



CTX MOB TESTER PRO

USER'S MANUAL



Version 2.0



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INTRODUCTION

S.E.M. Inc. is proud to present the **CTX MDB Tester PRO 2**, a professional-grade tool designed with one clear goal: to deliver the best test equipment for the vending industry. Its compact, lightweight design and convenient carrying case make it the perfect companion for vending technicians, whether in the workshop or out in the field.

The **CTX MDB Tester PRO** features a bright 4 x 20 blue LCD display that provides clear, easy-to-read messages instead of simple abbreviations. On each side of the display, four blue push buttons are located. The function of each button automatically adjusts according to the message shown on the screen.

IN WHAT COUNTRIES CAN I USE MY CTX MDB TESTER PRO?

The CTX can be used in a majority of countries. The 100-240vac input power supply enables the CTX to be used almost anywhere in the world providing you use the proper adapter available locally. IEC Format.



North-American standard



European standard

DESCRIPTION

The **CTX MDB Tester PRO 2** is the most advanced tool available for testing a wide range of MDB devices. It supports connections with coin acceptors, coin changers, bill validators, and cashless devices.

In **TEST mode**, the tester allows you to evaluate a single device while monitoring real-time communication between the VMC and the payment device on the display.

In **VMC SIMULATOR mode**, multiple payment devices can be connected simultaneously, and the three programmable selection buttons let you recreate the operating environment of a real vending machine.

The **CTX PERIPHERAL SIMULATOR** mode also offers the possibility of simulating a payment device to the VMC. For these functionalities, several configurations are possible and will be indicated to you in this manual.

Printer / Data serial port

RS232 serial port used for the test report optional serial printer. This port is also used to upload a new firmware in the tester.
(Contact SEM. Fees apply)

MDB 10 pins connector

This is where you will connect the "V" shape MDB harness A07650. The Female connector is the MDB Host side and the Male connector the MDB Slave side.

External power source

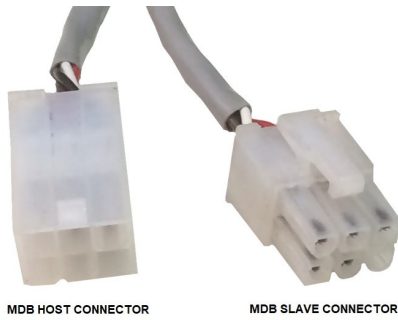
Input connector for the 24vdc power supply E04350.



Optional printer and Data port

MDB Host & Slave connectors harness

24VDC External Power source input



GETTING STARTED

There are two ways of capturing the power to feed your CTX MDB Tester PRO 2. Either you connect it to the 24vdc power supply provided with the CTX or if you are on the field, you can connect the MDB slave connector of the CTX to the MDB Host connector of any vending machine. If you are capturing the power from the MDB port of the machine, shut power down, disconnect all MDB devices that may already be connected and connect the tester.

On stand-by, the small green LED is flashing slowly. Press on the ON button for about one second to start the Tester. You will notice that the green LED starts flashing rapidly. Release the button when the screen comes alive.

Upon start-up, the CTX Tester makes a small self check. The following screen is visible.

```
CTX  MDB+ tester
      v2.xxxx
Self check, wait...
Current voltage 22,7
```

The start-up process lasts about three seconds before switching to the stand-by mode with this screen visible. Current voltage will vary from one machine to another.

```
CTX tester menus
-Manual      Simulator-
-Tunine     System-
```

GETTING FINISHED

To shut it down, press again on the same button for one second

```
Power shutting down!  
One moment please.
```

SYSTEM

The System button gives you access to special functions which are:

```
CTX tester menus  
-Manual      Simulator-  
-Tunings     System-
```

- System parameters
- Audit
- Print audit

```
- System parameters  
- Audit  
- Print audit  
Exit -
```

SYSTEM PARAMETERS

```
-Prices programme  
-Payout level  
-Cashless address  
-Always Idle      exit-
```

