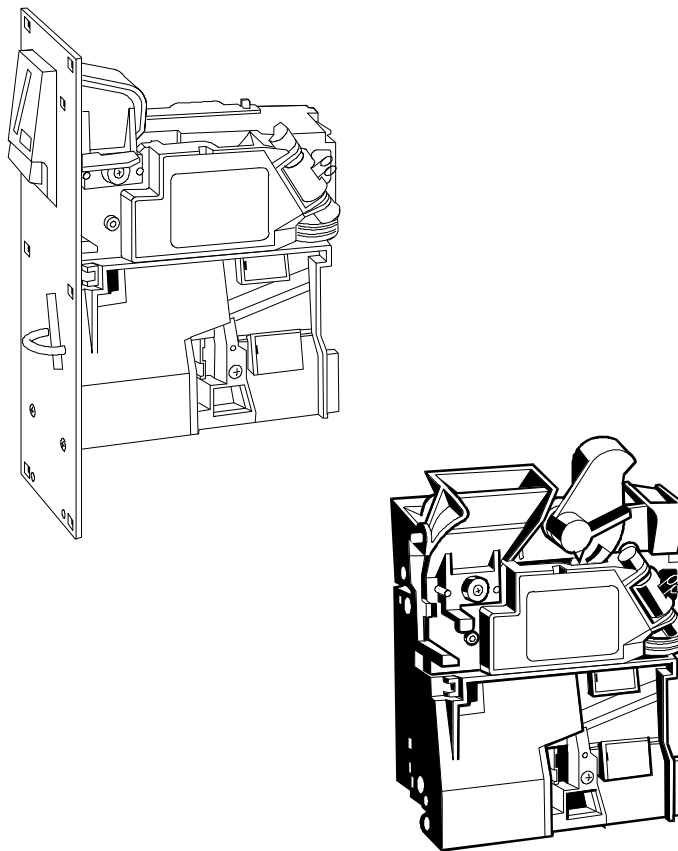

The

CASHFLOW[®] 111

ACCEPTOR



DESIGN GUIDE



CashFlow® 111 Acceptor Design Guide

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CashFlow® 111 Acceptor Design Guide

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Part Number 711450044

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SAFETY

Warning

Before cleaning, servicing, removing or replacing CashFlow® units, **ALWAYS SWITCH OFF** or **ISOLATE** the **ELECTRICITY SUPPLY** to the machine.

Caution

This guide is for use only by personnel trained to carry out electrical installation.

Dangerous Environments

Do not operate the unit in the presence of flammable gasses or fumes, or after the entry of fluid into the machine.

Disposal of Product

If necessary, always dispose of defective units according to local regulations.

Conformance to International Standards

When installed and operated according to the instructions provided for the particular unit, CashFlow® products meet the applicable national and international safety standards for any country in which they are used.

Safety

All electrical connections to the product must be rated according to the requirements for “Accessible SELV” circuits as defined in EN60335-1. The product is therefore suitable for use in a class 2 (non-earthed or non-grounded) appliance.

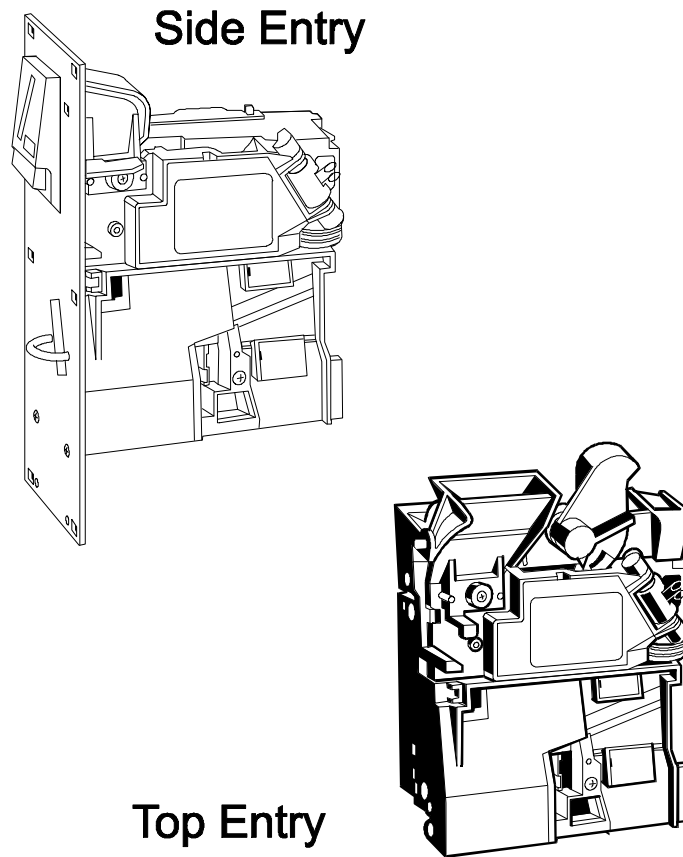
Over current protection is not included in the product and should be provided as part of the machine. The recommended fuse value at the rated supply of 12V is:

1A Slow blow (to EN60127)

Other protection methods may be used providing their over current characteristics remain within the overall operating characteristics of the above fuse.

PRODUCT RANGE

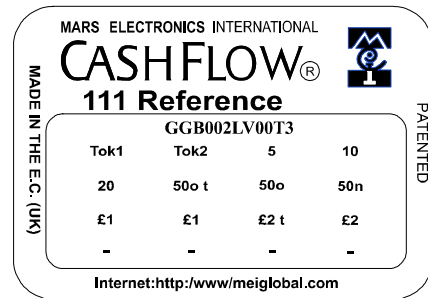
Mars Electronics International (MEI) has manufactured coin mechanisms compatible with gaming and amusement machines for a number of years. Over this time the functionality of the range has been enhanced to match your needs while maintaining mechanical compatibility. The product detailed in this book is the CashFlow® 111. Use the following pages to check that you have the right product for your application.



PRODUCT IDENTIFICATION

Each CashFlow® 111 variant is identified with the use of a profile number. This consists of a twelve digit alphanumeric number located on the discriminator coinset label.

For example: G GB 002 L V 00 T 3 represents a CashFlow® 111 acceptor for Great Britain, which is programmed with coinset number 002 and also accepts tokens.

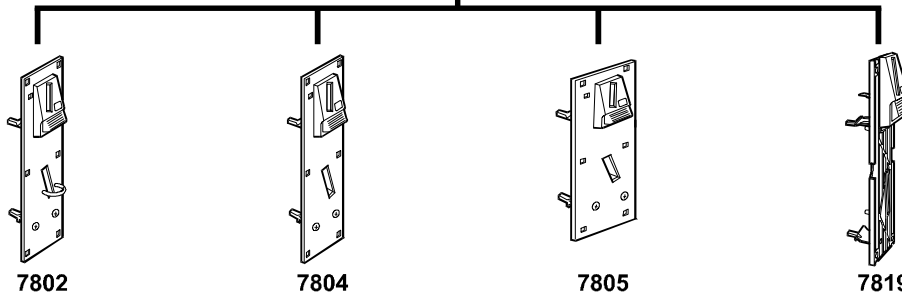
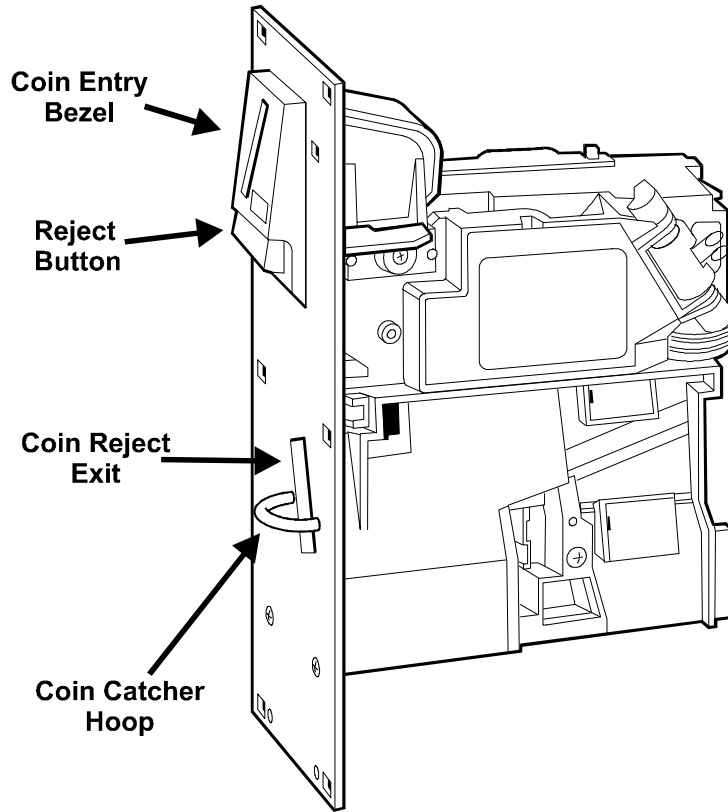


