

EE-COPY (v1.4)

STANDALONE EEPROM COPIER

Small sized standalone 24xx and 93xx series EEPROM copier.

Features: Copy, Slow copy for 93Cxx, Verify, Read (with address display), Address value read, Data editing and program to any specified address

Supported devices:

24C00, 24C01, 24C02, 24C04, 24C08, 24C16, 24C32, 24C64, 24C128, 24C256, 24C512, 24C1024

24AA00, 24AA01, 24AA02, 24AA04, 24AA08, 24AA16, 24AA32, 24AA64, 24AA128, 24AA256, 24AA512

24LC00, 24LC01, 24LC02, 24LC04, 24LC08, 24LC16, 24LC32, 24LC64, 24LC128, 24LC256, 24LC512

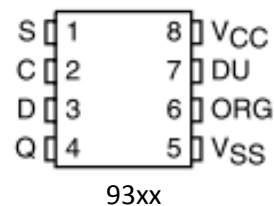
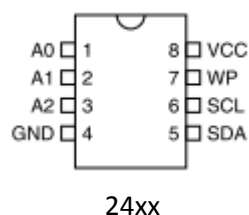
93C46 8bit/16bit, 93C56 8bit/16bit, 93C66 8bit/16bit, 93C76 8bit/16bit, 93C86 8bit/16bit

93LC46 8bit/16bit, 93LC56 8bit/16bit, 93LC66 8bit/16bit, 93LC76 8bit/16bit, 93LC86 8bit/16bit

93AA46 8bit/16bit, 93AA56 8bit/16bit, 93AA66 8bit/16bit, 93AA76 8bit/16bit, 93AA86 8bit/16bit

In case of 93xx series you have to check memory organization. You can find it in device datasheets. Maybe it support only 8bit, 16bit or both. If you try to read or copy with a non supported memory organization, result of operation will be wrong.

This programmer can handle several 24xx and 93xx variant, so maybe you can copy devices which are not in supported device list, for example 24FC64, etc, but you have to check pin map of your device. Pin map of your device should same like these:



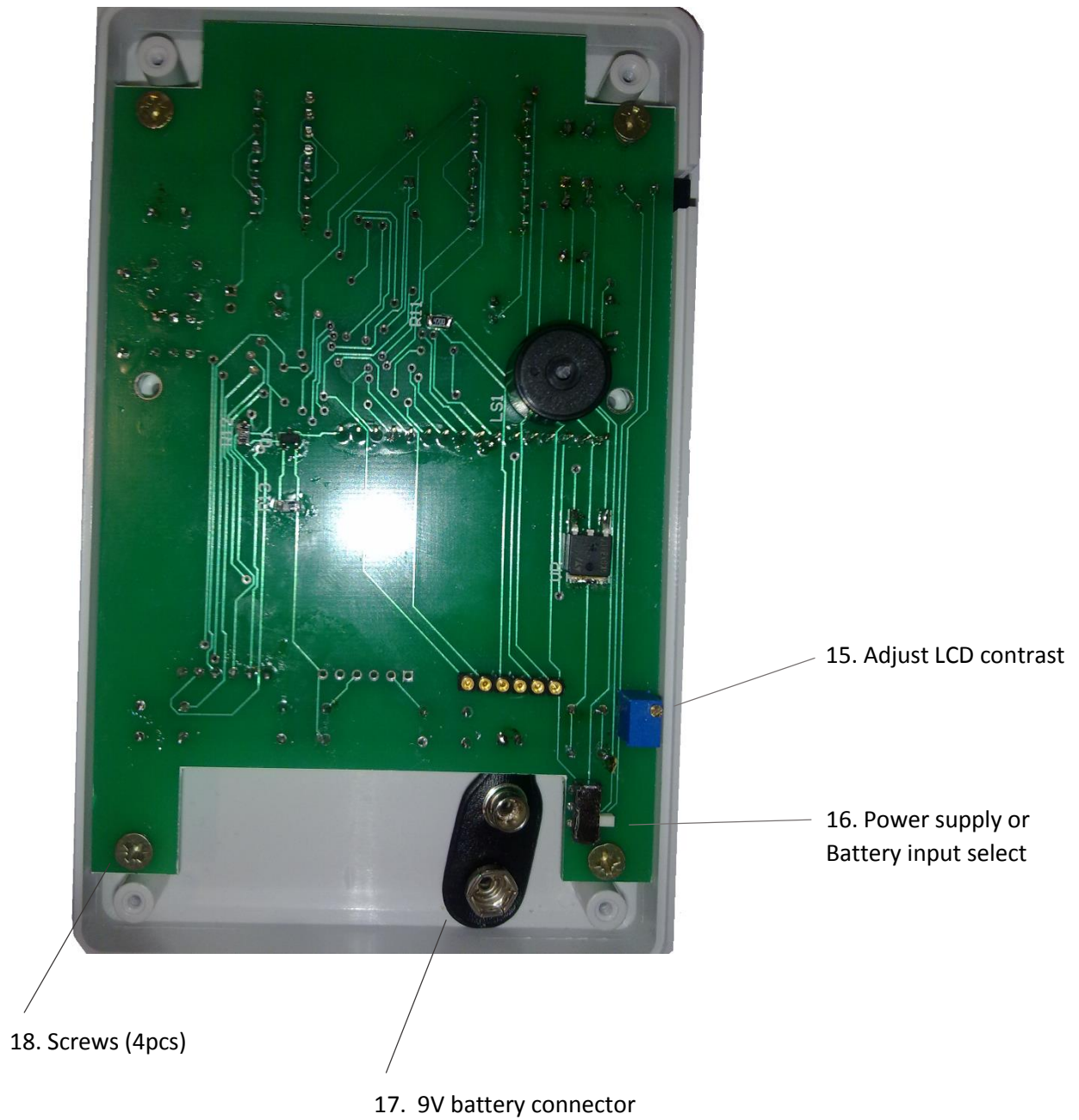
If your device has rotated pin map, you have to use a custom adapter!

