EM6 Electronic Calculator

Configuration Manual

EM6-SVH01-0101-01-E

EM6-SVH01-0101-02-E

EM6-SVH01-0101-03-E

Table of Contents

1. Glossary

Uncompensated Volume:	Gross volume
Compensated Volume:	Gross volume at standard temperature
Human Interface Controller:	The controller that monitors and controls the product controllers as well as interface to the operator via the keypad and display. The load information is also stored in the human-interface-controller.
Load	A load consists of a load header (which is stored in the human-interface-controller) and one or more tickets gathered from the product controllers.
Load header:	The information stored for a particular load i.e. date, time, Driver number etcetera
Load View Screen	The screen that displays the load. This screen is displayed when the print button is pressed and the human-interface-controller is in idle state.
Manager Mode:	When the operator is in the configuration menu, the system is in Manager Mode
Product Controller:	The controller that controls the flow of each individual product or arm.
Ticket:	A ticket is the information stored for a particular transaction. This information is stored on the relevant product-controller.

2. How to use this Manual

Each field that is described in this manual has three mandatory descriptions:

a) Access: Level-w
b) Hidden: Reason for the menu item to be hidden
c) Default: x units
d) Range: yyy – zzz / Options: yyy

a) Access is the level of access required to edit the field.
There are two levels of access:
   1) Level-1 requires that the menu was entered via the Manager-PIN or Technical-PIN
   2) Level-2 requires that the menu was entered via the Technical-PIN and the CF-button must also be pressed. When this happens, 'Edit' will appear in the bottom right screen of the menu. In order to press the CF-button, the seal must be broken. See 'Metrological Parameters'.

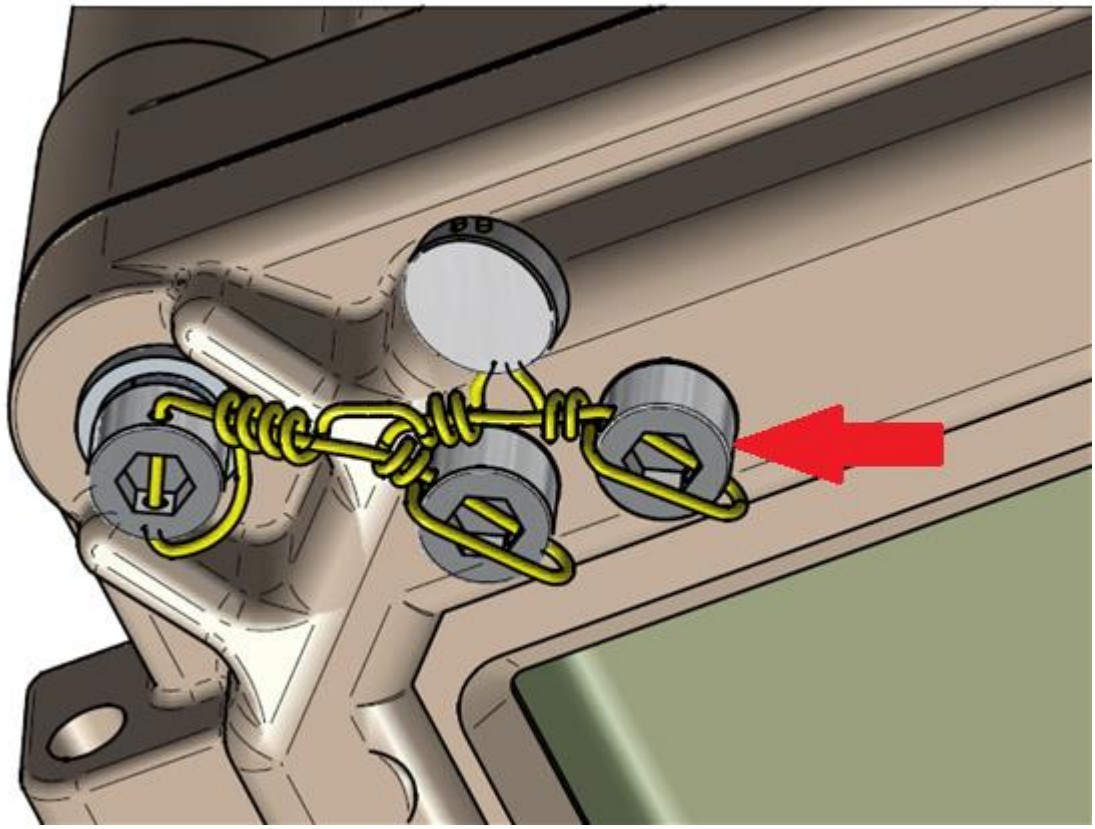
   If the user enters the menu via a level-1 access code, all the level 2 fields and Menu items will be hidden.
b) If the menu does not appear, the 'Hidden' description describes the parameter that causes the menu to be hidden.
c) Default is the default value that is set when the parameters are reset. The units are also displayed here (where applicable).
d) Range is the data range that is allowed for this field (where applicable).
   If the field is numeric, the range will be numeric
   If the field is an option, the range will indicate the options available.
   If the field is alphanumeric, the range will be the number of characters that is allowed for the field.

In addition to the fields, some menu items also have the 'Access' and 'Hidden' attribute.

3. Metrological Parameters

The metrological parameters are altered via the menu using access level-2 (see 'How to use this Manual'). To change these parameters, the seal must be broken and the CF-button must be pressed. The menu state will change from view to edit.

The menu state can be viewed in the bottom right corner of the display.
The CF-switch is located in the top left corner of the front panel of the calculator, above the LCD displays. See arrow below for location.



4. Navigating through the setup menu

‘Enter’ / ‘→’: Selects the item. (Moves up one level in the menu-tree)
‘CLR’ / ‘← : Exit the current menu. (Move down one level in the menu-tree)
‘↑’ : Move cursor up
‘↓’ : Move cursor down

5. How to use an Error Table

Decimal Code	Hexadecimal Code	Error Description
1	01	Error code 1
2	02	Error code 2
4	04	Error code 3
8	08	Error code 4
16	10	Error code 5
32	20	Error code 6
64	40	Error code 7
128	80	Error code 8

There may be multiple errors, in which case, the error code may be a combination of the codes above. To find the error, use the following procedure:

a) Active error = error code displayed.
b) Find the largest decimal number in the table that is equal to or less than the active error. This is one of the errors that have occurred.
c) Active error = Error found in table – Active error.
d) Repeat step (b) until no more errors are found.

Example:
Consider an error of 19.

Pass 1
a) Active error = 19.
b) Error 16 is the largest number equal to or less than 19. Error 16 has occurred
c) Active error = 19 – 16 = 3

Pass 2
b) Error 2 is the largest number equal to or less than 3. Error 2 has occurred.
c) Active error = 3-2 = 1

Pass 3
a) Error 1 is the largest number equal to or less than 1. Error 1 has occurred
b) Active error = 1-1 = 0

Therefore the errors that have occurred are 16, 2 and 1.

6. Tables

See Section on ‘How to use an Error Table’

6.1. Table 1: System Data-Error

This table indicates where a data corruption error has occurred on the human-interface-controller.

Decimal Error Code	Hexadecimal Error Code	Error Description
1	01	Code error
2	02	System directory (includes all the directories)
4	04	Input / output directory
8	08	Communication directory
16	10	Temperature directory
32	20	Volume accuracy directory
64	40	General purpose directory

6.2. Table 2: Product-Controller Data-Error

This table indicates where a data corruption error has occurred on the product-controller.

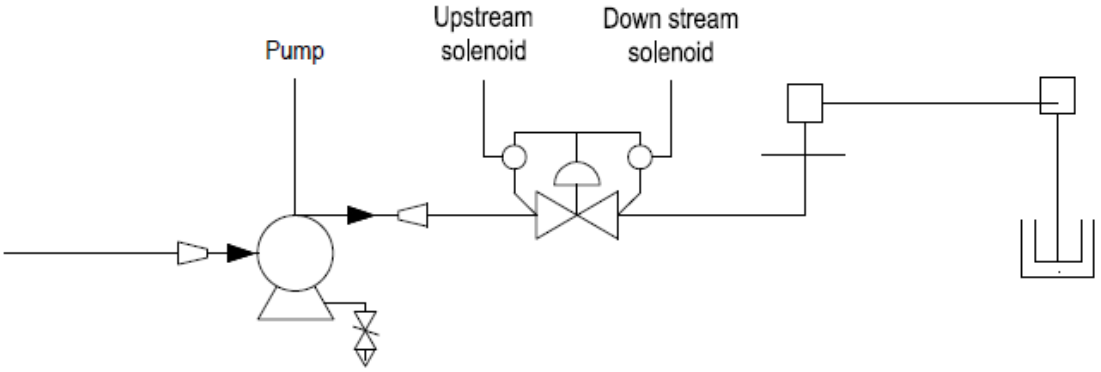
Decimal Error Code	Hexadecimal Error Code	Error Description
1	0001	Code error
2	0002	Meter directory (includes all the directories)
4	0004	General purpose directory
8	0008	Flow control directory
16	0010	Volume accuracy directory
32	0020	Temperature directory
64	0040	Input output directory
128	0080	Product directory
256	0100	Calibration directory
512	0200	Backup directory

6.3. Table 3: Ticket / Product Controller Errors

This table indicates the errors / events that have occurred on the ticket / product-controller.

