The

CASHFLOW 530

REFERENCE SERIES

3 TUBE CHANGEGIVER

APPLICATIONS DESIGN GUIDE

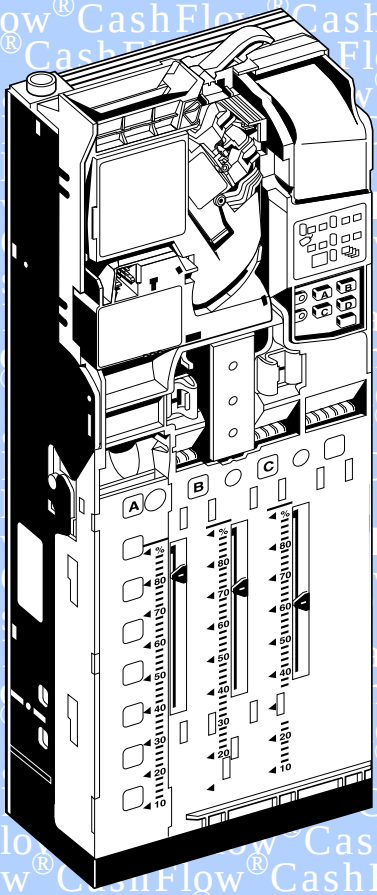


TABLE OF CONTENTS

SAFETY

International & National Standards Conformance

When installed and operated according to the instructions for the particular unit, CashFlow® 530 products are designed to meet the applicable Safety and Electro Mechanical Conformance standards for any country in which they are used.

CashFlow® 530 products are of class II construction. No safety earth connection is necessary or provided.

Dangerous Environments

Do not operate in the presence of flammable gases, fumes or water.

Disposal of Product

Do not dispose of any parts of this product by incineration.

Rated Operating Voltage

The rated voltage is indicated on a clear see through label above the changegiver keypad.

Always operate the changegiver from the type of power source indicated on the label.

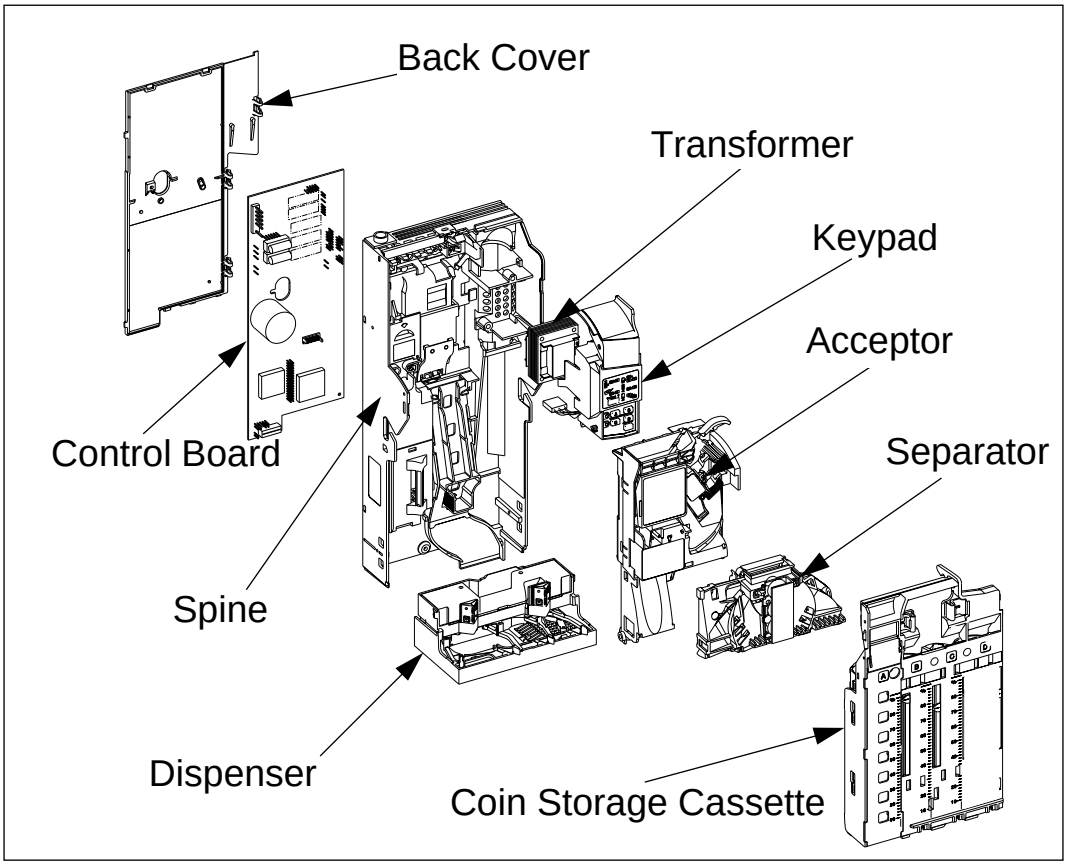
Warning: before removing or replacing modules **SWITCH OFF or ISOLATE the ELECTRICITY SUPPLY** to the host machine

THIS MANUAL IS PROVIDED FOR USE ONLY BY PERSONNEL TRAINED TO UNDERTAKE ELECTRICAL INSTALLATION

OVERVIEW

The CashFlow® 530 changegivers have been designed to address a wide range of market needs that are compatible with the majority of modern vending machines. The flexible approach allows easy matching of modules for all types of applications. They have been designed to work with a wide range of coinsets and can be upgraded in the field to accept new coins. There are three change tubes and field selection of the coins stored in them is possible. On the front of the changegiver is a keypad which is used to dispense coins and re-configure some simple aspects of the changer. All CashFlow® 530 changegivers are made up of the following modules;

- Control board
- Spine
- Transformer
- Keypad
- Dispenser
- Acceptor
- Separator
- Coin Storage Cassette



Exploded View of the CashFlow Changegiver

The basic functionality of all changers is to:

- Accept payment
- Signal the payment available to the machine (credit output)
- Monitor the product request inputs (sense inputs)
- Enable the appropriate price line output (if the vend is authorised)
- Deduct the vend price from the credit available
- Return un-used coins
- Monitor the machine inhibited condition (blocker)
- Indicate to the host machine the exact change condition

With the use of the MEI® Route Alpha 250 terminal you can also re-configure certain operational aspects of the changegiver. This includes inhibiting coins, changing from single to multi vend, etc..

PRODUCT OPERATION

GENERAL

When a coin is entered through the changegiver there are several conditions that are electronically checked.

After coins have been accepted and a product selection button is pressed a sense current flows through the changer sense circuit. When the changer detects that a product selection button has been pressed the changer looks up the price associated with the selection. If sufficient credit exists the changer turns the price line output on. This disconnects the safety line from price line common and connects the price line output to price line common. The vend motor relay within the vending machine is then energised (turning the vend motor on and closing a switch across the selection button).

When the vend cycle begins the blocker signal indicates to the changer that a vend has started. The price of the vend is deducted and the changer waits for the vend to finish. The price line output is turned off when the changer considers the vend to have finished.

Unused credit may be returned after the vend has finished either automatically or on customer demand, depending on how the changer has been set up.

If the changer detects a low-change condition the exact change relay is energised. The vending machine normally uses this signal to illuminate a lamp informing the customer to use the exact money for the vend.

If the vending machine becomes inhibited this is signalled to the changer by the blocker signal. During the inhibited state all coin acceptance is disabled. This condition may occur because there are no products left in the machine or the machine has developed a fault.

ACCEPTOR MODULE

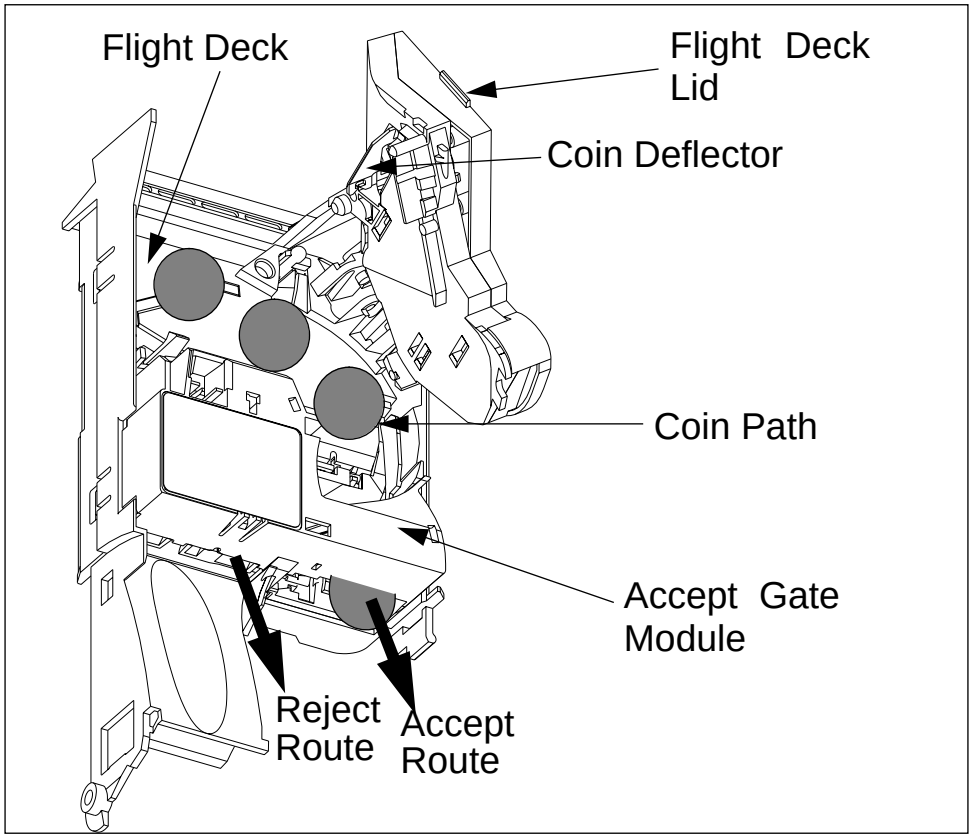
There are some functions of the acceptor module which are common across the whole CashFlow® product range. These include coin discrimination, control and communication.

When a coin is put through the acceptor module it's validity is determined by measuring certain parameters. It also looks at the coin type status to define whether the payment is a valid coin or token, or an invalid coin. Finally, the inhibit status is checked. If the coin is not inhibited, it will be accepted, the accept gate opened, and

the coin routed to either a tube or cashbox. The acceptor module is made up of the discriminator, back cover and the accept gate.

The discriminator comprises a flight deck and lid which together form the coin control and flight path. On the inside of the flight deck lid is a mechanical device incorporated near the coin entry point. This device is known as the coin deflector and is used to bring coins under control as they enter the product

.



Acceptor module

A hinge at the top right hand side of the flight deck allows coupling of the lid via an intermediate component, known as the lid arm. This allows the lid to locate accurately to the flight deck independently of the hinge. The lid also maintains a parallel coin throat by being spaced from the deck on three bosses which locate the lid squarely to the deck.

The design of the lid arm hinge area allows the lid to open to 180 deg. relative to the deck. The opening is restricted to just over 100 deg. by the back cover to prevent the lid possibly fouling other parts.

The action of the lid arm hinge spring allows the lid to remain open when past about 100 deg. and will snap shut when closed to about

60 deg. although the lid will need to be pressed to ensure that it is correctly seated against the deck.

The acceptor connects to the control board via a 10 way ribbon cable.

On the front of the acceptor is a six way socket. This is for use with a MEI® Route Alpha 250 support terminal. The terminal is hand held and, when connected to the acceptor allows some of the operational aspects of the changegiver to be altered.

ACCEPT GATE MODULE

The accept gate module contains a solenoid operated gate, optical coin strobes and coin routing components. Coins that are correctly discriminated are routed to the accept exit by energising the accept gate. Coins that are rejected are routed to the reject exit.

SEPARATOR MODULE

The separator directs the coins into different routes, either to the coin storage tubes or the cashbox. It contains a solenoid bank and, at the bottom, a top level sensor assembly which is used to detect when tubes are full and then route coins to the cashbox, or to another tube.

CONTROL BOARD

This is the main PCB which controls the way in which the changegiver operates. There are several different control boards, but basically these are the 4 price for electromechanical machines, an Executive and a BDV for electronic machines.

SPINE

The spine provides the housing for all of the other modules. On the rear are the three standard keyhole fixing points for fitting the changegiver firmly into the machine.

TRANSFORMER

The transformer assembly is housed behind the keypad cover. To gain access to the transformer is a screw located under the top flap of the keypad cover. Once this screw has been removed the keypad cover will lift off and the transformer is accessible. The transformer connects to the control board via two looms and is available in 24V, 100V, 120V, 220V, and 240V options.

KEYPAD

The keypad is used to float or dispense coins and to re-configure some aspects of the way in which the changer works.

DISPENSER

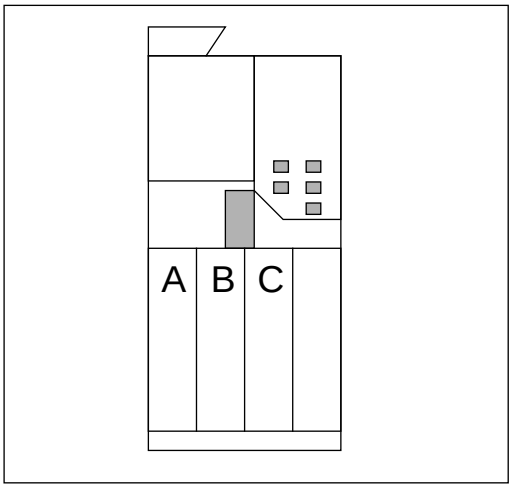
The dispenser is held in the spine by two clips, one on each side and connects to the control board via a loom. The dispenser contains three dispense arms which, when activated, dispense coins from each of the three storage tubes. The dispenser also contains low level sensors which detect when the tubes are low on coins. It is possible to dispense coins from tubes A, B or C during the same vending function.

