Programming the Super Universal Board

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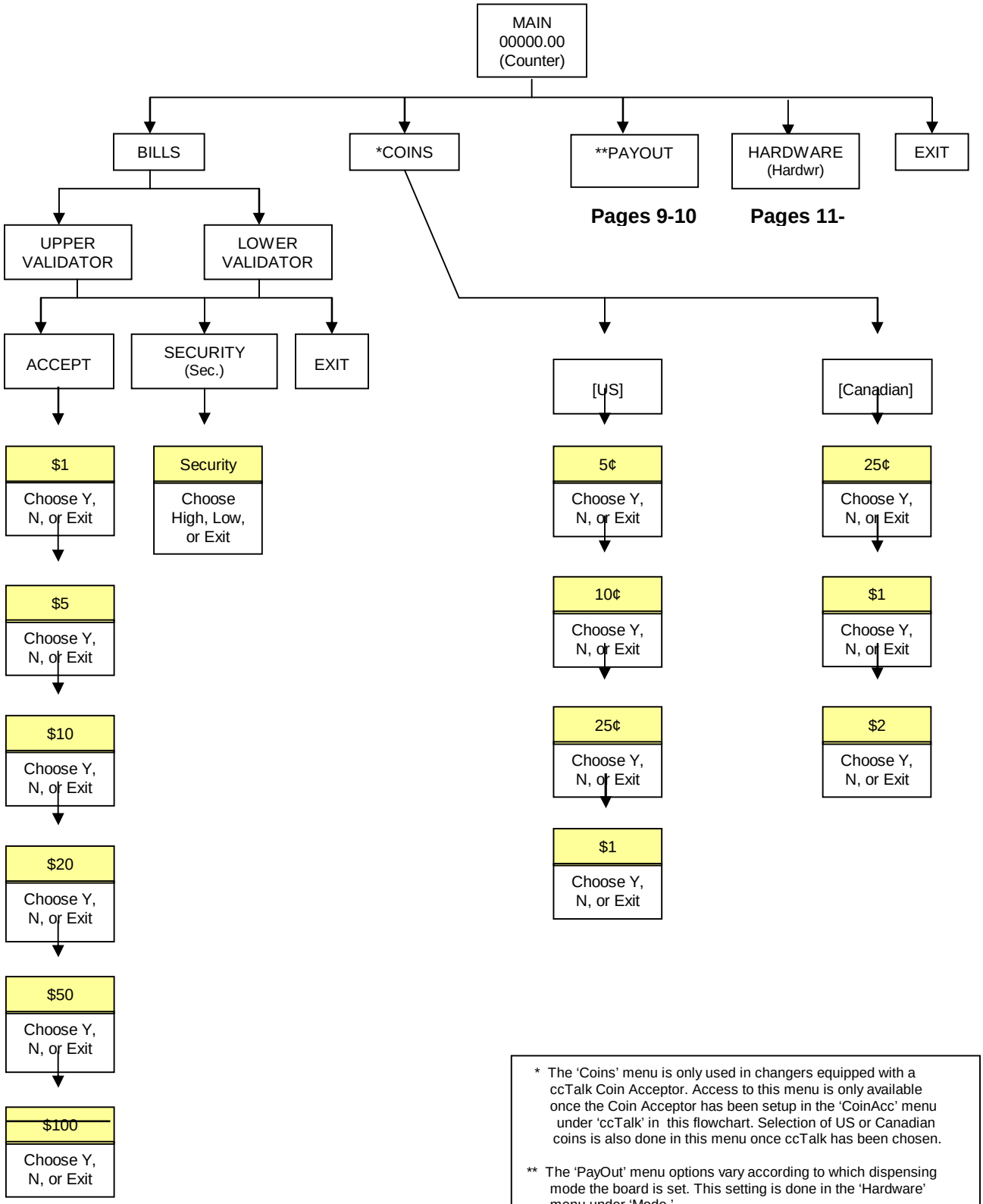
AC2005 CLASSIC SERIES CHANGER PROGRAM FLOW CHART