Depot configuration

6.4. Figure 5: Two stage and Digital control valve



Error codes and description’

Decimal Error Code	Hexadecimal Error Code	Error Description
1	000001	Power failure
2	000002	Reset
4	000004	
8	000008	Pulsar count discrepancy
16	000010	No flow
32	000020	Minimum flow
64	000040	Meter direction
128	000080	Stop button
256	000100	Communication error
512	000200	Temperature error
1024	000400	
2048	000800	Density Error
4096	001000	Meter Creep
8192	002000	Pump / Gravity Error
16384	004000	Permissive Error
32768	008000	Data Retention Error
65536	010000	Setup Error
524288	080000	Ticket corruption error
1048576	100000	Reset to factory defaults
2097152	200000	Uncompensated totalizer has been manually changed
4194304	400000	Compensated totalizer has been manually changed
16777216	1000000	Eprom write error
33554432	2000000	Dead-man switch error
67108864	4000000	Ticket in progress

6.5. Table 4: Load Errors

This table indicates the errors / events that have occurred on the load.

Decimal Error Code	Hexadecimal Error Code	Error Description
1	01	Power Failure
2	02	Reset
4	04	Reset to factory defaults
8	08	Permissive 1 error
16	10	Permissive 2 error
32	20	Load corruption error
64	40	LCD error

6.6. Table 5: Valve Outputs for different vehicle configurations

NOTE:
FOR INFORMATION ON HOW TO WIRE THE OUTPUTS, REFER TO:
‘Figure 1: Pump Mode’
‘Figure 2: Gravity Mode’
‘Figure 3: ‘Pump & Gravity’ (2-Valve Operation)’
‘Figure 4: ‘Pump & Gravity’ (3-Valve Operation)’

For Product Controller 1

‘Pump Gravity’ Options	Connector-J2 Pin - 3	Connector-J2 Pin – 4	Connector-J2 Pin - 5	Connector-J2 Pin - 9
Pump			P	
Gravity	G1	G2		
Pump & Gravity (2-Valve Operation)	G1	G2	P	
Pump & Gravity (3-Valve Operation)	F1	F2	P	G

For Product Controller 2

‘Pump Gravity’ Options	Connector-J2 Pin - 7	Connector-J2 Pin - 8	Connector-J2 Pin - 5	Connector-J2 Pin - 9
Pump			P	
Gravity	G1	G2		
Pump & Gravity (2-Valve Operation)	G1	G2	P	
Pump & Gravity (3-Valve Operation)	F1	F2	P	G

6.7. Table 6: Valve Outputs for depot configuration

For Product Controller 1

Connector-J2 Pin - 3	Connector-J2 Pin – 4	Connector-J2 Pin - 5
Upstream solenoid (N.O)	Downstream solenoid (N.C)	Pump

For Product Controller 2

Connector-J2 Pin - 7	Connector-J2 Pin - 8	Connector-J2 Pin - 9
Upstream solenoid (N.O)	Downstream solenoid (N.C)	Pump

6.8. Table 6: Inputs

Refer to '11.5.1 Input' menu.

For Product Controller 1

Description	Connector	Pin
Input 1	J5	1
Input 2	J5	2
Input 3	J9	1 & 2

For Product Controller 2

Description	Connector	Pin
Input 1	J5	4
Input 2	J5	5
Input 3	J9	3&4

6.9. Table 7: Temperature errors

This table indicates the errors that may be displayed in the temperature, pressure and density field when certain conditions arise.
(The table is just a guide)

Displayed Error Description	Error Description
Unstabl	Reading is unstable
Disable	Setting is disabled
Calib	Product controller not calibrated
Discon	Sensor disconnected from product controller
Range	Sensor reading out of range

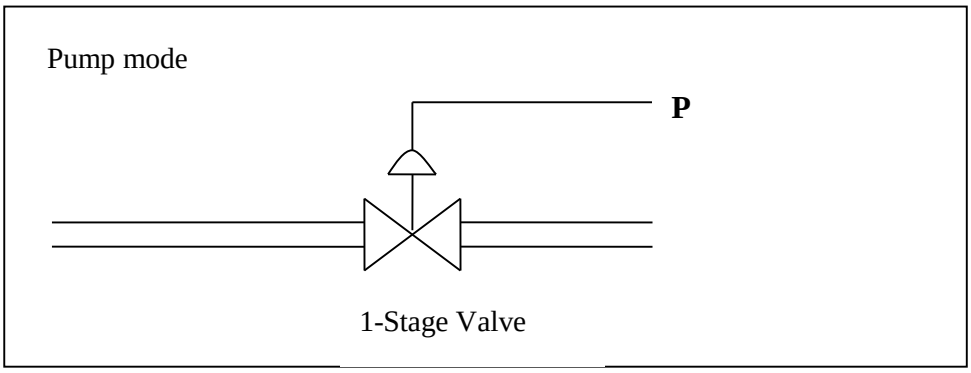
7. Figures

2 Stage vehicle configurations

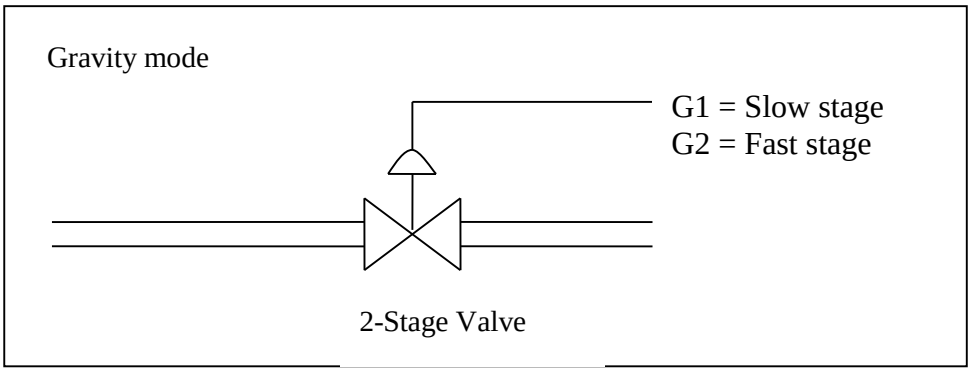
NOTE: REFER TO ‘

Table 5: Valve Outputs for different ’ FOR MORE INFORMATION.