Always select correct device types. For example in case of 24AA02 select 24C02; Microchip 93C46B select 93C46 16bit, etc.

Introducing:



Back side:



Details of parts

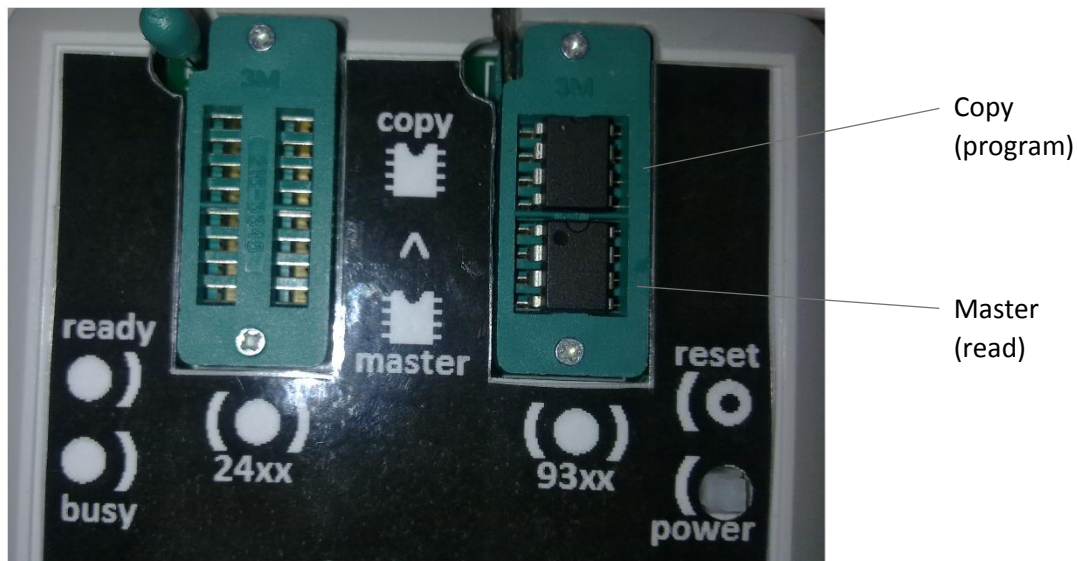
1.	24xx device socket	In case of 24XX series you have to use this socket
2.	93xx device socket	In case of 93XX series you have to use this socket
3.	Reset button	Copier reset. Useable for stop copy and verify operations, but we advise to wait for operation ending.
4.	Power On/Off	Copier turn on / off
5.	93xx LED	This LED indicates, that you have to use this socket
6.	Start button	Operation start button
7.	Function button	Select operation, like Copy/Verify/Read/Address value check. This button used for increase number values in Address value check operation
8.	Step forward button >	Device select button (forward) This button used for move cursor right in Address value check operation
9.	Step backward button <	Device select button (backward) This button used for move cursor left in Address value check operation
10.	LCD screen	LCD screen for menu system
11.	24xx LED	This LED indicates, that you have to use this socket
12.	Operation LED	This LED indicates that copier is busy. If lit, forbidden to insert or remove devices!
13.	Standby LED	This LED indicates that copier is turned on
14.	Power supply connector	External power supply connector. 9V DC. Outer is negative.
15.	Adjust LCD contrast	Adjust LCD contrast if needed. You should use it when change to battery mode.
16.	Power supply or Battery input select	You can select external power supply or battery mode with this switch.
17.	9V battery connector	Connector for 9V battery
18.	Srews (4pcs)	Fixing srews. In case of button malfunctions you should use these. see page 6, section 15.