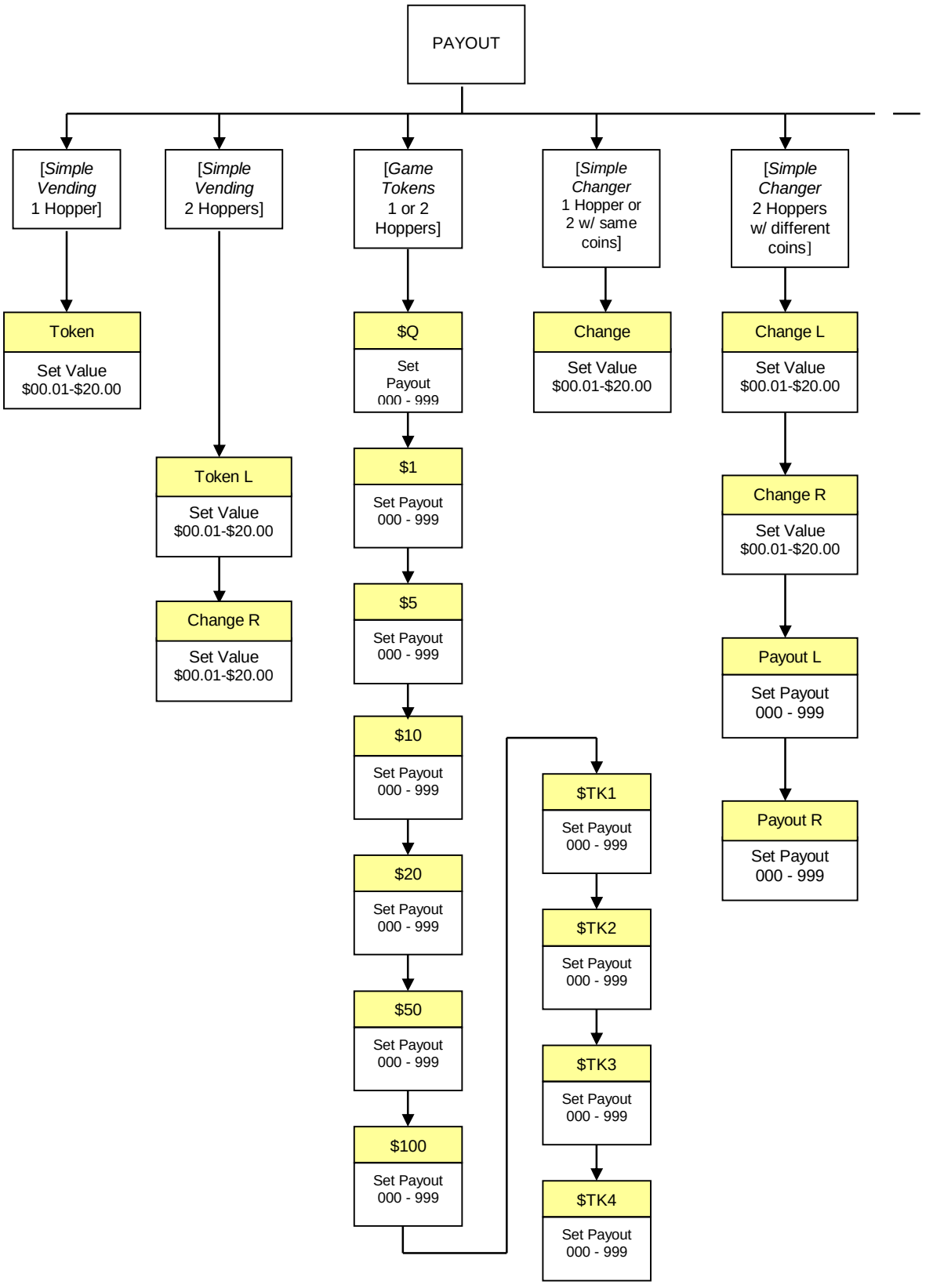


* The 'Coins' menu is only used in changers equipped with a ccTalk Coin Acceptor. Access to this menu is only available once the Coin Acceptor has been setup in the 'CoinAcc' menu under 'ccTalk' in this flowchart. Selection of US or Canadian coins is also done in this menu once ccTalk has been chosen.

** The 'PayOut' menu options vary according to which dispensing mode the board is set. This setting is done in the 'Hardware' menu under 'Mode.'

SW Version UNV F06

AC2005 CLASSIC SERIES CHANGER PROGRAM FLOW CHART



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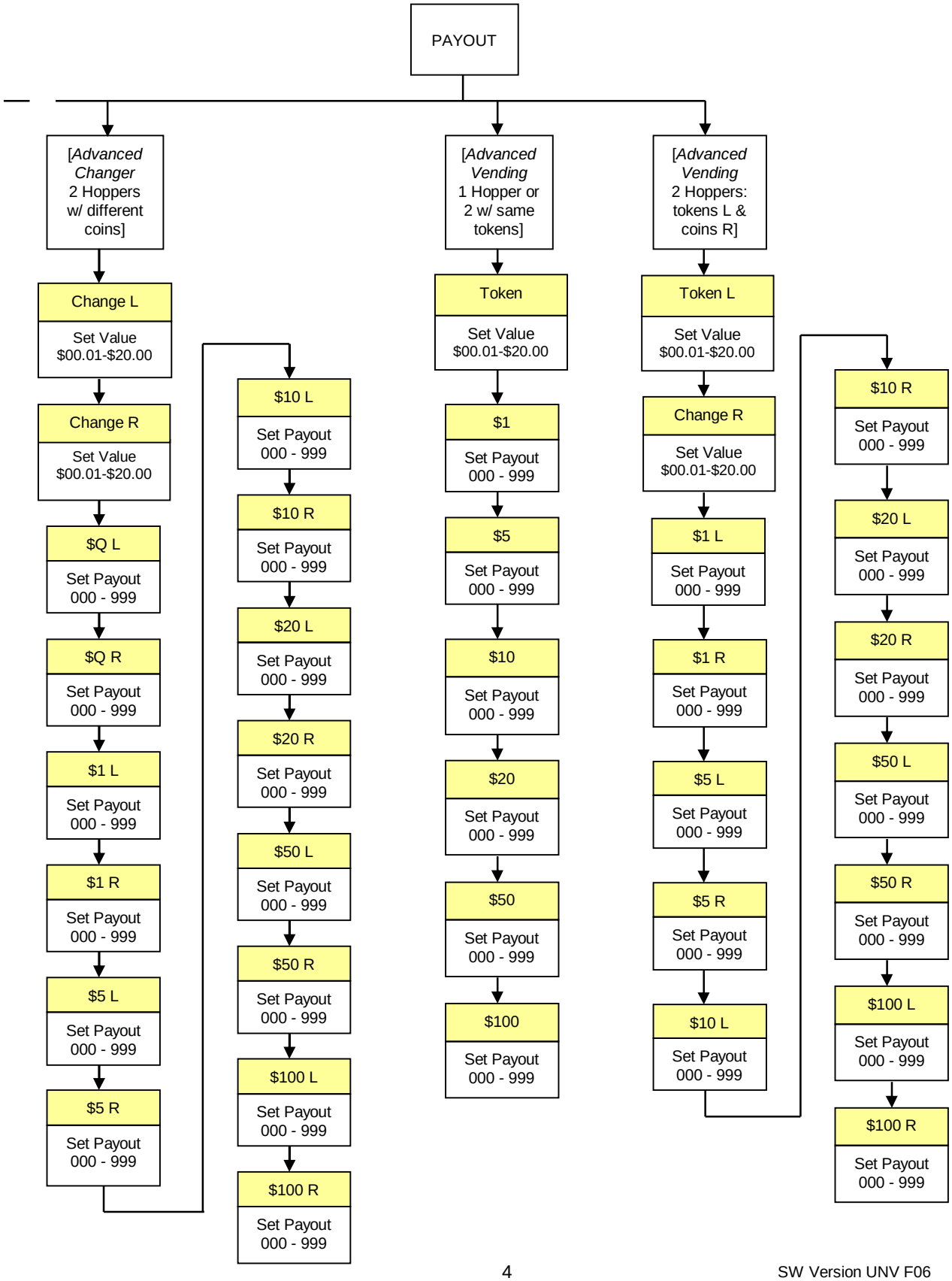

