

Tests i2c

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1.introduction

With a python file we use the library pigpio to send commands via I2C to 4 TIC36V4 on the same I2C canal.

The set-up is one rpi4 (GPIOs are SDA1 and SCL1) communicating via a [Logic level shifter 4 shannels bidirectionnal](#) to the TICs on their SDA and SCL.

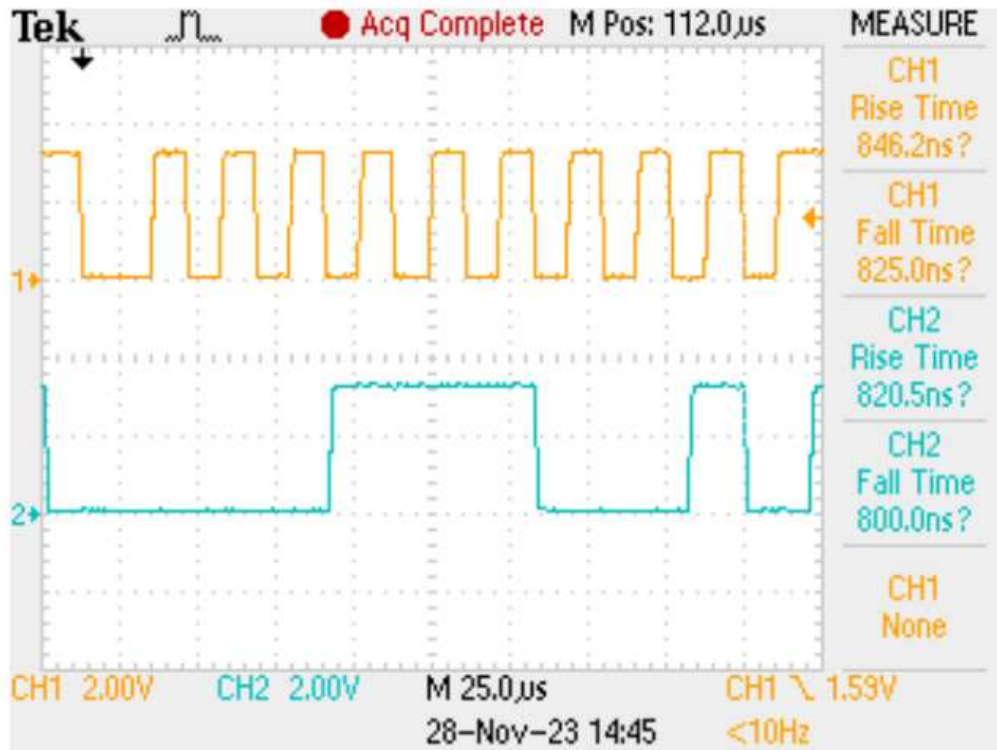
The LV of the level shifter is on 3,3V of the RPI4, and the HV of the level shifter is on 5V of the TIC.

We are having problems on the I2C communication between TIC36V4 drivers and our RPI. We manage to move the motors, but loads of I2C communications errors are appearing. So for now we have to use a fix that sends again exit_safe_start and target_position commands to still manage to do the wanted automatic sequence, but it's not enough we need to understand what is happening

2. Tests on i2c1 with no load

Trying to send a simple command (halt_and_set_position(0) which is command 0xEC) to a TIC on address 0x0E.

But there is no TIC and no logic level shifter



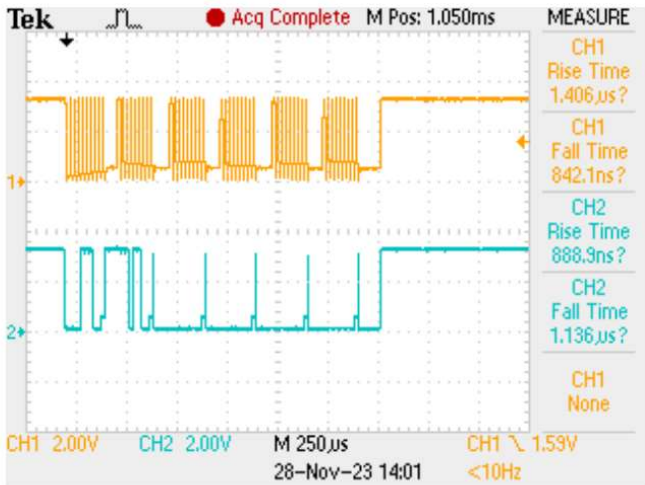
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3. Test on i2c1 with load

