

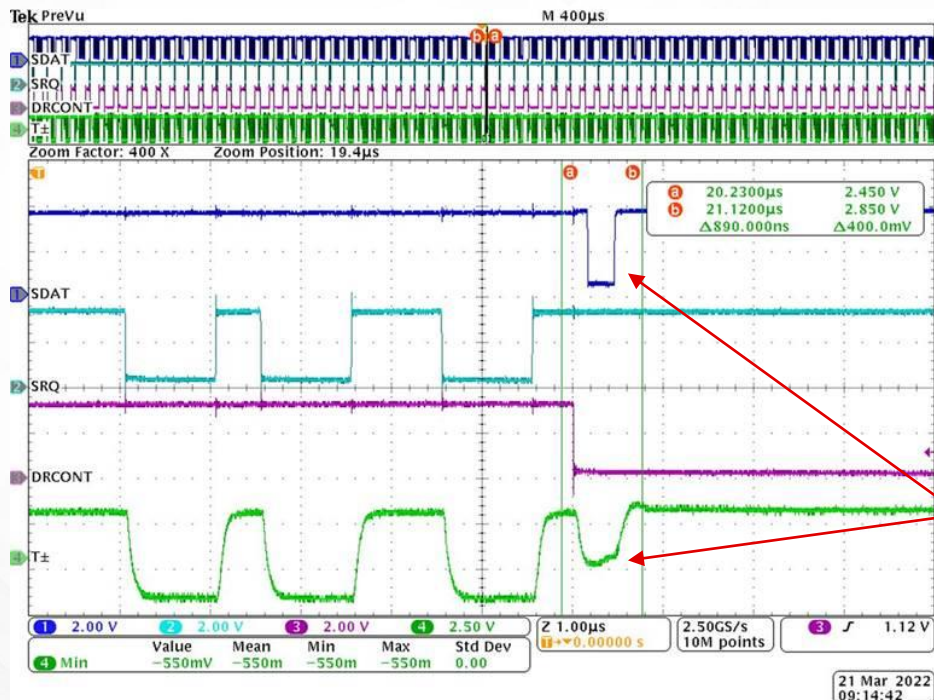
SN65176 Communication issue

Problem Description

End-customer returned a motor driver that has found the communication error of the RS485 with SN65176. as you can see the waveform next page, when /RE pin is pulled low by MCU, the V_AB differential voltage is dropping to -500mV and it triggers R pin to be low level. It could cause the communication error between motor drive and encoder side.

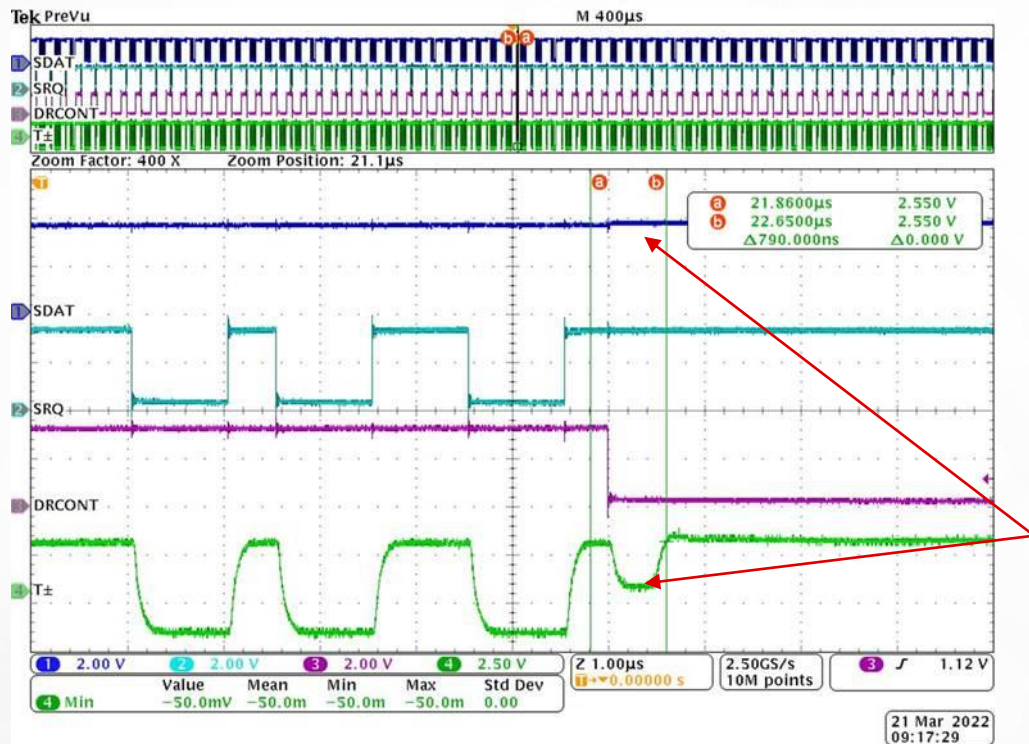
Customer tried to do the A-B-A swap. The communication error is following the NG part. Could you help to clarify if this device has something damage or what happened?

Probe Measurement_NG



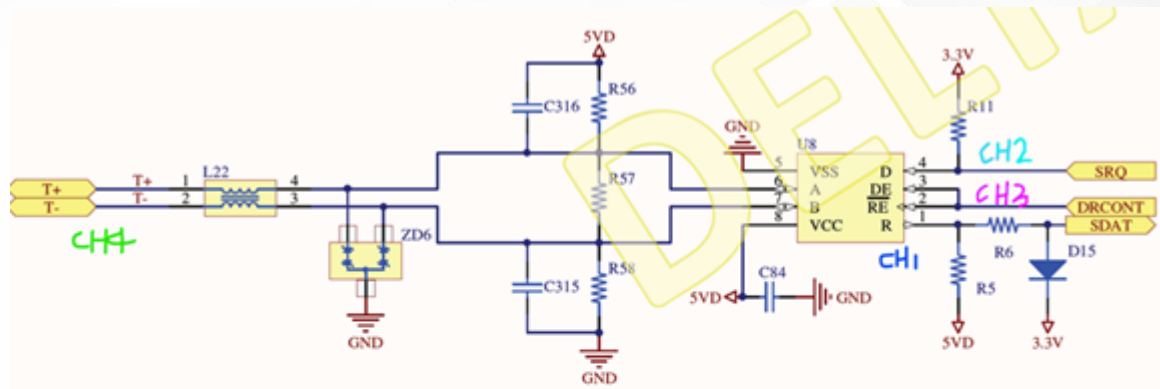
The V_AB differential voltage is Dropping to -550mV and the R pin of RS485 is pulled low. It could cause the Communication error.

Probe Measurement_Good



The V_AB differential voltage is Dropping to -50mV only and the R pin of RS485 is kept high. It's ok during RS485 communication.

Schematic



$R56 = R58 = 1K$

$R57 = 100R$

$R6 = 100R$

CH1: R

CH2: D

CH3: DR, /RE pin

CH4: T+/T- (with differential probe)

Summary

Why the V_AB differential voltage dropping out to -550mV after /RE pin is pulled low by MCU? It could cause the communication error between Motor Drive and Encoder.