

Microcoin**Micromate User Manual****Table of Contents**

	Page
Essential Information	2
1.0 Connection and Configuration	3
1.1 Connection	3
1.2 Switch On	4
1.3 Configuration for Use	4
2.0 Check the Configuration of a Validator	5
2.1 Check Coin Settings	5
2.2 Check Price Settings	5
3.0 Change the Settings in a Validator	6
3.1 Change the Coin Settings	6
3.2 Change the Price Settings	7
3.3 Change the Operator Settings	8
4.0 Program a Validator	10
4.1 Program with Coins	10
4.1.1 Program New Coins and Tokens	10
4.1.2 Reprogram an Existing Coin	11
4.2 Transfer a Config	12
4.2.1 Upload and Store a Config	12
4.2.2 To Program a Stored Config into a Validator	13
4.2.3 To Update a Factory Config	13
5.0 Diagnostics	14
5.1 Micromate Diagnostics	14
5.2 Validator Diagnostics	14
5.2.1 Testing Outputs	15
5.2.2 Hardware Tests	15
5.3 Software Verification	15
6.0 Battery Changing	16
7.0 Glossary	17

Essential Information

Before you use the Micromate, a few essential concepts and comments. It is strongly recommended that if you read nothing else, you at least read this page in conjunction with the **Glossary** and the **Micromate Menu Tree**.

Introduction

The Micromate allows a user to check and modify the coin and programming settings in QL. It will also enable the programming of new coins and tokens, and allow diagnostic tests to be done.

It is provided in a sturdy case to protect against everyday knocks and bumps.

Validator Power.

QL needs to be connected to a 12Vdc power source via its parallel port to work with the Micromate.

Micromate Power.

The Micromate is powered by an internal battery. It also has an input for an external 9Vdc power source which should be used during extended programming sessions to preserve the battery. Similarly, when working from the battery it is recommended that the Backlight be turned off and that the Power Saving feature be turned on.

Initial Setup.

When you first use your Micromate, set up the operating modes using the DIAGNOSTICS; MICROMATE menu (see section 1.3).

Menus and Navigation.

The menu structure of the Micromate is self explanatory and designed to prompt the user for the next entry. Take time to read each screen.

A flashing field indicates that the Micromate is requesting data input. Key in the data and press Enter. For multiple field entry screens, pressing ENTER will skip to the next field without changing the existing value.

Navigating the menus is accomplished by pressing the appropriate number key for the option listed or pressing ESC to return to the previous menu. Pressing ESC multiple times will step back through the menu tree and eventually return you to the main menu.

Where there are arrows at the bottom of the screen, use the scroll (arrow) buttons to access additional options and information.

The keypad responds best to slow deliberate presses on the individual keys. Listen for the confirmation beep.

QL Configuration Data.

Configuration data is downloaded from QL into the Micromate where it is edited. Any changes made to the configuration are not saved until the end of the editing session. Immediately prior to returning to the Main Menu, you will be asked "Save Changes to the Validator Y/N? Pressing NO at this point will leave the existing QL Config unchanged. Pressing YES will save your changes by returning the modified Config to QL

Coins and Tokens.

Throughout this manual, the term coin is used to cover both coins and tokens.

