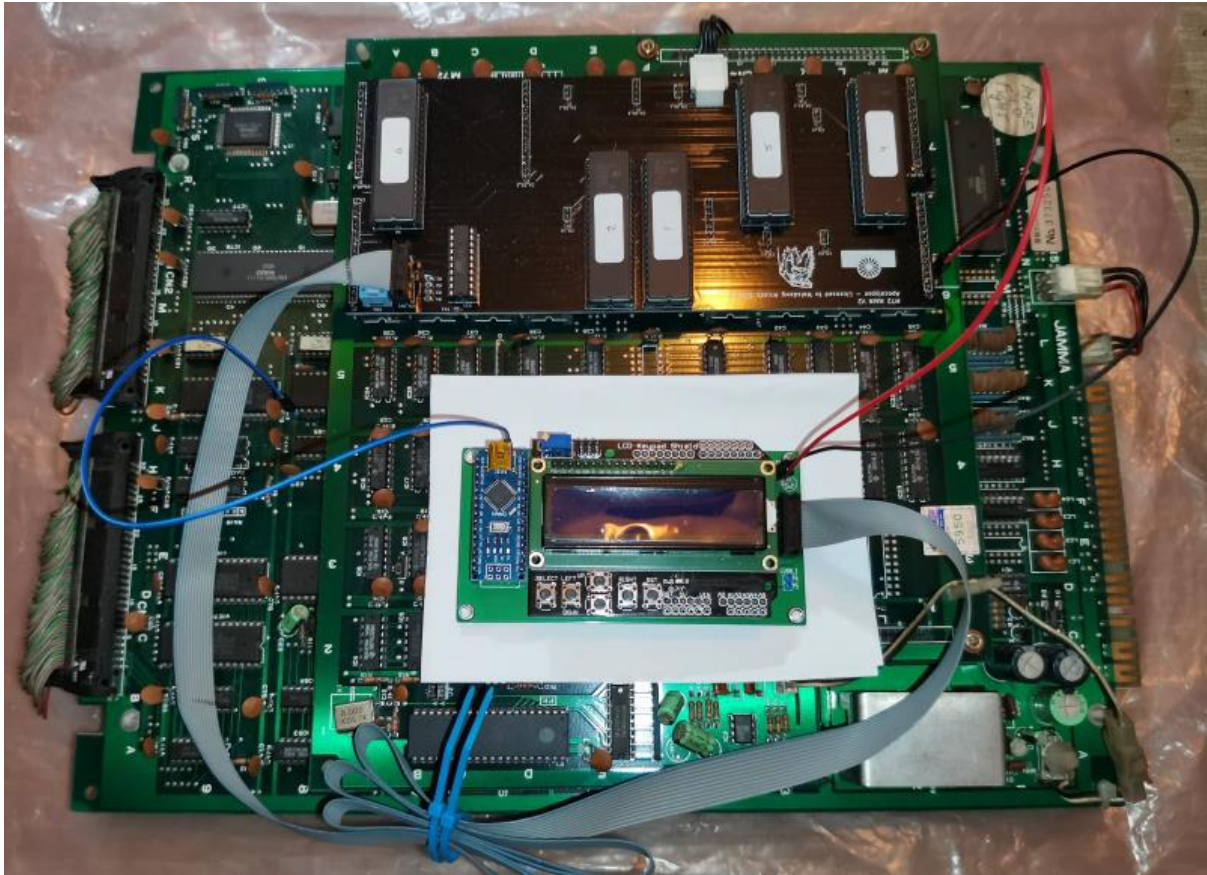# LCD selector installation
with Irem M72 multi

Short introduction

With LCD-selector you can control the M72 multi (Apocalypse/Mitsurugi-w) game selection instead of using the original DIP-switch solution. LCD-selector features auto-reset as well, so simply select the game with the buttons: advance + -1 game or + -10 game in the list and when correct game showed in the LCD screen, push the select-button -> game is selected, M72 is auto-reset and game loads up.

NOTE: if Arduino software needs update, do **NOT** connect the USB-cable when the selector is connected with the M72/multi PCB. Recommended is to remove the Arduino from the selector before connecting with USB cable to a computer. If Arduino is removed, please, see carefully how the Arduino is placed on the two connectors and reinstall it exactly similar way.

