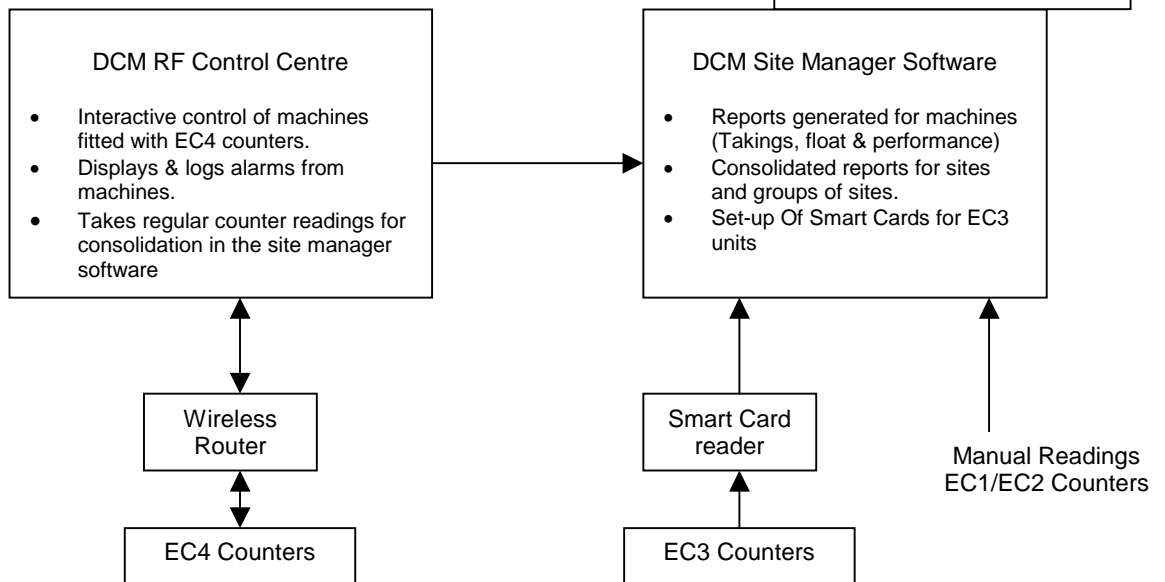




Product Range

The EC4Z electronic audit unit is an advanced electronic counters designed to work with standard Gaming and amusement machines.

The system is complemented with full site management software.



For users with their own site management software the DCM RF Control Centre and the separate DCM Smart Card Utility can be used to output data files of meter readings in an open format for importing into other programmes.



EC3 (Smart Card) Counter

The EC3 electronic counter is designed to electronically track cash for audit/security purposes within a machine. The readings can be electronically collected on a Smart Card to eliminate the risk of transcription errors that occur when reading meters manually.

The EC3 collects serial data from the gaming machine's BACTA dataport and also supports six conventional electro-mechanical inputs for use in machines without the dataport. BACTA Counts are collected individually for all Coins, Notes and Tokens IN and OUT as communicated via the dataport.



Displayed items are:

- Cash In** The total value of all coins and notes IN.
- Cash Out** the total value of all coins and notes paid OUT.
- Cash to Float** the total value of all coins IN routed to Hopper.
- Cash Refill** the total value of all coins classified as Cash Refill.
- Cash Float** the total value of all cash float reported by the machine.
- Notes In** the total value of all Notes types (£5 values and above) IN.
- VTP** The count of plays from the BACTA data port
- H/W 1 - 6** count of pulses on the conventional meter hardware inputs

Additionally, individual coin/note counts are taken from the BACTA data to aid identifying discrepancies. The display of these individual counts may be enabled through the menus. Tokens, if used in the machine are counted as separate total values for IN, OUT, to Float, Refill and Float.

Cashbox door and service door opening events are counted to assist in identifying unauthorised access to the machine.

A smart card can also be used to set the configuration of the unit.

This guide relates to EC3 software version 3.2.

Installation

Machine with BACTA Dataport

Using connection loom EC3-1 and with the machine power switched OFF, connect the 25 way 'D' connector to the BACTA port on the main game board and the 12 way Molex connector to the DCM-EC3 unit. If hardware meters are also required use loom EC3-3.