Typical GB coin set label

Digit	Description	Available Options
1	Product Code	G= CF111
2 & 3	Country Code	GB = Britain, DE = Germany, IT = Italy, ZA = South Africa
4,5 & 6	Coinset Number	001 to 999
7	Operating Voltage	L = 12v DC
8	Mechanical Variant	A = Front entry product with A reject cover B = Front entry product with C reject cover C = Top entry product with B reject cover
9 & 10	Factory Set Software options	00 to 99 (contact MEI for more information)
11	Tokens Programmed	0 = No T = Yes
12	MEI CashFlow® Series	3 = CashFlow® Product Series

More information is available on the 3 types of reject cover (A, B and C) in the Product Options; (Reject Covers) section.

PRODUCT OPTIONS; (FRONT PLATES)



7802

This model has a brushed stainless steel front plate suitable for external surface mounting. It is supplied complete with a coin catcher hoop, a coin entry bezel and a coin mechanism mounting plate assembly.

7804

This front plate is of mild steel painted black and is a standard assembly suitable for internal mounting. It is not supplied with a coin catcher hoop but if required it can be ordered using Pt. No. 28-13-0136.

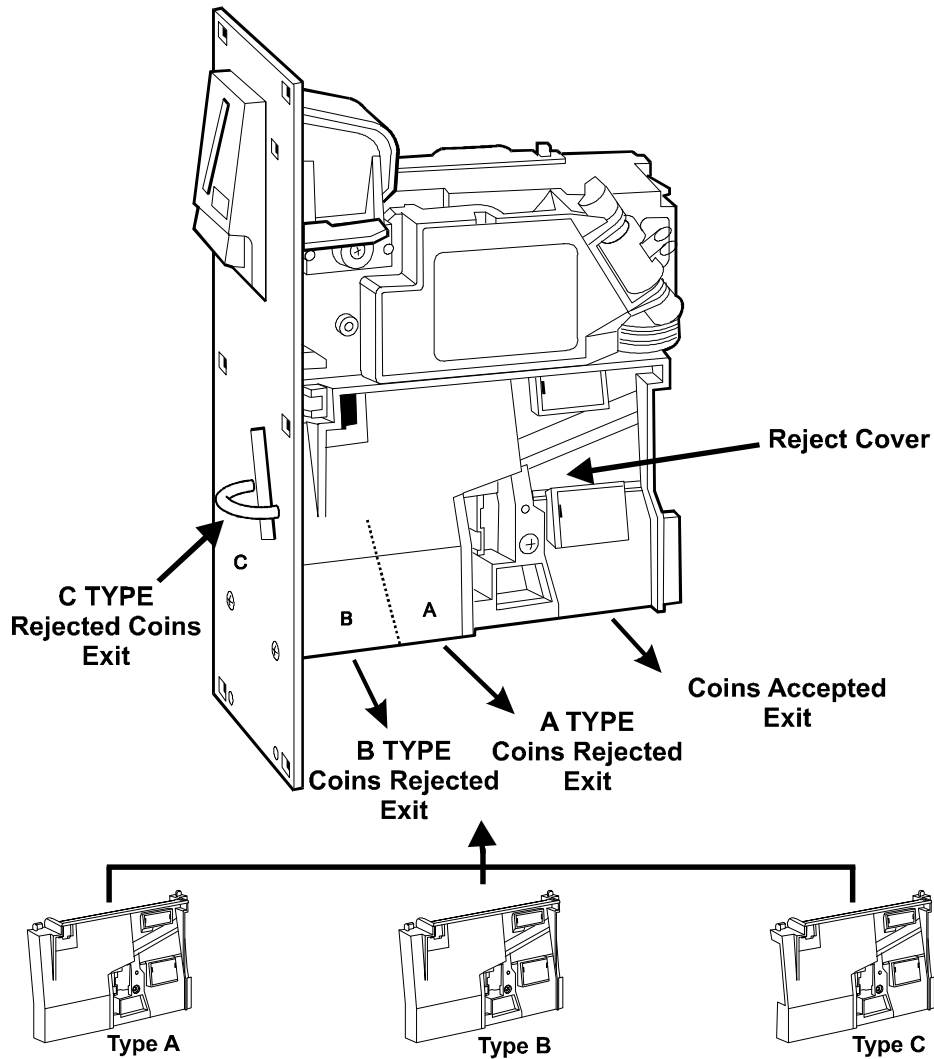
7805

This model consists of the same parts as the 7804 except that the black mild steel front plate is wider and slightly shorter.

7819

This is the basic coin mechanism mounting plate assembly made from clear polycarbonate and is supplied with the standard coin entry bezel assembly.

PRODUCT OPTIONS; (REJECT COVERS)



This type of reject cover is used on validators which are fitted with separators.

The coin exits that it provides are as follows; Coins accepted are routed to the right side and down. Rejected coins are routed to the bottom centre of the reject cover.

This type of reject cover is used on validators which are fitted to small channels.

The coin exits that it provides are as follows; Coins accepted are routed to the right side and down. Rejected coins are routed to the bottom left of the reject cover.

This type of reject cover is used on validators which are fitted to front plates.

The coin exits that it provides are as follows; Coins accepted are routed to the right side and down. Rejected coins are routed to the left-hand side of the reject cover.

PRODUCT FEATURES

STD = Available as Standard Feature

N/A = Not Applicable

Features	
Number of Active Coins	Up to 16
Number of Active Tokens	Up to 2
Number of Pre-programmed Tokens	Up to 14
Operating Voltage	12V D.C.
Number of Coin Outputs (Parallel)	6
Number of Coin Outputs (B.C.O.)	16
Individual Electronic Coin Inhibits	6
Parallel Interface (Industry standard)	STD
Binary Coded Output B.C.O (BACTA Standard)	STD
Auto Mode (Parallel / B.C.O. Interface)	STD
Multi-Pulse	STD
Token Teaching	STD
Token Group Select	STD
LED Diagnostics	STD
Alarm (Disabled as standard)	OPT
Side Entry	OPT
Top Entry	OPT
Coin Only Entry Bezel	OPT
Dual Coin/Token Entry Bezel	OPT
Coinless Programming	STD
Market Application	Non-Payout

DESCRIPTION & OPERATION

Description

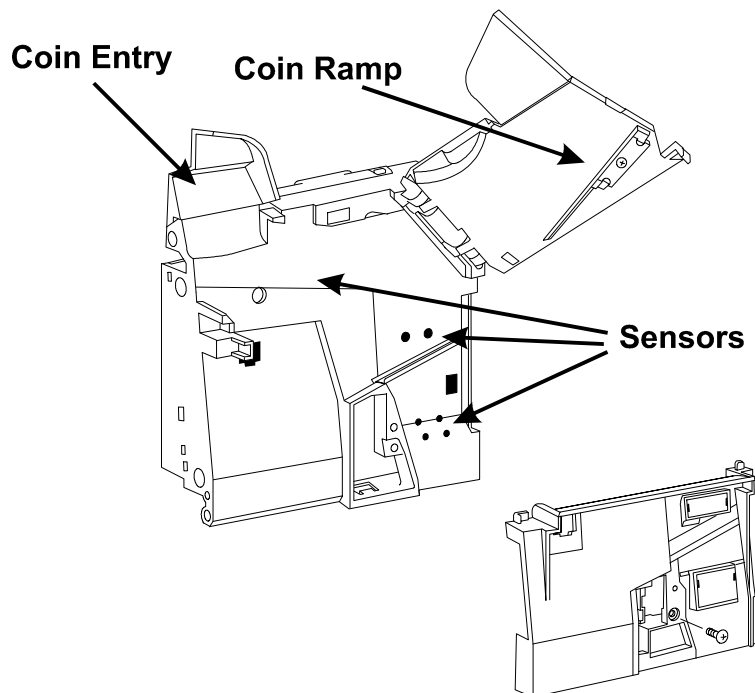
The CashFlow® 111 product is an electronic coin and token validation product for use in amusement machines, where there is a requirement to validate coins and tokens.

