# MID:COM E:Count

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## *Host Delivery Interface Guide*

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

**Midwest Computer Register, Corp.
1605 170th Street
Hampton, IA 50441**

**Telephone: 641-456-4848
Fax: 641-456-4600
E-Mail: Sales@MidComCorp.com
Web: www.MidComCorp.com**

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Midwest Computer Register, Corp.
1605 170th St.
PO Box 376 Hampton, Iowa 50441, USA
641-456-4848
www.midcomcorp.com
sales@midcomcorp.com

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# Contact Information

If you have questions or comments, you can email, write, or call.

**Email**

    Sales:                   sales@midcomcorp.com

    Support:            https://www.midcomcorp.com/contact

**Postal Address**

    MID:COM

    1605 170$^{th}$ St

    PO Box 376

    Hampton, Iowa 50441

**Phone Numbers**

    Phone:             641-456-4848

    Fax:               641-456-4600

# 1.0 - 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 a 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.  In Pump & Print Mode, pressing the **PRINT** key on the E:Count will print the ticket and finalize the delivery.  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 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 - PCM Connections

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 character will usually be echoed (although some commands will not echo the command character).
4. *Wait for the full command response* (ex: 'V' response looks like 'VE179EA061012345|' 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.**

**ASCII vs. Hex Command Notes:**

o 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.

o 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.  To send more data simply send another '0x1F 0xNN  0xYY' command.

o 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.  To send more data simply send another '0x1F 0xNN 0xYY 0xZZ' command.

## 2.1 - PCM Connection Commands

| PCM Command Byte(s) | | | | Description | Version |
|---|---|---|---|---|---|
| Byte 1 | Byte 2 | Byte 3 | Byte 4 | | |
| 0xFF | | | | Disconnect All | All |
| 0x1F | 0x02 | | | Connect Host to Register 1 – ASCII Only | All |
| 0x1F | 0x0F | 0xYY | | Connect Host to Register 1 for YY Bytes | All |
| 0x1F | 0x10 | 0xYY | 0xZZ | Connect Host to Register 1 for YY Bytes **and** wait for ZZ bytes to be returned | All |
| 0x1F | 0x03 | | | Connect Host to Register 2 – ASCII Only | All |
| 0x1F | 0x11 | 0xYY | | Connect Host to Register 2 for YY Bytes | E169E + |
| 0x1F | 0x12 | 0xYY | 0xZZ | Connect Host to Register 2 for YY Bytes **and** wait for ZZ bytes to be returned | E169E + |
| 0x1F | 0x01 | | | Connect Host to Printer – ASCII Only | All |
| 0x1F | 0x09 | 0xYY | | Connect Host to Printer for YY Bytes | E169E + |
| 0x1F | 0x04 | | | Connect Host to Auxiliary – ASCII Only | All |
| 0x1F | 0x13 | 0xYY | | Connect Host to Auxiliary for YY Bytes | E169E + |
| 0x1F | 0x05 | | | Connect Register 1 to Printer | All |
| 0x1F | 0x06 | | | Connect Register 2 to Printer | All |
| 0x1F | 0x07 | | | Connect Register 1 to Auxiliary Port | All |
| 0x1F | 0x08 | | | Connect Register 2 to Auxiliary Port | All |

## 2.2 - 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

## 2.4 - 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 tilde characters (~~~~~) sent in sequence to the Host. It was introduced in PCM version PCM8 (E:Count version E175F) and is in all versions since then.

# 3.0 – E:Count States

The E:Count has 4 States:

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


The E:Count Host Interface includes 4 Commands that change the E:Count 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 E:Count State are only valid in certain States:

| Command | State 1 | State 2 | State 3 | State 4 |
|---------|---------|---------|---------|---------|
| E | Valid | Valid | Invalid | Invalid |
| R | Valid | Invalid | Invalid | Invalid |
| N | Invalid | Valid | Invalid | Invalid |
| X | Invalid | Invalid | Invalid | 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 <u>not</u> Host Mode.  In a Host Mode delivery, the N will only End the delivery.

