

# MID:COM E:Count

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## *Host Delivery Interface Guide*

Reference for the MID:COM E:Count  
Host Delivery Interface



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MID:COM *E:Count* PC Delivery Interface Guide

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## 1.0.0 Host Interface Overview

The Host interface (PC, handheld, laptop, etc) is designed to be simple yet robust. Particular attention was paid to the interaction between the Host and the E:Count such that the operation of the E:Count is essentially the same whether Host is connected or not. In addition the E:Count can start and finish a delivery even if the Host fails before, during, or after a delivery. This eliminates any downtime for the truck in the case of a Host failure.

We refer to the two modes of operation as "**Host Mode**" or "**Pump & Print Mode**". Prior to a delivery the E:Count is always in Pump & Print Mode. The Host asserts Host Mode by sending a preset volume command. The main difference in the modes comes after the delivery has been made and the transaction is ready to be finalized. If in Pump & Print Mode, pressing the PRINT key on the E:Count will print the ticket and finalize the delivery. If in Host Mode the PRINT key simply indicates to the Host that the delivery is done. The Host can then query the E:Count and initiate ticket print and finalization. If the Host is unable to complete the transaction the operator can press and hold the MODE key for 3 seconds to override Host Mode and print the ticket.

We refer to the "delivery" as the time after the operator has pressed the START/STOP key (or the Computer has sent the R command) to start pumping product and the time that the PRINT key is pressed or the Host has issued an End Delivery command. Most commands can be sent pre-delivery. Some can be sent during the delivery, and only the Close/Re-Open Valves and Status commands can be sent while product is flowing. The Get E:Count Status command is very useful in determining what is going on with the E:Count at any time, including during the delivery.

The Host may communicate with up to two (2) E:Count registers, one (1) printer, and one (1) auxiliary serial device via the ports on the Power Control Module (PCM). The PCM acts like a switchboard. Each connected device can send the PCM a request to connect to another device, much like switching cables. Once the connection is established regular serial communication can commence. When the device is done with the conversation it is necessary to send a Disconnect command to "hang-up" and allow another device to initiate a connection when necessary. In practical use the Host is in control and the registers only initiate a connection to the printer and then back to the Host.

Multiple printers are offered for use with the E:Count system, each incorporates different features in order to meet the end-user's requirements. For an updated list please contact the factory.

By Weights & Measures regulations the E:Count must print the "meter delivery block". The Host has three methods for printing additional information and these methods may be used in any combination:

1. Append lines to the E:Count print buffer to be printed before and/or after the meter block.
2. Connect directly to the printer and send lines of text only.
3. Connect directly to printer and send any characters including control characters. Used for graphics, etc.

The E:Count Host communication protocol is simple and varies only slightly with a few commands. Generally, a single character is sent and there may or may not be additional required characters sent as parameters. The E:Count will execute the instruction, may echo the command, may return additional data, and then will return a pipe character. There are exceptions and these exceptions are noted in the individual command details.

Note that each instruction may take a varying amount of time to complete before the pipe character is returned to the Host. The pipe character indicates the E:Count has completed the requested operation. Some commands which require blocks of data to be sent may be interrupted by sending the escape character to avoid lockup if characters are missed; additional information is noted in the relevant command details.

The E:Count uses RS-232 protocol set to 9600,8,1,N with no handshaking. It is configured as a DCE device requiring a straight through cable to connect to a DTE device such as a handheld or a laptop. Only pins 2, 3, and 5 are used.

The use of a pipe symbol "|" when interpreted by a regular expression processing algorithm (or "RegEx") requires the use of the hex value 0x7C instead of "|".

## 2.0.0 E:Count Commands

### 2.1.0 - E:Count State Diagram and Valid Commands

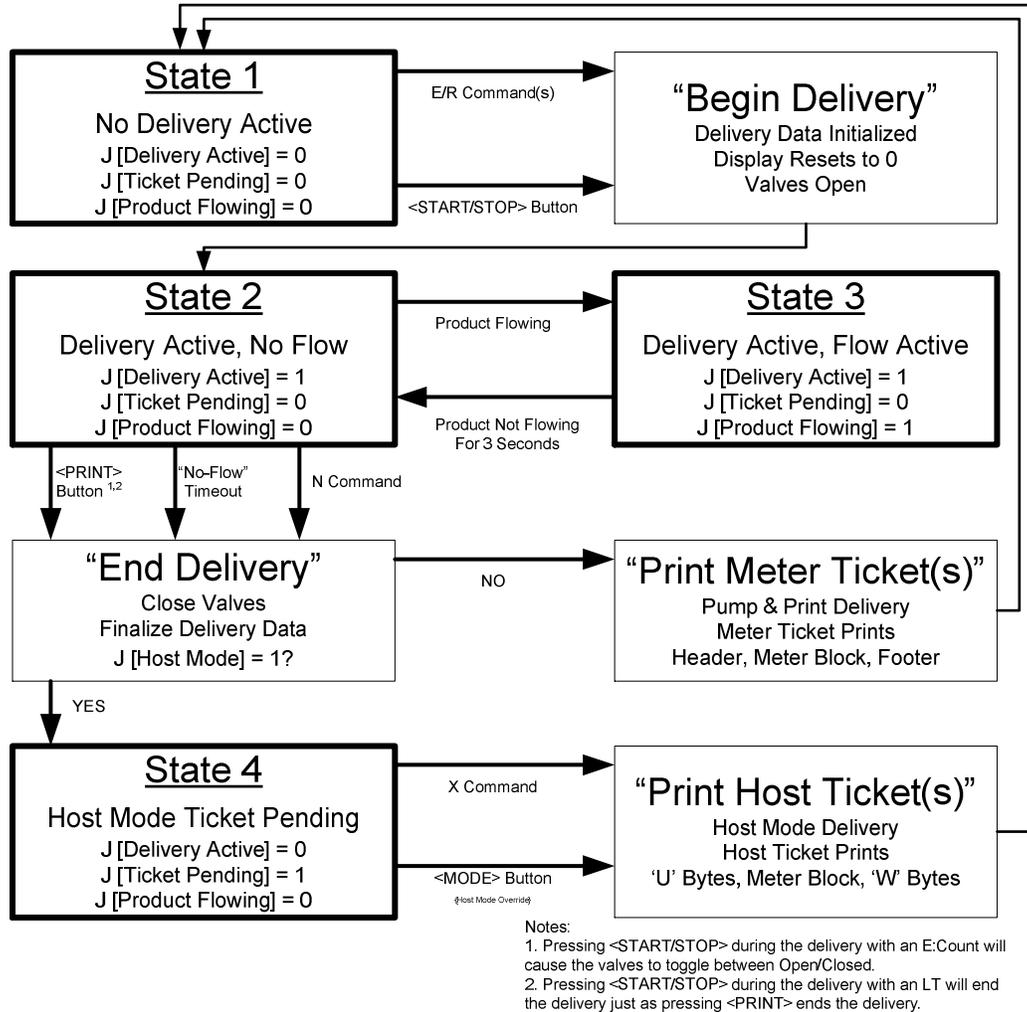


Figure 1. E:Count State Diagram

	<u>Main Loop</u>	<u>Delivery Loop</u>	<u>Pumping Loop</u>	<u>Post-Delivery Loop</u>
Valid Commands	All except N and K	E J K N T V	J K T	X W U i J T V E
Valves	Closed	Open Or Closed	Open	Closed
Exit To	Delivery	Post-Delivery	Delivery	Main
	E then START/STOP	No-Flow Timeout	Product stops flowing	X command required
		PRINT Key	for at least 3 seconds	
		N command		
Notes		E used for		
		Multiple Presets		

Figure 2. E:Count Commands Valid During Delivery

## ECount Host Communications

The ECount has 4 'States':

- \* No Delivery Active/No Ticket Pending State 1
- \* Delivery Active/Product Not Flowing State 2
- \* Delivery Active/Product Flowing State 3
- \* No Delivery Active/Host Mode Ticket Pending State 4

The ECount Host Interface includes 4 Commands that change the ECount 'State':

- E command = Select Host Mode, Set Product, Set Preset
- R command = Reset to Begin Delivery
- N command = End Delivery, Print Ticket if Pump & Print
- X command = Print Host Mode Ticket

Certain Host Commands that change the ECount 'State' are only valid in certain 'States':

State 1	State 200	State 300	State 400
E Valid	E Valid	E Invalid	E Invalid
R Valid *	R Invalid	R Invalid	E Invalid
N Invalid	N Valid **	N Invalid	E Invalid
X Invalid	X Invalid	X Invalid	X Valid ***

\* R will Reset the register to begin the delivery, just as if the Operator pressed <START/STOP>.

\*\* N will both End Delivery *and* Print Pump & Print Ticket if not Host Mode. In a Host Mode delivery the N will only End the delivery.

\*\*\* The X is required to Print the Meter Ticket in Host Mode if the Ticket Pending flag is ON. X is not valid in a pump and Print Delivery.

Ideally the ECount would echo the command character immediately, however if the command is invalid there are times where the ECount does not respond at all. The ECount is inconsistent about responding or not responding if a command is sent when it is not valid. If a Host application does not correctly anticipate the lack of a response, or an inaccurate response, to a command that is sent in a state where it is invalid, the resulting behavior is indeterminate and will lead to state machine errors.

## **Host Communication Recommendations**

1. The Host application should always request the J-status \*immediately prior\* to sending the E, R, N, and X commands. If the desired command is not valid in the current State of the ECount based on the J-Status response, don't send the command.
2. The Host application should always request the J-status \*immediately after\* sending the E, R, N, and X commands. If the resulting state of the ECount is not what was anticipated based on the previous Host command based on the J-status response, the host should present status and troubleshooting information to the operator.
3. The state machine in the Host application should anticipate possible command failures due to external factors (equipment, power, operator, etc) and either attempt to recover or inform the operator of the error condition. Frequent use of the J-status command is required.
4. The host application should never store the 'State' of the ECount, it should always request it using the 'J'. The Midcom ROADWARRIOR computer software sends a J before and after \*every\* Host command.

