

I2C interface on SOLAR

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Setup we have today

Each DS345 embeds a 1 kohm pullup resistor on SDA and SCL.

We have 5 DS345 on a flex, the SOLAR board drives 200 ohm

Currently working even with 5 meter cables

Working at 100 KHz up to 1 MHz 😊



ALICE

Orsay's request: move I2C pullups on SOLAR

Replace the DS345 pullup resistors by resistors onboard SOLAR

- to improve reliability if a DS345 fails (risk to loose the I2C link shared by up to 5 DS)
*Not so sure: when a SAMPA is not powered,
its I2C inputs is driven low by the ESD protection diode*
- Not the same pullup resistor seen on the bus when 1 to 5 DS are present
*Not A pullup between 200 and 1 kohm is acceptable.
The SCA can drive up to 8 mA*
- to gain room on the DS345/DS12 boards

This was tested

removed the resistors on DS & put 1 kohm on SDA and SCL on SOLAR

not working (the diaphony bw SDA & SCL is the most probable guilty)

investigations are complicated:

not enough DS boards to work at the same time on that I2C and on the data acquisition

SOLAR point of view

- We are of course open to change things if it enhances the design ☺
- Not sure the proposed changes will improve the reliability of the MCH:
 - when a SAMPA is not powered,
 - its I2C inputs is driven low by the ESD protection diode
- A pullup between 200 and 1 kohm is acceptable
- Involves many changes for only two resistors
 - Add a 1.2V regulator on each SOLAR board
 - Possible failure cases with such different voltages on SAMPA inputs ?
 - ...

Is It worth the effort?