.

For example:
»CAF<CR>
«ERR<CR>
means “the string ‘CAF<CR>’ was sent to the printer, which responded with the string ‘ERR<CR>’”.

Because the carriage return character resets the parser, it is recommended to send the carriage return character before each communications session in order to clear any unwanted data which may be in the parser’s buffer.

This example sends the parser reset character before sending two commands to the printer:
»<CR>
»JDU|data|<CR>
«ACK<CR>
»PRN<CR>
«ACK<CR>
The commands and requests accepted by the Zipher Text Communications Protocol are as follows:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEL</td>
<td>Job Select (data inserted into consecutive fields)</td>
</tr>
<tr>
<td>SLA</td>
<td>Job Select (data inserted into named fields)</td>
</tr>
<tr>
<td>JDU</td>
<td>Job Data Update (data inserted into consecutive fields)</td>
</tr>
<tr>
<td>JDA</td>
<td>Job Data Update (data inserted into named fields)</td>
</tr>
<tr>
<td>PRN</td>
<td>Print</td>
</tr>
<tr>
<td>SST</td>
<td>Set printer state</td>
</tr>
<tr>
<td>GST</td>
<td>Get printer state</td>
</tr>
<tr>
<td>CAF</td>
<td>Clear All Faults</td>
</tr>
<tr>
<td>PML</td>
<td>PackML commands and requests</td>
</tr>
</tbody>
</table>

The following commands require Version 2 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLI</td>
<td>Job Select with Allocation (data inserted into named fields)</td>
</tr>
<tr>
<td>JDI</td>
<td>Job Data Update with Allocation (data inserted into named fields)</td>
</tr>
<tr>
<td>GPC</td>
<td>Get Counts</td>
</tr>
<tr>
<td>SPC</td>
<td>Set Counts</td>
</tr>
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</table>

The following commands require Version 3 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS</td>
<td>Line Assignment (data inserted into named fields)</td>
</tr>
<tr>
<td>LDU</td>
<td>Line Data Update (data inserted into named fields)</td>
</tr>
<tr>
<td>LSL</td>
<td>Line Select</td>
</tr>
<tr>
<td>CLN</td>
<td>Clear Line (Line set to Non-Printing Job)</td>
</tr>
<tr>
<td>SLN</td>
<td>Stop Line (Line set to Production Disabled)</td>
</tr>
</tbody>
</table>

The following commands require Version 4 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>IJS</td>
<td>Interactive Job Selection</td>
</tr>
<tr>
<td>CQI</td>
<td>Clear Queue Item</td>
</tr>
</tbody>
</table>

The following commands require Version 5 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTD</td>
<td>Get Time And Date</td>
</tr>
<tr>
<td>TAD</td>
<td>Set Time And Date</td>
</tr>
</tbody>
</table>

The following commands require Version 6 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAN</td>
<td>Get async notification enable map</td>
</tr>
<tr>
<td>SAN</td>
<td>Set async notification enable map</td>
</tr>
<tr>
<td>EAN</td>
<td>Enable all async notifications</td>
</tr>
<tr>
<td>DAN</td>
<td>Disable all async notifications</td>
</tr>
<tr>
<td>DPN</td>
<td>Disable print notifications and enable all others</td>
</tr>
<tr>
<td>SNO</td>
<td>Enable/Disable a Single Notification</td>
</tr>
<tr>
<td>CAW</td>
<td>Clear All Warnings</td>
</tr>
<tr>
<td>CEM</td>
<td>Clear error (Fault or Warning)</td>
</tr>
<tr>
<td>GFT</td>
<td>Gets the current Faults</td>
</tr>
<tr>
<td>GWN</td>
<td>Gets the current Warnings</td>
</tr>
<tr>
<td>STS</td>
<td>Async send of current overall status</td>
</tr>
<tr>
<td>ERS</td>
<td>Async send of current error status</td>
</tr>
<tr>
<td>JOB</td>
<td>Async send of current job details</td>
</tr>
<tr>
<td>PRS</td>
<td>Async send of print start</td>
</tr>
<tr>
<td>PRC</td>
<td>Async send of print complete</td>
</tr>
<tr>
<td>OUT</td>
<td>Async send of various output changes</td>
</tr>
<tr>
<td>QSZ</td>
<td>Gets the size and status of the update queue</td>
</tr>
<tr>
<td>GJN</td>
<td>Gets the selected job name and line selection</td>
</tr>
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</table>

The following commands require Version 7 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>JGL</td>
<td>Get Job List</td>
</tr>
<tr>
<td>GJF</td>
<td>Get Job Field List</td>
</tr>
<tr>
<td>GJD</td>
<td>Get Current Job Data</td>
</tr>
</tbody>
</table>

The following commands require Version 8 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMD</td>
<td>Perform printer specific command</td>
</tr>
</tbody>
</table>

The following commands require Version 9 or greater of the Text Communications Protocol:

<table>
<thead>
<tr>
<th>Command Code</th>
<th>Command Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPD</td>
<td>Set Print Density (2300 only)</td>
</tr>
<tr>
<td>GPD</td>
<td>Get Print Density (2300 only)</td>
</tr>
</tbody>
</table>
The following commands require Version 10 or greater of the Text Communications Protocol

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPD</td>
<td>Set Print Density (Master and Slave version)</td>
</tr>
<tr>
<td>GPD</td>
<td>Get Print Density (Master and Slave version)</td>
</tr>
</tbody>
</table>

These are now described in detail.
The Job Select Commands (SEL and SLA/SLI)

These commands cause the selection of a job on the printer. Values for variable fields may also be specified. These commands are not available when Line Selection is enabled. Please see Line Assignment below.

Syntax

SEL|<jobname>|<data>|…|<CR>
SLA|<jobname>||<fieldname>=<data>|…|<CR>
SLI|<jobname>|<allocation>|<fieldname>=<data>|…|<CR>

Return Values

On success, SEL and SLA return the default success response, SLI returns an ID for the item placed in the job queue by this command. On failure, the default failure response is returned. If the command succeeds, the response is sent immediately.