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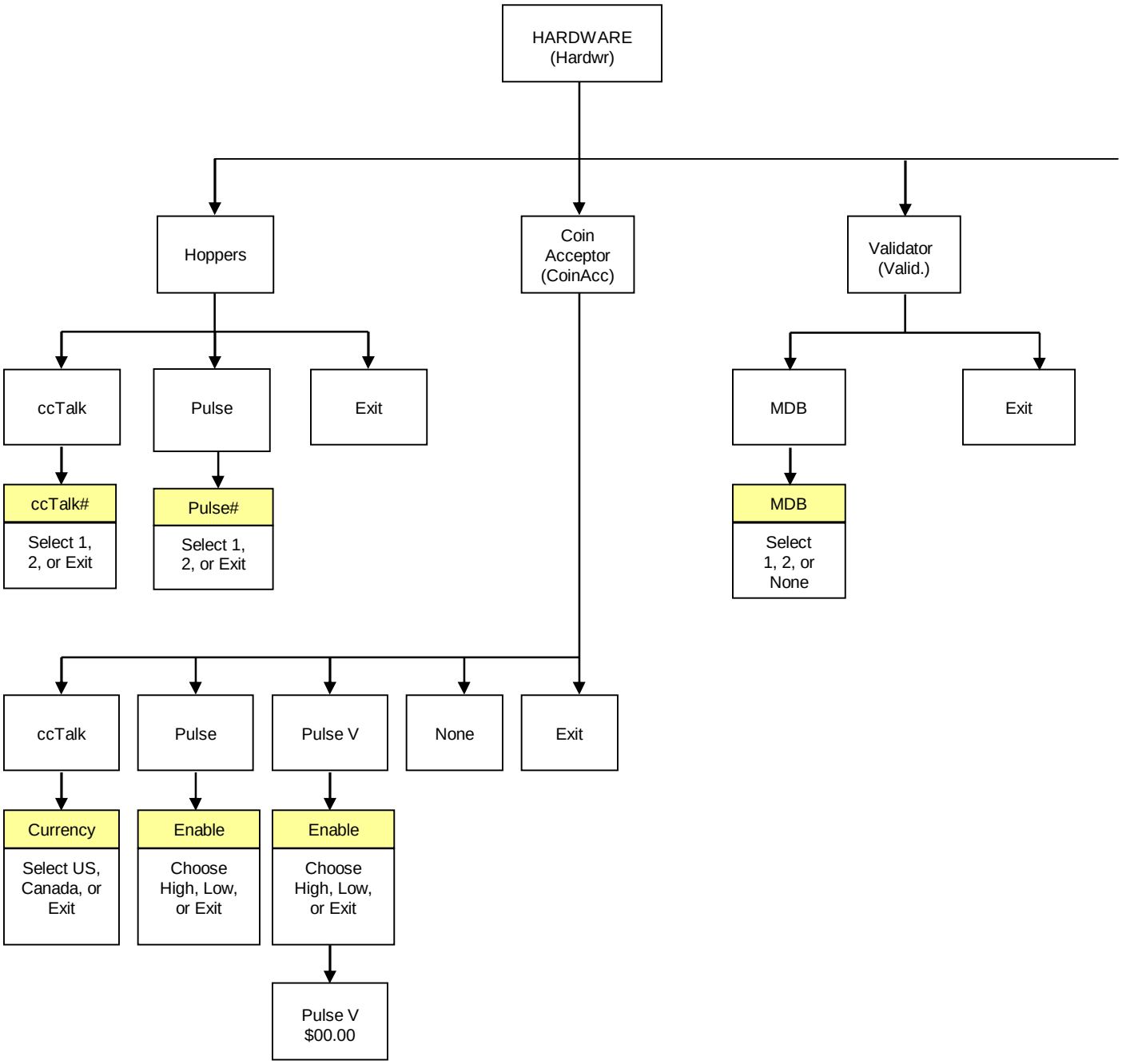