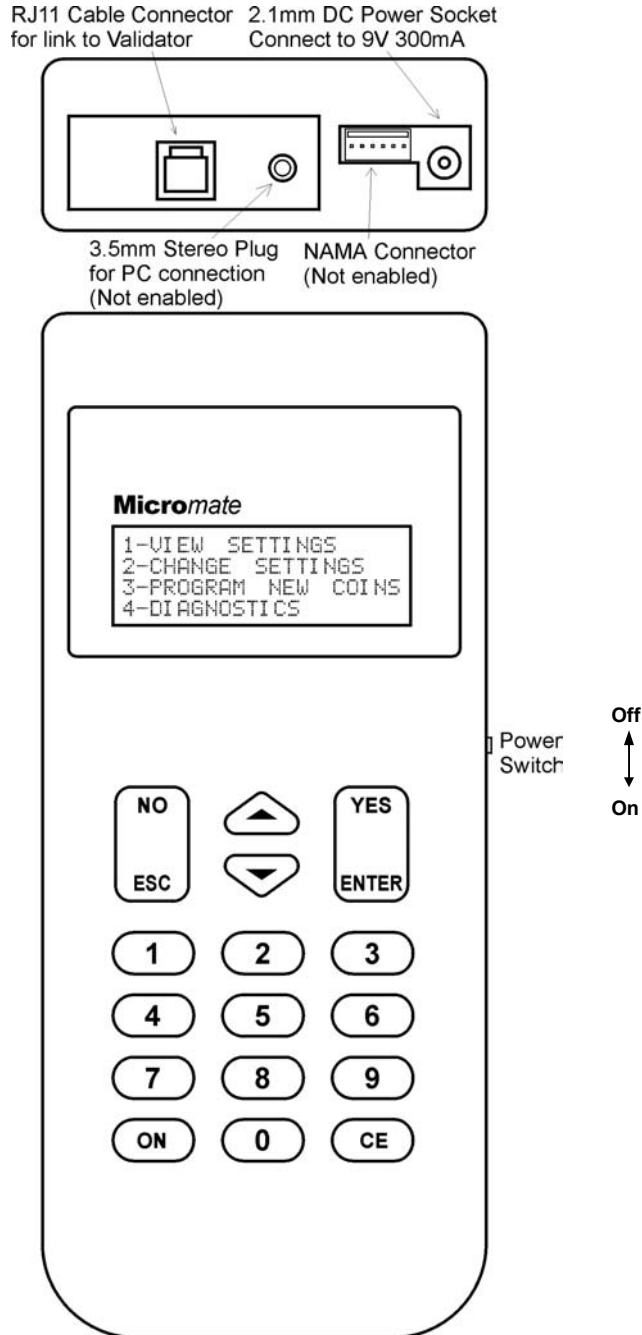
Micromate Display

This manual shows Micromate screen text as "BOLD "Capitals.

Flashing text is shown as "NORMAL "Capitals.

1.0 Connection and Configuration of the Micromate

1.1 Connecting the Micromate



The Micromate is normally connected to QL via the supplied RJ11 cable. The validator also needs to be connected 12Vdc via its parallel output connector. Where power is available, it is recommended that the Micromate be powered by a 9Vdc 300mA plug-pack, to preserve the internal battery.

1.2 Switch On

A small switch on the right of the housing, just above the keyboard, will switch power to the Micromate. Once switched on, the Micromate goes into a self-diagnostic mode, and then displays the Main Menu:

```
1-VIEW SETTINGS
2-CHANGE SETTINGS
3-PROGRAM NEW COINS
4-DIAGNOSTICS
```

1.3 To Configure the Micromate for Use

To check the set-up of the Micromate, press **4** to bring up the diagnostics menu.

```
1-MICROMATE
2-VALIDATOR
3-VERIFICATION
ESC
```

Press **1** to go to the Micromate set-up options.

```
VERSION=X.X
1-COMMS VIA CABLE
2-BACKLIGHT ON
ESC          ↓ SCROLL
```

- VERSION=** This is the software version number of the Micromate
- 1-COMMS** This is the setting for the communication method with the validator
The options available are: Press **1** to cycle thru options
- | | |
|------------------------|---|
| COMMS VIA CABLE | Comms via the supplied RJ11 cable (default) |
| COMMS VIA PC | Comms to a PC (not supported yet) |
| COMMS VIA I/RED | Comms via an Infra-red link |
- 2-BACKLIGHT** The option will turn the backlight on or off. Press **2** to toggle states
- .3-POWER SAVE** When the power save option is on, the Micromate will shut down after 5 minutes of inactivity. Press **3** to toggle states.

Once the settings are complete, press **ESC, ESC** to save settings and return to the main menu.

2.0 To Check the Configuration of a Validator

Pressing **1** at the Main Menu will bring up the View Settings Menu and allow you to check the configuration information in the QL validator.

1-COIN SETTINGS
2-PRICE SETTINGS

2.1 Check Coin Settings

To check the coin information, press **1**.

COIN SETTINGS
O/P ON=100 OFF=100
ENTER COIN CATEGORY - (*FLASHING*)
ESC

The O/P shows the ON and OFF pulse widths of the coin and price output lines in milliseconds (ms). Allowable range is any value between 0 and 65000ms.

To check the settings for a coin category, enter the coin channel No. Refer to QL Label

CAT=1 ENABLED=Y
VAL=XXX MEDIUM
OUTPUT=1 PULSES=1
ESC ↑↓ SCROLL

CAT=1 Coin category number (**1-12**)
ENABLED=Y Coin is enabled (**Y** or **N**)
VAL=XXX Value of the coin (**0-9999**)
MED Discrimination window (**narrow/medium/wide/special**)
OUTPUT=1 Output number (**1-6**)
PULSES=1 Number of pulses for each coin (**0-9999**)

Use the scroll keys to check other coin categories.

