

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

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## Essential Information

Before you use the Micromate, a few essential concepts and comments. It is strongly recommended that before you use the Micromate that you read the Introduction and the Glossary.

## Introduction

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

### Validator Power.

The QL validator can be powered from a 12Vdc power source via its parallel port to work with the Micromate. If the Micromate 2.0 is externally powered from a 12Vdc 1A+ power supply, a validator can be powered from the Micromate via the RJ11 comms cable.

### Validator Inhibit / Enable.

The QL Validator has an inhibit function, and may need to be enabled to function during programming. See your QL Model Number Specification sheet to determine which type of inhibit is used on your validator, and which pin is used to for the enable function. On a standard ten way header version, pin 6 (inhibit/enable) on the header will need to be connected to pin 1 (0V) to enable the validator.

### Micromate Power.

The Micromate 2.0 can be powered from an external 12Vdc power supply, via the RJ11 cable from a powered validator, or by its internal rechargeable battery. If both the Micromate and the validator are powered by 12Vdc external power sources, the 2 power supplies need to be isolated from each other. It is recommended that either the validator **or** the Micromate be externally powered. When the Micromate is powered by an external power supply, or via the RJ11 cable from a validator, the Micromate will be ON, and the battery will be being charged. The power status is indicated by the power LEDs next to the RJ11 connector. In external power mode, the green LED should be on, and the red LED will indicate charging of the battery. On continuously means fast charging, with the flash rate indicating the battery charge current. The slower the red LED flashes, the closer the battery is to being fully charged. During battery operation, both LEDs should be off. The earlier version of the Micromate can be distinguished by the absence of the power LEDs. This version runs on a 9Vdc power supply, does not have a rechargeable battery, and cannot be powered from the validator.

### 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 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, when you are 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.**

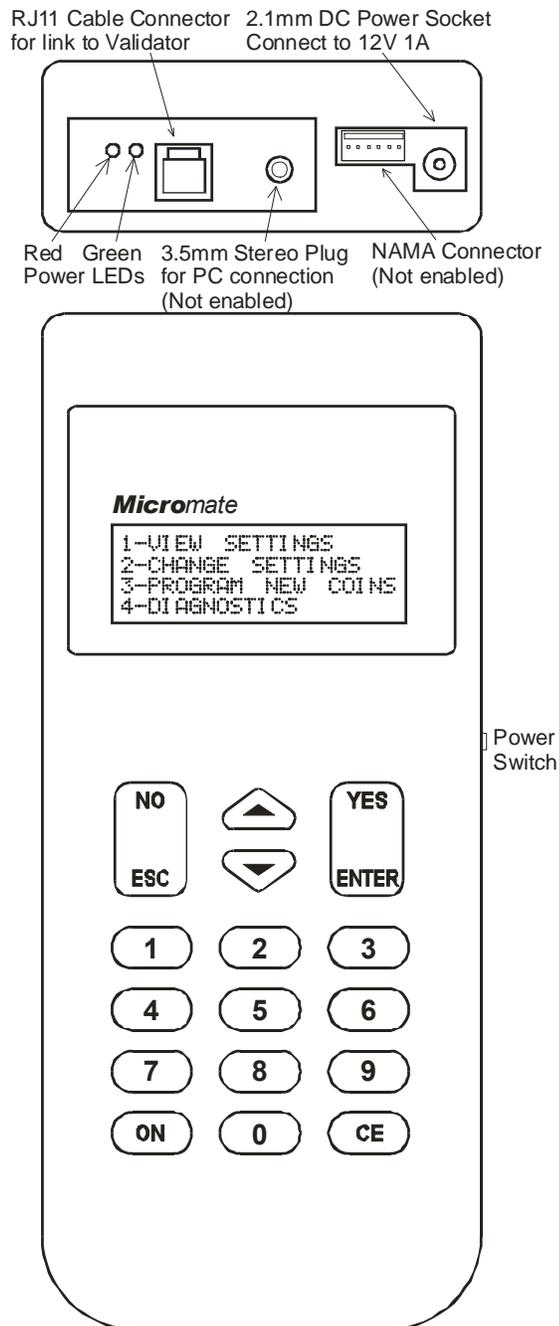
Throughout this manual, the term coin is used to cover both coins and tokens.