**Refer to Section 3.2.0 ECount Host Communications Timing for a detailed log and analysis.**

## 2.1.1 - E:Count and E:Count LT Command Summary

PCM COMMANDS - COMMAND NAME	CMD	TYPE	ARGS	RESP	VER	PCM	DOC	LT	HOSTFIX	RESP TIMEOUT	COMP TIMEOUT
CONNECT HOST TO PRINTER	1F 01	HEX						x		n/a	n/a
CONNECT HOST TO REGISTER 1	1F 02	HEX						x		n/a	n/a
CONNECT HOST TO REGISTER 2	1F 03	HEX						x		n/a	n/a
CONNECT HOST TO AUXILIARY	1F 04	HEX						x		n/a	n/a
CONNECT REGISTER 1 TO PRINTER	1F 05	HEX						x		n/a	n/a
CONNECT REGISTER 2 TO PRINTER	1F 06	HEX						x		n/a	n/a
CONNECT REGISTER 1 TO AUXILIARY	1F 07	HEX						x		n/a	n/a
CONNECT REGISTER 2 TO AUXILIARY	1F 08	HEX						x		n/a	n/a
CONNECT HOST TO PRINTER FOR YY BYTES	1F 09	HEX	1+YY			PCM10		x		n/a	n/a
CONNECT HOST TO REGISTER 1 FOR YY BYTES	1F 0F	HEX	1+YY			PCM12		x		n/a	n/a
CONNECT HOST TO REGISTER 1 FOR YY BYTES + RESPOND ZZ BYTES	1F 10	HEX	2+YY	ZZ		PCM12		x		n/a	n/a
CONNECT HOST TO REGISTER 2 FOR YY BYTES	1F 11	HEX	1+YY			PCM12		x		n/a	n/a
CONNECT HOST TO REGISTER 2 FOR YY BYTES + RESPOND ZZ BYTES	1F 12	HEX	2+YY	ZZ		PCM12		x		n/a	n/a
CONNECT HOST TO AUXILIARY FOR YY BYTES	1F 13	HEX	1+YY			PCM12		x		n/a	n/a
DISCONNECT ALL PORTS	FF	HEX						x		n/a	n/a
HOST COMMANDS - UPPERCASE CHARACTERS - COMMAND NAME	CMD	TYPE	ARGS.	RESP.	VER	E/L	DOC	LT	HOSTFIX	RESP TIMEOUT	COMP TIMEOUT
SEND PRESET (000000-999999) AND PRODUCT DATA TO ECOUNT	A	ASCII	11			177/309				5 ms	50 ms
SEND TIMER OVERRIDE TO ECOUNT	C	ASCII	1			163/309				5 ms	50 ms
SEND PRESET (00000-99999) AND PRODUCT DATA TO ECOUNT	E	ASCII	10			120/309				5 ms	500 ms
GET PRODUCT CALIBRATION DATA FROM ECOUNT	G	ASCII		600		116/309		*		5 ms	5,000 ms
GET PRINTER STATUS FROM ECOUNT	I	ASCII		1		120/309				5 ms	10,000 ms
GET STATUS FROM ECOUNT	J	ASCII		6		120/309				no cmd echo	250 ms
TOGGLE VALVES	K	ASCII				120/309		*		5 ms	1,000 ms (!)
END DELIVERY (AND PRINT P&P TICKET)	N	ASCII				115/309				5 ms	30,000 ms
SEND FLEET SETTINGS TO ECOUNT	O	ASCII	6			174/309		*		5 ms	100 ms
GET LIST OF VALID PRODUCT CODES FROM ECOUNT	P	ASCII		198		115/309		*		5 ms	1,000 ms
GET NEXTEL DELIVERY DATA FROM ECOUNT	Q	ASCII	161			115/309		!	MATRIX	5 ms	1,000 ms
RESET REGISTER	R	ASCII				115/309				5 ms	30,000 ms
GET DATA FOR PREVIOUS (OR CURRENT IF ACTIVE) DELIVERY FROM ECOUNT	T	ASCII				120/309				5 ms	1,000 ms
SEND HOST DELIVERY TICKET 'HEADER TEXT' TO ECOUNT	U	ASCII	VAR.			120/309				5 ms	5,000 ms
GET VERSION DATA FROM ECOUNT	V	ASCII		15		115/309				5 ms	1,000 ms
SEND HOST DELIVERY TICKET 'FOOTER TEXT' TO ECOUNT	W	ASCII	VAR.			120/309				5 ms	5,000 ms
PRINT HOST MODE DELIVERY TICKET	X	ASCII	1			115/309				5 ms	60,000 ms (!)
PRINT DUPLICATE OF PREVIOUS DELIVERY TICKET	Y	ASCII				120/309				5 ms	60,000 ms (!)
HOST COMMANDS - LOWERCASE CHARACTERS - COMMAND NAME	CMD	TYPE	ARGS.	RESP.	VER	E/L	DOC	LT	HOSTFIX	RESP TIMEOUT	COMP TIMEOUT
PRINT CALIBRATION TICKET	d	ASCII				135/309				5 ms	60,000 ms (!)
PRINT SHIFT TICKET (RESETS SHIFT TOTALS)	e	ASCII				135/309				5 ms	60,000 ms (!)
SEND QUANTITY ON BOARD FOR ALL PRODUCTS TO ECOUNT	f	ASCII	594			139/309		*		5 ms	5,000 ms
GET QUANTITY ON BOARD FOR ALL PRODUCTS FROM ECOUNT	g	ASCII		594		139/309		*		5 ms	5,000 ms
SEND SINGLE DELIVERY TICKET PRINT FLAGS TO ECOUNT	i	ASCII	10			160/309				5 ms	100 ms
GET CALIBRATION TICKET TEXT FROM ECOUNT	j	ASCII		VAR.		169/309				5 ms	10,000 ms (!)
GET SHIFT TICKET TEXT FROM ECOUNT	k	ASCII		VAR.		169/309				5 ms	10,000 ms (!)
GET COUNT OF LINES ON LAST TICKET FROM ECOUNT	l	ASCII		1		146/309				5 ms	100 ms
GET PREVIOUS PRODUCT CODE AND PRESET VOLUME (00000-99999)	m	ASCII		7		169/309				5 ms	100 ms
GET PREVIOUS PRODUCT CODE AND PRESET VOLUME (000000-999999)	n	ASCII		8		177/309				5 ms	100 ms
START PRINTING PASS-THROUGH TICKET	o	ASCII		1		175/309				5 ms	10,000 ms (!)
GET DESCRIPTION FOR SINGLE PRODUCT FROM ECOUNT	p	ASCII	2	25		146/309		*		5 ms	1,000 ms
PRINT PASS-THROUGH TICKET LINE	q	ASCII	25	1		175/309				5 ms	5,000 ms
FINISH PRINTING PASS-THROUGH TICKET	r	ASCII		1		175/309				5 ms	10,000 ms (!)
GET PRINTER TYPE FROM ECOUNT	u	ASCII		1		167/309				5 ms	100 ms
GET DATE/TIME FROM ECOUNT	v	ASCII	12			164/309				5 ms	100 ms
SET ECOUNT DATE/TIME	w	ASCII	10	1		164/309				5 ms	1,000 ms
GET HEADER AND FOOTER TEXT FROM ECOUNT	z	ASCII	-	352		167/309				5 ms	5,000 ms
OTHER COMMANDS - COMMAND NAME	CMD	TYPE	ARGS.	RESP.	VER	E/L	DOC	LT	HOSTFIX	RESP TIMEOUT	COMP TIMEOUT
CANCEL SENDING TEXT - E,U,W COMMANDS ONLY	1B	HEX		0		167/309		Y			
LT: !=ALL DATA IGNORED OR BLANK *=SOME DATA IGNORED/BLANK O=LT ONLY x=PCM COMMANDS NOT USED WITH LT											

### 2.1.2 - E:Count HOSTFIX (*HOSTFX* on Setup Menu) Setting

The HostFix E:Count Setting (*HOSTFX* in the E:Count Setup Menu) requires Host commands send a prefix (a single TILDE or '~' character) intended to prevent stray serial characters from being interpreted as commands. HOSTFIX was added in E175F. This is intended to prevent stray or erroneously transmitted characters from being falsely interpreted as commands.

#### HOSTFX Settings:

- o **OFF**            *HOSTFX* OFF Prefix not required.- DEFAULT.
- o **MATRIX**        *HOSTFX* MATRIX Require only 'Matrix' commands to use a prefix character. This setting requires updated Matrix software only.
- o **ALL**            *HOSTFX* ALL Requires all host software commands to use a prefix character. This setting requires updated Matrix software \*and\* updated Host Software. Contact your Host Software Provider for more information.

If HOSTFIX is set to all "ALL", it is necessary for the Host Software to send a TILDE (~) immediately prior to each and every E:Count command.

It is still required to wait several milliseconds after sending a PCM command before resuming communications. The E:Count command character should be sent immediately after the TILDE.

Because E174 (and older) will simply ignore the TILDE, it is allowable to modify your host software to always send the TILDE, even if using versions prior to E175. In the case that HOSTFIX is off or the version is older than E175 the TILDEs will be ignored.

#### HOSTFX Example:

```
TX: 0x1F 0x02    Connect PCM Host Port to PCM E:Count #1 Port.  
                  Host waits 5 ms for PCM Command to Switch Ports.  
TX: 0x7E        Send HOSTFX TILDE character.  
TX: 0x56        Send V to request E:Count Version Information.  
RX: VE175F 011123456|    Receive 17 bytes in response to V.  
TX: 0xFF        Disconnect Host from PCM.
```

(continued)

HOSTFIX Return Characters:

Version E176E introduced 'return characters' that will indicate when a HOSTFIX-enabled E:Count has received an invalid character.

- \* **ASTERISK Character (0x2A)** indicates that Tilde (~) character is required and was not received for HOSTFIX=ALL.
- ! **EXCLAMATION Character (0x21)** indicates that Tilde (~) character is required for the command and was not received for HOSTFIX=MATRIX.
- **DASH Character (0x2D)** indicates that a command character was not received within 15 milliseconds of receiving the Tilde (~) character.

HOSTFIX Software Updates/Versions Required (If Enabled):

- o **OFF** .....: No Updates Required.
- o **MATRIX, ALL** ...: Matrix version 2.0.0.523 (or newer).
- o **MATRIX, ALL** ...: RoadWarrior version 3.0.35.447 (or newer).
- o **ALL** .....: Updated Host software, contact vendor.

HOSTFIX Compatibility:

<b>E:Count</b>	<b>HostFix</b>	<b>Software Compatibility</b>
E174/older	N/A	All Host Versions Compatible.
E175(+)	"OFF"	All Host Versions Compatible.
<b>E175(+)</b>	<b>"MATRIX"</b>	<b>Requires Matrix 2.0.0.524(+).</b> All Host Versions Compatible.
<b>E175(+)</b>	<b>"ALL"</b>	<b>Requires Matrix 2.0.0.524(+).</b> <b>RoadWarrior 3.0.35.447(+).</b> <b><u>Requires Updated Host Software!</u></b>

### 2.1.3 - Application Pseudocode to Determine E:Count State

#### 0: [DETERMINE STATUS]

---

Get Status (J)  
If J.Delivery Active GOTO 2  
Else If J.TicketPending GOTO 4  
Else GOTO 1

#### 1: [MAIN LOOP = NO DELIVERY ACTIVE]

---

{NOTHING}  
Note: All commands valid

#### 2: [DELIVERY ACTIVE, NO FLOW]

---

Get Status (J)  
If J.ProductFlowing GOTO 3  
Else If J.TicketPending GOTO 4  
Else GOTO 2  
Note: Delivery Commands Valid (J, N, T, V)  
Note: T Data in this state is not final

#### 3: [DELIVERY ACTIVE, PRODUCT FLOWING]

---

Get Status (J)  
If J.ProductFlowing GOTO 3  
Else If J.TicketPending GOTO 4  
Else GOTO 2  
Note: Only Status Command Valid (J)

#### 4: [HOST MODE TICKET PENDING (ONLY VALID IN HOST MODE)]

---

Get Status (J)  
If J.TicketPending GOTO 4  
Else GOTO 1  
Note: Post-Delivery Commands Valid (J, T, U, W, X)

## 2.1.4 - E:Count State Transitions

### 1->2 (No Delivery to Delivery Active)

---

<Start/Stop> on E:Count to Reset Register, or  
Host Software sends R command, or  
Broken Valve (flow volume sufficient to force reset register  
when no delivery active)

### 2->3 (Delivery Active to Product Flowing)

---

Operator opens valve at and of hose, product flows

### 3->2 (Product Flowing to No Flow)

---

3 Seconds after product stops flowing

### 2->1 (End Pump and Print Delivery and Print Meter Ticket)

---

<Print> on E:Count if \*NOT\* in Host Mode, or  
Host Software sends N command \*NOT\* in Host Mode, or  
No Flow Timeout if \*NOT\* in Host Mode  
Result: Delivery Ended, Meter Ticket Printed

### 2->4 (End Host Mode Delivery)

---

<Print> on E:Count if in Host Mode, or  
Host Software sends N command in Host Mode, or  
No Flow Timeout if in Host Mode  
Result: Delivery Ended and Delivery Values Finalized for Query

### 4->1 (Print Host Mode Meter Ticket)

---

Host Software sends X command in Host Mode when ticket pending  
to Print Host Mode Meter Ticket, or  
<Mode> on E:Count if in Host Mode to cancel host mode and  
immediately print host mode meter ticket

#### Notes:

1. Sending E command turns on Host Mode flag
2. 'No Flow Timeout' and 'Print Key Pressed' flags in J command should not be used to determine state, they are only to determine how the last delivery ended
3. If Host Mode flag is on, X is required to print the Meter Ticket after delivery is ended.



### **2.1.6 - E:Count PCM Power-Down Notification**

The E:Count Power Control Module (**PCM**) will notify the Host that the ignition has been turned off (the PCM is connected to +12VDC and Ignition) and in several seconds the PCM is going to be shutting off all power to the Register, Printer, GPS, etc (that is, anything externally powered by the PCM).

The "**PCM Power Down Notification**" consists of a series of 5 5 TILDE characters (~~~~~) sent in sequence to the Host.

It was introduced in PCM8 and is in all versions since then, including the current PCM version PCM12 (as of the release E175F).

## 2.1.7 - E:Count Ticket Printing

	PUMP & PRINT	HOST MODE
<b>Header Text</b> Configured in Matrix Up to 10 lines, 25 ch/line	HEADER PRINTED	HEADER NOT PRINTED
<b>"Before Bytes"</b> Set by Host 'U' cmd Up to 20 lines, 25 ch/line	"U" BYTES NOT PRINTED	"U" BYTES PRINTED
<b>Meter Block</b> Some Lines Required (Weights & Measures) Configured in Matrix 6 to 36 lines, 25 chars/line	METER BLOCK PRINTED	METER BLOCK PRINTED
<b>"After Bytes"</b> Set by Host 'W' cmd Up to 40 lines, 25 ch/line	"W" BYTES NOT PRINTED	"W" BYTES PRINTED
<b>Footer Text</b> Configured in Matrix Up to 4 lines, 25 ch/line	FOOTER PRINTED	FOOTER NOT PRINTED

### Notes:

- 1) **"Host Mode"** is enabled per delivery by the 'Host' using either the 'A' or the 'E' command to set the Product/Preset for the next delivery. After the delivery 'Host Mode' is turned off.
- 2) **Printing the Matrix Header Text and the Matrix Footer Text on a Host Mode Delivery Ticket:**
  - The **Current "Header + Footer"** can be read from the E:Count using the 'z' command. Then these 250 and 100 bytes (respectively) can be passed back to the E:Count as part of the 'U' and 'W' bytes to print.
  - The **Header** is a max of 250 bytes (10 lines) and the 'U' command allows 500 bytes, so the host can add up to 250 bytes to the Header and set the entire block as the "Before Bytes" - these bytes print before the Meter Block when the X command is issued.
  - The **Footer** is a max of 100 bytes (4 lines) and the 'W' command allows 1000 bytes, so the host can add up to 900 bytes to the Footer and set the entire block as the "After Bytes" - these bytes print after the Meter Block when the X command is issued.
- 3) When printed by a Thermal-type printer, **"Copy #"** will be printed at the end of every Delivery Ticket. (The 'BLASTR' printer setting for the Cognitive Blaster printer does not print the Copy # on the ticket).
- 4) When printed by a Thermal-type printer, **Partial Cuts** will be performed between and at the end of all ticket copies, unless the 'i' command is used to suppress them.
- 5) When printed by a Thermal-type or Roll-type printer, **Blank Lines** will be feed between and at the end of all ticket copies to ensure the printed ticket area is past the cutter or tear bar, unless the 'i' command is used to suppress the trailing blank lines after the last copy. (The 'TM-220' setting for the Epson TM-200 Roll Impact printer does not support the suppression of the blank lines).