2.2 Check Price Settings

Press **2** to go to the Price Settings.

PRICE=XXX ENABLED=Y
CLEAR EXCESS=N

ESC

PRICE=XXX Price value (**0-65000**)
ENABLED=Y Price Enabled/Disabled
CLEAR EXCESS=N Clear excess after price reached

Press **ESC**, **ESC** to return to the main menu.

3.0 To Change the Settings in the Validator

At the main menu, press **2** to bring up the Change Settings Menu. The Micromate will then download all of the settings from QL into its memory system.

```
1-COIN SETTINGS
2-PRICE SETTINGS
3-OPERATOR SETTINGS
ESC
```

3.1 To Change the Coin Settings

To change the settings of a Coin Press **1** and enter the Coin Channel No. Refer QL Label.

```
ENTER COIN CATEGORY
NUMBER 1 TO 12

ESC
```

To check Coin Category 1 for example, press **1**, **ENTER**

```
CAT=1          ENABLED=Y
VAL=XXX       MEDIUM
OUTPUT=1     PULSES=1
CHANGE Y/N   ↑↓ SCROLL
```

Use the scroll keys to view other coin channels. Once you have found the channel you want to change, press **YES**. Press **Esc** to return to the Change Settings Menu.

```
ENABLED=YES
1=YES, 0=NO
```

Press **1** to enable the category, **2** to disable it.

The display will now return to the coin category display, with the VAL setting flashing, and a CHANGE TO at the bottom.

```
CAT=1          ENABLED=Y
VAL=XXX       WIDE
OUTPUT=1     PULSES=1
CHANGE TO
```

Type in the new value, and then press **ENTER** Allowable Range 0-9999

The options for the discrimination band will now be displayed, with the current setting flashing at the top.

```
DISC BAND=MEDIUM
1-NARROW      2-MEDIUM
3-WIDE        4-SPECIAL
ESC           SELECT BAND
```

Warning: Changing this setting may result in changes to the acceptance of genuine coins and frauds. It is recommended that you do not change these settings without consulting Microcoin, or one of their authorised distributors.

To change the current band, press the number of the new band required. The OUTPUT= field will now be flashing.

```
CAT=1          ENABLED=Y
VAL=XXX       WIDE
OUTPUT=1     PULSES=1
CHANGE TO
```

Press the appropriate number for the output line from **1-5** (if using the PRICE option), or **1-6** if the PRICE is disabled, and **ENTER** to set. Refer QL label.

Note that if you select output line 6 and the price output is enabled (price setting other than 0), both the Coin and Price outputs will be issued on line 6 simultaneously. **This situation must be avoided.**

The PULSES= will now be flashing.

```
CAT=1          ENABLED=Y
VAL=XXX       WIDE
OUTPUT=1     PULSES=1
CHANGE TO
```

Type in the number of pulses required (**1-9999**), and press **ENTER**.

The Micromate will now ask if there are any more changes required. If you press **YES**, you will be returned to the coin channel you have just edited.

Pressing **NO**, will return you to the Coin Category selection menu, where you can use the scroll keys to select other coin channels to edit.

When your changes are completed, press **ESC, ESC**, to return to the main menu.

You will then be asked if you want to program the changes into the validator.

```
PROGRAM CHANGES
INTO VALIDATOR Y/N
```

Pressing **YES** will tell the Micromate to download the new settings to the validator. Pressing **NO** will delete all changes to the settings, and the validator will not be reprogrammed.

3.2 To Change the PRICE Settings

The PRICE or(Credit) totalizer accumulates the value of the coins and tokens accepted by QL until the set Price (or credit) is reached, where upon it issues a pulse on output line 6. The CLEAR EXCESS option determines what happens to any stored credit in excess of the PRICE value. If the CLEAR EXCESS option is enabled, any stored credits will be cleared.

If the CLEAR EXCESS option is disabled, any stored credits will be saved and further pulses issued until the value of the stored credit is less than the price setting.

To modify the PRICE settings, from the main menu press **2** -CHANGE SETTINGS. The Micromate will interrogate the validator, retrieve the settings , and display the change settings menu.

```
1-COIN SETTINGS
2-PRICE SETTINGS
3-OPERATOR SETTINGS
ESC
```

Press **2** (PRICE SETTINGS) to display the current settings, with the PRICE= flashing.

```
PRICE=XXX     ENABLE=Y
CLEAR EXCESS=NO

CHANGE TO
```

To change the PRICE setting, enter the new value required (**0-65000**), and then press **ENTER**. If you wish to disable the PRICE, enter a value of **0**. This will cause the ENABLE= display to change to ENABLE=N, to confirm the disabling of the PRICE option.