**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.

## 3.1 - 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.
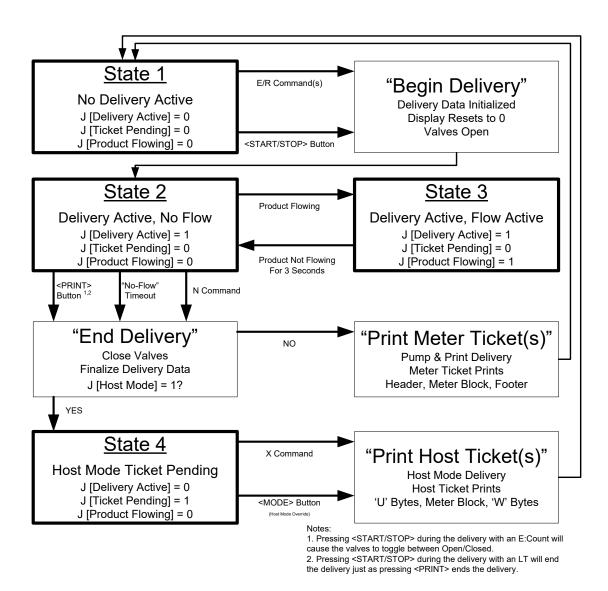
## 3.2 - E:Count State Flowchart

**State 1**
No Delivery Active
J [Delivery Active] = 0
J [Ticket Pending] = 0
J [Product Flowing] = 0

— E/R Command(s) →
— <START/STOP> Button →

**"Begin Delivery"**
Delivery Data Initialized
Display Resets to 0
Valves Open

**State 2**
Delivery Active, No Flow
J [Delivery Active] = 1
J [Ticket Pending] = 0
J [Product Flowing] = 0

— Product Flowing →
← Product Not Flowing For 3 Seconds —

**State 3**
Delivery Active, Flow Active
J [Delivery Active] = 1
J [Ticket Pending] = 0
J [Product Flowing] = 1

<PRINT> Button [1,2]    "No-Flow" Timeout    N Command

**"End Delivery"**
Close Valves
Finalize Delivery Data
J [Host Mode] = 1?

— NO →

**"Print Meter Ticket(s)"**
Pump & Print Delivery
Meter Ticket Prints
Header, Meter Block, Footer

YES

**State 4**
Host Mode Ticket Pending
J [Delivery Active] = 0
J [Ticket Pending] = 1
J [Product Flowing] = 0

— X Command →
— <MODE> Button →
{Host Mode Override}

**"Print Host Ticket(s)"**
Host Mode Delivery
Host Ticket Prints
'U' Bytes, Meter Block, 'W' Bytes

Notes:
1. Pressing <START/STOP> during the delivery with an E:Count will cause the valves to toggle between Open/Closed.
2. Pressing <START/STOP> during the delivery with an LT will end the delivery just as pressing <PRINT> ends the delivery.

*Figure 1.  E:Count State Diagram*

|  | Main Loop | Delivery Loop | Pumping Loop | Post-Delivery Loop |
|---|---|---|---|---|
| **Valid Commands** | All except N & K | E J K N T V | JKT | X W U I J T V E Q |
| **Valves** | Closed | Open or Closed | Open | Closed |
| **Exit To Mode** | Delivery | Post-Delivery | Delivery | Main |

**Figure 2.  E:Count Commands Valid During Delivery**

### 3.3 - 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)

# 4.0 - E:Count Ticket Printing

| | PUMP & PRINT | HOST MODE |
|---|---|---|
| **Header Text**<br>Configured in Matrix<br>Up to 10 lines, 25 ch/line | HEADER<br>PRINTED | HEADER<br>NOT PRINTED |
| **"Before Bytes"**<br>Set by Host 'U' cmd<br>Up to 20 lines, 25 ch/line | "U" BYTES<br>NOT PRINTED | "U" BYTES<br>PRINTED |
| **Meter Block**<br>Some Lines Required (Weights & Measures)<br>Configured in Matrix<br>6 to 36 lines, 25 chars/line | METER<br>BLOCK<br>PRINTED | METER<br>BLOCK<br>PRINTED |
| **"After Bytes"**<br>Set by Host 'W' cmd<br>Up to 40 lines, 25 ch/line | "W" BYTES<br>NOT PRINTED | "W" BYTES<br>PRINTED |
| **Footer Text**<br>Configured in Matrix<br>Up to 4 lines, 25 ch/line | FOOTER<br>PRINTED | FOOTER<br>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. These 250 and 100 bytes (respectively) can then 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 fed 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).

