

6.0 SERVICE PROGRAMMING

SERVICE MODE

Access the service mode by pressing the mode switch on the control board (refer to Figure 3.1). After displaying any errors, the first function is displayed. Press # or * to scroll through the errors and functions. Return to vend mode by closing the door, pressing the mode switch or allowing the 2 minute time-out to occur.

For convenience, there is a decal on the right-hand side inside the cabinet that presents all the information in this section in a flow-chart format.

6.1 ERROR CODES

Any errors that have been recorded will be displayed when the mode switch is pressed. Refer to Section 7.4 for a description, along with troubleshooting tips for correcting the errors. ALWAYS CORRECT THE ERROR BEFORE CLEARING THE MESSAGE.

1. **# NEXT ERROR** – View the next top level error code.
2. **1. SUBLVL ERRORS** – Displays any sublevel error codes for MDB devices.
3. **0. CLEAR ERROR** – Erases the error code from memory.

6.2 ACCOUNTING DATA

Limited sales information can be displayed directly on the vendor display. More detailed sales information is contained in the DEX data. This data can be collected with any DEX data collection system.

1. **HIST. VENDS** – Displays number of vends since initialization of the control board.
2. **HIST. CASH** – Displays the total sales since initialization of the control board.
3. **RESET. VENDS** – Displays the number of vends since the last reset.
4. **RESET. CASH** – Displays the total sales since the last reset.
5. **HIST. SELECTIONS** – Displays sequential number of paid vends for each individual selection since initialization of the control board. Depending on the configuration, up to 80 selections may be audited. Enter a selection by entering its characters. The display will show the total paid count for the selection for 2 seconds. At this time another selection may be entered. All selections can be accessed this way. Press # to exit to the Accounting Menu.
6. **CLEAR VALUES** – Clears RESET. VENDS and RESET. CASH.
7. **SERIAL NUMBER** – Allows programming of the serial number that will appear in field ID101 in the DEX data. The user may also choose to have this programmed serial number used in place of the changer serial number in field CA101.

6.3 FILL/DISPENSE

The FILL/DISPENSE function allows the user to add coins to the changer or dispense coins from the changer.

1. **SELECT TUBE 1-5** - To dispense coins, press 1 through 5 (for a 5-tube changer) to dispense from tubes 1-5. Tubes are numbered starting with the lowest denomination. The control will display the value of the coin being dispensed and the total number of coins in that tube.
2. **OR INSERT COIN** - To fill the changer, simply drop coins in the coin slot. The display will show the value of the coin and the total number of coins in that tube. Note that coins can also be added through the back of the changer. However, the control will not have an accurate count of the coins in the tube unless the tube is filled completely. When the high-level sensor in the tube detects coins, the control will set the correct coin count for that tube.

6.4 DELAYED SALES

The user can delay sales of specified selections to give the product time to settle or cool. The delay must be manually started each time sales are to be delayed. Delayed sales has no effect on the time limits imposed by the Health and Safety rules (refer to Section 7.2). To automatically prevent sales during specific days and times, use SALES BLOCKING (refer to Section 6.10).

1. **START DELAY** – Begins the sales delay timer. Before starting the timer, choose menu item “5. EDIT SEL’NS” to specify which selections will be delayed. Customers will not be able to purchase those selections until the delay period ends.
2. **CANCEL DELAY** – Stops the delay timer and allows vending of all selections.
3. **SET DELAY** – Adjust the time of the delay timer in 15 minute increments.
4. **CLEAR ALL** – Clears all selections that were chosen to be delayed.
5. **EDIT SEL’NS** – View and change the delay status of all selections. The user can choose to apply the delay to a single selection, a tray, or all selections in the vendor.

6.5 TEMPERATURE

The user can set the refrigeration temperature and review the cooling performance of the vendor.

1. **CURRENT TEMP** – Displays the actual temperature in the cabinet.
2. **SETPOINT** – The user can adjust the refrigeration setpoint in 1°F increments. This is the temperature at which the refrigeration system will turn on. The refrigeration unit will turn off when the actual temperature is 4°F below the setpoint. If the vendor has Health and Safety software, and is vending perishable food, the temperature must be set to 41°F or below. A set point of 40°F is recommended.
3. **START LOG** – Begin recording the actual temperature every minute for the first 30 minutes of cooling after the door is closed.