## 2.2.0 E:Count Command Details

### 2.2.1 - E or A (Set Preset) Command

NOTE: As of E177F the 'A' command may be used in place of the 'E' command. The 'E' command will function normally.

#### Description:

Set Delivery Product, Volume, Reset, and Preset.

E Command allows Maximum Preset Volume of 9999.9.

A Command (E177+) allows Maximum Preset Volume of 99999.9.

#### Parameters:

Field	Length (bytes)	Format (ASCII)
<b><u>E Command = Required in E176 and older, OK in E177 and Newer:</u></b>		
Product Code	2 bytes	01-99
Preset Tenths, Implied Decimal	5 bytes	00000-99999
Preset Enable	1 byte	0-1 (0=OFF 1=ON)
Byte 9 (Ignored)	1 byte	0 (Send ASCII 0)
Byte 10 (Ignored)	1 byte	1 (Send ASCII 1)
	-----	
	10 bytes	
<b><u>A Command Only Valid in E177 and Newer:</u></b>		
Product Code	2 bytes	01-99
Preset Tenths, Implied Decimal	6 bytes	000000-999999
Preset Enable	1 byte	0-1 (0=OFF 1=ON)
Byte 10 (Ignored)	1 byte	0 (Send ASCII 0)
Byte 11 (Ignored)	1 byte	1 (Send ASCII 1)
	-----	
	11 bytes	

#### Returns:

E0| if Product is invalid (A command returns A0|)

E1| if Product is valid (A command returns A1|)

#### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: A  
RX: A (Verify E or A is echoed to continue)  
TX: 10/11 ASCII bytes (See above, example: 01001000101)  
RX: 1| (Verify response byte + pipe char)  
TX: 0xFF (Disconnect PCM)

(continued)

E (or A) Command Notes (continued):

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- The A Command is only valid in E177+, if your application must support older and newer E:Counts you have to:
  1. Detect which version of the E:Count is running (refer to the V command) and send either the E or E depending on the version, or
  2. Have a setting that end users can enable/disable to determine which command your software sends, or
  3. Only use the E command.
- Refer to the P (Get Product Status) command for a list of valid products.
- Send the E (Set Preset) command prior to the delivery to put the E:Count into Host Mode for the following delivery.
- **START/STOP Reset Enable was added in E162E and was removed in E178F. See the section describing "Start/Stop Reset Enable" for details.**
- If the Host is unable to send an R to begin the delivery the Operator may turn off the E:Count by turning off the vehicle - this will reset the E:Count and cancel host mode and re-enable the START/STOP button to Reset.
- If no preset is desired when initiating Host Mode set the Preset Enable parameter to 0.
- The E (Set Preset) command can be interrupted - refer to the Command Interruption notes.
- To Begin a Host-Mode Delivery the Host must Send an E Preset command to the E:Count even if no preset is desired, and
  1. Option 1: The Driver presses START/STOP on the E:Count to begin the delivery if the START/STOP Reset Enable is Enabled.
  2. Option 2: The Host sends an R (Reset Register) command to begin the delivery.
  3. This process insures that the E:Count remains in control of the valves during the delivery process in order to fulfill Weights & Measures requirements as discussed in the Overview above; while allowing the Host to determine of the delivery should be started.

(continued)

E (or A) Command Notes (continued):

- Host Mode Enable is only valid in Data Block 04 and higher.
- The Preset Volume in tenths with and assumed decimal (therefore 5 bytes) is only valid in Data Block 04 and higher; the Preset Volume in whole units with an assumed decimal is 4 bytes in Data Block 03 and lower.
- Refer to the following pages for Preset and START/STOP Reset details.

### **Multiple Presets**

- The Preset Volume is an additive field, not an absolute value. At the beginning of each delivery the Preset Volume is 0 unless a Preset is entered using the **<PRESET>** key.
- When **<PRESET>** is pressed the volume displayed will be the previous Preset value.
- The Preset Volume is 'saved' when the **<START/STOP>** button is pressed.
- NOTES: For additional information regarding Multiple Presets see the following Multiple Preset and Fleet Fueling Notes.

### **Multiple Presets in a Single Delivery**

- The MID:COM E:Count is capable of **Multiple Presets**. The following is an example of a blending delivery:
  1. Send the "E" Command to enter the initial Preset Volume
  2. Send the "R" command to Reset the E:Count
  3. The Operator delivers product, the valves will close when the initial Preset is reached
    - a. Use the "J" command to monitor the E:Count during the delivery
  4. Send the "E" Command to enter the next Preset Target Volume
    - a. The Product, Start/Stop Enable, and Preset Enabled flags should not be changed.
  5. Send the J command to determine that the preset is active
  6. If the valves are closed send the K command to open the valves
  7. The Operator delivers product, the valves will close when the next Preset is reached
    - a. Use the "J" command to monitor the E:Count during the delivery
  8. Repeat, or End the Delivery and Print the Ticket
- The Multiple Preset process may be continued as many times as desired.

(continued)

## Multiple Presets and Fleet Fueling

Once the delivery has started (either the operator presses <START/STOP> or the Host sends the first "R" command), every time a Preset Volume is sent to the E:Count, that Preset Volume becomes the new Preset Target for the delivery.

## START/STOP Reset - Enable and Disable

**E178 and Newer:** Use the Setup Menu setting "**SS RST**" - the "Start/Stop Reset Enabled" parameter is no longer supported. To maintain backward-compatibility with older E:Count versions your application should send a "1" for this parameter to allow older version of the E:Count (E177 and older) to allow the Operator to use the START/STOP button to Reset, or a "0" to prevent older versions of the E:Count from being reset by the Operator.

**E161 to E177:** Use the Setup Menu setting "**SS RST**" as it is more reliable - even though the "Start/Stop Reset Enabled" parameter is functional it is not recommended.

**E160 and Older:** The parameter that allows the Host to control whether or not the START/STOP button on the E:Count may be used to begin a delivery. This parameter or feature is called "START/STOP Reset". Each time the E:Count is reset the START/STOP Reset is always Enabled (required for Pump & Print mode where there is no computer).

When a Host sends the E command with the appropriate parameter bit set to \*disable\*, the E:Count START/STOP Reset is disabled (0=Disable). The operator is required to use the Host to start a delivery (the START/STOP Reset is "Disabled").

When a Host sends the E command with the appropriate parameter bit set to \*enable\*, the E:Count START/STOP Reset is enabled (1=Enable). The operator is allowed to use either the START/STOP button (at any time) or the Host may send an R to start a delivery (the START/STOP Reset is "enabled").

The state of this bit is saved until one of the following:

1. The next delivery is started.
2. The E:Count is reset.
3. The Host sends another E command.

The E command may be sent any time (and multiple times) while a delivery is not active.

### 2.2.2 - I (Get Printer Status) Command

Description:

Get Printer Status

Parameters:

none

Returns:

I0| = printer is out of paper

I1| = printer is ready

I2| = other printer error

I3| = E:Count is configured with no printer (NOPRTR)

Ix| (where x = any other number) = other error

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)

TX: I

RX: I (Verify I is echoed)

RX: 1| (Verify response byte + pipe char)

TX: 0xFF (Disconnect PCM)

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- Regardless of the Printer Type installed, the return values are the same.

### 2.2.3 - P (Get Product Status) Command

Description:

Get Product Status for All Products

Parameters:

none

Returns:

P+data+| (see below)  
data is 198 bytes long, 2 ASCII bytes per product code for each of 99 Product Codes:  
00 = invalid product code  
01 = valid product code

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: P  
RX: P (Verify P is echoed)  
RX: bytes ... | (Verify response bytes + pipe char)  
TX: 0xFF (Disconnect PCM)

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- E:Count LT: Only Product 1 (01) will be valid as the LT is a single-product register. The LT will return '01' followed by 196 '0' characters.
- Only product codes that have been assigned calibration factors during the meter calibration process are allowed to be selected by the Host system.
- When the P command is received the E:Count will return 198 bytes representing all of the 99 product codes. Invalid codes are indicated by 00.
- For the following example only product codes 01, 03, and 05 are valid:
  1. The returned Data string would look like:  
01000300050000.....00 (a total of 198 bytes)

## 2.2.4 - J (Get E:Count Status) Command

### Description:

Get E:Count Status and Active Delivery Volume

### Parameters:

none

### Returns:

SHHHH 5 Hex bytes (versions prior to E135E)

SHHHHC 6 Hex bytes (versions E135E and later)

S: Status - 1 Byte (bit 0 = LSB)

Bit 0= Timeout	0-1	0=No, 1=Yes
Bit 1= Print Key	0-1	0=Not pressed, 1=Pressed
Bit 2= Preset	0-1	0=None or Reached, 1=Set
Bit 3= Valves	0-1	0=Closed, 1=Open
Bit 4= Product Flowing	0-1	0=No, 1=Yes
Bit 5= Delivery Active	0-1	0=Off, 1=On
Bit 6= Ticket Pending	0-1	0=No, 1=Yes
Bit 7= Host Mode Status	0-1	0=No, 1=Yes

HHHH: Current Delivery Volume - 4 HEX Bytes

- These bytes represent the hex values of the volume to the hundredths of unit volume.
- The hex values should be 00-99 for each character.
- These characters are frequently unprintable characters and are not viewable inside a terminal emulation program.

C: XOR Checksum of SHHHH

- C is the XOR Checksum of the previous 5 bytes
- Only available in Data Block 05 and later (see the V Version command)

### Example:

- 4 bytes sent to Host from E:Count represent volume
- ASCII values of each character: 0 3 37 16
- Hex values of each character: 00 03 25 10
- This represents 000325.10 units, either gallons or litres.
- The decimal is implied and \*not\* transmitted.

(continued)

J Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: J  
RX: bytes (Verify bytes are received)  
TX: 0xFF (Disconnect PCM)

J Command Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- Product Flowing (Bit 4): While product is flowing and for several seconds after flow has stopped the J command will return 1 in Bit 4.
- Delivery Active Bit (Bit 5): Prior to a delivery being started (by pressing Start/Stop on the E:Count or by the Host sending the R command) and after the delivery ticket is printed (by the PC sending the X command to finalize the delivery) the delivery is Active and the J command will return 0 in Bit 5.
- When the Delivery Status bit is set the volume bytes returned will represent the current delivery volume.
- When the Delivery Status bit is clear (meaning there is no delivery active or pending) the current delivery volume will be 0000.
- Ticket Pending Bit (Bit 6) indicates that one of the following has ended the active delivery and a delivery ticket is waiting to be printed by the Host:
  - Print button pressed on the E:Count, or
  - N End Delivery command sent from the Host, or
  - No-Flow Timeout has expired and delivery has ended.
- Command Frequency - The PC should not interrogate the register more than several (2 or 3) times per second with the J command.
- The J command will not be echoed and the pipe will not be sent; only 6 (or 5) bytes are returned in response to the J command.

(continued)

- **J Command - E:Count Failure to Respond**
  - a. The J command is unique in that it is always valid regardless of the status or status of the E:Count, even if it may take several attempts to get a response.
  - b. When sending the J command it is possible for the E:Count to not respond and if this happens it should be considered 'normal', even if infrequent.
  - c. When the J command fails to respond we recommend:
    - i. Resend the 0x1F 0x02 command (or 0x1F 0x03 for E:Count #2) prior to resending the J command.
    - ii. Resend the J command up to 5 times/second (a minimum of 200 ms between retries) for up to 5-15 seconds (depending on the previous detected state of the E:Count) before erroring out after no response.
  - d. If product is flowing it may be necessary to re-send the J command 2-3 times before getting a response, normally only one J command in 100,000 fails while flow is active.
  
- **Other Commands - E:Count Failure to Respond**
  - e. Any other command should never fail to get a response...
    - i. Unless a wireless adapter or other wireless converter such as Ethernet to serial is being used; these can cause a separate class of problems.
    - ii. The use of wireless devices requires code written in such a way to prevent stray characters from being misinterpreted as commands, which could in the worst-case mess up the configuration of the E:Count itself, including mangling product labels, etc.
  - f. If a command does fail to get a response, resending any command will definitely cause other problems - this should be avoided at all costs.
  
- **For everything except the J command a failure by the E:Count to respond to a command should be treated as a catastrophic failure, and the following may be used to determine the cause:**
  - g. Verify the PCM LEDs are lighting up for the two devices that are attempting to communicate.
  - h. Verify the E:Count is NOT in a Menu.
  - i. Verify the E:Count is NOT in Calibration Mode.
  - j. Verify the E:Count is NOT in Calibration Menu Mode.
  - k. Verify serial cables are connected securely at both ends.
  - l. Verify the E:Count is connected to the correct PCM port.
  - m. Verify the COM Port number selected exists (if using a USB-serial or Ethernet-to-serial converter).
  - n. Verify the COM Port number in the software is correct.
  - o. Verify the COM Speed selected in is 9600.