The CLEAR EXCESS will now be flashing.

```
PRICE=XXX     ENABLE=Y
CLEAR EXCESS=NO
              1=YES, 0=NO
CHANGE TO
```

Press **1** to clear the excess, or **0** to save it.

The settings you have selected will now be displayed, and you will be asked whether you want to make any changes to the settings as displayed, or to accept them and program them into the validator.

PRICE=XXX ENABLE=Y
 CLEAR EXCESS=NO
 ANY MORE CHANGES Y/N?

If you press **YES**, you will be taken back to the price setting Menu.
 If you press **NO**, the changes will be programmed into the validator, and you will be returned to the settings menu.

3.3 To Change the Operator Settings

1-COIN SETTINGS
 2-PRICE SETTINGS
 3-OPERATOR SETTINGS
 ESC

From the Change Settings Menu, press **3** to go to the Operator Settings Menu.

1-OUTPUT PULSE TIME
 2-SET VAL CODE
 3-CLEAR ALL SETTINGS
 ESC

Setting 1 allows you to change the output pulse width and spacing for the coin and PRICE outputs. Press **1** to bring up the pulse time menu. The ONTIME setting will be flashing.

ONTIME = 100
 OFFTIME = 100
 CHANGE TO

To change the pulse on time, key in the new value, (eg, **50**) then press **ENTER**. The ONTIME setting will now show your new setting, and the OFFTIME setting will be flashing.

ONTIME = 50
 OFFTIME = 100
 CHANGE TO

Key in the new value for the OFFTIME, or spacing between the output pulses (eg **50**) then press **ENTER**. The new settings will be displayed and you will be asked if you want to make any more changes to the new settings.

ONTIME = 50
 OFFTIME = 50
 ANY MORE CHANGES Y/N?

Press **YES** if you want to go back and change the settings. Press **NO** to keep the new settings and return to the operator settings menu.

1-OUTPUT PULSE TIME
 2-SET VAL CODE
 3-CLEAR ALL SETTINGS
 ESC

To secure a validator against unauthorised changes, you can enter a user or VAL CODE. The VAL CODE is chosen to allow an authorised user to access the change settings menus, but prevent

unauthorised changes. When enabled, the Micromate can access only read only functions and the diagnostic modes with the exception of the output line test which is also denied.
To set a VAL CODE, press **2**.

SECURITY
ENTER NEW VALCODE

ESC

Enter a number that you would like to use as the VALCODE (**1-99999**), for example **1 2 3**.
Note: If you want to disable the VALECODE feature, set the number to 0.

As you type an asterisk will appear for each number. Press **ENTER** to set.

SECURITY
ENTER NEW VALCODE

ESC

You will now be asked to confirm the new code. Enter the number again, and press ENTER to finish.

CONFIRM NEW CODE

ESC

If the code is entered correctly, you will be returned to the operator setting menu.

If you wish to clear all the config settings from the validator, you can use option 3.

WARNING
THIS OPTION WILL
ERASE THE CONFIG
CONTINUE Y/N?

WARNING!!! This option WILL erase all coin settings, price settings, and operator settings! It should not be used unless under instruction from a Microcoin Service representative.

Pressing **YES** will cause the Micromate to clear all the config information from QL requiring it to be completely reprogrammed Press **NO** to return to the setting menu.

When you have finished making all the required changes through the setting menus, press **ESC** to return to the main menu. The Micromate will ask you if you want to program the changes you have made to the config into the validator.

PROGRAM CHANGES
INTO VALIDATOR Y/N?

If you select **NO**, you will be returned to the main settings menu, and all changes that have been made to the config will be discarded. If you select **YES**, the changes will be downloaded QL

4.0 Program a Validator

To program new coins into a validator, press **3** (program new coins) from the main menu. The Micromate then shows the Program New Coins Menu.

1-PROGRAM WITH COINS
2-EXTRACT VAL CONFIG

ESC TO EXIT AND SAVE ↓

(Scroll to see the other options)

3-UPDATE FACTORY CFG
4-PROGRAM A NEW CONFIG

ESC ↑ BACK

4.1 To Program a Validator Using Coins

To program new coins or tokens into a validator, you need to have available a minimum of 10 coins or tokens of each denomination selected from a population at random. The 10 coins are used to teach QL the average coin signature and acceptance limits for that coin. Passing more coins (up to say 25), or the same 10 coins a number of times during programming will increase the discrimination accuracy.