Details

The difference between SEL and SLA lies in the way values for variable fields are matched to field names. SEL assigns consecutive values to fields named “VarField00”, “VarField01”, “VarField02” etc.; SLA allows the field name to be specified in the command, useful if the job has fields which are not named “VarField00” etc. or if only a few fields need to be updated and using SEL would require the inclusion of values for fields that do not need updating. If the SEL command is to be used, care should be taken when designing the job that the fields to be updated have the correct names. SLI is similar to SLA except for the additional allocation parameter and the return id value.

Date Fields

Date fields are updated as for normal fields, but the correct format must be used. In the case of a User Entered Date, the correct format is:

```
dd/mm/yyyy
```

In the case of a Calculated Date, the correct format is:

```
ddd/mmm/yy
```

with negative values permitted for any of the components.

Please note that a Calculated Date depends on an underlying date calculation, and that it is this that will be updated by the command. If the job contains several Calculated Dates which obtain their value from the same date calculation, all of these will be updated.

Counter Fields

These are handled as normal fields.

Price Fields

These should be entered as decimal values. The decimal separator may be the point (.), comma (,) or centre dot (.). The value will be interpreted according to the number of decimal places specified for that field. For example, if the field has the default number of decimal places (2), the value “15” is interpreted as “15.00”, the value “15.5” as “15.50”, the value “15.076” as “15.07”, the value “.99” as “0.99” etc.

Allocation

This integer value will determine the number of prints allocated for the selected job.

The most likely reason for a failure on this command is trying to select a job which does not exist in the database. Specifying an invalid field name for a variable field or using an inappropriate format for a date field is not considered an error; the value will simply be ignored.

Examples

```latex
»SEL|Default 4 Line Text|<CR>
<ACK|<CR>
```
Selects the job “Default 4 Line Text” without specifying any data for variable fields.

»SEL|Default 4 Line Text|First Field|Second Field|<CR>
«ACK<CR>
Selects the job “Default 4 Line Text” and sets the field “VarField00” to the value “First Field” and the field “VarField01” to the value “Second Field”.

»SLA|Default 4 Line Text|<CR>
«ACK<CR>
Selects the job “Default 4 Line Text” without specifying any data for variable fields.

»SLA|Default 4 Line Text|Line 1=First Line|Line 4=Fourth Line|<CR>
«ACK<CR>
Selects the job “Default 4 Line Text” and sets the field “Line 1” to the value “First Line” and the field “Line 4” to the value “Fourth Line”.

»SLA|DateTest|OffsetDate=-010/002/00| <CR>
«ACK<CR>
Selects the job “DateTest” and sets the field “OffsetDate” to be two months minus ten days after its reference date.

»SLA|DateTest|AbsoluteDate=24/05/2003| <CR>
«ACK<CR>
Selects the job “DateTest” and sets the field “AbsoluteDate” to the 24th of May 2003.

»SLI|Default 4 Line Text|1500|<CR>
«2<CR>
Selects the job “Default 4 Line Text” with an allocation of 1500 prints and without specifying any data for variable fields. An id e.g. 2 is returned.

»SLI|Default 4 Line Text|3000|Line 1= First Line|Line 4=Fourth Line|<CR>
«3<CR>
Selects the job “Default 4 Line Text” with an allocation of 3000 and sets the field “Line 1” to the value “First Line” and the field “Line 4” to the value “Fourth Line”. An id e.g. 3 is returned

The Line Assignment Command (LAS)

When selection between multiple production lines (Line Selection) is enabled on the printer the process of Job Selection is replaced by the assignment of a Job to a numbered Line (Line Assignment).

Syntax

LAS|<jobname>;<line>;<fieldname>=<data>|…|<CR>

Return Values

On success LAS returns the queue item identifier for the line assignment item generated by the command. On failure the default failure response is returned. The response is sent immediately.

Details

The line value is a number between 1 and the number of lines for which the printer is configured. This has an absolute maximum of 16. Out of range values will cause a default failure response. Allocations are not currently supported in Line Select mode. The LAS command is otherwise identical to SLA in terms of its field names and data values.

Examples

»LAS|DateTest|8|OffsetDate=-010/002/00| <CR>
«ACK<CR>
Assigns the job “DateTest” to line 8 and sets the field “OffsetDate” to be two months minus ten days after its reference date.

**The Clear Line Command (CLN)**

When selection between multiple production lines (Line Selection) is enabled the clear line command allows the Line to have a Non Printing Job assigned to it.

**Syntax**

CLN|<line>|<CR>

**Return Values**

On success, returns the default success response. On failure, returns the default failure response.

**Details**

The line value is a number between 1 and the number of lines for which the printer is configured. This has an absolute maximum of 16. Out of range values will cause a default failure response.

**Examples**

» CLN|1|<CR>  
« ACK<CR>  
Assigns the Non Printing job to line 1.

**The Stop Line Command (SLN)**

When selection between multiple production lines (Line Selection) is enabled the clear line command allows the Line to have Production Disabled assigned to it.

**Syntax**

SLN|<line>|<CR>

**Return Values**

On success, returns the default success response. On failure, returns the default failure response.

**Details**

The line value is a number between 1 and the number of lines for which the printer is configured. This has an absolute maximum of 16. Out of range values will cause a default failure response.

**Examples**

» SLN|1|<CR>  
« ACK<CR>  
Assigns Production Disabled job to line 1.

**Interactive Job Selection (IJS)**

This command enables manual job selection to be remotely triggered by Text Comms. The Job Name and any Line Assignment (see LAS) and Allocation are set by the command. Variable data entry and preview confirmation are carried out on screen by the user.
Syntax

IJS|<line>|<jobname>|<allocation>|<CR>

Return Values

On success an interactive job selection will be initiated. Failure modes may be indicated by a message on the printer screen or by the standard error result or by no response and no interactive job selection being triggered.

Details

The line value is a number between 1 and the number of lines for which the printer is configured. If no lines are configured this values should be 0 or left blank e.g. IJS||<jobname>|<allocation>|<CR>.

Out of range values for line assignment will give the default failure response.

Examples

»IJS||TestJob||<CR>

Triggers Interactive Job Selection of the Job ‘TestJob’, with no allocation limit, when not in Line Select Mode.