6) 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.
7) Contact MID:COM for additional printer documentation regarding the advanced features offered by the different models of printers.

# 5.0 - HOSTFIX Setting (HOSTFX on Setup Menu)

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.  HOSTFX 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 HOSTFX is set to all "ALL", it is necessary for the Host Software to send a tilde (~) immediately prior to 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 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.
                         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: VE179EA061012345|    Receive 17 bytes in response to V.
TX: 0xFF                 Disconnect Host from PCM.

**HOSTFX 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.

## HOSTFX 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.

## HOSTFX Compatibility:

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

# 6.0 - Host Communication Recommendations

- 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 E:Count based on the J-Status response, do not send the command.

- 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 E:Count is not what was anticipated based on the previous Host command according to the J-status response, the host should present status and troubleshooting information to the operator.

- 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.

- The host application should never store the 'State' of the E:Count, it should always request it using the 'J'.  The MID:COM ROADWARRIOR computer software sends a J before and after **every** Host command.

- Ideally the E:Count would echo the command character immediately, however if the command is invalid there are times where the E:Count does not respond at all.  The E:Count 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 is it invalid, the resulting behavior is indeterminate and will lead to state machine errors.

# 7.0 - E:Count Commands

| 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 AUXILARY | 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 |
| ALLOW START/STOP BUTTON USING SWAUTH | x | ASCII | | | | | | | | |
| DON'T ALLOW START/STOP BUTTON USING SWAUTH / END DELIVERY | y | ASCII | | | | | | | | |
| GET HEADER AND FOOTER TEXT FROM ECOUNT | z | ASCII | - | 352 | 167/309 | | | | 5 ms | 5,000 ms |
| HOST REQUEST PREVIOUS DELIVERY TICKET | $ | ASCII | | | 180 | | | | | |
| HOST REQUEST MULTIPOINT CALIBRATION DATA | % | ASCII | | | 180 | | | | | |
| HOST SEND MULTIPOINT CALIBRATION DATA | ^ | ASCII | | | 180 | | | | | |
| GET LAST DELIVERY FROM ECOUNT NVRAM | @ | ASCII | | | 201 | | | | | |
| GET ENTIRE NVRAM | ! | ASCII | | | 201 | | | | | |
| **HOST COMMANDS - 2 CHARACTERS - COMMAND NAME** | **CMD** | **TYPE** | **ARGS.** | **RESP.** | **VER E/L** | **DOC** | **LT** | **HOSTFIX** | **RESP TIMEOUT** | **COMP TIMEOUT** |
| CLEAR NVRAM | ## | ASCII | | | 201 | | | | | |
| SEND DUPLICATE TICKET TO HOST | =Y | ASCII | | | 202 | | | | | |
| **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

## 7.1 - E or A  Set Preset

**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:**
> None

| Field | Length (bytes) | Format (ASCII) |
|-------|----------------|----------------|

**E Command = Required in E176 and older, OK in E177 and Newer:**

| Field | Length (bytes) | Format (ASCII) |
|-------|----------------|----------------|
| 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 |

**A Command Only Valid in E177 and Newer:**

| Field | Length (bytes) | Format (ASCII) |
|-------|----------------|----------------|
| 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:**
> A0| if Product is invalid       (E command returns E0|)
> A1| if Product is valid         (E command returns E1|)

**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) |

**E (or A) Command Notes:**
- The A Command is only valid in E177+, if your application must support older and newer E:Counts you must:
    1. Detect which version of the E:Count is running (refer to the V command) and send either the E or A 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 ESC Command section.
- 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 ensures that the E:Count remains in control of the valves during the delivery process to fulfill Weights & Measures requirements as discussed in the Overview above; while allowing the Host to determine if the delivery should be started.
- 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.