**Micromate Display**

This manual shows Micromate screen text as 8 point **BOLD CAPITALS**.  
Flashing text is shown as 8 point **NORMAL CAPITALS**.

# 1.0 Connection and Configuration of the Micromate

## 1.1 Connecting the Micromate



The Micromate 2.0 is connected to a QL validator via the supplied RJ11 cable. A VAL365 interface is used to further interface with a QL3 JST connection. It is recommended that the validator is powered from a 12Vdc 1A power supply via the parallel port. This will supply power to the validator, and also power the Micromate via the RJ11 comms cable. The validator may need to be enabled by connecting the INHIBIT (pin 6 on a 10 way header) to 0V (pin 1 on the 10 way).

See the model specification sheets for more details on the INHIBIT operation of the specific QL validator. *Note: see Micromate Power in the Introduction section for information on Micromate 1.0 series power requirements*

## 1.2 Switch On

A small switch on the right of the housing, just above the keyboard, will switch power to the Micromate if running on the internal battery. Once switched on, or externally powered, 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  
 Press **1** to cycle thru the options

**COMMS VIA CABLE** Comms via the supplied RJ11 cable  
**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.

Scroll down to see the rest of the options

```

VERSION=X.X
3-POWER SAVE ON
4-TOGGLE ENABLES OFF
ESC          ↓ SCROLL

```

**3-POWER SAVE** When the power save option is on, the Micromate will shut down after 5 minutes of inactivity when running on the battery. Press **3** to toggle states.  
**4-TOGGLE ENABLES** Toggle Enables is used to turn all coins of a particular value on, and all other coins off. Press **4** to toggle on or off. See TOGGLE ENABLES in the glossary for more details.

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 -
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 will 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), the coin output on line 6 will be ignored. The PRICE setting over-rides the coin output line selection. **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<br>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) totaliser 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= 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.

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.

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

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 disabled.

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-PGM 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 or token to an existing QL configuration. It is important to be aware of the coins already programmed into the validator. Do not program a coin that is already in the validator into a new category. If the coin is already programmed in, use the REPROGRAM AN EXISTING COIN option to refresh the coin averages. The PROGRAM A NEW COIN will set acceptance windows based on the coins rolled during programming. These windows are not as accurate as factory set acceptance windows for the programmed coins.

REPROGRAM AN EXISTING COIN is used to renew the average coin signature data of a coin that is already programmed into QL. No other settings are changed. The factory acceptance windows are not changed, leading to superior coin discrimination and fraud rejection.

### 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, for example, **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. The source and target validators must be of the same type, ideally having the same Model Number. The config transfer 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. In a QL1 transfer, the coin averages will still have to be programmed in by rolling coins. In most QL2/QL3 transfers, the coin averages are transferred and no coins need to be rolled.

### 4.2.1 Config Transfer Between QL1 Validators

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-PGM A NEW CONFIG

ESC      ↑  BACK
  
```

#### 4.2.1.1 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 CONFIG
FROM QL1
  
```

If the config in the target validator has been changed from the factory settings, the display will show:

```

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

If the source QL is configured as required ignore this warning and press **YES**. 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 QL1s. Note that the source Config is secure in the Micromate, even after power off.

### 4.2.1.2 To Program a Stored QL1 Config into a Validator

Once you have a config uploaded to you 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**

```
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-PGM A NEW CONFIG
ESC      ↑  BACK
```

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.

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

If the last digit of the configs are different a warning is displayed. In this case it should be safe to proceed. 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

#### 4.2.2 To Update a Factory Config in a QL1 Validator

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.

### 4.2.3 Config Transfer Between QL2/QL3 Validators

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-PROGRAM CONFIG
ESC      ↑  BACK

```

#### 4.2.3.1 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 CONFIG
FROM QL2

```

If the config in the target validator has been changed from the factory settings, the display will show:

```

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

```

If the source QL is configured as required ignore this warning and press **YES**

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 QL2s. Note that the source Config is secure in the Micromate, even after power off.

### 4.2.3.2 To Program a Stored QL2/QL3 Config into a Validator

Once you have a config uploaded to the Micromate, you can program it into a target QL. Connect the Micromate to the target QL and from the Program New Coins Menu, select **3-PROGRAM CONFIG**

```

1-PROGRAM WITH COINS
2-EXTRACT VAL CONFIG
ESC TO EXIT AND SAVE ↓

```

Scroll down to see the other options

```

3-PROGRAM CONFIG
ESC      ↑  BACK

```

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.