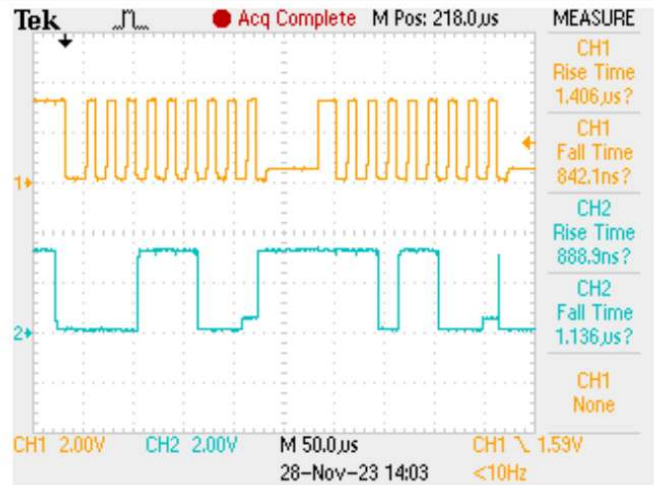
Now there are one logic level shifter and 2 TICs on this i2c canal

3.1 No external pull-up resistance

- reading on the 3,3V side of the logic level shifter

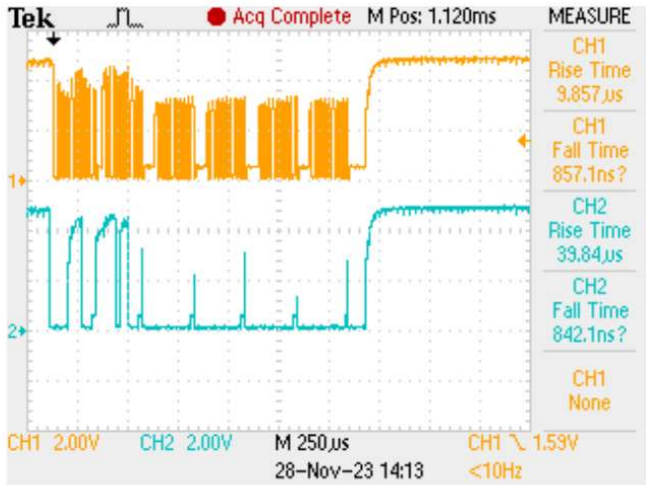


TDS 2012B - 13:54:23 28/11/2023

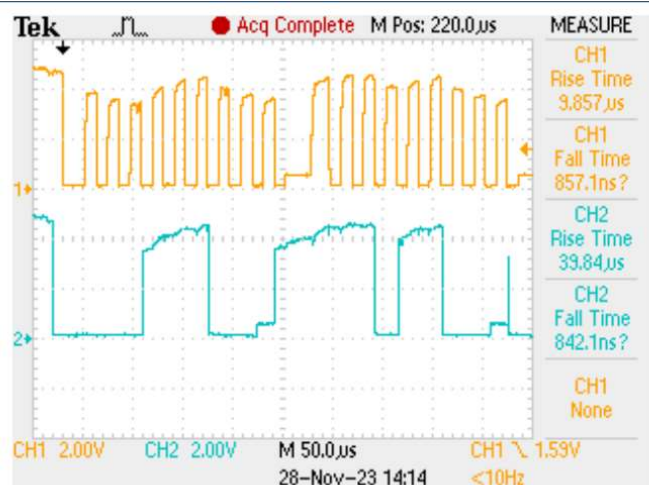


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- reading on the 5V side of the logic level shifter