**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.

## 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 for versions (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 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 can 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.

## 7.2 - C  Set Timer Override TIMOVR

**Description:**
>The C command sets the state of the Timer Override function (TIMOVR).

**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.

**C Command Notes:**
- The "C" command is only valid in Versions E163E or later.
- The "C" command is only valid prior to a delivery.

## 7.3 - D  Send Nextel Delivery Information

**Description:**
Send Nextel Delivery Information (Digital Dispatcher)

**Parameters:**
After the D command is sent, the E:Count will expect to see 161 bytes of initial delivery information as listed below.  If more bytes are sent, they are simply ignored.  All Decimals are implied.

| Field | Format | Length (bytes) |
|---|---|---|
| Product Code | 00-99 | 2 |
| Preset | 00000-99999 | 5 |
| Preset Apply | 1=On 2=Off | 1 |
| Flow Timeout | 1=On 2=Off | 1 |
| Start/Stop Enabled | 1=Enabled 2=Disabled | 1 |
| Price/Unit | 000000-090000 (xx.xxxx) | 6 |
| Tax Rate 1 | 000000-999999 (xx.xxxx) | 6 |
| Tax Type 1 | $ or % | 1 |
| Tax Rate 2 | 000000-999999 (xx.xxxx) | 6 |
| Tax Type 2 | $ or % | 1 |
| Discount Rate | 000000-999999 (xx.xxxx) | 6 |
| Discount Type | $ or % | 1 |
| Discount Days | 00-99 | 2 |
| Special Field | ASCII 0 (Zero) | 1 |
| Special Field | ASCII 0 (Zero) | 1 |
| Special Field | ASCII N | 1 |
| Padding | HEX 0 (Zero) | 119 |

```
                                                        ============
                                                        Total 161 Bytes
```

**Returns:**
None

**Command Sequence:**

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

## 7.4 - G  Get Calibration Data

**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:**
- 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).

**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 2nd 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 3rd 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 the hex equivalent.

**Example:**

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

| Byte # | ASCII Value | Note |
|--------|-------------|------|
| 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 |
|-------|---|-----|---|-------|
| 01    |   | 01  |   | 01 = PROPANE (see below) |

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

## 7.5 - I  Get Printer Status

**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:**
- Regardless of the Printer Type installed, the return values are the same.

## 7.6 - J  Get E:Count Status

**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 liters.
* The decimal is implied and **not** transmitted.

**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:**
- 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 1 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 5 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.

**J Command – E:Count Failure to Respond**
- 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.
- 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.
- When the J command fails to respond we recommend:
  - Resend the 0x1F 0x02 command (or 0x1F 0x03 for E:Count #2) prior to resending the J command.
  - 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.
- 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.

## 7.7 - K  Close/Re-Open Valves

**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:**
- **E:Count LT:** When the K command is sent to the E:Count LT, 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.

## 7.8 - N  End Delivery

**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:**
- 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

## 7.9 - 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:**

      *O + return_value + |*         *return_value*        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.
- ** 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** 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 0x00) the resulting checksum would be **0xEA**.
  - Example: To transmit a **15-second** timeout (0x4F 0x0F 0x00 0x00 0x00 0x00 0x00) the resulting checksum would be **0xE5**.
  - Example: To transmit a **60-second** timeout (0x4F 0x3C 0x00 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) disables 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.
- The O command may be sent multiple times during the delivery, only that most recent Timeout value is saved.
- **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.***

### 7.10 - P  Get Product Status

**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:**
- 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 can 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:
  The returned Data string would look like: 01000300050000......00 (a total of 198 bytes)

## 7.11 - Q  Get Nextel Delivery Information

**Description:**
Get Nextel Delivery Information (Digital Dispatcher)

**Parameters:**
    None

**Returns:**

After the Q command is sent, the E:Count will return the original 161 bytes sent with the D command, with the zeroes replaced with the final delivery information listed below. All Decimals are implied.