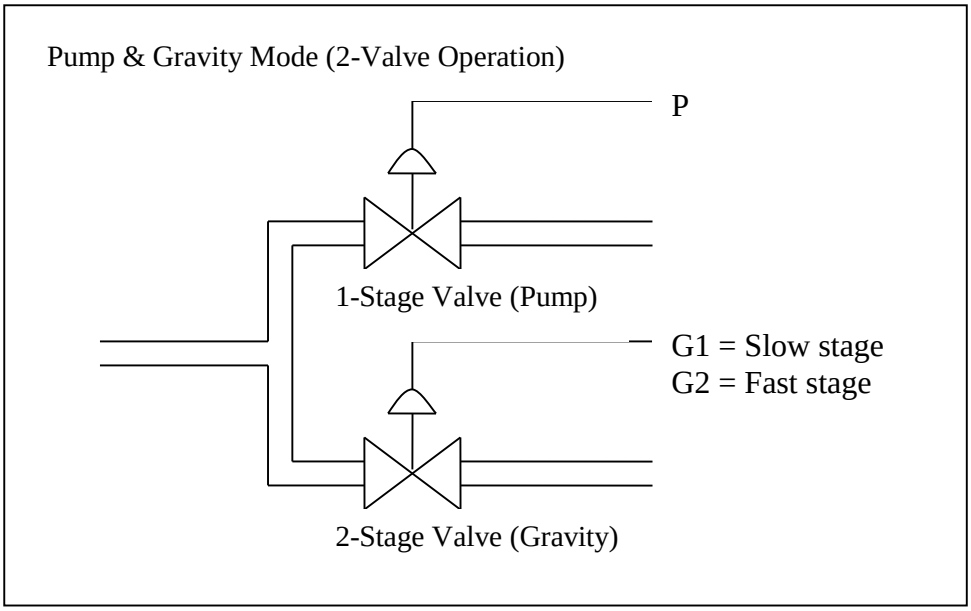
7.1. Figure 1: Pump Mode



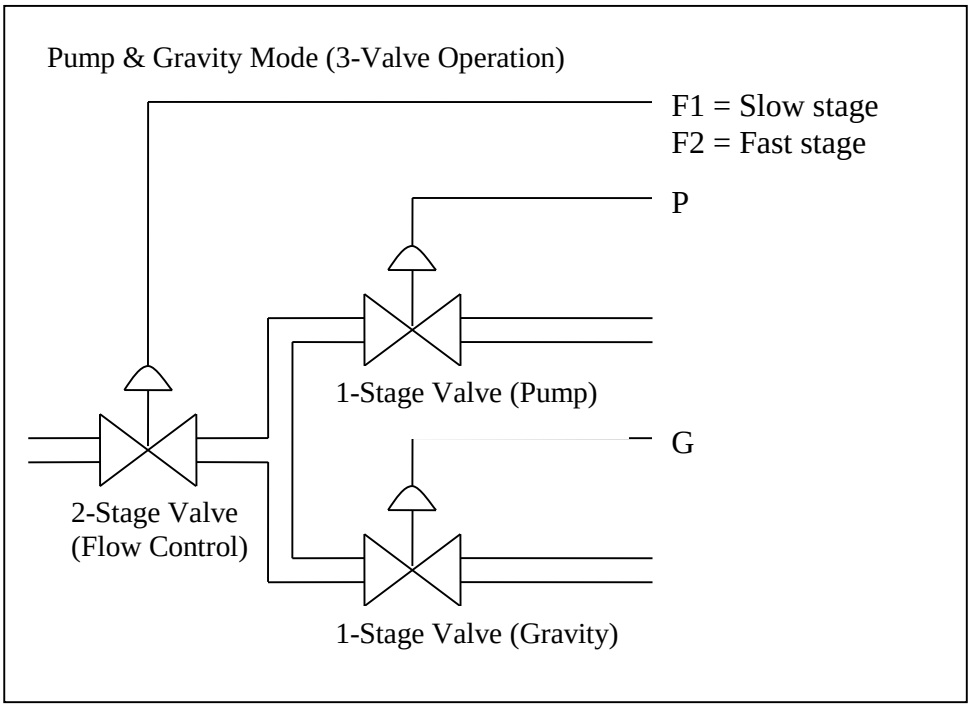
7.2. Figure 2: Gravity Mode



7.3. Figure 3: ‘Pump & Gravity’ (2-Valve Operation)

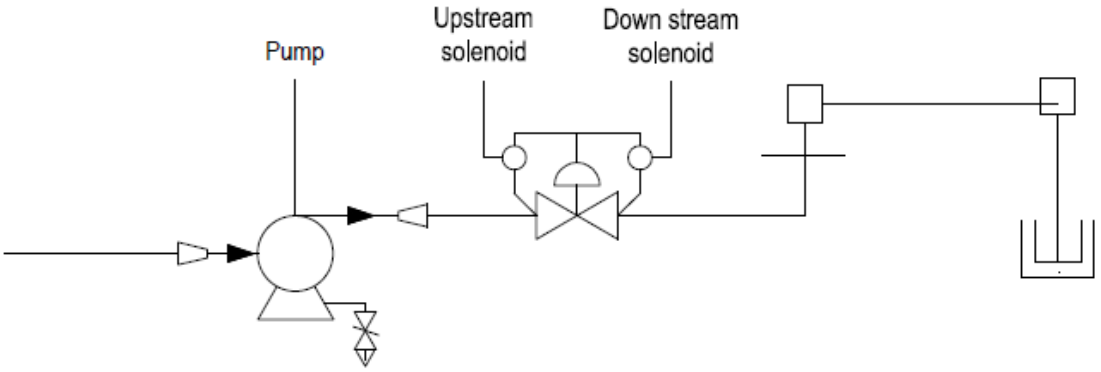


7.4. Figure 4: 'Pump & Gravity' (3-Valve Operation)



Depot configuration

7.5. Figure 5: Two stage and Digital control valve


Pump
Upstream solenoid
Down stream solenoid

8. Error codes and description

The error codes of the tickets / product-controller are included in this manual because most (not all!) errors are as a result of the configuration.
Please see 'Table 3: Ticket / Product Controller Errors' for the error codes.

8.1. Power Failure Error (1)

Time that error can occur : During delivery

Error Occurs when the power fails during a delivery.

8.2. Reset Error (2)

Time that error can occur : During delivery

Error occurs when a watchdog timer occurs during a delivery
.

8.3. Pulsar Count (8)

Time that error can occur : During delivery
Configuration setting(s) : 'Pulse Error Counter'

If the difference in channel A and Channel B pulses is greater than the 'Pulse Error Counter' this error will occur and the transaction will terminate.

8.4. No Flow (16)

Time that error can occur : During delivery
Configuration setting(s) : 'No Flow Time'

If the flow stops during the transaction, this error will occur and the transaction will terminate.

8.5. Minimum Flow (32)

Time that error can occur : During delivery
Configuration setting(s) : 'Minimum Rate' and '

Minimum Time’

If the flow rate is too low during the transaction, this error will occur and the transaction will terminate.

8.6. Meter Direction (64)

Time that error can occur : During delivery

8.7. Stop Button (128)

Time that error can occur : During delivery

During a delivery, if the emergency stop button is pressed or the human-interface controller stops the product controller's flow, this error will occur and the transaction will terminate.

8.8. Communication Error (256)

Time that error can occur : During delivery

If the human-interface-controller does not (or cannot) send an alive signal periodically to the product controller during delivery, this error will occur and the transaction (if in progress) will terminate.

8.9. Temperature Error (512)

Time that error can occur : During delivery
Configuration setting(s) : 'Temperature'

If the temperature is less than -30^{o}C or greater than the maximum temperature setting, this error will occur and the transaction (if in progress) will terminate.

8.10. Density Error (2048)

Time that error can occur : During delivery

If the density is less than 350 kg/m^3 or greater than 1075kg/m^3, this error will occur and the transaction (if in progress) will terminate.

8.11. Meter Creep (4096)

Time that error can occur : When meter is in idle state
Configuration setting(s) : 'Pulse Trip' and '

Pulse Delay’

If unauthorized flow occurs, this error will occur.

8.12. Pump / Gravity Error (8192)

Time that error can occur : During delivery
Configuration setting(s) : 'Input' & '**Error! Reference source not found.**'

If an external pump/gravity selector switch is used, this error will occur if the pump / gravity selector switch changes state during a delivery and the transaction will terminate.

8.13. Permissive Error (16384)

Time that error can occur : During delivery
Configuration setting(s) : 'Input'

If an input is set as a general permissive and the permissive is dropped during a delivery, this error will occur and the transaction will terminate.

8.14. Data Retention Error (32768)

Time that error can occur : Any time

If the RAM or EEPROM gets corrupted, this error will occur and the transaction (if in progress) will terminate.

8.15. Setup Error (65536)

Time that error can occur : Any time, usually when the user exits setup mode
Configuration setting(s) : '**Error! Reference source not found.**'
'Input'

If there are inconsistencies within the setup of the product controller, this error will occur.

A few inconsistencies that cause this error are:

a) A product controller is set to 'pump gravity (3-valve)' operation and the other product controller is set to a 'pump gravity' operation as well.
b) More than one input on the product controller is set for a 'Remote Start' button or a 'Pump / Gravity' external switch

8.16. Ticket Corruption Error (524288)

Time that error can occur : When a ticket is displayed or printed

If a ticket is corrupt, this error code is reflected.
If a ticket with this error was stored during a load, the load-view-screen will display the ticket if the load number for the ticket is not corrupted. All the fields (except for the load number, ticket number & error code) will be set to zero because the data for this ticket cannot be trusted.

8.17. Reset to factory defaults (1048576)

Time that error can occur : Meter in setup mode
Configuration setting(s) : 'Clear Parameters' and
'**Error! Reference source not found.**

If tickets are cleared from memory, a ticket will be created (the first ticket) that will reflect this error code.

8.18. Uncompensated Totalizer has been manually changed (2097152)

Time that error can occur : Meter in setup mode

If the uncompensated totalizer is altered, a ticket with this error will be created.

8.19. Compensated Totalizer has been manually changed (4194304)

Time that error can occur : Meter in setup mode

If the compensated totalizer is altered, a ticket with this error will be created.