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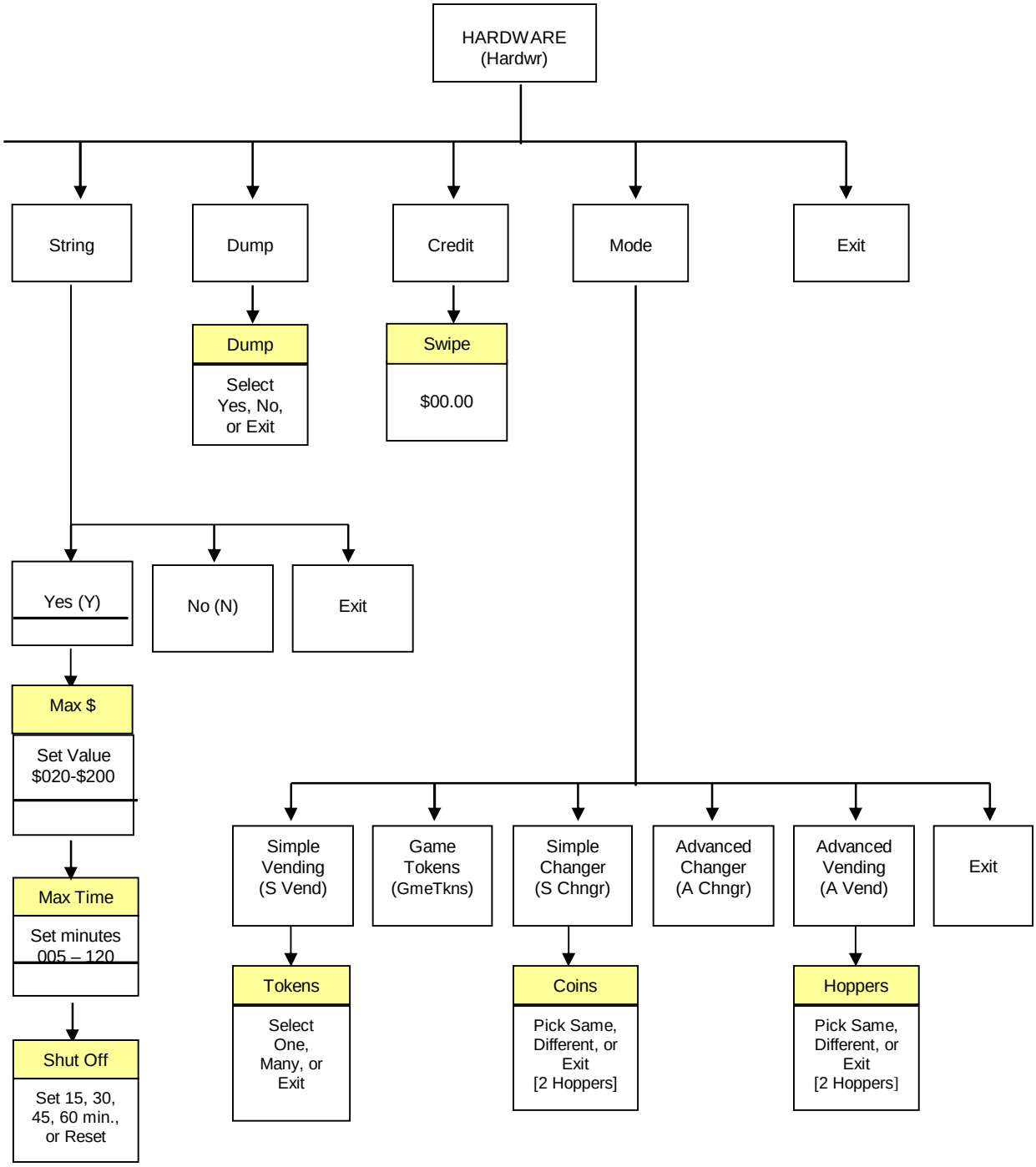

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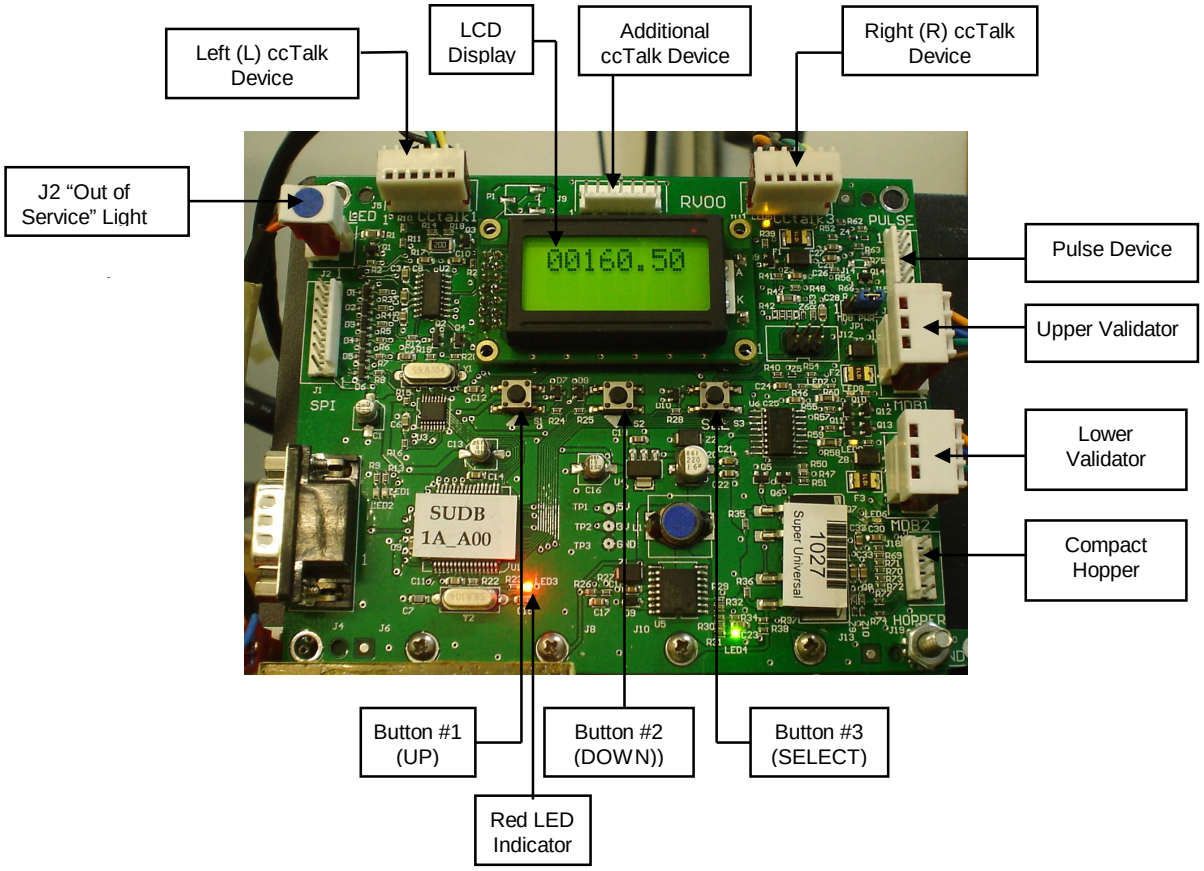

Figure 1 – Main Logic Board

STANDBY OPERATION

Power-ON the changer, and allow it to run through its start-up procedure, which may take up to a minute or more. During this time, you will hear the validator motors cycling. This is normal. After waiting the allotted time, the changer will be in its Standby state, ready to accept bills or coins. In this state, the MLB display's backlight will be on continuously, and the screen will display the current count of total dollars changed by the machine. Additionally, the board's red LED will blink once per second to indicate that the unit is getting power and functioning normally. (See Figure 1.)