»IJS|1|TestJob|100|<CR>

Triggers Interactive Job Selection of the Job ‘TestJob’, with an allocation of 100, allocated to the first line (Line 0), in Line Select mode.

The Job Data Update Commands (JDU and JDA/JDI)

These commands cause the variable fields on the currently selected job to be updated. These commands are not available when Line Selection is enabled. Please see Line Data Update below.

Syntax

JDU|<data>|...|<CR>
JDA|<fieldname>=<data>|...|<CR>
JDI|<allocation>|<fieldname>=<data>|...|<CR>

Return Values

On success JDU and JDA return the default success response JDI returns a queue item identifier for the job update item generated by the command. On failure the default failure response is returned. If the command succeeds, the response is sent immediately.

Details

The commands JDU, JDA and JDI work in the same way as SEL, SLA and SLI respectively, except that they do not select a new job, but update variable fields and allocations in the currently selected job.

The most likely reason for a failure on this command is trying to update fields when no job is selected. Specifying an invalid field name for a variable field is not considered an error; the value will simply be ignored.

Examples
»JDU|First Field|Second Field|<CR>
«ACK<CR>
Updates variable fields on the current job; sets the field “VarField00” to the value “First Field” and the field “VarField01” to the value “Second Field”.

»JDA|Line 1=First Line|Line 4=Fourth Line|<CR>
«ACK<CR>
Updates variable fields on the current job; sets the field “Line 1” to the value “First Line” and the field “Line 4” to the value “Fourth Line”.

»JDI|400|Line 1=First Line|Line 4=Fourth Line|<CR>
«3<CR>
Updates variable fields on the current job; sets the field “Line 1” to the value “First Line” and the field “Line 4” to the value “Fourth Line”. The allocation for the job is reset to 400. An id e.g. 3 is returned.

Line Data Update Command (LDU)

When selection between multiple production lines (Line Selection) is enabled on the printer the process of Job Data Update is replaced by the updating of fields in the job assigned to a numbered Line (Line Data Update).

Syntax

LDU|<line>|<fieldname>=<data>|…|<CR>

Return Values

On success LDU returns a queue item identifier for the line update item generated by the command. On failure the default failure response is returned. The response is sent immediately.

Details

The line value is a number between 1 and the number of lines for which the printer is configured. This has an absolute maximum of 16. Out of range values will cause a default failure response. Allocations are not currently supported in Line Select mode. The LAS command is otherwise identical to JDA in terms of its field names and data values.

Examples

»LDU|8|OffsetDate=-020/003/00|<CR>
«1<CR>
Updates variable fields on the job assigned to line 8; sets the field “OffsetDate” to be three months minus twenty days after its reference date.

Line Select Command (LSL)

When selection between multiple production lines (Line Selection) is enabled on the printer the Line Select command becomes available.

Syntax

LSL|<line> | <CR>

Return Values

On Success LSL returns the default success response, and on failure it returns the default failure response. The response is sent immediately.

Details
The line value is a number between 1 and the number of lines for which the printer is configured. This has an absolute maximum of 16. Out of range values will cause the default failure response.

Examples

»LSL|5|
»ACK<CR>
Sets line 5 to be the active line. A Job Select for the job assigned to Line 5 will be added to the job selection queue.

The Print Command (PRN)

This command causes the currently selected job to be printed once.

Syntax

PRN<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response. If the command succeeds, the response is sent after the job has been printed.

Details

The PRN command attempts to print the current job.

Examples

»PRN<CR>
»ACK<CR>
The current job was successfully printed.

Force Micro Purge command (FMP)

This command causes the currently printers that have the functionality to Micro Purge. Micro purging ejects a small amount of ink from the printhead. It can only be performed when the printer is either Online or Offline. Attempting to perform it in any other state will result in an ERR command being returned. If the printer is Online and printing the Micro Purge will occur when the print completes. The result is only returned when the command completes so the ACK response can be delayed if the printer is printing.

Syntax

FMP<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response. If the command succeeds, the response is sent after the micro purge has completed.

Details

The FMP command attempts to carry out a Micro Purge.

Examples

»FMP<CR>
»ACK<CR>
The micro purge was successfully completed.
The Set State Command (SST)

This command attempts to set the overall state of the printer.

Syntax

SST|<desiredstate>|<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response. If the command succeeds, the response is sent after the state transition has taken place.

Details

The SST command attempts to set the overall state. Valid values for desiredstate are:

- 0  Shut down
- 1  Starting up
- 2  Shutting down
- 3  Running
- 4  Offline

The most likely reason for a failure on this command is trying to perform a state transition which is not supported. Please refer to Appendix 1 for the state transition diagram showing the permitted state transitions.

Examples

»SST|1|<CR>
«ACK<CR>
Starts up the printer

»SST|0|<CR>
«ERR<CR>
An attempt to shut down the printer. The error is caused because it is not possible to enter state 0 directly, the printer must be moved into state 2 to shut down the printer.

The Get State Request (GST)

This request retrieves various state values from the printer.

Syntax

GST<CR>

Return Values

STS|<overallstate>|<errorstate>|<currentjob>|<batchcount>|<totalcount>|<CR>
Returns immediately.

Details

The GST request retrieves the following values:

- overallstate
  The overall state of the printer, as described for the SST command.
- errorstate
  The error condition of the printer. This will be one of the following:
  - 0  No errors
currentjob
  The job selected in the printer. This will be empty if no job is selected.

batchcount
  The printer’s batch count.

totalcount
  The printer’s total count.

Examples

»GST<CR>
«STS|3|0|Default 4 Line Text|4345|8253|<CR>
The printer is running, there are no errors present, the currently selected job is “Default 4 Line Text”, the batch count is 4345 and the total count is 8253.

»GST<CR>
«STS|4|2||0|8253|<CR>
The printer is offline with a fault, there is no job selected, the batch count is 0 and the total count is 8253.

The Get All Faults Command (GFT)

This command lists all current faults in the printer.

Syntax

GFT<CR>

Return Values

On success, returns the total count of the number of faults followed by a list of current faults. On failure, returns the default failure response.

