

## InfoTag® KE28xx Communications for 186 CPU Firmware Version 4

\*KE28xx models include: KE2800, KE2852, KE2853, KE2856

**This document applies to printer firmware versions 4.x only.**

Note that changes made to version 4.x from the previous version 3.x are shown **highlighted**.

### Disclaimer

Note: This document is correct to the best knowledge of InfoSight Corporation. InfoSight Corporation reserves the right to change this document or the system it describes without notice.

### Introduction

This document will describe the Communications Protocols that are available with the KE2800 InfoTag printer software. [Extended Protocol](#) is intended to provide secure and reliable communications with an intelligent host device. Programmable Protocol is more limited in capability but is provided for those situations where full bi-directional communications is not possible.

This document assumes familiarity with the ASCII character code as well as fundamental computer programming skills.

Communications is established via an RS232 serial connection with the following parameters:

Baud Rate	Selectable 1200 to 19200
Data Bits	7 or 8
Parity	ODD, EVEN or NONE
Start Bits	1 or 2
Stop Bits	1
Three Wire	RX, TX and GND

XON/XOFF handshaking is implemented to control flow of information to the printer when the printer is not in a state to accept it. When the printer enters a busy condition (when compiling, printing, etc) it will send an XOFF character to the host. When the printer is no longer busy, it will send an XON character to the host. Note that when batch printing the printer may send multiple XOFF characters but only one XON will be sent at the end of the batch.

### Extended Protocol

The Extended Protocol is a bi-directional, master-slave communications protocol that is designed to be a robust and reliable method of getting data into and out of the printer. A [detailed description](#) of the packet format, error checking and acknowledgement format is available.

### Standard Message TYPES

The following is a list of message types which are provided with the KE28xx tag printer. Note that the message types are single characters and are shown below in **bold**. Some message types contain data text fields and some do not. Further, those types that do have data text fields may have a sub type as the first character of the data text field.

<b>Message Type</b>	<b>Description</b>
0 - 9	Text to Print
A	Assignment a Buffer
B	Query for Buffer Assignment
C	Communications Link Check
D	(reserved)
E	(reserved)
F	Force Outputs
G	Begin Print Cycle (Go)
H	Feed a Tag
I	Begin ASCII Image Download (deprecated)
J	Begin Binary Image Download
K	(reserved)
L	Begin Logo Download Sequence
M	(reserved)
N	(reserved)
O	Place Printer Online
P	Printer Setup Parameters
Q	Query for Record Information Upload
R	Download Record Information
S	Query for Status
T	Set Time and Date
U	Upload Setup Parameters
V	Logo Download Value
W	(reserved)
X	(reserved)
Y	(reserved)
Z	(reserved)

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### ***Text to Print***

**1** through **9,0** - The DATA TEXT contains a text string which is a message to be placed into the Operator Text register in the field specified by the data type. Type 0 specifies text field number ten. Since the message text is stored in the Operator Text register, a corresponding flag must be placed into the Record text to cause this data to be printed. The response message contains no data in the DATA TEXT field.

### ***Assign a Buffer***

**A** - The DATA TEXT field contains an ASCII string which represents a number (from 1 to 10) specifying the buffer number to Assign for

printing. The response message contains no data in the DATA TEXT field.

#
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# - The message buffer to assign.
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**Query for Buffer Assignment**

**B** - This type is used to query the printer to determine which buffer is currently assigned. The response message will contain the currently assigned buffer number in the DATA TEXT field. Use this message to obtain the currently assigned buffer before assigning a new buffer if you will wish to restore the original setting later.

**Communication Link Check**

**C** - This type is used to check the communications link integrity. No data is required in the message, **the response message will contain the firmware version number in the DATA TEXT field**. An ACK response will indicate that the link is functioning properly.

