Programming Systems

MICE-4
Memory In Circuit Emulator

User Manual

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1 Introduction

Thank you for buying the ART MICE-4 Memory In Circuit Emulator. The MICE-4 is a ROM Emulator with a USB interface. It is very small, light, portable and energy efficient.

MICE-4's PC software is very simple to use, yet it has powerful functions. The PC software can control up to 4 MICE-4 units at the same time, emulating a total memory of 16MB.

It can also be plugged into the IC socket directly, eliminating noise, fan out, and time delay as a result of the cable.

Furthermore the MICE-4 is capable of driving the reset circuitry of your application.

1.1 Standard Accessories

Please check that the MICE-4 comes with the following accessories. Should one of these be missing, please contact the distributor where you purchased the programming device as soon as possible.

			
MICE-4	USB Cable	Reset Signal Cable	Software, Manual and Driver CD

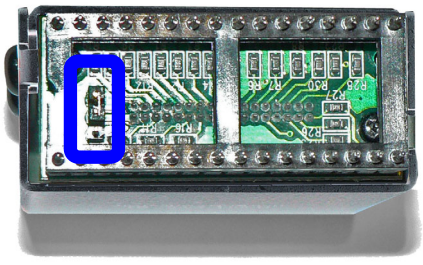
1.2 Supported Devices

EPROM	2716-27040, 27C16-27C040, 27LV128-27LV040
EEPROM *	2816-28040, 28C16-28C040
FLASH *	28F256-28F020, 29C256-29C040

* Socket conversion adapter might be needed

1.3 Footprint Jumper

Make sure you select the correct footprint for 28 or 32 pin devices. You can do this by correctly placing jumper J1 which is located in the socket of the MICE-4 (see picture and diagram below).



Jumper J1: 32 pin

For 32 pin devices short the top two pins with the jumper

Jumper J1: 28 pin

For 28 pin devices short the bottom two pins with the jumper

1.4 How To Get More Information?

The WebSite (http://www.artbv.eu) contains a wide variety of information, links, software and tools that are useful to every user. Also you will find information on the complete product line of Programming Systems.

When you have questions or problems, you can always e-mail Programming Systems at: support@artbv.eu

We hope you enjoy working with the ART MICE-4 Memory In Circuit Emulator.

2 Installation

Before connecting the MICE-4 to your PC, first install the PC software.

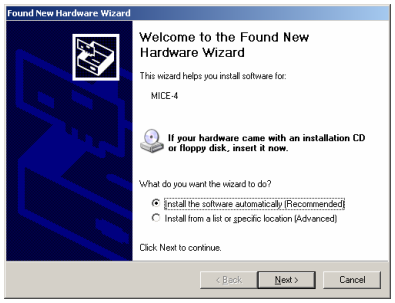
2.1 Installing the PC Software

1. Set the Font Size to [small fonts] (96 dpi) for optimal display:
   1.1. Right click on the Windows desktop.
   → Select [Properties] at the bottom of the function menu.
   1.2. Select [Settings] and then click the [Advanced] button to set the Font Size.
2. Insert the software CD into your CD drive. Normally the installation interface will start automatically (if Auto Run is enabled for your CD drive). Follow the instructions to complete installation.
   2.1. If Auto Run doesn't work, run [setup.exe] in the [software] directory on the CD drive to start the installation.

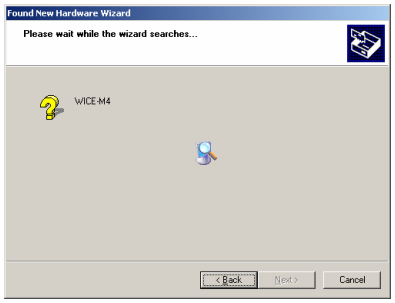
2.2 Install the USB Drivers

Install the USB driver for the MICE-4 hardware (Windows XP screens):

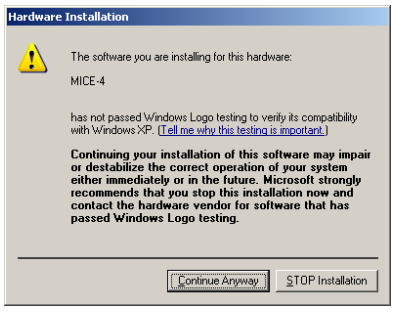
1. Connect the USB cable to the PC USB port and the MICE-4 USB port.
2. Windows will now start the Found New Hardware Wizard. Select the following option:
   → Install the software automatically (Recommended)