For installing the LCD selector you need to have:

- Fully working Irem M72 PCB set with multiboard (Apocalypse/Mitsurugi-w)
- LCD selector
- 3 wires for +5V, GND and reset (recommended with DuPont-connectors) and possibly 3 pins for M72 PCB connections
- Ribbon cable with 2x6 pin connector in both ends

Wires and ribbon cable

Wires and ribbon cable are not delivered with the selector. Simple reason is that people tend to use selectors different ways. Some want to use the M72 and selector with supergun system – selector usually very near the M72 resulting need of very short cabling. Same time someone else prefers to install the selector to arcade cabinet (like on top of the control panel) while the M72 PCB is inside the cabinet. This results a big difference in needed wire/cable lengths. So, please check your way of style to use the M72 and selector, measure the needed approximate length of wires and get them accordingly. All wires/connectors used are standard type.

Wires: It's recommended to use DuPont wires with female connectors in each end and add three pins to the M72 PCB for connecting wires. Another method is soldering the wires directly to the M72 PCB. In this case connectors would be needed only on another end of wires.

Ribbon cable: 2x6 pin, female connector in each end. Pitch for the connector is a common 2,54mm (or 0.1").

Pins for M72 PCB: If you plan to solder the +5V, GND and reset wires directly to the M72 PCB, you can skip buying the pins. If planning to have removable wires, then 3 pieces of single male pins are needed.

+5V and GND connections for the LCD selector

Please, use connection points from the M72 top PCB – the same PCB where the larger board of the multi is connected to. There are plenty of separate points to select from (you can check them with multimeter by measuring the continuity against Jamma-connector GND and +5V contacts). However, I found only one place where these points are available just next to each other and is also located in an easy spot for connecting wires.
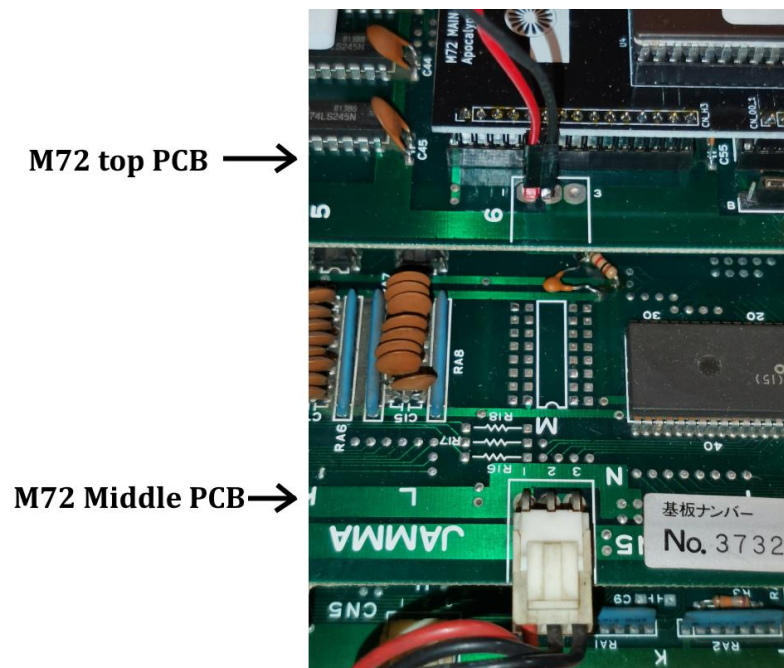
Picture: Thin red and black wires installed to M72 top PCB, for the selector GND and +5V.

NOTE: Checking the connections by measuring the voltages is recommended before connecting with LCD selector. Before powering up the M72 check that there is no shortcut between the pins.