Inserting devices:

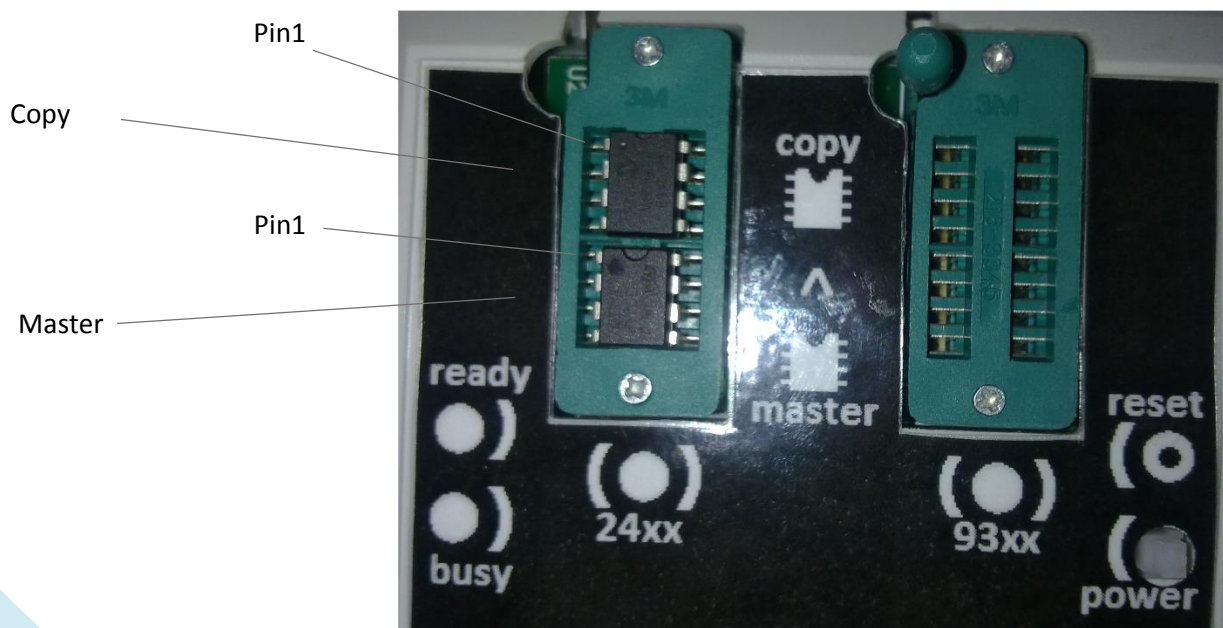
You have to insert same device types to same socket. Unused socket always remain empty. There is the Insert the master (original) chip to bottom side of socket. Insert copy device to upper side of socket. Insert the master chip with the notch upwards, aligning the bottom line with the bottom line of the socket. The picture below illustrates the process of inserting master and copy ICs.

Socket adapters are available for SMD encapsulations, like SOIC8 DIP8 (150mil), SSOP8 DIP8 or SOIC16 DIP16 (150mil) adapters. Best choose for copying two SOIC8 IC is one SOIC16 DIP16 adapter, for copy SMD to DIP is one SOIC8 DIP8 adapter.

