ochin_CM4v2 Hardware test number 16

Ethernet test

Devices used for tests

1. ochin CM4v2 carrier board
2. Raspberry Pi CM4 module with eMMC
3. Power Supply 0-30Vdc
4. RJ45-GHS adapter
5. Ethernet switch

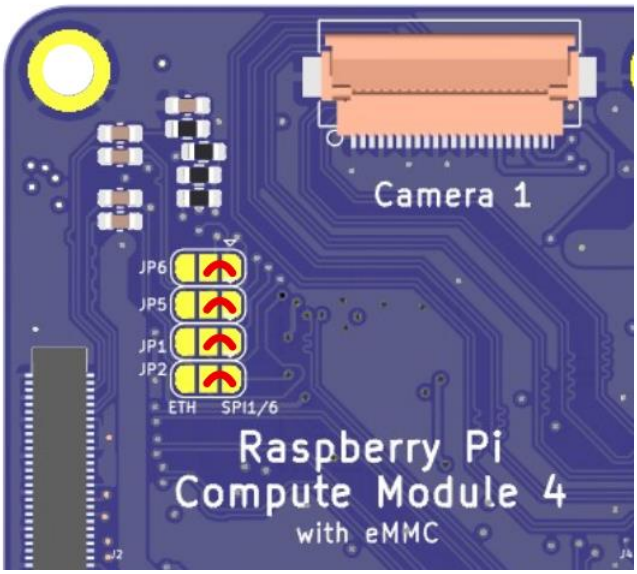
Test description

The purpose of this test is to verify the proper functioning of the Ethernet interface of the CM4 module.

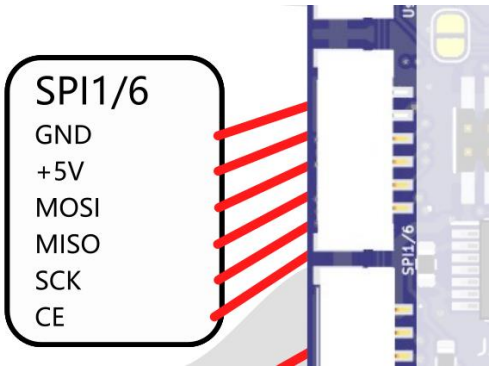
Preliminary configuration

The connector, named SPI1/6, can be used to connect to either the SPI1/6 or the Ethernet port. In order to allow either connection, there are four smd switches (normally open) on the back of the ochin_CM4v2 board, which must be soldered appropriately.

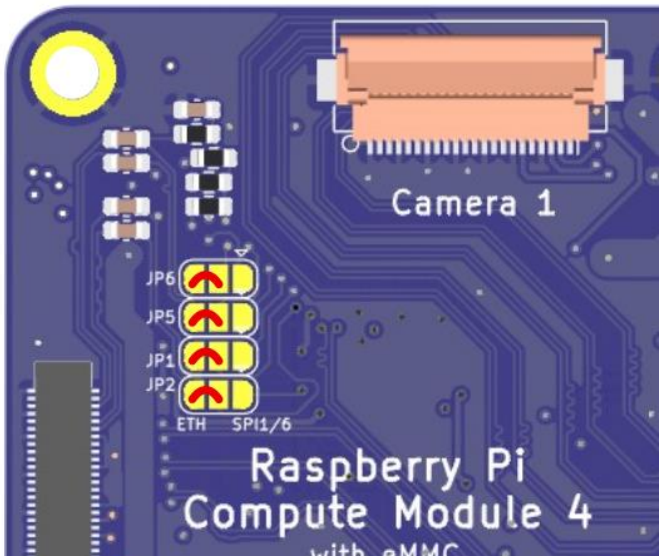
In order to use the connector as SPI1/6, it is necessary to solder the jumpers between the central pad and the pad on the right (indicated by the word SPI1/6) of JP6,5,1,2 as shown in the following figure:



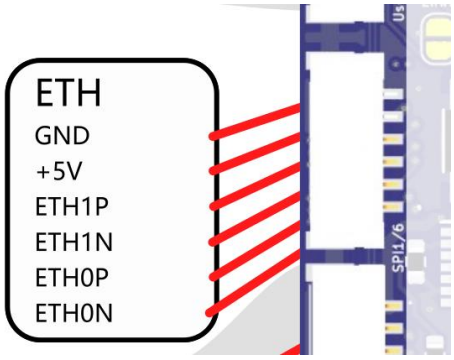
The order of the signals on the SPI1/6 connector is as follows



In the case of connecting to the Ethernet port of the RPI CM4, the smd switches JP6,5,1,2 should be soldered as follows:



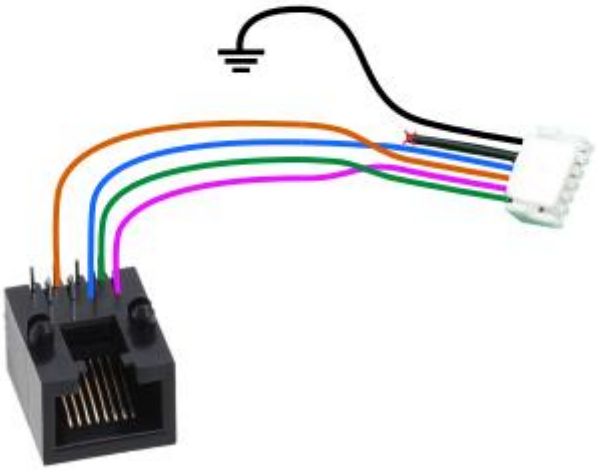
In this case, the order of the signals on the SPI1/6 connector will be as follows:



An important note must be made regarding the Ethernet connection. In order to allow Ethernet connectivity and without affecting the size of the ochin_CM4v2 board, it was decided to adopt a transformerless configuration, like the one adopted and described by Texas Instruments in Application Note AN-1519 for their DP83848 Ethernet devices. It is therefore advisable to study and understand the AP-1519 before deciding to use the Ethernet port in a transformerless configuration.

The following image represents the connection diagram for connecting to the ochin_CM4v2 using a standard RJ45 cable:

Signal Name	JST GHR-6V Pin Number	RJ45 Pin Number
ETH0_N	1	2
ETH0_P	2	1
ETH1_N	3	4
ETH1_P	4	3
		nc
GND	6	nc
		nc
		nc



Test execution

To test the functionality of the Ethernet interface, it is necessary to connect the ochin to an Ethernet switch by means of the adapter and an RJ45 cable. If the test is successful, you will be able to access the 100baseT Ethernet network.

Test result

Test passed