COIN STORAGE CASSETTE

The coin storage cassette clips to the front of the changer and contains three independent coin storage tubes. There is a range of different sizes of tube. These will generally cover most sizes of coins that you should want to route to coin tubes. Each tube has a designator fitted at the bottom. The size of the designator fitted is dependant upon the thickness of the coin. There are eight different sizes of designator each lettered from A - H.

The front cover is marked A,B,C to indicate the position of the fitted tube (as shown). Coins of the following sizes can fit into each of the positions:

- Coin diameters from 15.0 to 26.0 mm in position A
- Coin diameters from 18.6 to 33.0 mm in position B
- Coin diameters from 15.0 to 29.2 mm in position C



Although there are different sizes of tubes and designators available, not every tube can be fitted into every position in the cassette.

Prisms are located at the top of each tube which, when combined with the optos on the separator form the top level sensor. The top level sensors are used to indicate when a tube is full. When a tube is full any further coins are routed to the cashbox.

The cassette can be automatically filled by feeding coins through the product, or manually filled by removing the cassette from the changer.On the front of the cassette are float indicators which can be positioned manually by sliding them up and down.

COIN ACCEPTANCE, ROUTING & RETURN

The changer has a standard coin entry and exit chuting. Coin return via a reject lever is also standard. The coin acceptance, and the routing used on coin acceptance, are dependant on:

- The set up of various configuration items in the changer EEPROM
- Other changer conditions which will alter while the changer is in operation

As a result of this, both coin acceptance and coin routing are dynamic, i.e. changing in time as the state of the changer alters. The dependencies are detailed in the following.

COIN ACCEPTANCE

The acceptance of each coin is determined primarily by the set up of Default Inhibits in the EEPROM. This specifies which coins should always be inhibited (i.e. rejected). In addition to these defaults, extra inhibits will be imposed depending on the following conditions:

In normal mode with the overpay inhibit flag set:

- Coins which are not dynamically routed to the tubes will be inhibited and rejected if their value, plus the existing coin credit, cannot be returned due to lack of correct change coins
- Coins which would take the total system credit over the maximum allowed credit are inhibited
- Vend tokens are inhibited if the total system credit is not zero

In normal mode with the overpay inhibit flag clear:

- If use exact change has been signalled, the exact change inhibits are imposed
- Coins which would take the total system credit over the maximum allowed credit are inhibited
- Vend tokens are inhibited if the total system credit is not zero

In float mode:

- All coins which are not dynamically routed to the tubes will be inhibited

In price teach mode:

- Coins which would take the total system credit over the maximum allowed credit are inhibited
- Vend tokens are inhibited

Global coin inhibit

In addition to the individual coin inhibits described above, a global coin inhibit can be imposed. This will inhibit all coin acceptance regardless of any other conditions. A global inhibit is imposed when:

- Manually dispensing coins either from the key pad or the terminal
- Returning credit
- A vend is in progress
- A price is on the display due to a product selection being made with insufficient credit
- The value of tube contents is on the display
- Any bits in the EEPROM error register are set, apart from bit 5
- A Vend token has been accepted
- An executive type vending machine has indicated that it requires a free vend
- The host machine has indicated it is inhibited
- The cashbox error bit or any of the protocol A error bits in MISC ERRORS is set

COIN ROUTING

The coin routing used is determined primarily by the tube vs. coin type array set up in the EEPROM. This array specifies which coin types are stored in each tube. If a tube is not fitted, this is indicated by 0FFh being stored in the array and is shown as 00h on the MEI® Route Alpha 250 support terminal. In addition, there are conditions which prevent coin routing to a tube even when it does store the coin. These are any of the following:

- The tube full sensor reads covered (or has failed its self-test, if test enabled on acceptor)
- There was a fatal dispenser error on that tube
- The tube counts held in changer RAM are equal to, or greater than, the maximum level for that tube. The maximum level depends on the float mode selected. If the normal float-up mode (default) is selected, then the maximum level is equal to the programmed float level for that tube. If float down operation is enabled, then the maximum level is equal to the programmed full level for that tube.

The routes, determined by all the above criteria, are the dynamic routes. Note, before a coin can be routed it must first be accepted. If a coin is rejected none of the above applies.

CHANGE PAYBACK

In general the changer will attempt to return any coin credit to the consumer, in the best possible coin mix. However, this simple statement requires clarification.

Use of Tubes:

- The changer will only attempt to use tubes which are shown as fitted, and have not been disabled by the occurrence of sensor or dispenser faults
- If a tube is fitted and is not disabled, it will be allowed to be used for change payback only if its tube counts are above the safe count value at the start of the change payback sequence
- The changer will not function if the coin storage cassette is not fitted

Best Change Calculation:

Once the tubes that can be used have been determined the best coin mix to pay back the change is calculated. Best coin mix is defined as the first of the following found to be possible:

- Correct change paid with minimum number of coins
- Correct change paid with non-optimal coin mix
- Closest change paid with minimum number of coins
- Closest change paid with non-optimal coin mix
- No change paid

Once the best coin mix has been determined the dispensers will commence to pay the change out. The software will drive as many motors as possible at once to expedite the change payback.

Should either of the following occur the dispense sequence will be suspended once each motor has got to its home position:

- The tube has run out of coins while coins are still required. This could occur should the low level sensor/s go from covered to uncovered, causing a tube count recalibration, which reduced the number of coins held in the tube
- A dispenser error is detected (stall, etc.)

The software will then re-compute the best coin mix to pay back the credit still remaining. and re-start the dispensers with this new coin mix. The above will be repeated until all the change which can be dispensed has been paid.

Note that the best mix computation limits the total number of coins to 255 in each given invocation. This means that the maximum value of change which can be returned is determined by the 255 coins selected in the initial computation. Further computations may lead to more than 255 coins in total being dispensed, but the value will not increase.

TUBE SENSOR USAGE

This section describes the operation of the tube sensors in more detail. The sensor operation significantly affects the users perception of how the changer appears to operate.

Each tube has associated with it three sensors:

- The full level sensor (opto sensor)
- The low level sensor (opto sensor)
- The tube dispenser home position sensor (reed switch)

Full sensors

Effect on coin routing

The changer cannot read the tube full sensors directly, but must request their status from the acceptor module. The acceptor module defaults to performing a self-test of the full sensor prior to each read of it. This self-test can be disabled by the changer (e.g. in Float or Price Teach where sunlight may cause the test to fail). The acceptor module reports both the reading of the sensor, COVERED or UNCOVERED, and the outcome of the self-test, OK or FAILED. If sensor self-test is disabled, then the outcome will always be reported as OK.

The changer will perform the following actions (on a tube-by-tube basis) based on the self-test results and the sensor reading:

Self-Test Result	Sensor Reading	Changer Action
OK	UN-COVERED	This is the normally expected result. The changer will clear a full sensor error, if flagged. It does not take any further direct action, however the routes may be updated if the tube counts have got to their maximum level

Self-Test Result	Sensor Reading	Changer Action
OK	COVERED	This is a fault condition, as the maximum level a tube should reach is 3 coins from full. The changer will signal a full level sensor error. If the low level sensor is reading COVERED then there is a good chance that the tube is really full, so the changer will recalibrate the tube counts to the pre-programmed full number.
FAILED	UN-COVERED	This condition cannot occur, as the acceptor will always assume any FAILED sensors are COVERED, and will report this.
FAILED	COVERED	This is a fault condition, due to the failure of the acceptor module's sensor self-test (opto was seen ON with the LED being OFF). The changer will signal a full level sensor error. It will ignore the reported reading, and continue to use the last (good) reading before the failure. The routing will be updated. The tube is still used for dispense. If all 3 main tube sensors are reported as FAILED, then the cassette is assume to be removed (and a cassette out error will be flagged). Note that sunlight (or other intense light source) can affect the sensor self-test, causing it to fail. Thus the changer will inhibit the self-test feature when float or price teach mode is entered. When this mode of operation is selected, the self-test result will always be OK.

Coin cassette removal detection

If the coin storage cassette is removed, all the tube full sensors on the 3 tubes will read covered. Should the changer detect this all tubes full condition, it will flag a cassette removed error and will indicate a changer error on the error LED. No change payback will be attempted from the 3 tubes. Manual dispensing from the tubes will still be allowed, but the tube counts will not be decremented. Coins will still be accepted but routed to the cashbox.

The error will be cleared as soon as a coin is accepted or a dispense attempted with the coin cassette back in place. Note that if all tubes really are full then a cassette removed error will be indicated, but will clear once the tube level drops.

Full sensor error detection

The changer will detect full sensor errors on dispensing from a tube. If coin storage cassette removal has not been detected. The bit appropriate to that tube in the FULL SENSOR ERROR register will be set and a changer error will be indicated on the error LED. Since the sensor reads full the tube will no longer be routed to, but no other action will be taken, i.e. the tube will still be dispensed from.

The full sensors are read on initialisation, acceptance and dispensing coins. Full sensor errors relating to a tube are cleared whenever a full sensor reads uncovered. Note that this means that if more than 1 coin covers the full sensor, the full error for that tube will initially be set on dispensing from that tube, but it will be cleared again as soon as the sensor becomes uncovered.

Coin count re-calibration

When accepting coins, the full sensors will be used for re-calibrating the number of coins in the tubes. For any given coin type the number of coins that it takes to cover the full sensor can vary due to variations in coin thickness. For this reason the tube counts for a tube will be set to be their full re-calibration number only if:

- The sensor status has changed
- The result of the sensor self test was good
- A coin cassette error has not been detected
- The recorded tube counts are outside the following range:

  (Full recal number - MAX_FULL_COUNT_DIFF) ≤ tube count ≤ (full recal number + MAX_FULL_COUNT_DIFF)

The allowed variation from the full re-calibration number before re-calibration is performed (MAX_FULL_COUNT_DIFF) is set to 9.

Low sensor error detection

The low sensor is checked at the following times:

- On power-up
- Before beginning any dispensing (either manual dispensing, or credit return)
- While dispensing, immediately after every coin is paid out

The status of the low level sensors will be held in non-volatile memory, thus preserving this information for the next power-up.

Coin count re-calibration

Low level recalibration is intelligent in its handling of tube storage cassette removal and replacement. The main assumption made is that the tube storage cassette is not removed during a change return operation. The following table gives the details of the low sensor operation.

A tolerance of ± MAX_LOW_COUNT_DIFF is applied to the tube counts before recalibration on low level sensors is done. This reflects the fact that due to the tolerances, both electrical and mechanical, it is unlikely that the maximum number of coins in a tube will be the same in all changers, in all tube positions.

Thus if the tube_counts are within MAX_LOW_COUNT_DIFF of tube_low_count, no recalibration will occur when the low sensor goes from COVERED to UNCOVERED.

The following table gives a brief summary of the low sensor operation.

Low Level Sensor Operation

Sensors Read At:	Old Sensor Reading	New Sensor Reading	Action (If tube count error is greater than specified requirement)
1) Power-up	X	U	Reset of counts to 0
	X	C	Reset of tube_ counts to tube _float_level
	C	C	None
2) Prior to dispense	U	U	None
	C	C	None
	C	U	Recalibrate tube_counts to tube _low_count
	U	C	Reset of tube_ counts to tube _float_count
3) During dispense	U	U	None
	U	C	None
	C	U	Recalibrate tube_counts to tube _low_count-1
	C	C	None
4) After dispense	U	U	None
	U	C	None
	C	U	Recalibrate tube_counts to tube _low_count
	C	C	None

Key : U = uncovered C = covered X = don't care

Home sensors

Only when the dispenser arm is in the centre of its park region will the home sensor register. The drive to the dispenser motor is removed when the dispense is seen to have failed .

It is possible for the dispenser arm to keep moving after the drive to the motor has been removed. It should not move out of the parked position but it could be possible for it to move into the part of the park region where the home sensor reads not home. It is valid therefore for the home sensor to read not home at the beginning of a dispense cycle.

The tube will not be used again until the next dispense cycle, when, if another incorrect home sequence is seen, it will be permanently disabled. If any tube has been disabled a changer error will be indicated on the error LED.

Once a tube has been permanently disabled it can only be re-enabled by removing the source of error (e.g. jam) and clearing the appropriate error register via the terminal or a manual invent. The dispenser error will then be cleared, and the tube re-enabled.