Operation

Coin validation parameters are factory programmed for optimum acceptance of up to 16 coins or 14 coins and 2 tokens, so field adjustments are not necessary to use the programmed coin set.

Coins or tokens are inserted into the validator through either a side or top entry facility. The coins roll down a ramp past sensors which check the characteristics of each coin against pre-programmed limits.

If variations are required to the programmed coin set please refer to the Operators Handbook for details.



PRODUCT OPERATION

Accepted Coins

If a coin or token is recognised by the validator the accept gate will then be activated and the coin/token routed along the accept path. The CashFlow® validator has the capability to sense the correct movement of a coin. An alarm output can be given if a coin (or object) does not follow the correct validation sequence.

Inhibited Coins

Acceptance of one or more coin types can be inhibited, causing them to pass to the reject exit. This can be done by using the coin inhibit lines of the validator machine interface connector 1 or by programming the validator to inhibit specific coin types.

Rejected Coins

If a coin or token does not match the pre-programmed limits, or if a coin validation inhibit is active, or if no power is supplied to the validator, the accept gate will remain closed and the coin will be routed via the reject route.

If a coin or token jams at the entry point, it can be freed by opening the validator reject flap which releases the coin to the reject path. Side entry mechanisms fitted to the front plates have an in built reject button that opens the validator reject flap when pressed.

The host machine is required to provide a suitable mounting facility for top entry versions.

Signals to and from the machine

Communication between the validator and the machine is made through the validator machine interface.

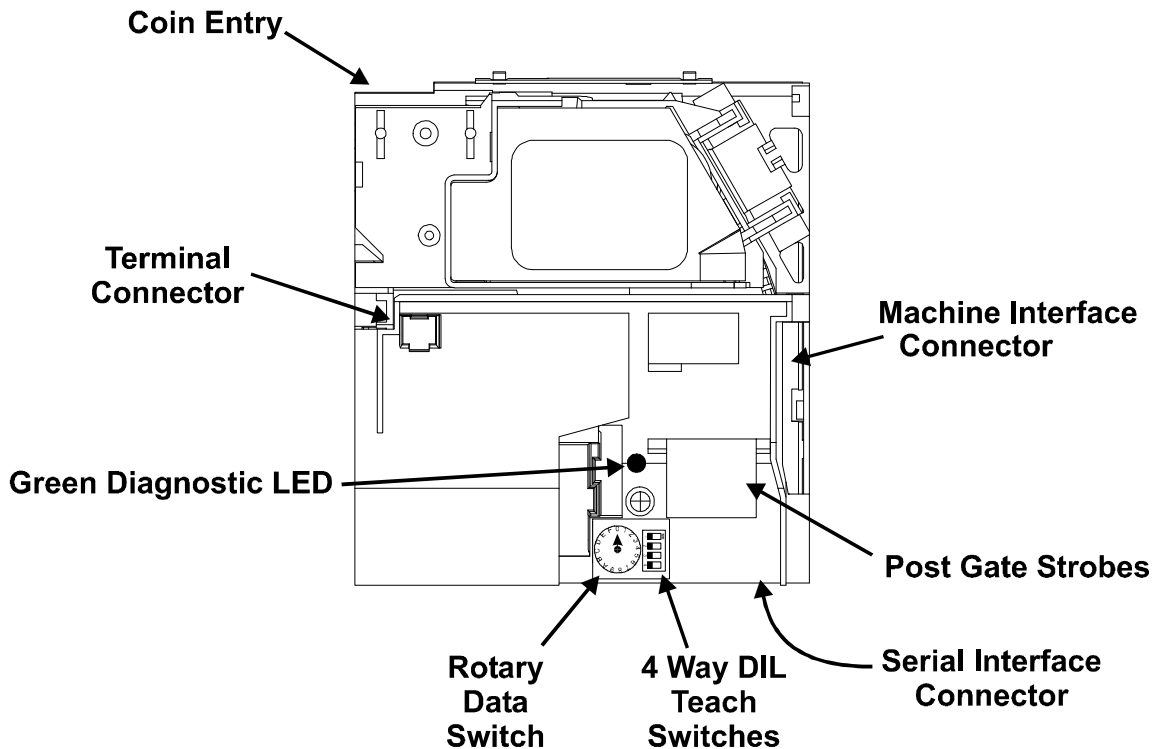
Once through the validator, the value of the accepted coin is signalled to the machine using the appropriate coin output line.

Multi-Pulse

Factory setable option that will pulse the GB 50p coin output (of a GB profile) four times on validation of a GB £2 coin Only in parallel output mode.

E.g. Where more than 6 coin values are to be presented on the parallel interface Muti-Pulse can be used.

PRODUCT OPERATION, ELECTRICAL



Machine Interface Connector

The interface to the machine is provided by Connector 1 of the validator. The functions provided are: Coin outputs A, B, C, D, E, F. The unit will operate in one of four Coin Output modes:

Fixed Parallel.

Fixed Binary Coded Output (BCO).

Automatic - Selects BCO or Parallel Interfaces.

Serial Mode. (Future use only)

Further detail on these modes are given in Sections 4, 5 and 7.

Serial Interface Connector, (Future use only)

This 10 pin connector, accessible from the bottom of the validator, provides for a potential serial communication to a service tool. At present this connector serves no function.

Customers ***should not connect anything*** to this connector.

Terminal Connector, (Future use only)

A 6-way connector used for a Mars® Route Alpha hand held service tool. At present this connector serves no function.

Customers ***should not connect anything*** to this connector.

Rotary Data and 4 Way DIL Teach Switches

In place of the option links used on an ME111 a 4-way DIL switch and a rotary switch have been provided. These are accessible through the reject cover of the validator.

The rotary data switch will enable data input to the teach functions i.e. Token Selection.

The 4-way DIL switch can be used to enable or disable the alarm by using switch 1 of the DIL switch, and various teach functions which are accessed via switches 2, 3 & 4.

Diagnostic LED

The LED is used to display the current operation of the validator and can be used for fault diagnosis when inserting coin or when teaching functions are being used, as shown below.

Flash Code Sequence:

Constantly ON	Validator power on
1 Flash	Coin accepted or Reject lever pressed
2 Flashes	Coin not recognised and rejected
3 Flashes	Coin rejected by validator 4th sensor
4 Flashes	Coin recognised but not accepted due to inhibit setting

Post Gate Strobes

The strobes are used for added security to the validator. These detect coins which enter the validator using the wrong direction e.g. from the bottom of the validator up wards. If this movement is detected the alarm will be set.

PRODUCT CONFIGURATION

Using the Rotary Data Switch and the 4-Way DIL Switches the product can be re-configured.

Further details regarding the settings shown below can be obtained from the CashFlow® 111 Operators Handbook.

4-Way DIL Switches				Configuration Mode Selected	Rotary Switch position/s required
1	2	3	4		
OFF	X	X	X	Alarm Dis-abled	X
ON	X	X	X	Alarm Enabled	X
X	OFF	OFF	ON	Default Overflow Route	0 - 7
X				Machine Interface Type	C - F
X	OFF	ON	OFF	Inhibit Coin/Token Teach	0 - F
X	ON	OFF	OFF	Enable Coin/Token Teach	0 - F
X	OFF	ON	ON	Token Group Select for Channel 0	0 - D
X				Self Teach a Token into Channel 0	E - F
X	ON	ON	OFF	Token Group Select for Channel 1	0 - D
X				Self Teach a Token into Channel 1	E - F
X	ON	OFF	ON	Discriminator Node ID Select	0 - 6
X				Fraud Defence Teach to Channel 0	E - F
X	ON	ON	ON	Normal Operation	X
X	OFF	OFF	OFF	Normal Operation	X

To commence any changes firstly the power should be removed, the required settings made on the rotary switch, the DIL switch settings are set and then the unit is powered up again. At this point the LED will start flashing. Returning the DIL switches to either all OFF or all ON will commit the changes to non-volatile memory.

Tests should then be conducted to confirm that the changes are satisfactory, including the relevant flash sequences of the LED, as described later.