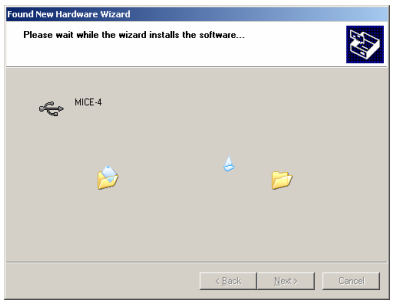
3. Windows will automatically search for a driver.



4. When the installation shows the Windows XP compatibility warning, click [Continue Anyway]. The MICE-4 USB driver is tested with Windows XP and has proven to be compatible.



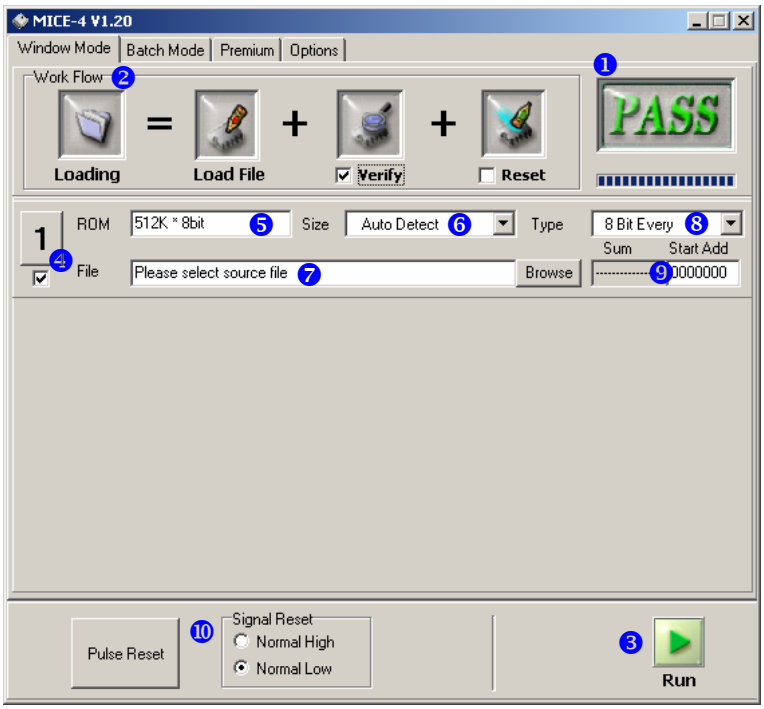
5. Windows will install the driver for the MICE-4.



6. Click [Finish] when the **Completing the Found New Hardware Wizard** message appears.

3 PC Software Operation

In this section the usage of the PC software will be explained. Once you have connected the MICE-4 to a PC and you have started the MICE-4 PC software, the following window will be displayed.



3.1 Windows Mode Tab

The status section in the top-right corner (❶) shows [**PASS**] and you can see the details of all attached MICE-4 devices (maximal 4).
If you have not connected a MICE-4 to the PC, the status section will show **[FAIL]** and you will not be able to see details of any MICE-4.

3.1.1 Work Flow Section

The Work Flow Section (❷) can be found next to the status section. In this section you will see 4 icons:

1. Loading:
   This defines which actions will be performed when users click the [Run] icon (❸): 
2. Load File:
   This icon will be yellow when a file (as defined for that device in ❼) is being uploaded to the attached MICE-4 units. It will be green when the upload has been successful. It will be grey when it has not been used and a **[FAIL]** icon is shown when there has been an error.
3. Verify:
   When the selection box is checked, the PC software will verify if the file have been uploaded to the MICE-4 units correctly.