4. **VIEW LOG** – View the temperatures recorded in the cooling log. The reading number, temperature, date and time are displayed. Press **1** or **2** to scroll up or down through the readings. This log will not display until 30 minutes after the log is started.

TIP: To view a temperature history of the previous 2 days, use DATA LOGS (refer to Section 6.14).

6.6 PRICE SETTINGS

Before setting prices, install a changer so that the control will recognize the proper scaling factor for your currency.

6.6.1 SET PRICES

Enter the tray then the column for the first selection to be priced. The current price for the selection will be displayed. Press **9** to edit, then enter the new price, making sure to enter all digits after the decimal point. The decimal is placed automatically based on the scaling factor from the changer.

Example: For a price of \$1.50, enter **1 5 0**.

The user can choose to apply the new price to that selection (**), all selections on the tray (*1), or all selections in the vendor (*2). It is usually faster to set all selections to the most common price in the vendor (*2), then change individual trays or items that have a different price.

6.6.2 VALUEVEND

ValueVend starts with the prices that were set using SET PRICES. Using ValueVend, any two selections are grouped together (a matching product or a different product) and offered at a reduced price. Up to 10 such groups are available. For example, in one group, soup and crackers are offered individually at full price, but if one is purchased along with the other the (total) price is reduced.

The vending machine operator should advertise the special combination prices.

- 1. RESPOND TIME** is used to set the number of seconds (20 to 99) the customer has to respond before any remaining credit is returned. Set the time to at least 30 if dual languages are scrolled in the display.
 - 1** – Press to increase the seconds.
 - 2** – Press to decrease the seconds.* - Press to save the new setting.
- 2. CHANGE** is used to change the settings of each group in turn, starting with Group 1.

GROUP – Groups 1 through 10 may be displayed in turn by using the “*” key.

 - 0 CLEAR** – Clears all of the settings in the current group. Use this key before changing settings. Using CLEAR will not change prices set using SET PRICES.
 - 1 EDIT** – Enter the first selection, enter the second selection, then enter the discounted price for this grouping.

Selections can be any combination of tray and column.

- * **SAVE** – Press to save the new settings and return to the GROUP display.
- # **EXIT** – Returns to the GROUP display without saving any changes.
- 1 EDIT** – Press to move to the price setting display. Enter a new discounted price for this group (the group selections are kept intact).
- * **SAVE** – Press to save the new price and return to the GROUP display.
- # **EXIT** – Press to return to the GROUP display without saving any changes.
- * **NEXT** – Display the next group.
- # **EXIT** – Return to the ValueVend menu.

6.7 TRAY SETUP

6.7.1 Test Motors

Enter the selection number to be tested, or press * to see the following options for testing multiple motors.

- 1-JOG ALL** – All motor positions in the vendor will be tested. Each motor will be turned only a very small amount, so that products loaded in the vendor will not be dispensed. The display will show the number of the motor being jogged, or it will show a message that a motor is missing.
- 2-JOG TRAY** – All motor positions on the selected tray will be tested. The display will show the number of the motor being jogged, or it will show a message that a motor is missing.
- 3-CHECK JAMMED** – The control will attempt to run each motor that has caused a jammed motor error. The status of the motor will be displayed afterward.

6.7.2 Link Motors

The user can link adjacent selections of the same product on the same tray. The leftmost linked selection is the master selection. All other linked selections are vended using the selection number and price of the master selection. Linked selections are vended sequentially for better product rotation. Entering the selection number of any linked selection will default to the master selection number, and the control will vend the next linked selection in the sequence.

- 1. NEW LINK** – Enter the tray where the motors are to be linked, then enter the first and last column numbers (left to right) to be linked.
- 2. VIEW / EDIT** – The user can view, change, or delete existing links.
- 3. CLEAR ALL** – This will delete all current links. The prices of the previously linked selections will remain the same as their master selections until new prices are set.