PRODUCT INTERFACES

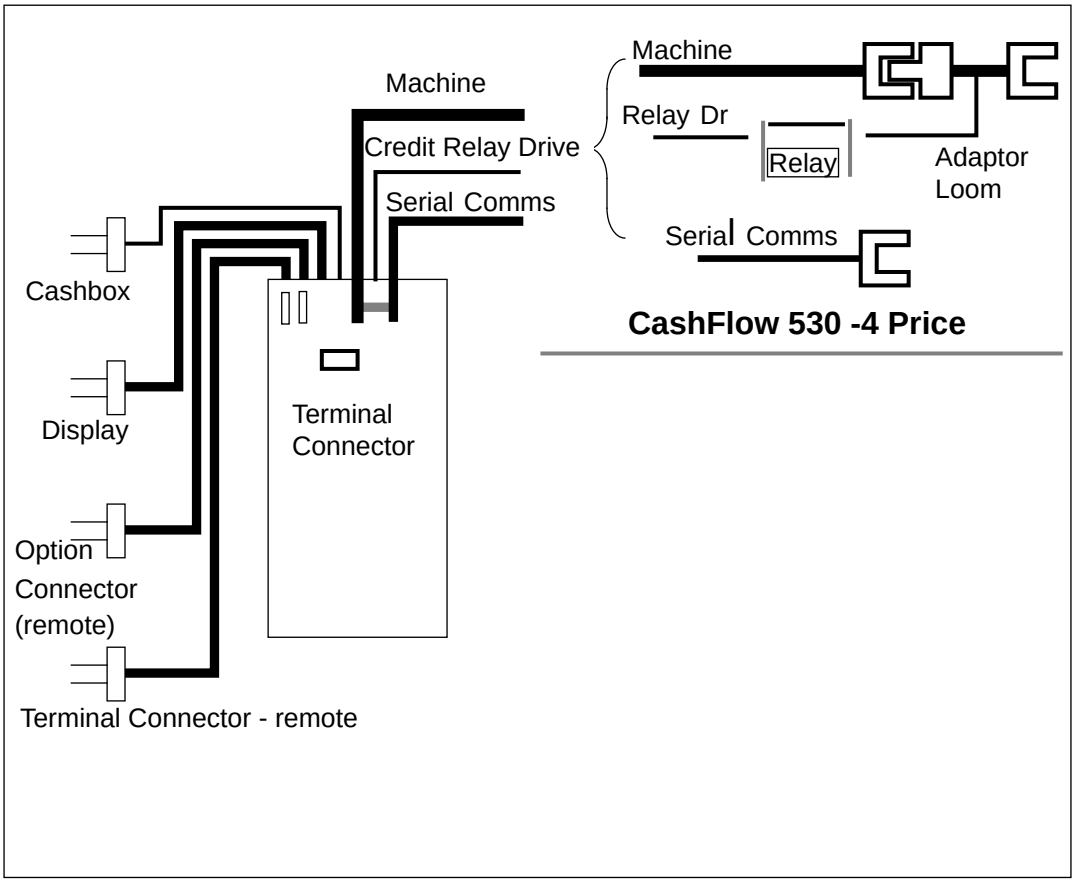
The external interfaces to the changegiver product can be divided into two groups and are explained in the following pages.

- Electrical Interfaces: includes looms, connectors, power supplies.
- Man Machine Interfaces: includes keypad, terminal and credit display.

These are described in the following sections.

ELECTRICAL INTERFACES

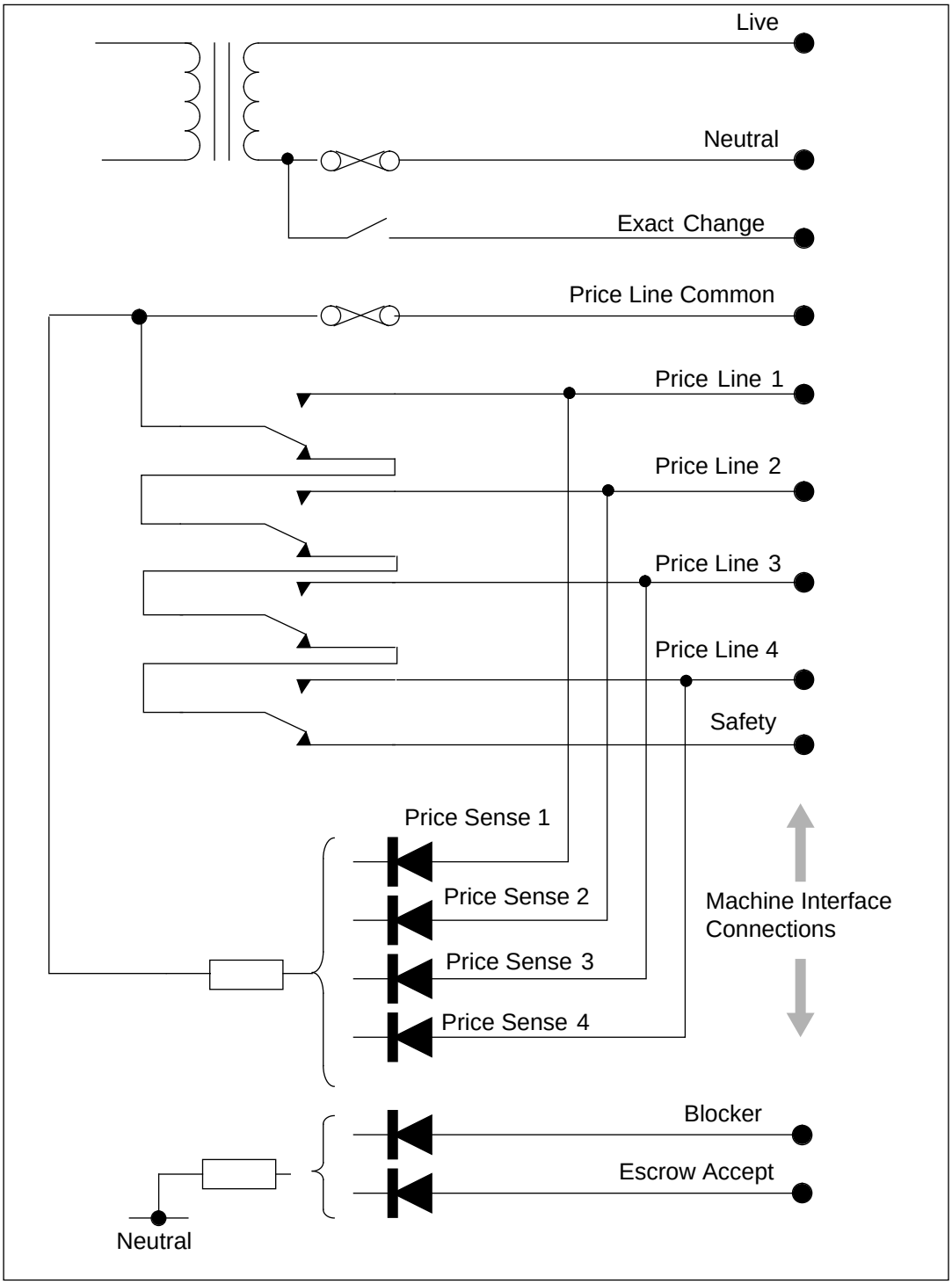
The diagram below illustrates the external electrical interfaces.



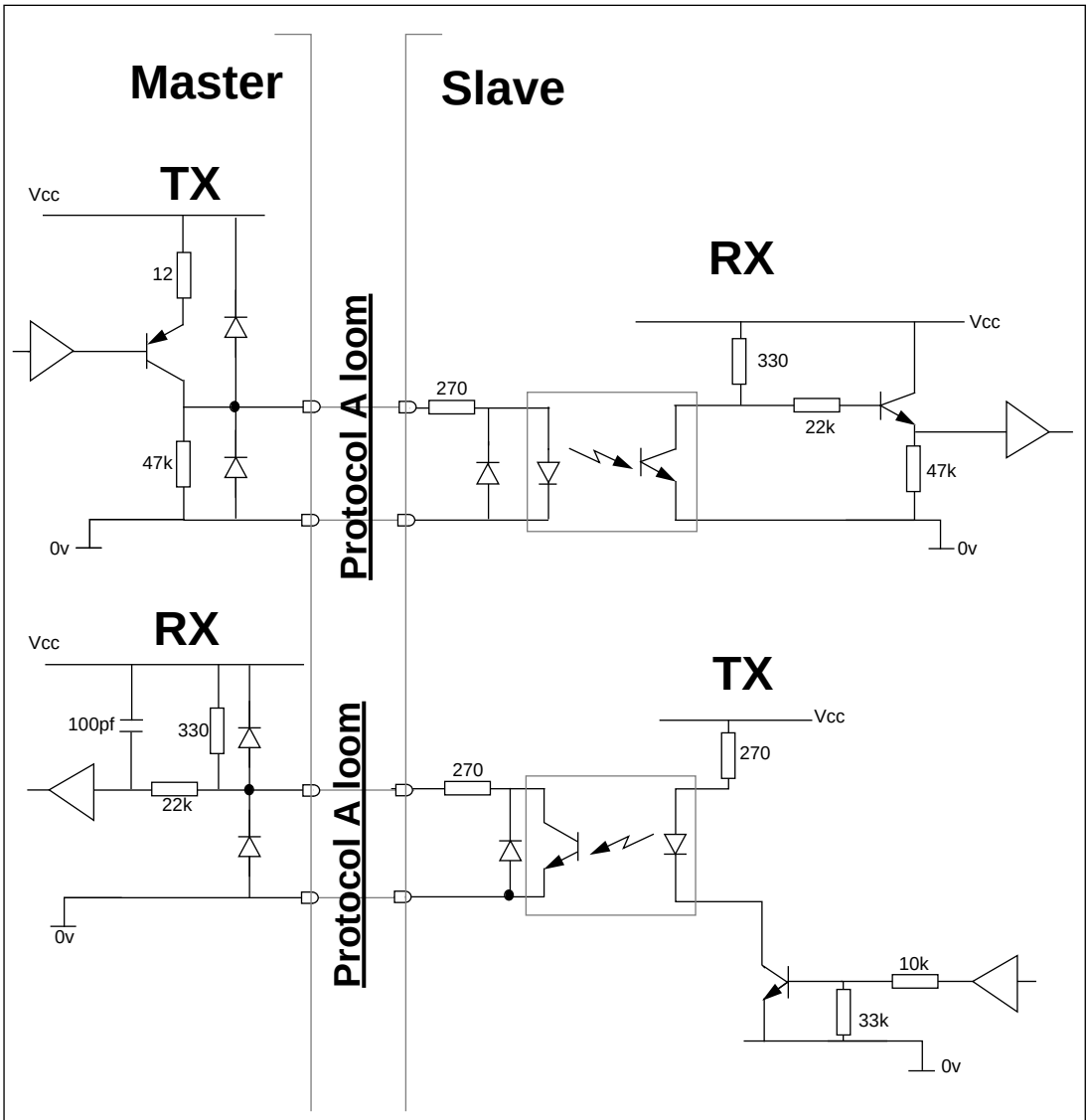
HOST INTERFACE

The mains electro-mechanical interfaces are via a common pinout.

Host Interface for CashFlow® 530 4 Price



Protocol A Equivalent Circuit

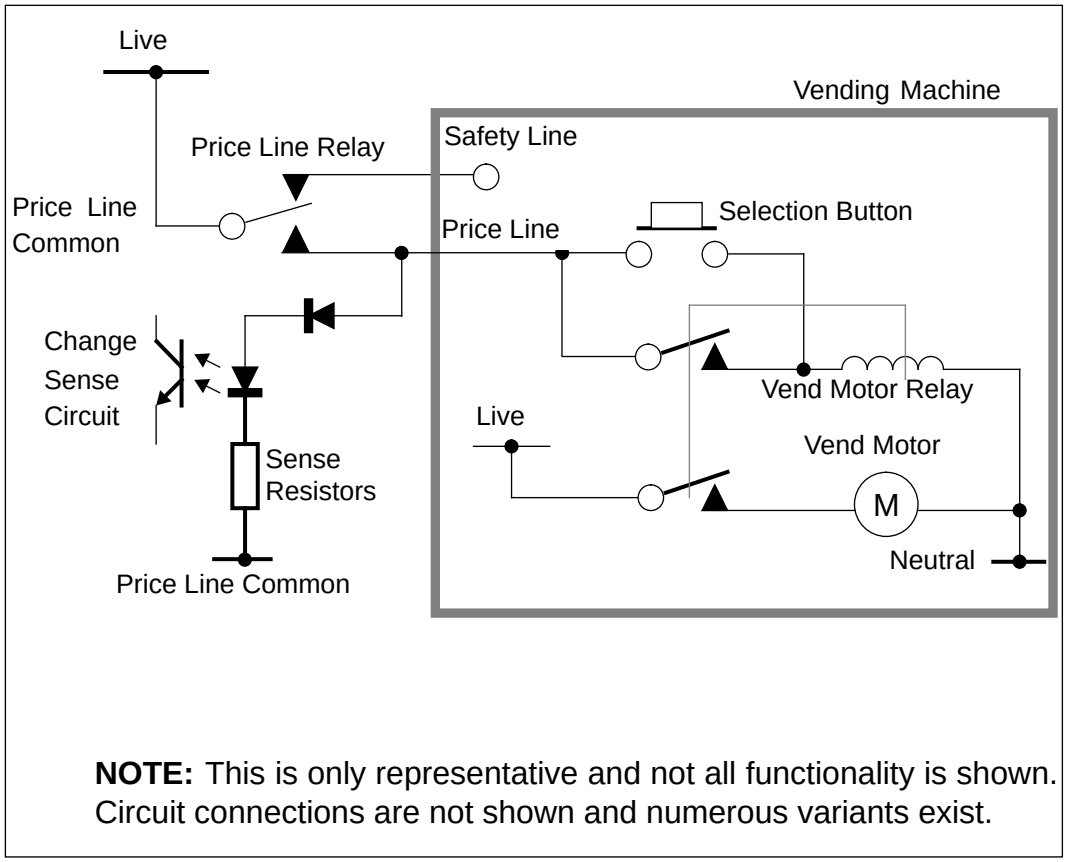


These circuits should be regarded as a general schematic and not in any way representative of a particular application.

