Chapter 5
Error Codes

Errors

This chapter contains the full list of error codes, in numerical order.
Errors are normally indicated by the error code (number) being displayed. The error is displayed as "ERRxx", where "xx" is the code number. Errors are also written to an error log. You can check logged errors using Function 02 as detailed in chapter 4.

Startup System Errors

Error codes (01..09) are reserved for startup errors. This type of error is detected before the displays are initialised, and is reported using beep codes (pump beeps once for error 01, twice for error 02, etc.)
Some of these codes can also be dynamically checked during normal operation, in which case they will be reported in the normal way (i.e., they will display the **ERR xx** message and stop all deliveries).
These errors are fatal errors (processor halted) and require the pump to be reset. Power down and wait for 5 seconds before switching on the pump.

00 Start up log

This is not really an error it contains the number of startups.

01 Processor Error

This is a sequential IRAM address test which is performed at startup. It tests the processor's 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

02 Internal Ram error

Error 02 is a sequential IRAM address test which is performed at startup. It covers all IRAM excluding the 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

03 Eprom Error

Error 03 indicates a checksum error. This may occur either at startup or dynamically during operation. In either case the processor is halted if an error is found.

04 External RAM Error

This is a walking bit test of the XRAM. This test is performed both at startup (entire XRAM checked) and dynamically (one address per call from main loop). In either case the processor is halted if an error is found.

05 Non Volatile Setup

Error 05 is a check of the non volatile variables. These are the set up variables which must remain unchanged during a power failure. They remain constant unless changed by a diagnostic function. They are checked (against their backup variables) both at startup (all non-vol variables checked) and dynamically (one byte checked each call from main loop). If an error is found, the non volatile variables are all reset to their default values and (if not found during startup) the system restarts.

06 Delivery variables lost

This is a startup check of the current/last delivery related variables. These variables are overwritten with each new delivery, but in case of power loss, must be present between deliveries.
Unlike the non-vol variables, during deliveries, these are continually changing and are therefore not checked dynamically. At startup, these are checked (for corruption of XRAM during power loss) against their backup variables. If an error is found, the non volatile variables are all reset to their default values.

07 Keyboard Error

This is a startup check of local or remote (input processor) DIP switch setting validity, and for the presence of the relevant keyboards. This error is non-fatal error which serves as an audible warning to reconfigure DIP switches or replace keyboards and restart the system.

08..09 Not used

Errors 08 and 09 are reserved.

Fatal Errors (excluding fatal startup errors)

Errors 10 through to 29 all cause the processor to stop. The errors are displayed but beeps are not sounded. The pump must be reset after one of these errors.

10..15 Pump Control State Errors (Pump A..F)

This indicates an attempt to enter an undefined side control state on a particular pump number.

16 Stack Error

The stack is continuously checked. If a stack overflow occurs, error 16 will be displayed.
This check is performed in the **dynchk** module.

17 Display Error

If a Display error is indicated, a translation error occurred when writing to one of the 7 segment LCD displays.

18 Variable Range Error

Error 18 indicates a global software parameter (ie pump, grade or price etc) is not within its normal range. This can be a result of corruption of the internal data RAM, which may cause unpredictable results.
This check is not limited to any particular module, but is used by any procedure that requires range checking.

19 Dollar Maths Error

At the end of a delivery, the delivery dollar calculations are performed (ie price per litre multiplied by litres equals dollars). Error 19 indicates an error occurred in the calculations. A likely cause for this would be a price change (or corruption of the price variable) during a delivery.

20 Litres Maths Error

At the end of a delivery, the delivery quantity accumulation calculation is made (ie, total number of encoder counts for the delivery time multiplied by the encoder constant equals the litres displayed). Error 20 indicates an error occurred in the accumulation.
If this is not the case, it is probable that the encoder is going too fast, such that the incoming encoder counts (which are accumulated under interrupt control) are not being "consumed" quickly enough by the maths routines to prevent a rollover.

21 Clock Error

A Clock Error indicates that the current time variable (which is used to time tag events) is not incrementing.

22 Motor Control Error

Error 22 indicates that an attempt was made to turn a motor on or off when it was already in that state (according to the software).

23 Solenoid Control Error

This indicates that an attempt was made to open or close a solenoid valve when it was already in that state (according to the software). It will also occur (except in diagnostic mode) if an attempt is made to turn on a solenoid valve when the corresponding motor is not on.

