

# HATM02F

3 Relay module for Raspberry Pi

## I. Short description

HATM02 is universal and very functional board. It is specifically designed for MaticBox Case compatibility and is made for people who want to use the Raspberry Pi for automation projects in home or industrial environment.

## II. Included

1. PCB board -1pc.
2. Cable RJ6 -1pc.
3. Male Connectors for JP3, JP5, JP6 -3pcs.
4. Pitch terminal – 12pcs.

## III. Elements and Features

### Relays

The board has 3 relays with the possibility of switching up to 250V AC and max current up to 3A.

Relay 1 has both NO and NC outputs. Relays 2 and 3 have only NO output.

All three relays have a common end of the contact system.

### Connector RJ6

RJ6 has 5 input/output ports. (Inputs Up to 24V, Active – Low level; Possibility of direct connection of buttons, switches and etc.)

I/O 1 – universal input/output port.

I/O 2 - universal input/output port.

I/O 3 - combined with built-in Raspberry Pi One Wire interface. (It is chosen whether it is I/O or One Wire with a jp4)

I/O 4 – universal input/output port or serial (UART)

I/O 5 - universal input/output port.

### LED diode

Two-color LED – red/green. If combined with frequency switching - yellow.

### Buzzer

There is a buzzer for sound signaling, without its own sound generator. It is connected to the Raspberry Pi pin with built-in PWM with which the client can choose the and sounds of the buzzer.

### Button

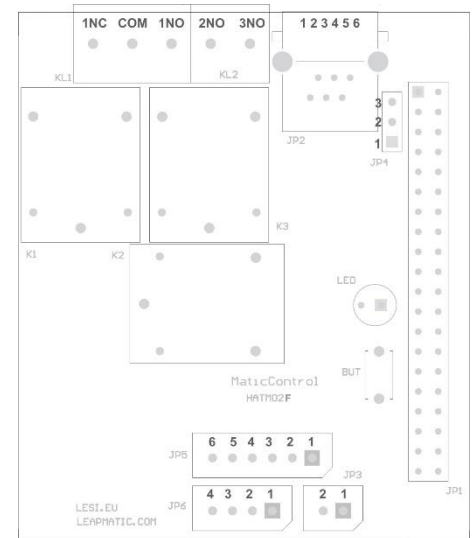
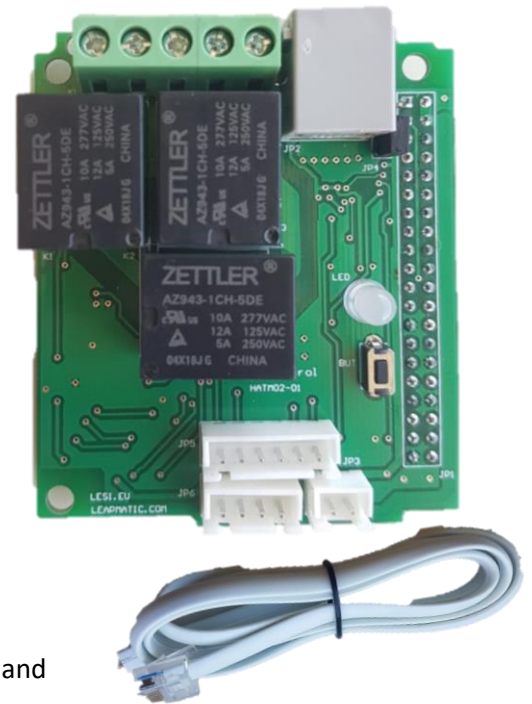
Valet Button – for service needs.