**Force Outputs**

**F** - This type is used to have the printer force one of its output bits into the specified state. The DATA TEXT field must contain two integers, separated by commas, which represent the number of the output module and its desired state as follows:

#, #
------

Each number is a decimal integer. A comma separates the two numbers. The numbers represent the following:

#	- Module Number	(0 - 23)
#	- State	(0=Off, 1=On)

Note: When forcing an output, it may only stay in its forced state until the next scan of the control program. Unlike forcing an output in a PLC, this does not override the scanning logic.

CAUTION: Use of this message can cause damage to the equipment or injury to personnel.

**Begin Print Cycle (Go)**

**G** - This type is used to cause the printer to begin printing. The print cycle will only begin if the printer is On-line. The response message contains no data in the DATA TEXT field.

**Feed a Tag**

**H** - This type is used to feed a tag through the printer. The message contains no data in the DATA TEXT field. One tag will be fed through the printer.

**Image Download Sequence**

There are two command sequences for downloading a bit-mapped image to the printer. The first, type I, is used to send data in ASCII encoded format and is provided for backward compatibility with the KE2700 style printer only. The second method, type J is used to send the image in raw binary format that greatly reduces download times. The second format is compatible only with the KE28xx type printer.

**Type I** - ASCII encoded format:

I - This type is used to download a bit-mapped image to the printer. The message contains commands and/or data in the DATA TEXT field. Sub-types are required to control the download process. For a complete description of this image download method, please consult the communications specification for the KE2700 printer which is available from the factory.

**Type J** - Binary encoded format:

J - This type is used to download a bit-mapped image to the printer in raw binary data format. The message contains commands and data in the DATA TEXT field. With this method, commands can be embedded anywhere in the data stream and blocks of data up to 1000 bytes can be sent in a single message.

For a complete description of the download format and the encoding scheme used to represent the image, please contact the factory.

### **Begin Logo Download Sequence**

**L** - This type is used to begin a download of the user programmable logo field. The DATA TEXT field must contain a string of up to 10 characters which is the name of the logo. This name will appear to the operator in the list of available logos. The name must contain the number 1 or number 2 somewhere within it to specify logo field 1 or 2. If the name does not contain one of these numbers, the number one is assumed. The response message contains no data in the DATA TEXT field.

SSS
-----

sss      - The name of the logo (up to 10 characters)
---

Once this message is received and acknowledged any currently stored user logo will be erased and the system will be ready to receive a new logo. This message should be followed by the Logo Value message type described below.

### **Place Printer On-line**

**O** - This type is used to force the printer to go On-line. The response message contains no data in the DATA TEXT field.

### **Printer Setup Parameters**

**P** - This type is used to send Parameter setup information to the printer. Parameter data is sent down in packets, where each packet uses the P message type. The first character of the DATA TEXT field must be a sub-type which identifies the packet type. Following the packet type character is the data for the parameters. The response message contains no data in the DATA TEXT field. The message sub-types are as follows:

**F** - This sub-type is used to download the field identifiers for the Programmable Host Protocol. The DATA TEXT field must contain 16 integers, separated by commas:

##,##,##,##,##,##,##,##,##,##,##,##,##,##,##,##

The numbers are grouped in eight pairs, where each pair represents

# - Field Offset Position  
# - Field Length

There will be no data in the DATA TEXT field of the response message.

**D** - This sub-type is used to instruct the system to store the currently loaded parameters as the default parameters. Once this operation is performed, the current parameters will be used whenever the operator selects "Defaults" in a setup screen. There is no data in the DATA TEXT field of the message or the response.

**G** - This sub-type is reserved for future use.

**H** - This sub-type is used to download the protocol and related parameters for host communications. The DATA TEXT field must contain a list of seven integer values separated by commas:

##,##,##,##,##,##,##

The data represents the following information:

#	- Protocol	(0=Extended, 1=Programmable)
#	- Station ID	(0=None)
#	- Start Character	(0=None)
#	- Echo	(0=No Echo)
#	- Terminator 1	(Required)
#	- Terminator 2	(Optional, 0 if not used)
#	- Character to Ignore	(Optional, 0 if not used)

Note that the Station ID field applies only to Extended Protocol, while the other fields apply only to Programmable Protocol. Non-applicable fields must still be supplied in this message.