FLT|<count>||[<nnnn>|<clearable>|<title>]|<CR>

Part within square brackets repeats for each fault present.

Details

count
  The total number of faults.

nnnn
  The error number (the 4 digit “E” number as displayed on the printer message area)

clearable
  Indicates if the fault is clearable
    0. Not Clearable
    1. Clearable

title
  The textual title of the fault as displayed on the printer message area.

Note that the repeating part of the return string (fault number, clearable and title) is of fixed format and cannot be changed via the protocol definition file, although the separator ‘|’ may be changed as required.

Examples

»GFT<CR>
«FLT|3|5308|0|Printhead 1 - Printhead Disconnected|5307|0|Printhead 1 - No Cartridge|1005|0|Print Limit Exceeded|<CR>

Indicates there are 3 faults at the printer all of which are not as yet clearable.

The Get All Warnings (GWN)

This command lists all current warnings in the printer.

Syntax

GWN<CR>

Return Values

On success, returns the total count of the number of warnings followed by a list of current warnings. On failure, returns the default failure response.

WRN|<count>|[[<nnnn>|<clearable>|<title>]|]<CR>

Part within square brackets repeats for each warning present.

Details

count The total number of warnings.
nnn The error number (the 4 digit “E” number as displayed on the printer message area)
clearable Indicates if the warning is clearable

  0. Not Clearable
  1. Clearable
title The textual title of the warning as displayed on the printer message area.

Note that the repeating part of the return string (fault number, clearable and title) is of fixed format and cannot be changed via the protocol definition file, although the separator ‘|’ may be changed as required.

Examples

»GWN<CR>
«WRN|0|<CR>

Indicates that there are no warnings at the printer.

The Clear All Faults Command (CAF)

This command attempts to clear all fault conditions present in the printer.

Syntax

CAF<CR>

Return Values
On success, returns the default success response. On failure, returns the default failure response. If the command succeeds, the response is sent after all faults have been cleared.

Details

The CAF command attempts to clear all faults present in the printer. Each fault will only be cleared if it is user-clearable (i.e. if it could be cleared using the user interface). The most likely reason for this command failing is the presence of a non-user-clearable fault. If there are no faults present, the success response is immediately returned.

Examples

»CAF<CR>
«ACK<CR>

All faults successfully cleared

The Clear All Warnings Command (CAW)

This command attempts to clear all warning conditions present in the printer.

Syntax

CAW<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response. If the command succeeds, the response is sent after all warnings have been cleared.

Details

The CAW command attempts to clear all warnings present in the printer. Each warning will only be cleared if it is user-clearable (i.e. if it could be cleared using the user interface). The most likely reason for this command failing is the presence of a non-user-clearable warning. If there are no warnings present, the success response is immediately returned.

Examples

»CAW<CR>
«ACK<CR>

All warnings successfully cleared

The Clear Single Error (CEM)

This command attempts to clear a single numbered error present in the printer.

Syntax

CEM|<number>|<CR>

Where <number> is the 4 digit number of the error.

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Details
The CEM command attempts to clear a specific error (fault or warning) present in the printer. If an error with the given number is not pre-set then it returns the default failure response. The error will only be cleared if it is user-clearable (i.e. if it could be cleared using the user interface). The most likely reason for this command failing is the presence of a non-user-clearable error or an incorrect error number. If there are no errors present, the success response is immediately returned.

Examples

»CEM|1005|<CR>
«ACK<CR>

The Print Limit Exceeded fault is successfully cleared.

The Get Counts Command (GPC)

This command gets a snapshot of various performance counters from the printer

Syntax

GPC<CR>

Return Values

PCS|<success prints>|<fail prints>|<missed prints>|<remaining prints>|<CR>
Returns immediately.

Details

The GPC request retrieves the following values:

success prints The number of successful prints since start-up
fail prints The number of failed prints since start-up
missed prints The number of missed print signals since start-up
remaining prints The number of prints left in the current allocation

The Set Counts Command (SPC)

This command sets the values of various performance counters on the printer

Syntax

SPC|success prints|fail prints|missed prints|<CR>

Return Values

PCS|<success prints>|<fail prints>|<missed prints>|<remaining prints>|<CR>
Returns immediately.

Details

The SPC request sets the following values:

success prints The number of successful prints since start-up
fail prints  The number of failed prints since start-up
missed prints The number of missed print signals since start-up

The Clear Queue Item Command (CQI)

This command removes items from the job queue that have not yet become active

Syntax

CQI|<item number>|<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Details

The CQI request removes the numbered item from the job queue. The item number to use is that returned by the command that added the job to the queue.
If the command is issued with no queue item number all items are removed from the queue.
It is possible that a queue item existing at the time when the command is issued will have reached selection or been removed from the queue by other means before the CQI command is processed causing it to fail. This is expected behaviour.

Examples

»CQI<CR>
«ACK<CR>
All queue items successfully cleared

»CQI|3|<CR>
«ACK<CR>
Item with id 3 (Not necessarily the third item) successfully removed from the queue.

The Get Time and Date Command (GTD)

Syntax

GTD<CR>

Return Values

On success, returns the date and time of the printer in the following format:

TAD|DD/MM/YYYY HH:MM:SS|<CR>

On failure, returns the default failure response.

Details

The GTD command gets the current date and time of the printer.

Examples

»GTD<CR>
«TAD|09/05/2011 10:00:00|<CR>
The Set Date and Time Command (TAD)

Syntax

TAD|DD/MM/YYYY HH:MM:SS|<CR>

Return Values

On success, sets the printer time and date and returns the default success response. On failure, sends the default failure response.

Details

The TAD command sets the time and date on the printer to the time specified. If the time is sent in any other format the command will return the default failure response.

Examples

»TAD|09/05/2011 10:00:00|<CR>
«ACK<CR>

»TAD|09/05/2011|<CR>
«ERR<CR>

»TAD|09/05/2011 10:00|<CR>
«ERR<CR>

The Get Job Name Command (GJN)

Syntax

GJN<CR>

Return Values

On success, returns the name of the current job in the printer in the following format :-

JOB|<job name>|<line number>|<CR>

Line number is set to a dash “-“ if the printer is not currently in line select mode.