```

THIS CONFIG CANNOT
BE USED WITH THIS
VALIDATOR.
ESC

```

If the last digit of the configs are different a warning is displayed. In this case it should be safe to proceed. 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

```

The config will now be transferred. If the config has been changed from the factory settings, you will get a warning message. If the config is correct, press YES to continue. With most QL2/QL3 configs, the transfer will be complete.

```

TRANSFERRING CONFIG
PLEASE WAIT

```

With some QL2/QL3 configs, you may be asked to program specific coins to reset the coin averages. The Micromate will bring up each coin category that needs to be programmed, showing the category number, and the value of the coin. You are then asked whether you want to roll coins, or transfer the absolute values.

```

CAT X  VALUE XX
NEEDS PROGRAMMING
1-ROLL COINS
2-USE ABSOLUTES

```

To allow the best signature accuracy, you should select **1 ROLL COINS**, and then follow the prompts to roll 10 or more coins.

```

PASS 10 OR MORE
SAMPLE COINS
ESC      ROLL COIN

```

If you do not have sufficient suitable coins (or tokens) available when you are transferring the config, you can select **2 TRANSFER ABSOLUTES**. This will transfer the exact values from the source validator into the target validator, without allowing for manufacturing variations between the two validators. The coin should work, but will have reduced acceptance rates compared to an average set by rolling coins.

Once you have selected TRANSFER ABSOLUTES, the Micromate will complete the config transfer, and if the config has been changed from the original factory settings, a warning will appear.

|   |
|---|
| <p><b>THIS CONFIG HAS BEEN<br/>CHANGED FROM THE<br/>FACTORY SETTINGS.<br/>YES TO CONTINUE</b></p> |
|---|

Pressing YES will return you to the program coins menu.

## 5.0 Diagnostics

Select option 4 from the Main Menu to bring up the Diagnostics 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 these may require a 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<br>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<br>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 Charge the Battery:

The Micromate 2.0 internal battery is a Ni-mH rechargeable 9V cell. It is charged automatically when the Micromate is powered either from an external 12Vdc power supply, or via the RJ11 comms cable from a powered validator. If the battery goes flat, it will take about 3 hours to fully charge. The Micromate can be used with external power while the battery is charging.

## 7.0 Glossary

|                               |   |
|-------------------------------|---|
| <b>ALARM</b>                  | 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>   |
| <b>AVERAGE COIN SIGNATURE</b> | 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. The factory acceptance windows for each coin are generated after testing many coins, and represent the best acceptance possible while avoiding frauds.  |
| <b>BACKLIGHT</b>              | The Micromate has a display which can be turned On / Off. Refer Micromate diagnostics.  |
| <b>CATEGORY No.</b>           | 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> .  |
| <b>CHECKSUM</b>               | 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>   |
| <b>COINS</b>                  | Coins from around the world come in many shapes, sizes, metals, and values. The QL validator is designed to work with all the common coins from most currencies in the world. As coins have a long usable life, there can be changes in the composition and manufacturing details of a specific coin over its lifespan. A coin may be manufactured from a copper alloy for many years, and then the manufacturing process can be changed to make the coin from plated steel, to reduce the cost of manufacture. Special coins can be minted, to commemorate events and celebrations. If a coin is issued with a change to the face design, but no change to the size or composition of the metal, the QL will usually recognise the coin as the same as the previous design. Any change in the metallic composition, size, or shape will mean that the QL validator will recognise the coin differently. If the coin has changed, both variations of the coin will have to be separately programmed into the validator. For example, a particular currency might have a copper one penny coin, minted from ₤3 to ₤2. It might then be changed to a cupro-nickel material, then in ₤8, changed to a copper plated steel construction. All three variants of the coin may look similar, but would need to be programmed into the validator in separate coin channels. Each channel would have the same value, and activate the same output line, but would be recognised by the validator as 3 different coins. |
| <b>COIN SIGNATURE</b>         | Coins are validated in the QL by an analysis procedure that reads the alloy and size of the coin. The information gained by the validator as it verifies each coin is then manipulated to produce a series of numbers, which represent the coin signature. This signature is then compared to the values stored in the validator, and if it matches one of the stored values, the validator accepts the coin, and issues the appropriate outputs. Standard coin signatures are determined at the factory, using large numbers of each coin type, to enable the variations between individual coins to be allowed for in calculating allowable data spreads.   |