## 2.2.5 - K (Close/Re-Open Valves) Command

### Description:

Close or Re-Open Valves

### Parameters:

none

### Returns:

K|

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: K  
RX: K (Verify K is echoed)  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- **E:Count LT: When the K command is sent to the E:Count the valves will close and the delivery will end.**
- Sending the K command has the same effect as pressing START/STOP on the E:Count during the delivery:
  1. When the valves are open sending the K command will close the valves
  2. If the valves have been closed during the delivery sending the K command will re-open the valves. This is useful for fleet fueling applications for multiple deliveries at a single location.
- The K command is not intended to be sent except when:
  1. The current delivery is a Host-Mode delivery, and
  2. The Delivery Ticket Pending Flag is set
    - See the J Get E:Count Status command for more information

## 2.2.6 - N (End Delivery) Command

### Description:

End Current Delivery

### Parameters:

none

### Returns:

N|

### Command Sequence:

TX: 0x1F 0x02                   (Connect PCM-Host to PCM-EC1)  
TX: N  
RX: N                            (Verify N is echoed)  
RX: |                           (Verify pipe char)  
TX: 0xFF                        (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- The Pipe is returned after the delivery is ended
  1. If the delivery is Pump & Print the Pipe will be returned after the delivery is printed.
  2. If the Delivery is a Host Mode delivery the X command must be used to print the delivery ticket(s).
- After the Delivery the Host may:
  1. Query the E:Count for the delivery values using the T Command
  2. Query the E:Count for the current status using the J command
  3. Send the pre-meter block bytes to the E:Count for printing before the meter block using the U Command
  4. Send the post-meter block bytes to the E:Count for printing after the meter block using the W command
  5. Print the Meter Tickets using the X Command

## 2.2.7 - T (Get Delivery Data) Command

### Description:

Get All Delivery Data

### Parameters:

none

### Returns:

T+data+| (see below)

If product is flowing 'data' will be a 0 indicating that the T command is not valid while product is flowing ("T0|" is all that will be returned).

If product is not flowing, data will be in the format below: For E:Count Data Block Versions 01 through 03 the T command returns 91 data bytes, all fields are ASCII values and the decimals are implied.

For E:Count Data Block Versions 04 through 05:

Field	Format	Length (bytes)
Start Time + CRLF	MMDDYYHHMM	12
Finish Time + CRLF	MMDDYYHHMM	12
Product Code + CRLF	00-99	4
Truck # + CRLF	0000-9999	6
Driver # + CRLF	0000-9999	6
Sale # + CRLF	000000-999999	8
Net Volume + CRLF	00000000-99999999	10
Gross Volume + CRLF	00000000-99999999	10
Net Totalizer + CRLF	00000000-99999999	10
Gross Totalizer + CRLF	00000000-99999999	10
Compensator State + CRLF	0-1 (0=Off, 1=On)	3
Delivery Status + CRLF	xxx	5

=====  
Total 96 Bytes

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: T  
RX: T (Verify T is echoed)  
RX: bytes ... | (Verify response bytes + pipe char)  
TX: 0xFF (Disconnect PCM)

(continued)

T Command Notes (continued):

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- The data returned by the T command will persist between power cycles and is available until the next delivery.
- Delivery Status is only valid in data block versions 04 and higher
- The Delivery Status bytes consist of the following:
  1. Byte 1: The Status Byte as returned by the J command at the end of the Delivery
    - See the J command documentation for the definition of Status Byte 1
    - The value of the Delivery Status byte represents the value of the Status Byte at the moment the delivery is printed
  2. Byte 2:
    - Bit 0: Power Failure During the Delivery
    - Bit 1: Host Mode Cancelled During Delivery
    - Bits 2-7: Reserved for future use
    - Note: In all versions prior to E142E Byte 2 will always be 0.
  3. Byte 3: Reserved for future use
- Detecting Power Failures
  1. During the delivery if the Power Fails (for whatever reason) all delivery data is saved and the Meter Block must be printed before the register is allowed to continue.
    - This is true in both Pump & Print and Host Modes.
  2. The only method the Host may determine a Power Failure during a delivery is by looking at Bit 0 of Status Byte #2 for the T command.
    - The Host may query for the T data at any time before, during, and after a delivery.
    - When the Power has failed during a delivery, all bits (0-7) for Status Byte 1 will be 0 indicating that the power failed prior to the delivery being finalized.

## T Command Notes (continued):

- T Command Return Values
  1. Prior to the R command, the E:Count will return delivery values for the previous delivery, even if the E:Count has been off between the delivery and the T command.
    - Sending the R command to the E:Count will reset the values returned by the T command.
  2. After the R but prior to the N, the E:Count will return the delivery values for the current delivery in process.
    - Note: If product is flowing the T Command will return T0| indicating the T command is not valid while product is flowing.
  3. After the N command, the E:Count will return the delivery values for the immediate prior delivery. These values will not change until after the next R command is received by the E:Count.

### 2.2.8 - V (Get E:Count Version) Command

Description:

Get E:Count Version Data

Parameters:

none

Returns:

V+data+| (see below)

data is 15 bytes

Field	Format	Length (bytes)
Firmware Version	XXXXXX (may be spaces)	6
Data Block Version	00-99	2
RegNum	0-1	1
Serial Number	000000-999999	6
		=====
		Total 15 Bytes

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: V  
RX: V (Verify V is echoed)  
RX: bytes ... | (Verify response bytes + pipe char)  
TX: 0xFF (Disconnect PCM)

Notes:

- In version E160E and later the V may be sent at any time except while product is flowing. In version prior to E160E the V may only be sent when a delivery is not active.
- Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.

## 2.2.9 - U (Set Pre-Meter Block Printer Bytes) Command

### Description:

Set the Bytes that Print Before the Meter Block on the Delivery Ticket - "Before Bytes"

### Parameters:

25 bytes per line to add to buffer  
1 byte (after last line only) = 00h (null) to indicate no more lines to follow

### Returns:

U|

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: U  
RX: U (Verify U is echoed)  
TX: 25 bytes (25 ASCII bytes, repeat up to 20 times for up to 20 lines to print)  
TX: 0x00 (Send NULL to indicate no more text)  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- Send 25 chars per line for each line to add to buffer
- Send 00h (ASCII character 0) after last line indicating there are no more lines to follow
- No more than 500 bytes (or 20 lines) may be sent
- Can be interrupted - refer to the Command Interruption notes.

## 2.2.10 - W (Set Post-Meter Block Printer Bytes) Command

### Description:

Set the Bytes that Print After the Meter Block on the Delivery Ticket - "After Bytes"

### Parameters:

25 bytes per line to add to buffer  
1 byte (after last line only) = 00h (null) to indicate no more lines to follow

### Returns:

W|

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: W  
RX: W (Verify W is echoed)  
TX: 25 bytes (25 ASCII bytes, repeat up to 40 times for up to 40 lines to print)  
TX: 0x00 (Send NULL to indicate no more text)  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- No more than 1000 bytes (or 40 lines) may be sent
- Send 25 chars per line for each line to add to buffer
- Send 00h (ASCII character 0) after last line indicating there are no more lines to follow
- Can be interrupted - refer to the Command Interruption notes.

### 2.2.11 - X (Finalize and Print Delivery Ticket) Command

#### Description:

Close the Print Buffer and Print the Delivery Meter Block

#### Parameters:

Number of copies = A single ASCII character from 0-9.

- Used only for Printer Type = THERMAL (but still required)
- 0 = Use Register default copies
- 1-9 = Perform a partial cut after each copy until the final copy and then perform a full cut
- Ignored (still required) if Printer Type is **not** THERMAL.

#### Returns:

Prior to Version E142E:

X|

Versions E142E and newer:

X0	printer error or printer is out of paper
X1	delivery printed
X2	X command invalid during Pump&Print delivery
X3	no parameter was received
X4	printing suppressed by 'i' command

#### Command Sequence:

TX:	0x1F 0x02	(Connect PCM-Host to PCM-EC1)
TX:	X	
RX:	X	(Verify X is echoed)
TX:	1	(ASCII byte 0-9 = # Copies)
RX:	byte ...	(Verify response byte + pipe char)
TX:	0xFF	(Disconnect PCM)

#### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands.**
- When the E Preset command is sent the E:Count is put in Host Mode for the upcoming delivery, Host Mode overrides the COPIES setting in the E:Count Setup Menu, the Host controls how many copies are printed (unless the 'Number of Copies' parameter sent with the X command is 0).
- The meter ticket will print when the program issues the X command to finalize the ticket and print the delivery data.
- When sending the **X** Finalize command it is important not to attempt to communicate with the E:Count until the "|" character is received by the Host Computer. Until the character is received the E:Count is communicating through the PCM with the Printer.

## 2.2.12 - Y (Print Duplicate Meter Block Ticket) Command

### Description:

Print a Duplicate of the Meter Block Ticket

### Parameters:

none

### Returns:

Y| (the pipe symbol is transmitted after the ticket prints)

### Command Sequence:

TX: 0x1F 0x02	(Connect PCM-Host to PCM-EC1)
TX: Y	
RX: Y	(Verify Y is echoed)
RX:	(Verify pipe char)
TX: 0xFF	(Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- The Y command is not valid when the 'TicketPending' status bit of the J command is set.
- The Host application must determine if the printer is ready and has paper prior to issuing the Y Print Duplicate Ticket command. See the I Printer Status command for more information.
- If more than 1 duplicate of the previous ticket is to be printed then the Y command should be sent multiple times.
- When sending the Y Duplicate command it is important not to attempt to communicate with the E:Count until the "|" character is received by the Host Computer. Until the character is received the E:Count is communicating through the PCM with the Printer.
- The message "DUPLICATE TICKET" will be printed at the top of every duplicate ticket.

### 2.2.13 - ESC (Cancel Current) Command

Description:

Cancel the Current Command and Stop Looking for More Characters

Parameters:

none

Returns:

0| if it wasn't waiting for more characters  
x| if it was looking for 'x' more characters - the E:Count was looking for more data

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: 0x27  
RX: <none> (NO ECHO/NO RESPONSE)  
TX: 0xFF (Disconnect PCM)

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- Only valid for E, U, and W commands.
- For commands that take multiple bytes as arguments (E, U, and W) this byte will tell the E:Count to stop looking for more characters and exit the command

## 2.2.14 - R (Reset) Command

### Description:

Reset the E:Count to Begin a Delivery

### Parameters:

none

### Returns:

R|

### Command Sequence:

TX: 0x1F 0x02	(Connect PCM-Host to PCM-EC1)
TX: R	
RX: R	(Verify R is echoed)
RX:	(Verify pipe char)
TX: 0xFF	(Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- After receiving the R command the E:Count will reset and open the valves to commence delivery.
- Sending the R to begin the delivery is functionally equivalent to the operator pressing START/STOP to initialize the delivery.

## 2.2.15 - d (Print Calibration Ticket) Command

### Description:

Print a Register Calibration Ticket

### Parameters:

none

### Returns:

d| (the pipe symbol is transmitted after the ticket prints)

### Command Sequence:

TX: 0x1F 0x02	(Connect PCM-Host to PCM-EC1)
TX: d	
RX: d	(Verify d is echoed)
RX:	(Verify pipe char)
TX: 0xFF	(Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- If more than 1 copy of the Calibration Ticket is desired then the d command should be sent multiple times.
- When sending the d command it is important not to attempt to communicate with the E:Count until the "|" character is received by the Host Computer. Until the character is received the E:Count is communicating through the PCM with the Printer.
- The Host application must determine if the printer is ready and has paper prior to issuing the d Print Calibration Ticket command. See the I Printer Status command for more information.

## 2.2.16 - e (Print Shift Ticket) Command

### Description:

Print a Register Shift Ticket

### Parameters:

none

### Returns:

e| (the pipe symbol is transmitted after the ticket prints)

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: e  
RX: e (Verify e is echoed)  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- Each time the Shift Ticket is printed, the current "Shift" is ended, the Shift Start Time is noted, and the Beginning and Ending Ticket Numbers are noted.
- When sending the e command it is important not to attempt to communicate with the E:Count until the "|" character is received by the Host Computer. Until the character is received the E:Count is communicating through the PCM with the Printer.
- The Host application must determine if the printer is ready and has paper prior to issuing the e Print Shift Ticket command. See the I Printer Status command for more information.

### 2.2.17 - G (Get Calibration Data) Command

Description:

Return all Calibration Data for all 99 Products

Parameters:

none

Returns:

G + data + | (the pipe symbol is transmitted last)

Data is 600 bytes in the following format:

Bytes 001 to 297:

Calibration Factors for Products 01-99

Bytes 298 to 300:

Ignore

Bytes 301 to 498:

Dwell Factors for Products 01-99

Bytes 499 to 500:

Ignore

Bytes 501 to 599:

Compensation Table for Products 01-99

Byte 600:

Ignore

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)

TX: G

RX: G (Verify G is echoed)

RX: bytes ... | (Verify response bytes + pipe char)

TX: 0xFF (Disconnect PCM)

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See PCM Commands in the E:Count Host Interface Guide for more information.**
- E:Count LT: Only Product 1 Calibration Factor and Dwell Factor will be valid as the LT is a single-product register. All other values will be 0.
- When sending the command it is important not to attempt to communicate with the E:Count until the "|" character is received by the Host Computer. Until the "|" character is received by the Host the E:Count will not respond to any command(s).

(continued)

### **Calibration Factor Syntax:**

The Calibration Factor for a single Product Code returned by the G command is comprised of 3 bytes that represent 6 numeric digits with an implied decimal.

1. Select the bytes for a specific product; bytes 1-3 are for Product 01, bytes 4-6 are for product 2, etc..
2. Re-order the bytes for an individual product; the original order is ABC and the resulting order should be ACB.
3. Convert each of the 3 bytes for an individual product to a two-digit hex equivalent (including leading zeros) resulting in 6 numeric digits.
4. Insert a decimal character after the 2<sup>nd</sup> digit.