8.20. Eprom write error (16777216)

During the saving of the transaction data an error occurred.

8.21. Deadman switch error (33554432)

The deadman operation was disturbed causing the delivery to end.

8.22. Ticket in progress (67108864)

The ticket was still in progress and is not available for use.

9. Using the Editor

The editor has 4 modes of operation depending on the information to be edited.

In all modes of operation the following applies:

Pressing ‘CLR’ once will clear the last digit entered.
Pressing ‘CLR’ twice will clear the whole line.

1) Integer

   Simply enter the value.

   There is always a predefined range in which the operator can enter a value. If the number entered is out of range, the closest value within the range is displayed

2) Positive Floating Point

   A decimal point is inserted in a predefined position on the line depending on the field to be edited.
   Enter the value taking the decimal point into consideration. The value will only be accepted once the digits pass the decimal point position thereby making it a valid number.

   There is always a predefined range in which the operator can enter a value. If the number entered is out of range, the closest value within the range is displayed

3) Positive / Negative Floating Point

   A ‘%’ is displayed before field to be edited and a decimal point is inserted in a predefined position on the line depending on the field to be edited.

   First enter a 1 or a 2 to select ‘-‘ or ‘+’ respectively. The rest of the procedure operates like a positive-floating-point field.

4) Alpha Numeric

   For each alphanumeric value that must be entered the following must be done:
   a) Press ‘5’ to select a character set if the current character set is wrong. The character sets available are: Upper case letters, lower case letters, numbers and special characters
   b) Press the up or down arrow to scroll through the characters within the character set.

   Press the right or left arrow to move the cursor right or left.

10. System Directory

The system directory includes the parameters that are independent of the product controllers.

10.1. General Purpose Directory

Access: Level-1

10.1.1 Input Timeout

Access: Level-2
Hidden: None
Default: 60 seconds
Range: 2 – 999

Enter the editor timeout.
This value represents the time that the editor will exit. When the editor exits as a result of the input time, the previous value that was stored in memory will be retained.

10.1.2 Inactivity Timeout

Access: Level-2
Hidden: None
Default: 300 seconds (5 minutes)
Range: 1 – 999

Enter the inactivity timeout.
This value represents the time that the controller will stop a load and go to an idle state if there has been no activity on the product controller or human interface controller.

10.1.3 Manager PIN

Access: Level-1
Hidden: None
Default: 8888
Range: 0 – 9999

Enter the Manage PIN number.
This PIN number is a lower security access code that allows modification to level 1 menus.

10.1.4 Technical PIN

Access: Level-2
Hidden: None
Default: 9999
Range: 0 – 9999

Enter the Technical PIN number.
This PIN number is a higher security access code that allows modification to level 2 menus. The PIN number cannot be viewed when the operator has entered the menu with a level-1 access PIN number.

10.1.5 Clock

Access: Level-1

10.1.5.1 Date

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Enter the current date.

10.1.5.2 Time

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Enter the current time.

10.2. Volume Accuracy Directory

Access: Level-2

10.2.1 Decimal Points

Access: Level-2
Hidden: None
Default: 0 decimal points
Range: 0 – 2

Enter the number of decimal points that the uncompensated and compensated volumes display.
The decimal points are shown in all printouts and view screens.

10.2.2 Volume Units

Access: Level-2
Hidden: None
Default: 'L'
Range: 3 characters

Enter the volume units.
The volume units are only displayed on the load and ticket printouts

10.2.3 Minimum Volume

Access: Level-2
Hidden: None
Default: 100
Range: 1 - 9999

Minimum preset volume to be entered at time of preset.

10.2.4 Maximum Volume

Access: Level-2
Hidden: None
Default: 999000
Range: 10 - 999000

Minimum preset volume to be entered at time of preset.

10.3. Preset Directory

Access: Level-2

10.3.1 Compensated Mode

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable pre-set delivery to compensated volume. When compensated mode delivery is enabled, the EM6 will deliver according to the compensated volume and not the uncompensated volume.

10.3.2 Preset Operation

Access: Level-2
Hidden: None
Default: Enable
Options: Enable
Disable

Enable or disable preset delivery.
Enable to allow preset operation, disable to exclusively monitor and record delivery information.
When preset delivery is disabled, no pump or valve control will occur.

10.3.3 Enter Volume

Access: Level-2
Hidden: None
Default: Enable
Options: Enable
Disable

Enable or disable entering of preset volume.
Enable to allow entering of preset volume during normal preset operation.
Disable entering of preset volume allows the preset to control pump and valve solenoids until one of the following conditions is met:

- User presses the stop button
- Maximum preset of 999000L is reached
- An error occurs on the product meter (see Table 3: Ticket/Product controller errors)

10.4. Temperature and Density Directory

Access: Level-2

10.4.1 Show Compensated

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable display of compensated volumes.
Enable to allow the operator to view the compensated volume on the display. If the product controller's temperature setting is disabled or the product controller sends an invalid temperature reading, 'xxxxxx' will be displayed for the compensated volume and the relevant error will be displayed in the temperature field
(see '

Table 7: Temperature errors').

Disable to prevent the operator the view the compensated volume on the display.

10.4.2 Print Compensated

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable Print-compensated volume.
Enable to allow the operator to view the compensated volume on the printouts. If the product controller's temperature setting is disabled or the product controller sends an invalid temperature reading, 'xxxxxx' will be printed for the compensated volume and the relevant error will be printed for the temperature

(see '

Table 7: Temperature errors’).

Disable to prevent the operator the view the compensated volume on the printouts.

10.5. Communication Directory

Access: Level-2

10.5.1 Data communication

Access: Level-2
Hidden: None
Default: Offline
Options: Offline
Poll & authorise
Remote control

Select data communication interface protocol.
Offline to disable the communication interfaces.
Poll & authorise to utilise the Modbus RTU interface and allow connection to SSAM. Remote control to interface to TMS using the S.L.I.P protocol

10.5.2 Node Address

Access: Level-2
Hidden: None
Default: 1
Range: 1 - 255

Communication node address of EM6 to identify it on a data communication network. Node address is to be configured to correspond to the SSAM or TMS node number

10.5.3 Depot Number

Access: Level-2
Hidden: None
Default: '-------'
Range: 8 characters

Enter an alphanumeric value for the depot number.
The number is a reference to the depot from which the truck loads and is printed with each load-printout.

10.5.4 Vehicle Number

Access: Level-2
Hidden: None
Default: '-------'
Range: 8 characters

Enter an alphanumeric value for the vehicle number.
This number (in combination with the depot number) allows a person to identify from which vehicle a load-printout comes from. The number is printed with each load-printout.

10.5.5 Prompts

Prompts are separated into two groups. The first group contains 5 general prompts that will be displayed sequentially after the PRE key or permissive 1 has been connected. The second group of prompts relates to the meter and the compartments.
Each prompt has a hidden option to show or hide the user entered data on the displayed and printed information

10.5.5.1 General Prompt 1

Access: Level-2

10.5.5.1.1 Prompt text

Access: Level-2
Hidden: None
Default: ''
Range: 18 characters

Enter Prompt 1.
This is an alphanumeric field that acts as a prompt for a load.
If this field is blank, the unit will not use this prompt, nor will the prompt be displayed on the load header when it is viewed or displayed. This field provides additional information for the load, i.e. driver number, load number etc.
If the EM6 is configured to use Driver PIN numbers this prompt will be used to capture the Driver number.

10.5.5.1.2 Hide prompt

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable display and printing of EM6 prompt

10.5.5.1.3 Hide prompt input

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable display and printing of user entered prompt information

10.5.5.2 General Prompt 2

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter general prompt 2.
See general prompt 1 for description.
If the EM6 is configured to use Driver PIN numbers this prompt will be used to capture the PIN code.

10.5.5.3 General Prompt 3

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter Prompt 3.
See general prompt 1 for description.

10.5.5.4 General Prompt 4

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter Prompt 4.
See general prompt 1 for description.

10.5.5.5 General Prompt 5

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter Prompt 5.
See general prompt 1 for description.

10.5.5.6 Meter Prompt 1

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter meter prompt 1.
Prompts relating to meter and compartment specific information.
See general prompt 1 for description

10.5.5.7 Meter Prompt 2

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter meter prompt 2.
See meter prompt 1 for description.

10.5.5.8 Meter Prompt 3

Access: Level-2
Hidden: None
Default: ‘’
Range: 18 characters

Enter meter prompt 3.
See meter prompt 1 for description.

10.5.6 Printer Setup

Access: Level-2

10.5.6.1 Printer Type

Access: Level-2
Hidden: None
Default: None
Options: None
Epson TM-220
Epson TM-U295
Blaster

Select the printer type.