ACCESSING THE PROGRAM MENUS

Your changer comes preset with default operational settings that are easily reprogrammed to meet your desired application. Programming is done using the three buttons and LCD display located on the Main Logic Board as an interface. (See Figure 1.)

When the unit is in the Standby mode, pressing the 'SEL' (Select) button (#3) enters the Setup mode initially, and then it selects and saves your choices within the Setup mode menus that follow. Buttons #1 and #2 are used to move the cursor and to increase or decrease user-set values. Many of the menus contain submenus, which may be accessed by pressing the Select button when the appropriate menu item is displayed or highlighted. Choosing 'Exit' in any menu will take the program out of Setup back to Standby mode.

The following sections describe the various options available in the software and should be used as a reference during initial setup and configuration. *Note: For menu items and settings, refer to the Program Flow Charts in this manual. These settings must be done in sequence all the way through for any changes to be saved. Choosing 'Exit' at any point in the middle of a series will return the program to*

Standby mode WITHOUT saving any changes. Also, after programming is complete and the changer is back in Standby mode, turn the MLB power OFF then back ON again before resuming operation.

SETTING BILL ACCEPTANCE

BILLS – Upper Validator and Lower Validator

The first menu item contains settings that affect the bill validator.

Accept: This submenu is used to specify which bill denominations will be accepted by the validator. Choose (Y) to accept or (N) to reject each bill denomination in sequence. *Note: Some validators have a set of dip switches for individual denomination acceptance. Both the validator and the logic board must be set to 'Yes' or 'Accept' for a bill to be accepted. Check the validator manual for information on your particular validator. (Factory settings from American Changer enable all bills on the validator's DIP switches, so they should not be changed; all settings can be made in the Main Logic Board.) Not all validators can accept all bill denominations up to $100 bills.*

Security: This setting applies to ALL bills. Set whether to use high or low security scanning of bills by the validator. High security scanning, basically, checks more bill parameters and makes it more difficult to pass a counterfeit bill. For this reason, though, high security may require a "crisper" or newer bill for acceptance and may not accept an older "tissue-paper," yet legitimate, bill that low security might.

SETTING COIN ACCEPTANCE (OPTIONAL)

COINS

This Menu item only shows up if a ccTalk Coin Acceptor is present and set up in the Hardware menu. (Refer to the Coin Acceptor setup section in this manual.) Similar to setting bill acceptance, the 'Coins' menu is used to specify which coin denominations will be accepted. Denomination settings depend on whether US or Canadian coins were selected during Coin Acceptor setup. For US coins, choose (Y) to accept or (N) to reject nickels through one-dollar coins. For Canadian coins, accept or reject 25 cent, one-dollar, and two-dollar coins. *Note: The Condor Plus uses pulse communication, NOT ccTalk.*

SELECTING AN OPERATING MODE

HARDWARE – MODES

The changer can be selected to run in any one of five distinct operating modes. Mode selection is done in the sixth submenu of the 'Hardware' menu, 'Mode.' Which mode to select depends on how the changer is to be used. Please read through the following descriptions, and choose the one that matches the way you want your changer to be set up. *Mode selection should be made PRIOR to setting up the payouts in the 'Payout' menu, because the payout menu changes for different mode settings.*

Simple Vending (S Vend) Mode: Vend tokens only if machine has one hopper, or vend tokens from the left hopper and change from the right if the machine is equipped with two hoppers. If this mode is selected, the program prompts you to select the number of tokens to be dispensed – One or Many. For two hoppers, 'One' means that one token will be dispensed, and change will be made for the remaining balance, if any. 'Many' means that the hopper will dispense as many tokens as possible for the money denomination accepted, and change will be made for the remaining balance, if any. Token and change values are set in the 'Payout' menu. For one hopper, since no change is available, the changer defaults to 'Many,' changing the full amount to tokens. Discounts or bonus payouts are not possible using Simple Vending mode.

Game Tokens (GmeTkns) Mode: Select Game Tokens mode to vend tokens only. NOTE: This is the mode to use if you would like to make use of "Party Tokens," which can be user-set to pay out as many as 999 tokens. Payouts per money denomination, and up to 4 different "Party Tokens," can be set independently, giving the option of including discounts or bonuses for certain denominations at your discretion. *If changer is equipped with two hoppers, both should be filled with the same tokens.*

Simple Changer (S Chngr) Mode: This is the most basic changing mode. A coin or bill is fully changed into the denomination(s) of coins in the hopper(s) without discounts or bonus payouts. This mode can be used with one or two hoppers. If two hoppers are installed, they can each be filled with the same or different denomination coins with which to make change. The program will prompt you to enter whether the coins in the hoppers are the same (Same) or different (Diff). Payouts settings are per dollar.

(Change values and payouts are set in the 'Payout' menu; refer to the Payout Options section in this manual.)

Advanced Changer (A Chngr) Mode: Advanced changing mode is designed for two hoppers only, each filled with different coins. This is the most configurable changing mode, as it allows independent changing options to be set for each coin and bill accepted. Individual payouts from both the left and right hoppers can be set for each money denomination, allowing for a broad variety in the types of payouts that can be set, including discounts for certain bills and bonuses, if desired.