MACHINE INTERFACE

The normal idle state of the machine interface with no credit is as follows:

- Blocker input active (connected to LINE)
- EA input active (if present)
- Sense input lines inactive (open circuit)
- Safety Line output connected to price line common (via ALL price line relays)
- Price line outputs inactive (open circuit)
- Credit relay off (contacts open)
- Exact change output inactive (contacts open)



NOTE: This is only representative and not all functionality is shown. Circuit connections are not shown and numerous variants exist.

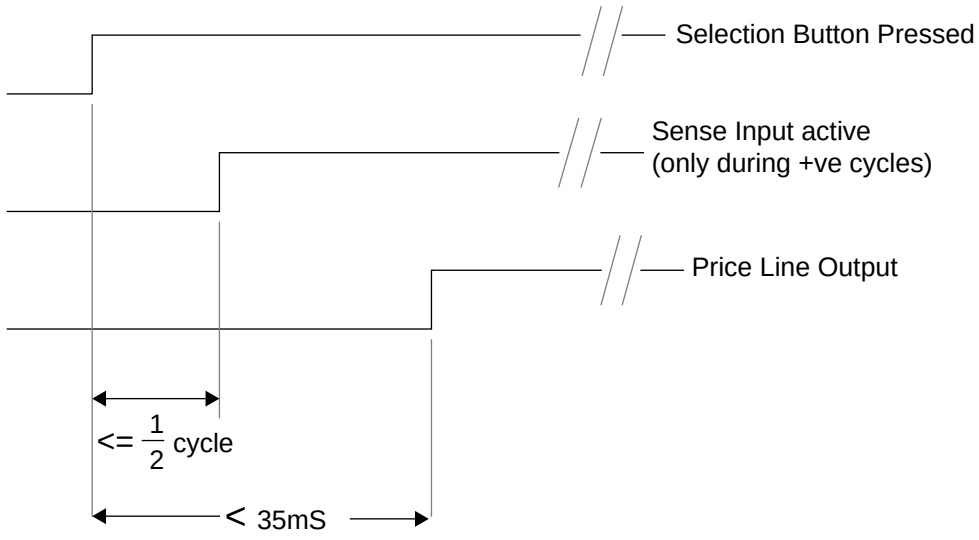
The 4 price changer has 4 input/output lines, providing for 4 sense inputs, and 4 price line outputs. When a product selection is detected the appropriate price line output is enabled (if sufficient credit exists). The price line relay outputs are interlocked, by enabling one price line output this ensures the other price line outputs are disabled. When the reset condition is detected all price relays are turned off.

SINGLE / MULTI VEND

Unused credit (change) is returned to the customer either automatically or on demand by pressing the reject lever. If the changer is programmed to single vend mode any unused credit is returned automatically immediately after the vend finished condition is met. In multi vend mode the credit balance is not returned until requested by the customer (or automatically after a timeout period of 5 seconds has elapsed).

SENSE INPUT TIMING

In some vending machines the timing between pressing the product selection button and the price line output becoming active is critical. During this period the changer must determine the price line of the selection, look-up the vend price and decide whether to allow the vend, and if so energise the price line relay. If the sense input from the vending machine is A.C. the sense current is only detected during the positive half cycle, therefore it may be 1/2 cycle (i.e. 10mS) before the sense input is detected, leaving 25mS for everything else.



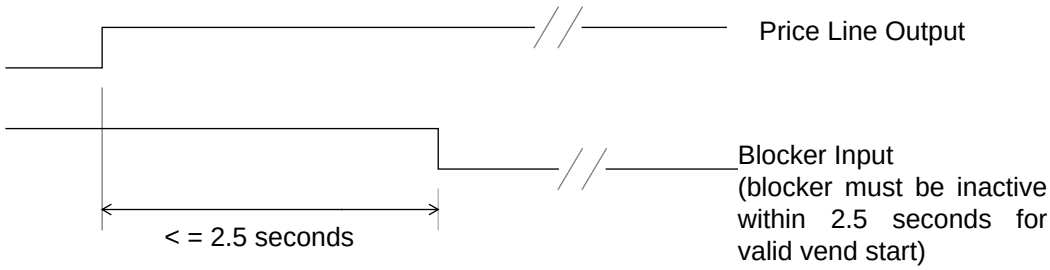
Note: Price line output becomes active only after the sense input is active and the changer has authorised the vend. (i.e. credit = vend price)

Price Line Output Timing

VEND START

When a price line output has been energised the changer will wait for the vend start signal. This is indicated by the blocker input becoming inactive. If the vend start signal is not seen within 2.5 +/-

0.5 seconds of the price line output being energised the price line output is removed. The price line output will be energised again if the sense input is still active and sufficient funds exist to pay for the product requested.



Note: If blocker does not become inactive within 2.5 seconds the price line output is turned off. It will turn on again when a valid sense input is detected.

Vend Start Timing

VEND FINISHED

While the vend is in progress the vending machine holds the blocker signal inactive. When the vend is finished the blocker signal returns to its normal active state. As far as the changer is concerned the vend is considered to have finished when the reset conditions are met, and the price line output is disabled. The changer can be programmed to several different reset conditions to suit different vending machine interfaces.

- Blocker reset
- Delayed blocker reset
- Blocker return reset
- Escrow accept reset

If the reset conditions are not met (i.e. the vend failed), the vend price will be paid back to the customers credit balance.

BLOCKER RESET

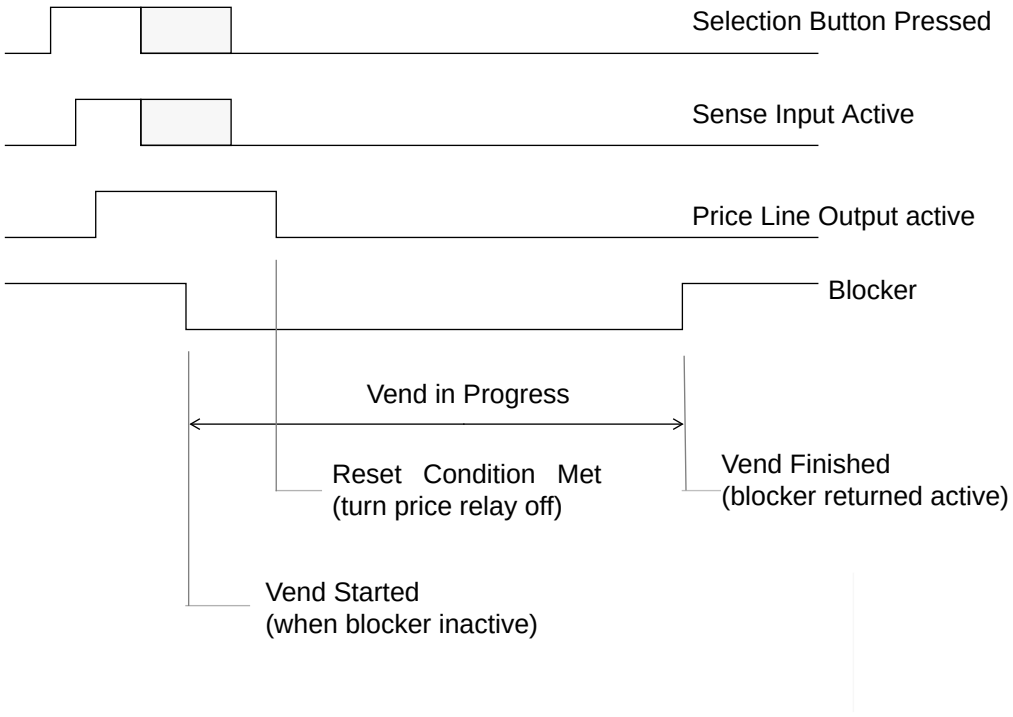
The changer assumes the vend has finished successfully 40 +/-10 mS after the vend start signal is received (blocker signal becomes inactive). The price line output is turned off at this point.

The 30mS minimum delay is required to ensure the price line output is active for sufficient time for some machines to latch the signal.

Blocker reset is the most commonly used reset condition.

DELAYED BLOCKER RESET

In this reset mode the price line output remains active for 200 +/- 20 mS after the vend start signal is detected (blocker becomes inactive). The vend is assumed to have finished successfully after this delay and the price line output is turned off.



The shaded area shows the state of the signal changes sometime within this area.

Note: Price Line output removed ~40 or ~200mS after blocker becomes inactive.

Normal Vend Cycle (Blocker or Delayed Blocker Reset)

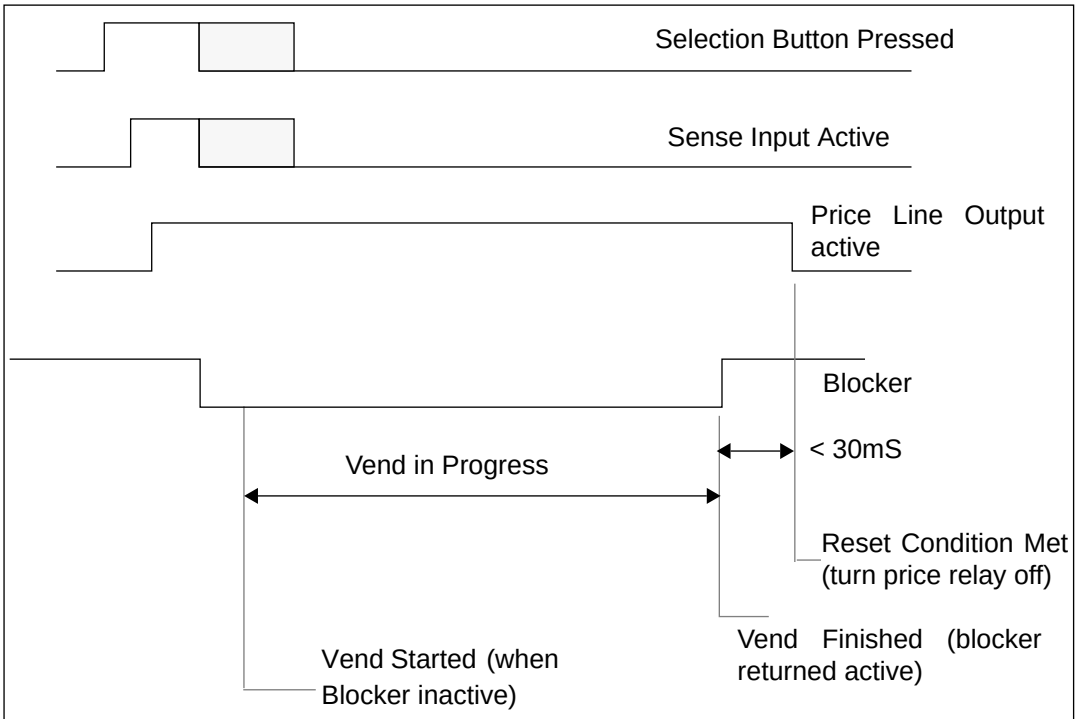
BLOCKER HOLD RESET

The changer waits for the signal to return to its normal active state to indicate the vend cycle was successful. When the reset condition is met the price line output will be disabled within 30 mS (to stop a further vend beginning).

To allow for any fault condition the changer will only wait for 1 minute (+/- 2 seconds) for the blocker signal to return, if this does not occur the vend is assumed to have failed.

If the changer is programmed to operate in a pre-vend credit deduction mode and the reset condition is not met, the vend price will be paid back to the customers credit. If the reset condition is not met in the post-vend update mode, the vend price will not be deducted.

Following a failed vend the changer will enter the inhibited state and inhibit further credit acceptance and vends until the signal returns to its normal active state.



The shaded area shows the state of the signal changes sometime within this area.

Note: Price Line output removed within 30mS of blocker returning active.

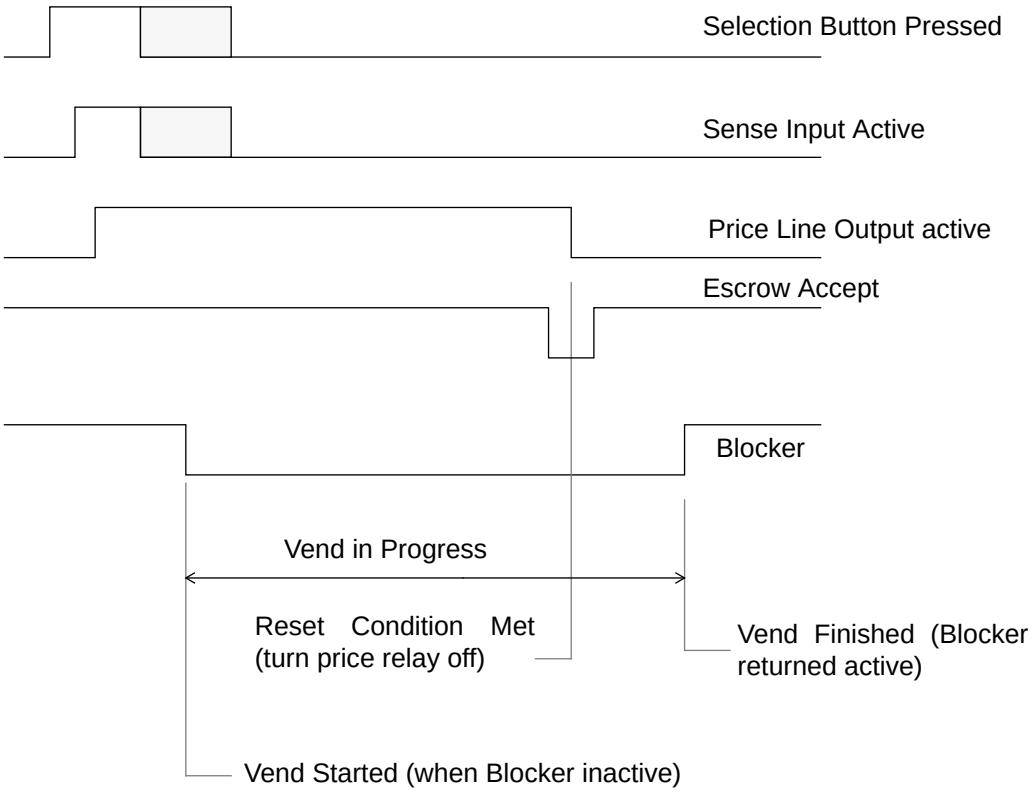
Normal Vend Cycle (Blocker Hold Reset)

ESCROW ACCEPT

In this mode the escrow accept (EA) input is used in conjunction with the blocker input to indicate a successful completion of a vend cycle. Normally, once the vend has started the EA input will be active and

blocker inactive. The end of the vend is indicated when EA becomes inactive while blocker is still inactive. If the blocker signal returns to its active state before EA goes low the vend is deemed to have failed.