10.5.6.2 Auto Print

Access: Level-2
Hidden: If 'Printer Type' is set to none
Default: Disable
Options: Enable
Disable

Enable or disable 'Auto Print'
If enabled, the load will be printed automatically when a load is completed.
If 'Printer Type' is set to none, this options will be ignored.

10.5.6.3 Number of Copies

Access: Level-2
Hidden: If 'Printer Type' is set to none
Default: 1
Range: 1 – 10 (Copies)

Enter the number of copies to be printed.
This value only comes into effect when the load is printed automatically after the load is completed or the operator prints from the 'Load View Screen'. When individual tickets are printed from Manager mode, only one ticket is printed at a time.
If 'Printer Type' is set to none, the number of copies will be ignored.

10.5.6.4 Line delay

Access: Level-2
Hidden: If 'Printer Type' is set to none
Default: 0.1 sec
Range: 0 sec to 1.0 sec

Printer waits the line delay time after each line printed. This can be used if the printer connected to the EM6 has a small internal buffer and feedback is not available from the printer.

10.5.7 Port 1 setup

Access: Level-2

10.5.7.1 Protocol

Access: Level-2
Hidden: None
Default: Modbus
Options: Modbus
SLIP
Printer

Select the communication protocol for port 1. If port 1 shows "GSM" and the protocol selection is not available, this is due to the GSM board being connected to the EM6. This will override all port protocol settings.

10.5.7.2 Baud Rate

Access: Level-2
Hidden: None
Default: 9600 bps
Options: 2400
4800
9600
19200
57600
115200

Select the baud rate for port 1.

10.5.7.3 Parity

Access: Level-2
Hidden: None
Default: None
Options: None
Even

Enable parity for port 1.

10.5.8 Port 2 setup

Access: Level-2

10.5.8.1 Protocol

Access: Level-2
Hidden: None
Default: Modbus
Options: Modbus
SLIP
Printer

Select the communication protocol for port 2

10.5.8.2 Baud Rate

Access: Level-2
Hidden: None
Default: 9600 bps
Options: 2400
4800
9600
19200
57600
115200

Select the baud rate for port 2.

10.5.8.3 Parity

Access: Level-2
Hidden: None
Default: 9600 bps
Options: None
Even

Enable parity for port 2.

10.5.9 GSM

10.5.9.1 SMS Setup

10.5.9.1.1 Profile 1- 5

10.5.9.1.1.1 Mobile Number

Access: Level-2
Hidden: None
Default:

Enter the mobile number in the format of +27797073652 for each profile.

10.5.9.1.1.2 SMS Printout

Access: Level-2
Hidden: None
Default: Disable
Options: Disable
Enable

Enable the print out to be sent as an SMS message to the profile mobile number configured in 10.5.9.1.1.1

10.5.9.2 Email setup

10.5.9.2.1.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Options: Disable
Enable

Enable or disable ability to send printouts by email. Ensure the socket is enabled and configured correctly to ensure a data connection is available.

10.5.9.2.1.2 Profile 1- 5

Access: Level-2
Hidden: None
Default:

10.5.9.2.1.2.1 Email Address

Access: Level-2
Hidden: None
Default:

Configure the recipient email address.

10.5.9.2.1.2.2 Email Printout

Access: Level-2
Hidden: None
Default:

Enable or disable option to send printout to profile email address.

10.5.9.2.1.3 Outgoing Server

Access: Level-2
Hidden: None
Default:

Configure the outgoing email server address.

10.5.9.2.1.4 Sender Address

Access: Level-2
Hidden: None
Default:

Configure the sender email address.

10.5.9.2.1.5 Username

Access: Level-2
Hidden: None
Default:

Configure the email account username.

10.5.9.2.1.6 Password

Access: Level-2
Hidden: None
Default:

Configure the email account password.

10.5.9.2.1.7 Outgoing Port

Access: Level-2
Hidden: None
Default:

Configure the outgoing email server port.

10.5.9.3 Socket Setup

10.5.9.3.1.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Options: Disable
Enable

Enable or disable data connection.

10.5.9.3.1.2 APN Name

Access: Level-2
Hidden: None
Default:

Configure APN (Access Point Name) name for data connection.

10.5.9.3.1.3 APN Username

Access: Level-2
Hidden: None
Default:

If the APN requires a username, enter it here.

10.5.9.3.1.4 APN Password

Access: Level-2
Hidden: None
Default:

If the APN requires a password, enter it here.

10.5.9.3.1.5 Server port

Access: Level-2
Hidden: None
Default: 0

If there is a server port to connect to, enter it here.

10.5.10 Driver PIN

Driver number, name and PIN number can be setup to allow the EM6 to operate in standalone mode. When enabled prompt 1 must be configured to

10.5.10.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable
Enable or disable use of standalone driver numbers and PIN numbers

10.5.10.2 Driver List 1 - 5

Access: Level-2
Hidden: Driver PIN disabled

Driver list consists of 5 groups of drivers, each group consists of 10 drivers each consisting of a driver number, driver name and a PIN code.

10.5.10.2.1.1 Driver Name 1 - 10

Access: Level-2
Hidden: Driver PIN disabled

Driver list consists of 5 groups of drivers, each group consists of 10 drivers each consisting of a driver number, driver name and a PIN code.

10.5.10.2.1.2 Driver Number

Access: Level-2
Hidden: Driver PIN disabled
Default: 0000
Options: 0000 - 9999

Select unique driver number to identify driver. Do not use default driver number of 0000.
When driver PIN numbers are enabled Prompt 1 must be setup to ask for the driver number.

10.5.10.2.1.3 Driver Name

Access: Level-2
Hidden: Driver PIN disabled
Default: Driver X
Range: 9 characters

Select unique driver name to identify driver. Do not use default driver name of Driver X. X is sequentially assigned from 1 to 50.

10.5.10.2.1.4 Driver PIN

Access: Level-2
Hidden: Driver PIN disabled
Default: 0000
Options: 0000 - 9999

Select unique driver name to identify driver. Do not use default driver PIN of Driver X. X is sequentially assigned from 1 to 50.
When driver PIN numbers are enabled Prompt 2 must be setup to ask for the driver PIN.

10.6. Input and Output

Access: Level-2

10.6.1 Permissive 1

10.6.1.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable permissive 1.
This input must be intrinsically safe.
The input corresponds to connector J3 pin-16 (IS-IN1-CON) on the main motherboard.

Permissive 1 operates differently to permissive 2. A load is started and stopped using this permissive input.
If a permissive exists, the load will start and the preset will automatically prompt the operator for the load header without pressing a key.
If the permissive is removed, the load will terminate without a key being pressed.

10.6.1.2 Description

Access: Level-2
Hidden: If Permissive 1 is disabled
Default: 'Ground'
Range: 11 characters

Enter the permissive description.
This description is used to display that this permissive is disconnected or removed.

10.6.1.3 Timeout

Access: Level-2
Hidden: If Permissive 1 is disabled
Default: 05 seconds
Range: 0 – 60 (seconds)

Enter the timeout value.
If any product controller is in a flowing state and this permissive is removed, the operator has a certain amount of time determined by the timeout value to reconnect the permissive to continue the load. The load will restart from the valve delay stage. If the operator does not reconnect the permissive, the load will be terminated.
If no product controller is in the flowing state and the permissive is removed, the timeout value will not come into effect and the load will terminate immediately.

10.6.2 Permissive 2

Access: Level-2

10.6.2.1 Enable

Access: Level-2
Hidden: None
Default: Disable

Options: Enable
Disable

Enable or disable permissive 2.
This input must be intrinsically safe.
The input corresponds to connector J3 pin-32 (IS-IN2-CON) on the main motherboard.

Permissive 2 operates differently to permissive 1. If this permissive is removed, the load will stop all the arms and exit the load immediately.

10.6.2.2 Description

Access: Level-2
Hidden: If Permissive 2 is disabled
Default: ‘Overfill’
Range: 11 characters

Enter the permissive description.
This description is used to display that this permissive is disconnected or removed.

10.7.Diagnostics

Access: Level-1

10.7.1 Clear Settings, Loads

Access: Level-2
Hidden: None
Default: Not applicable
Range: Not applicable

Select 'Proceed' to Clear the memory and reset the parameters to default value.

10.7.2 Memory Status

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

See 'Table 1: System Data-Error'
Note: If a setting was changed during setup, the memory status may not be zero.

10.7.3 Keypad

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

The key that is present in the keypad buffer is displayed. Key 2 (arrow up) and 8 (arrow down) are not displayed but the menu line pointer will move up or down respectively

10.7.4 Display

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Selecting this option will switch on every pixel on the display. If there is an area that does not turn on, those pixels are damaged.