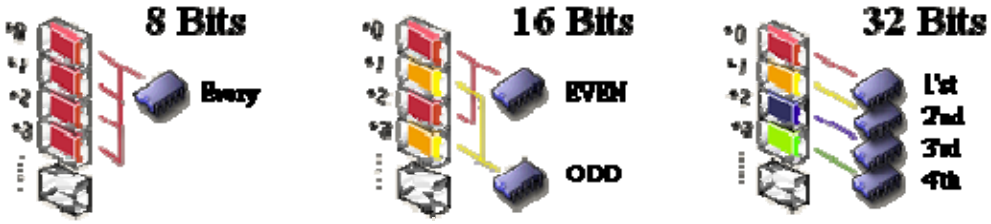
4. Reset:
   When the selection box is checked, the PC software will activate the reset circuitry in the MICE-4 after loading it.

All actions in the Work Flow Section will be performed for the enabled MICE-4 devices. A MICE-4 can be enabled by checking the selection box below the device ID number (❹).

3.1.2 Emulator Section

The Emulator Section is indicated by numbers ❹ to ❾.

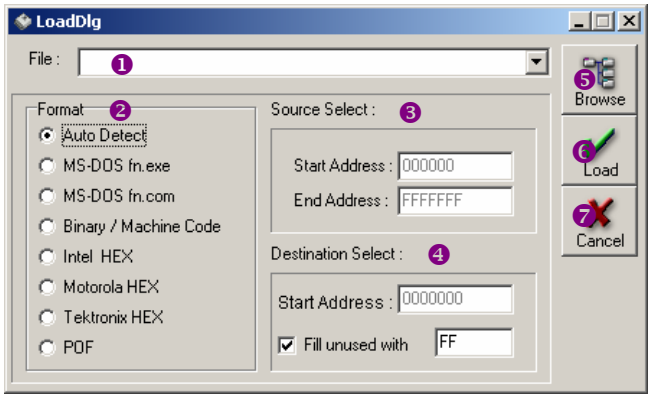
- Unit ID and Selection Box: ❹
  The Unit ID (1-4) can be used to indicate which Emulator section belongs to which MICE-4 unit. Click the ID and a red led on the MICE-4 will signal to identify itself. Use the selection box to enable a MICE-4 unit for the Run icon (❸). Only when selected clicking the Run icon (❸) will effect this MICE-4 device.
- ROM: ❺
  Memory size of the chip the MICE-4 will emulate.
- Data Size: ❻
  The size of the Work File (❼)
- Type: ❽
  The memory split mode or layout to use when loading the file to the MICE-4. It defines which bytes from the file will be loaded into the MICE-4. The picture below will indicate which memory layout will be used.



- Sum and Start Add: ❾
  Sum shows the checksum of the file after the Run icon (❸) has been clicked for the first time (and file has actually been loaded). **Start Add** (start address) defines from which address in the file data should be loaded into the MICE-4.
- Work File: ❼
  The source file that will be loaded into the MICE-4. Click **[Browse]** and the Load File dialog will be shown as described in the next paragraph.

3.1.2.1 Load File Dialog

The Load File dialog can be used to specify which file should be loaded



- **File:** ❶
  The file name and location of the **Work File**. Simply enter the exact location and the name of the source file or click on the **[Browse]** button (❺) to search and select the file.
- **Format Section**: ❷
  Here you can specify the file format of the **Work File**. The MICE-4 PC software supports 7 file formats. If you are not sure about the format of the file, simply select **[Auto Detect]** to have it detected automatically.
- **Source Select Section**: ❸
  When a binary file format is selected, a range limitation can be defined for the selected file. You can define the start and end address to limit the file size.
- **Destination Select Section**: ❹
  - **Start Address:**
    When a binary file format is selected, set the start address of the buffer and MICE-4. This address will contain the first byte loaded into the MICE-4.
  - **Fill unused:**
    Some file formats can have gaps in the memory map. Here you can define what value should be used to fill the gap (empty spaces). The default value is FF (blank)
- **Load**: ❻
  Confirm the file to be load to the MICE-4 with the selected settings.
- **Cancel**: ❼
  Cancel all entries and file definition.