If a teach mode is entered inadvertently then either switch off power or just leave for 30 seconds (when the LED will stop flashing), otherwise a teach function may be set that was not intended.

PRODUCT INTERFACES

Introduction

The standard interfaces available on CashFlow® 111 validators are Parallel and Binary Coded Output (B.C.O.). The validator is supplied in Automatic Mode which senses the type of interface selected by the host machine via pin 8 (Output Mode Select) of the machine interface connector. The product can be taught to ignore the state of this line by changing the machine interface type as above.

Parallel Mode

This type of interface is a standard 6 coin parallel output interface as used in the ME111 (Dual Polarity). When a coin is validated the output will present a low impedance to the Coin Output Common line for between 80 and 120mS.

For a GB profile the coin outputs are activated as follows:

Coin Output							
Alarm O/P	Coins	A	B	C	D	E	F
	5p	3					
	Token		3				
	10p			3			
	20p				3		
	50p (Old)					3	
	50p (New)					3	
	£1 (1983)						3
	£2					Multi- Pulse	
Enabled Outputs		3	3	3	3	3	3

The coin outputs for A and C can be combined (e.g. A + C, B, D, E, F) to give compatibility with MS/ME126B1 validators. This option is set by programming the validator. The coin outputs are factory defined but can be modified via a service tool, e.g. Service Alpha.

If an alarm condition occurs all coin outputs will be activated. simultaneously for >600ms

Multi Pulse

This will only operate when in Parallel mode. This factory settable option will pulse the GB 50p coin output (of a GB profile) four times on validation of a GB £2 coin. This option can be disabled via a Service Tool e.g. Service Alpha.

Parallel Output mode inhibits, A, B, C, D, E, F

To inhibit coin acceptance the CashFlow® validator offers six individual inhibit inputs

The channels that activate the associated coin output will be inhibited when the inhibit is held High.

i.e. inhibit A will inhibit coin output A channels. The default settings for the GB profiles are:

Inhibit Line	Coins Inhibited
A	5p
B	Token
C	10p
D	20p
E	50p old & new £2
F	£1

Coin Output Common Line

This line allows for operation with positive or negative common systems. The interface self-configures by sensing the output common voltage supplied by the machine on the coin output common line, (pin 2 for a 15 way machine interface connector, or pin 3 for a 17 way connector).

All potentials are relative to the 0 volt return line to the machine. pin 11 for a 15 way connector and pin 12 for a 17 way machine interface connector.

Negative common operation is selected when pin 2 output common is 0 volts or negative with respect to pin 11.

Positive common is selected when pin 2 is more positive than +7 volts with respect to pin 11.

Binary Coded Output (BCO)

Defined by the validator coin output map, when in BCO mode coin output A is permanently set active to indicate that the BCO feature is available. Coin output A will have a high impedance (approx. 1M Ohm to 0v) if coin output common is allowed to float.

Coin Output							
	Coins	A	B	C	D	E	F
Enabled Outputs	5p	1	0	1	0	0	0
	10p	1	1	1	1	0	0
	20p	1	0	1	0	1	1
	50p (Old)	1	1	1	0	0	1
	50p (New)	1	0	1	1	0	1
	£1 (1983)	1	1	1	0	1	0
	£2	1	1	1	1	1	1
	Token	1	0	1	1	1	0
Alarm O/P		1	1	0	1	1	1

When a valid coin is received its respective pattern above will be output on the coin outputs (B-F) for between 80 and 120 mS. Any output pulse outside these limits should be considered invalid.

If an alarm condition occurs coin outputs B, D, E and F will be activated for > 600mS.

Binary Coded Output Mode Inhibits

The channels inhibited, for a given inhibit line going high are factory set by the validators coin inhibit map option. When inhibit (A to F) is active, then coins for the channels specified in the map will be inhibited. The default settings for the GB profile are:

Inhibit Line	Coins inhibited
A	£2
B	Token
C	Reserved
D	20p
E	5p, 10p, 50p old & new
F	£1

Auto Mode Parallel or BCO Selection:

In this mode the status of the output mode input on pin 7 for the 15 way connector, or pin 8 for the 17 way connector of the machine interface, selects either the parallel output interface or the binary coded output.

A high logic signal to these pins(7 or 8 of the machine interface connector 1) will select parallel mode, setting pins 7 or 8 to a low logic will select BCO mode. If there is no connection made to pins 7 or 8 the interface will default to parallel mode.

ELECTRICAL INTERFACES

Introduction

This section gives the pin assignments for all connector interfaces used on the CashFlow® validators and it also includes timing diagrams of the signals appearing on the input and output lines.

Machine Interface Connector.

The interface to the validator from the machine is exactly the same as those which apply to the MS/ME series validators, with the exception of pin 8 of the 17-way connector.

Connector 1 can accept either 15 pin or 17 pin interface connectors.

17 Way Connector	15 Way Connector	(Mars) Function Definitions	Input or Output	PIN No.	(BACTA Standard) Function Definition
1	-	A Coin Output	O	1	Ident signal
2	1	B Coin Output	O	2	Accept Output 5
3	2	Coin Output Common	I	3	Accept Output Common
4	3	F Coin Output	O	4	Accept Output 1
5	4	Polarising Key 1	-	5	Polarising Key
6	5	E Coin Output	O	6	Accept Output 2
7	6	D Coin Output	O	7	Accept Output 3
8	7	Output Mode Input	I	8	Select Line
9	8	C Coin Output	O	9	Accept Output 4
10	9	C Coin Inhibit	I	10	Inhibit 4
11	10	+12V Supply	I	11	+12V Supply
12	11	0V Supply	I	12	0V Supply
13	12	D Coin Inhibit	I	13	Inhibit 3
14	13	E Coin Inhibit	I	14	Inhibit 2

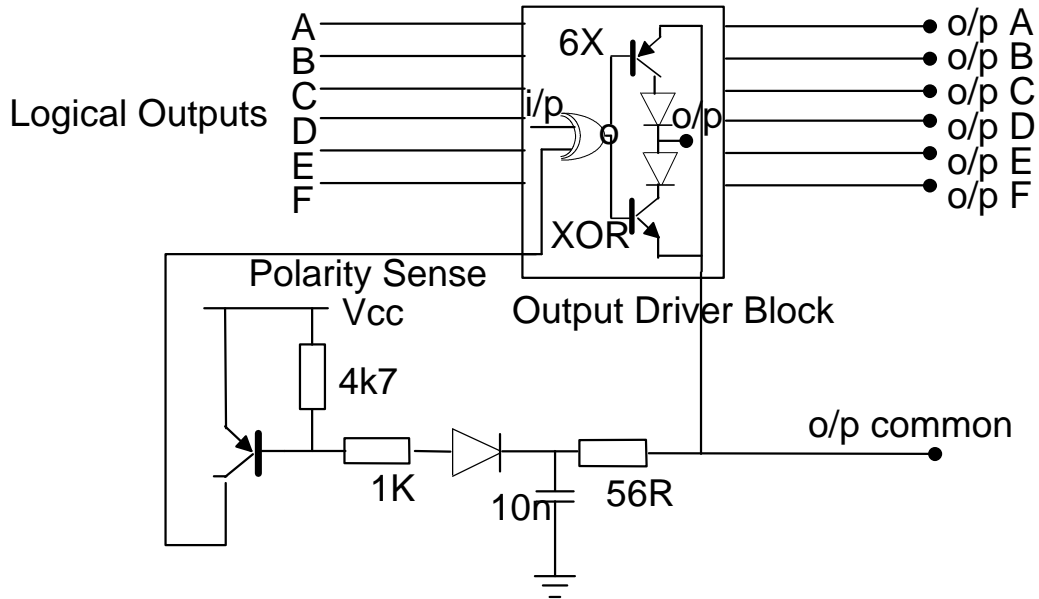
CashFlow® 111 Acceptor Design Guide

15	14	F Coin Inhibit	I	15	Inhibit 1
16	15	B Coin Inhibit	I	16	Inhibit 5
17	-	A Coin Inhibit	I	17	Inhibit 6

ELECTRICAL SPECIFICATION

Voltage Range	12V (+ 3V maximum, -2V minimum)
Idle Current	35mA
Peak current	800 mA