**M** - This sub-type indicates that the DATA TEXT field contains the printer configuration parameters. These parameters, separated by commas, must have the following format:

##.##.##.##.##.##.##.##.##.##.##.##.##.##.##.##

Each number represented by #.# are floating point values with the decimal point optional. Each number represented by a single # is an integer value. The numbers represent in order the following values:

##	- Tag Width
##	- Tag Length
##	- Stepper Motor Resolution
##	- Mirror Resolution
#	- Heat Intensity
#	- Laser Off Tickle
#	- Operator Display
#	- Reversing Take-up
#	- Stepper Rate
#	- Number of Lasers
#	- Pixel Rows
#	- Galvo Step Size
#	- Flags
##	- Tear Off Location

**O** - This sub-type indicates that the DATA TEXT field contains the communications parameters. These parameters, separated by commas, must have the following format:

#,#,#,#,#

Each number is a single digit in length. The numbers represent the following fields:

#	- COMM Port number (2, 3 or 4)
#	- Baud Rate (0=19200, 1=9600, 2=4800, 3=2400, 4=1200)
#	- Data Bits (0=7, 1=8)
#	- Stop Bits (0=1, 1=2)
#	- Parity(0=Even, 1=Odd, 2=None)

**P** - This sub-type indicates that the characters in the DATA TEXT field are new password strings. Up to 6 strings, separated by commas, can be included in the message. The first string is the Supervisor password and the second string is the Operator Data Entry password. All other passwords are reserved for future use.

**U** - This sub-type indicates that the Units of measure follow in the message. The character in the DATA TEXT field determines the new setting of the units.

0	(ASCII zero)	- English Units
1	(ASCII one)	- Metric Units

### ***Query for Record Information Upload***

**Q** - This type is used to request Record information for the currently assigned data buffer. Record data is requested in packets, where each packet uses the Q message type. The first character of the DATA TEXT field must be a sub-type which identifies the packet type.

Following the packet type character for some sup-types is the slot number for the request. The response message contains the requested data in the DATA TEXT field. The message sub-types are as follows:

**B** - This sub-type is used to request the bar-code attributes for the currently assigned message buffer. The DATA TEXT field contains the slot number within the buffer. The slot number must be from 0 to 7, corresponding to slots 1 to 8. The response message DATA TEXT field contains the data fields for the slot.

#.#.#.#.#.#.#

#	- The bar-code symbology number
#.#	- The X coordinate of the field
#.#	- The Y coordinate of the field
#.#	- The character height
#	- The link to the text fields
#	- The field rotation in degrees
#	- The bar-code scale factor

**C** - This sub-type is used to request the tag count values. The response message contains the counts, each count separated by a comma as shown:

#,#,#

#	- The quantity of tags required to be printed. (0 - 999999)
#	- The current count of tags produced (0 - 999999)
#	- The number of copies of each tag to produce (0 - 999999)

**F** - This sub-type is used to request the record flags. The response message contains the flags, each one separated by a comma. Currently only one flag is defined:

#

#	- 0 = no slash in the zero character, 1 = slash in zero.
---	--

**H** - This sub-type is used to request the shift starting time schedule. Note that the shift schedule applies to all message buffers rather than just the current buffer. The response message contains the shift starting times. Each starting time consists of an hour and minute value separated by a colon. Each time is separated by a comma as shown:

HH:MM,HH:MM,HH:MM

HH:MM	- The first shift starting time
HH:MM	- The second shift starting time
HH:MM	- The third shift starting time

**L** - This sub-type is used to request the data for a specific logo field for the currently assigned buffer. The DATA TEXT field must contain the slot number within the buffer. The slot number must be from 0 to 7, corresponding to slots 1 to 8. The response message DATA TEXT field will contain the logo data as shown:

##.##.##.##.##.##.##.##

#	- The logo id number (0=none, 1 -> #of logos)
##	- The X coordinate of the field
##	- The Y coordinate of the field
##	- The character height
##	- The character width
#	- The field rotation in degrees.