Advanced Vending (A Vend) Mode: This mode is, basically, a further adjustable version of the Simple Vending mode, adding the capability of setting individual payouts per each accepted money denomination. When two hoppers are used for this mode, unlike in Simple vending mode, you have the option of filling them with the same or different coins (select 'Same' or 'Diff.' after selecting this mode). If they are both filled with the same tokens, the changer works the same as with one hopper. If 'different' is selected, the left hopper should contain tokens, while the right should contain coins for change. All payouts are configurable for each accepted money denomination; you set how many tokens and how much change is paid out for each transaction (see 'Payout' menu instructions below).

PAYOUT OPTIONS

PAYOUT

There are eight different ways that this menu can appear, as seen in this manual in the Program Flow Chart in the row of boxes under the 'Payout' box, depending on what Hardware Mode the unit is set to, the number of hoppers, and the type(s) of coins or tokens in the hopper(s). *If not already done, please select an operating mode for the changer PRIOR to completing the 'Payout' settings.* (Refer to the Selecting an Operating Mode section in this manual.)

Simple Vending Mode (1 Hopper): Press Up or Down (buttons #1 or #2) to set the value of the tokens in the hopper. A token's worth can be set to anywhere between 1¢ and $20. Press the Select button to save the value chosen.
Example: Set Token = $0.25 to pay out 4 tokens per dollar.

Simple Vending Mode (2 Hoppers): Select a value for the tokens in the left hopper ('Token L'), and enter the denomination of the coins in the right side hopper ('Change R'). Both can be set to values between 1¢ and $20.
Example: With the mode set to 'many', set Token L = $0.30, and Change R = $0.05 (fill the right hopper with nickels). Inserting a $5 bill will pay out 16 tokens ($4.80) and 4 nickels ($0.20). With the mode set to 'one', the payout will be 1 token ($0.30) and 94 nickels ($4.70) for the same $5 bill.

Game Tokens Mode (1 or 2 Hoppers): If changer is equipped with two hoppers, both should be filled with the same tokens for this mode. Here, set the number of tokens to be paid out per money denomination accepted, starting with the quarter, and proceeding, in increasing order, all the way to the $100 bill. (Only the denominations that have been set for acceptance in the 'Bill' and 'Coin' menus and on the validator will show up.) Then, continue by setting the number of tokens to be paid out for up to 4 different "Party Tokens." Press Up or Down (buttons #1 or #2), then Select to set the payouts. Each number can be set to anywhere between 0 and 999 tokens.
Example: Set $Q = 1, $1 = 4, $5 = 22, and $TK1 = 100. This will pay out 4 tokens per dollar with a 2 token bonus for changing a $5 bill, and 100 tokens upon acceptance of "Party Token" #1.

Simple Changer Mode (1 Hopper, or 2 with same coins): Enter the denomination of coins in the hopper(s). This value can be set to anywhere between 1¢ and $20. Use the Up button to increase the value and the Down button to decrease it, and push the Select button to save.
Example: Set Change = $0.25 to pay out 4 quarters per dollar.

Simple Changer Mode (2 Hoppers with different coins): Begin by entering the denomination of coins in the left ('Change L') and right ('Change R') hoppers. These values can be set to anywhere between 1¢ and $20. Next, set the number of coins from each to be paid out per dollar for each changing operation. The left hopper is first ('Payout L'), then the right ('Payout R').

Note: The 'Payout' settings override the 'Change' value settings, so be sure to correctly enter how many of each coin you want dispensed per dollar.
Example: Set Change L = $0.25, Change R = $0.05, Payout L = 3, and Payout R = 5 to pay out 3 quarters and 5 nickels per dollar.

Advanced Changer Mode (2 Hoppers w/ different coins): First, enter the denomination of coins in both the left hopper ('Change L') and the right ('Change R'). These values can be set to anywhere between 1¢ and $20. Then, set the number of coins to be paid out of each hopper per money denomination, starting with the left hopper payout per quarter ('$Q L'), then the right hopper payout per quarter ('$Q R'), then left and right payouts per dollar, and so on, up through payouts per $100 bill. Those denominations that are not enabled are skipped. *Note: The 'Payout' settings override the 'Change' value settings, so be sure to correctly enter how many of each coin you want dispensed per denomination.*
Example: To pay out exactly 5 nickels per denomination, with the balance to be paid in quarters, the settings would be: Change L = $0.25, Change R = $0.05, $Q L = 0, $Q R = 5, $1 L = 3, $1 R = 5, $5 L = 19, $5 R = 5, $10 L = 39, $10 R = 5, etc….

Advanced Vending Mode (1 Hopper, or 2 with same tokens): Using the Up and Down buttons, set the value of the tokens in the hopper(s). They can be set to values between 1¢ and $20. Following this, enter the number of tokens to be dispensed for each accepted bill denomination, starting with $1 and increasing, in sequence, to $100. Any number between 0 and 999 can be chosen for each, giving you the option of including discounts or bonus payouts starting at $1 bills.
Example: Set Token = $0.50, $1 = 2, $5 = 12, and $10 = 25 to pay out 2 tokens per dollar with a 2-token bonus for $5 bills, and a 5-token bonus for $10 bills.

Advanced Vending Mode (2 Hoppers: Tokens L and Coins R): This mode requires that the left-side hopper contain tokens, and the right-side hopper contain coins for change. First, select the value of the tokens in the left hopper ('Token L'), and then enter the coin denominations in the right hopper ('Change R'). Then, in sequence, enter the desired number of each to be paid out for each bill value accepted by the validator. The program will prompt for each value starting with the token payout per one-dollar bill ('$1 L') and change given ('$1 R'). This is followed by the token and change payout per $2 bill (if enabled), and so on, up through the payouts per $100 bill. *Note: The 'Payout' numbers override the 'Token' and 'Change' value settings, so be sure to correctly enter how many of each you want the changer to dispense per denomination.*
Example: To dispense two-dollar tokens and give some change in quarters for every bill accepted, set Token L = $2.00, Change R = $0.25, $2 L = 1, $2 R = 0, $5 L = 2, $5 R = 4, $10 L = 4, $10 R = 8, $20 L = 9, $20 R = 8, etc….