6.7.3 Home Switch

Only the seventh and eighth tray positions in the vendor can be set to use motors with home position switches. Enter the tray letter (G or H) or number (7 or 8) and press **1** to change the setting. The setting must match the type of motors used on the tray, or the motors will not work correctly.

When the setting is **Y** for YES, the switches on all of the motors on the selected tray are enabled. When a product selection is made the motor will only turn one full turn then stop. If the sensors did not detect a drop then "PLEASE MAKE ANOTHER SELECTION" will be displayed. Note that if the motors are non-switched (as in the 1.5" helix trays) the helix will turn for 4 seconds - typically vending more than one item.

When the state is **N** for NO, the switches on all of the motors are disabled. When a product selection is made the motor will turn until the sensors detect a drop. If after several seconds no drop occurs the motor will stop and "PLEASE MAKE ANOTHER SELECTION" will be displayed.

6.7.4 Delayed Stop

The user can program a delayed stop of up to one second to allow a motor to continue running after the product has been dispensed.

1. **ENTER SELECTION** – Enter the number of the selection to be delayed, enter **9** to edit, then enter the time in tenths of a second. The decimal point is placed automatically.

Example: Entering **8** will program a delay of 0.8 seconds.

The user can save the programmed delay to the selection, the entire tray, or all selections in the vendor. Linked selections will use the delay programmed for the master selection.

6.7.5 Letter / Number

The user can choose to designate the trays in the vendor with letters (A-H) or numbers (1-8). Depending on the setting, the top tray is designated "A" or "1". Numbers are typically used only in countries that do not use alphabetic characters. If the setting is changed, the trays should be relabeled accordingly.

6.7.6 Configure

The control will find all connected motors in the vendor and display the total number. The configuration of connected motors is stored in memory. If a configured motor is later found to be missing during a vend, an error message will be generated in service mode to alert the service person that the motor is disconnected.

6.8 MDB (MULTI-DROP BUS) SETTINGS

6.8.1 Force Vend

The factory default is "**N**" for no. If set to "**Y**", the customer is forced to make a selection before the control will allow a refund. If the selected product cannot be dispensed, a full refund can be returned to the customer. This setting will be over-riden by the CHANGE BILL setting. (refer to Section 6.8.3).

6.8.2 No Cheat

The factory default is "**Y**" for yes. If set to "**Y**", the control will not allow a vend unless correct change can be

returned to the customer. If disabled, the control will allow the customer to be short-changed up to \$1.00.

6.8.3 Change Bill

The factory default is "**N**" for no. If set to "**Y**", the customer can insert a bill and receive a full refund in coins by pressing the coin return button. Note that using CHANGE BILL will override force vend.

6.8.4 Hold Lost Credit

The factory default is "**Y**" for yes. If set to "**Y**", any remaining credit after a vend that can't be returned to the customer will be maintained on the display for 15 minutes. The customer can add to this credit to purchase additional items.

6.8.5 Multi-Vend

The factory default is "**N**" for no. If set to "**Y**", the vendor will hold the change following a vend. The customer can make additional purchases with the remaining credit. The customer may push the coin return button at any time to refund this credit.

6.8.6 Lev2 Coin Mech

The factory default is "**N**" for no. If set to "**Y**", the vendor will treat the coin mechanism as a level 2 device. Vendor must be powered down before change will take effect. AMS recommends that this option remain as "N" for no.

6.9 OPTIONS

6.9.1 Message

The user can customize the scrolling message that is displayed when the vendor is idle. Other words can be customized by using the CREATE CUSTOM option in the LANGUAGE menu (refer to Section 6.9.3).

6.9.1.1 For vendors with serial numbers prior to software revision "**P**":

Write out the desired scrolling message first. The message to be shown on the scrolling display can be up to 50 characters, including letters, numbers, punctuation and spaces. Next, rewrite the message, replacing each Character of the message using the appropriate Enter chart entry (refer to the following table, Table 1, Keypad Mapping Chart). For example, entering ***5** in the message option will print the character X on the display (please note that ***5** counts as only one character, the letter X, in the scrolling message).