10.7.5 Can Bus

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

There are 8 error counters, 1 transmit counter and 1 receive counter per can bus. There are two can buses, one internal to the EM6 and one external bus that can be connected to peripheral devices.
When a can bus error occurs, the relevant error counter is incremented by one. On system power up these counters are always set to zero.
To reset a particular error counter, move the menu cursor to the error in question and press ENT.
If an error counter continues to increment there is a fault on the can bus that must be corrected.

10.7.6 Port 1 Test

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Test to confirm communication port operation. Data will be transmitted on the TX line and a counter will increment with each message sent. When TX and RX pins are directly connected to one another the RX counter and the TX counter will increment simultaneously.
If the TX and RX pins are directly connected but only the TX counter increments and not the RX counter, then the serial port is not working correctly.

10.7.7 Port 2 Test

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

See port 1 test description.

10.7.8 Dallas Tag Test

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Connect Dallas iButton tag to the EM6 controller connection (optional) and the 12 digit tag identification number will be displayed

10.7.9 Eprom Test

Access: Level-1

Eprom test shows three EEPOM devices utilised by the EM6. Each device will show it's make and capacity if correctly connected but will show FAIL if incorrectly connected

10.7.10 Inputs

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

10.7.10.1 Inputs 1

Access: Level-1
Hidden: None

Controller inputs can be either connected to inductive (Proximity) sensor or simple switch. The table below shows the different configurations for the controller input options.

Simple input	Inductive sensor input	Input status
Contact open	Sensor disconnected	Open circuit
Contact closed	Sensor damaged	Short circuit
	Sensor detects air or metal	Air present
	Sensor does not detect air or metal	No air present

10.7.10.1 Inputs 2

Access: Level-1
Hidden: None

See input 1

10.7.11 GPS status

Access: Level-1
Hidden: None

10.7.11.1 Status

Access: Level-1
Hidden: None

Shows connected if the REF-400 GPS sensor is connected and disconnected if the GPS sensor is not connected.

10.7.11.2 Coordinates

Access: Level-1
Hidden: Hidden if REF-400 sensor is not connected

Shows the GPS coordinates of the REF-400 sensor if fitted.

10.7.11.3 Time

Access: Level-1
Hidden: Hidden if REF-400 sensor is not connected

Shows the Greenwich Mean Time of the REF-400 sensor.

10.8. Read Only

Access: Level-1

10.8.1 Version

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Displays the EM6 software version number

10.8.2 Software Checksum

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Displays the checksum of the electronic calculator code.

10.8.3 W & M Checksum

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Weights and measures checksum. Checksum calculated on the legally relevant weights and measures functions on the electronic calculator.

10.8.4 W & M Events

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

All modifications made to the electronic calculator's settings are recorded and are available for viewing and printing.

10.8.5 EM6 Pin Outs

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

The electronic calculators pin descriptions are given for the all the external connections

10.8.6 EM6 Test Points

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

The electronic calculators test point voltages are given for fault finding procedures.

10.8.7 EM6 Fuses

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

The electronic calculator's fuse values are listed to aid replacement if a fuse is damaged or illegible.

10.8.8 View Setup

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Displays the current controller settings. The settings can be viewed and printed.

11. Meter Setup Directory

The meter setup directory includes the parameters that are independent of the human-interface-controller. If a communication failure occurs while the operator is busy in this directory, the system will close this directory automatically

11.1. General Purpose

Access: Level-1

11.1.1 Enabled

Access: Level-1
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable the meter. If the meter is disabled it will not be available for preset selection.

11.1.2 Meter Name

Access: Level-2
Hidden: None
Default: ‘Meter X’
Range: 11 characters

Meter name for selected meter, X is replaced with relevant meter number 1 or 2. This name should be changed to adequately label the flow meter in question.

11.1.3 Error Hold

Access: Level-2
Hidden: None
Default: 0
Range: 0 – 2147483647

See ‘Table 3: Ticket / Product Controller Errors’

If an error code is set in the error hold register, the error will not be reset until the operator clears the errors in the ‘diagnostics - clear alarms’ menu.
If an error code is not set, the error will be automatically cleared when the error is absent. It is possible to hold more than one error in the error hold register

Example
If the error mask is set at 640, it means that error code 512 and 128 is set (512+128=640, see section on ‘How to use an Error Table’).
When a temperature problem or a Stop button occurs, the operator will have to clear the alarm in the menu.
All other error that may occur will be cleared when the error no longer occurs.

11.1.4 Pulse Trip

Access: Level-2
Hidden: None
Default: 75 pulses
Range: 1 – 255

Enter the Pulse Trip to determine the amount of pulses that the pulsar must count to initiate a meter creep.

The Pulse-Trip and Pulse-Delay work together to determine when a meter creep occurs.

A meter creep will occur when a certain amount pulses are counted at a certain minimum speed.
The number of pulses that must be counted is determined by ‘Pulse-Trip’.
This minimum speed is determined by ‘Pulse Delay’.

11.1.5 Pulse Delay

Access: Level-2
Hidden: None
Default: 10 seconds
Range: 1 – 255

Enter the Pulse Delay to determine the minimum speed at which the pulser must count to initiate a meter creep.

After a pulse, a timer starts. If the next pulse occurs before the timer reaches Pulse Delay time, the minimum speed criterion is met and the pulse can be counted.

Example
If the' Pulse Trip' is set to 75 and the 'Pulse Delay' is set to 10
A meter creep will occur if 75 pulses are counted with a maximum delay of 10 seconds between each pulse. If a delay between any pulse is more than 10 seconds, the 75 pulses have to be recounted from scratch.

A note on 'meter creeps' and 'meter direction'
If a meter is setup as 'clockwise' and the meter creep occurs is an 'anti-clockwise' direction, the creep-pulses are subtracted and the creep-pulses are compared with the absolute value of the 'Pulse Trip' field. If the pulsar vibrates heavily, there will be pulses in both directions and this will keep the creep pulses at approximately 0 pulses, thereby avoiding a creep transaction

11.2.Flow Control

Access: Level-2

11.2.1 Valve Type

Access: Level-2
Hidden: None
Default: 2 stage (vehicle)
Options: 2 stage (vehicle)
2 stage (depot)
Digital control valve

Select the valve operation to match the installed valve operation.

11.2.2 Meter Direction

Access: Level-2
Hidden: None
Default: Clockwise
Options: Clockwise
Anticlockwise
None

Set the direction to clockwise, anti-clockwise or none.
If the meter turns in the wrong direction, a meter-direction-error will occur unless the direction is set to none. If the meter direction is set to none then the pulses counted will always be incremented positively regardless of the meters direction.

11.2.3 Minimum Rate

Access: Level-2
Hidden: None
Default: 150 volume units per minute
Range: 1 – 9999

Set the minimum flow rate.

The Minimum-rate and Minimum-time work together to determine when the flow rate is too low.

If the flow rate of the product is below the minimum rate for a certain period of time (set by the minimum-time parameter), a Minimum-Flow error will occur and the transaction will terminate.

11.2.4 Minimum Time

Access: Level-2
Hidden: None
Default: 10 seconds
Range: 1 – 255

Set the minimum time.
See 'Minimum-Rate' parameter for a complete description.

11.2.5 No Flow Time

Access: Level-2
Hidden: None
Default: 10 seconds
Range: 1 – 255

Set the Zero-Flow-Timeout.

If the flow rate of the product is zero for a time specified by the 'No Flow Timeout', a 'No Flow' error will occur and the transaction will terminate. This value is not used when the flow rate is decreased to zero due to a natural sequence of events (i.e. the preset volume has been reached).

11.2.6 Reverse Volume

Access: Level-2
Hidden: None
Default: 12 litres
Range: 0 – 255 litres

Set the reverse flow volume
If the meter direction is set to clockwise and the meter turns anti-clockwise the EM6 will subtract the reverse flow litres until the Reverse volume parameter is surpassed and then the EM6 will terminate the transaction with a meter direction error.

11.2.7 Delivery Mode

Access: Level-2
Hidden: Hidden if valve type is not 2 stage (vehicle)
Default: Gravity
Options: Pump
Gravity
Pump & Gravity (2-Valve Operation)
Pump & Gravity (3-Valve Operation)

See ‘

Table 5: Valve Outputs for different ’ to connect the correct outputs to the correct valves.