3.1.3 Reset Section

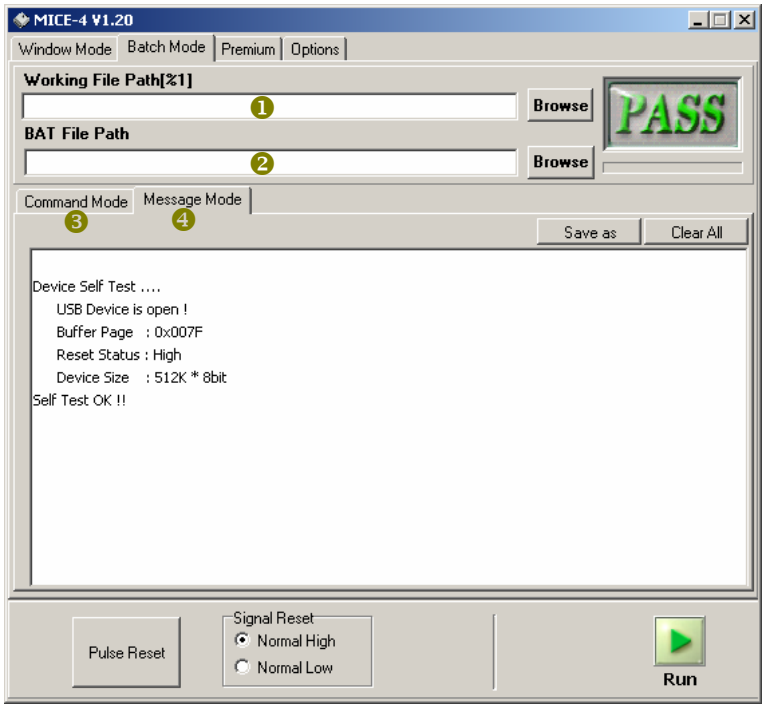
The Reset Section (❿) can be found on the left bottom side of the screen. Click **[Pulse Reset]** and the reset line of the ART MICE-4 will be activated according to the selected setting in Signal Reset. The reset cable should be used to connect the MICE-4 to the reset circuitry of the PCB or application board.

3.1.4 Run Icon

Click the Run icon (❸) to load the files to all activated MICE-4 devices.

3.2 Batch Mode Tab

The MICE-4 can be operated using batch command files. Below the window of the batch mode tab is shown.



3.2.1 Working File

The Working File Path[%1] (❶) defines the location and name of the file that will be loaded into the MICE-4 in batch mode. This file name can be accessed as %1 in a batch command.

3.2.2 BAT File Path

The BAT File Path (❷) defines the location and name of the batch command file.

3.2.3 Command Mode Tab

The Command Mode tab (❸) shows the content of the batch command file that has been loaded. Users can also input batch commands directly here or edit the batch file. The [Save as] button will save the batch commands into a file. The [Clear All] button will clear all commands displayed in the command window.
More about MICE-4 commands, see paragraph 3.2.5 Batch Mode Commands.

3.2.4 Message Mode Tab

The Message Mode tab (❹) shows the information of the MICE-4, including connection status, settings and hardware self-tests. The [Save as] button will save the messages into a log file. The [Clear All] button will clear all messages displayed in the message window.

3.2.5 Batch Mode Commands

In this section all supported batch mode commands will be described.

Each batch command starts with 'WE'. This command supports maximal 7 parameters:

```
WE <file> /<format> /<type> /<block> /<unit> /<layout> /<reset>
   /<start_address> /<verify>
```

Commands and parameters are case insensitive. Each parameter will be preceded by a slash (/) except for the file parameter.

3.2.5.1 <file>

The file parameter can be supplied in two ways:

1. Fill in the complete path and filename
2. Use **%1** as file definition. The MICE-4 software will recognize this as a substitution for the filename of the **Work File**, when importing a file by dragging the file onto the MICE-4 software.

3.2.5.2 <format>

When this parameter has not been supplied, the software will try to auto detect the file format. Other available formats are:

```
/MS_DOS_FN.EXE
/MS_DOS_FN.COM
/BIN
/INTEL_HEX
/MOTOROLA_HEX
/TEKTLONIX_HEX
```

3.2.5.3 <block>

If the file size exceeds IC type, the file will be cut into block. Each block size will equal the IC size. The block command can be used to identify which block should be loaded into the MICE-4. Default the first block will be used. The format of the block parameter is:

```
/N<block_number>
```