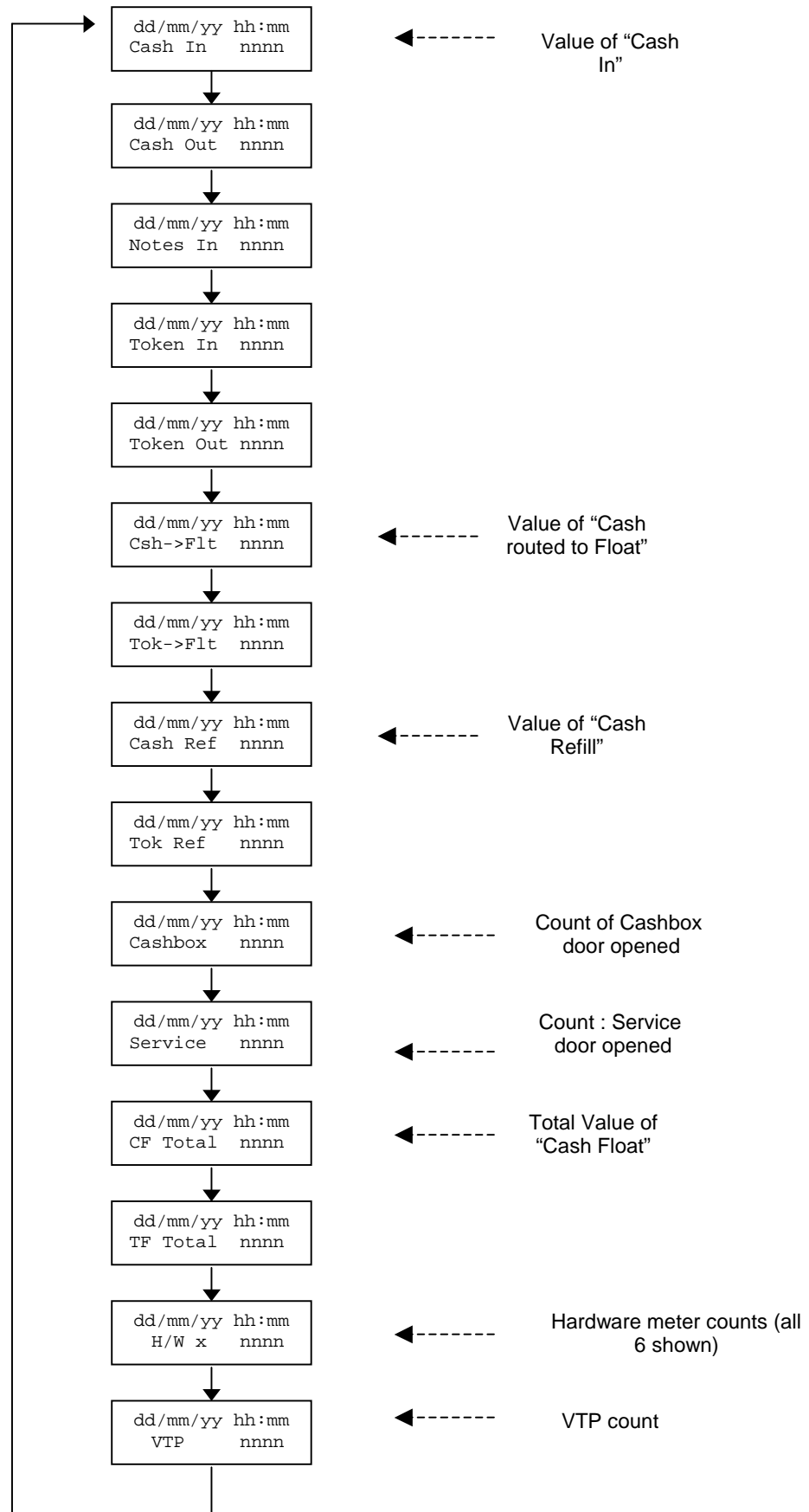
Machine without Dataport

Using connection loom EC3-2 and with the machine power switched OFF, hard wire the colour coded wires to the meter or coin pulses to be counted and a 12v DC power source in the machine. A spare counter input can be connected to the cashbox or service door to trigger the "snapshot" of readings when the machine is opened.



Operation

In normal operation the display will scroll through all enabled display items in turn e.g.