Select the message option to enter a message. The controller will prompt the user to "**CHANGE Y/N.**" Press **1** to change within five (5) seconds, or press any other key to exit.

Key in the new message using the chart. Press the ***** as needed to cycle through 1, 2, or no asterisks, as seen on the display, while the message is entered.

Cycle through the asterisks and enter the letters until the new message is completed. It is only necessary to cycle through the asterisks in order to select other letters. Press **#** to save the new message.

For example, to display the letters **TUV** enter ***34E**. In another example, to display **AMS IS #1** enter **AM *S H E *D H **E1**.

To correct mistakes press *** H** to backspace.

6.9.1.2 For vendors with serial numbers after software revision **"Q"**:

Write out the desired message first. The message to be displayed on the scrolling display can be up to 50 characters, including letters, numbers, punctuation and spaces. New messages erase old ones.

Select the message option and the controller will prompt the user to press **"1"** to change the message, or press **"#"** to exit.

To enter a message, the user should rapidly tap a particular key to cycle through a list of characters for that key. Stop at the desired character. When the keypad is left idle, the last-displayed character is moved over to the end of the message. Continue to select the next character. The key definitions are similar to those of telephones and cell phones:

KEY 0: (space)0

KEY 1: !? , . \$; * & " + - / < > = # % ' 1

KEY 5: JKL5

KEY 6: MNO6

KEY 2: ABC2

KEY 3: DEF3

KEY 4: GHI4

KEY 7: PQRS7

KEY 8: TUV8

KEY 9: WXYZ9

Pressing the ***** key will back space through the message. Pressing the **#** key will save the message.

6.9.2 Prize

The factory default is **"0"** for none. The user can set the vendor to give away a free product after a predetermined number of successful vends. Enter the number of vends between free vends, up to 9999. Setting the number to **"0"** will disable the prize option.

6.9.3 Language

6.9.3.1 Primary

The user is presented with a menu of available languages. The user may choose the primary language for the display of all messages. Note that Service Mode messages are available in Primary language only.

TABLE 1., KEYPAD MAPPING CHART
(Used Before Software Revision P)

With No Asterisk		With One Asterisk (*)		With Two Asterisks (**)	
Enter This	To Display Character	Enter This	To Display Character	Enter This	To Display Character
A	A	A	N	1	1
B	B	B	O	2	2
1	C	1	P	3	3
2	D	2	Q	4	4
C	E	C	R	5	5
D	F	D	S	6	6
3	G	3	T	7	7
4	H	4	U	8	8
E	I	E	V	9	9
F	J	F	W	0	0
5	K	5	X	A	!
6	L	6	Y	B	?
G	M	G	Z	C	:
H	SPACE	H	BACKSPACE	D	;
7	+	7	*	E	#
8	-	8	/	F	\$
#	SAVE	#	<	G	%
9	,	9	>	H	&
0	.	0	=	#	'

6.9.3.2 Secondary

If desired, the user can select a secondary language for the display of all messages. Messages will be displayed first in the primary language, then in the secondary language.

6.9.3.3 Create Custom

The user can create customized versions of words or enter words in another language. For convenience, the primary language messages can be used as a starting point. The user can then select words to modify. After creating the customized messages, set the primary or secondary language to CUSTOM.

6.9.4 Product Sensor

If set to "Y", the vendor will use the product sensor (optional) to determine if there is product in the delivery bin. The control board will not allow vending until any product in the delivery bin is removed. A "REMOVE PRODUCT" message will be displayed. This feature is used primarily when vending glass bottles and products that can be damaged by other falling products.

6.9.5 Speech

A speech synthesizer option is available for use with RC Systems Inc. DoubleTalk LT speech synthesizer. It operates only while the vendor is in service mode. The speech synthesizer vocalizes keystrokes and what is shown on the display.

The Options menu selection 5 enters the synthesizer on/off menu. Press 5 to toggle on/off. Press # to exit to the Options Menu.

When turned on the synthesizer is inactive until the vendor is placed into service mode.