Note: During this explanation the term coin will be used to cover both coins and tokens.

Press **1** to start the programming procedure. The Micromate then downloads the QL configuration and displays the following message while this is being done.

IDENTIFYING
VALIDATOR!

Once the Micromate gets the information it needs, it shows the programming using coins menu.

1-PROGRAM A NEW COIN
2-REPROGRAM AN
EXISTING COIN
ESC SELECT 1 OR 2

PROGRAM A NEW COIN is used to add a new coin to an existing QL configuration. REPROGRAM AN EXISTING COIN is used **only** to renew the average coin signature data of a coin that is already programmed into QL. No other settings are changed.

4.1.1 Program a New Coin

Select 1, Program a new coin from the Program with coin menu.

ENTER COIN CATEGORY
NUMBER 1 TO 12

ESC

Enter the coin channel for the new coin. Refer to the QL label to ensure you do not inadvertently program over (and therefore delete) an existing coin channel. Use the scroll keys to move to a vacant coin channel.

```

CAT =11      ENABLED=NO
VAL=0        MEDIUM
OUTPUT=1     PULSES = 0
CHANGE Y/N   ↑↓ SCROLL

```

Configure the selected coin channel by pressing YES and proceed as per instructions for Changing Coin Settings (section 3.1). Choose MEDIUM discrimination band, this can be adjusted later for greater coin acceptance or elimination of frauds if required.

When the coin channel settings are correct, press NO

```

PASS 10 OR MORE
SAMPLE COINS

ESC          ROLL COIN

```

After you roll the first of the coins, the display will change to show the number of coins that have been passed.

```

CAT=1  VALUE=xxx
COIN SAMPLE=1

ESC    ENTER AFTER 10

```

The coin sample number will count the number of coins as they are passed. The minimum required is 10 samples, but to increase discrimination precision, more coins can be passed. Press **ENTER** to finish the programming sequence for that coin.

```

ENTER COIN CATEGORY
NUMBER 1 TO 12

ESC

```

The display will return to the coin category selection menu, to allow you to start programming another coin, or to exit by pressing **ESC**. Pressing **Esc** again will bring up the save changes? Option. Choose **Yes** to save the new coin programming.

4.1.2 To Reprogram the Coin Signature of an Existing Coin Category

From the Main menu, press **3** then select **1**, to get to the Program with Coins Menu

```

1-PROGRAM A NEW COIN
2-REPROGRAM AN
EXISTING COIN
ESC    SELECT 1 OR 2

```

Select **2** to start the procedure.

Note that this option only resets the average coin signature of an existing coin and assumes you know in which channel the target coin is located. If you are unsure, refer to the QL label or better still use the Check settings option in the Micromate.

```

THIS OPTION RESETS
THE COIN SIGNATURE
ONLY
ESC    CONTINUE Y/N?

```

Press **YES** to continue.

ENTER COIN CATEGORY
NUMBER 1 TO 12

ESC

Enter the number of the category you wish to refresh ie 1

PASS 10 OR MORE
SAMPLE COINS

ESC ROLL COIN

Coin selection and accuracy is as discussed above.

After the first coin is rolled, the display will show the category information, and the number of coins rolled.

CAT=5 VALUE=100
 COIN SAMPLE=1

ESC ENTER AFTER 10

The coin sample number will count the number of coins as they are passed. The minimum required is 10 samples, but to increase discrimination precision, more coins can be passed. After sufficient coins have been passed, press **ENTER** to finish the programming sequence for that coin.

The display will return to the coin category selection menu, to allow you to reprogram another coin, or to exit by pressing **ESC**. Press **Esc** again to save changes.

4.2 To Transfer a Config from One Validator to Another

There may be times when you want to copy the config from one validator to another. This can be done by extracting the config from the source validator, and then downloading it to the target validator. This will usually take less time than setting up the target validator using the settings menus, particularly if there are a number of coin categories configured. The transfer will bring all the coin category and user settings to the target validator, but new average coin signatures will need to be programmed in for each coin channel in the target validator.

From the main menu, select 3 to get to the Program New Coins Menu.