**O** - This sub-type is used to request the operator setup data for a specific field for the currently assigned buffer. The DATA TEXT field must contain the desired slot number within the buffer. The slot number must be from 0 to 7, corresponding to slot 1 to 8. The response message will contain the text data for the indicated slot:

SSS,SSS,#,SSS

sss	- The prompt text for this field (up to 10 characters)
sss	- The verify text for this field (up to 20 characters)
#	- The field flags:
	Bit 1 (lsb) : 1 = Field is active, 0 = Disabled
	2 : 1 = Auto Clear, 0 = Overstrike
	3 : 1 = Qty Required field active
	4 : 1 = S/N field active
	5 : 1 = S/N Lower field active
	6 : 1 = S/N Upper field active
sss	- The prompt for the Serial Number field (up to 10 chars.)

Note that flag bits 3-6 are only required for slot 0. That is, the settings of the Qty and S/N activation fields are obtained from slot 0 of the buffer. Setting or clearing these bits in slots 1-7 will have no effect.

Note that the serial number prompt is global to the buffer and is not specific to any slot.

**P** - This sub-type is used to request the prefix and suffix strings for the currently assigned message buffer. The response message will contain two strings separated by commas:

SSS,SSS

sss	- The message prefix
sss	- The message suffix

**S** - This sub-type is used to request the serial number and its associated upper and lower range values. The DATA TEXT field of the response message will contain **four groups of four** integer values separated by commas. Each number can be from 1 to 9 digits in length.

#, #, #, #, #, #, #, #, #, #, #, #, #, #, #, #

Each group of 4 digits represents a serial number value and consists of the following items.

- # - The serial number
- # - The lower limit value
- # - The upper limit value
- # - The increment value (may be negative)

Serial number groups 1 and 2 are linked numbers, the second incrementing after the first rolls over. Groups 3 and 4 operate in a similar fashion.

**T** - This sub-type is used to request the data for a specific text field for the currently assigned buffer. The DATA TEXT field must contain the desired slot number within the buffer. The slot number must be from 0 to 7, corresponding to slot 1 to 8. The response message will contain the text data for the indicated slot:

SSS; #.#.#.#.#.#.#.#.#

- sss - The text for this field (up to 50 characters)
- ## - The X coordinate of the field
- ## - The Y coordinate of the field
- ## - The character height
- ## - The character width
- ## - The character pitch
- # - The field rotation in degrees.

Note the use of a semicolon to separate the text from the X coordinate value. This is a change from previous versions to allow the comma to be included as part of the text string.

**U** - This sub-type is used to request the User Tables. Note that user tables apply to all message buffers rather than just the current buffer. The DATA TEXT field of the response message will contain three strings separated by commas:

SSS,SSS,SSS

The strings represent the following data fields:

- sss - User Year Table (up to 10 characters)
- sss - User Month Table (up to 12 characters)
- sss - User Shift Table (up to 3 characters)

**Download Record Information**

**R** - This type is used to send Record information for the currently assigned data buffer. This type allows the transmission of more than just printable text strings.

Record data is sent down in packets, where each packet uses the R message type. The first character of the DATA TEXT field must be a sub-type which identifies the packet type. Following the packet type character is the data for the record. The response message contains no data in the DATA TEXT file. The message sub-types are as follows:

**B** - This sub-type is used to send the bar-code attributes for the currently assigned message buffer. The first item in the DATA TEXT field is the slot number within the buffer. The slot number must be from 0 to 7, corresponding to slots 1 to 8. Following the slot number are the rest of the data fields for the slot.