The synthesizer must be plugged into the DEX plug on the control board. The Sensit II utility cable (P/N 20786, Harness, Chip Programming) may be used, but it must be plugged into a male-to-male gender adapter (Radio Shack 26-231B) followed by a null modem adapter (Radio Shack 26-264). The serial cable from the DoubleTalk LT is plugged into the null modem adapter. The ¼" jack from the Sensit II utility cable is then plugged into the DEX plug on the control board (other DEX functions cannot be used while the DoubleTalk LT is plugged in). A dedicated cable could also be constructed.

6.10 SALES BLOCKING

Four separate time periods in each day of the week can be set, during which selections can be blocked. All or any combination of selections in the vendor can be blocked from vending, or are exempt from blocking.

1-4 SET PERIODS

1. Enter the number (1-4) of the time period to set-up. For example, choose #1.
2. Enter the time when sales blocking period #1 is to start, then press SAVE as indicated.
3. Select a.m. or p.m. for starting.
4. Enter the time when sales blocking period #1 is to end, then press SAVE as indicated.
5. Select a.m. or p.m. for ending.
NOTE: A time period can be started, for example, at 9:00 p.m., and may be set to end at 6:00 a.m. the following day.
6. Starting with Sunday, press 1 to select if time period #1 blocking will be ON or OFF. Select 2 to continue with the next day of the week.
7. NOTE: Sales blocking as set in the vendor may be turned ON and OFF by turning one or more days of the week ON or OFF.

ALL SELECTIONS?

1. To block all selections in the vendor in time period #1 select YES for 'ALL SELECTIONS?'

2. To choose different selections to block in time period #1 select NO. Choose the combination of selections to block as desired. Any combination of tray and column may be blocked (for example, trays 3, 4 and 5, and selections 61, 62 and 66).
3. In this Selection Entry display, enter the number of the first selection. For example, choose 25.
4. The display will show 25, and if it is blocked or exempt.
5. Press the number "9" on the keypad anytime to switch 25 from being blocked to being exempt, or back again.
6. Press "#" on the keypad to exit without saving, and return to the previous display.
7. Press "*" on the keypad to show the next display for selection 25.
8. Press "*" again to save selection 25 as blocked or exempt, as was displayed.
9. Press "1" to save ALL of #2 tray as blocked or exempt.
10. Press "2" to save ALL selections in the vendor as blocked or exempt.
11. Press "#" to exit and return to the previous display. After a short time without any keystrokes the control will save entries as-is and return to the Selection Entry display.
12. After saving, these selections will be blocked as set for time period #1.
13. Return to 1-4 SET PERIODS and chose time period #2. Follow the same steps as given above for time period #1. The time of day, the days of the week, and the selections can be different from time period 1. All four time periods may be different from others.
14. The settings in sales blocking may be changed at any time by selecting the time period and changing the time of day, day of the week, and selections.

6.11 CLOCK SETTINGS

1. **TIME AND DATE** – Enter the current time and date. This information will be used for data logs and error records.
2. **DAYLIGHT SAVINGS** – The factory default is "N" for no. If set to "Y", the time is automatically adjusted for Daylight Savings Time.
3. **DISPLAY CLOCK** – The factory default is "Y". The current time will appear on the display beneath the scrolling message when the vendor is not in use.
4. **12/24 FORMAT** – The user can choose to display the time in 12-hour or 24-hour (military) format. The factory default is 12-hour format.

6.12 FREE VEND

The factory default is "N" for no. The vendor can be quickly set to vend all products for free. Prices are ignored while FREE VEND is enabled. The original prices will be restored when FREE VEND is turned off.

1. **VIEW / EDIT** – The current setting is displayed, and the user can change the setting. A warning will be briefly displayed if FREE VEND is turned on.

6.13 AUXILIARY OUTPUT

The auxiliary output is a 5VDC signal lasting 100 milliseconds following a successful vend. This signal can be used to trigger user-supplied external devices. As of this writing, AMS does not supply such accessory devices and cannot offer technical assistance for such devices. This feature is provided only as a convenience to those users of advanced technical skill who wish to connect such a device to their AMS vendor and have sufficient electronic expertise to do so

1. **VIEW / EDIT** – The current setting is displayed, and the user can change the setting. Enabling the auxiliary output will not harm the vendor or affect the performance of the vendor in any way.