To allow for any fault condition the changer will only wait 1 minute (+/- 2 seconds) for the EA reset condition to be met. If this does not occur the vend is assumed to have failed and is dealt with in the same way as for blocker hold reset.



The shaded area shows the state of the signal changes sometime within this area.

Note: Price Line output removed when EA becomes inactive while blocker inactive.

Normal Vend Cycle (Escrow Accept Reset)

ELECTRO MECHANICAL INTERFACE

All electro-mechanical interface connections between the changer and the host vending machine are electrically isolated. Outputs are isolated via the relays (i.e. price line outputs) and the inputs from the machine are current limited and optically isolated.

The standard electro-mechanical interface parameters for all changers defined in this specification are as follows:

EXACT CHANGE OUTPUT

Rated 0.5 Amps AC resistive load. Fused 1.6 Amps thermal. Fault rating 3.5 Amps.

When the changegiver detects the change available in the tubes is low it indicates exact change to the vending machine. The machine normally uses this signal to illuminate a lamp informing the customer to use the correct money.

CREDIT RELAY DRIVE

Open collector drive provided (includes flyback diode) - 20mA @12V.

The credit relay is only available on the 4 price changer as an option located outside the unit.

SAFETY LINE

Rated 2.6 Amps. Fused (via price line common) 3.15 Amps fast. Fault rating 7.0 Amps.

This output is normally connected to price line common via all the price line relays (in their off state). When any price line becomes active the safety line becomes open circuit within the changegiver.

PRICE LINE COMMON

Rated 2.6 Amps AC inductive load. Fused 3.15 Amps fast. Fault rating 7.0 Amps.

PRICE LINE OUTPUTS

Rated 2.6 Amps AC inductive load (worst case power factor of 0.5). Fused (via Price Line Common) 3.15 Amps fast. Fault rating 7.0 Amps.

When a sense input becomes active the changer determines the price to be charged for the selection requested. If sufficient credit exists it will energise the appropriate price line relay. This relay will

disconnect Safety from price line common and connect price line common to the selected price line output enabling the vending machine to proceed with the vend cycle.

PRICE SENSE / BLOCKER / ESCROW ACCEPT / VEND START/ INHIBIT INPUTS

Rated < 100 mA. Fault protection by circuit impedance.

The maximum source impedance (from vending machine) to allow the changer to correctly sense an input is dependant on the voltage profile of the unit as follows.

Mains Voltage Profile Range	Mains Activated Minimum Source Impedance for OFF Condition	Mains Activated Max Load Impedance
20.4 - 26.4 VAC	118K ohms	10 k ohms
87 - 121 VAC	475K ohms	10 k + 47 k ohms
95 - 132 VAC	525K ohms	10 k + 47 k ohms
187 - 242 VAC	1 M ohms	10 k + 47 k ohms
212 - 264 VAC	1M1 ohms	10 k + 47 k ohms

MAINS POWER INTERFACE

The current mains voltage ranges are:

- 20.4 - 26.4VAC (covering voltages 24v +10%, -15%)
- 87 - 121VAC (covering voltages 100v -13%, 110v +10%)
- 95 - 132VAC (covering voltages 120V+10%, - 20.8%)
- 187 - 242VAC (covering voltages 220V + 10%, - 15%)
- 212 - 264VAC (covering voltages 240V + 10%, - 11.7%)

POWER CONSUMPTION / RATING

	AC Profiles
Quiescent Power	15VA @50Hz
Maximum Power	20VA @ 50Hz
Input current rating	3.52A (min)
Internal fuse rating	1.6A (Thermal Delay)

TERMINAL CONNECTOR

This connector is on the front of the acceptor module. It is used with the MEI® Route Alpha 250 terminal to access and reconfigure certain aspects of the way in which the changer operates. A list of the items and relevant addresses can be found in a later section.

The connector type is: Staked Pins 0.1" DIL

Pin No	Function
1	Vneg (0V)
2	Data (Tx / Rx)
3	GND (0V Screen)
4	Busy
5	GND (0V Screen)
6	Vin (12V)

Terminal Connector

DISPLAYS

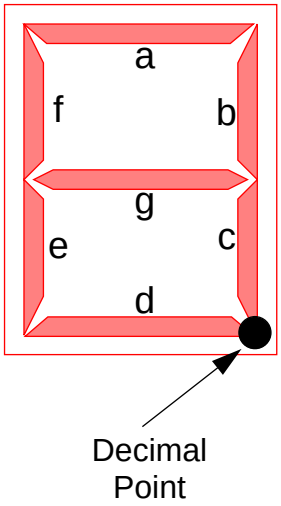
There are both 4 and 5 digit display looms available.

The 5 digit display has a 24 way Molex connector, the 4 digit display has a 12 way connector.

The table below shows the pinouts on the machine end of the looms.

Pin No	4 Digit Loom	5 Digit Loom
1	Segment A	Digit 3
2	Segment B	-
3	Segment C	0V
4	Segment D	-
5	Segment E	-
6	Segment F	-
7	Segment G	Digit 2
8	Digit 3	Digit 1
9	Digit 1	Digit 4
10	Digit 2	Digit 5
11	Digit 4	-
12	DP	Segment F
13	-	DP
14	-	Segment D
15	-	Segment B
16	-	Segment G
17	-	Segment E
18	-	Segment A
19	-	-
20	-	Segment C
21	-	-
22	-	-
23	-	-
24	-	-

Display segments



Note: Digit 1 is the least significant

MAN MACHINE INTERFACES

KEYPAD

All changegivers have a keypad mounted on the front face. Two LEDs are also mounted in this area to indicate the operational state of the changer. The keypad will enable the following functions to be performed:

- Dispense coins
- Set price(s)
- Float the changer
- Reset tube counts

EXTERNAL CREDIT DISPLAY

The external display (if fitted) provides the machine user with the following information:

- Current credit in real money (consumer)
- Vend price in real money (consumer)
- Accumulated credit in price teach & float modes (operator / route person)
- Power-on indicator (service engineer)
- Cash in tubes (operator / route person)

Displaying Credit

If there is credit in the system (either coin or value token), the total value of this credit is displayed in real money units. Any leading zeros will be blanked. The decimal point will be lit according to the decimal point setting in the EEPROM. A decimal point setting of 0 indicates zero places of decimal (i.e. the Decimal Point is lit on the right hand digit). A decimal point setting of 1 indicates one place of decimal, and so on. Any value of decimal point over 4 will be ignored and no decimal point will be lit.

If there is free vend credit available (either by free vend token or host machine free vend), the credit display indicates this by a display of 5 dashes (on the middle segments).

If there is no credit in the system, the display shows a single 0 in the right hand digit and no decimal point is lit.

Displaying Vend Price

If price display is enabled, and the user makes a selection whose value exceeds the current system credit, then the display will show the price of the vend (in real money), while the selection is active. Leading zero blanking and decimal point will be handled as the display of credit.

Displaying Price Teach Credit

If the changegiver is in price teach mode, the current value of credit is displayed in real money. Leading zeroes are blanked and the decimal point is flashed at 1Hz indicating a non standard display.

Displaying Float Value

If the changegiver is in automatic float mode, the total value of any coins accepted as float is displayed in real money. Leading zeroes are blanked and the decimal point is flashed at 1Hz indicating a non standard display.

Displaying Total Tube Value

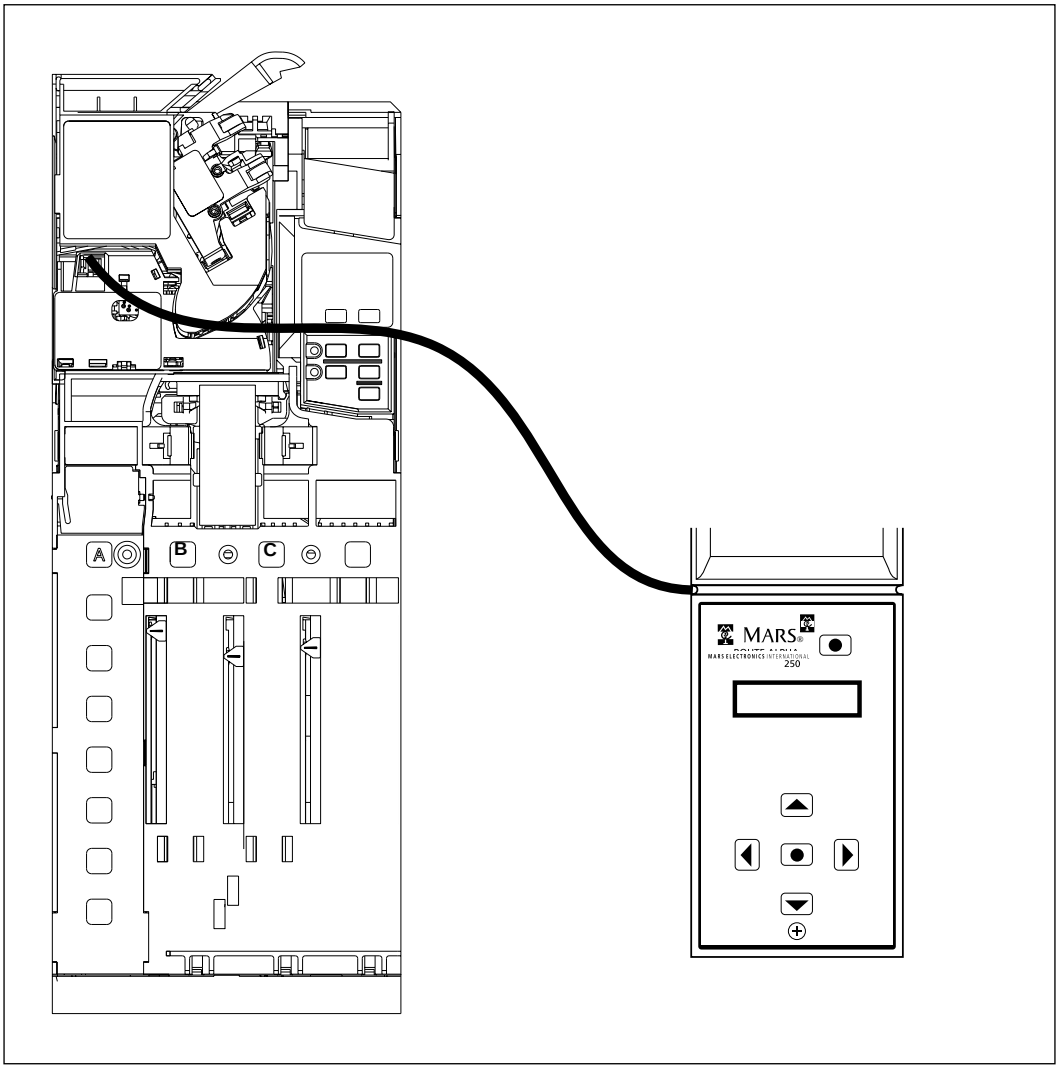
The operator/routeperson can get an indication of the total value of coins in the tubes by pressing the mode key twice with the tube cassette fitted. The total value in the tube is displayed for 2 seconds on the on-product display. This data cannot be displayed on a VMC display.

Power On Indicator

On system power-up or reset, the changegiver will light all segments of the display for 0.5 seconds. If there is no machine or changer fault present, the red LED will light. This will provide the user with a basic check of the display and associated H/W.