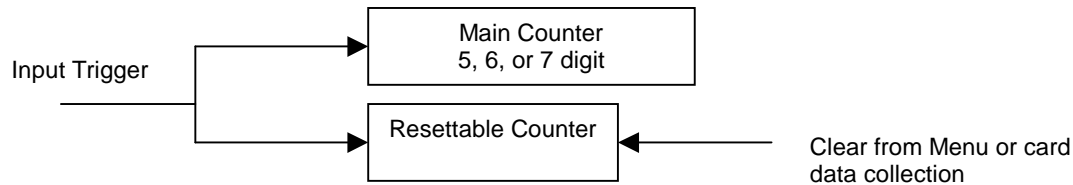
A “short” press on the Function button will step the display to the next counter name in sequence, the counter value is then displayed for 30 seconds before the normal scrolling continues. A “medium” press on the Function button displays the unit serial number and site code.

The EC3 counter features resettable as well as absolute “non-resettable” counters for all items. If the resettable counters are enabled these are added to the display sequence above with their values always shown as 5 digits, prefixed with a “R”.

Input pulses on the hardware counter inputs are filtered to prevent noise and fast pulses corrupting the count. The filter value can be changed if required to set the maximum operating rate of the hardware input EC3. The operation rate of the BACTA dataport is controlled by the handshaking within the protocol, however the EC3 should be able to handle 20+ counting messages per second.

All counter values and settings are stored in non-volatile EEPROM memory. For security and integrity multiple coded copies of the main counter values are maintained enabling recovery in most cases from single bit or byte data corruption.

The counters themselves comprise a “main counter” which is non-resettable and a smaller “resettable” counter which may be cleared through the menus.



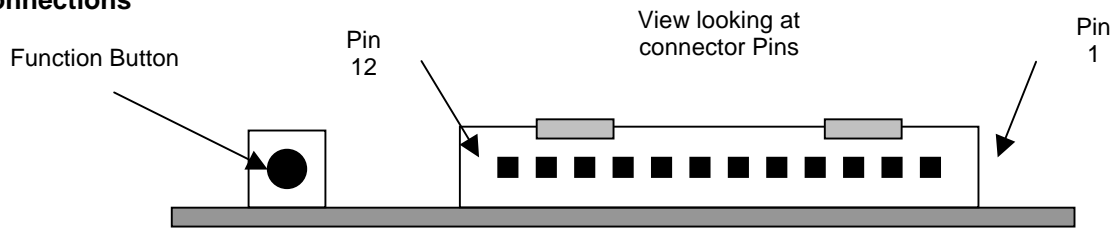
The main counters are “absolute counts” and cannot be cleared, however they can be set to operate and display as 5, 6 or 7 digit counters:

Digits	Count “From”	Count “To” (before rolling over back to zero)
5	00000	99999
6	000000	999999
7	0000000	9999999

The resettable counters count in the range 00000 to 49999 before rolling over back to zero.



Connections



Pin	Signal	Loom EC3-1 Wire Colour	Loom EC3-2 Wire Colour	Loom EC3-3 Wire Colour
1	+12V EC3 supply	Orange or Red	Red	Red
2	Counter 6 Common	No connection	Brown	Brown
3	Counter 6	No connection	Green	Green
4	BACTA_TX	Grey	No connection	Grey
5	BACTA_RX1	Blue	No connection	White/Black
6	0v EC2 supply return	Black	Black	Black
7	Counter 5	No connection	Yellow	Yellow
8	Counter 4	No connection	Pink	Pink
9	Counter 3	No connection	White	White
10	Counter 2	No connection	Violet	Violet
11	Counter 1	No connection	Blue	Blue
12	Counter Common	No connection	Orange	Orange