On failure, returns the default failure response.

Details

The GJN command gets the name of the job current set on the printer and the selected line if in line select mode.

Examples

»GJN<CR>
«JOB|Counter_Test|-|<CR>

Indicates that the current job is “Counter_Test”

In line select mode

»GJN<CR>
«JOB|Counter_Test|2|<CR>

Indicates that the job called “Counter_Test” has been loaded from line 2.
The Queue Size Command (QSZ)

Syntax

QSZ<CR>

Return Values

On success, returns the size of the update queue at the printer and the queue status in the following format:-

QSZ|<nn>|<s>|<CR>

Where

<nn> is the current queue size

<s> is the queue status

0. queue empty
1. queue low
2. queue high
3. queue full
4. queue state intermediate

On failure, returns the default failure response.

Details

The QSZ command returns the size of the update queue at the printer and the queue status. A queue status of high is only returned if the queue sizes rises above the pre-set high threshold, it is not returned when the queue size is falling. Similarly, a queue status of low is only returned if the queue size is falling. The queue state intermediate indicates that the queue is neither empty, full or at the pre-set low or high thresholds.

Examples

»QSZ<CR>
«QSZ|0|0|<CR>

Indicates that the queue is empty

»QSZ<CR>
«QSZ|15|3|<CR>

Indicates that the queue is full

»QSZ<CR>
«QSZ|2|1|<CR>

Indicates that the queue size is 2 and has triggered a queue low indication.

»QSZ<CR>
«QSZ|7|4|<CR>

Indicates that the queue size is 7 but this is not low enough to have triggered a queue low indication or high enough to have triggered a queue high indication.
The Get Job List Command (GJL)

Syntax

GJL<CR>

Return Values

On success, returns the total count of the number of Jobs followed by a list of the names of the Jobs in the printer in the following format :-

JBL|<count>|[<jobname>]|<CR>

Part within square brackets repeats for each job present.

On failure, returns the default failure response.

Details

count
The total number of jobs.

jobname
The name of the job.

Note that the repeating part of the return string is of fixed format and cannot be changed via the protocol definition file, although the separator ‘|’ may be changed as required.

Examples

»GJL<CR>
«JBL|3|ApplesJob|OrangesJob|BananasJob|<CR>

Indicates that there are 3 jobs in the database called ApplesJob, OrangesJob and BananasJob.

The Get Job Fields Command (GJF)

Syntax

GJF|<jobname>|<CR>

Where <jobname> is the name of a Job at the printer (obtained from a GJL command for example)

Return Values

On success, returns the total count of the number of fields in the Job followed by a list of field names in the following format :-

JFL|<count>|[<fieldname>]|<CR>

Part within square brackets repeats for each field present. The list of fields are not returned in any particular order.

On failure, returns the default failure response.

Details

count
The total number of fields in the job.

fieldname
The name of the job field.

Note that the repeating part of the return string is of fixed format and cannot be changed via the protocol definition file, although the separator ‘|’ may be changed as required.

Examples

»GJF|OrangesJob|<CR>
«JFL|2|Field00|PriceField01|<CR>

Indicates that there are 2 fields in the job called “OrangesJob” which are called “Field00” and “PriceField01”.

The Get Current Job Data Command (GJD)

Syntax

GJD<CR>

Return Values

On success, returns the total count of the number of fields in the currently loaded Job followed by a list of field name and value pairs in the following format :-

JDL|<count>|[<fieldname>=<value>]|<CR>

Part within square brackets repeats for each field present.

On failure, returns the default failure response.

Details

count
  The total number of fields in the job.

fieldname
  The name of the job field.

value
  The value of the job field.

The values will be those supplied when the user selected the job (SEL, SLA, SLI command) but will be unaffected by changes to the printing fields made by JDU, JDA or JDI commands. Also real time incrementing fields such as counters and elapsed times will remain as entered at job select.

Note that the repeating part of the return string (fieldname, assigner symbol, value) is of fixed format and cannot be changed via the protocol definition file, although the separator ‘|’ and assigner “=” may be changed as required.

Examples

»GJD<CR>
«JDL|2|Field00=Apples|PriceField01=$2.00|<CR>

Indicates that there are 2 fields in the current job, “Field00” which is text field having a value of “Apples” and “PriceField01” which has a value of “$2.00”.

The Device Specific Commands and Requests (CMD)

This set of commands allows control of certain printer functions.
Syntax

CMD|<devcommand>|<CR>

Return Values

The CMD commands all return the default success response if the syntax is correct and the printer supports the command. The default failure parameter is returned if the syntax is invalid or the printer does not support the command.

Details

Send a CMD command. The command is specified in the devcommand parameter; valid values for this parameter for the videojet 8610 printer are:

- COP: Causes printers which implement this command to open the cap covering the print head.
- CCL: Causes printers which implement this command to close the cap covering the print head.
- BWE: Causes printers which implement this command to enable warming of the print head.

Examples

»CMD|COP|<CR>
«ACK<CR>
The caps are opened

»CMD|CCL|<CR>
«ACK<CR>
The caps are closed

»CMD|XXX|<CR>
«ERR<CR>
The CMD sub command XXX is not defined.

The Set Print Density command ( SPD )

This is only currently available for Videojet 2300 series printer.

Set the “Printer Density” parameter to a specified value.

Syntax

SPD|<d>|<CR>

or

SPD|<d>|<ms>|<CR>

where <d> is a numeric value between 0 and 100% and is the required print density

where <ms> is the Master and Slave selector with a value from 1 to 15 as follows :-

1. Update the printer (or the Master only in a Master/Slave configuration)
3. Update the Master and the first Slave (if enabled)
7. Update the Master and the first 2 Slaves (if enabled)
15. Update the Master and the all 3 Slaves (if enabled)

<ms> values other than 1 can only be sent to a Master printer. If <ms> is omitted then it is equivalent to an <ms> value of 1 i.e. just the local or master printer.
Other numerical values of `<ms>` can be used where the Master or Slaves affected is determined by the binary equivalent of the number e.g. 9 will update the Master and 3rd Slave only.