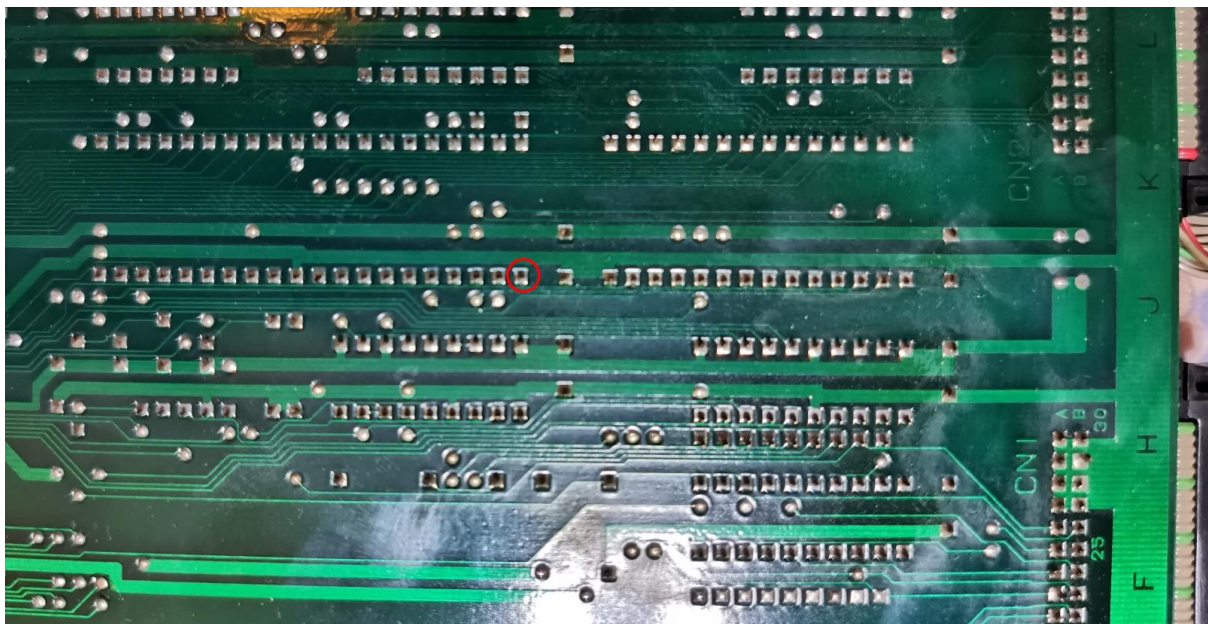# Installation of the reset-wire for the LCD selector

There are two ways for installing the reset wire:

- directly by soldering to the CPU leg (NEC V30, pin 21) on the component side of the M72 middle PCB