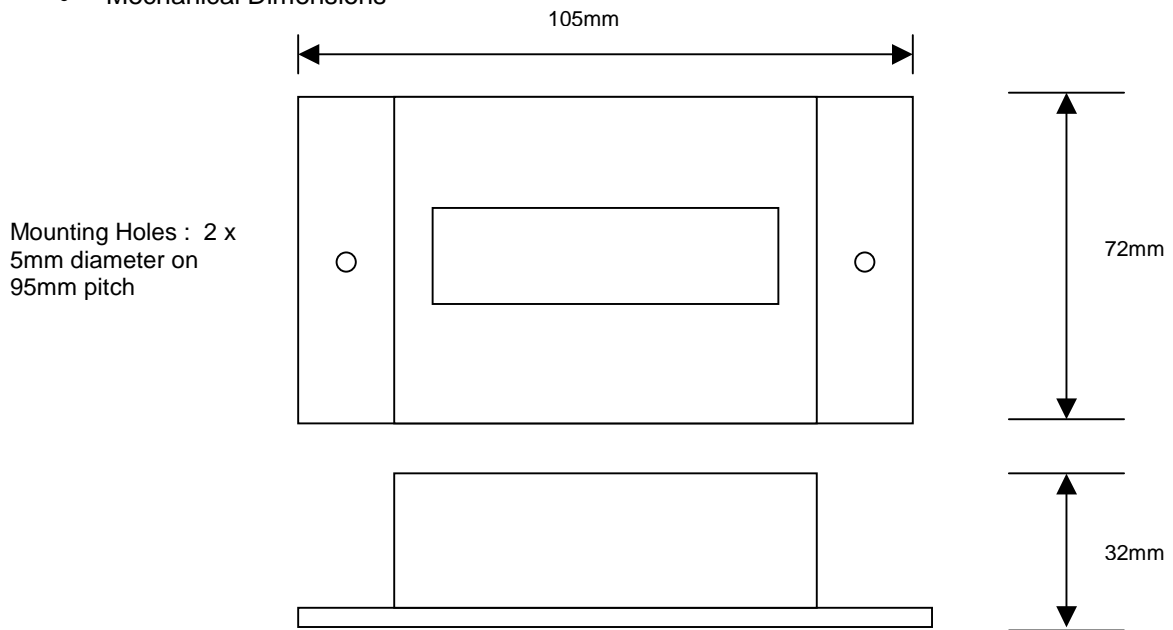
The EC3-1 loom is 1.5 metres long to connect to a standard data port (25 pin D connector). The EC3-2 loom is 1.0 metres long (Power connections 1.5 metres) with free ends. The EC3-3 loom has a 1.5 metre connection to the dataport and 1.0 metre long free ends.

**Appendix 1 - Specification**

- BACTA Dataport compatible – 1200 baud data rate
- Hardware Counter inputs – voltage levels 0v / 12v, auto detecting 0v or 12v common line.
- Hardware Counter inputs – 390 ohm load between pins 2 and 3, other counters 470 ohm load to pin 12. (These values allow the correct operation of most meter detect circuits. These inputs can also be driven directly by most coin mechanisms, hoppers etc).
- 38 non resettable 7 digit and 38 resettable 4½ digit electronic counters
- 12 way Molex interface connector
- 2 line by 16 character LCD display with 5mm characters
- Battery backed real-time clock for date & time stamping meter readings. Battery Life : 10 years.
- Display scrolls through active counters continuously
- Single “Function” switch to access a simple set-up menu.
- Counts held in non volatile EEPROM memory with a life of greater than 1 million counts on any single counter. For security multiple copies of each count are held to permit error correction.
- Power Supply
 - Voltage: 12v DC nominally (9v – 15 v acceptable)
 - Current: 120mA max supply (plus 30mA pulsed for each hardware counter active)
- Operating Temperature +0°C to +45°C
- Storage Temperature -10°C to +60°C
- EMC The EC3 module is supplied as a component with no intrinsic function under the definition of the EU EMC Directive. The complete machine is subject to EMC conformance.
- Safety The EC3 is a low voltage device – It is recommended that the power supply transformer and mains wiring within the machine conforms to a relevant standard such as IEC 950.