For a non master slave configuration the second parameter must be 1 or omitted.

The command will set the Print Density to the nearest supported value on the master and slaves selected. For the 2300 series the supported values are 100%, 70%, 50%, 33% and 25%.

The command will return an error if the values are out of range or an update is requested on a slave printer which is either not currently configured or connected.

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Examples

```plaintext
»SPD|33|<CR>
«ACK<CR>

Sets the print density to 33% on the printer.

»SPD|75|1|<CR>
«ACK<CR>

Sets the print density to 70% on the printer.

»SPD|70|15|<CR>
«ACK<CR>

Sets the print density to 70% on the Master and all 3 Slave printers.

»SPD|150|1|<CR>
«ERR<CR>

Fail as the density value is out of range.

»SPD|100|20|<CR>
«ERR<CR>

Fail as the master/slave selector value is out of range.

»SPD|100|3|<CR>
«ERR<CR>

Fail because the printer is either not in master-slave configuration or the slave is not configured or disconnected.

The Get Print Density command (GPD)

This is only available for Videojet 2300 series printer.

Get the “Printer Density” value from the printer.

Syntax

GDP<CR>

or

GDP|<p>|<CR>
where \(<p>\) is a numeric value between 0 and 3 as follows:

- 0  Read the printer value (or the Master value only in a Master/Slave configuration)
- 1  Read the value at the 1\textsuperscript{st} Slave (if enabled)
- 2  Read the value at the 2\textsuperscript{nd} Slave (if enabled)
- 3  Read the value at the 3\textsuperscript{rd} Slave (if enabled)

If \(<p>\) is not present then the value at the local printer is returned.

**Return Values**

On success, returns

\[\text{DEN}|<d>|\text{CR}\]

Where

\(<d>\) is a numeric value between 0 and 100\% and is the current print density. Or -1 if a Slave printer is not currently connected.

On failure, returns the default failure response

**Examples**

»GDP<CR>
«DEN|50|<CR>

Indicates that the current Print Density for the Master printer is 50\%.

»GDP|1|<CR>
«DEN|100|<CR>

Indicates that the current print density at the first Slave is 100\%.

»GDP|2|<CR>
«ERR<CR>

Indicates that the second Slave is not enabled.

»GDP|2|<CR>
«DEN|-1|<CR>

Indicates that the second Slave is disconnected.

**The PackML Commands and Requests (PML)**

This set of commands and requests allow the printer to be controlled according to the PackML Automatic Mode Machine States Definition.

**Syntax**

\[\text{PML}|\text{packmlcommand}|\text{CR}\]

**Return Values**

The PackML commands all return the default success response on success and the default failure response if the command was rejected. The return values for the PackML requests are described below.

**Details**
Sends a PackML command or request. The command or request is specified in the `packmlcommand` parameter; valid values for this parameter are:

**PRE**
Sends a PackML Prepare command, which represents the PackML state transition from **STOPPED** to **STARTING**. In CLARiTY terms it is equivalent to pressing the \[\text{Shutdown}\] button while the system is in the **Shut Down** state. The success response is sent when the system state reaches the target state. The failure response is sent if the state transition is rejected. If the system is already in the target state when the command is received, a success response is immediately sent without performing any action. If the system is in a state other than the source or target states for this transition, the command is immediately rejected.

**STA**
Sends a PackML Start command, which represents the PackML state transition from **READY/HELD** to **STANDBY**. In CLARiTY terms it is equivalent to pressing the \[\text{Start}\] button while the system is in the **Offline** state. The success response is sent when the system state reaches the target state. The failure response is sent if the state transition is rejected. If the system is already in the target state when the command is received, a success response is immediately sent without performing any action. If the system is in a state other than the source or target states for this transition, the command is immediately rejected. This command may fail if there is no job selected.

**STP**
Sends a PackML Stop command, which represents the PackML state transition from **STARTING/HELD/READY/STANDBY/PRODUCING** to **STOPPING** or **ABORTED** to **STOPPED**. In CLARiTY terms it is equivalent to clearing any faults and then pressing the \[\text{Power}\] button while the system is in the **Offline**, **Starting up**, or **Running** states, or equivalent to clearing any faults while the system is in the **Shut Down** state and a fault has occurred. The success response is sent when the system state reaches the target state. The failure response is sent if the state transition is rejected. If the system is already in the target state when the command is received, a success response is immediately sent without performing any action. If the system is in a state other than the source or target states for this transition, the command is immediately rejected. This command may fail if there are faults present that cannot be cleared.

**HLD**
Sends a PackML Hold command, which represents the PackML state transition from **STANDBY/PRODUCING** to **HOLDING**. In CLARiTY terms it is equivalent to pressing the \[\text{Pause}\] button while the system is in the **Running** state. The success response is sent when the system state reaches the target state. The failure response is sent if the state transition is rejected. If the system is already in the target state when the command is received, a success response is immediately sent without performing any action. If the system is in a state other than the source or target states for this transition, the command is immediately rejected.

**ABT**
Sends a PackML Abort command, which represents the PackML state transition from **STARTING/HELD/READY/STANDBY/PRODUCING** to **ABORTING**. This command causes an **Abort** fault to occur, thus setting the error state to **Fault Present**. The success response is sent when the system state reaches the target state. The failure response is sent if the state transition is rejected. If the system is already in the target state when the command is received, a success response is immediately sent without performing any action. If the system is in a state other than the source or target states for this transition, the command is immediately rejected.

**GST**
Gets the PackML State as a decimal integer, with the following possible values:
0  STOPPED
1  STARTING
2  READY
3  STANDBY
4  PRODUCING
5  STOPPING
6  ABORTING
7  ABORTED
8  HOLDING
9  HELD

The command response string is:
<packmlstate><CR>

GSX

Gets the PackML State as a string, with the following possible values:
STOPPED
STARTING
READY
STANDBY
PRODUCING
STOPPING
ABORTING
ABORTED
HOLDING
HELD

The command response string is:
<packmlstatestring><CR>

Examples

»PML|GST|<CR>
«9<CR>
The printer is in the HELD state.

»PML|GSX|<CR>
«HELD<CR>
The printer is in the HELD state.

»PML|ABT|<CR>