  OR

- soldering underside of the middle PCB, soldering point of the same CPU leg

How to find the NEC V30 CPU: Removal of the M72 top PCB for clarity is recommended, even if soldering on the component side of the PCB. The V30 is partially under the top board. Jamma connector is in the other end of middle PCB, large CN1 and CN2 connectors (marked clearly on both side of the PCB) in the other end. V30 is located near CN1 and CN2 connectors.
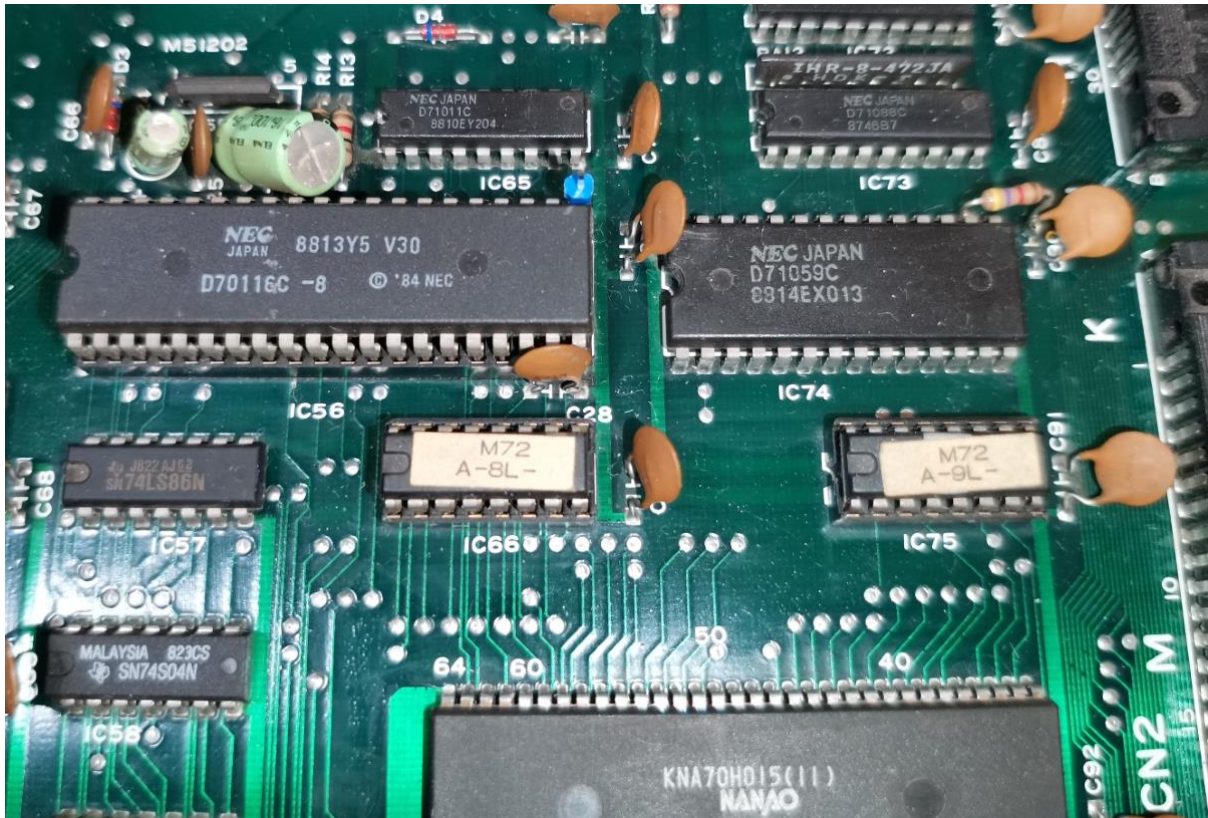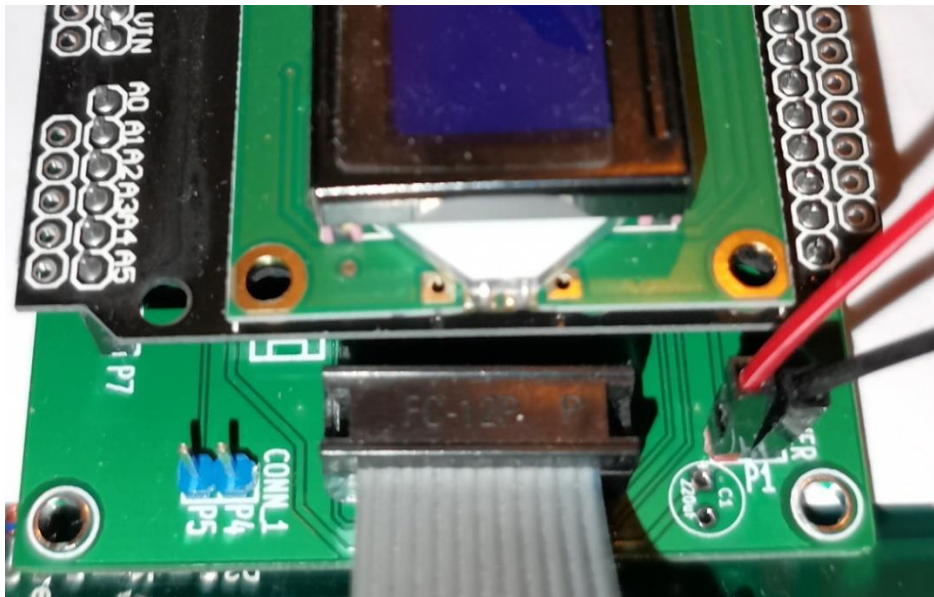
Picture: DuPont pin (for reset wire) soldered directly to CPU leg (component side of the middle PCB).
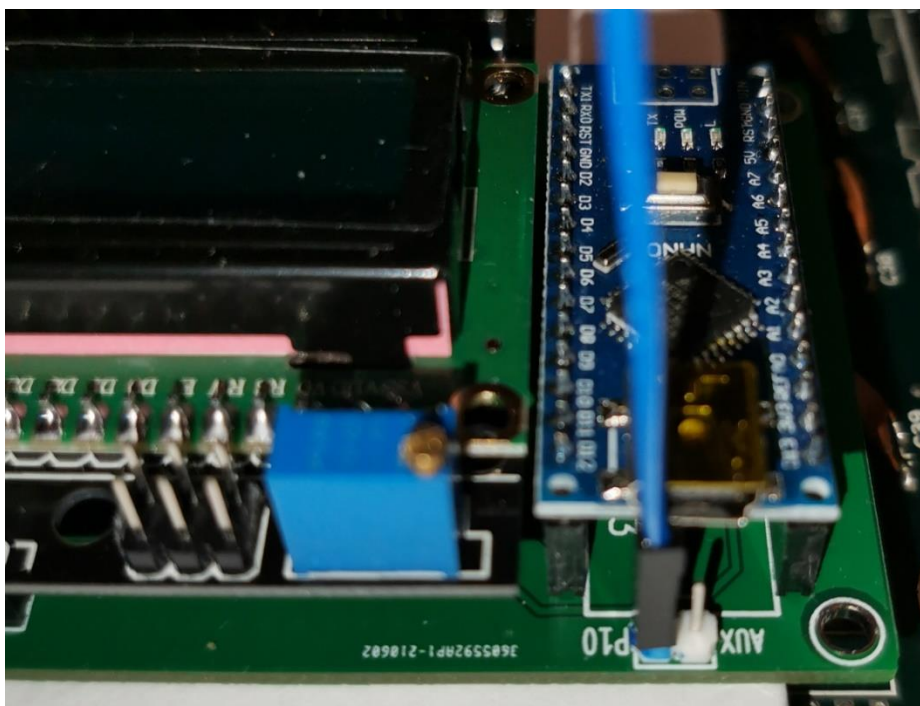