| Field | Format | Length (bytes) |
|---|---|---|
| First 41 Bytes from the D Command | | 41 |
| Gross Volume | xxxxxxx.x | 8 |
| Net Volume | xxxxxxx.x | 8 |
| Product Price | xxxxxx.xx | 8 |
| Tax 1 | xxxxxx.xx | 8 |
| Tax 2 | xxxxxx.xx | 8 |
| Total Price | xxxxxx.xx | 8 |
| Discount | xxxxxx.xx | 8 |
| Total Gross | xxxxxxx.x | 8 |
| Total Net | xxxxxxx.x | 8 |
| Truck # | xxxx | 4 |
| Driver # | xxxx | 4 |
| Sale # | xxxxxx | 6 |
| Register Serial # | xxxxxx | 6 |
| Compensator Status | 1=On 2=Off | 1 |
| Start Time | MMDDYYHHMM (Military) | 10 |
| Finish Time | MMDDYYHHMM (Military) | 10 |
| Print Status | 0=No 1=PrintKey 2=Timeout | 1 |
| Software Version | xxxxxx | 6 |

                                       ============
                                       Total 161 Bytes

**Command Sequence:**

| | | |
|---|---|---|
| TX: | 0x1F 0x02 | (Connect PCM-Host to PCM-EC1) |
| TX: | Q | |
| RX: | bytes … \| | (Verify response bytes + pipe char) |
| TX: | 0xFF | (Disconnect PCM) |

**Notes:**

## 7.12 - R  Reset

**Description:**

Reset the E:Count to Begin a Delivery

**Parameters:**

**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:**

- 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.

## 7.13 - T  Get Delivery Data

**Description:**

Get All Delivery Data

**Parameters:**

**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 + CRLFxxx | | 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) |

**Notes:**

- 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:**
- During the delivery, if the power fails for any reason, all delivery data is saved and the meter block must be printed before the register can continue.
    o This is true in both Pump & Print and Host Modes.
- 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.
    o The Host may query for the T data at any time before, during, and after a delivery.
    o 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 Return Values:**
- 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.
    o Sending the R command to the E:Count will reset the values returned by the T command.
- After the R but prior to the N, the E:Count will return the delivery values for the current delivery in process.
    o Note: If product is flowing the T Command will return T0| indicating the T command is not valid while product is flowing.
- 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 or the Start/Stop is pressed.

## 7.14 - U  Set Pre-Meter Block Printer Bytes

**Description:**

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

**Parameters:**

        25 bytes per line to add to before bytes
        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:**

- Send 25 characters per line for each line to add to before bytes.
- 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.

## 7.15 - V  Get E:Count Version

**Description:**
> Get E:Count Version Data

**Parameters:**
> none

**Returns:**
> V+data+|  (data is 15 bytes - see below)

| 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.

## 7.16 - W  Set Post-Meter Block Printer Bytes

**Description:**

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

**Parameters:**

25 bytes per line to add to after bytes
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:**

- No more than 1000 bytes (or 40 lines) may be sent.
- Send 25 characters per line for each line to add to after bytes.
- 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.

## 7.17 - X  Finalize & Print Delivery Ticket

**Description:**
>Finalize before and after bytes and print the delivery ticket

**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(byte) | (ASCII byte 0-9 = # Copies) |
| RX: | X | (Verify X is echoed) |
| RX: | byte\| | (Verify response byte + pipe char) |
| TX: | 0xFF | (Disconnect PCM) |

**Notes:**
- 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 and the Host controls how many copies are printed (unless the 'Number of Copies' parameter sent with the X command is 0).
- The delivery 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.

## 7.18 - Y  Print Duplicate Ticket

**Description:**
   Prints a Duplicate 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:**
- The Y command is not valid when the 'Ticket Pending' 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  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.

## 7.19 - d  Print Calibration Ticket

**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:**
- 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.

## 7.20 - e  Print Shift Ticket

**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:**
- 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.

## 7.21 - f  Set Quantity On Board

**Description:**

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:**

- 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 the 594 bytes be transmitted.

## 7.22 - g  Get Quantity On Board

**Description:**
>   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:**

- 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.