### **Dwell Factor Syntax:**

The Dwell Factor for a single Product Code returned by the G command is comprised of 2 bytes that represent 4 numeric digits with an implied decimal.

1. Select the bytes for a specific product; bytes 301-302 are for Product 01, bytes 303-304 are for product 2, etc..
2. Re-order the bytes for an individual product; the original order is AB and the resulting order should be BA.
3. Convert each of the 2 bytes for an individual product to a two-digit hex equivalent (including leading zeros) resulting in 4 numeric digits.
4. Insert a decimal character after the 3<sup>rd</sup> digit.

### **Compensation Table Syntax:**

The Compensation Table Index for a single Product Code returned by the G command is comprised of 1 byte that represents the numeric table number of the product being compensated.

1. Select the byte for a specific product; byte 501 is for Product 01, bytes 502 is for product 2, etc..
2. Convert the 1 byte for an individual product to a one-digit hex equivalent (excluding the leading zero) resulting in 1 numeric digit.

See the examples on the following pages for details.

(continued)

**Example :**

The original ASCII values returned as data by the G command:

```
Byte #      ASCII Value
-----
0           71           The G command is echoed to the Host
1           1            } Calibration Factor for PC 01
2           54           } "
3           151          } "
.
.
301         17           } Dwell Factor for PC 01
302         0            } "
.
.
501         0            } Compensation Table for PC 01
502         1            } Compensation Table for PC 02
.
```

Sample Calculations for PC 01:

Calibration Factor

```
ASCII    →   Hex      →   Reordered →   Decimal
1 54 151      01 36 97      01 97 36      01.9736 Cal Factor
```

Dwell Factor

```
ASCII    →   Hex      →   Reordered →   Decimal
17 0      11 00      00 11      001.1 Dwell Factor
```

Compensation Table

```
ASCII    →   Hex      →   Table
0         0         0 = Uncompensated (see below)
```

```
Comp Table #  Description
-----
00            UNCOMPENSATED
01            PROPANE
02            DIESEL/HEATING OIL
03            GASOLINE
04            LUBE OIL
05            METHANOL
06            ANHYDROUS AMMONIA
07            JET-A FUEL
08            JET-B FUEL
09            ETHANOL
```

## 2.2.18 - 1 (Get Ticket Line Count) Command

### Description:

The lower-case 'l' command returns the number of lines printed by the previous ticket

### Parameters:

none

### Returns:

l+data+| (the pipe symbol is transmitted after the data)

Data is 1 byte in binary format that must be converted into a numeric two-digit hexadecimal number. The two-digit hexadecimal number represents the number of lines printed.

ASCII	→	Decimal	→	Hex	→	Result
\$		36		24		24 Lines Printed

### Command Sequence:

```
TX: 0x1F 0x02      (Connect PCM-Host to PCM-EC1)
TX:  l
RX:  l              (Verify l is echoed)
RX:  byte ... |    (Verify response byte + pipe char)
TX:  0xFF          (Disconnect PCM)
```

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- The l command will return the number of lines printed by the previous ticket whether it was a delivery, duplicate, shift, or calibration ticket.
- The l command is intended to be used to format data for the E:Count "Before Bytes" or "After Bytes" that must align or be printed in a specific location on a pre-print form.

### 2.2.19 - p (Get Product Description) Command

Description:

The lower-case 'p' command returns the 25-character description for the specified product

Parameters:

Decimal Character code for the desired product number.

Returns:

p + data + | (the pipe is transmitted after the data)

Data is 25 bytes in ASCII format representing the product description for the Product Code specified

Command Sequence:

Example #1 (product description for product #01):

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: p
RX: p                  (Verify p is echoed)
TX: 0x01               (Request description of product 01)
RX: bytes ... |       (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

Example #2 (product description for product #67):

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: p
RX: p                  (Verify p is echoed)
TX: 0x43               (Request description of product 67)
                       (Note: Hex 43 = Decimal 67)
RX: bytes ... |       (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- E:Count LT: Only Product 1 will be valid as the LT is a single-product register. The LT will return all spaces for any other product description.
- The p command will not change the current product code.
- All 25 bytes of the product description will be returned, including leading or trailing spaces.

## 2.2.20 - g (Get Quantity On Board) Command

### Description:

The lower-case 'g' command returns the Quantity on Board (QOB) for all 99 products

### Parameters:

none

### Returns:

g + data + | (the pipe is transmitted after the data)

Data is 6\*99 bytes (594 bytes) in ASCII format representing the Quantity on Board for all 99 products to the tenth of a unit volume. The decimal is implied and will not be transmitted.

### Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: g  
RX: g (Verify g is echoed)  
RX: bytes ... | (Verify response bytes + pipe char)  
TX: 0xFF (Disconnect PCM)

### Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- E:Count LT: Only the QOB for Product 1 will be non-0 as the LT is a single-product register. The LT will return '000000' for all other products.

### 2.2.21 - f (Set Quantity On Board) Command

Description:

The lower-case 'f' command sets the Quantity on Board (QOB) for all 99 products

Parameters:

594 bytes, 6 bytes per QOB for 99 Products (6\*99=594)

Parameters are 6\*99 bytes (594 bytes) in ASCII format representing the Quantity on Board for all 99 products to the tenth of a unit volume. The decimal is implied and should not be transmitted.

Returns:

f|

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: f  
RX: f (Verify f is echoed)  
TX: 594 bytes ...  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

Notes:

- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**
- E:Count LT: Only the QOB for Product 1 will be stored as the LT is a single-product register. The LT still requires that all of the 594 bytes be transmitted.

## 2.2.22 - i (Set Host Mode Printer Options) Command

### Description:

The lower-case 'i' command sets the Printer Options for the Host-Mode ticket to be printed with the X command.

Parameters: 10 bytes

Byte 1: Print Meter Ticket - ASCII 0 or 1

0=Enabled (default), 1=Suppress Meter Block

Note: This will force the E:Count to \*not\* print a Meter Ticket for the current Delivery when the X command is issued.

Byte 2: Cut Between Copies - ASCII 0 or 1

0=Enabled (default), 1=Suppress Cut Between Copies

Note: For Most Thermal Printers Only

Byte 3: Cut After Final Copy - ASCII 0 or 1

0=Enabled (default), 1=Suppress Cut After Final Copy

Note: For Most Thermal Printers Only

Byte 4: Line/Form Feeds After Final Copy - ASCII 0 or 1

0=Enabled (default), 1=Suppress LF/FF After Final Copy

Note: For all Roll Printers, added in E178F.

Byte 5: Print Copy# on Roll Ticket - ASCII 0 or 1

0=Enabled (default), 1=Suppress COPY# Print

Note: For all Roll Printers, added in E178F.

Note: The *BLASTR* printer setting does not print the COPY# regardless of this value, but the *BLASTB* printer setting will print the COPY#.

Byte 6: Display HOST MODE warning while ticket pending in

Host Mode - ASCII 0 or 1

0=Enabled (default), 1=Suppress HOST MODE Message

Note: Once a Host Mode ticket is pending when the operator presses PRINT on the E:Count "HOST MODE" will be displayed indicating that the ECount is waiting for the X command from the Host in order to print the Meter Ticket. Added in E179E0 rev3.

(continued)

Byte 7: Send ESTOP Warning to Host - ASCII 0 or 1  
0=Enabled (skip), 1=Send  
Note: Added in E179EZ, not available in all versions.

Byte 8: Host Override of "SS RST" Settings  
ASCII 0,1,2,3  
0 = Use "SS RST" Setting value from Setup (default)  
1 = OFF (disabled)  
2 = ON  
3 = NSSOHM (No Start Stop to Open valves in Host Mode).

Bytes 9-10: Not Used - ASCII 0 (required)  
These bytes are not used but must be transmitted  
Send "00" (ASCII 0 characters)

Returns:  
i|

### 2.2.23 - C (Set Timer Override TIMOVR) Command

Description:

The C command sets the state of the TIMOVR or Timer Override function.

Parameters:

1 byte

ASCII 0: Timer Override Disabled

ASCII 1: Timer Override Enabled

The TIMOVR function on the Delivery Menu is available if the TIMER setting is ON in the Calibration Menu. The C command has no effect if the Calibration Menu TIMER setting is OFF.

If the operator wants to override the 3 minute no flow timeout required by Weights and Measures TIMOVR should be enabled using either the Delivery Menu or the C command.

Enabling TIMOVR (Timer Override) \*disables\* the 3-minute no-flow timer for the next delivery only.

When TIMOVR is enabled the following message will print on the ticket:

MULTIPLE TANK DELIVERY AT ONE SITE ONLY

Returns:

C + data + | (data is the parameter sent to the E:Count)

Command Sequence:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)  
TX: C  
RX: C (Verify C is echoed before continuing)  
TX: 1 ASCII bytes (See above, example: 1)  
RX: | (Verify pipe char)  
TX: 0xFF (Disconnect PCM)

This indicates that Timer Override should be enabled for the next delivery. The 3-minute no-flow timer will be disabled and the Multiple Tank message will print on the delivery ticket.

(continued)

C Command Notes:

- The "C" command is only valid in Versions E163E or later.
- The "C" command is only valid prior to a delivery.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.24 - v (Get E:Count Date/Time) Command

### Description:

The v command returns the current date and time of the E:Count.

### Parameters:

None

### Returns:

v + data + |

data is 10 bytes: YYMMDDhhmm

YY = Year (2-digit)

MM = Month

DD = Day

hh = Hour

mm = Minute

### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: v
RX: v                  (Verify v is echoed before continuing)
RX: bytes ... |       (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

### Notes:

- The "v" command is only valid in Versions E164E or later.
- The "v" command is only valid when a delivery is not active.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.25 - w (Set E:Count Date/Time) Command

#### Description:

The w command sets the current date and time of the E:Count.

#### Parameters:

10 bytes: YYMMDDhhmm

YY = Year (2-digit)

MM = Month

DD = Day

hh = Hour

mm = Minute

#### Returns:

w + 0 + |

0 indicates success

#### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: w
RX: w                  (Verify w is echoed before continuing)
TX: 1008231154        (Set date time to 11:54 am 2010/08/23)
                        (Send ASCII characters)
RX: byte ... |        (Verify response byte + pipe char)
TX: 0xFF              (Disconnect PCM)
```

#### Notes:

- The "w" command is only valid in Versions E164E or later.
- The "w" command is only valid when a delivery is not active.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.26 - u (Get Printer Setting) Command

### Description:

The u command gets the current Printer Setting from the E:Count.

### Parameters:

none

### Returns:

u + *setting\_char* + |

*setting\_char* is 1 ASCII byte - refer to the following list to determine the printer setting:

### Char Printer Type

0	MID:COM Slip Printer
1	Epson TM-295 Impact Slip
2	Epson POS Thermal Roll (or 100% POS Compatible)
3	No Printer
4	Zebra RW-420 Thermal Roll
5	Cognitive Blaster Thermal Roll v1
6	Epson TM-220 Impact Roll
7	Fujitsu FP-460 Thermal Roll, Logo + Black Mark Sensor
8	Zebra RW-420 Thermal Roll
9	Citizen CT-S601/CT-S651 Thermal Roll, Logo
:	Colon=Epson TM-88 Thermal Roll, Logo
;	Semi-Colon= Cognitive Blaster Roll (v2) + Black Mark Sensor
<	Greater-Than=Printek Mobile RT43 BlueTooth Thermal Roll
=	Equals=Datamax MicroFlash 4TE Thermal Roll

### Command Sequence:

TX:	0x1F 0x02	(Connect PCM-Host to PCM-EC1)
TX:	u	
RX:	u	(Verify u is echoed before continuing)
RX:	byte ...	(Verify response byte + pipe char)
TX:	0xFF	(Disconnect PCM)

(continued)

`u' Command Notes:

- The "u" command is only valid in Versions E167E or later.
- Epson TM-220 setting "**TM-220**" is only valid in E168E and newer.
- Blaster Printer setting "**BLASTB**" supporting the Black Mark Sensor is only valid in E178F and newer.
- Fieldtek Mobile RT43 BlueTooth setting "**RT43BT**" is only valid in E178F and newer.
- Datamax MicroFlash 4TE setting "**DMM4TE**" is only valid in E178F and newer.
- The "u" command is only valid when a delivery is not active.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.27 - z (Get Header/Footer) Command

### Description:

The z command gets the current Header and Footer text from the E:Count.

### Parameters:

none

### Returns:

z + *header\_text* + *footer\_text* + |

*header\_text* is 250 ASCII bytes (10 lines, 25 chars/line)

*footer\_text* is 100 ASCII bytes (4 lines, 25 chars/line)

Note: If the line is to be suppressed (or not printed), the first character of the line will be a null character (decimal 0) and the remaining characters on the line are ignored.

If a blank line is to be printed, all 25 characters will be spaces.

### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: z
RX: z                  (Verify z is echoed before continuing)
RX: bytes ... |       (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

### Notes:

- The "z" command is only valid in Versions E167E or later.
- The "z" command is only valid when a delivery is not active.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.28 - j (Get Calibration Report Text) Command

### Description:

The "j" command gets the text that prints on the Calibration Report.

### Parameters:

none

### Returns:

*j + Calibration\_Report\_Text + |*  
(the pipe indicates there is no more text to follow)

*Calibration\_Report\_Text* will be multiple lines of ASCII text with line control characters (CR, LF, or CRLF) separating each line.

### Sample:

To see a sample of the text select the CALRPT option from the Delivery Menu - the text that is returned is the exact text from the report.

### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: j
RX: j                  (Verify j is echoed before continuing)
RX: bytes ... |        (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

### Notes:

- The "j" command is only valid in Versions E169E or later.
- The "j" command is only valid when a delivery is not active.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.29 - k (Get Shift Report Text) Command

### Description:

The "k" command gets the text that prints on the Shift Report.

### Parameters:

none

### Returns:

*k + Shift\_Report\_Text + |*  
(the pipe indicates there is no more text to follow)

*Shift\_Report\_Text* will be multiple lines of ASCII text with line control characters (CR, LF, or CRLF) separating each line.

### Sample:

To see a sample of the text select the SHIFT option from the Delivery Menu - the text that is returned is the exact text from the report.

### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: k
RX: k                  (Verify k is echoed before continuing)
RX: bytes ... |       (Verify response bytes + pipe char)
TX: 0xFF              (Disconnect PCM)
```

### Notes:

- The "k" command is only valid in Versions E169E or later.
- The "k" command is only valid when a delivery is not active.
- This command will \*not\* reset the shift data - only printing the shift report will reset all shift data.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.30 - m or n (Get Product/Preset Volume) Command

NOTE: As of E177F the 'n' command may be used in place of the 'm' command. The 'm' command will function normally.