11.2.8 Pump Control Options

Access: Level-2
Hidden: If the valve type is not set “2 stage (vehicle)” or
If the ‘Pump Gravity’ setting is set to gravity only

11.2.8.1 Valve Delay

Access: Level-2
Hidden: If the ‘Pump Gravity’ is set to Gravity only
Default: 5 seconds
Range: 0 – 255

Set the delay time from when the transaction is started to when the pump valve is opened

11.2.8.2 Final Trip

Access: Level-2
Hidden: If the ‘Pump Gravity’ is set to Gravity only
Default: 5 volume units
Range: 0 – 9999

Set the amount of volume units that the pump valves will close before the preset amount is reached.
This trip point will automatically adjust itself to compensate for external changes (e.g. flow rate). The automatic adjustment occurs at the end of a load if no errors have occurred. The trip point will only change by one unit at a time.

11.2.8.3 Fast Open

Access: Level-2
Hidden: If the 'Pump Gravity' is set to Gravity
Default: 100 volume units
Range: 0 – 9999

Volume units at which to open the second stage of the two stage valve

11.2.8.4 Fast Close

Access: Level-2
Hidden: If the 'Pump Gravity' is set to Gravity
Default: 150 volume units
Range: 0 – 9999

Volume units at which to close the second stage of the two stage valve

11.2.9 Gravity Control Options

Access: Level-2
Hidden: If the valve type is not set "2 stage (vehicle)" or
If the 'Pump Gravity' setting is set to pump only

11.2.9.1 Valve Delay

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 5 seconds
Range: 0 – 255

Set the delay time from when the transaction is started to when the gravity slow flow valve is opened.

11.2.9.2 Final Trip

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 5 volume units
Range: 0 – 255

Set the amount of volume units that the gravity valves will close before the preset amount is reached.

This trip point will automatically adjust itself to compensate for external changes (e.g. flow rate). The automatic adjustment occurs at the end of a load if no errors have occurred. The trip point will only change by one unit at a time.

11.2.9.3 Fast Open

Access: Level-2

Hidden: If the 'Pump Gravity' is set to pump only
Default: 100 volume units
Range: 0 – 255

Set the amount of volume units after which the gravity fast flow valve opens..

11.2.9.4 Fast Close

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 150 volume units
Range: 0 – 255

Set the amount of volume units after which the gravity fast flow valve will close before the preset amount is reached.

11.2.10 Valve setup

Access: Level-2
Hidden: If the valve type is set "2 stage (vehicle)"

11.2.10.1 Valve Delay

Access: Level-2
Hidden: None
Default: 5 seconds
Range: 0 – 255

Set the delay time from when the transaction is started to when the gravity slow flow valve is opened.

11.2.10.2 Final Trip

Access: Level-2
Hidden: None
Default: 5 volume units
Range: 0 – 255

Set the amount of volume units that the gravity valves will close before the preset amount is reached.

This trip point will automatically adjust itself to compensate for external changes (e.g. flow rate). The automatic adjustment occurs at the end of a load if no errors have occurred. The trip point will only change by one unit at a time.

11.2.10.3 Fast Open

Access: Level-2
Hidden: None

Default: 100 volume units
Range: 0 – 255

Set the amount of volume units after which the gravity fast flow valve opens.

11.2.10.4 Fast Close

Access: Level-2
Hidden: None
Default: 150 volume units
Range: 0 – 255

Set the amount of volume units after which the gravity fast flow valve will close before the preset amount is reached.

11.2.10.5 Slow Flow

Access: Level-2
Hidden: If valve type is 2 stage (depot)
Default: 150 volume units
Range: 0 – 9999

Set point for the slow flow rate of the digital control valve

11.2.10.6 Fast Flow 1

Access: Level-2
Hidden: If valve type is 2 stage (depot)
Default: 2000 volume units
Range: 0 – 9999

Set point for the default fast flow rate of the digital control valve. If the flow rate input is enabled but not preset the fast flow 1 flow rate will be selected. If the flow rate select input is not enabled then Fast flow 1 is selected by default.

11.2.10.7 Fast Flow 2

Access: Level-2
Hidden: If valve type is 2 stage (depot)
Default: 2000 volume units
Range: 0 – 9999

Set point for the default fast flow rate of the digital control valve. If the flow rate input is enabled and preset the fast flow 2 flow rate will be selected. If the flow rate select input is not enabled then Fast flow 1 is selected by default.

11.2.10.8 Tolerance

Access: Level-2
Hidden: If valve type is 2 stage (depot)
Default: 10 percent
Range: 1 – 100

The tolerance applied to slow and fast flow rate set points during loading operation

11.3. Volume Accuracy

Access: Level-2

11.3.1 Pulsar Type

Access: Level-2
Hidden: None
Default: IS pulsar
Range: IS pulsar
EXD pulsar

Select which pulsar interface to use.

11.3.2 Pulses per Volume

Access: Level-2
Hidden: None
Default: 10 pulses
Range: 1 – 50000

Set the number of pulses per volume unit loaded

11.3.3 Pulse Error Counter

Access: Level-2
Hidden: None
Default: 5 pulses
Range: 1 – 99999 (pulses)

When the difference in pulses between channel-A pulses and channel-B pulses is greater than the pulse error counter, a pulsar-count error occurs

11.3.4 Pump Switch Points

Access: Level-2
Hidden: If the 'Pump Gravity' setting is set to gravity only

11.3.4.1 Switch Point 1

Access: Level-2
Hidden: If the 'Pump Gravity' is set to gravity only
Default: 100 volume units per minute
Range: 0 – 9999

Set the switch point at which the calibration factor switches from calibration factor 1 to calibration factor 2 or vice versa. There is a built in hysteresis, therefore the calibration factor switches from 1 to 2 at 20% lower than Switch Point 1 and the calibration factor switches from 2 to 1 at 20% higher than Switch Point 1.

11.3.4.2 Switch Point 2

Access: Level-2
Hidden: If the 'Pump Gravity' is set to gravity only
Default: 300 volume units per minute
Range: 0 – 9999

Set the switch point at which the calibration factor switches from calibration factor 2 to calibration factor 3 or vice versa. There is a built in hysteresis, therefore the calibration factor switches from 2 to 3 at 20% lower than Switch Point 2 and the calibration factor switches from 3 to 2 at 20% higher than Switch Point 2.

11.3.5 Gravity Switch Points

Access: Level-2
Hidden: If the 'Pump Gravity' setting is set to pump only

11.3.5.1 Switch Point 1

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 100 volume units per minute
Range: 0 – 9999

See Switch-Point-1 for pump.

11.3.5.2 Switch Point 2

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 300 volume units per minute
Range: 0 – 9999

See Switch-Point-2 for pump.

11.4.Temperature

Access: Level-2

11.4.1 Temperature

Access: Level-2

11.4.1.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Options: Enable
Disable

Enable or disable the temperature circuit.
Set the 'System – Temperature, density – Show compensated and / or 'System – Temperature, density – Print compensated to enable. This will allow the operator to view the temperature and compensated volume.

11.4.1.2 Maximum

Access: Level-2
Hidden: If 'Temperature' is disabled
Default: 70°C
Range: 0 – 140

Set the maximum temperature allowed. If the instantaneous temperature exceeds the maximum temperature, a temperature alarm will occur and if a transaction is in progress, it will terminate.
Note: during a transaction, the average temperature is displayed but the instantaneous temperature must not rise above the maximum temperature.

11.4.1.3 Table

Access: Level-2
Hidden: If 'Temperature' is disabled
Default: Table 60B (20°C)
Options: Table 54A (15°C)
Table 54B (15°C)
Table 54C (15°C)
Table 54D (15°C)
Table 60A (20°C)
Table 60B (20°C)
Table 60C (20°C)
Table 60D (20°C)
GPL
Butane
Propane
LPG
None

Select the correct table to use.
Note: The option None is the same effect as using Table B (1963 revision). In this case, the expansion coefficient must be entered.

11.4.1.4 Offset

Access: Level-2
Hidden: If 'Temperature' is disabled
Default: 0 °C
Range: -9.9 – +9.9

Set the temperature offset to cater for drift in the temperature probe.
See section on 'How to use the editor'.

11.4.1.5 Expansion Coefficient

Access: Level-2
Hidden: If 'Table' is not set to 'Table 54C, Table 60C or None'
Default: 0.000000
Range: 0.000648 – 0.001728

Set the temperature coefficient according to 'Table-G' in the 'Petroleum Measurement Tables' 1963 revision.

11.5. Input / Output

Access: Level-2

11.5.1 Input

Access: Level-2

11.5.1.1 Input 1 (exd)

Access: Level-2
Hidden: None
Default: Not used
Options: Not Used
Remote Start
Meter Permissive
Deadman switch
Flow rate select
Pause
Pump / Gravity
Meter direction

Set the use for input 1. (See ‘
Table 6: Inputs’).