#, #, #, #, #, #, #, #, #, #

#	- The slot number
#	- The bar-code symbology number
##	- The X coordinate of the field
##	- The Y coordinate of the field
##	- The character height
#	- The link to the text fields
#	- The field rotation in degrees
#	- The bar-code scale factor

**C** - This sub-type is used to send the tag count values. Each count is separated by a comma as shown:

#, #, #

#

#	- The quantity of tags required to be printed. (0 - 999999)
#	- The current count of tags produced (0 - 999999)
#	- The number of exact copies of each tag to produce (0 - 999999)

**F** - This sub-type is used to send the record flags. Each flag is separated by a comma. Currently only one flag is defined:

#

#	- 0 = no slash in the zero character, 1 = slash in zero.
---	--

**H** - This sub-type is used to send the shift starting time schedule. Note that the shift schedule applies to all message buffers rather than just the current buffer. Each starting time consists of an hour and minute value separated by a colon. Each time is separated by a comma as shown:

HH:MM,HH:MM,HH:MM

HH::MM - The first shift starting time  
HH::MM - The second shift starting time  
HH::MM - The third shift starting time

**L** - This sub-type is used to send the data for a specific logo field for the currently assigned buffer. The first item in the DATA TEXT field must be the slot number within the buffer. The slot number must be from 0 to 7, corresponding to slots 1 to 8. Following the slot number are the rest of the data fields for the slot.

#,#,#. #, #, #, #, #, #, #, #

# - The slot number (0 to 7)  
# - The logo id number (0=none, 1 -> #of logos)  
#. # - The X coordinate of the field  
#. # - The Y coordinate of the field  
#. # - The character height  
#. # - The character width  
# - The field rotation in degrees.

**O** - This sub-type is used to send the operator setup data for a specific field for the currently assigned buffer. The DATA TEXT field must contain the desired slot number within the buffer as well as the data.

#,SSS,SSS,#,SSS

# - The slot number (0 - 7)  
sss - The prompt text for this field (up to 10 characters)  
sss - The verify text for this field (up to 20 characters)  
# - The field flags:  
    Bit 1 (lsb) : 1 = Field is active, 0 = Disabled  
    2 : 1 = Auto Clear, 0 = Overstrike  
    3 : 1 = Qty Req field active  
    4 : 1 = S/N field active  
    5 : 1 = S/N Lower field active  
    6 : 1 = S/N Upper field active  
sss - The prompt for the Serial Number field (up to 10 chars.)

Note that the serial number prompt is global to the buffer and is not specific to any slot.

**P** - This sub-type is used to send the prefix and suffix strings for the currently assigned message buffer. Each string must be limited to 3 characters and must be separated by commas:

SSS,SSS

sss - The message prefix  
sss - The message suffix

**S** - This sub-type is used to send the serial number and its associated upper and lower range values. The DATA TEXT field must contain four groups of four integer values separated by commas. Each number can be from 1 to 9 digits in length.

##,##,##,##,##,##,##,##,##,##,##,##

Each group of 4 digits represents a serial number value and consists of the following items.

# - The serial number  
# - The lower limit value  
# - The upper limit value  
# - The increment value (may be negative)

Serial number groups 1 and 2 are linked numbers, the second incrementing after the first rolls over. Groups 3 and 4 operate in a similar fashion.

**T** - This sub-type is used to send the data for a specific text field for the currently assigned buffer. The first item in the DATA TEXT field must be the slot number within the buffer. The slot number must be from 0 to 7, corresponding to slot 1 to 8. Following the slot number are the rest of the data fields for the slot.

#,SSS;##,##,##,##,##,##,##,##

# - The slot number (0 to 7)  
sss - The text for this field (up to 50 characters)  
## - The X coordinate of the field  
## - The Y coordinate of the field  
## - The character height  
## - The character width  
## - The character pitch  
# - The field rotation in degrees.

Note the use of a semicolon to separate the text from the X coordinate value. This is a change from previous versions to allow the comma to be included as part of the text string.

**U** - This sub-type is used to send the User Tables. Note that user tables apply to all message buffers rather than just the current buffer. The DATA TEXT field must contain three strings separated by commas:

SSS,SSS,SSS

The strings represent the following data fields:

sss	- User Year Table (up to 10 characters)
sss	- User Month Table (up to 12 characters)
sss	- User Shift Table (up to 3 characters)

**Z** - This sub-type is used to indicate to the printer that the download of the record has been completed. The DATA TEXT field contains no information, nor will the reply message. This is an optional message.