Once the payouts have been set, always run tests to be sure they are correct and how you want them before final installation of the changer. The settings can be programmed and reprogrammed as much as needed and can be changed at any time to meet your requirements.

HOPPER SETUP

HARDWARE – HOPPERS

The changer will arrive from the factory with this information already programmed, so this menu will only be needed if changes are to be made. To access the 'Hoppers' menu, first enter the 'Hardware' menu by highlighting it with the cursor, and pressing Select; it is the first submenu. Use this menu to tell the Logic Board what types of hopper(s) are installed inside the changer.

ccTalk: Select this option if using one or m ore hoppers with a pulse interface to the Main Logic Board (MLB). Once selected, enter the number of pulse hoppers – one or two – to be used in the changer. *Note: Each Logic Board has the capacity to control two pulse hoppers, left and right; but, if only one is used, it must be plugged into the left-side connector (see Figure 1 for the pulse device connections on the MLB). Further Note: If pulse hoppers are selected, pulse validator is automatically selected and all bills are enabled.*

COIN ACCEPTOR SETUP

HARDWARE – COINACC

If the changer came from the factory with a coin acceptor already installed, this information will be preprogrammed into the MLB, so this menu will only be needed if changes are to be made. The second submenu inside the 'Hardware' menu is the Coin Acceptor setup menu ('CoinAcc'). Similar to the 'Hoppers' menu, this menu is used to configure the Logic Board for the use of a coin acceptor.

ccTalk: This option should be selected if the installed coin acceptor communicates with the Main Logic Board using ccTalk serial communication protocol (see Figure 1 for the ccTalk device connections on the MLB; contact the coin acceptor's manufacturer or American Changer if help is needed). After choosing ccTalk, the program prompts for specification of the currency type that will be processed by the coin acceptor. Choose either US or Canadian coins.

Pulse: If the installed coin acceptor communicates with the Logic Board using pulse protocol, select 'Pulse' (the Condor Plus uses Pulse communication). Following this, the program will request specification of the logic level used to enable the coin acceptor, high (Hi) or low (Lo) (for the Condor Plus, select high). *Note: The Logic Board can only control one pulse device; if a pulse validator is installed, a pulse coin acceptor cannot be* (see Figure 1 for the pulse device connection on the MLB).

Pulse V: If the installed coin acceptor uses a mechanical switch, select 'Pulse V'. Following this, the program will request specification of the logic level used to enable the coin acceptor, high (H) or low (Lo). The program will then request the desired value of the coin.

None: Select this option only if the changer is not equipped with a coin acceptor.

VALIDATOR SETUP

HARDWARE – VALIDATOR

The changer will arrive from the factory with this information already programmed, so this menu will only be needed if changes are to be made. Setup of the validator(s) is done using the third submenu, 'Valid,' inside the 'Hardware' menu. The Main Logic Board can control up to two validators, but only one of each type. The two types are distinguished by their use of either MDB or pulse communication protocols to communicate with the MLB. The settings in this submenu tell the Logic Board how many of each type of validator, if any, are installed in the changer.

MDB: Select 'MDB,' and then enter how many MDB validators are installed in the changer – either one (1), two (2), or zero (None). (See Figure 1 for the MDB validator connections on the Main Logic Board.)

ANTI-STRINGING PROTECTION

HARDWARE – STRING

The fourth submenu inside the 'Hardware' menu is used for setting up or disabling options that help protect the changer from "stringing." Select 'String,' and then choose either (Y) to enable stringing protection, or (N) to disable it. If Yes is chosen, there is a series of three settings that will follow, explained below, that together control the behavior of the changer with regard to stringing.

Max $: This setting is the maximum dollar amount that can be accepted by the machine within the user-set time limit (next setting) before triggering the anti-stringing protection. The dollar amount can be chosen anywhere between $20 and $200 in $5 increments.

Max Time: The time entered here is the time limit for the changer accepting the user-set maximum dollar amount (previous setting). If the changer accepts the maximum dollar amount within the amount of time set here, anti-stringing protection will be triggered. The length of time can be set to anywhere between 5 and 120 minutes in 5 minute increments.

Shut Off: This setting controls the anti-stringing protection, which is the shutting down of the changer for the time specified here. The changer can be set to shut down for 15, 30, 45, or 60 minutes, or until the MLB is reset by turning the power off then back on ('Reset').

USING THE HOPPER DUMP FEATURE

HARDWARE – DUMP

Enter this submenu to enable or disable the "dump" feature, which will automatically empty all of the contents of the hopper(s). After entering the 'Hardware' menu, scroll down and select 'Dump.' To enable the feature, choose Yes (Y); to disable it, choose No (N). Note: Choosing Yes will not initiate a coin dump; it will only enable it to occur.

Using the DUMP Feature: *The following will work only if the Dump feature is enabled in the 'Dump' menu.*

1. Open the changer door to give access to the MLB and the hopper(s).
2. Place a suitable container in front of the hopper to catch the dispensed coins. On rear load models, the coins may have to be scooped out of the coin cup as they are being ejected.
3. On the Main Logic Board, press and hold buttons #1 and #2 (Down) simultaneously, until the hopper(s) begin to dispense their contents. They should only need to be held down for a few seconds.
4. Once the hopper(s) are emptying, they will continue to run until manually stopped by pressing the Select (SEL) button on the MLB. They may be stopped at any time or allowed to run until empty.
5. A count of the number of coins being dispensed by each is displayed on the LCD display. If the hoppers are completely emptied, this count will show how many coins were in each before dumping commenced.

Out-of-Service Conditions & Error Codes

Out-of-Service conditions occur in the changer for the following reasons: blown fuses, validator errors, coin acceptor errors, or hopper errors.

Blown Fuse: An AC power spike in line voltage or a bad transformer on the Power Supply board can cause a blown fuse. If the primary fuse blows, the indication is that the green LED on the power supply will not light.

