



The EasyCAT library includes an example, the DemoHMI.ino, that use the [Adafruit 2.8" TFT display with capacitive touch screen for Arduino](#).

This display is a good product at an affordable price and it is designed to work with boards with 3.3V I/O, as the ZERO, as well with the ones with 5V I/O, as the UNO. Unfortunately this is only partially true as, while the input signals are buffered with an 74HC4050, the output, I.E. the SPI MISO, is completely unbuffered.

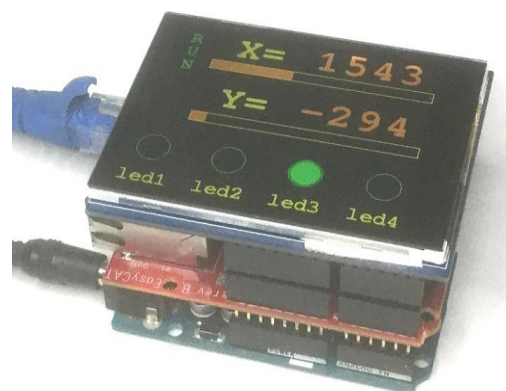


Fig-1 DemoHMI EasyCAT example

From a voltage level point of view this is not a problem, as 3.3V is an acceptable high level even for an ATmega 328 powered at 5V.

But, if in a 5V system, E.G. one using an Arduino UNO, there is also another SPI shield, a problem arises: when the other SPI is selected it puts 5V on the MISO, that is good for the Arduino but it is out of specs for the TFT, as its MISO is unbuffered and not 5V tolerant.

This situation happens when we use an Arduino UNO combined with an EasyCAT shield and an Adafruit TFT display: this can lead to malfunctions and, in certain situations, also to hardware damages.

See [this post on the Adafruit forum](#).

Fortunately there is an easy workaround that simply consists in isolate the MISO of the TFT shield from the rest of the system : this is possible as the TFT library never reads the display registers, the touch screen is on I2C, and we don't use the SD card.

To do so follow the indications of the picture on the side.

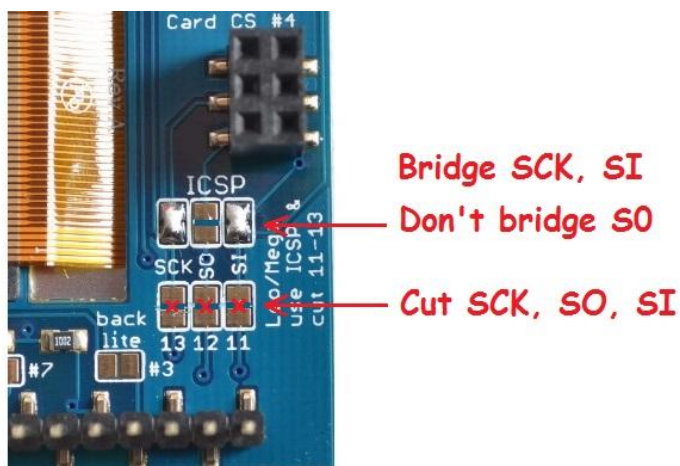


Fig-2 How to isolate the MISO of the TFT shield