PRICES PROGRAMMING

This is where you will set the vend price of the three selections for simulation purposes. The maximum vend price is for the moment set at \$9.95 for each selection. Use the buttons ↑↓ to increase or decrease the vend price. Note that the price will wrap around making it faster to reach a high vend price.

```
↑ Price A = $0.05 ↓
↑ Price A = $0.10 ↓
↑ Price A = $0.20 ↓
                        Exit -
```

PAYOUT LEVEL

Payout level refers to how the coin changer handles the change payout. You can choose between level 2 and 3. Basically, if you are not familiar with that, it is simply the way the coin changer will handle the change remittance. In Level 2, the VMC, or in this case the CTX, will dictate which tubes must give out the change. In Level 3, the VMC only informs the coin changer of the amount to give back leaving the choice of tubes to the changer's coin management system. Press the top left button to change the payout level. Once everything set, press on the OK button.

CASHLESS ADDRESS

Select which address you want to test your Casless payment device between #1 or #2. Use the top left button to change the address and confirm with OK.

When using the CTX in Peripheral simulator into a machine that does not have a cashless address number two, the display will prompt Cashless NO on power up if you have set the address to 2.

ALWAYS IDLE (VMC CONTROLLER MODE ONLY)

When using the CTX with a cashless device, it is possible to program the Always Idle Mode for testing, select Yes to turn it ON.

AUDIT

The audit gives the coin inventory of the last (or current) coin changer under test and the sales done in simulation mode. Details of the audit will vary according configuration of the connected MDB device(s).

```
Coins inventory in
the tubes!
-exit           next-
```

The audit is available only if you have done some sales with the CTX. If no sales took place since the last power up, the display will prompt **No sale made since the last power up.**

PRINT AUDIT

If you have the small optional serial printer, you can print the audit here. You can also make a virtual print using Windows' Hyperterminal function or another similar terminal emulation software.

(Set parameters at 9600, N, 8, 1 plus carriage return)

Requires serial cable # A03330 from SEM.

Below is a print out of the audit coming from two devices under test. The first thing visible is the internal configuration of each device. Then the audit follows.

Please note that the audit detail shows two MEI products. SEM does not promote any brands or models over another. Those two products just happened to be at hand at the moment this manual was written. It could have been any other brand.

Details show Canadian units.

Exemple

Simulator session report:
CTX MDB+ tester v1.11

Information sent by the changer:
Changer Level 3
Country currency code:0001
Scaling factor: 5
Decimal place: 2

Coin type credit and routing:
Coin type 00 value: \$0.05 to tube
Coin type 01 value: \$0.10 to tube
Coin type 02 value: \$0.10 to cash box
Coin type 03 value: \$0.25 to tube
Coin type 04 value: \$0.25 to cash box
Coin type 05 value: \$1.00 to tube
Coin type 06 value: \$1.00 to cash box
Coin type 07 value: \$2.00 to tube
Manufacturer code: MEI
Serial number: 5048G201148
Model tuning revision: CF7500MDB
Software version: 01.19

Optional features supported:
>Alternative payout method.
>Extended diagnostic command.
>Controlled manual fill/payout cmds.

Optional features not supported:
>File transport layer (FTL).

Information sent by the bill validator:
Validator level 1
Country currency code: 1
Scale factor: = 100
Decimal place: 2
Stack. Capacity: 200
Bill validator has escrow capability.

Bill type credit and security level:
Bill type 00 value: \$5 Security level: low
Bill type 01 value: \$10 Security level: low
Bill type 02 value: \$20 Security level: low
Coupon type 03 Security level: low
Manufacturer code: MEI
Serial number: 037680826835
Model tuning revision: AE2600CN
Software version: 17.40

Coins inventory in the tubes:
042 coin(s) in tube \$0.05
050 coin(s) in tube \$0.10
012 coin(s) in tube \$0.25
008 coin(s) in tube \$1
028 coin(s) in tube \$2
Coin box: \$1.25
Bill box: \$0.00
Cash sales \$1.25

TESTING AN MDB DEVICE

The CTX MDB Tester PRO 2 can test multiple types of MDB devices. At the time of printing, the following types are certified testable.