VIA MEI® ROUTE ALPHA 250 TERMINAL

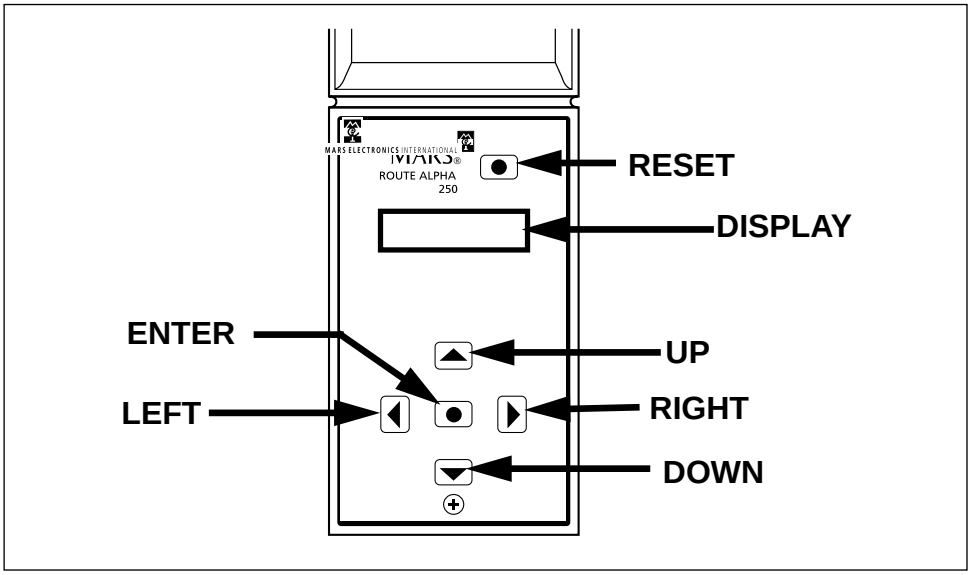
If you have access to a MEI® Route Alpha 250 terminal you can re-configure any of the functions available for a particular product. The terminal is connected to the acceptor via a six way connector which plugs into the front of the acceptor.



The terminal is used to check or change certain data which affects the way the changer operates. The data is held in addresses. Each address has a unique number which identifies the feature you wish to read or change e.g. if you want to change from single vend to multi vend then you need to go to address number 226 and put in a 1 (single vend is a 0).

The following pages will explain how to access and change the data in certain addresses. At the end of this section there is a list of addresses and the relevant values.

KEY FUNCTIONS



Reset Key: used to reset all modes and to initialise any settings that you have changed. If the reset key is pressed while an address is being updated then the address may not be updated. The reset key must be pressed to store the changes that you have made.

Up Key: used to increase the value displayed on the screen.

Down Key: used to decrease the value displayed on the screen.

Left Key: used to scroll the display to the left when a large number is being accessed that cannot be fully displayed on the screen.

Right Key: used to scroll the display to the right when a large number is being accessed that cannot be fully displayed on the screen.

Enter Key: used to change between the address and data displays.

Other Facilities of the Terminal

The terminal has several features to speed up its use. This includes the ability to scan at a higher speed with the keys auto repeating, to automatically roll over from its highest to lowest address and to inform the operator should a communication error occur.
Should you need to know which version numbers of the software is used in the changegiver the UP key is pressed while the terminal is in reset mode. The terminal will firstly display the acceptor HI^2 node address, if the UP key is pressed again the acceptor software version number will be displayed.. Pressing the UP key again will display the acceptor eeprom number and if pressed again the acceptor configuration code.
To return to normal operation press the RESET key.

Auto Repeating Keys

If either the UP or DOWN keys are kept pressed they automatically repeat. The repeat speed of the key increases the longer the key is held down.

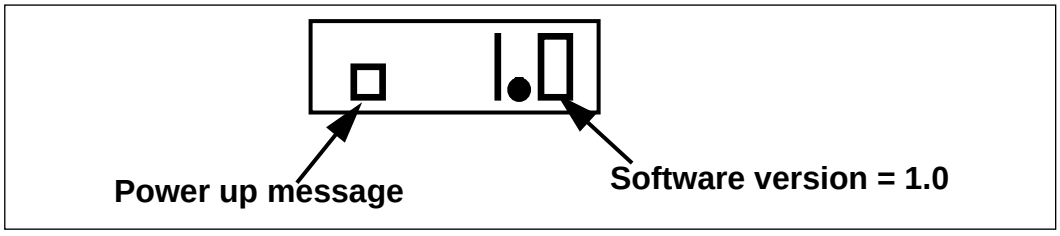
Double Click Hotkeying

If a key is doubled clicked (pressed twice in quick succession) then this causes the address number to increment by a larger amount. e.g. if the user starts at address number 1 then double clicks the UP key, the address will jump to 40, double click again the address will jump to address 100 etc. This is useful as the addresses used for the changer start at address 200. You can also double click the DOWN key to decrement by larger amounts.

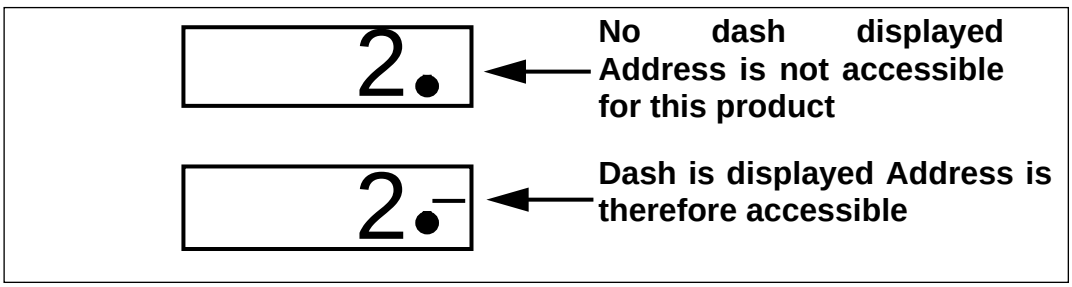
USING THE TERMINAL

As soon as the terminal is connected to a changegiver it powers up and interrogates the product.

The terminal display will clear and briefly show a message that indicates the version of software in the terminal. A display of [0 1.0] means software with a version number of 1.0 is fitted in the terminal.



After a few seconds the display will show the number [1.] or [1.-]. Not all configuration items are applicable to every product but all the address values are shown on the display. If the value for the address is applicable to the product a dash will be present at the far right position on the display. The value can then be accessed and changed if required.



The basic operation to alter the information held in an address is:

1 Connect the terminal to the CashFlow® product.

2 Wait for the terminal to power up correctly.

3 Select the address by using the UP and DOWN keys.

4 Examine the data by pressing the ENTER key.

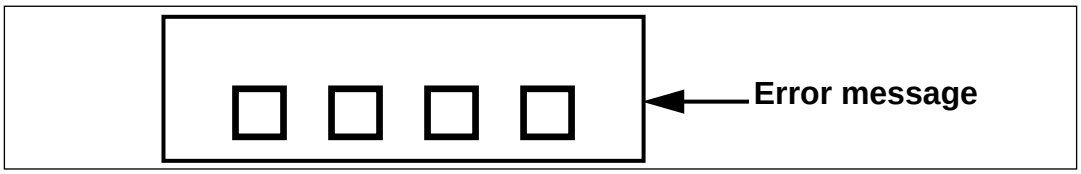
5 Alter the data value by pressing the UP or DOWN keys until the new value has been reached.

6 Press the ENTER key to return to displaying addresses.

7 Press the RESET key to initialise the new value.

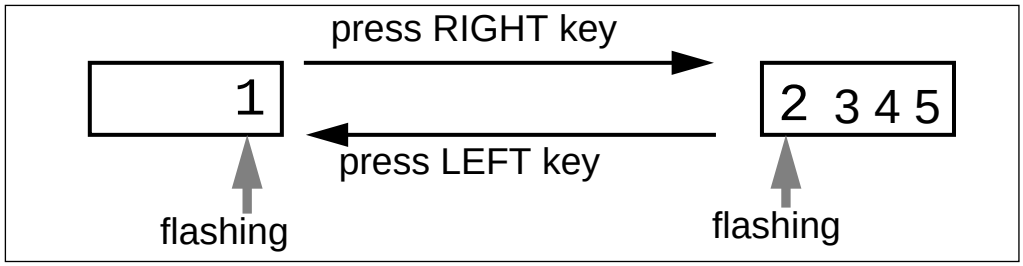
When the terminal is displaying values stored at addresses, no decimal point will be displayed.

If an error occurs with the communication between the terminal and the changegiver the display will show an error message of four half height zeroes.



This message will stay on the display. Pressing the RESET key may clear the fault. The display will then revert to showing the current address. If the error occurred while updating an address then the value of that address should be checked as it may not have been updated correctly. If, after pressing the RESET key, the fault remains the error message will stay and you need to return the terminal for repair.

As the screen is capable of only displaying four digits at any one time the number displayed on the screen can be scrolled if it is greater than 9999 by using the LEFT and RIGHT keys. The left or rightmost digit will flash indicating an extra digit can be examined by use of the scrolling keys e.g. Value is 12345



The table below shows you the address of each item that can be reconfigured and their possible values.

ADDRESSES AND VALUES

Address	Parameter	Range	Meaning
200	Maximum credit	0-65,535	maximum credit
201	Price 1	0-65,535	value of price 1
202	Price 2	0-65,535	value of price 2
203	Price 3	0-65,535	value of price 3
204	Price 4	0-65,535	value of price 4
226	Single/Multivend	0 -1	0 = single vend 1 = multivend
227	Escrow return inhibit	0 -1	0 = escrow allowed 1 = escrow inhibited
228	Reset mode (Electromech only)	0 - 4	0 = blocker reset 1 = delayed blocker reset (20ms) 2 = delayed blocker reset (300ms) 3 = blocker hold reset 4 = after escrow signal
229	Coin inhibit, coins 1-4 for multiple coin inhibit,add together e.g. 1 + 8 = 9 so coins 1 & 4 are inhibited	0 -15	0 = no coins inhibited 1 = inhibit coin 1 2 = inhibit coin 2 4 = inhibit coin 3 8 = inhibit coin 4
230	Coin inhibit, coins 5-8	0 -15	0 = no coins inhibited 1 = inhibit coin 5 2 = inhibit coin 6 4 = inhibit coin 7 8 = inhibit coin 8
231	Coin Inhibit, coins 9 -12	0 -15	0 = no coins inhibited 1 = inhibit coin 9 2 = inhibit coin 10 4 = inhibit coin 11 8 = inhibit coin 12
232	Exact change inhibit group Inhibit coins 1 - 4	0 -15	1 = coin 1 2 = coin 2 4 = coin 3 8 = coin 4

Address	Parameter	Range	Meaning
233	Exact change inhibit group Inhibit coins 5 - 8	0 -15	1 = coin 5 2 = coin 6 4 = coin 7 8 = coin 8
234	Exact change inhibit group Inhibit coins 9 - 12	0 -15	1 = coin 9 2 = coin 10 4 = coin 11 8 = coin 12
235	Change delay	0 - 255	255 = infinite delay
236	Exact change equation (ECE) part1	0 - 7	1/2/4 = tubes A/B/C
237	Exact change equation (ECE) part2	0 - 7	1/2/4 = tubes A/B/C
238	Price hold (Protocol A only)	0 - 1	0 = do not hold price 1 = hold price
239	Price display	0 -1	0 = do not display price 1 = display price
240	Coin scaling factor	0 - 250	(Protocol A only)
241	Decimal point position	0 - 3	decimal point position
242	Overpay inhibit	0 -1	0 = overpay allowed 1 = overpay Inhibited
243	Clear overpay inhibit	0 -1	0 = cleardown allowed 1 = cleardown Inhibited
244	Keypad inhibit	0 -1	0 = keypad enabled 1 = keypad inhibited
245	Price teach inhibit	0 -1	0 = price teach allowed 1 = price teach inhibited
246	Fast sense (Electromech only)	0 -1	0 = normal 1 = fast sense
247	Auto Tube Inventory (float down)	0 -1	0 = float down disabled 1 = float down enabled
251	Tube in position A float level	0 - 255	number of coins in a tube to be floated to

Address	Parameter	Range	Meaning
252	Tube B float level	0 - 255	as address 251
253	Tube C float level	0 - 255	as address 251
261	Tube in position A full count	0 - 255	number of coins in a tube that activate the full sensor
262	Tube B full count	0 - 255	as address 261
263	Tube C full count	0 - 255	as address 261
271	Tube in position A low count	0 - 255	number of coins in a tube that activate the low sensor
272	Tube B low count	0 - 255	as address 271
273	Tube C low count	0 - 255	as address 271
281	Tube in position A safe count	0 - 7	minimum number of coins that must be left in a tube (this number is multiplied by 2 in the changer)
282	Tube B safe count	0 - 7	as address 281
283	Tube C safe count	0 - 7	as address 281
291	1st coin type in tube A	0 - 12	coin number 0 = no coin (taken from coinset label reading from left to right & top to bottom)
292	1st coin type in tube B	0 - 12	as address 291
293	1st coin type in tube C	0 - 12	as address 291
301	2nd coin type in tube A	0 - 12	coin number, 0 = no coin
302	2nd coin type in tube B	0 - 12	coin number, 0 = no coin
303	2nd coin type in tube C	0 - 12	coin number, 0 = no coin
310	Value of coins in tubes READ ONLY	0-65,535	value of coins in all tubes
311	tube A current coin count READ ONLY	0 - 255	current number of coins in tube