• Mechanical Dimensions



Appendix 2 - Menu Operation

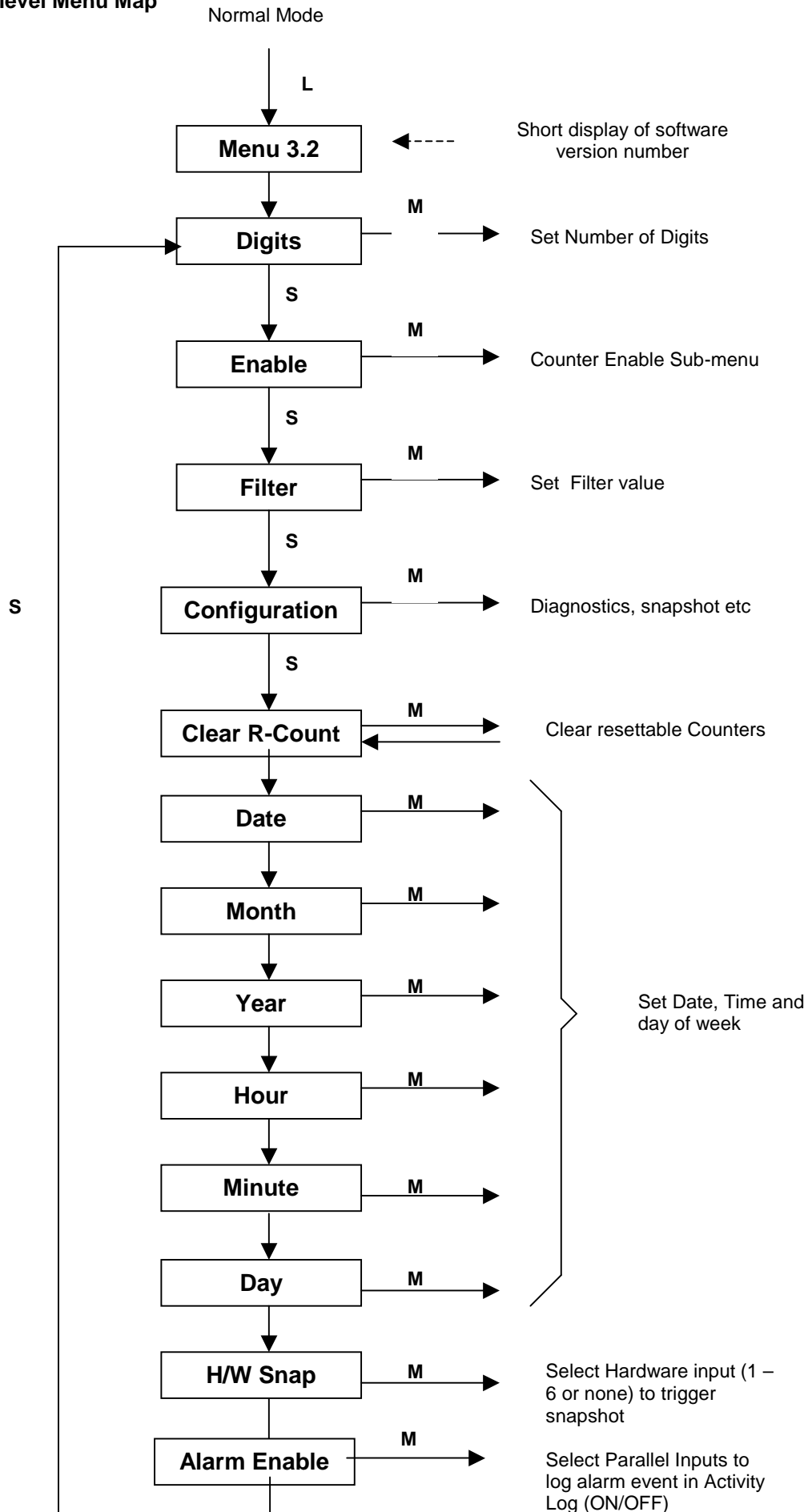
Menus are accessed and controlled with the single "Function" key with the length of press differentiating between tasks:

Function Key	Time held ON	Action
Short press (S)	< 1 second	Steps to next item in menu
Medium Press (M)	>1 second, < 5 seconds	Enters the next menu level/ sub menu, or displays / changes a value
Long Press (L) HOLD until display changes	> 5 seconds	Enters menus from normal operation, or exits from the current menu level

If the Function key is not pressed for 15 seconds the menus will exit, one level at a time.