Picture: A red circle remarks the another possible solder point for the reset wire/pin. Underside of the middle PCB.

Installation of the ribbon cable and +5V, GND and reset-wires to the selector

Picture: Correct placing of the +5V (red), GND (black) and ribbon cable in the selector.


Picture: Correct placing of the reset-wire (blue)

NOTE: M72 only - the reset wire connects to near the Arduino USB-port. This is different from all other selector installations! For clarity: later M72 LCD selector revisions, only one blue pin for reset is pre-installed in the correct location.

Ribbon cable to the multi:

First, set all the DIP-switches to 0-position and connect the ribbon cable. Ribbon cable connector is wider than the connector in multi, leaves few wires of the cable not connected.
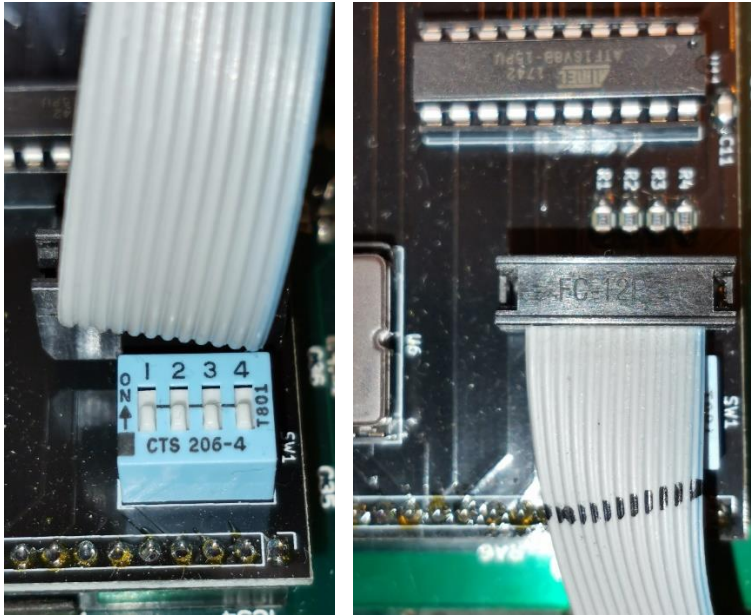
Picture: DIPs set to 0 and ribbon cable placement

NOTE: Only "data" lines are carried via the ribbon cable. If inserted incorrectly there will be no shortcuts present. Only incorrect game will be loaded. If that happens, check the connections and try again.

First use after installation

Double check all your connections before powering up. For testing step-by-step: connect first the +5V and GND to LCD selector, power up your M72 and see that the selector powers up too (including LCD panel). Power off and proceed applying the reset-wire and ribbon cable.

When powering up (all wiring complete) first time: if the game is not automatically loaded, select one game from the selector and push select-button.