Address	Parameter	Range	Meaning
312	tube B current coin count READ ONLY	0 - 255	current number of coins in tube
313	tube C current coin count READ ONLY	0 - 255	current number of coins in tube
321-332	value of coins 1 - 12	0-65,535	
340	Full sensor errors READ ONLY	0 - 255	value = sum of codes where 1/2/4 = tubes A/B/C 128 = post gate strobe error
341	Tube dis-abled READ ONLY	0 - 31	value = sum of codes where 1/2/4 = tubes A/B/C
342	EEPROM errors (i) READ ONLY	0 - 15	1 = errors in page 0 2 = errors in page 1 4 = corrupt audit FEM 8 = audit FEM removed
343	EEPROM errors (ii) READ ONLY	0 - 15	1 = incorrect configuration version 2 = audit FEM not defined 4= undefined 8 = internal write error
344	Operational errors (i) READ ONLY	0 - 15	1 = undefined 2 = acceptor error 4 = HII hardware error 8 = HII transmit error
345	Operational errors (ii) READ ONLY	0 - 15	1= coin cassette removed 2=protocol A transmit error 4=protocol A receive error 8 = cashbox full error
349	Reset error flags	0 - 1	0 = do not reset 1 = reset error flags
360	Audit module - VMC identification code	0-65,535	vending machine ID
361	Audit module - printout language	0 - 4	0 = English 1 = French 2 = German 3 = Dutch 4 = Spanish

Address	Parameter	Range	Meaning
362	Audit module - printout type	0 - 2	0 = basic 1 = basic + interim vend report 2 = basic + interim vend + free vend report
363	Audit module - printout product limit	0 - 25	limit details on printout to first few specified price lines
364	Audit module - installation day	1 - 31	day of installation into the machine
365	Audit module - installation month	1 - 12	month of installation into the machine
366	Audit module - installation year	0 - 99	year of installation into the machine
380	Discount award	0 - 9999	amount added to credit when the vended value exceeds the discount trigger
381	Discount trigger	0 - 9999	if the vended value exceeds this value then the award will be added to the system credit
382	Link Master ID	0 - 9999	ID code of link master node
383	Exact Change Offset	0 - 15	allows a more advanced warning to be given of the exact change
384	Max Coin Credit	0-65,535	maximum coin credit that can be accepted by the changegiver
388	Card Reval Allowed	0 - 1	0 = revaluation not allowed, 1 = revaluation allowed
389	Audit Unit Fitted	0 - 1	0 = not fitted, 1 = audit unit fitted
390	VMC Unit Fitted	0 - 1	0 = not fitted, 1 = VMC fitted
391	CPC Unit Fitted	0 - 1	0 = not fitted, 1 = CPC fitted

DIAGNOSING TERMINAL PROBLEMS

SYMPTON	CAUSE	SOLUTION
Terminal displays an error message at power up	Communications error	Press RESET
Terminal displays an error message when changing from address to data mode or vice versa	Communications error between terminal and product or the terminal does not recognise the product it has been connected to	Repeat last operation
Terminal powers up correctly but no addresses are accessible	The product is not compatible with the terminal	Requires a different terminal/ software
Terminal does not power up	Bad connections or Faulty cable	Check the connections at either end of lead. Replace lead
Terminal powers up but one of the keys does not work	Faulty key	Use the self test feature. If the key is faulty send unit for repair
Non standard characters printed on display	Faulty unit	Send unit for repair

TESTING THE TERMINAL

It is possible to test all the features of the terminal itself by putting the unit into a special test mode. To enter the test mode hold the ENTER key pressed when powering the unit up. The display will initially show three digits indicating the result of an automatic on board test. The display format is:

[<BUSY state> <DATA state> <AUTO TEST result>] where

<BUSY state> = current state of BUSY line, 0 = low, 1 = high

<DATA state> = current state of DATA line, 0 =low, 1=high

<AUTO TEST result> = result of automatic test

0 = Pass

1 = BUSY line error

2 = DATA line error

3 = BUSY and DATA line errors

Pressing the ENTER key activates the next stage of test.

The LCD is tested by displaying a pattern of four identical digits on the display. The digits alter every 1/2 second and the display should be examined to check all the digits are formed correctly.

Display will show:

[0000], [1111], [2222], [3333], [4444], [5555], [6666], [7777], [8888], [9999], [----], [oooo], [ ], [....].

Pressing the ENTER key activates the next stage of test.

The terminal keys are checked next. A single number is shown on the display indicating what key was pressed last. Display shows:

[**0**] No key pressed

[**1]** UP key pressed

[**2**] RIGHT pressed

[**3**] DOWN key pressed

[**4**] LEFT key pressed

[**5**] ENTER key pressed

This is the last test and the RESET key must be pressed to restart the terminal in normal operational mode.

COMPATIBILITY

The CashFlow® 530 product range is compatible with the majority of modern vending machines requiring a changegiver. The options currently available are;

- CashFlow® 530 - 4 price - A four price electromechanical changegiver

Interfaces are provided for a credit display if required on the above.

MACHINE INTERCONNECTION LOOMS

The looms fitted to the CashFlow® 530 products have a range of connectors and pinouts to be fully compatible with existing machine wiring. The table below shows the new CashFlow® looms and the old interface looms which they replace.

CashFlow® Machine Loom No.	Replaces	Serial (PA)	BDV	Electro mechanical	No. of Price Lines
T3	B32,FI, F16			✓	1
T4	FF,B12,F15, F26			✓	4
T5	FB,B03,B62 F03,F10,F3 5			✓	4
T6	FJ,B02,F02, F27			✓	3
T7	FA, No credit relay	(Gen. purpose loom)			
T8	FD,B74,F01			✓	4
T9	FC,B60,F08 ,F33			✓	4

CashFlow® Machine Loom No.	Replaces	Serial (PA)	BDV	Electro mechanical	No. of Price Lines
T11	FE,F12			✓	4
T12	FG,F44			✓	4
Machine Loom ⁕ 165972002	FF, F26 Adaptor			✓	4
Machine Loom ⁕ 165974001	FM, F75 Adaptor			✓	6

⁕ Requires T7 Adaptor Loom to effect interface.

ENVIRONMENTAL PERFORMANCE

Products are available to meet the following environmental specification.

TEMPERATURE RANGE

Working ambient	- 15 to 60°C
Max rate of change	15°C/hr non condensing
Storage	-40 to + 65°C
Solar radiation	Max. working ambient applies

HUMIDITY

Operational	Worst case up to 90% RH, non condensing at 43°C
Storage	Worst case up to 95% RH, non condensing at 65°C

VIBRATION

Operational - units will not be damaged by these conditions:

Vibration (through machine mounting)	0.25g at 5 to 500 Hz. Intermittent over the unit's life. Refer to BS2011: part 2.1 Fc:1983

INSTALLATION

To ensure that the changegiver operates correctly it must be mounted so that it hangs within 2° of vertical, in both front and side elevations.

The reject lever must have a minimum 3mm clearance from the machine reject mechanism when installed.

The amount of travel for the coin mechanism's reject lever when engaged should normally be between 12-18mm. It should not be forced beyond this point as there is a danger of the reject lever bottoming out and damage being caused.

TRANSPORTATION

Units in the packed state will not sustain any physical damage under these conditions:

Shock	Half sine, 30g shock, 18ms duration. Refer to BS 2011: part 2.1 Ea: 1977
Bump	1000 bumps 6ms duration at 25g. Refer to BS 2011: part 2.1 Eb: 1977
Free Fall	1000mm fall onto packing faces. Refer to BS 2011: part 2.I Ed: 1977
Crush	Neatly stacked units of the same type may be stacked to a height of 2 metres

LIQUIDS

Water

The units inclusive of PCB's will be splash protected.

The coin entry encourages excess water towards the reject path and the front of the product out of the coin path. Coin stall under these conditions is minimised.

The above should in no way be interpreted as a specification capable of operating at 100% RH.

Salt Water

As above.

Prolonged exposure in a salt laden atmosphere will lead to PCB corrosion damage.

Other Liquids

This includes: dilute carbonic acid, dilute citric acid, carbonated drinks, beer, tea, coffee, chocolate, soup, syrup and sugar residue, uric acid.

- Certain beverages and the dilute acids may cause similar effects to salt water if they contact the PCB's
- Wet performance will be similar to that described for 'water'
- Liquids which leave a residue on drying which affects the passage of coins could cause malfunction

SAFETY CLASSIFICATIONS

CLASSIFICATION

The changer products will comply with :

- UL 756 “Coin and currency changers and actuators”
- IEC 335, 3rd Edition “Safety of household and similar electrical appliances”

PARTITIONS

All of the following lines are assumed to be at mains potential (live parts at hazardous voltage).

Mains input (live & neutral)

Exact change output

Price sense inputs

Price outputs

Blocker (vend start) input

Escrow accept input

Price line common input

Safety line output

All of the following lines, and any other circuits accessible without the removal of any covers using a tool are assumed to be unearthed accessible SELV circuits as defined in IEC 335.

Protocol A current loop

MEI terminal link

Credit display

Cashbox full connector

Acceptor serial link

Credit relay coil output

SAFETY INSULATION

Safety insulation is provided between :

a) All operator points of contact without tool access and hazardous voltages

b) SELV circuits and hazardous voltages

Safety insulation (as defined above) is provided as follows :

- Clearance through air ≥ 8.0 mm
- Creepage over insulation surface ≥ 8.0 mm
- Thickness through insulation (except for cables)
- Accessible reinforced insulation ≥ 2.0 mm
- Basic insulation ≥ 1.0 mm
- Dielectric strength of reinforced insulation : 3750 VAC RMS for 1 minute
- Dielectric strength of supplementary insulation : 2750 VAC RMS for 1 minute

Insulation is provided between poles of the supply input (live & neutral) and to other hazardous voltages as follows :

- Clearance through air before fuse ≥ 2.5 mm
- Clearance through air after fuse ≥ 1.0 mm
- Creepage over insulation surface before fuse ≥ 3.0 mm
- Creepage over insulation surface after fuse ≥ 1.0 mm
- Dielectric strength over basic insulation ≥ 1250 VAC RMS for 1 minute

ENERGY STORAGE

The maximum energy stored in the changers smoothing capacitor will be less than 5.1 Joules at maximum input voltage and no load.

FLAMMABILITY

All major plastic parts are moulded in materials with a flammability rating of UL 94 V-2 or better. Small parts which do not form part of the fire containment enclosure, or which are not located close (< 13.0 mm) to live (hazardous) parts, may be moulded from a material with a flammability rating of UL 94 V-HB.

ELECTRO-MECHANICAL AND MAINS INPUT RATINGS

- Input: (line and neutral) fused neutral only 1.6A thermal
  Fault rating 3.5A

- Exact change fused neutral only 1.6a thermal
  Load rating 0.5A
  Fault rating 3.5A

- Price line common
- Price lines, safety line fused PLC only 3.15A fast
  Load rating 2.6A
  Fault rating 7A

The changer will satisfy the requirements of class 2 equipment as defined in IEC 950.

MECHANICAL PARTS

The changer does not contain mechanically moving parts, or sharp edges, which can present a hazard in normal use.