«ACK<CR>
The PackML Abort command was successfully executed.

»PML|GSX|<CR>
«ABORTED<CR>
Confirmation that the printer is now in the ABORTED state.

»PML|PRE|<CR>
«ERR<CR>
The PackML Prepare command was unsuccessful because the printer is in the ABORTED state.

»PML|STP|<CR>
«ACK<CR>
The PackML Stop command successfully cleared the Abort error and moved the printer to the STOPPED state.

»PML|PRE|<CR>
«ACK<CR>
The PackML Prepare command successfully moved the printer to the READY state.

»PML|STA|<CR>
«ACK<CR>
The PackML Start command successfully moved the printer to the STANDBY state.
«ACK<CR>
The PackML Hold command successfully moved the printer to the HOLDING state.

»PML| GSX |<CR>
«HELD<CR>
The printer is in the HELD state.
Async Notifications

The Async Text Comms is can be provided on the same port as the existing Text Comms.

After upgrade to Version 6 of Text Comms or initial delivery of a printer all notifications are completely disabled and all parameter changes will be ignored.

The notifications can be enabled or disabled from Clarity config via the TextCommsAsyncEnables parameter. This parameter sets the default for the notifications. Upon restarting the printer or starting a new Text Comms session this default will be reloaded. Various Text Commands are provided to temporarily change the enable or disable state of each of the notifications.

Each Asynchronous message will be separated by a separator character as determined in the protocol XML (usually a carriage return i.e. 0x0D)

The following values can be enabled for notification via the Async Text Comms

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>STS</td>
<td>Async send of current overall status</td>
</tr>
<tr>
<td>ERS</td>
<td>Async send of current error status</td>
</tr>
<tr>
<td>JOB</td>
<td>Async send of current job details</td>
</tr>
<tr>
<td>PRS</td>
<td>Async send of print start</td>
</tr>
<tr>
<td>PRC</td>
<td>Async send of print complete</td>
</tr>
</tbody>
</table>

The Overall State change Notification (STS)

This message indicates a change in the overall state of the printer as seen on the home screen.

Syntax

STS|<n>|<CR>

Details

The values of the states (<n>) are as defined in the SST (State Set Command) and GST (Get State Request) text commands. i.e.

0. Shutdown
1. Starting Up
2. Shutting Down
3. Running
4. Offline

The message will contain the value of the state i.e. 0 to 4.

Examples

«STS|0|<CR>

the printer has changed state to idle.

The Print Start Notification (PRS)

This message indicates that the current print has commenced and that the next print can be loaded into the print queue of the printer.

Syntax
PRS<CR>

The Print complete Notification (PRC)

This message indicates that the current print is complete and that the next print can be sent to be printed at the printer.

Syntax

PRC<CR>

The I/O Output changes Notification (OUT)

A message is generated each time an output event occurs. A message will only be generated if enabled individually by the text commands given below. These are a sub-set of those which can be specified as a trigger to turn a physical output on or off.

0. Update Queue Empty (OutEvtUpdateQueueEmpty)
1. Update Queue Full (OutEvtUpdateQueueFull)
2. Update Queue High (OutEvtQueueHigh)
3. Update Queue Low (OutEvtQueueLow)

A queue status of high is only returned if the queue sizes rise above the pre-set high threshold, it is not returned when the queue size is falling. Similarly, a queue status of low is only returned if the queue size is falling.

Syntax

OUT|QEMPTY|<CR>
OUT|QFULL|<CR>
OUT|QHIGH|<CR>
OUT|QLOW|<CR>

The Error state change Notification (ERS)

This message indicates a change in the overall error state of the printer.

Syntax

ERS|<n>|<CR>

Details

The values of the states (<n>) are as defined in the existing GST (Get State Request) text commands. These are as given below.

0. No errors
1. Warnings present
2. Faults present

The message will contain the value of the state i.e. 0 to 2.

Examples

«ERS|2|<CR>

the printer has changed state to fault present.
The Current Job changed Notification (JOB)

This message indicates that a new job has been loaded into the printer.

Syntax

JOB|<name>|<line>|<CR>

Details

The name of the new job is sent (<name>) and if in line select mode, the name of the job and the new line number is sent (<line>).

Examples

«JOB|Cartridge Test Image|-|<CR>

A new job was loaded called “Cartridge Test Image”, while not in line select mode.

«JOB|Counter Job|2|<CR>

A new job was loaded called “Counter Job” for line select 2.

The Set Async Notification command (SAN)

The command enables or disables a set of notifications.

Syntax

SAN|<bbbbbbbbbb>|<CR>

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Details

It takes a binary value to define a set of binary flags. Each bit is defined as follows :-

0. Overall State change
1. Print Start (Message start)
2. Print complete (Message complete)
3. I/O Output changes
4. Error state change
5. Current Job changed
6. I/O Output change - Update Queue Empty
7. I/O Output change - Update Queue Full
8. I/O Output change - Update Queue High
9. I/O Output change - Update Queue Low

If Bit 3 is not present then all I/O Output change notifications are disabled, otherwise Bits 7 to 10 allow individual outputs to be enabled or disabled.

The default value for these flags will be stored as a parameter in the printer which will be remembered across a comms link restart and printer reboot. This parameter can be edited from CLARITY Config.

Note the change is not saved across a comms link restart and printer reboot, the value will revert to that from the value set in CLARITY Config.
Examples

»SAN|10101|<CR>
«ACK<CR>

enables reporting of error state, print complete and overall state.

**The Get Async Notification command (GAN)**

Returns a bit map of binary flags indicating currently enabled notifications.

**Syntax**

GAN<CR>

**Return Values**

On success, returns binary value to define a set of binary flags. Each bit is defined as for the SAN command.
On failure, returns the default failure response.

Examples

»GAN<CR>
»SAN|000010001|<CR>

Indicates that reporting of only error state and overall state is enabled.

**The Enable All Notifications commands (EAN)**

Switches on the Async comms mode and prevents the sending of all notifications.
Equivalent to SAN|1111111111|

**Syntax**

EAN<CR>

**Examples**

EAN<CR>

**Return Values**

On success, returns the default success response. On failure, returns the default failure response.

Examples

»EAN<CR>
«ACK<CR>

**The Disable All Notifications command (DAN)**

Switches off all Async comms messages and prevents the sending of all notifications.
Equivalent to SAN|0|

**Syntax**

DAN<CR>

**Return Values**
On success, returns the default success response. On failure, returns the default failure response.

Examples

`»DAN<CR>`
`«ACK<CR>`

**The Disable Print Notifications command (DPN)**

Switches off the print start and print complete Async comms messages and enables all other notifications.
Equivalent to `SAN|111111001` |

**Syntax**