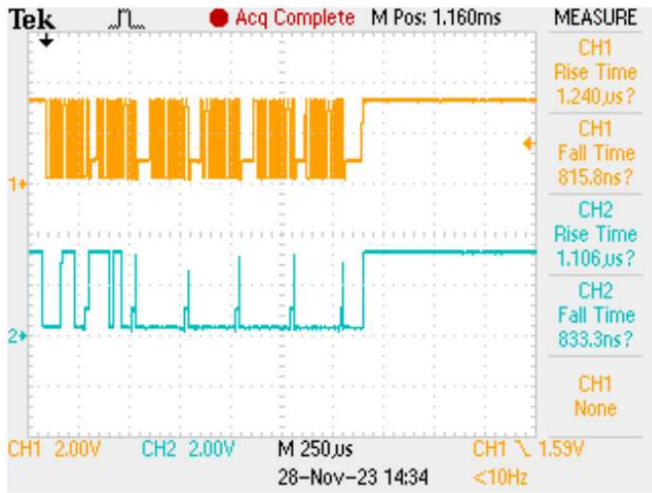
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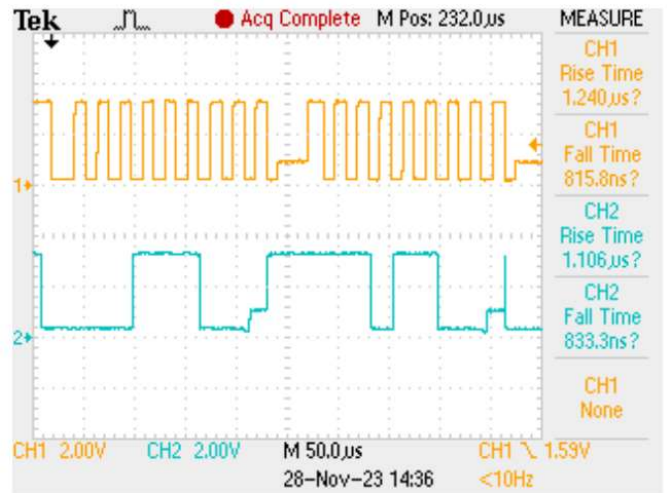
TDS 2012B - 14:07:11 28/11/2023

3.2 2,2k external pull-up resistance

- reading on the 3,3V side of the logic level shifter

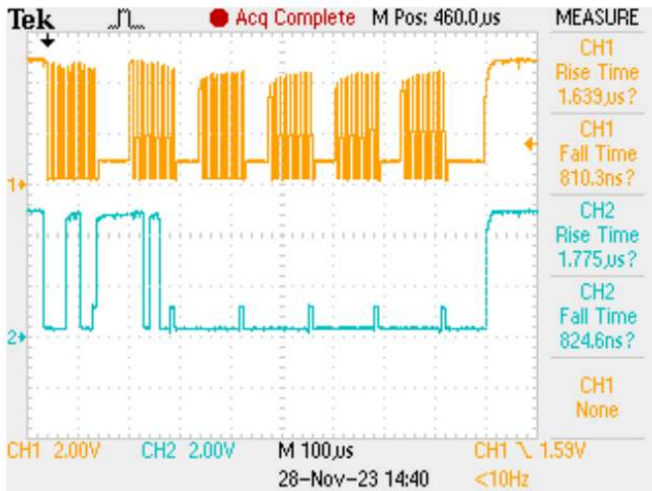


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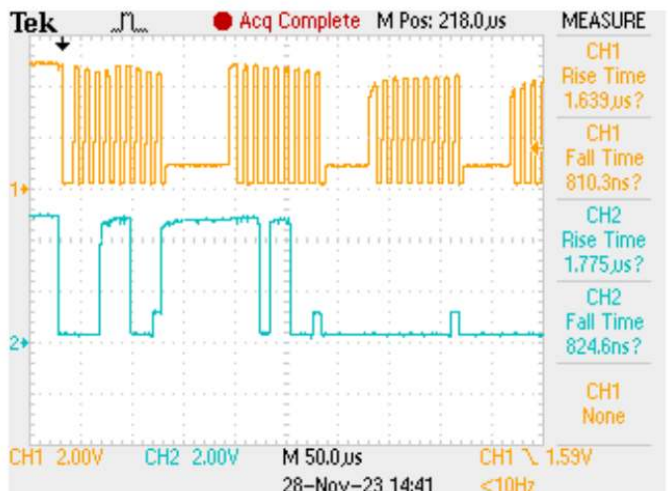