1. Replace the fuse. If the green LED now lights, then there was a spike.
2. If it does not light and the fuse blows again, disconnect the hopper and validator connectors and try again. If the green LED stays lit, reconnect each component one at a time until you find the one blowing the fuse.
3. If the fuse still blows with all components removed from the MLB, the power transformer is shorted. To test the transformer, use a multimeter set for ohms and measure across the primary (40ohms) and the secondary (1.5ohms).

ERROR CODES ON BOARD DISPLAY

Validator Errors: When a validator error occurs, the validator's EEPROM shuts down the validator and sends an error code to the Logic Board's LCD display. The Out-of-Service light on the front of the machine will illuminate for a validator error.

1. **Validat. Full –** The Bill Stacker is full of bills and should be emptied.
2. **Validat. Motor –** Motor failure. Either the Stacker or Transport motor has failed; replace the unit.
3. **Validat. Sensor –** One of the sensors inside the validator has failed. Check for a jammed bill; if that is not the cause, repair or replace the validator.

4. **Validat. Checksum –** Checksum failure. The validator's Logic Board programming has been corrupted; repair or replace the validator.
5. **Validat. CashBox –** The Bill Stacker has been removed from the validator and should be replaced.
6. **Validat. NoComm –** There is a communication failure between the changer's Main Logic Board (MLB) and the validator. This may be a temporary condition while one of them is completing some task, or the cable harness may be loose or unplugged, or the validator may need to be repaired or replaced.
7. **Validat. Disabled –** The MLB cannot enable the validator due to an internal error inside of the validator. This may be a communication issue and may be temporary.
8. **Validat. String –** The changer's Anti-Stringing protection has shut down the machine's operation. Basically, more money has been paid out in less time than allowed by the system's settings (see the Anti-Stringing Protection setup section in this manual). Wait the allotted time, or reset the MLB to resume operation.
9. **Validat. Pulse –** The pulse validator being used has been disabled. Check the unit and repair or replace as necessary.
10. **Busy –** This message is displayed whenever the validator is in the process of validating (accepting) or stacking a bill.

Coin Acceptor Errors: *The following Coin Acceptor errors are only for changers equipped with a Money Controls SR3 Coin Acceptor using ccTalk serial communication protocol.* The Out-of-Service light on the front of the machine will NOT illuminate for a Coin Acceptor error, but the error message will be displayed on the LCD display.

1. **CoinAcc. NoComm –** There is a communication failure between the changer's Main Logic Board (MLB) and the coin acceptor. This may be a temporary condition, or the cable harness may be loose or unplugged, or the coin acceptor may need to be repaired or replaced.
2. **CoinAcc. EEPROM –** The EEPROM on the coin acceptor's logic board has an error. Repair or replace the unit.
3. **CoinAcc. Coils –** There is a general error in the unit's inductive coils. Check the coin path for dirt or an obstruction. If nothing is found, unit may need servicing or replacement.
4. **CoinAcc. CreditS –** The coin acceptor's Credit Sensor is either blocked or faulty. Check for a jammed coin on the "credit" side, or else the unit may need repair or replacement.
5. **CoinAcc. Piezo –** The coin acceptor's Piezo Sensor is experiencing an error. Unit may need repair or replacement.
6. **CoinAcc. RejectS –** The coin acceptor's Reject Sensor is either blocked or faulty. Check for a jammed coin on the "reject" side, or else the unit may need repair or replacement.
7. **CoinAcc. TempS –** The coin acceptor's Temperature Sensor is experiencing an error. Unit may need repair or replacement.
8. **CoinAcc. TempHigh –** The operating temperature of the coin acceptor is above specified limits. Locate the cause of the high temperature and remedy the situation. If nothing is found, the temperature sensor may have failed, or the unit may need servicing or replacement.

Hopper Errors: Hopper errors occur for a variety of reasons, but the most common in any coin machine is always low coins. Any of the hopper Errors will cause the Out-of Service light on the front of the machine to illuminate. For the following, if two hoppers are installed in the machine, X = L (left) or R (right).

1. **HopperX NoComm –** The changer's Main Logic Board is unable to communicate with the hopper. This may be a temporary condition, or the cable harness may be loose or unplugged, or the hopper may need to be repaired or replaced. *Note: If using only one hopper, it must be plugged into the left-side connector (see Figure 1).*

2. **HopperX NoPay –** This code signifies that a payout signal was sent to the hopper, but the hopper did not dispense any coins/tokens. Check the hopper for a possible coin jam, exit blockage, or other mechanical error. If nothing can be found, have the unit repaired or replaced. *Note: If using two hoppers and one of them fails to pay out, the other hopper will make up the difference, if it can.*

3. **HopperX OptoBlkd –** An optical sensor near the exit window is being blocked. The exit path may be obstructed, or the Optic Board may be bad. Repair or replace.

4. **HopperX Current –** The maximum current level for the hopper is being exceeded. Inspect for a jammed coin preventing the coin Elevator Track from moving, or a stalled or shorted motor. Repair or replace the hopper.

5. **HopperX Fraud –** The changer may be being defrauded. Inspect for a jammed coin or other obstruction near exit window; repair or replace the hopper.

6. **HopperX TimeOut –** The coins/tokens were not dispensed from the hopper in the specified time. Check the hopper for any coin jams or mechanical obstructions preventing coins from exiting. Have the unit repaired or replaced.

7. **HopperX Low –** This is the most common error; it signals Low Coins in the hopper. Refill the hopper with coins or tokens. If you have enough coins in the hopper to cover the gold low-level sensing plates and you are still getting this message, try the following:
   a. Ensure the coins have not bridged in the extension on top of the hopper, preventing them from falling down into the hopper.
   b. Clean the bottom gold plates of the hopper with EMERY cloth or fine sandpaper. Refill the hopper and try again.
   c. Using an ohmmeter, check the continuity of the hopper harness from the 12-pin connector back to the logic board. You should get 0 ohms for each line.

   If none of this works, the unit may need repair or replacement.