Example: Will load block number 10 into the MICE-4

```
/N10
```

3.2.5.4 <unit>

When the unit parameter is not supplied, MICE-4 unit 1 will be used. A maximum of 4 MICE-4 units can be controlled at the same time. The format of the unit parameter is:

```
/#<unit_number:1-4>
```

Example: Will load data into MICE-4 unit 1

```
/#1
```

3.2.5.5 <type>

When this parameter has not been supplied, the software will try to auto detect the IC size it is supposed to emulate. According to the file size of **Working File**, system selects the suitable type. The ART MICE-4 supports 10 IC types:

/16 /2716	=	2K	x 8Bits
/32 /2732	=	4K	x 8Bits
/64 /2764	=	8K	x 8Bits
/128 /27128	=	16K	x 8Bits
/256 /27256	=	32K	x 8Bits
/512 /27512	=	64K	x 8Bits
/010 /27010	=	128K	x 8Bits
/020 /27020	=	256K	x 8Bits
/040 /27040	=	512K	x 8Bits
/080 /27080	=	1024K	x 8Bits

3.2.5.6 <layout>

The layout parameter defines which data from the source file will be loaded into the MICE-4. In paragraph 3.1.2 each layout type has been described. When the layout parameter is not supplied, layout type '8 bit every' will be used. Besides the default setting the MICE-4 also supports the following layout settings:

```
/16BIT_EVEN
/16BIT_ODD
/32BIT_1ST
/32BIT_2ND
/32BIT_3RD
/32BIT_4TH
```

3.2.5.7 <reset>

When the reset parameter has been supplied, the MICE-4 reset line will be signalled as defined in paragraph 3.4 Options Tab. The format of the reset parameter is:

```
/RESET
```

3.2.5.8 <start_address>

With this parameter the start address from which data will be loaded into the MICE-4 can be supplied. The start address should not exceed the IC size. The format of the reset parameter is:

```
/S000400
```

3.2.5.9 <verify>

When the file has been loaded into the MICE-4, it can be verified if all content has been transferred correctly. The format of the verify parameter is:

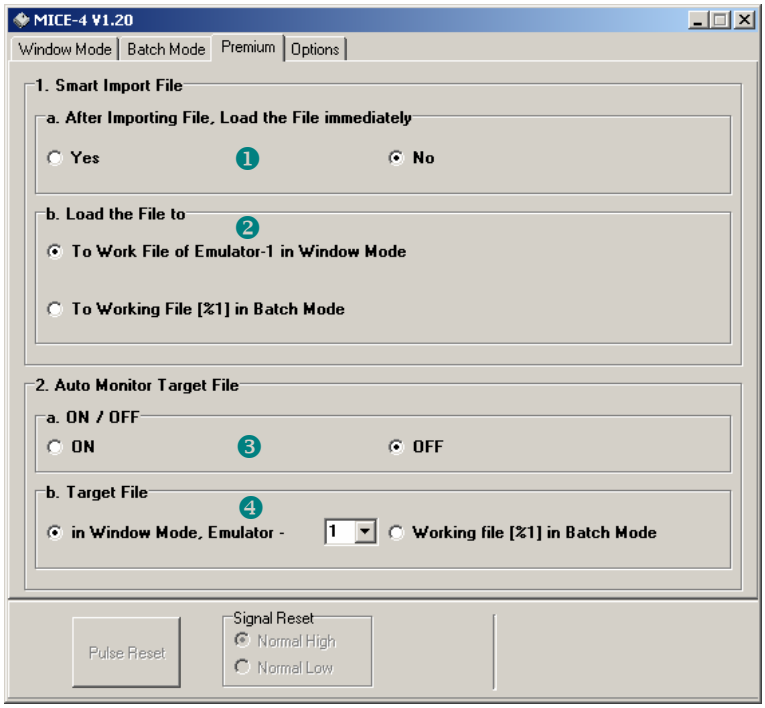
```
/V
```

3.2.5.10 Example

A batch file command could look like the ones below:

```
WE boot.hex /INTEL_HEX /2732 /#1 /RESET /S0000 /V
WE %1 /INTEL_HEX /27040 /16BIT_EVEN /#2 /RESET /S000000 /V
WE %1 /INTEL_HEX /27040 /16BIT_ODD /#3 /RESET /S000000 /V
```

3.3 Premium Tab



3.3.1 Smart Import File Section

Files can be dragged on the MICE-4 software. In the Smart Import File section (❶, ❷) can be defined what should be done with the file.