Coin Output electrical specification

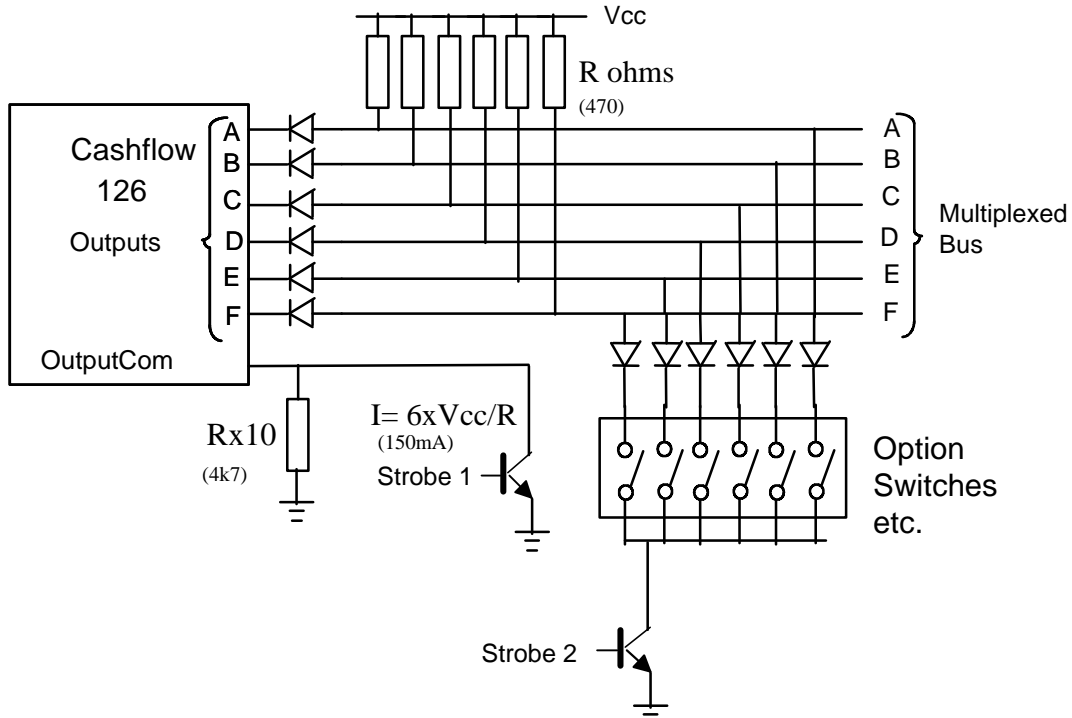


Output Circuit Block Diagram

Absolute Maximum Ratings

Output Current	(O/PA) - F	± 30 mA
Maximum Voltage	(O/PA) - F	± 32 V w.r.t. 0V

Output Common Specification



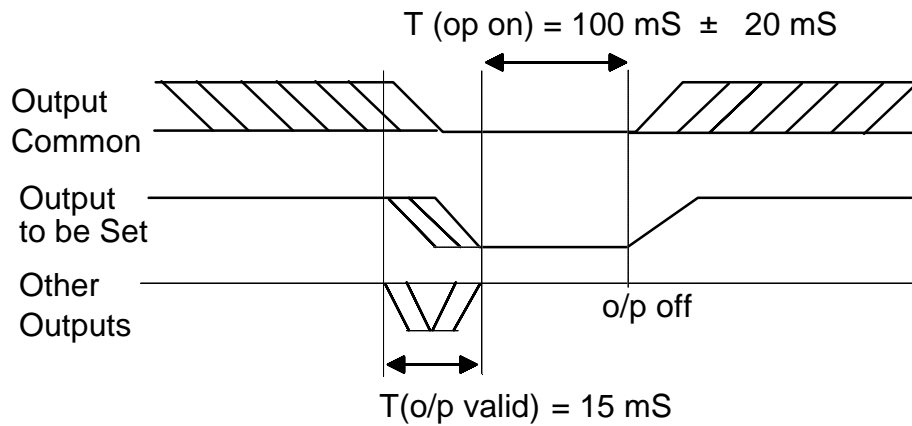
Sample multiplexed implementation - Negative Common Strobe

If output common (OPcom) is left floating then it is possible that the output configuration could change.

When the OPcom is redefined, then, if the output configuration has to change, then there is a maximum delay of 15us before the coin outputs will be valid. Before this time the outputs will be indeterminate.

To prevent this happening a resistor should be added to OPcom to define the level during the multiplexing off period. The value should be large enough so as not to interfere with the normal multiplexing operation. In this case the maximum delay between Opcom and coin outputs is 1us.

NOTE: Should an alarm situation be detected, all outputs in parallel mode will go true. Any multiplexing device must be capable of sinking or sourcing sufficient current (i.e. 6 x single output current) to keep the output common voltage within the maximum or minimum specification for that configuration.



Negative Output Common Timing Circuit

Negative Common Voltage Range

This interface is selected when pin 3 is $< 2.5\text{V}$ with respect to pin 12. (0V)

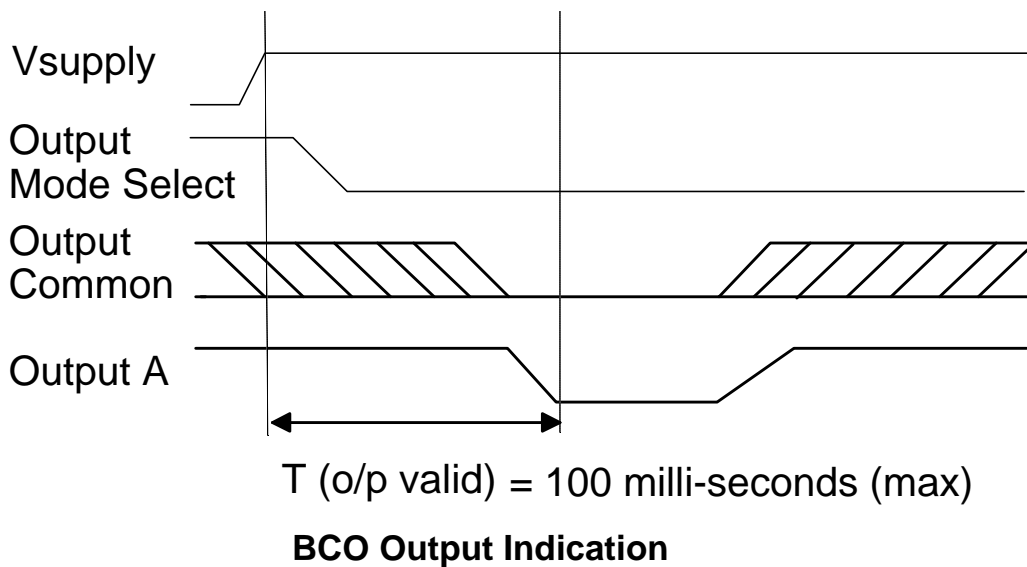
Negative Common Outputs:

On: Maximum current = 30mA

O/P saturation voltage (Coin O/P - Opcom) $< 1.5\text{V}$

Off: 10 μA maximum at 27 volts (Coin O/P - OPcom)

Pulse Width: Switched on for between 80 and 120 ms
on acceptance of the appropriate coin.



Positive Common Voltage Range

Positive Common Operation

This interface is selected when pin 3 is more positive than +7 volts with respect to pin 12.

Output Common Voltage:

+7 volts to +26 volts with respect to pin 12.

Positive Common Outputs

- On: Current 40mA maximum
Voltage drop 1.5 volts maximum for saturated transistor/diode junctions.
- Off: 5uA maximum with +27 volts maximum forward bias referred to pin 3.
- Pulse Width: Switched on for between 80 and 120ms on acceptance of appropriate coin.

Binary Coded Output (BCO)

BCO mode is indicated by the A output being permanently active. This indicator can take up to 100 milliseconds to be established from power up.

In order to ensure reliable operation of the machine the state of this output should be regularly polled (i.e. the coin validator might be changed without powering down).

As there are often long machine interface leads involved in coin mechanism interfaces, it is recommended that the input should be de-bounced in software to avoid glitches.

Coin Inhibits

Maximum input voltage to inhibit channels (logic 0) $<1.0V$

Minimum input voltage to enable channels (logic 1) $>4.0V$

Input impedance 12 Kohms to +5v.