Cash devices: (in Manual and Simulation modes)

- All MEI / CPI / COINCO coin changers
- All MEI / CPI / COINCO bill validators
- All COINCO coin changers
- All COINCO bill validators
- Pyramid bill validators
- NRI G13 MDB coin acceptors
- Most others

Cashless devices:

- COINCO
- MEI
- NAYAX
- USA tech
- Most others

STARTING THE TEST

To start testing your MDB device, simply connect it to the MDB harness of the tester and select **Manual**. The detection screen will show up:

```
CTX tester menus
-Manual      Simulator-
-Tunine     System-
```

```
Detecting.....
Please wait...
Cancel-
```

Depending the type of MDB device under test, the message varies.

```
Changer detected!
Wait while
initialization
Cancel-
```

```
Bill valid. detected
Wait while
initialization
Cancel-
```

After that, the display will indicate the type of device detected and a series of functions will be attached to the side buttons.

```
Changer level 3
-payout
-reset      status-
-accept(ON) stop-
```

```
Validator level 1
-escrow(OFF)stacker-
-reset      status-
-accept(ON) stop-
```

If no device is connected or if the device is simply not responding, the following screen will be visible. If so, check the MDB harness leading to the device and make sure it is securely connected to the device and/or the tester.

```
No peripheral
detected!
```

When you're done with your series of tests, simply press on the button next to the Stop- prompt. The display will acknowledge the end of session by displaying "**Please wait...**".

LIST OF MESSAGES COMING FROM AN MDB COIN CHANGER

The first line of the display is for messages sent by the device. The error message is sent only when the device is performing an action. On stand-by, the device is always sending its type (i.e. **changer level 2**). If an error is detected, it will be visible on the first line of the display.

```
  Acceptor unplugged!  
-Payout  
-reset  
-accept(ON)    stop-
```

It can also be seen elsewhere depending on the nature of the error reported. For example, a tube sensor error in a level 2 changer would be seen on the first line, in the payout section, and in the status as seen below:

```
defect. tube sensor!  
-Payout  
-reset  
-accept(ON)    stop-
```

```
-$0.05 NO  
-$0.10 NO  
-$0.25 DEF  
-all           return-
```

```
  Tube $0.25 jammed  
or defective sensor  
-exit           next-
```

THE MESSAGES

WHAT IT MEANS

Acceptor unplugged

The MDB changer cannot detect its coin acceptor. Check if correctly plugged. Coin acceptor may be defective.

Cannot detect

The vending tester cannot detect the coin changer. Check for harness damages. Check for unplugged harness inside coin changer.

Changer was reset

This message can be seen upon power-up and when the device is being re-initialize.

Defective changer

The tester detects the unit cannot be tested because of a general failure inside the coin changer. Send the unit to a service center.

Defective sensors	A high level sensor is activated while the low is not. Either a defective top sensor or a foreign object stuck at the top of the tube. Usually, this message will be visible after a payout of the tube having the error.
Device is short	There is short circuit inside the unit under test.
Escrow return	The coin return lever was activated.
No credit	Coin accepted and directed to the tube or the cashbox. However, that coin was not detected in either place. Check for jammed path. Also check for coin sensors in acceptor.
No tube payout	No coin value linked to this push button. Even if the tube is present, it may have an identical value as another. In MDB mode, two 25¢ tubes will be seen as one tube. As an example, a coin changer having 3 x 25¢ and 2 x 1\$ tubes will be seen as a two-tube changer (25¢ & 1\$).
Pay out busy	Changer is telling the VMC it is currently dispensing change.
Please wait	The CTX is waiting.
ROM Checksum	The checksum of the coin changer does not error match with its internal memory because of corrupted data. Unit must be sent to a service centre.
Routing error	A validated coin did not follow the intended route. It went to the cashbox but was meant to go the tubes or vice-versa. Check the gate in the acceptor.
Tube jam	The coin changer has detected a coin jam into one of its tubes.