11.5.1.2 Input 2 (exd)

Access: Level-2
Hidden: None
Default: Not used
Options: Not Used
Remote Start
Meter Permissive
Deadman switch
Pause
Flow rate select
Pump / Gravity
Meter direction

Set the use for input 2. (See ‘
Table 6: Inputs’).

11.5.1.3 Input 3 (is)

Access: Level-2
Hidden: None
Default: Not used
Options: Not Used
Remote Start
Meter Permissive
Deadman switch
Pause
Flow rate select
Pump / Gravity
Meter direction

Set the use for input 3. (See ‘
Table 6: Inputs’).

11.5.1.4 Deadman Timeouts

Access: Level-2
Hidden: If no input has Deadman functionality enabled
Default: Not used

11.5.1.4.1.1 Make timeout

Access: Level-2
Hidden: If no input has Deadman functionality enabled
Default: 10 seconds
Range: 2 – 250 seconds

If the Deadman switch contact is made or closed for a time exceeding the “Make timeout” the delivery will stop due to a Deadman error. The EM6 will display paused until the contact is closed for the first time.

11.5.1.4.1.2 Break Timeout

Access: Level-2
Hidden: If no input has Deadman functionality enabled
Default: 5 seconds
Range: 2 – 250 seconds

If the Deadman switch contact is broken for a time exceeding the "Break timeout" the delivery will stop due to a Deadman error.

11.6. Products

Access: Level-2

11.6.1 Number of Products

Access: Level-2
Hidden: None
Default: 1
Range: 1-8 (products)

Enter the number of products that can be loaded on this product-controller.

11.6.2 Pulse Rate

Access: Level-2
Hidden: None
Default: 0
Range: 0 - 255

Pulse rate specifies the number of litres per output pulse. If pulse rate is set to 1, electronic calculator will output 1 pulse per 1 litre. If pulse rate is set to 10, the electronic calculator will output 1 pulse every 10 litres.

11.6.3 Product

Access: Level-2

11.6.3.1 Select Product

Access: Level-2
Hidden: None
Default: ‘’
Range: ULP 95
LRP 95
DIESEL 10
DIESEL 50
JET A1
IP

Selecting default name and density for the product by simply selecting from the drop down menu.

11.6.3.2 Product Name

Access: Level-2
Hidden: None
Default: 'Product x' (Where x is the Product number)
Range: 11 characters

Enter an alphanumeric value for the product name.
This field used on the load-printouts and the load view screen to identify the product loaded on the product-controller.

11.6.3.3 Default Density

Access: Level-2
Hidden: None
Default: 0.7200Kg/L
Range: 0.3500Kg/L – 1.0750Kg/L

Density value to be used in compensation calculations. Density to be specified at 15°C or 20°C depending on what temperature table is selected.

11.6.3.4 Pump Calibration

Access: Level-2
Hidden: If the 'Pump Gravity' setting is set to gravity only

11.6.3.4.1 Calibration Factor 1

Access: Level-2
Hidden: If the 'Pump Gravity' is set to gravity only
Default: 1
Range: 0 – 9.9999

Enter the Pump Calibration Factor 1 for the product selected in the product menu.

11.6.3.4.2 Calibration Factor 2

Access: Level-2
Hidden: If the 'Pump Gravity' is set to gravity only
Default: 1
Range: 0 – 9.9999

Enter the Pump Calibration Factor 2 for the product selected in the product menu.

11.6.3.4.3 Calibration Factor 3

Access: Level-2
Hidden: If the 'Pump Gravity' is set to gravity only
Default: 1
Range: 0 – 9.9999

Enter the Pump Calibration Factor 3 for the product selected in the product menu.

11.6.3.5 Gravity Calibration

Access: Level-2
Hidden: If the 'Pump Gravity' setting is set to pump only

11.6.3.5.1 Calibration Factor 1

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 1
Range: 0 – 9.9999

Enter the Gravity Calibration Factor 1 for the product selected in the product menu.

11.6.3.5.2 Calibration Factor 2

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 1
Range: 0 – 9.9999

Enter the Gravity Calibration Factor 2 for the product selected in the product menu.

11.6.3.5.3 Calibration Factor 3

Access: Level-2
Hidden: If the 'Pump Gravity' is set to pump only
Default: 1
Range: 0 – 9.9999

Enter the Gravity Calibration Factor 3 for the product selected in the product menu.

11.6.3.6 Price

Access: Level-2

11.6.3.6.1 Enable

Access: Level-2
Hidden: None
Default: Disable
Range: Disable
Enable

Allow operator to use pricing as part of the electronic calculators preset operation

11.6.3.6.2 Units

Access: Level-2
Hidden: If price disabled
Default: Per 1L
Range: Per 1L
Per 100L
Per 1000L

Pricing can be applied on a per 1L, per 100L or per 1000L as application demands. The price calculation works as follows:

$$\frac{Volume\ delivered\ x\ cost\ per\ unit}{units}$$

11.6.3.6.3 Currency

Access: Level-2
Hidden: If price disabled
Default: EUR

Currency can be made up of three symbols or alphanumeric characters.

11.6.3.6.4 Modify price

Access: Level-2
Hidden: If price disabled
Default: Disable
Range: Disable
Enable

Enabled allows operator to modify price during preset operation.
Disabled denies operator ability to modify pricing during preset operation

11.6.3.6.5 Price

Access: Level-2
Hidden: If price disabled
Default: 1.00
Range: 0.00 - 9999.99

Enabled allows operator to modify price during preset operation.
Disabled denies operator ability to modify pricing during preset operation

11.6.3.6.6 Incl/excl tax

Access: Level-2
Hidden: If price disabled
Default: Including tax
Range: Including tax
Excluding tax

Price per unit including of excluding tax

11.6.3.6.7 Tax

Access: Level-2
Hidden: If price disabled
Default: 14.0%
Range: 0.1% - 99.9%

Tax amount to be used in price calculations

11.7.Diagnostics

Access: Level-1

11.7.1 Clear Parameters, Tickets

Access: Level-2
Hidden: None
Default: Not applicable
Range: Not applicable

Select ‘Proceed’ to Clear the memory and reset the parameters to default value.

11.7.2 Clear Tickets

Access: Level-2
Hidden: None
Default: Not applicable
Range: Not applicable

Select ‘Proceed’ to Clear the Transaction history.

11.7.3 Totalizers

Access: Level-2

11.7.3.1 Uncompensated

Access: Level-2
Hidden: None
Default: 0
Range: 0 – 999999900

Enter a new totalizer value for the uncompensated volume.
When this totalizer is changed, a new ticket is created in memory so that the operator can see that the totalizer was changed.

11.7.3.2 Compensated

Access: Level-2
Hidden: None
Default: 0
Range: 0 – 999999900

Enter a new totalizer value for the compensated volume.
When this totalizer is changed, a new ticket is created in memory so that the operator can see that the totalizer was changed.

11.7.4 Data Status

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

If data errors are present this number will be greater than zero. To understand these numbers either press enter on the electronic calculator or see 'Table 2: Product-Controller Data-Error'

11.7.5 Alarms

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Press enter to view current alarms on the electronic calculator

11.7.6 Clear Alarms

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Select 'Clear Alarms' to clear all alarms.

11.7.7 Temperature

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Check the instantaneous temperature

11.7.8 Input

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

This is a one-digit number which represents the input
If the input is high, the digit is 1.
If the input is low or disconnected, the digit is 0.

11.7.9 Output

Access: Level-2

11.7.9.1 Output 1

Access: Level-2
Hidden: None
Default: Not applicable
Options: Enable
Disable

If enabled, the output is switched on.
If disabled, the output is switched off.
All outputs will be switched off when exiting this menu option.

11.7.9.2 Output 2

Access: Level-2
Hidden: None
Default: Not applicable
Options: Enable
Disable

See Output 1 for description

11.7.9.3 Output 3

Access: Level-2
Hidden: None
Default: Not applicable
Options: Enable
Disable

See Output 1 for description

11.7.9.4 Output 4

Access: Level-2
Hidden: None
Default: Not applicable
Options: Enable
Disable

See Output 1 for description

11.8. Read Only

Access: Level-1

11.8.1 View Tickets

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

View all the tickets on the Product-Controller.

See 'Table 3: Ticket / Product Controller Errors' for the error codes that appear on each ticket

To navigate through the tickets:
'←' & '→' : scroll through the tickets
'ENT' : Manually enter the ticket number to view.
'PRN' : Print current ticket
'CLR' : Exit

11.8.2 View Setup

Access: Level-1
Hidden: None
Default: Not applicable
Range: Not applicable

Displays the current meter point settings. The settings can be viewed and printed.