MECHANICAL DRAWINGS

The following drawings are included in this section:

Front Plate Dimensions

Drawing Number 32780. Front plate mounting detail

Drawing Number 32799. Standard front plate dimensions

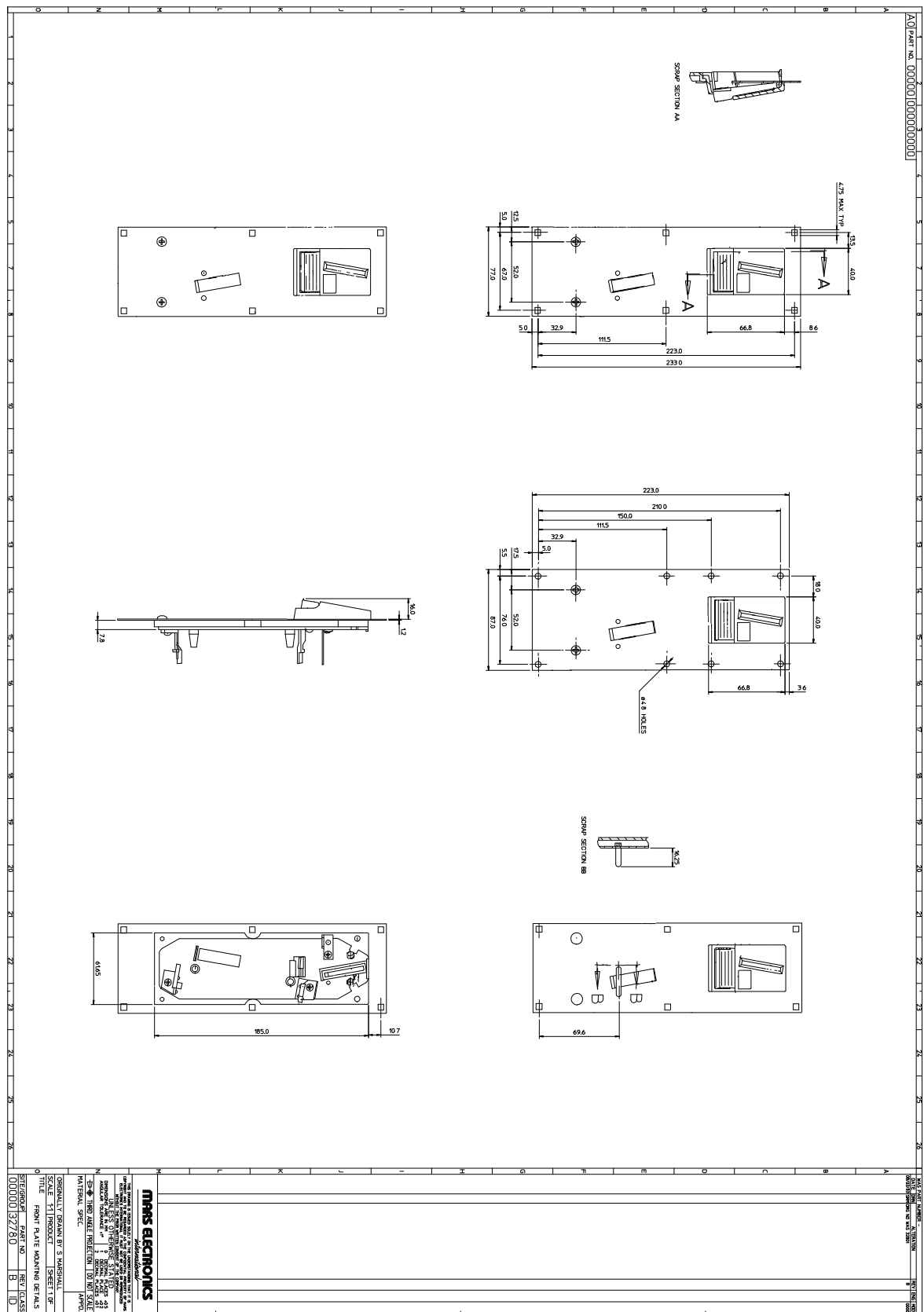
Side Entry

Drawing Number 711592001. Top entry space envelope

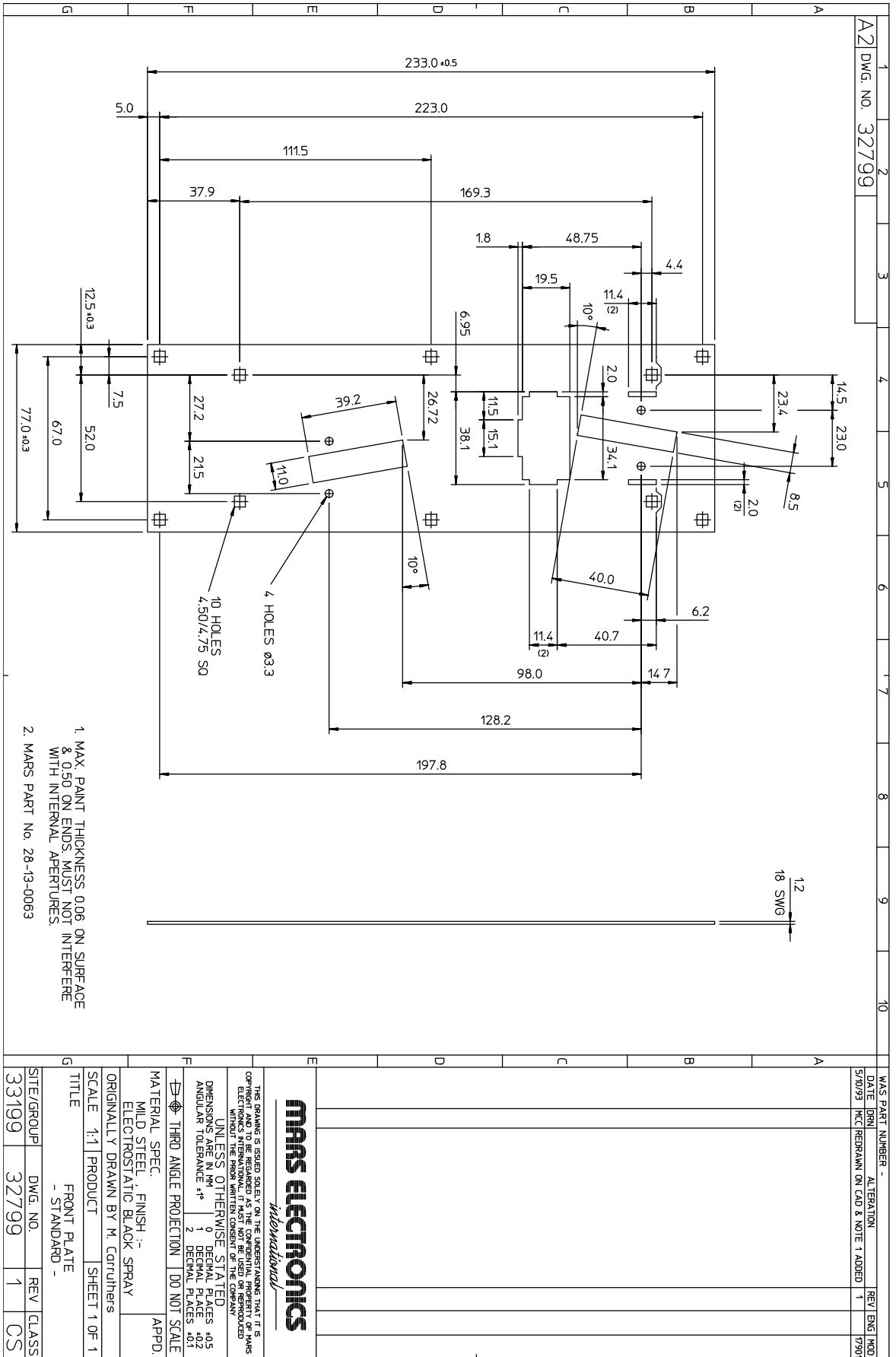
Top Entry

Drawing Number 711589001. Side entry space envelope

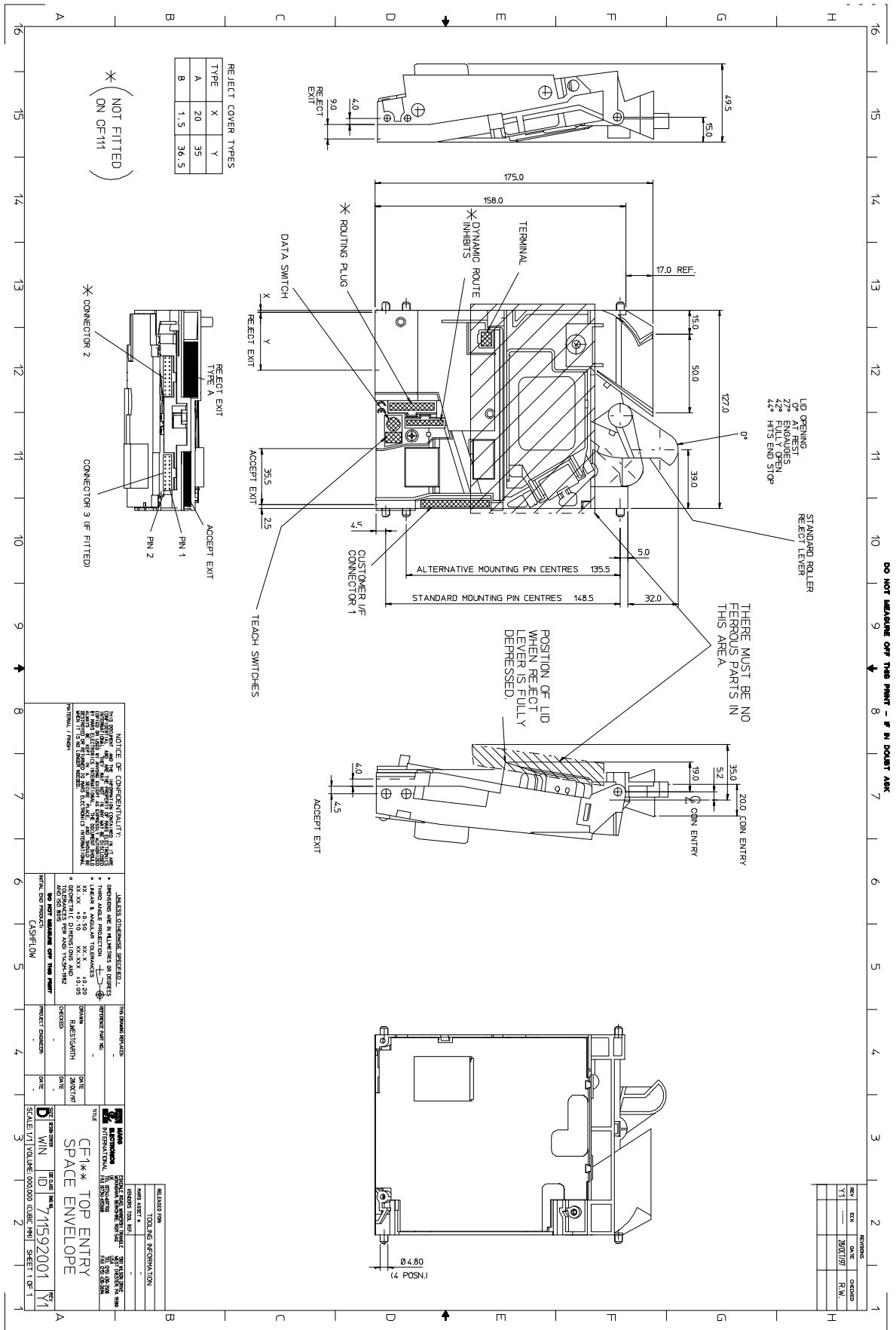
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CLASHFLOW

THESE SERVICES:

DATE: 12/15/00

PROJECT NUMBER: 71592001