EMPTYING THE TUBE

Once the test completed, it is now time to empty the tubes you just filled.

```
Changer level 2
-payout
-reset
-accept(OFF)  stop-
```

Press on **Payout** and then on the corresponding button (\$0.05, \$0.10, \$0.25, \$1.00, and \$2.00) to dispense from each tube. To dispense one coin from the tube, press briefly on the corresponding button. To empty this tube, press and hold the button and the process will start. To stop it, press on STOP. If you want to empty all the tubes in a single operation, press and hold the ALL button until the payout starts. Note that only the coins that went to the tube during you test you will be paid out. To empty the rest, you may need to use the buttons on the changer itself.

PRESS STOP BEFORE UNPLUGGING THE COIN CHANGER.

Once everything tested and cleaned, you can slip your coin changer into a bag, write a short memo and put that changer on a shelf for future use.

LIST OF MESSAGES COMING FROM AN MDB BILL ACCEPTOR

Connect your bill acceptor in the proper connector. Note that your bill acceptor has a "V" harness just like the MDB tester. Connect the male part of the "V" coming from the bill acceptor to the female side of the "V" from the tester. Doing the contrary will result in the incapacity for the tester to detect the presence of the bill acceptor.

Upon power up, the following display will be visible.

```
Validator level 1
-escrow(OFF)stacker-
-reset          status-
-accept(ON)    stop-
```

This setting means you can insert any bill into the acceptor and it should be accepted and stacked immediately. If you want to keep the bill into the escrow position, change the escrow setting from OFF to ON as seen below.

```
Validator level 1
-escrow(ON)  stacker-
-reset      status-
-accept(ON)  stop-
```

If you insert a bill, the display will inform you that a \$xx bill has been accepted and is currently waiting for you to either send the stack or reject order.

```
  $10 in escrow
-stack      reject-
```

THE MESSAGES

WHAT IT MEANS

Attempted qty	Number of attempts to insert a bill while the acceptor is disabled.
Bill box removed	Bill acceptor has its stacker box removed.
Bill not identified	Bill is unknown to the acceptor.
Bill rejected	Bill was rejected by the bill acceptor.
Bill removed	Bill was removed manually while being accepted by the bill acceptor.
Bill returned	The bill has been returned because you pressed on the reject button.
Defective motor	The motor pulling the bill is defective.
Invalid escrow req.	Stack or reject command cannot be performed as the bill is already in bill box.

Not available	This option is not available with this type of bill acceptor.
ROM checksum error	The checksum of the bill acceptor does not the calculated checksum.
Sensor problem	One of the sensors has failed to provide its response.
Stacker count	Amount of bill into the bill box
Stacker is full	Stacker full, cannot accept further bills.
Unit disabled	Bill acceptor does not have the permission to accept bills.
Unit must be enabled	Escrow button activated while accept line is OFF.
Acceptor busy	Bill acceptor is performing a task and cannot answer a request.
Acceptor jammed	Bill stuck in the bill path.
Acceptor was reset	Bill acceptor has been reset
Disabled/rejected	The bill acceptor does not have the permission to accept this type of bill.
\$xx in escrow	The bill displayed is currently in escrow position waiting to be stacked or rejected.
Stacked	Value of the bill being stacked plus total amount inserted so far.

Turn the ACCEPT LINE off. The bill acceptor should not accept bill. Test many denominations. Test many bills of each denomination as well.

WHEN FINISHED, PRESS ON STOP BEFORE UNPLUGGING THE UNIT.

Once everything tested and cleaned, you can slip your bill acceptor into a bag, write a short memo and put that changer on a shelf for future use.