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- reading on the 5V side of the logic level shifter



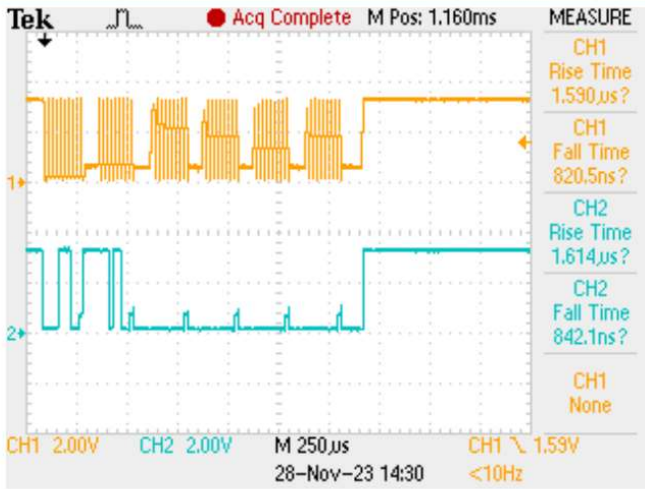
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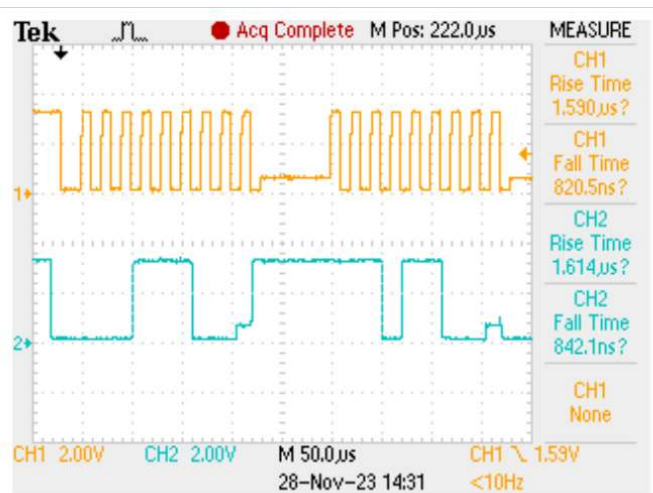
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3.3 10k external pull-up resistance

- reading on the 3,3V side of the logic level shifter

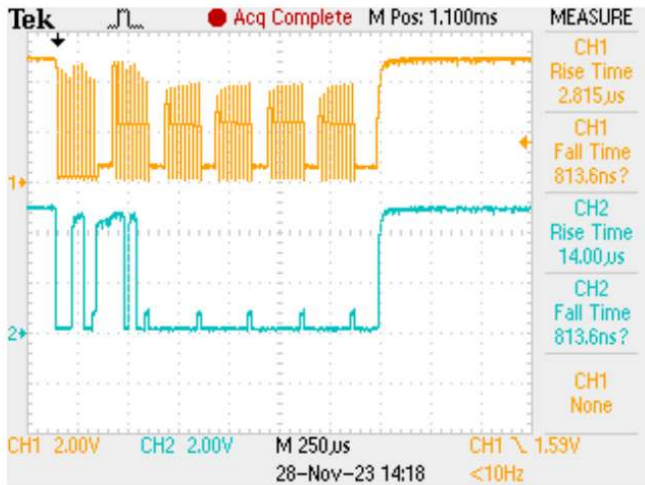


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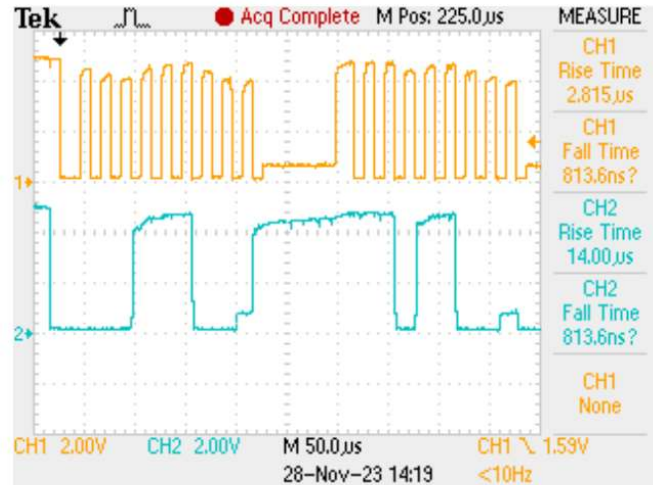