### Top Connectors

I2C port – JP5

For infrared port or other universal application – JP6

For external 5V power supply - JP3



## Optional functions

EEPROM – 24LC256

Crypto Chip – ATECC608

## IV. IMPORTANT GUIDELINES FOR HAT MANAGEMENT

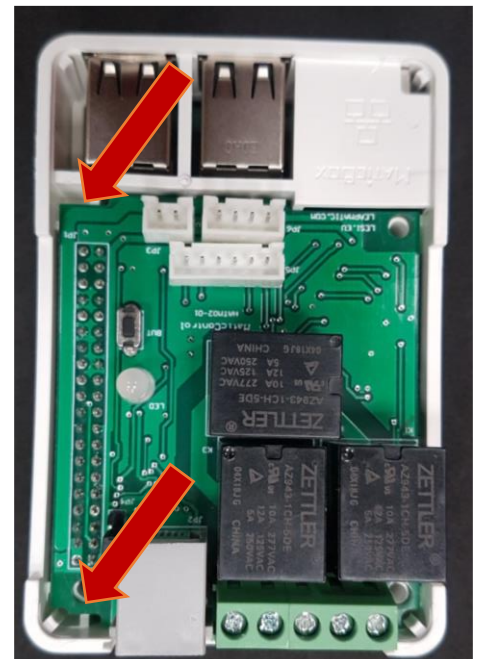
Guidelines for initial startup of software used for hat mangament (Node red, other software or custom code)