STATUS

The tester has a very interesting function called **Status**. This button gives you the internal configuration of the MDB device currently connected. Of course, the configuration will be different from one device to the other. It is however, a very useful tool.

```
Changer level 3
-payout
-reset          status-
-accept(ON)    stop-
```

Some of those configurations are visible below:

COIN CHANGERS

BILL ACCEPTORS

```
Scale factor: 005
Decimal Place: 2
-quit          next-
```

```
Scale factor = 00100
Decimal Place: 2
-quit          next-
```

```
Coin type 07
value: $1
to tube
-quit          next-
```

```
Bill type 00
value: $5
security level: low
-quit          next-
```

```
076 coin(s) in tube
$0.25
-quit          next-
```

```
Stack.capacity: 0200
Bill validator has
escrow capability.
-quit          next-
```

SIMULATOR MODES

The CTX MDB Tester PRO 2 offers you two simulation modes: VMC Simulator and MDB Peripheral Simulator. The VMC Simulator will transform your tester into a vending machine offering you three programmable selections. You can change the price of those selection as you have seen it on page 7 of this manual. When used as a VMC, the tester allows you to connect up to three MDB devices which are: The coin changer, the bill acceptor, and the card reader.

The other simulator is the Peripheral Simulator. This is a very unique feature allowing you to transform your tester into either a coin changer/bill acceptor, and a cashless device. With the simulator, you can transfer money to the machine, make a sales, and watch as change is given back (virtually) by the machine.

TESTING MDB DEVICES IN SIMULATION MODE.

The simulator function enables you to test multiple MDB components together in real life situation and see how they interact together. For example, you can test a coin changer and a bill acceptor together and see if the change given out is accurate.

```
CTX tester menus
-Manual   Simulator-
-Tunine   System-
```

To start, press on **Simulator**. The display will then offer you two types of simulator: **VMC simulator** of **Peripheral simulator**. Select **VMC simulator**. When operating in VMC simulation, the CTX tester will power up any MDB device that is connected to its port. The display will then prompt you any device it communicates with prompting to insert coins and/or bills and/or card.

```
UMC simulator-  
Peripher. simulator-  
  
exit-
```

```
Credit:          $0.00  
-vend 0  
-vend 0 Peripherals-  
-vend C          stop-
```

```
AlwaysIdleEnabled  
-vend 0  
-vend 0 Peripherals-  
-vend C          stop-
```

Please note that some MDB devices, especially cashless, may take much time to respond. The CTX stays in peripheral detection mode up to 10 minutes after pressing the Start button.

If the Always Idle mode is enabled, it shows on the top line before making a transaction. It can be enabled/disabled through the main menu, under System/System Parameters

Insert coins or bills or cards. The amount inserted will be visible on the top right corner of the display. In the case of a card reader, the current balance on the card will be visible. Press on any of the three selections and see if the change is dispensed properly. Repeat as many times necessary using all three selections programmed at different prices. Below are some print screen of messages you might see on your tester. When done, press on stop to quit.

```
Price B:          $0.25  
End of session.  
Refundins:       $0.20  
One moment please.
```

```
Price C:          $0.25  
Insufficient funds !  
Add:              $0.25  
stop-
```

PRESS STOP BEFORE UNPLUGGING YOUR MDB DEVICES.

Pressing the Peripherals button confirms the peripherals communicating with the CTX in the current session.

MACHINE WITH THE PERIPHERAL SIMULATOR

The CTX enables you to test your VMC (**Vending Machine Controller**) by transforming your tester into either a coin changer, a bill acceptor or a card reader. Upon activation of the Peripheral Simulator, the machine will send the information to the tester as to which MDB devices it can poll as you can see in the following three screen shots.

```
    UMC simulator-  
Peripheral. simulator-  
  
                exit-
```

```
Peripheral supported  
Coin changer - yes
```

```
Peripheral supported  
Bill validator - yes
```

```
Peripheral supported  
Cashless - yes
```

If you see such messages, it means your machine can support all three MDB peripherals. If the card reader or bill validator are not supported, NO would be visible. Not all MDB vending machines are capable of handling all peripherals. After that, the display will switch to the standby mode as visible next page.