**Query for Status**

**S** - This type is used to query the printer for its current status. There is no DATA TEXT field for this type. The ACK response message from the printer will contain a DATA TEXT field. This field will contain three numbers separated by commas. These numbers represent the states of the three I/O ports of the printer. The numbers must be converted into binary, where each bit will represent the state of an input or output point.

##,#

#	- The value of the current state of the Output/Input port
#	- The value of the current state of Input port 1
#	- The value of the current state of Input port 2

Field 1 - Output/Input Port

Bit	0 (lsb)	-	Out	BUSY
	1	-	Out	ON-LINE
	2	-	Out	FAULT
	3	-	Out	spare
	4	-	In	START PRINT
	5	-	In	ABORT PRINT
	6	-	In	ESTOP
	7	-	In	TAG FEED

Field 2 - Input Port

Bit	0 (lsb)	-	spare
	1	-	spare
	2	-	spare
	3	-	spare
	4	-	spare
	5	-	spare
	6	-	spare
	7	-	spare

Field 3 - Input Port

Bit	0 (lsb)	-	spare
	1	-	spare
	2	-	spare
	3	-	spare
	4	-	spare
	5	-	spare
	6	-	spare
	7	-	spare

**Set Time and Date**

**T** - This type is used to set the time and date of the printer's built-in clock/calendar. The DATA TEXT field for this message must contain the time and date separated by commas in the following format:

HH:MM,MM/DD/YY

HH:MM - The current time of day in military 24 hour format  
MM/DD/YY - The current date.

There is no data in the DATA TEXT field of the response message.

**Upload Printer Setup Parameters**

**U** - This type is used to upload Parameter setup information from the printer. Parameter data is uploaded in packets, where each packet uses the U message type. The first character of the DATA TEXT field must be a sub-type which identifies the packet type. The response message contains the requested data in the DATA TEXT field. The message sub-types are as follows:

**F** - This sub-type is used to query the printer to upload the field identifiers for the Programmable Host Protocol. The DATA TEXT field of the response message will contain 16 integers, separated by commas:

#,#,#,#,#,#,#,#,#,#,#,#,#,#,#,#,#

The numbers are grouped in eight pairs, where each pair represents

#	- Field Offset Position
#	- Field Length

**G** - This sub-type is reserved for future use.

**H** - This sub-type is used to query the printer to upload the protocol and related parameters for host communications. The DATA TEXT field of the response message will contain a list of seven integer values separated by commas:

#,#,#,#,#,#,#

The data represents the following information:

#	- Protocol	(0=Extended, 1=Programmable)
#	- Station ID	(0=None)
#	- Start Character	(0=None)
#	- Echo	(0=No Echo)
#	- Terminator 1	(Required)
#	- Terminator 2	(Optional, 0 if not used)
#	- Character to Ignore	(Optional, 0 if not used)

Note that the Station ID field applies only to Extended Protocol, while the other fields apply only to Programmable Protocol. Non-applicable fields will still be supplied in this message.

**M** - This sub-type requests the printer configuration parameters. The response message DATA TEXT field contains the printer configuration parameters. These parameters, separated by commas, have the following format:

#.#.#.#.#.#.#.#.#.#.#.#.#.#.#.#.#.#

Each number represented by #.# are floating point values with the decimal point optional. Each number represented by a single # is an integer value. The numbers represent in order the following values:

##	- Tag Width
##	- Tag Length
##	- Stepper Motor Resolution
##	- Mirror Resolution
#	- Heat Intensity
#	- Laser Off Tickle
#	- Operator Display
#	- Reversing Takeup
#	- Stepper Rate
#	- Number of Lasers
#	- Pixel Rows
#	- Galvo Step Size
#	- Flags
##	- Tear Off Location