#### Description:

The 'm' (or 'n') command returns the current selected Product Code, and the Last Active Preset Volume as set by either the Operator using the E:Count or the Host using the Preset Command.

#### Parameters:

none

#### Returns:

*Product\_Code* + *Last\_Active\_Preset* + |  
(the pipe indicates there is no more text to follow)

*Product\_Code* is 2 ASCII digits, from 01-99 and will be current active product number.

*Last\_Active\_Preset* is 5 (or 6 for 'n' command) ASCII characters without the decimal character - leading 0's will be sent.

#### Sample:

```
m0101000|  
n01001000|
```

This indicates the current product code is 01 and the last active Preset Volume was 100 units (Gallons or Litres).

#### Command Sequence:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)  
TX: m  
RX: m                  (Verify m is echoed before continuing)  
RX: bytes ... |       (Verify response bytes + pipe char)  
TX: 0xFF              (Disconnect PCM)
```

#### Notes:

- The "m" command is only valid in Versions E169E or later and is only valid when no delivery is active ('n'= 177+).
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.31 - O (Fleet) Command

**Description:**

The "O" (capital O) Fleet command sets values for Fleet functions, and returns a value depending on the success or failure of the parameters sent. E174F incorporates a No-Flow Timeout, which is a delay after which the valves will be closed automatically once flow has stopped during a delivery.

**Parameters:**

Timeout (seconds, 0-250)		1 byte	*
No Flow Required Override	(0x00 or 0x01)	1 byte	**
-spare bytes-		4 bytes	***
XOR Checksum, Seed:0xA5		1 byte	****

-----  
Total: 7 bytes

**Returns:**

<i>O + return_value +  </i>	<i>return_value</i>	Result
	-----	
	ASCII 0	Command OK
	ASCII 1	Checksum Error

Example Command: (Notes: 'O' = 0x4F, 15 seconds = 0x0F)  
0x4F 0x0F 0x00 0x00 0x00 0x00 0x00 0xE5

This example would set the Fleet Timeout to 15 seconds:

```
TX: 0x1F 0x02          (Connect PCM-Host to PCM-EC1)
TX: 0x4F              (Send 'O')
RX: 0x4F              (Verify 'O' echoed before continuing)
TX: 0x0F 0x00 0x00 0x00 0x00 0x00 0xE5
RX: 0x30 0x7C         (Verify checksum valid + pipe char)
TX: 0xFF              (Disconnect PCM)
```

**Notes:**

- The "O" command is only valid in Versions E174F or later.
- The "O" command is only valid when product is not flowing, it may be sent either prior to or during the delivery.
- \* Timeout: 1 Byte, (0-250) decimal value indicates timeout in seconds during the delivery when the valves should close automatically after product has stopped flowing.

(continued)

O Command Notes (continued):

- **\*\* No Flow Override:** As of E176F if this byte is anything other than 0x00 then the valves will close after the Fleet Timeout even if there has been no product flow. In E175 and older, or if this byte is 0x00 then the valves will only close after product flow has stopped \*and\* time Fleet Timeout has expired (the valves will not close automatically unless there has been previous product flow).
- **\*\*\* Spare Bytes:** As of E174F not used, send 4 NULL bytes (0x00).
- **\*\*\*\* XOR Checksum:** Calculate the checksum by XOR'ing 0xA5 with each of the first 7 bytes of the command, including the 'O' character.
  - Example: To transmit a **0-second** timeout (0x4F 0x00 0x00 0x00 0x00 0x00) the resulting checksum would be **0xEA**.
  - Example: To transmit a **15-second** timeout (0x4F 0x0F 0x00 0x00 0x00 0x00) the resulting checksum would be **0xE5**.
  - Example: To transmit a **60-second** timeout (0x4F 0x3C 0x00 0x00 0x00 0x00) the resulting checksum would be **0xD6**.
- The Fleet Timeout will default to 0 for every delivery at the beginning of the delivery, regardless of what was used during the prior delivery.
- Sending a timeout of 0 seconds (0x00) disabled the fleet timeout and the valves will not automatically close until a non-0 timeout is transmitted.
- The Fleet Timeout will reset to 0 after the delivery ticket has printed.
- **E:Count LT: When the Fleet Timeout expires the valves will close and the delivery will end.**
- **IMPORTANT: If the E (Preset) command is to be used, the O command must be sent after the E command both prior to and during a delivery.**
- The O command may be sent multiple times during the delivery, only that most recent Timeout value is saved.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

## 2.2.32 - o (Pass-Through Print Start Ticket) Command

### Description:

The 'o' (lower-case O) Pass-Through Print Start Ticket command will initialize a pass-through ticket, allowing the Host to use the 'q' and 'r' commands to add text lines and finish the pass through ticket, respectively.

The 'o' Pass-Through Print Start Ticket command returns a value depending on the success or failure of the command and the status of the printer.

The 'o' Pass-Through Print Start Ticket command was added in E175F and is only valid in E175F and newer+ versions.

### Parameters:

None

### Returns:

o + return_value +	return_value	Result
	ASCII 0	Paper Error
	ASCII 1	Command Successful
	ASCII 2	Printer Error
	ASCII 3	"NO PRINTER"

### Example Command:

```
TX: 0x1F 0x02      (Connect PCM-Host to PCM-EC1)
TX: o
RX: o              (Verify o is echoed)
RX: |              (Wait & Verify pipe char, IMPORTANT)
TX: 0xFF           (Disconnect PCM)
```

### Notes:

- The 'o' command only needs to be called one time to initialize a pass-through ticket.
- The 'o' command is only valid in Versions E175F or later.
- The 'o' command is only valid when product is not flowing & no ticket is pending (State "1").
- **After calling the 'o' command it is imperative that the 'r' command be called prior to returning to normal program operation in order to "end" Pass-Through Printing.**
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.33 - q (Pass-Through Print Line of Text) Command

#### Description:

The 'q' (lower-case q) Pass-Through Print Line of Text command will print 25 ASCII text characters from the Host on the printer, advance one line, and perform a carriage return. Send the 'q' command repeatedly to print a collection of 'text lines'.

This allows for generic text-based tickets to be printed without writing Host-specific code for each printer type. Use the 'o' and 'r' commands to start and finish the pass through ticket, respectively.

The 'q' Pass-Through Print Line of Text command returns a value depending on the success or failure of the command and the status of the printer.

The 'q' Pass-Through Print Line of Text command was added in E175F and is only valid in E175F and newer+ versions.

#### Parameters:

25 bytes of ASCII Text to print

#### Returns:

<i>q + return_value +  </i>	<i>return_value</i>	Result
	ASCII 0	Paper Error
	ASCII 1	Command Successful
	ASCII 2	Printer Error
	ASCII 3	"NO PRINTER"

#### Command Sequence:

```
TX: 0x1F 0x02      (Connect PCM-Host to PCM-EC1)
TX: q
RX: q              (Verify U is echoed)
TX: 25 bytes       (25 ASCII bytes)
RX: |              (Wait & Verify pipe char, IMPORTANT)
TX: 0xFF           (Disconnect PCM)
```

#### Notes:

- The 'q' command may be called repeatedly to print multiple lines of text on a pass-through ticket.
- The 'q' command is only valid in Versions E175F or later.
- The 'q' command is only valid when product is not flowing & no ticket is pending (State "1").
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.34 - r (Pass-Through Print Finish Ticket) Command

#### Description:

The 'r' (lower-case r) Pass-Through Print Finish Ticket command will finalize the pass-through ticket, executing all necessary code for the current printer type. This allows for generic text-based tickets to be printed without writing Host-specific code for each printer type. Use the 'o' and 'q' commands to start and print lines on the pass through ticket, respectively. The 'r' Pass-Through Print Finish Ticket command returns a value depending on the success or failure of the command and the status of the printer. The 'r' Pass-Through Print Finish Ticket command was added in E175F and is only valid in E175F and newer+ versions.

#### Parameters:

None

#### Returns:

<i>r</i> + <i>return_value</i> +	<i>return_value</i>	Result
-----		
	ASCII 0	Paper Error
	ASCII 1	Command Successful
	ASCII 2	Printer Error
	ASCII 3	"NO PRINTER"

#### Command Sequence:

```
TX: 0x1F 0x02      (Connect PCM-Host to PCM-EC1)
TX: r
RX: r              (Verify r is echoed)
RX: |              (Wait & Verify pipe char, IMPORTANT)
TX: 0xFF           (Disconnect PCM)
```

#### Notes:

- The 'r' command only needs to be called one time to finish a pass-through ticket.
- The 'r' command is only valid in Versions E175F or later.
- The 'r' command is only valid when product is not flowing & no ticket is pending (State "1").
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 2.2.35 - x/y (LT Software Authorization Control) Commands

NOTE: The 'x' and 'y' commands are only valid in the E:Count LT as of LT411C and newer.

#### Description:

The "x" command will enable the START/STOP key to reset the register which begin a delivery.

The "y" command will disable the START/STOP key. If sent during the delivery it will end the delivery by closing all valves and the pump motor contactor.

#### Operation:

The SETUP menu item "SWAUTH" was added in LT415 and E180. If it is turned OFF then there is no FMS software authorization.

If it is turned ON then the 'x' command must be used to enable the delivery and the 'y' command may be used to end the delivery as well as the other methods that end the delivery.

#### Parameters:

none

#### Returns:

x |

y |

(the pipe indicates there is no more text to follow)

#### Command Sequence:

TX: x

RX: x (Verify x is echoed before continuing)

RX: | (Verify pipe char)

Refer to the following page for a flowchart of the usage of AUTHRX.

(continued)

SWAUTH (Host/Software Authorization) Usage (continued)

```
BOOTUP:
INITIALIZE DATA PREPARE COMMS RESET DISPLAY, 'WAITING'

WAITING:
LOOK FOR KEYS OR COMMANDS
DETECT <START/STOP> PRESS OR "R" COMMAND = 'RESET ARMED?'

RESET/SWAUTH ARMED?: (HAS HOST SENT 'x'?)
Y = 'INITIALIZE DELIVERY'
N = SHOW "SWAUTH OFF", 'WAITING'

INITIALIZE DELIVERY:
OPEN VALVES, RESET VOLUME, 'DELIVERY'

DELIVERY:
LOOK FOR PULSES, KEYS, COMMANDS, TIMER
PRESET REACHED = Y, 'END DELIVERY'
<START/STOP> PRESSED, 'END DELIVERY'
<PRINT> PRESSED, 'END DELIVERY'
NO FLOW TIMEOUT, 'END DELIVERY'
HOST DISARM SWAUTH ('y'), 'END DELIVERY'