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- reading on the 5V side of the logic level shifter



TDS 2012B - 14:10:55 28/11/2023



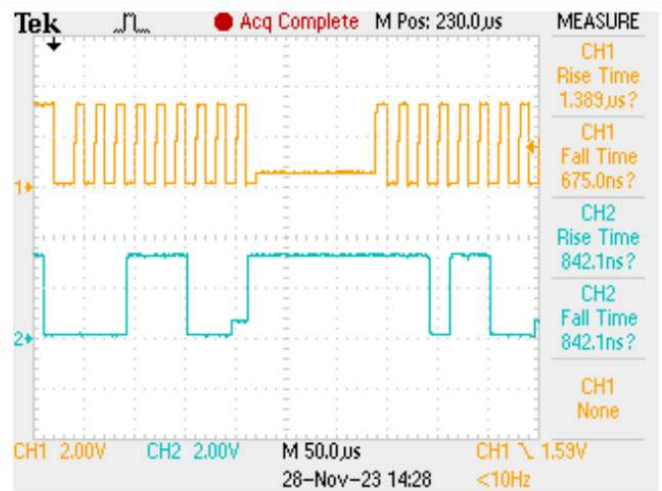
TDS 2012B - 14:12:01 28/11/2023

3.4 47k external pull-up resistance

- reading on the 3,3V side of the logic level shifter

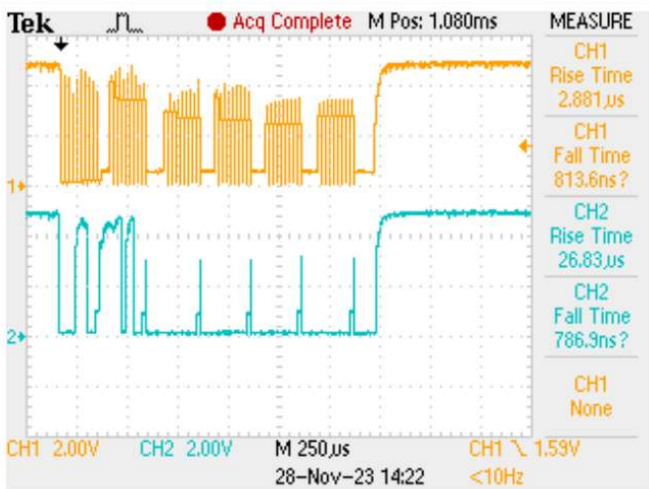


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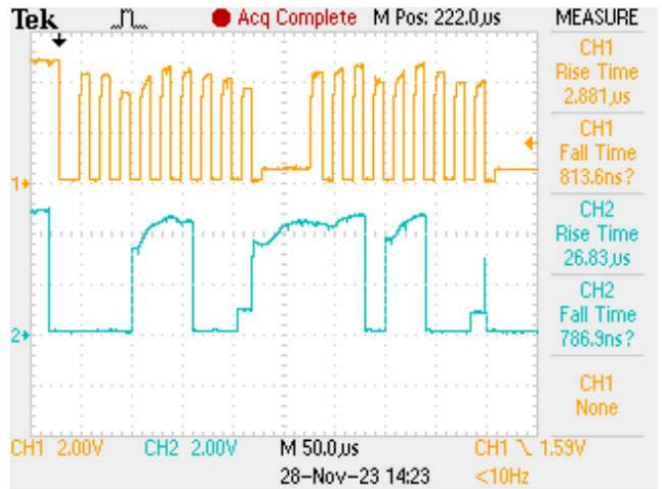


TDS 2012B - 14:20:46 28/11/2023

- reading on the 5V side of the logic level shifter



TDS 2012B - 14:14:54 28/11/2023



TDS 2012B - 14:15:58 28/11/2023