24 Power Fail

This error indicates the system entered its main initialisation procedure (which should only happen on power up or as a result of certain diagnostic functions), but the power fail flag does not show power failed. This may occur in the event of a total power loss (including the lithium battery) such that the XRAM was corrupted, or if the power fail procedures are not functioning correctly.

25 Input Processor to main failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) but is no longer receiveing any comms response from it.
This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

26 Main to Input Processor failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) and is receiveing comms response from it, but the Input Processor is not receiving data from the main processor.
This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

27 Remote Parameters Failure

Error 27 will be displayed if the pump is not within the diagnostics functions and the remote rx_param block that was sent from the input microprocessor is different to the set stored by the MPU.

28 Display pointers corrupted

A constant check is dynamically made, of the display information. This error indicates an error has occurred which could cause incorrect information to be displayed on the LCDs.

29 Not used

This error code is reserved.

Single Pump Number Fatal Errors

Errors 30 through to 59 do not cause a complete system crash, as they relate to a single pump number only. They cause the related pump to stop delivery, and its displays to flash. This continues until the nozzle is replaced and any nozzle on that pump number is removed again. The ERRxx message is then displayed on that pump number and all further processing of the pump ceases.
Note that all other pump numbers can continue unaffected. To use the affected pump again, the pump unit must be reset (powered off for at least 5 seconds).

30 LPG Temperature Probe 1 Error

This is caused by either an open circuit, short circuit or out of range error being detected on probe 1 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

31 LPG Temperature Probe 2 Error

Error 31 is caused by either an open circuit, short circuit or out of range error being detected on probe 2 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

32 Grade 1 Front hose air sensed (Pump A1)

During a Grade 1 delivery, air was sensed in the front hose for more than 1 minute.

33 Grade 1 Rear hose air sensed (Pump B1)

During a Grade 1 delivery, air was sensed in the rear hose for more than 1 minute.

34 Grade 2 Front hose air sensed (Pump C2)

During a Grade 2 delivery, air was sensed in the front hose for more than 1 minute.

35 Grade 2 Rear hose air sensed (Pump D2)

During a Grade 2 delivery, air was sensed in the rear hose for more than 1 minute.

36 Grade 3 Front hose air sensed (Pump E3)

During a Grade 3 delivery, air was sensed in the front hose for more than 1 minute.

37 Grade 3 Rear hose air sensed (Pump F3)

During a Grade 3 delivery, air was sensed in the rear hose for more than 1 minute.

38 Grade 1 Front encoder error (Pump A1)

Grade 1 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

39 Grade 1 Rear encoder error (Pump B1)

The Grade 1 rear encoder inputs were out of sequence.

40 Grade 2 Front encoder error (Pump C2)

Grade 2 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

41 Grade 2 Rear encoder error (Pump D2)

The Grade 2 rear encoder inputs were out of sequence.

42 Grade 3 Front encoder error (Pump E3)

The Grade 3 front encoder inputs were out of sequence.

43 Grade 3 Rear encoder error (Pump F3)

The Grade 3 rear encoder inputs were out of sequence.

44 Grade 1 Front encoder too fast (Pump A1)

This error indicates an overflow of either encoder counts or encoder errors was detected for the Grade 1 front encoder.

45 Grade 1 Rear encoder too fast (Pump B1)

There was an overflow of either encoder counts or encoder errors detected for the Grade 1 rear encoder.

46 Grade 2 Front encoder too fast (Pump C2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 front encoder.

47 Grade 2 Rear encoder too fast (Pump D2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 rear encoder.

48 Grade 3 Front encoder too fast (Pump E3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 front encoder.

49 Grade 3 Rear encoder too fast (Pump F3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 rear encoder.

50 Grade 1 Front encoder run on (Pump A1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 front hose delivery (i.e. after the "get dribble" state has timed out). Possible fault could be leaking valves.

51 Grade 1 Rear encoder run on (Pump B1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 rear hose delivery.

52 Grade 2 Front encoder run on (Pump C2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 front hose delivery.

53 Grade 2 Rear encoder run on (Pump D2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 rear hose delivery.

54 Grade 3 Front encoder run on (Pump E3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 front hose delivery.

55 Grade 3 Rear encoder run on (Pump F3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 rear hose delivery.

56 LPG Overspeed

Flow rate detected during delivery exceeded overspeed trip setting. Note that this error on one LPG pump will display on both, regardless of whether the other is delivering or not.