END DELIVERY:
FINALIZE DELIVERY DATA + PRINT (IF ENABLED), 'WAITING'
```

Notes:

- The 'x' must be sent prior to every reset, SWAUTH requires that each delivery be authorized by the host/software.
- The 'x' & 'y' commands are only valid in Versions LT411C or later.
- Note that if the operator ends the delivery manually it will disable the START/STOP key as if you had sent the 'y' command and will also end the delivery.
- On power-up the START/STOP key defaults to disabled.
- L411 or E180 or newer are required to use Software Authorization.
- **Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### 3.0.0 PCM Commands

<u>PCM Command Byte(s)</u>				<u>Description</u>
Byte1	Byte2	Byte3	Byte4	
-----	-----	-----	-----	
0xFF				Disconnect All
0x1F	0x02			Connect Host to Register 1 - ASCII Only
0x1F	0x0F	0xYY		Connect Host to Register 1 for YY Bytes
0x1F	0x10	0xYY	0xZZ	Connect Host to Register 1 for YY Bytes <b>and</b> wait for ZZ bytes to be returned
0x1F	0x03			Connect Host to Register 2 - ASCII Only
0x1F	0x11	0xYY		**Connect Host to Register 2 for YY Bytes
0x1F	0x12	0xYY	0xZZ	**Connect Host to Register 2 for YY Bytes <b>and</b> wait for ZZ bytes to be returned
0x1F	0x01			Connect Host to Printer - ASCII Only
0x1F	0x09	0xYY		**Connect Host to Printer for YY Bytes
0x1F	0x04			Connect Host to Auxiliary - ASCII Only
0x1F	0x13	0xYY		**Connect Host to Auxiliary for YY Bytes
0x1F	0x05			Connect Register 1 to Printer
0x1F	0x06			Connect Register 2 to Printer
0x1F	0x07			Connect Register 1 to Auxiliary Port
0x1F	0x08			Connect Register 2 to Auxiliary Port

\*\* Only valid in E169E or newer

**NOTE: that since the E:Count LT does not use a PCM it is not necessary to send the PCM commands, illustrated below:**

E:Count:

TX: 0x1F 0x02 (Connect PCM-Host to PCM-EC1)

TX: J

RX: bytes (Verify 6 bytes are received)

TX: 0xFF (Disconnect PCM)

E:Count LT:

TX: J

RX: bytes (Verify 6 bytes are received)

(continued)

## E:Count PCM Communications & PCM Connection Commands:

Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. By always sending the appropriate PCM connection commands the Host can ensure they are connected to the correct device.

Always allow for a brief delay after sending the PCM commands (0x1F 0x02, 0x1F 0x03, 0xFF, etc...) to allow for internal line switching to take place; allow roughly 2-3ms or the time it would take two characters to be transmitted at 9600 baud.

Whenever the Host wants to communicate with any device connected to the PCM (an E:Count Register, a Printer, or any Auxiliary device) the Host should perform the following steps:

1. Send the PCM Command to Connect the Host to the PCM port (ex: 0x1F 0x02 to connect Host to E:Count 1).
2. Wait 2-3ms for internal line switching in the PCM **\*before\*** sending additional commands.
3. Send the command string (ex: 0x56 to request the version from the E:Count [0x56 = 'V']). The command char will usually be echoed (although some commands will not echo the command char).
4. Wait for the full command response (ex: 'V' response looks like 'VUE175F061001234|' Note: the 'V' is echoed immediately and the pipe '|' indicates there is no more data to follow). **It is imperative that the host wait for the command to complete prior to beginning the next command.**
5. Send the PCM Command to Disconnect the PCM ports (ex: 0xFF disconnects all devices when not communicating).
6. Wait 2-3ms for internal line switching in the PCM \*before\* sending additional commands.

*Note: If desired step 5 may be omitted if there are additional commands to the same device to follow, but as the PCM Connection Commands (ex: 0x1F 0x02) **\*should\*** be resent with the next command, they will also be sent through to the connected device (ex: 0x1F 0x02). Under normal circumstances these commands do not affect the E:Count.*

**The PCM will never respond to any commands, there will be no echo of characters received and processed by the PCM.**

(continued)

### **ASCII vs. Hex Command Notes:**

- The ASCII commands are intended to be used by the Host to **send ASCII printable characters to the target device, and should only be used if the target device will respond with ASCII data.** Non-printable characters sent by the Host in this mode may be interpreted by other devices as commands and should not be sent.
- The `'0x1F 0xNN 0xYY'` commands are intended to be used by the Host to **send any characters (including hex data) to the target without a response,** enabling the Host to send binary/hex data without a response as necessary.
  - The PCM will automatically disconnect the target device after 0xYY bytes have been sent. The Host does not need to send the 0xFF byte to disconnect the PCM port. In order to send more data simply send another `'0x1F 0xNN 0xYY'` command.
- The `'0x1F 0xNN 0xYY 0xZZ'` command is intended to be used by the Host to **send hex characters to the target device and to allow the target device to send hex characters back to the Host,** enabling the Host and the target device to exchange binary/hex data as necessary.
  - The PCM will automatically disconnect the target device after 0xZZ bytes have been sent from the target device to the Host. The Host does not need to send the 0xFF byte to disconnect the PCM port. In order to send more data simply send another `'0x1F 0xNN 0xYY 0xZZ'` command.

**In order to advance any printer model a single line send the printer a Linefeed character - 0x0A or Chr\$(13) - this command works on all printers.**

**Contact MID:COM for additional printer documentation regarding the advanced features offered by the different models of printers.**

### **3.1.0 PCM Internal LED Status**

There are 5 LEDs inside the cover of the Power Control Module that shows which two devices are currently connected based on the most recent PCM command. The two LEDs that are 'on' indicate which two devices are current 'connected':

LED 1: Register 1 is Connected

LED 2: Register 2 is Connected

LED 3: Host is Connected (Serial 1)

LED 4: Auxiliary is Connected (Serial 2)

LED 5: Printer is Connected

### 3.2.0 ECount Host Communications Timing - DockLight

Send Sequences			Communication			
Send	Name	Sequence	ASCII	HEX	Decimal	Binary
--->	J	4A				
--->	X	58				
--->	N	4E				
--->	R	52				
--->	0	30				
--->	ec	1F 02				
--->	E	45				
--->	01000111	30 31 30 31 30				

Receive Sequences			
Active	Name	Sequence	rsw

Time	Hex	Direction	Line
1/30/2015 08:33:28.657	[TX] - 1F 02	TX	1
1/30/2015 08:33:33.516	[TX] - 4A	TX	1
1/30/2015 08:33:33.531	[RX] - 00 00 00 00 00 00	RX	2
1/30/2015 08:33:40.594	[TX] - 58	TX	2
1/30/2015 08:33:40.609	[RX] - 58 32 7C	RX	2
1/30/2015 08:33:59.780	[TX] - 4E	TX	3
1/30/2015 08:34:15.608	[TX] - 52	TX	3
1/30/2015 08:34:15.623	[RX] - 52 7C	RX	4
1/30/2015 08:35:20.121	[TX] - 4A	TX	4
1/30/2015 08:35:20.133	[RX] - 28 00 00 00 00 28	RX	5
1/30/2015 08:35:27.616	[TX] - 58	TX	6
1/30/2015 08:35:36.024	[TX] - 52	TX	7
1/30/2015 08:35:45.384	[TX] - 4E	TX	7
1/30/2015 08:35:45.390	[RX] - 4E 7C	RX	7
1/30/2015 08:36:07.910	[TX] - 4A	TX	8
1/30/2015 08:36:12.374	[TX] - 1F 02	TX	8
1/30/2015 08:36:17.782	[TX] - 4A	TX	8
1/30/2015 08:36:17.794	[RX] - 00 00 00 00 00 00	RX	9
1/30/2015 08:38:01.542	[TX] - 45	TX	9
1/30/2015 08:38:01.549	[RX] - 45	RX	9
1/30/2015 08:38:02.374	[TX] - 30 31 30 31 30 30 30 31 31 31	TX	10
1/30/2015 08:38:02.392	[RX] - 31 7C	RX	10
1/30/2015 08:38:12.214	[TX] - 4A	TX	11
1/30/2015 08:38:12.226	[RX] - 84 00 00 00 00 84	RX	12
1/30/2015 08:38:15.518	[TX] - 58	TX	13
1/30/2015 08:38:15.527	[RX] - 58 34 7C	RX	13
1/30/2015 08:38:19.941	[TX] - 4E	TX	14
1/30/2015 08:38:31.037	[TX] - 52	TX	14
1/30/2015 08:38:31.044	[RX] - 52	RX	14
1/30/2015 08:38:34.189	[TX] - 4A	TX	15
1/30/2015 08:38:34.465	[RX] - 7C	RX	15
1/30/2015 08:38:40.068	[TX] - 4A	TX	16
1/30/2015 08:38:40.080	[RX] - AC 00 00 00 00 AC	RX	16
1/30/2015 08:38:43.661	[TX] - 4A	TX	17
1/30/2015 08:38:43.673	[RX] - AC 00 00 00 00 AC	RX	17
1/30/2015 08:38:45.061	[TX] - 4A	TX	17
1/30/2015 08:38:45.073	[RX] - AC 00 00 00 00 AC	RX	17
1/30/2015 08:38:58.667	[TX] - 45	TX	18
1/30/2015 08:38:58.674	[RX] - 45	RX	18
1/30/2015 08:38:59.355	[TX] - 30 31 30 31 30 30 30 31 31 31	TX	18
1/30/2015 08:38:59.372	[RX] - 31 7C	RX	18
1/30/2015 08:39:02.388	[TX] - 4A	TX	19
1/30/2015 08:39:02.400	[RX] - AC 00 00 00 00 AC	RX	19
1/30/2015 08:39:07.572	[TX] - 58	TX	19
1/30/2015 08:39:15.218	[TX] - 4A	TX	20
1/30/2015 08:39:15.230	[RX] - AC 00 00 00 00 AC	RX	20
1/30/2015 08:39:25.195	[TX] - 52	TX	21
1/30/2015 08:39:34.929	[TX] - 4E	TX	21
1/30/2015 08:39:34.935	[RX] - 4E 7C	RX	22
1/30/2015 08:39:35.537	[TX] - 4A	TX	23
1/30/2015 08:39:35.549	[RX] - C4 00 00 00 00 C4	RX	23
1/30/2015 08:39:55.401	[TX] - 4E	TX	24
1/30/2015 08:40:05.328	[TX] - 4A	TX	24
1/30/2015 08:40:05.340	[RX] - C4 00 00 00 00 C4	RX	24
1/30/2015 08:40:10.120	[TX] - 52	TX	24
1/30/2015 08:40:10.127	[RX] - 52 7C	RX	24
1/30/2015 08:40:12.951	[TX] - 4A	TX	25
1/30/2015 08:40:12.962	[RX] - C4 00 00 00 00 C4	RX	25
1/30/2015 08:40:19.151	[TX] - 58	TX	26
1/30/2015 08:40:19.158	[RX] - 58 33 7C	RX	26
1/30/2015 08:41:03.620	[TX] - 58	TX	27
1/30/2015 08:41:03.627	[RX] - 58	RX	27
1/30/2015 08:41:04.053	[TX] - 30	TX	28
1/30/2015 08:41:04.103	[RX] - 31 7C	RX	28
1/30/2015 08:41:17.843	[TX] - 4A	TX	28
1/30/2015 08:41:21.795	[TX] - 1F 02	TX	28
1/30/2015 08:41:22.803	[TX] - 4A	TX	28
1/30/2015 08:41:22.815	[RX] - 00 00 00 00 00 00	RX	28

Figure 3. E:Count Host Command HEX Log

The following table reflects the results of the various State Changing Commands depending on the State of the ECount. It is an analysis of the hex command log from the previous page.

STEP	TIME	ACTION	STATE	EXPECTED	OBSERVED	DELAY
1	33.33.516	J - Delivery Active Clear, Ticket Pending Clear	100			15 ms
2	33.40.594	send X, no argument = invalid		X2	X2	15 ms
3	34.15.608	send R = reset valid	100	R	R	
		<b>Transition to delivery active, pump &amp; print</b>				
4	35.20.133	J - Delivery Active Set, Ticket Pending Clear	200			12 ms
5	<b>35.27.616</b>	<b>send X, no argument = invalid</b>		<b>X2 </b>	<b>no response</b>	
6	35.36.024	send R = invalid		no response	no response	
7	<b>35.45.384</b>	<b>send N = finish and print</b>	200	<b>N </b>	<b>N </b>	<b>6 ms!</b>
		<b>Transition to no delivery, no ticket pending</b>				
8	36.17.782	J - Delivery Active Clear, Ticket Pending Clear	100			12 ms
9	38.01.542	Send E, wait for echo = valid		E	E	7 ms
10	38.02.374	send E arguments		1	1	18 ms
		<b>Transition to host-mode active, pre-delivery, no ticket pending</b>				
11	38.12.214	J - HostMode Set, Delivery Active Clear, Ticket Pending Clear				12 ms
12	<b>38.15.518</b>	<b>send X, no argument = invalid</b>	100	<b>no response</b>	<b>X4 </b>	9 ms
13	38.19.941	send N = invalid	100	no response	no response	
14	38.31.037	send R = reset	100	R	R	R echo 7 ms
15	38.34.465	3.428 seconds between echo of R and echo of   to finish reset				3.428 s
		Note: I sent the J at 38.34.189 to force the display of the rx time of the pipe				
		<b>Transition to delivery active, host mode</b>				
16	38.40.068	J - HostMode Set, Delivery Active Set, Ticket Pending Clear	200			12 ms
17	38.58.667	send e = rereset = valid		E1	E1	echo 7 ms
18	38.59.355	E arguments		1	1	17 ms
19	39.07.572	send X, no argument = invalid		no response	no response	
20	39.25.195	send R reset = invalid		no response	no response	
21	39.34.929	send N = finish and wait for X	200	N	N	6 ms
		<b>transition to ticket pending, host mode</b>				
22	39.35.537	J - HostMode Set, Delivery Active Clear, Ticket Pending Set	300			12 ms
23	39.55.401	send N = invalid		no response	no response	
24	<b>40.10.120</b>	<b>send R reset = invalid</b>		<b>no response</b>	<b>R </b>	<b>7 ms</b>
25	40.19.151	Send X, no argument (testing return)		R3	R3	7 ms
26	41.03.620	Send X, follow with argument after echo		X	X	7ms
27	<b>41.04.053</b>	<b>x argument</b>		<b>1 </b>	<b>1 </b>	<b>50 ms!</b>
		<b>transition to no delivery, no ticket pending</b>				
28	41.22.803	J - Delivery Active Clear, Ticket Pending Clear	100			12 ms

Figure 4. E:Count Host Command Log Analysis

## 4.0.0 Host Interface Examples

### Overview:

#### **PCM Connection:**

Whenever the Host wants to communicate with any device connected to the PCM (an E:Count Register, a Printer, or any Auxiliary device) the Host should perform the following steps:

1. Connect to the desired PCM port
2. Send the command string
3. Wait for response
4. Disconnect the PCM Port