1-PROGRAM WITH COINS
2-EXTRACT VAL CONFIG

ESC TO EXIT AND SAVE ↓

Scroll down to see the other options

3-UPDATE FACTORY CFG
4-PROGRAM A NEW CONFIG

ESC ↑ BACK

4.2.1 Upload and Store a Config from a Programmed Validator

To start the process, connect the Micromate to the source validator.
From the Program New Coins Menu, select **2- EXTRACT VAL CONFIG**.

```
PULL CONFIG=XXXXX-XX
FROM VAL= XXXX
CONTINUE Y/N?
ESC
```

The display shows the config designator and serial number and from the source validator, and asks if you want to continue. Press YES to upload the config into the Micromate.

EXTRACTING DATA!

If the config in the target validator has been changed from the factory settings, the display will show:
If the source QL is configured as required ignore this warning and press YES

```
THIS CONFIG HAS BEEN
CHANGED FROM THE
FACTORY SETTINGS.
YES          TO CONTINUE
```

Once the data is uploaded, the display returns to the Program New Coins Menu
The uploaded config is stored in memory in the Micromate, and can be used to reconfigure any number of QLs. Note that the source Config is secure in the Micromate (even after power off).

4.2.2 To Program a Stored Config into a Validator

Once you have a config uploaded to your Micromate, you can program it into a target QL.
Connect the Micromate to the target QL and from the Program New Coins Menu, select **4-PGM A NEW CONFIG**

The Micromate checks the compatibility of the source and target QLs to make sure the configuration is suitable for that QL. If the second last digit of the Configs are different the process is aborted. If the last digit of the configs are different a warning is displayed. In this case it is safe to proceed.

```
THIS CONFIG CANNOT
BE USED WITH THIS
VALIDATOR.
ESC
```

The display shows the current config in the target QL and the config in the Micromate that is to be downloaded. If the details are correct, press **YES**.

```
CHANGE VAL CONFIG
FROM          XXXXX—XX
TO           XXXXX—XX
ESC          YES/NO
```

You will be asked to program the coin signatures for the new config. The Micromate does not distinguish whether a coin category is used or not, and so it cycles through each category, showing you the settings, and asking if you want to program that coin.

```
PROGRAM COIN SIG FOR
CAT=1  VALUE=0
ESC          YES/NO
```

If a coin category has no value, press NO to go to the next category.

```
PROGRAM COIN SIG FOR
CAT=5  VALUE=100

ESC          YES/NO
```

Once you reach a category that does have a value set up, press YES to start programming the coins.

```
PASS 10 OR MORE
SAMPLE COINS

ESC          ROLL COIN
```

Pass 10 (or more) of the appropriate coins for that category, and then press **ENTER** to store the values. The details of the next category will then come up. Continue to program the coins in to the categories until you have finished all 12.

Once all of the coins have been programmed (you will need to index up to and including Cat 12), the config will then be downloaded into QL.

```
TRANSFERING CONFIG
PLEASE WAIT
```

After the config is downloaded, the display returns to the main programming menu. Press ESC to return to the Program New Coins Menu

4.2.3 To Update a Factory Config

Occasionally, a new version of a factory config will be issued with updated coin data. If you are using validators with the same config, and you have not modified the config in any way, you can update your validators with the new version of the config without having to roll coins. The updating process will transfer the new information into the validator, without modifying the coin signature data.

Note: This operation should only be performed to update the config of a QL with an unmodified factory config and having a Config No. exactly the same as the Config being uploaded.

Connect the Micromate to a QL having the revised Factory Config and extract the Config as described above.

Connect the Micromate to the target QL and select option 3, update a Factory Config from the Program New Coins Menu

```
TRANSFERING CONFIG
PLEASE WAIT!
```

After the config has been transferred, you will be returned to the programming menu.

5.0 Diagnostics

Select option 4 from the Main Menu

1-MICROMATE
2-VALIDATOR
3-VERIFICATION
ESC

5.1 Micromate Diagnostics

The Micromate performs a self diagnostic routine every time it is powered up, to ensure that it is functioning correctly. The diagnostics menu for the Micromate is used to set the Micromate user options, as explained in section 1.3 of this user guide.

5.2 Validator Diagnostics

From the main diagnostics menu, press 2 to bring up the validator diagnostics menu.

1-SELF DIAGNOSTICS
2-TEST OUTPUTS
3-TEST HARDWARE
ESC

Press **1** to start the self diagnostics routine in the validator.

TESTING!

OPTO'S ARE OK

ESC

The validator checks the operation of the 3 coin detection opto-coupler devices, and then reports back their condition. If an error message comes up, indicating that one or more of the optos are faulty, you should check the QL coin path for obstructions

If there are no obvious signs of obstruction, contact your nearest Microcoin Service Centre for advice.