|                           |  |
|---------------------------|--|
| <b>COMMS</b>              | This setting refers to the physical mode of communication between the Micromate and QL. Refer <i>Configuration For Use</i>   |
| <b>CONFIG</b>             | 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. Not all configs will work with all validators. The Micromate will check the validator to ensure hardware compatibility before loading a config.  |
| <b>DISCRIMINATION</b>     | The discrimination band determines how wide the acceptance window will be for a particular coin or token. The typical factory setting is MEDIUM band. NARROW, WIDE and SPECIAL can also be selected. Refer <i>Change the Coin Settings</i>   |
| <b>DISPLAY</b>            | 1. Micromate: The Micromate display consists of a 20 character x 4 line LCD fitted with software selectable backlight option.<br>2. QL: Some QL versions are fitted with a single digit LED display for use with the Quick Learn on board programming facility.  |
| <b>ENABLE</b>             | 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> , and <i>Toggle Enable</i> for more details.   |
| <b>EXCESS CREDIT</b>      | 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 be stored in QL as long as it has power. Refer <i>Change Price Setting</i>   |
| <b>GATE</b>               | 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>  |
| <b>OUTPUT LINE</b>        | 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), the Coin output will be ignored, and the Price output will be issued on line 6. <b>This situation must be avoided.</b> Refer <i>Change Coin Settings</i><br>The Micromate can also be used to turn on each of the outputs during diagnostic testing. Refer <i>Hardware Tests</i> .   |
| <b>OUTPUT PULSE WIDTH</b> | 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>   |
| <b>POWER SAVING</b>       | When the power save option is turned ON, the Micromate will switch itself off after 5 minutes of inactivity. Refer <i>Micromate Diagnostics</i>  |
| <b>PRICE</b>              | The PRICE or (Credit) totaliser 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. Range 0-65000 Refer <i>Change the Price Settings</i>   |
| <b>PULSES</b>             | 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>   |
| <b>QL VALIDATOR TYPE</b>  | The QL Validators are available in three models, QL1, QL2 and QL3. The validators can be distinguished by the Model Number on the label. QL1 validators have a model number in the format Q, followed by 4 digits, for example Q5210. The QL2 validators have a postscript letter, for example Q5230-M. The QL2 versions feature downloadable signatures, which enables config transfers without having to roll coins. The QL3 version is an RoHS compliant version of QL2 with a 4 pin JST connector replacing the RJ11 data connector. QL3 models are identified by two postscripts, for example Q5230-MO. Configs for the QL1 and QL2/3 versions are not compatible, due to |

differences in the data structure. There are also various hardware options which can be fitted to each validator that require special configs. The Micromate will not allow a config transfer to an incompatible validator.

- TOGGLE ENABLE** *Note: This feature is only useful in an application where validators need to be set into single coin/value mode.*  
The toggle enable control is used to enable a particular coin value, whilst disabling all other coin values (see Coins information in the glossary). When the TOGGLE ENABLE is set to on, as you enable a particular coin, for example, 5c, all programmed coins which have the same value will be enabled, and all coins which have different values will be disabled. This feature makes allowance for the need to have multiple versions of the same value coin programmed into a validator, due to changes in the coin composition or size. Refer *Coins*
- 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 *Change Coin Settings*
- 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.  
*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.*  
Refer *Change Operator Settings*
- 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 *Software Verification*