Copy of 93xx series:



Copy of 24xx series:



Cautions and useful hints:

1. Never remove or insert devices when Busy LED light!
2. Insert devices carefully. Always check pin orientation (Pin 1 is up). Master chip is the bottom, Copy chip is the upper.
3. Use only socket of selected device type. Always leave unused socket empty.
4. Never insert 93xx devices to 24xx socket, or 24xx devices to 93xx socket!
5. For stop Read operation, hold Start button about 1sec
6. Reset button useable for stop copy and verify operations, but we advise to wait for operation ending.
7. If you select battery mode, you should adjust LCD contrast.
8. In case of battery mode we advise turn off LCD backlight for longer battery lifetime. LCD backlight turn off function available only on title screen. Hold down Start button when push the Function button.
9. External power supply is 9V DC. Outer is negative.
10. This copier developed mainly for external power supply mode, but possible to use with battery. In case of battery mode we advise turn off LCD backlight for longer battery lifetime.
11. Copier has beeper. One beep if operation was ok. Three quick beep if error occurred, for example during verify.
12. If you type wrong address value on Address value check operation screen, you will get Error text. Valid address ranges for chip types:
24C00 (0-0F), 24C01 (0-7F), 24C02 (0-FF), 24C04 (0-1FF), 24C08 (0-3FF), 24C16 (0-7FF),
24C32 (0-FFF), 24C64 (0-1FFF), 24C128 (0-3FFF), 24C256 (0-7FFF), 24C512 (0-FFFF),
24C1024 (0-1FFFF), 93C46 8bit (0-7F) 93C46 16bit (0-3F), 93C56 8bit (0-FF) 93C56 16bit (0-7F),
93C66 8bit (0-1FF), 93C66 16bit (0-FF), 93C76 8bit (0-3FF), 93C76 16bit (0-1FF),
93C86 8bit (0-7FF), 93C86 16bit (0-3FF)
13. There is a status number on upper right corner of LCD screen during Copy and Verify operation. This (hexadecimal) number indicates the operation status, and count down to zero. In case 24C1024 will count down to zero twice.
14. 24xx devices requires more time for copy and verify than 93xx devices. Estimated operation durations:

24C02:	copy: 3sec,	verify: 3sec
24C04:	copy: 5sec,	verify: 7sec
24C16:	copy: 20sec,	verify: 28sec
24C32:	copy: 43sec,	verify: 56sec
24C128:	copy: 2min 49sec,	verify: 3min 42sec
24C256:	copy: 5min 40sec,	verify: 7min 24sec
24C1024:	copy: 22min 41sec,	verify: 28min 50sec
15. Push buttons located under cover layer of copier. In case of button jamming or lack of sensitivity you should tide or loose the four fixing screw. If needed please set the four white spacer under PCB and tide screws again.
16. In case of 93CxxC chip with dual data organization (8bit/16bit) address value reading or data programming, recommended to select 16bit device.
17. Normal copy of some 93Cxx chip types doesn't work. In this case you have to use slow copy function.
18. When you select a function, you can see the used socket on right side of screen.

Using copier :

1. After turn on you will see this screen

```
-----  
EE-COPY          V1.4  
SELECT DEVICE:   < >  
-----
```

In upper row is the name of programmer and sw version.

You can select devices with < > buttons. At now you can't use Start and Function buttons. . LCD backlight turn off function available only on this title screen. Hold down Start button when push the Function button.

2. When you pushed the Device select buttons

```
-----  
24C00  
SEL. OPERATION: ^  
-----
```

You can select devices with < > buttons. You can select operations with ^ button. Operations: Copy, Verify, Read, Address value check

3. Copy menu:

```
-----  
24C00           □#  
COPY            □#  
-----
```

After operation selection, you can see the used socket and you can start it with Start button. Insert devices carefully. □: Used socket, #: empty socket. Always check pin orientation (Pin 1 is up). Master chip is the bottom, Copy chip is the upper. Always check device socket LED light, too.

4. Copying:

```
-----  
24C00          WAIT 01  
COPY  
-----
```

During operation appears WAIT text and status count down number. This (hexadecimal) number indicates the operation status, and count down to zero. In case of 24C1024 will count down to zero twice.

5. Copy is done:

```
-----  
24C00          DONE  
COPY  
-----
```

If operation finished, appears DONE text. You can repeat the operation with Start button. You can select devices with < > buttons and another operations with ^ button.