SCALE: 1/1 (VOLUME 00000) (SHEET 1 OF 1)

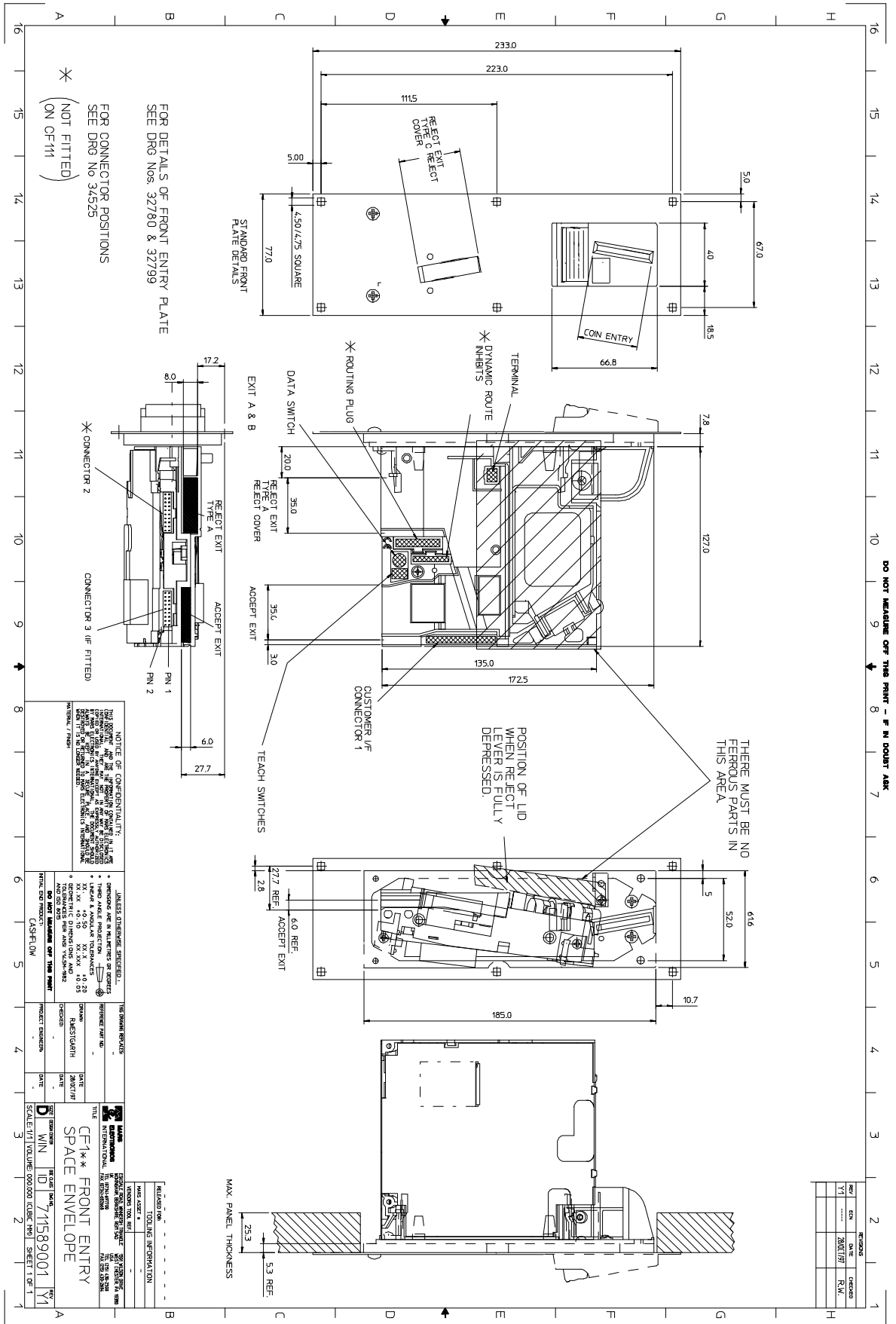
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CF111 TOP ENTRY SPACE ENVELOPE

REVISIONS:

NO.	DATE	DESCRIPTION
1	12/15/00	INITIAL RELEASE

CashFlow[®] 111 Acceptor Design Guide



NOTICE OF COMPATIBILITY:
 THE FRONT AND REAR PORTS OF THIS DEVICE ARE NOT COMPATIBLE WITH THE FRONT AND REAR PORTS OF THE CASHFLOW 111. THE FRONT AND REAR PORTS OF THIS DEVICE ARE COMPATIBLE WITH THE FRONT AND REAR PORTS OF THE CASHFLOW 111. THE FRONT AND REAR PORTS OF THIS DEVICE ARE COMPATIBLE WITH THE FRONT AND REAR PORTS OF THE CASHFLOW 111.