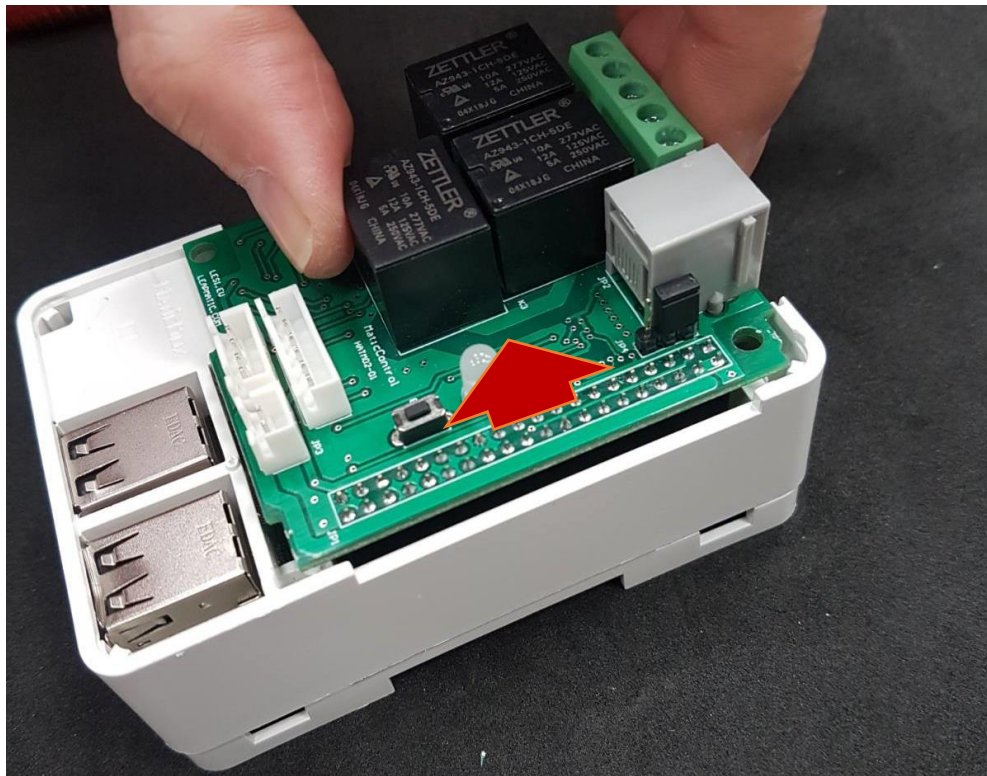
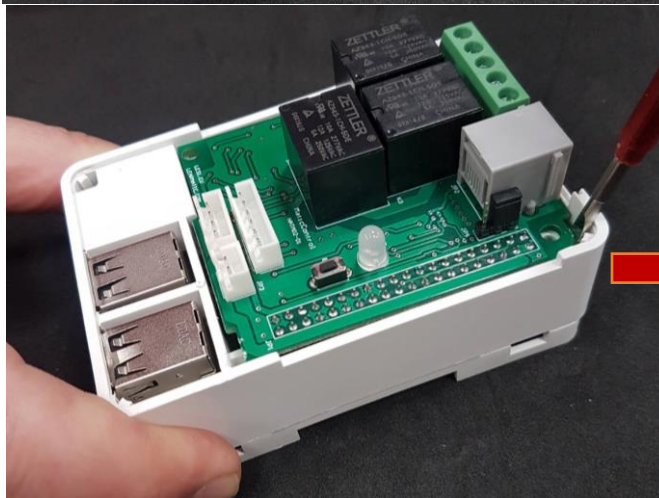
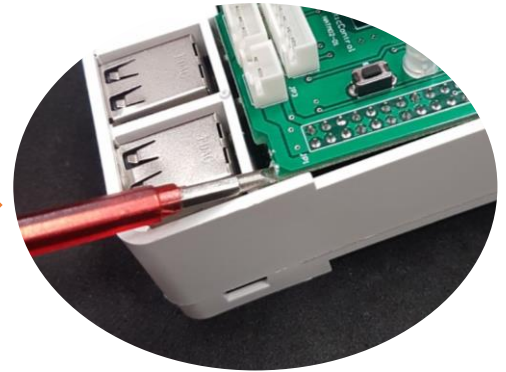
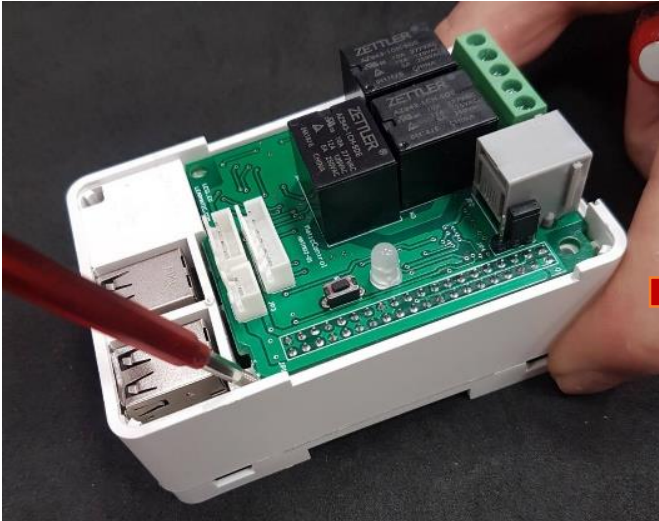
- All GPOs that control outputs such as relays, I/O, LED, buzzer, should be defined as outputs with the following values:
  - Relays, buzzer, diode, I/O (1;2;3;5), InfraRed Output, must be set to “0”
  - I/O 4 output must be set to “1”
- To use the Button You need to switch on the pull up resistor function for this Input
- The Buzzer is connected to the Raspberry Pi pin with built-in PWM. The frequency should not be less than 1kHz. It is desirable that the fill factor is not more than 10%.
- Trigger Levels of I/O 1; I/O 2; I/O 5 are between 1.0V -1.5V
- Trigger Levels of I/O 3 is between 1V -1.5V when chosen as GPIO.
- Trigger Levels of I/O 4 is between 3.0V -3.5V. The level is such because it is intended to be used for remote UART communication with external devices.
- To all I/O can be connected a button to ground.
- \*Outputs are Open Collector to ground.  $I_{max} = 100mA$  ;  $U_{max} = 16V$

## V. How to unmount the board

The mounting of HATM02F is easy. You just place it on top of the pins and push it down. The unmounting is easy as well but you need to be careful with all 40 pins underneath. That’s why we added in this document a quick and easy way how to unmount the board.

1. On the both corners we designed a special space where you can insert a little screw driver.
2. Then put a screw driver into the upper hole and lift carefully the HAT
3. Repeat the same with the other side
4. Lift the board from the case





### HATM02-SCH