**O** - This sub-type requests the communications parameters. Following the sub type 'O' must be a single character '2' through '4' indicating the desired comm port number. The response message DATA TEXT field contains the communications parameters. These parameters, separated by commas, have the following format:

##,##,##

Each number is a single digit in length. The numbers represent the following fields:

#	- Baud Rate (0=19200, 1=9600, 2=4800, 3=2400, 4=1200)
#	- Data Bits (0=7, 1=8)
#	- Stop Bits (0=1, 1=2)
#	- Parity(0=Even, 1=Odd, 2=None)

**P** - This sub-type requests the current password list. The response message DATA TEXT field will contain the current password strings. The password list consists of 6 strings, separated by commas. The first string is the Supervisor password and the second string is the Operator Data Entry password. All other passwords are reserved for future use but are included in the response message.

**U** - This sub-type requests the current units of measure. The response message DATA TEXT field will contain a single character '0' or '1'.

0	(ASCII zero)	- English Units
1	(ASCII one)	- Metric Unit

### **Logo Download Value**

**V** - This type is used to send one or more segments of the logo image to be stored in the user programmable logo field. The logo is stored in a run-length-encoded format and each piece of the image must be sent to the printer for storage. The DATA TEXT field of the message must contain a string of ASCII characters in two character groups. Each two character group represents the hexadecimal

value of one byte of the logo image. For example, to download the logo segment

```
0x12 0x33 0xFA 0xFB 0xBC 0xFC 0xFF
```

the data text field would contain the following string:

```
1233FAFBBCFCFF
```

Note: each hexadecimal value from A to F must be a Upper Case letter. Also, since each byte is represented by two characters, the string length must be consist of an even number of characters. No separator is used between bytes.

For a description of the run-length-encoding scheme used to represent the logo, please contact the factory.

## Programmable Protocol

The programmable protocol provides a mechanism for communicating with the printer using an unfamiliar protocol. By configuring the various programmable protocol parameters, a wide range of devices can communicate with the printer without special software development.

Most communications protocols begin with a unique character that is called the Start Character. This ASCII code will not appear anywhere else in the transmission and uniquely identifies the beginning of a download sequence. This code value must be placed into the Start Character field of the host setup screen. If no unique starting character is available in the protocol, then the Start Character parameter must be set to zero. We recommend using a starting character to provide synchronization on a new message download.

Most data communications protocols have a unique character that terminates the transmission. The decimal value of this character must be entered into the Terminator parameter. You must have a unique terminating character at the end of your transmission.

Sometimes a communications protocol will have a character that causes a problem by interfering with other aspects of the protocol. For example, a transmission will often end with a Carriage Return / Line Feed pair. To strip off the line feed character, you can enter the decimal value of the character code into the Character to Ignore parameter. In the example we would enter 10 so that the Line Feed (ASCII value = 10) would be ignored.

Once data collection begins, the printer must know where each field begins, and how many characters to extract for each field. In the host setup screen is a table for entering the offset and length of each field. Note that this requires the host computer to always send the exact same number of characters on each transmission. If fewer characters are required then the field must be padded with spaces to fill it out to the proper length.

For example, to send three text fields of 3, 10 and 11 characters you can send:

```
<STX>1112222222223333333333<CR>
```

Note that this example assumes that you have configured the printer to use the ASCII STX character as the Start Character and the CR (carriage return) character as the terminator. You must also configure the field table to extract the first field from offset 1 length 3. The second field has an offset of 4 length 10, and the final field has an offset of 14 length 11.

Note that the printer will not respond to the transmission in any way. The data received from the transmission will be interpreted to be the text strings to be placed into the Operator Text registers.

Note that the printer will automatically begin a print cycle upon receipt of this message. When the printer begins printing, it will send an XOFF character to your computer indicating that it is busy. When printing completes, it will send an XON indicating that it is no longer busy. Do not attempt to send any characters while the printer is busy as they will be lost.

## **Conclusion**

This concludes the description of the communications protocols for the InfoSight Corporation KE28xx InfoTag Software. Please refer all questions to the factory.

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