6.14 DATA LOGS

The user can review recorded data on vendor temperature, power outages, and door openings. This data is sometimes helpful in diagnosing problems with the vendor. These logs are cleared whenever the software is changed.

1. **TEMPERATURE** – The temperature log contains temperature measurements taken at half-hour intervals over the previous two days. The display shows the recording number, the recorded temperature, and the time and date of the recording. The log holds 96 measurements, with number 1 being the most recent.
2. **POWER** – The power outage log records power failure information. The display shows the recording number, whether power went ON or OFF, the temperature in the cabinet, and the time and date of the recording. The log holds 10 recordings, with number 1 being the most recent.
3. **DOOR SWITCH** – The door switch log records door openings and closings. The display shows the recording number, whether the door was OPENED or CLOSED, the temperature in the cabinet, and the time and date of the recording. The log holds 10 recordings, with number 1 being the most recent.

6.15 EnergySENSIT

The EnergySensit feature is a way of reducing energy consumption. When enabled, EnergySensit predicts periods of inactivity and allows the internal temperature of the vendor to rise, taking advantage of these inactive times.

Essentially, by looking at past activity, the vendor learns when to expect vends and when not to and alters the internal temperature (and hence, energy consumption) accordingly. Less energy is used as the internal temperature is allowed to increase.

Because of this increase in temperature, it's not recommended for use on temperature-critical products. Note that the EnergySensit temperature change feature cannot be enabled while the Health & Safety function is enabled.

6.15.1. ENABLE

The factory default is "N" for no. When set to "Y," EnergySensit is enabled.

NOTE: If the Health and Safety feature is ON, the display will show "ENERGYSENSIT OFF" immediately after displaying "HEALTH AND SAFETY ON." To use EnergySensit the Health and Safety feature must be off.

6.15.2. CLEAR HISTORY

EnergySENSIT keeps a recorded history. The entire contents of the history can be deleted and a new record will start at that time.

6.15.3. TEMP CHG

The factory default is 10° F. TEMP CHG (temperature change) allows the user to set the difference (increase) in temperature from the original temperature set point (see section 6.5). During predicted periods of inactivity, the vendor will maintain a temperature equal to the temperature set point plus the temperature change value. This value can be set from 1°F to 30°F.

For example, 45° chiller set point
+ 10° EnergySENSIT change
55° vendor temperature

6.15.4. PATT TIME

The factory default is 7 days. PATT TIME (pattern time) is a repeating cycle or time period that the surrounding environment experiences. Although it can be set from 1 to 10 days, 7 days represents the typical cycle of most environments in the US and many other countries. In a swing-shift type environment where employees work 4 days and then have 4 days off, set the PATT TIME to 8.

6.15.5. HIST FACT

The factory default is 3. The HIST FACT (historical factor) is used to determine how much past data to use for predicting future periods of inactivity. If set to 3, it will use data from three pattern times. If set to 4, it will use data from 4 pattern times, and so on. It can be set from 3 to 15. The higher the number, the less likely that someone will purchase a warmer-than-ideal product but the energy savings won't be as great.

6.15.6. DEL TIME

The factory default is 3 hours. DEL TIME (delay time) is the time it takes the vendible products to warm (or cool) by the TEMP CHG amount. Typically, a machine full of beverages will require a greater delay time than one full of snacks.

6.15.7. LIGHTING

This is an optional feature in EnergySensit. The factory default is "N" for No. Press "7" to change between No and Y for Yes. Lighting uses the historical activity data to turn the lights in the vendor off and on. Note that Lighting may be enabled regardless of the status of the other EnergySensit feature, or of Health and Safety. If the lights are off and the keypad is used or credit activity is detected, the lights will come on for three minutes.

If the lights are off and the door is opened, the lights will come on and remain on until the door is closed. When the door is closed, the lights will turn off.