57 Loss of encoder constant or LPG specific gravity setting

One of these values is corrupt, and has not yet been set back to a valid value (using the appropriate diagnostic function).

58 LPG Sensor failure

The LPG sensor has stopped providing or is providing incorrect information, to the input processor.

59 LPG system vapour present

During an LPG delivery vapour was sensed in the system for more than one minute.

Non Fatal System Errors

Errors 60 through to 89 do not cause any loss of system functionality. They are logged only (for service use).

Comms Channel A errors

60 Channel A Receiver Parity Error

This indicates a parity error was detected in one or more of the received message bytes.

61 Channel A Receiver Framing Error

Character was received for which no stop bit was detected.

62 Channel A Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end, causing this error code. The formal definition is that an all zero character with no stop bit has been received.

63 Channel A Receiver Overrun Error

This indicates an overflow of the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

64 Channel A Receiver Checksum Error

This error indicates the message received had a checksum error.

65 Channel A Receiver Data Error

Error 65 indicates the polling message received from the Console is an invalid type, i.e., a new feature has been added to a console which is not yet supported, or the comms line has been corrupted (in which case a checksum error will probably also occur).

66 Channel A Receiver Overflow Error

The message received was too long for the buffer, causing this error. This may happen if no EOM character or sequence is detected.

67 Channel A Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

68 Channel A Receive Timeout Error

This indicates that the receiver is expecting a character from the Console, but has not received one for more than 1 second.

69 Channel A Transmit Timeout Error

This timeout error indicates that the transmitter is attempting to send a message to the Console, but there has been a delay of more than 1 second since the last character was transmitted.

Comms Channel B errors

70 Channel B Receiver Parity Error

Error 70 indicates a parity error was detected in one or more of the received message bytes.

71 Channel B Receiver Framing Error

A character was received for which no stop bit was detected.

72 Channel B Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end. The formal definition is that an all zero character with no stop bit has been received.

73 Channel B Receiver Overrun Error

This indicates an overflow of the the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

74 Channel B Reciever Checksum Error

The message received had a checksum error.

75 Channel B Receiver Data Error

This indicates that the polling message received from the Input Processor is an invalid type (or that the comms line has been corrupted, in which case a checksum error will probably also occur).

76 Channel B Receiver Overflow Error

The message received was too long for the buffer. This may happen if no EOM character or sequence is detected.

77 Channel B Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

78 Channel B Receive Timeout Error

This indicates that the receiver is expecting a character from the Input Processor, but has not received one for more than 1 second.

79 Channel B Transmit Timeout Error

This indicates that the transmitter is attempting to send a message to the Input Processor, but there has been a delay of greater than 1 second since the last character was transmitted.

General log only system errors

Errors 80 through 89 are general system errors. They are logged only; they do not cause the system to crash.

80 Grade 1 Front Preset Overrun

This indicates that the delivery on the Grade 1 Front hose did not stop at the preset or allocation limit. When this happens, the cutover point at which slow flow is entered automatically adjusts to compensate.
Note the difference from the encoder runon error: encoder runon is a continued flow after the end of delivery state has been reached, whereas preset overrun indicates that the end of delivery state was not reached in time to prevent excess fuel being delivered.

81 Grade 1 Rear Preset Overrun

This indicates that the delivery on the Grade 1 Rear hose did not stop at the preset or allocation limit.

82 Grade 2 Front Preset Overrun

This overrun error indicates that the delivery on the Grade 2 Front hose did not stop at the preset or allocation limit.

83 Grade 2 Rear Preset Overrun

Error 83 indicates that the delivery on the Grade 2 Rear hose did not stop at the preset or allocation limit.

84 Grade 3 Front Preset Overrun

This indicates that the delivery on the Grade 3 Front hose did not stop at the preset or allocation limit.

85 Grade 3 Rear Preset Overrun

This indicates that the delivery on the Grade 3 Rear hose did not stop at the preset or allocation limit.

86 Lost Reply (Console)

A Lost Reply error indicates that the pump comms are trying to reply to a poll from the Console, but did not succeed in sending a reply within 4 clock ticks (0.08s) of receiving the poll message.
This means that the main loop tasks (other than comms) are taking up too much processor time, so that the comms do not get serviced often enough.

87..99 Not used

These error codes are reserved.