MEI OFFICES

WWW.MEIGROUP.COM

INDEX

U

V

APPENDIX

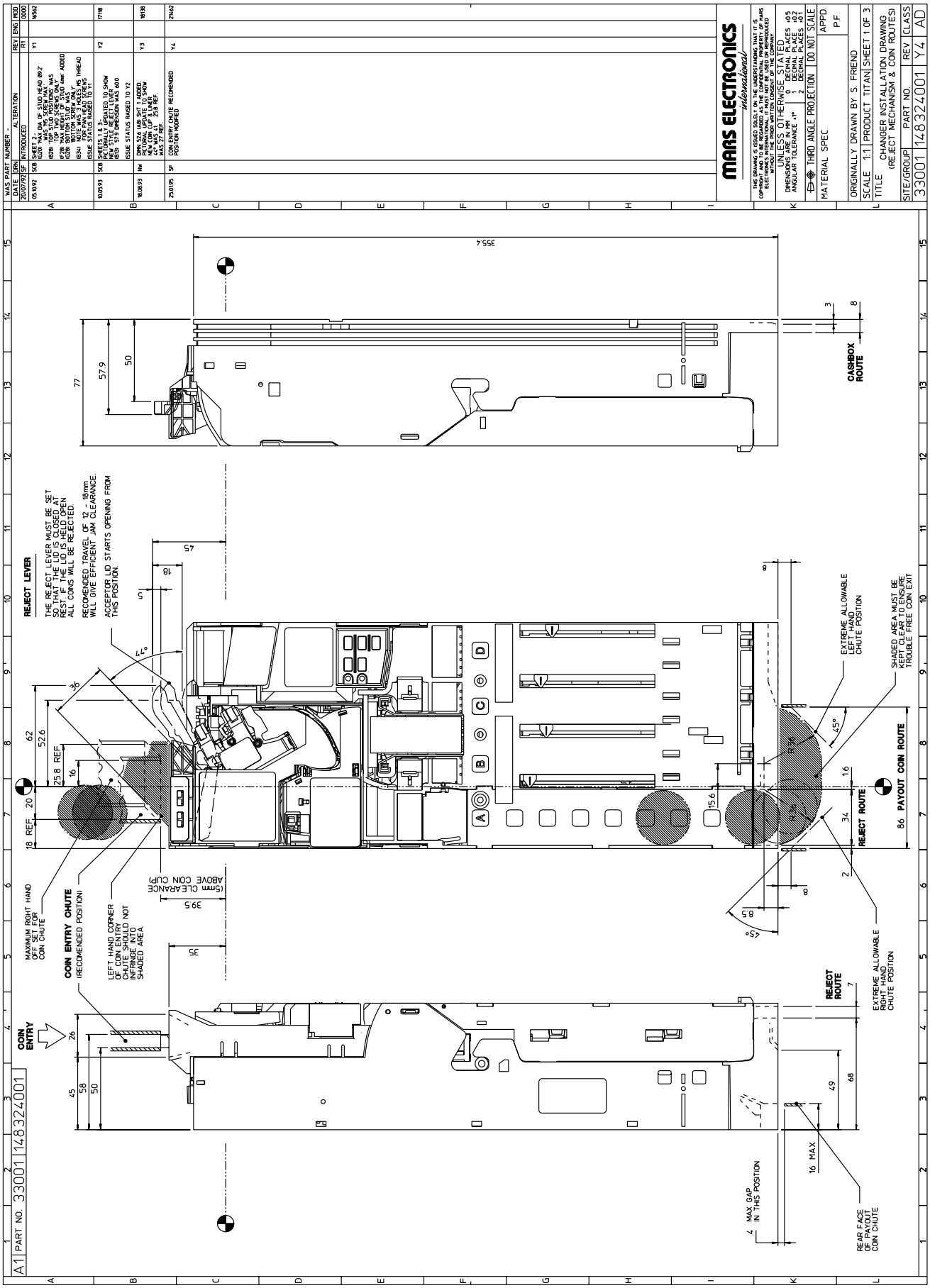
INTERFACE DRAWINGS

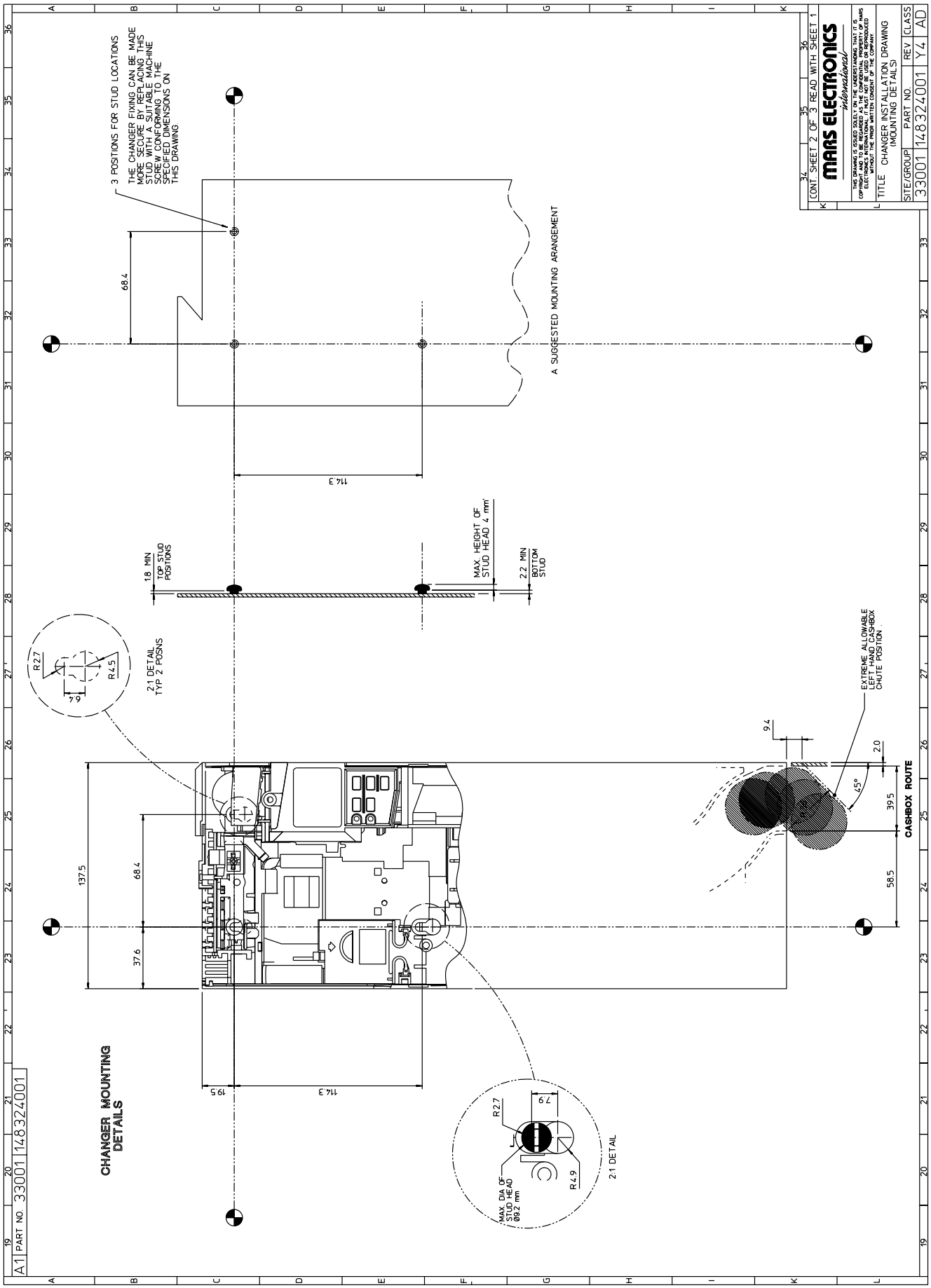
Mechanical interface drawing number 148324001, (consiting of 3 separate sheets), shows generic dimensional details of the CashFlow® range of changegiver products and is not to be considered specific to the CashFlow® 530 product.

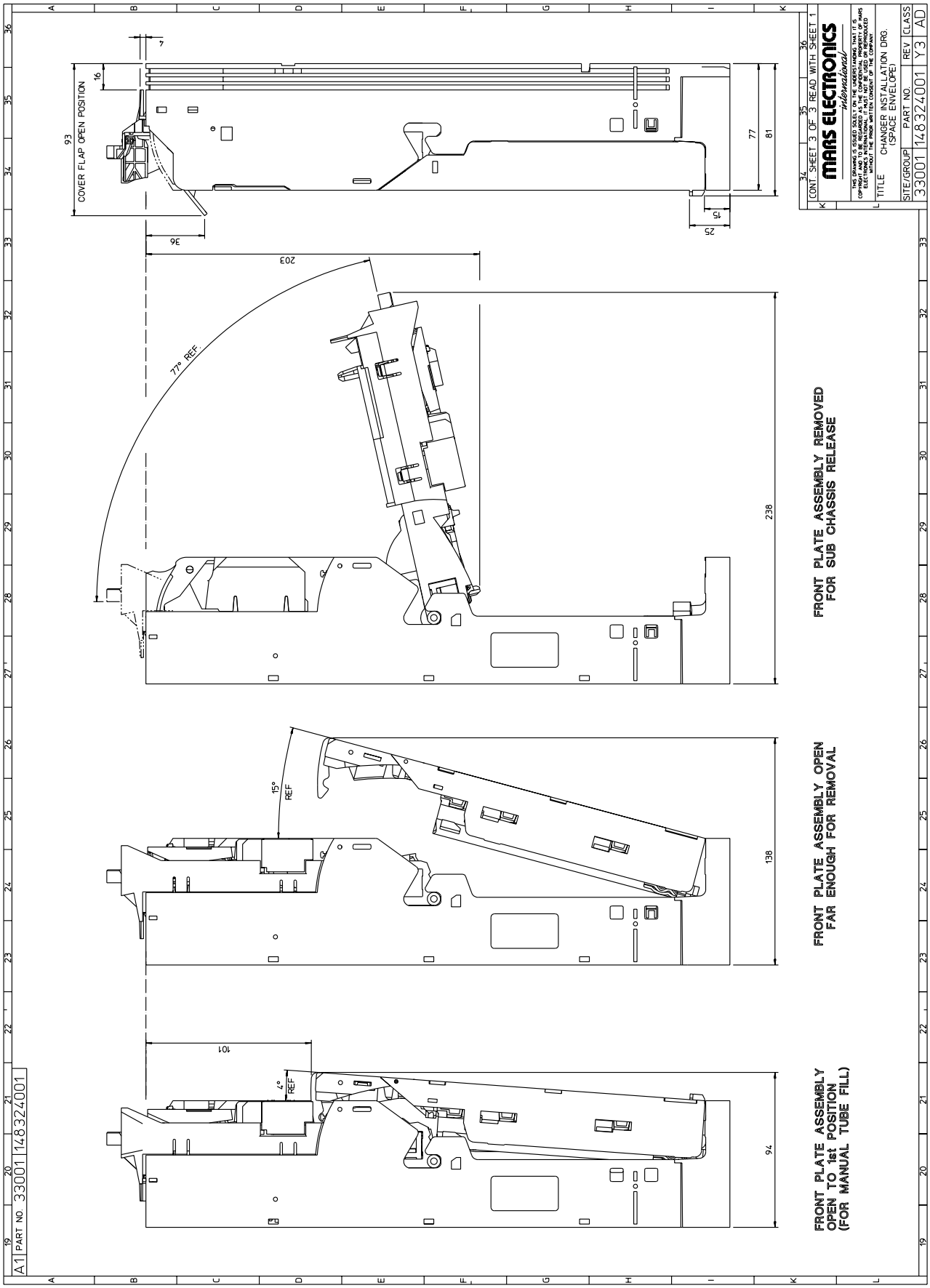
It follows that any indication of a fourth tube should be ignored. All external and internal measurements shown on drawing number 148324001 are, however, consistent with other CashFlow® changegiver products.

Details shown include the following:

- Reject Mechanism & Coin Routes
- Mounting Details
- Space Envelope


MARS ELECTRONICS
355.4
77
57.9
50
CASHBOX ROUTE
REJECT LEVER
THE REJECT LEVER MUST BE SET SO THAT THE LID IS CLOSED AT REST. IF THE LID IS HELD OPEN ALL COINS WILL BE REJECTED.
RECOMENDED TRAVEL OF 12 - 18mm WILL GIVE EFFICIENT JAM CLEARANCE.
ACCEPTOR LID STARTS OPENING FROM THIS POSITION
57
18
5
37°
36
62
52.6
25.8 REF
16
20
18 REF
COIN ENTRY CHUTE
(RECOMENDED POSITION)
MAXIMUM RIGHT HAND OFF SET FOR COIN CHUTE
LEFT HAND CORNER OF COIN ENTRY CHUTE SHOULD NOT INFRINGE INTO SHADED AREA
(5mm CLEARANCE ABOVE COIN CUP)
39.5
35
COIN ENTRY
26
45
58
50
EXTREME ALLOWABLE LEFT HAND CHUTE POSITION
SHADED AREA MUST BE KEPT CLEAR TO ENSURE TROUBLE FREE COIN EXIT
EXTREME ALLOWABLE RIGHT HAND CHUTE POSITION
45°
R45
R45
15.6
16
34
86 PAYOUT COIN ROUTE
REJECT ROUTE
2
8
15
8
45°
REJECT ROUTE
7
49
68
16 MAX
4 MAX GAP IN THIS POSITION
REAR FACE OF PAYOUT COIN CHUTE
A B C D


3 POSITIONS FOR STUD LOCATIONS
THE CHANGER FIXING CAN BE MADE MORE SECURE BY REPLACING THIS STUD WITH A SUITABLE MACHINE SCREW CONFORMING TO THE SPECIFIED DIMENSIONS ON THIS DRAWING
68.4
A SUGGESTED MOUNTING ARRANGEMENT
114.3
18 MIN TOP STUD POSITION
MAX HEIGHT OF STUD HEAD 4 mm
2.2 MIN BOTTOM STUD
2:1 DETAIL TYP 2 POSNS
R27
R45
6.4
EXTREME ALLOWABLE CHUTE POSITION
9.4
2.0
45°
39.5
58.5
CASHBOX ROUTE
137.5
68.4
37.6
19.5
114.3
CHANGER MOUNTING DETAILS
R27
7.9
R49
MAX DIA OF STUD HEAD Ø8.2 mm
2:1 DETAIL
CONT. SHEET 2 OF 3 READ WITH SHEET 1
MARS ELECTRONICS international
THIS DRAWING IS ISSUED SOLELY ON THE UNDERSTANDING THAT IT IS COPYRIGHT AND IS LOANED AS THE CONFIDENTIAL PROPERTY OF MARS ELECTRONICS INTERNATIONAL. IT MUST NOT BE USED OR REPRODUCED WITHOUT THE PRIOR WRITTEN CONSENT OF THE COMPANY.
TITLE CHANGER INSTALLATION DRAWING (MOUNTING DETAILS)
SITE/GROUP 33001
PART NO. 14832400 1
REV Y4
CLASS AD
A1 PART NO 33001 14832400 1


COVER FLAP OPEN POSITION
93
16
7
77
81
15
25
36
203
77° REF
238
FRONT PLATE ASSEMBLY REMOVED FOR SUB CHASSIS RELEASE
15° REF
138
FRONT PLATE ASSEMBLY OPEN FAR ENOUGH FOR REMOVAL
101
7° REF
94
FRONT PLATE ASSEMBLY OPEN TO 1st POSITION (FOR MANUAL TUBE FILL)
CONT SHEET 3 OF 3 READ WITH SHEET 1
MARS ELECTRONICS International
THIS DRAWING IS ISSUED SOLELY ON THE UNDERSTANDING THAT IT IS CONFIDENTIAL TO MARS ELECTRONICS INTERNATIONAL AND THAT IT MUST NOT BE USED OR REPRODUCED WITHOUT THE PRIOR WRITTEN CONSENT OF MARS ELECTRONICS INTERNATIONAL.
TITLE CHANGER INSTALLATION DRG. (SPACE ENVELOPE)
SITE/GROUP 33001
PART NO. 148324001
REV Y3
CLASS AD
A1 PART NO 33001 148324001

REPRESENTATIVE:

THE INTELLIGENT TRANSACTION™