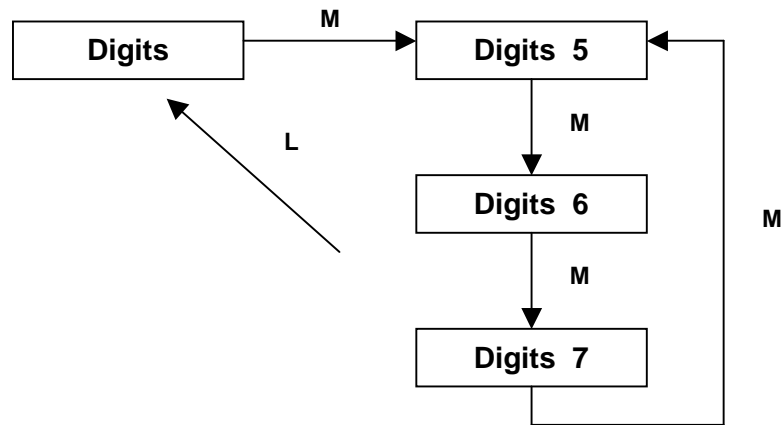


Top level Menu Map

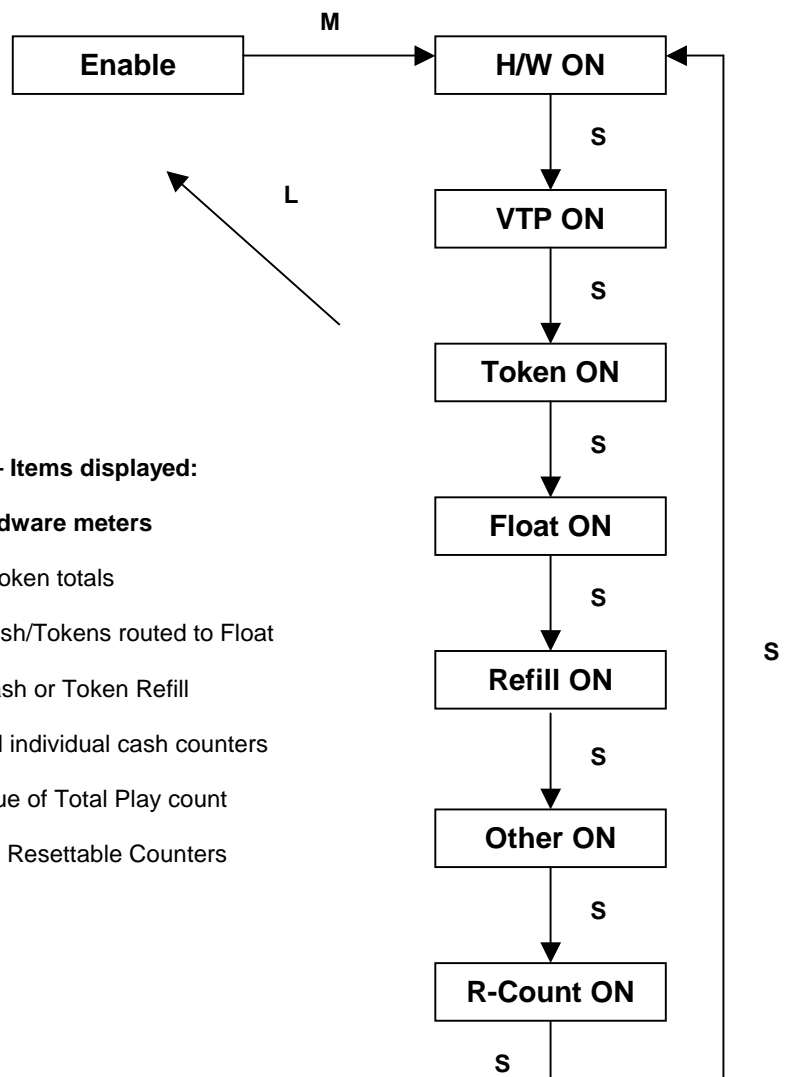




Digit Selection



Counter Enables



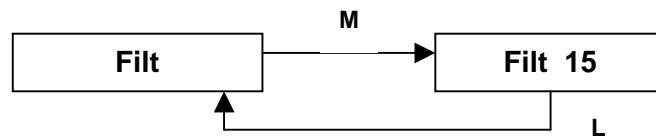
M - toggles individual counter ON and OFF

Legend – Items displayed:

- H/W**- hardware meters
- Token**- Token totals
- Float**- Cash/Tokens routed to Float
- Refill**- Cash or Token Refill
- Other**- All individual cash counters
- VTP**- Value of Total Play count
- R-Count**- Resetable Counters