```
DPN<CR>
```

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Examples

`»DPN<CR>`
`«ACK<CR>`

**The Set Single Notification command (SNO)**

The command enables or disables a single class of notification.

**Syntax**

```
SNO|<name>|<b>|<CR>  or  
SNO|<nn>|<b>|<CR>
```

Return Values

On success, returns the default success response. On failure, returns the default failure response.

Details

The set single notification command takes either a number (`<nn>`) of the bit as given for the SAN command or a name (`<name>`) corresponding to one of the bits as below

- **STS** - Overall State change
- **PRS** - Print Start (Message start)
- **PRC** - Print complete (Message complete)
- **OUT** - I/O Output changes
- **ERS** - Error state change
- **JOB** - Current Job changed
- **QEM** - I/O Output change - Update Queue Empty
- **QFU** - I/O Output change - Update Queue Full
- **QHI** - I/O Output change - Update Queue High
- **QLO** - I/O Output change - Update Queue Low

It also takes a second parameter `<b>` to indicate the required new value.

0. Disabled
1. Enabled
Examples

»SNO | 4 | 1 | <CR>
«ACK<CR>

enables reporting of error status changes

»SNO | ERS | 0 | <CR>
«ACK<CR>

disables reporting of error status changes

»SNO | OUT | 1 | <CR>
»SNO | QEM | 1 | <CR>
«ACK<CR>

enables reporting of Update Queue Empty.

If the value is changed or if the new value is the same as the current value then acknowledge (ACK) is returned otherwise an error (ERR) is returned.

Note the change is not saved across a comms link restart and printer reboot, the value will revert to that from the value set in CLARiTY Config (see below)
Example Code

The following code is a simple Visual Basic program to send a series of commands to the printer via COM1. The code assumes that there is a job in the printer's database called “Default 4 Line Text” and that it has variable text fields named “Line 1”, “Line 2”, “Line 3” and “Line 4”.

Private Sub ZipherTextCommsTest()
' Use the MSComm object to interface with the serial port
Dim serialport As Object
Set serialport = CreateObject("MSCOMMLib.MSComm")
' Use COM1
serialport.comsport = 1
' 115200 baud, no parity, 8 data, and 1 stop bit.
serialport.Settings = "115200,N,8,1"
' Read the entire buffer
serialport.InputLen = 0
' Open port
serialport.PortOpen = True
' Send the commands
SendZipherCommands serialport
' Close the serial port.
serialport.PortOpen = False
End Sub

Private Sub SendZipherCommands(serialport As Object)
Dim successResponse As String
successResponse = "ACK" & Chr$(13)
' If the printer is shut down, start it up
Dim state As Integer
state = GetState(serialport)
If state = 0 Then
    serialport.Output = "SST|1|" & Chr$(13)
    If WaitForResponse(serialport) <> successResponse Then Exit Sub
End If
' Wait for it to get into a useful state
Do Until state = 4 Or state = 3
    Sleep 1
    state = GetState(serialport)
Loop
' Select the "Default 4 Line Text" job and set the Line 1,2,3,4 fields to empty
serialport.Output = "SLA|Default 4 Line Text|Line 1=|Line 2=|Line 3=|Line 4=|" & Chr$(13)
If WaitForResponse(serialport) <> successResponse Then Exit Sub
' Set the printer to Running if necessary
If GetState(serialport) <> 3 Then
    serialport.Output = "SST|3|" & Chr$(13)
    If WaitForResponse(serialport) <> successResponse Then Exit Sub
' Wait for 1 second so that the printer can get the printhead into printing position
    Sleep 1
End If
For i = 1 To 100 Step 10
    ' Update the field data
    serialport.Output = "JDA|Line 1=" & Str$(i) & "|Line 2=" & Str$(i + 1) & "|Line 3=" & Str$(i + 2) & "|Line 4=" & Str$(i + 3) & "|" & Chr$(13)
    If WaitForResponse(serialport) <> successResponse Then Exit Sub
    ' Print
    serialport.Output = "PRN" & Chr$(13)
    If WaitForResponse(serialport) <> successResponse Then Exit Sub
Next
' Take the printer offline
serialport.Output = "SST|4|" & Chr$(13)
If WaitForResponse(serialport) <> successResponse Then Exit Sub
End Sub
Private Function GetState(serialport As Object) As Integer
    Dim statusString As String
    Dim pos As Integer
    serialport.Output = "GST" & Chr$(13)
    statusString = WaitForResponse(serialport)
    ' Get to the character after the "STA:" part
    statusString = Mid$(statusString, 5, 1)
    GetState = CLng(statusString)
End Function

Private Function WaitForResponse(serialport As Object) As String
    Dim outputbuffer As String
    ' Wait for data to come back to the serial port.
    Do
        DoEvents
        outputbuffer = outputbuffer & serialport.Input
    Loop Until InStr(outputbuffer, Chr$(13))
    WaitForResponse = outputbuffer
End Function

Private Sub Sleep(seconds As Single)
    'I don't recommend this code, but I want to make everything simple to show the principles!
    start = Timer
    Do
        Loop Until Timer >= start + seconds
    End Sub
Appendix 1: State Transition Diagram

The following diagram shows the state transitions for CLARiTY:

Note that any state transition may be blocked by the printer if it would be unsafe or inappropriate in the current circumstances. For example, if no job is selected the printer cannot be placed in the Running state.