Select the device you wish to use. It can be **cash** (coin or bills) or **cashless**, a card reader.

```
    Please select  
-cash      cashless-  
                exit-
```

If you select **Cash**, the following display will then become visible. Each time you press on value key, this amount will be sent to the machine and the display of the machine will show the entire amount. For example, if you press on \$0.25 and \$1.00, the machine display will show \$1.25. You can decide to press on **Escrow** to cancel the transaction or you can make a selection in the machine.

```
- $0.05      $5 -  
- $0.10      escrow-  
- $0.25      token-  
- $1         exit-
```

When change is given back by the machine, you can see it adding up on the display. When done, press on Exit.

If you select token, this screen will come up asking you if is it a token (from the coin changer) or a coupon (from the bill acceptor). The token or the coupon will be sent to the VMC and depending if the VMC can handle it, it will give a product.

```
-token      COUPON-  
  
           exit-
```

If you have selected **Cashless**, then the following display will be visible. You can build up your card balance by increments of \$1.00 and \$5.00. Press **Clear** if you made a mistake and start again. Once the proper credit set, press on **Send Credit** to send it to the machine. The display of the machine should show the same amount. You cannot send less than \$1.00 to the machine.

```
Credit:      $0.00  
- $1         e-token-  
- $5         send credit-  
-clear      exit-
```

Make the transaction. The display will prompt **Vend Success**, showing the amount of the transaction and the new balance on the card once completed. **Vend approved** and **Vend failure** may also be visible briefly on the display depending the machine is it connected to.

The e-token choice is available with some cashless device capable of giving out random free vend. Not all system are capable of doing so and furthermore, not all VMC can handle this command.

SELECTION ID NUMBER

In the MDB protocol, each selection returns an ID number when using a cashless device. This ID number is built-in into the VMC and cannot be changed. The ID number is used only with a cashless device and allows the cashless system to deny a vend for some reasons. The main application is when the machine-most likely a spiral machine-serves as a tool vender.

When coupled with an access management software, it is possible to restrict the access to some selections according different rules like a maximum quantity of that product, a schedule, or whatever reason. That restriction is based on the selection ID returned by the VMC to the cashless device.

That Selection ID number is provided to you so that you can build your restriction rules using the CTX. Note that the number prompted is a decimal value whereas the actual selection number of some machines could potentially be an hexadecimal value. In such a case, Selection ID # 1040 visible in the display below would have been prompted by the selection button 410. Selection ID # 784 would have been prompted by the selection button 310. One last example, selection button number 101 will prompt selection ID # 257.



PRESS ON EXIT WHEN YOU'RE DONE

TUNING MODE

```
CTX tester menus
-Manual   Simulator-
-Tunine   System-
```

```
Changer level 3
*Tunine mode*
in process...
stop-
```

The tuning mode is a special function enabling you to calibrate or tune your MDB device, **providing the device allows it**. In tuning mode, the CTX only sends the power to the MDB device connected. There is no communication at all between both the CTX and the MDB device. If tuning is allowed on this device, then follow very strictly the instruction provided by the manufacturer of your device.

If your MDB device does not offer tuning capability, putting the CTX in Tuning Mode will not reverse that situation.

The Tuning Mode is also used for firmware flash download into your MDB device such as new bank notes update.

**WHEN DONE, PRESS ON STOP TO REMOVE POWER
FROM YOUR DEVICE**

Made in Canada by S.E.M. Inc.
3610 Valiquette St., St. Laurent, QC, Canada, H4S 1X8
Tel. 514-334-7569 Toll Free 1-888-334-7569

www.sem.ca

info@sem.ca

This manual was written by our technical department. Even though the utmost attention was given to writing this manual, errors may have slipped by unnoticed. Any comments, suggestions, or errors you may detect should be sent directly to: info@sem.ca