Hint: If you would like to erase a chip, insert chip into copy socket, but leave master chip socket empty.

Normal copy of some 93Cxx chip types doesn't work. In this case you have to use slow copy function..

6. Slow copy (only 93Cxx):

```
-----
93C56 8 BIT      #☐
SLOW COPY       #☐
-----
```

7. Slow copying:

```
-----
93C56 8 BIT      WAIT 01
SLOW COPY       FE
-----
```

During operation appears WAIT text and status count down number. This (hexadecimal) number indicates the operation status, and count down to zero. Under the counter you can see the readed data.

8. Slow copy is done:

```
-----
93C56 8 BIT      DONE
SLOW COPY
-----
```

9. Verify menu:

```
-----
24C00           ☐#
VERIFY          ☐#
-----
```

10. During verify operation:

```
-----
24C00           WAIT 01
VERIFY
-----
```

During operation appears WAIT text and status count down number. This (hexadecimal) number indicates the operation status, and count down to zero. In case of 24C1024 will count down to zero twice. If operation finished, appears DONE text. You can repeat the operation with Start button, or select devices with < > buttons and another operations with ^ button.

11. If Verify operation find difference:

```
-----
24C00           ERR.
ADD:000000 D:13 00
-----
```

ERR. text indicates that error occurred during Verify. There are on bottom row the address of error, value of master IC and value of copy IC. In case of 93xx 16bit mode there are two 16bit value:


```

-----
93C46 16bit      ERR.
ADD:00007F D:1213 FFFF
-----

```

You can repeat the operation with Start button. You can select devices with < > buttons and another operations with ^ button.

12. Read menu:

```

-----
24C00           # #
READ            □#
-----

```

Operation will start with Start button. This function useable for displaying all data of master device on screen.

13. During read operation:

```

-----
00000: FF 12 FF
00 FF 00 01 33
-----

```

During read operation all data of master device will display on screen. You can stop it with holding start button. You can see the actual address and readed data. The first data is locatated on displayed address, the others on increased addresses. On 00000 address is FF, 00001:12, 00002:FF, 00003:00, 00004:FF, 00005:00, 00006:01, 00007:33

When reading finished, Busy LED will turn off. You can repeat the operation with Start button, or select devices with < > buttons and another operations with ^ button.

14. Address value check operation menu:

```

-----
24C00           # #
ADDR. VALUE     □#
-----

```

Insert chip into socket of master device (bottom).

After Start button pushing:

```

-----
24C00
ADDR.: 00000
-----

```

With this function you can check value of one specified address. First, you have to input a valid address in hexadecimal notation. Function button used for increase number values, < > buttons for move cursor left or right. You can see cursor position only during cursor move. If you type wrong address value, you will get ERR. (Error) text (see page 6. section 12):

```

-----
24C00           ERR.
ADDR: 00100
-----

```

Push Start button for reset input field, and type new address. Or push twice Function button for new device or operation selection.

15. Push Start button, If Address value was valid you can see data value on the specified address:

```
-----  
24C00      DONE  
ADDR: 0000F  D:12  
-----
```

You can see the address and data value. (1 byte in HEX). In case of 93C 16bit device you can see two byte. Push Start button for reset input field, and type new address. Or push twice Function button for new device or operation selection.

16. Data programming to any specified address:

```
-----  
93C46 16bit      #☐  
ADDR. WRITE      # #  
-----
```

Insert chip into socket of copy device (upper). Avoid accidental data modification, we recommend that before you insert chip into the socket, first edit address and data value.

17. After Start button pushing:

```
-----  
93C46 16bit  
ADDR.: 00000 D:0000  
-----
```

With this function you can write data to a specified address. First, you have to input a valid address and data (hexadecimal). Function button used for increase number values, < > buttons for move cursor left or right. You can see cursor position only during cursor move. If you type wrong address value, you will get ERR. (Error) text (see page 6. section 12):

```
-----  
93C46 16bit      ERR.  
ADDR: 10000 D:0000  
-----
```

Push Start button for reset input field, and type new address and data. Or push twice Function button for new device or operation selection.

18. Push Start button, If Address value was valid you can see DONE message:

```
-----  
93C46 16bit      DONE  
ADDR: 0000F  D:1201  
-----
```

Push Start button for reset input field, and type new address. Or push twice Function button for new device or operation selection.