### 7.23 - i  Set Host Mode Printer Options

**Description:**
      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
            **Notes**: 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
            **Notes**: For Most Thermal Printers Only

      **Byte 3: Cut After Final Copy – ASCII 0 or 1**
            0=Enabled (default), 1=Suppress Cut After Final Copy
            **Notes**: 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
            **Notes**: 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
            **Notes**: For all Roll Printers, added in E178F.
            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
            **Notes**: Once a Host Mode ticket is pending when the operator presses PRINT on the E:Count "HOST MODE" will be displayed indicating that the E:Count is waiting for the X command from the Host to print the Meter Ticket. Added in E179E0 rev3.

      **Byte 7: Send ESTOP Warning to Host – ASCII 0 or 1**
            0=Enabled (skip), 1=Send
            **Notes**: 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 (<u>N</u>o <u>S</u>tart <u>S</u>top to <u>O</u>pen valves in <u>H</u>ost <u>M</u>ode).

**Bytes 9-10: Not Used – ASCII 0 (required)**

    These bytes are not used but must be transmitted

    Send "00" (ASCII 0 characters)

**Returns:**

    i|

**Command Sequence:**

| | | |
|---|---|---|
| TX: | 0x1F 0x02 | (Connect PCM-Host to PCM-EC1) |
| TX: | i | |
| RX: | i | (Verify i is echoed) |
| TX: | "0110100100" | |
| RX: | \| | (Verify pipe char) |
| TX: | 0xFF | (Disconnect PCM) |

**Notes:**

## 7.24 - j  Get Calibration Report Text

**Description:**

Lowercase "J" gets the text that prints on the Calibration Report.

**Parameters:**

**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.

## 7.25 - k  Get Shift Report Text

**Description:**
> 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.

## 7.26 - l  Get Ticket Line Count

**Description:**

Lowercase "L" returns the number of lines printed by the previous ticket

**Parameters:**

**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:**

- 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.

## 7.27 - m or n  Get Product/Preset Volume

**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+).

## 7.28 - o  Pass-Through Print Start Ticket

**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 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: | byte\| | (Verify response and pipe char) |
| 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.***

## 7.29 - p  Get Product Description

**Description:**

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:**

- 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.

## 7.30 - q  Pass-Through Print Line of Text

**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:**

> *q + return_value + |*

| return_value | 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 q is echoed) |
| TX: | 25 bytes | (25 ASCII bytes) |
| RX: | byte\| | (Verify response byte +  pipe char) |
| 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").

## 7.31 - r  Pass-Through Print Finish Ticket

**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:**

$r + return\_value + |$

| return_value | 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: | byte\| | (Verify response byte + pipe char) |
| 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").

## 7.32 - u  Get Printer Setting

**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)

**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.

## 7.33 - v  Get E:Count Date/Time

**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.

### 7.34 - w  Set E:Count Date/Time

**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: | 2108231154 | (Set date time to 11:54 am 2021/08/23) |
| | | (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.

## 7.35 - x / y  Software Authorize SWAUTH

**NOTE: The 'x' and 'y' commands are only valid in the E:Count as of E180 and newer.**

**Description:**
> The "x" command will enable the START/STOP key to reset the register which begins 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.

**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)


**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 E180 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.
- If SWAUTH is enabled the START/STOP key will always default to disabled on power-up.

### 7.36 - z  Get Header/Footer

**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.

## 7.37 - ! / @  Get Deliveries from NVRAM

**Description:**

Get Stored Deliveries from E:Count NVRAM

**Parameters:**

**Returns:**

| Field | Format | Length | Comma | Total |
|---|---|---|---|---|
| Tank ID | 000000-999999 | 6 | 1 | 7 |
| Start Date | YYYYMMDD | 8 | 1 | 16 |
| Start Time | HHMM | 4 | 1 | 21 |
| Finish Date | YYYYMMDD | 8 | 1 | 30 |
| Finish Time | HHMM | 4 | 1 | 35 |
| Product Code | 00-99 | 2 | 1 | 38 |
| Truck # | 0000-9999 | 4 | 1 | 43 |
| Driver # | 0000-9999 | 4 | 1 | 48 |
| Sale # | 000000-999999 | 6 | 1 | 55 |
| Net Volume | 00000000-99999999 | 8 | 1 | 64 |
| Gross Volume | 00000000-99999999 | 8 | 1 | 73 |
| Net Totalizer | 00000000-99999999 | 8 | 1 | 82 |
| Gross Totalizer | 00000000-99999999 | 8 | 1 | 91 |
| Compensator State 0-1 | (0=off, 1=on) | 1 | 1 | 93 |
| Padding (*) to 100 characters | | 5 | 0 | 98 |
| CRLF at the end of the record | | 2 | 0 | 100 |