**Prior to sending any command to the E:Count the Host must connect to the E:Count through the PCM by sending the appropriate connection bytes. See 3.0.0 PCM Commands for more information.**

### Example 1: Get E:Count Version with HOSTFX "ALL"

If HOSTFX is set to all "ALL", it is necessary for the Host Software to send a TILDE (~) immediately prior to each and every E:Count command.

This is intended to prevent stray or mis-transmitted characters from being falsely interpreted as commands by the E:Count.

It is still required to wait several milliseconds after sending a PCM command before resuming communications. The E:Count command character should be sent immediately after the TILDE.

Because E174 (and older) will simply ignore the TILDE, it is allowable to modify your host software to always send the TILDE, even if using versions prior to E175. In the case that HOSTFX is off or the version is older than E175 the TILDES will be ignored.

#### HOSTFX Example:

TX: **0x1F 0x02** Connect PCM Host Port to PCM E:Count #1 Port.  
**NOTE: Host must wait 5 ms after sending PCM Command to allow PCM time to switch UART ports.**

TX: **0x7E** Send HOSTFX TILDE character.

TX: **0x56** Send V to request E:Count Version Information.  
RX: **0x56** The E:Count will echo the Command Character to indicate to the Host the command was received \*before\* it processes the command; *the Host must wait for all characters to be received before sending the next command.*

RX: **E175F 011123456|** Receive full response including pipe.  
*NOTE: If the full number of bytes are not received the Host must assume there has been a communication hardware failure.*  
**NOTE: Only when the pipe '|' character has been sent is it safe for the Host to send the next command, prior to sending the pipe the E:Count is still working.**

TX: **0xFF** Disconnect Host from PCM.

## Example 2: Print Pass-Through Ticket with HOSTFX "ALL"

The **Pass-Through Printing Commands** (o,q,r) may be used to print a non-delivery ticket regardless of the type of printer connected to the E:Count.

The pass-through printing commands are only valid when a delivery is not active and there is no delivery ticket pending.

There are 3 Pass-Through Commands:

1. 'o' = Start Pass-Through Ticket

Based on the E:Count printer setting the **o** command will verify the printer is online, verify the printer has paper, advance to the next black mark (if enabled), and the print the logo stored in the printer (if configured). The **o** command only needs to be called once per pass-through ticket.

2. 'q' = Print Line on Pass-Through Ticket

Based on the E:Count printer setting the **q** command takes 25 ASCII text bytes as arguments and will verify the printer is online, verify the printer has paper, print the 25 ASCII text bytes, advance the form feed 1 line, and return the 'carriage' to the beginning of the line. The **q** command may be called as many times as necessary to add lines to the pass-through ticket.

3. 'r' = Finish Pass-Through Ticket

Based on the E:Count printer setting the **r** command will verify the printer is online, verify the printer has paper, do a full or partial cut (if enabled), advance the necessary number of linefeed to eject the paper from the printer (if enabled), and advance to the next black mark (if enabled). The **r** command only needs to be called once per pass-through ticket.

(continued)

Print Pass-Through Ticket with HOSTFX "ALL" Example:

**TX: 0x1F 0x02** Connect PCM Host Port to PCM E:Count #1 Port.  
**NOTE: Host must waits 5 ms after sending PCM Command to allow PCM time to switch UART ports.**

**TX: 0x7E** Send HOSTFX TILDE character.

**TX: 0x6F** Send 'o' to begin pass-through ticket.

**RX: o1|** The E:Count indicates the Printer is ready and the pass-through ticket has been started  
**Wait for '/' to indicate previous command is complete.**  
**If the response is anything other than ASCII '1' there is a problem with the printer and the specific error should be reported to the end-user.**

**TX: 0x1F 0x02** Connect PCM Host Port to PCM E:Count #1 Port.  
**NOTE: Host must waits 5 ms after sending PCM Command to allow PCM time to switch UART ports.**

**TX: 0x7E** Send HOSTFX TILDE character.

**TX: 0x51 + 25\_bytes** Send 'q' + 25 text bytes to print pass-through line.

**RX: q1|** The E:Count indicates the Printer is ready and the pass-through text line has been printed.  
**Wait for '/' to indicate previous command is complete.**  
**If the response is anything other than ASCII '1' there is a problem with the printer and the specific error should be reported to the end-user.**

[Repeat "0x1F 0x02 {5 ms pause} ~q" to print desired lines.]

**TX: 0x1F 0x02** Connect PCM Host Port to PCM E:Count #1 Port.  
**NOTE: Host must waits 5 ms after sending PCM Command to allow PCM time to switch UART ports.**

**TX: 0x7E** Send HOSTFX TILDE character.

**TX: 0x6F** Send 'r' to begin pass-through ticket.

**RX: r1|** The E:Count indicates the Printer is ready and the pass-through ticket has been finished.  
**Wait for '/' to indicate previous command is complete.**  
**If the response is anything other than ASCII '1' there is a problem with the printer and the specific error should be reported to the end-user.**

**TX: 0xFF** Disconnect Host from PCM.

### Example 3: Host-Mode Delivery and Meter Ticket Print

1. PRE DELIVERY
  - a. Get E:Count Version
    - i. Send: V
    - ii. Receive Response VUE163E061123456|
  - b. Get E:Count Status
    - i. Send: J
    - ii. Receive Response: SHHHH
    - iii. Make sure Delivery is *\*not\** in Active
    - iv. Make sure Ticket is *\*not\** Pending
  - c. Get list of Valid Products
    - i. Send: P
    - ii. Receive Response: Pxxx...|
    - iii. Verify the Product Code desired is valid
  - d. Send Preset command to set product, preset, and start/stop reset enable.
    - i. Send: E0101000101
    - ii. Receive Response: E1|
    - iii. Verify selected Product Code is valid
  - e. Get E:Count Status
    - i. Send: J
    - ii. Receive Response: SHHHH
    - iii. Make sure Host Mode = ON
    - iv. Make sure Preset = ON (if desired)
    - v. Make sure Delivery Active = OFF
    - vi. Make sure Ticket Pending = OFF
  - f. Set Timer Override (if desired)
    - i. Send: C1
    - ii. Receive Response: C1|
  - g. Get Printer Status to determine if printer is ready
    - i. Send: I
    - ii. Receive Response from Register 1: I1|
    - iii. Wait for pipe, may take a few seconds

Note: Every command above should be preceded by the correct PCM Command to select the desired register

(continued)

## 2. RESET REGISTER

### a. Option 1: Operator Presses START/STOP to Reset

- i. Functionally equivalent to sending R command
- ii. May be disabled by "SS RST" = 'OFF' in setup menu
- iii. May be disabled by "SS Reset Enabled" bit = 0 in E command

### b. Option 2: Host Sends R command to Reset

- i. Send: E0101000101
- ii. Receive Response from Register 1: R|
- iii. Wait for pipe, may take a few seconds

### c. Get E:Count Status

- i. Send: J
- ii. Receive Response: SHHHH
- iii. Make sure Delivery Active = ON

## 3. MONITOR DELIVERY

### a. Get E:Count Status

- i. Send: J
- ii. Receive Response: SHHHH
- iii. While Delivery Active = ON
  1. May toggle valves
  2. May change preset
  3. May monitor volumes
  4. May end delivery (N command)
  5. Operator may press <Print> to end delivery
    - a. Ticket will not yet print in Host Mode
  6. No-Flow timer may elapse to end delivery
    - a. Ticket will not yet print in Host Mode
- iv. If Ticket Pending = ON
  1. Operator pressed <Print> to end delivery
    - a. Ticket will not yet print in Host Mode
  2. See step .. POST DELIVERY
- v. If Timeout Elapsed = ON
  1. No-Flow Timer elapsed to end delivery
    - a. Ticket will not yet print in Host Mode
- vi. If Preset Enabled = OFF and it was ON earlier
  1. Preset reached
  2. Valves closed but delivery is still active and valves may be re-opened

Note: Every command above should be preceded by the correct PCM Command to select the desired register

(continued)

#### 4. ENDING DELIVERY

##### **a. Option 1: No-Flow Timeout**

- i. If TIMER is on in the Calibration menu, and if Timer Override is off (which means do not override the timer) the no flow timeout will fire in the required time.
- ii. If Host Mode = OFF the meter ticket will print
- iii. If Host Mode = ON the E:Count will enter the Post-Delivery state and wait for further commands before printing the required meter ticket
  1. Timeout Elapsed status bit set to ON
  2. Delivery Active set to OFF
  3. Ticket Pending set to ON

##### **b. Option 2: Operator presses <Print> Key**

- i. If Host Mode = OFF the meter ticket will print
- ii. If Host Mode = ON the E:Count will enter the Post-Delivery state and wait for further commands before printing the required meter ticket
  1. Print Key status bit set to ON
  2. Delivery Active set to OFF
  3. Ticket Pending set to ON

##### **c. Option 3: Host software sends N command**

- i. Send: N
- ii. Receive Response from Register 1: N|
- iii. Delivery Active set to OFF
- iv. Ticket Pending set to ON

##### **d. Get E:Count Status**

- i. Send: J
- ii. Receive Response: SHHHH
- iii. Make sure Delivery Active = OFF

Note: Every command above should be preceded by the correct PCM Command to select the desired register.

(continued)

## 5. POST-DELIVERY

- a. Get E:Count Status
  - i. Send: J
  - ii. Receive Response: SHHHH
  - iii. Make sure Ticket Pending = ON
  
- b. Get Delivery Data
  - i. Send: T
  - ii. Receive Response T+data+|
  
- c. Process delivery information (per host requirements)
  
- d. Send "Before Buffer" bytes
  - i. Send: U+data
  - ii. Receive Response from Register 1: U|
  - iii. Repeat as necessary, send 00h when complete
  
- e. Send "After Buffer" bytes
  - i. Send: W+data
  - ii. Receive Response from Register 1: W|
  - iii. Repeat as necessary, send 00h when complete
  
- f. Send "Thermal Paper Cut Options" command
  - i. Only used to Suppress Full and Partial Cuts
  - ii. Send: i+data
  - iii. Receive Response from Register 1: i|
  
- g. Send Finalize and Print Ticket command
  - i. Send: X2 (To print two copies if Thermal printer)
  - ii. Receive Response from Register 1: X|
  - iii. (see X command details)
    1. During the Print Process the E:Count will disconnect the Host in order to communicate with the printer
    2. When printing is complete it will re-connect the Host to the E:Count and transmit the | indicating printing is complete.

Note: Every command above should be preceded by the correct PCM Command to select the desired register

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## VERSION HISTORY

<u>Version</u>	<u>Date</u>	<u>Author</u>	<u>Description</u>
1.00	10-17-06	BJS	Document created
1.01	10-18-06	BJS	Added Notes
1.02	11-03-06	BJS	Updated Commands
1.03	11-07-06	BJS	Updated Commands
1.04	11-13-06	BJS	Added ESC Command
1.05	11-17-06	BJS	Added P Command
1.06	11-20-06	BJS	Updated Version Command
1.07	11-21-06	BJS	Updated T Command
1.08	11-22-06	BJS	Updated J Command
1.09	11-29-06	BJS	Updated Y Command
1.10	11-30-06	BJS	Updated ESC Command
1.11	12-05-06	BJS	Updated J Command
1.12	12-08-06	BJS	Added PCM LED notes
1.13	12-13-06	BJS	Added Examples and Overview
1.14	12-14-06	BJS	Added State Diagram
1.15	12-14-06	BJS	Updated Index, Formatted Examples
1.16	12-15-06	BJS	Corrections
1.17	01-04-07	BJS	Updating R and K Commands, PCM Notes
1.18	01-09-07	BJS	Updating PCM, K, and J Commands
1.19	01-15-07	BJS	Updating T Command
1.20	01-17-07	BJS	Updating E, T, N, and J Commands
1.21	03-21-07	BJS	Updating Preset and Rest Commands
1.22	05-16-07	BJS	Adding e, d, and updating J Commands
1.23	06-18-07	BJS	Updated T Command
1.24	07-24-07	BJS	Updated T and X Commands
1.25	07-26-07	BJS	Update X, I, and N Commands
1.26	08-24-07	BJS	Add G, l, p and update U, W
1.27	08-27-07	BJS	Add f and g Commands
1.28	09-05-07	BJS	Update "l" command
1.29	10-17-07	BJS	Update X command
1.30	05-07-08	BJS	Update V, "i" commands and Examples
1.31	07-10-08	BJS	START/STOP Reset - Enable or Disable
1.32	08-21-08	BJS	Update Command Chart
1.33	09-23-08	BJS	Update Preset command notes
1.34	10-03-08	BJS	Update state diagram, add C command
1.35	10-03-08	BJS	Update Long Delivery Example
1.36	11-17-08	BJS	Add w and v commands
1.37	12-05-08	BJS	Update page numbers
1.38	03-18-09	BJS	u and z Commands
1.39	10-12-09	BJS	Update u for TM-220
1.40	01-06-10	BJS	Update j, k, m, and PCM commands
1.41	05-10-10	BJS	Update j and k commands