Press **ESC** to return to the main diagnostics menu.

5.2.1 Test the Outputs of the Validator

Press **2** from the main diagnostics menu to start the output test sequence. This test will allow you to turn each of the outputs on, and ensure that they are functioning correctly with your equipment.

TEST OUTPUT LINE 1-6
PUSH 0 FOR ALARM O/P
PUSH CE FOR GATE
ESC

- To test the output lines, you will need to monitor the voltage on each line. See your QL user guide for the pin numbers and voltage levels that correspond to each output for your Model
Note: Some models of the QL have different numbers of output connection pins, and not all lines may be available on these models.

To signal each line to switch, press and release button 1 to activate line 1, button 2 for line 2, and continue until all required channels are tested. The outputs will pulse at the time set in the pulse width options for QL. Note that the pulse widths may require temporary change to be monitored

- To test the alarm line, press the **0** button.

- To test the operation of the gate, press the **CE** button. A double “click” will be heard from the validator, indicating that the gate has activated.
- Once you have completed the output tests, press **ESC** to return to the diagnostic main menu.

5.2.2 Validator Hardware Tests

The QL validator comes equipped with a multi-coloured LED and a switch to aid in diagnosis and on board programming. There is also the option of a 7 segment display. To test these devices, press **3**.

**1-TEST 7SEG DISPLAY
2-TEST LED
3-TEST SWITCH
ESC**

- To test the operation of the 7 segment display, press **1**. This will signal the validator to display the numbers 0 to 9 on the display. Watching the display during this time will allow you to see if the display is working, and if any segments are not working.
- To test the multi-coloured LED on the side of the validator, press **2**. This will cause the validator to pulse the LED, first green, then red, then orange, before returning the display to the normal green.
- To test the operation of the programming switch, press **3**.

**PRESS THE SWITCH ON
THE VALIDATOR.**

Press the programming switch within 30 seconds, and the display will show that the switch is OK.

SWITCH OK.

If the switch fails, or you don't press it within 30 seconds, a warning display comes up.

**SWITCH FAILED TO
OPERATE.**

If the switch is faulty, contact a Microcoin Authorised Service Centre.

Once you have concluded the hardware tests, press **ESC** until you return to the diagnostics main menu.

5.3 Software Verification

The Micromate can perform a comparative verification of the program that is used to operate the validator, and the configuration data loaded in to customise the validator for a specific job. **Note: This feature has been included primarily for the regulated Gaming Industry. Use in other applications may be limited.**

As part of the verification procedures, a ‘seed’ number is entered, and this is used, with a CRC check, to generate a number. This number can then be compared to the verification numbers generated by other validators of the same type, to check whether anything is different or changed.

To verify the validator, press **3** from the diagnostics main menu.

**SERIAL NO= XXXX
SOFTWARE REV= X.XX
CONFIG NO= XXXXX-XX
VERIFY Y/N?**

The serial number of the validator will be displayed, along with the software revision number, and the config number. To proceed with the verification, press **YES**.

VAL S/N= XXXX

ENTER SEED
ESC

Enter a seed number, for example **1, 2, 3, ENTER.**

CALCULATING
PLEASE WAIT!

SEED=123

The display will now show the results of the verification.

VAL S/N= XXXX
CONFIG CRC= XXXXX
ROM CRC= XXXXX
ESC

The Config CRC is the checksum of the seed number, and the config data stored in the validator. This number can be compared to a previous reading taken from the same validator, or from another validator with the same config, to see if there are any changes in the code. The ROM CRC is the checksum of the seed number and the program software in the validator, and can be used to verify that there haven't been any changes to the operation of the validator.

6.0 To Change the Battery:

Ensure the micromate is turned off, and disconnect all cables. Unscrew the 4 screws on the back cover of the Micromate. Holding the Micromate horizontally, face down, CAREFULLY lift the back cover off the unit. Unplug the existing battery, and replace it. Check the PCB and end cover to ensure they are in position, and then replace the back cover, screwing up the 4 screws.

Always use an Alkaline 9V battery as a replacement.

Note: Please dispose of used batteries carefully.