UNLESS OTHERWISE SPECIFIED:

- DIMENSIONS ARE IN MILLIMETERS OR DECIMALS THEREOF.
- DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY.
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DATE	20/01/97	PROJECT ENGINEER	DATE	20/01/97
DESIGNED BY	RAJESH/DARSH	CHECKED	DATE	20/01/97
<p>CF111 FRONT ENTRY SPACE ENVELOPE</p> <p>SCALE: 1:1 (VOLUME: 000000) (DATE: 20/01/97) SHEET 1 OF 1</p>				

REV	DATE	CHECKED
1	20/01/97	R.M.

COMPATIBILITY

Compatibility	MS/ME 111 & B1
Coin Entry Path	Yes
Coin Exit Path	Yes
Mechanical Mounting	Yes
12 Volts DC	Yes
Machine Interface	Yes (A)
Parallel Coin Output	Yes
Serial Output	No
Binary Coded Output (BCO)	No

NOTES:

(A) = Remove polarising pin 8 from your existing machine interface loom

PERFORMANCE STANDARDS

POWER SUPPLY

Operating Voltage: +12V tolerance = (+ 3V) (- 2V)
Supply Voltage Ripple Within Vmin to Vmax up to 100Hz
250mV pk - pk for F>100Hz
Current consumption:
Quiescent current: 35 mA Max
Max current: 800 mA Max

COMPLIANCE CLASSIFICATIONS

The product is designed to the following standards for sale into European markets and will carry the “CE” mark.

Electromagnetic Conformance (EMC)

The product is designed to comply with the following European standards:

EN50082-1 1992 Electromagnetic Compatibility Generic Immunity Standard

EN55022 1995 Limits and methods of measurement of radio disturbance characteristics of information technology equipment.

Safety

The product is intended for use in machines which are designed to comply with;

- a) EN60335-1, 3rd Edition, Safety of household and similar electrical appliances, Part 1, General Requirements.”
- b) BS3456, Safety of household and similar electrical appliances, Part 1, General Requirements.
- c) BS EN60950 1992, Safety of Information Technology Equipment, including electrical business equipment.

The product is suitable for use in a class 2 (non-earthed or non-grounded) appliance as defined in EN60335.

All electrical connections to the acceptor must be rated according to the requirements for “Accessible SELV” circuits as defined in EN60335.

When used in applications where compliance to BS EN60950:1992 is necessary, the host machine power supply must additionally meet the requirements for SELV limited power supplies as defined in BS EN60950. For these applications, the coin mechanism should be installed so that it is external to any fire enclosure.

Flammability

All major plastic parts will be moulded in materials with a flammability rating of 94 V-2 / IEC 707 FV2 or better. Some small parts are moulded in materials with a flammability rating of 94 HB / IEC 707 FH2.

Power Supply Input Protection

Overcurrent protection is not included in the product and must be provided as part of the machine.

Recommended fuse rating at the rated supply of 12V is:

1A Slow blow EN60127

Other protection methods may be used providing their over current characteristics remain within the overall operating characteristics of the above fuse.

Mechanical Parts

The product will not contain mechanically moving parts, or sharp edges, which can prevent a hazard in normal use.

Coin Sizes

CashFlow® 111 product will be able to validate and route coins within the following range:

Circular coins, in the range 15mm to 31.5 mm in diameter.

Circular coins, in the range 1.1mm to 3.2mm in thickness.

Faceted coins within the relevant coinsets will also be handled.

Damaged, bent or distorted coins may not be validated.

Coin Acceptance Rate

The acceptor will validate coins at up to 3 coins per second, when linearly separated i.e. >330 ms apart. After a coin has been rejected, no further coins will be accepted for a period of 0.5 seconds. Should a further coin be entered during this period, the reject period will be reinitiated.

Fraud Performance

Dual post gate strobes are fitted to give protection against COAS and Strimmer type frauds.

Provision has been made on the PCB for a COAS detector. If the input is seen to go active, the alarm will be set.

Where machines do not recognise an all outputs ON as an alarm indication the alarm should be disabled by switching option switch 1 to OFF, otherwise false credit may be given in the event of a fraud attack.

ENVIRONMENTAL PERFORMANCE

Temperature Range

Normal operational range 10°C to 40°C

Full operational range 0°C to 60°C

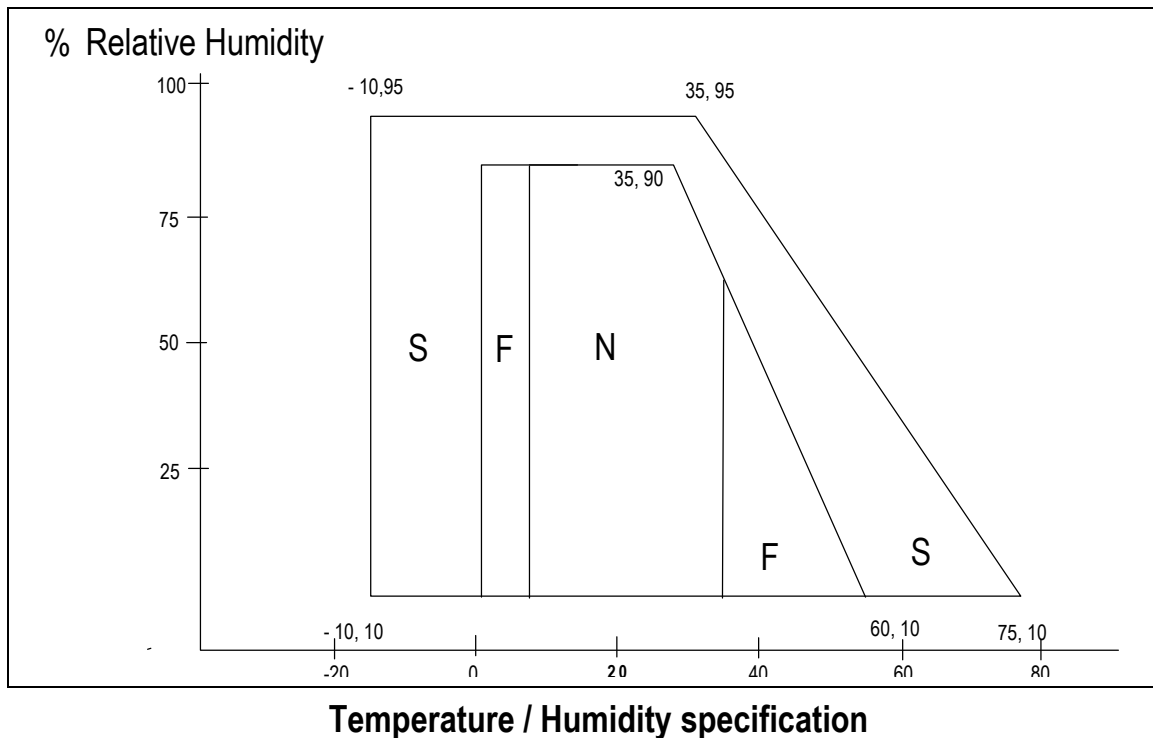
Storage range -10°C to 75°C

Max. rate of change 10°C/hr, non condensing

Humidity Range

Operational 10%RH - 90%RH, non condensing

Storage 5%RH to 95%RH, non condensing



Temperature oC

N = Normal operating range

F = Full operating range

S = Storage range

Thermal shock

Sudden changes of temperature may cause temporary degradation of performance. For continuous operation and specified performance within the full operational temperature range, the rate of change of temperature should not be greater than 10°C per hour, non condensing

Vibration (through machine mounting)

Vibration 0.25g at 5Hz to 500Hz - pseudo random, flat bandwidth

Coin validation will not be affected.

TRANSPORTATION

The following apply to fully packaged units:

Shock	Half sine, 30g shock, 18ms dur BS 2011 Part 2.1 EA : 1977
Bump	1000 bumps 6ms duration at 25g BS 2011 Part 2.1 b : 1977
Drop - Free Fall	2 drops from 1m onto each face BS 2011 Part 2.1 ED : 1977
Drop and Topple	50mm drop onto each corner BS2011 Part 2.1 EC : 1977

LIQUID

CashFlow® 100 series validators PCB's are fitted with splash protection shields to protect against fluid intrusion. However, prolonged exposure to a salt laden atmosphere, or liquids which dry onto the surface of the PCB could cause malfunction.

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Helping you deliver

Representative



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