3.3.1.1 After Importing File, Load the File immediately

When a file is dragged on the MICE-4 software, what should be done with it?

- **Yes:** Load it into buffer area in **Window Mode/Batch Mode**.
- **No:** Just show the filename and path of the **Work File** (❼) but do not load it.

3.3.1.2 Load the File to

After smart-importing the file, the Load the File to section (❷) defines where to use the file:

- **The Work File in Window Mode Emulator-1**
- **The Work File [%1] in Batch Mode**

3.3.2 Auto Monitor target file

As soon as the target file has changed, a message box can be displayed in the bottom-right corner of the screen to notify the users. The Window Pop-up ON/OFF selection (see paragraph 3.4.2 Message Window) should be enabled. Furthermore the Auto Monitor Target File option (❸) should be enabled as well.

- **ON:** notify and ask whether the file should be reloaded
- **OFF:** do not notify

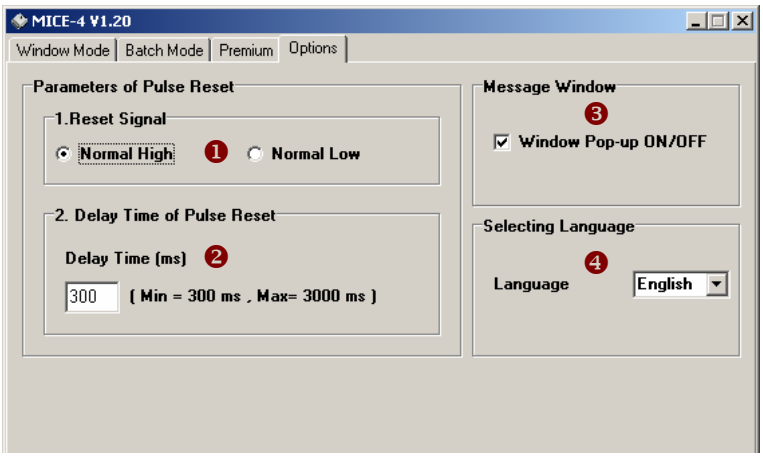
3.3.2.1 Target File

As users can load different files in **Window Mode** and **Batch Mode**, one of these must be assigned as the target for the file that is being monitored.

- **in Window Mode Emulator – [1, 2, 3, 4]**:
  assign the file in **Window Mode** as the target file
- **Working file [%1] in Batch Mode**:
  assign the file in **Batch Mode** as the target file

3.4 Options Tab

In the options tab (as shown below) the language and reset signal settings can be changed.



3.4.1 Parameters of Pulse Reset Section

In this section the behaviour of the reset signal can be defined.

3.4.1.1 Reset Signal

The Reset Signal (❶) can be defined to two default levels:

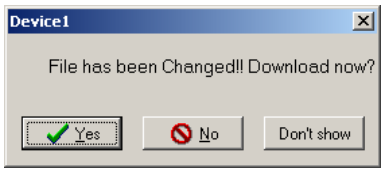
- **Normal High:** The reset line will be held high during normal operation. A reset pulse will be a high - low - high transition.
- **Normal Low:** The reset line will be held low during normal operation. A reset pulse will be a low - high - low transition.

3.4.1.2 Delay Time of Pulse Reset

The duration of the reset pulse can be set here. The minimal pulse time is 300 milliseconds; the maximal time is 3 seconds.

3.4.2 Message Window

As soon as the target file has changed or a new USB Emulator is connected, a message box (shown below) can be displayed in the bottom-right corner of the screen to notify the users. The Window Pop-up ON/OFF selection (❸) should be enabled and the Auto Monitor Target File option on the Premium Tab (see paragraph 3.3.2 Auto Monitor target file) should be enabled as well.



3.4.3 Selecting Language

In the Selecting Language section (❹) the MICE-4 currently offers a choice of two languages.

PS20060803-MICE4-UME-PDF

Programming Systems B.V.:
Telephone: +31- 40 - 222 33 11
Fax: +31- 40 - 222 23 21
WebSite: www.artbv.eu
E-mail: support@artbv.eu