7.0 Glossary

ALARM	QL has an alarm output, can be configured to pulse in the event of various conditions. The Micromate can switch this output during diagnostic testing, to ensure correct operation. Refer <i>Micromate Diagnostics</i>
BACKLIGHT	The Micromate has a display which can be turned On / Off. Refer <i>Micromate diagnostics</i> .
CATEGORY No.	QL has 12 Coin Categories (or Coin Channels) which can be programmed for individual coins or tokens. Each of the 12 Coin Channels has the following information associated with it: Coin Value, Output Line, No. of pulses, Enabled or Disabled status and Discrimination Band. Refer <i>Check Coin Settings</i> .
CHECKSUM	This is a number generated by an algorithm within QL that uses both the seed number, chosen by the user, and the CRC number, which is calculated from the software code. The checksum can be used to verify that the code and configuration in a validator hasn't changed, or that the code in different validators is the same. Refer <i>Software Verification</i>
EXCESS CREDIT	Excess credit is generated when the accumulated value of coins accepted exceeds the pre set totalised price (or credit) value. Excess credits can be retained or cleared after the accumulated price output. Any retained excess credits will stored in QL as long as it has power. Refer <i>Change Price Setting</i>
AVERAGE COIN SIGNATURE	The Coin Signature is a set of values generated within QL for a particular coin when a coin passes through the detect area. The Average Coin Signature is a set of numbers stored within QL which represents the average of the coin signatures for a population of those coins. The average coin signature is used to form a window of acceptance that a coin signature must fall within to be considered valid. Both of these values are specific to any particular QL.
COMMS	This setting refers to the physical mode of communication between the Micromate and QL Refer <i>Configuration For Use</i>
CONFIG	The CONFIG, or configuration file, contains all the information programmed into QL. This includes all coin category information, and user specified settings, as well as other factory specific settings not accessible with a Micromate
DISCRIMINATION	The discrimination band determines how wide the acceptance window will be for a particular coin or token Typical factory setting is MEDIUM band. NARROW, WIDE and SPECIAL can also be selected. Refer <i>Change the Coin Settings</i>
DISPLAY	1. Micromate: The Micromate display consists of a 20 character x 4 line LCD fitted with software selectable backlight option. 2. QL: Some QL versions are fitted with a single digit LED display. For use with Quick Learn on board programming facility.
ENABLE	Each coin category may be enabled(turned on to accept) or disabled (turned off, sometimes referred to as Inhibited) by the Micromate. Refer <i>Change Coin Settings</i> .
GATE	The validator has a gate which opens to allow valid coins to pass through to the accept chute. The Micromate can test the operation of this gate. Refer <i>Hardware Tests</i>
OUTPUT LINE	The QL validator has 6 parallel output lines. Output lines 1-5 are specific coin output lines. Output line 6 is shared with coin output line 6 and the PRICE (or credit) output line. Note that if you select output line 6 and the price output is enabled (price setting other than 0), both the Coin and Price outputs will be issued on line 6 simultaneously. This situation must be avoided. Refer <i>Change Coin Settings</i>

The Micromate can also be used to turn on each of the outputs during diagnostic testing. Refer *Hardware Tests*.

OUTPUT PULSE WIDTH	The output pulse width is the duration of the pulses issued on coin lines 1-6. Both the ON time and the OFF time (time between multiple pulses) can be specified in mSec. Range 0-9999 Refer <i>Change Operator Settings</i>
POWER SAVING	When the power save option is turned ON, the Micromate switches itself off after 5 minutes of inactivity. Refer <i>Micromate Diagnostics</i>
PRICE	The PRICE (Credit) totalizer accumulates the value of the coins and tokens accepted by QL until the set Price (Credit) is reached, where upon it issues a pulse on output line 6. Range 0-65000 Refer <i>Change the Price Settings</i>
PULSES	The number of pulses issued on a coin output line for each of the Coin Channels can be programmed by the Micromate. Range 0-9999 Refer <i>Change Coin Settings</i>
VALUE	Value of the coin or token in a particular Coin Channel. Used in conjunction with the Price setting. Generally specified in decimal value ie \$1=100 Range 0-9999. Refer <i>Change Coin Settings</i>
VAL CODE	The VAL CODE is a user defined access code stored within QL to prevent unauthorized changes to QL. As the code is stored in QL it is validator specific and independent of the Micromate. <i>Note: If you are going to use the VALCODE feature, it is very important to keep records of the code used. Once a VALCODE is set, the only way the validator can be reprogrammed is with the correct VAL CODE for that validator, or by returning the validator to a Microcoin authorised Service Centre to have the code reset.</i> Refer <i>Change Operator Settings</i>
VERIFICATION	The verification feature is used to check that the code and config data in the validator have not changed. A seed number is chosen by the user, and this is applied to an algorithm that calculates a number from the config data, and from the ROM code. These numbers can then be compared to previous readings, or other validators of the same type. Refer <i>Software Verification</i>