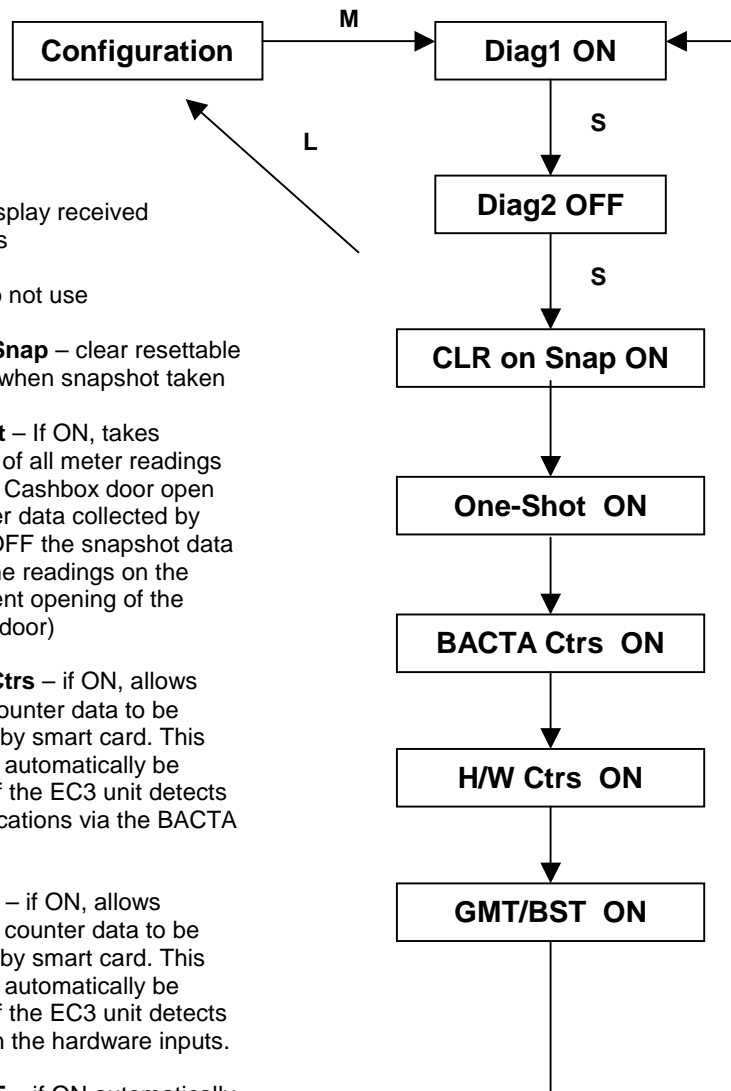


Set Filter Value



S – steps between standard values 5, 10, 15, 20, 25

Configuration



Dia1 – display received messages

Dia2 – do not use

CLR on Snap – clear resettable counters when snapshot taken

One-Shot – If ON, takes snapshot of all meter readings on the 1st Cashbox door open event after data collected by card. (If OFF the snapshot data reflects the readings on the most recent opening of the Cashbox door)

BACTA Ctrs – if ON, allows BACTA counter data to be collected by smart card. This mode will automatically be enabled if the EC3 unit detects communications via the BACTA dataport.

H/W Ctrs – if ON, allows hardware counter data to be collected by smart card. This mode will automatically be enabled if the EC3 unit detects activity on the hardware inputs.

GMT/BST – if ON automatically adjusts the clock forward one hour on the last Sunday in March and back one hour on the last Sunday in October.

**Appendix 3 – Diagnostic Information**

In normal operation when an input event is detected the counter number/type is displayed on the 2nd line of the LCD with a “+” character. e.g. for a 10p coin inserted :

10p CI+

On power up the model and software version number are displayed for a short period of time:

DCM –EC3 v3.2

Error Messages:

EE Error

An irrecoverable memory has occurred
– try powering off and on again

Internally the EC3 counter can detect communication errors. If these are detected they are displayed for a short period when the units is powered up and when the menus are entered in the format below, where Exx is the error number followed by the number of occurrences. Please refer these errors to JCA Systems.

E01 003

Appendix 4 – Factory Settings

Digits	7
Filter	10
Counter Values	All zero
EC3 Serial Number	factory set to a unique number
Snapshot	One-shot mode + clears resettable counters
GMT/BST	ON
H/W Snap	None
BACTA Ctrs	OFF (will automatically configure)
H/W Ctrs	OFF (will automatically configure)



Appendix 5 : Collecting Meter Readings from an EC3 unit

1. Create a collection card using either the Site Manager or Smart Card Utility software packages
2. Collect readings from one or more machines



Insert card into slot with the gold contacts away from the Display

If the Display shows "INVALID CARD" it may be inserted the wrong way round

The display will show

Writing Record
nnnn

Where nnnn is the record number being written. (A 256K card has capacity for over 100 records, a 64K card can hold a maximum of 34 records). If the card is full, no records will be written and a warning message issued.

Wait until the display shows

Remove Card

Before taking the card out, otherwise the data from the meter will not be read completely.

3. Repeat for all machines to be read