**Command Sequence:**

| TX: | 0x1F 0x02 | (Connect PCM-Host to PCM-EC1) |
|---|---|---|
| TX: | @ or ! | |
| RX: | bytes … \| | (Verify response bytes + pipe character) |
| TX: | 0xFF | (Disconnect PCM) |

**Notes:**

- '!'  Dumps ENTIRE NVRAM (Can take 5 Minutes or Longer)
- '@'  Sends LAST Transaction
- ''!', '@' commands are only valid when product is not flowing & no ticket is pending (State "1").

## 7.38 - ##  Clear Deliveries from NVRAM

**Description:**
Clear Stored Deliveries from E:Count NVRAM

**Parameters:**
none

**Returns:**


**Command Sequence:**
TX:     0x1F 0x02              (Connect PCM-Host to PCM-EC1)
TX:     ##
RX:     ##|                    (Verify response bytes + pipe character)
TX:     0xFF                   (Disconnect PCM)

**Notes:**
- ''##' command is only valid when product is not flowing & no ticket is pending (State "1").

## 7.39 - =Y  Send Duplicate Ticket to Host

**Description:**

The '=Y' Send Duplicate Ticket to Host command will send a duplicate ticket to the Host port instead of to the Printer port so that the host can capture a digital copy of the ticket.

The '=Y' Send Duplicate Ticket to Host command was added in E202EA and is only valid in E202EA and newer+ versions.

**Parameters:**

None

**Returns:**

*=Y*

**Command Sequence:**

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

**Notes:**

- The '=Y' command only needs to be called one time to send a duplicate ticket to the host.
- The '=Y' command is only valid in Versions E202EA or later.
- The '=Y' command is only valid when product is not flowing & no ticket is pending (State "1").

## 7.40 - 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: | 0x1B | (ESC Hex) |
| RX: | #| | (Verify response bytes + pipe character) |
| TX: | 0xFF | (Disconnect PCM) |

**Notes:**

- 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.

# 8.0 - Recommended E:Count Delivery Commands

**Pre-Delivery E:Count Host Command Sequence**
J: Verify No Ticket Pending and No Delivery Active and No Product Flowing
  If J:TicketPending=True --> Warn User                   (error)
  Else If J:DeliveryActive=True --> Warn User   (error)
  Else If J:ProductFlowing=True --> Warn User   (error)
  Else continue

V: Verify Version is Supported
P: Get List of Valid Product Codes
E/A: Send Product Code, Preset Volume
J: Verify Preset Command was Successful
  If J:HostMode=True --> **"Reset"**             (from 'E' command successful)
  Else          --> Warn User          (error)

**Reset**
J: Verify No Ticket Pending and No Delivery Active and No Product Flowing
  If J:TicketPending=True --> Warn User                   (error)
  Else If J:DeliveryActive=True --> Warn User   (error)
  Else If J:ProductFlowing=True --> Warn User   (error)
  Else continue

R: Reset Register

J: Verify Delivery Active
  If J:DeliveryActive=True --> **"Delivery Active"**       (from 'R' command successful)
  Else            --> Warn User      (error)

**Delivery Active**
J:Verify Delivery Still Active
  If J:TicketPending=True --> **"Post-Delivery"**   (from Operator Pressing \<PRINT> on E:Count)
                                    (from E:Count 'No-Flow Timeout' expiring, 3 min.)
                                    (from 'N' command successful)
  Else If J:DeliveryActive=False --> Warn User   (Error)
  Else If J:Product Flowing=True --> Cannot End Delivery while Product Flowing

(Optional, if host wants to End Delivery instead of forcing operator to press \<PRINT> on E:Count then host can send N command, see below)

**End Delivery**
J: Verify Delivery Active and No Product Flowing
  If J:TicketPending=True --> Warn User                   (error)
  Else If J:ProductFlowing=True --> Warn User   (error)
  Else If J:DeliveryActive=True --> continue

N: End Delivery
J: Verify Delivery Ended and Ticket Pending
  If J:TicketPending=True --> **"Post-Delivery"**   (from 'N' command successful)
  Else          --> Warn User          (error)
        Note: Ticket Pending only valid if E command used prior to delivery

**Post-Delivery**
J: Verify Ticket Pending
  If J:TicketPending=False --> Warn User                   (error)
  Else continue

T: Get Delivery Data
U: Set Host Header Text (500 chars max, 25 chars/line)
W: Set Host Footer Text (1000 chars max, 25 chars/line)

I: Verify Printer Status
  if I:PrinterReady=False --> Warn User           (error)
  Else continue

X: Print Ticket (Header, Meter Block, Footer) [parameter can override # copies]
J: Verify Ticket Printed
  If J:TicketPending=True --> Warn User                   (error)
  Else continue     --> **"No Delivery Active"**

# 9.0 - Host Interface Examples

## 9.1 - 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 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. T*he 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.

**9.2 - 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 linefeeds 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.

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: **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 wait 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 wait 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.

**9.3 - Example 3: Host-Mode Delivery and Meter Ticket Print**

1. PRE DELIVERY
   a. Get E:Count Version
      i. Send: V
      ii. Receive Response VE179EA061012345|

   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

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 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


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

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.

# VERSION HISTORY

| Version | Date | Author | Description |
|---------|------|--------|-------------|
| 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 |

| Version | Date | Author | Description |
|---|---|---|---|
| 1.42 | 08-23-10 | BJS | Update sample command procedures |
| 1.43 | 10-26-10 | BJS | Update u for Fujitsu FP-460 |
| 1.44 | 04-21-11 | BJS | Update States and PCM Commands |
| 1.45 | 12-12-11 | BJS | Add O (Fleet Timeout) command |
| E174F-1.00 | 12-21-11 | BJS | E174F Release |
| E175F-1.00 | 01-26-12 | BJS | E175F, PCM Cmds, HostFix (~) Notes |
| E175F-1.01 | 03-27-12 | BJS | Pass-Through(o, q, r) & HOSTFX Notes |
| E176F-1.00 | 05-22-12 | BJS | E176F Release |
| E176F-1.01 | 05-25-12 | BJS | No Flow parameter |
| E176F-1.02 | 06-06-12 | BJS | HostFix Update |
| E177F-1.00 | 10-11-12 | BJS | E177F, A & n Commands |
| E177F-1.01 | 10-31-12 | BJS | LT COMMAND NOTES, COMMAND SUMMARY |
| E177F-1.02 | 01-15-13 | BJS | X & T Command Notes |
| E177F-1.02 | 04-06-13 | BJS | r,i,u Command Notes |
| E177F-1.03 | 04-18-13 | BJS | U,i Command Notes |
| E178F-1.00 | 05-17-13 | BJS | Ticket Printing, i,u,A,E CmD Notes |
| E178F-1.01 | 06-14-13 | BJS | J command |
| E178F-1.02 | 06-26-13 | BJS | LT command updates |
| E178F-1.03 | 07-24-13 | BJS | State Diagram, Delivery Command Seq. |
| E179E0-1.00 | 09-30-13 | BJS | State Diagram, E179E0 release |
| E179E0-1.01 | 12-19-13 | BJS | Byte6 of i command |
| E179E0-1.02 | 01-28-14 | BJS | o,q,r commands |
| E179E0-1.03 | 02-02-15 | BJS | I cmd, host comms troubleshooting |
| E179E0-1.04 | 02-05-15 | BJS | x and y commands |
| E180E0-1.00 | 09-21-15 | BJS | PCM Commands, SWAUTH, 180/415 Rel. |
| 2.00 | 05-18-21 | JAC | Q, D, !/@, ##, =Y commands and updated format |
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