

Application Note

AN2002

FLS-C(H)

SSI interface usage

V 2.03

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Abstract

This application shows how to display a measured distance value on a standard external numeric digital display. Description of the wiring and sensor configuration are included as well as two samples are given.

This application note is provided as is without any warranty for any problems this sample may cause.



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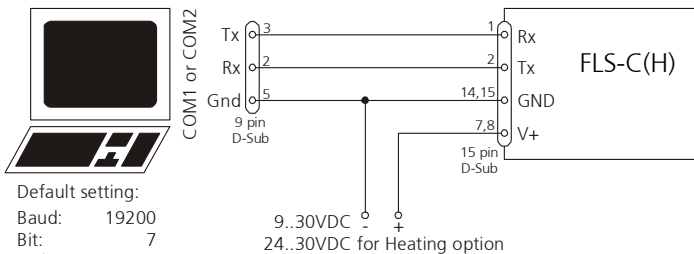
1 Introduction

The FLS-C(H) provides a Synchronous Serial Interface (SSI). SSI is a widely used serial interface standard for industrial applications between a master (e.g. controller) and a slave (e.g. FLS-C). On an SSI communication channel, the master generates a clock, while the slave sends the data corresponding to the received clock signal. Only point to point communication is possible with the SSI interface. The RS-422 standard defines the electrical signal levels of the SSI interface.

2 Configuration

This chapter is a step by step configuration example. Just do each single step described later in this to chapter configure the FLS-C(H) device as a SSI slave.

2.1 Connection for configuration

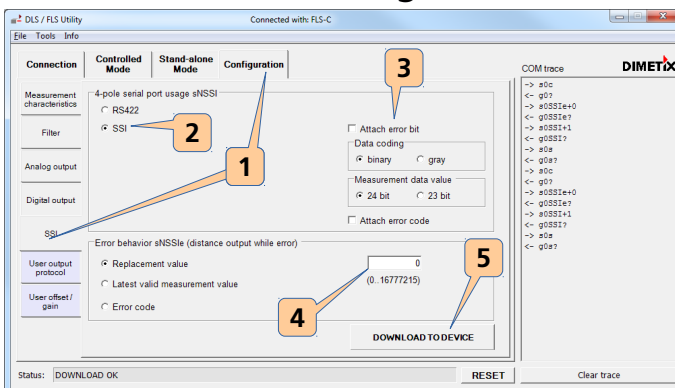


To configure the FLS-C(H), it must be powered and connected as shown in Fig. 1.

Download the Utility Software from our web site www.dimetix.com (Products / FLS Utility / Software) and install it on the PC.

Fig. 1 Connection of the FLS-C(H) for configuration

2.2 SSI interface configuration



- (1) Choose the "Configuration" tab and the "SSI" sub tab.
- (2) Choose the SSI (physically the same port as RS-422, however RS-422 will be deactivated).
- (3) Set the necessary configuration for the SSI output.
- (4) In case a measuring error, the SSI output will have the value specified in "Replacement value".
- (5) Press the "DOWNLOAD TO DEVICE" button to send the chosen configuration to the FLS-C(H) and to save it in the device.

Fig. 2: SSI Configuration

2.3 Operation mode configuration

Now the SSI interface is configured. However, the FLS-C(H) does not do distance measurements automatically. There are two operation modes to activate distance measurements without sending commands to the FLS-C(H). In automatic operation mode, the FLS-C(H) starts measuring after power on, while in manual operation mode the FLS-C(H) starts measuring based on a digital input.

2.3.1 Automatic operation mode

In this operation mode, the FLS-C(H) starts measuring immediately after power on. The result of the distance measurement is available at all outputs and can therefore be polled by the SSI master.

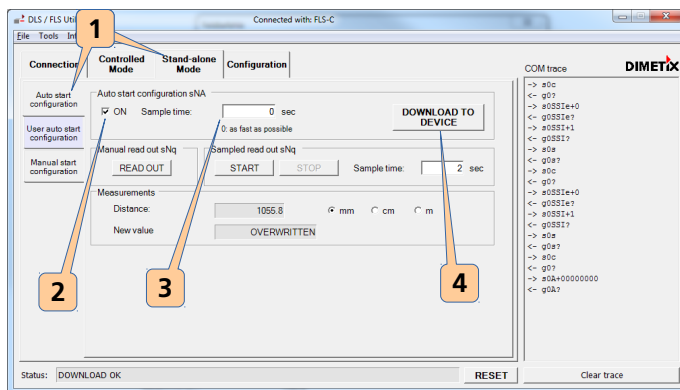


Fig. 3: Automatic operation mode configuration

- (1) Choose the “Stand-alone Mode” tab and the “Auto start configuration” sub tab.
- (2) Set Automatic Mode to ON.
- (3) Set a sample time. Set value to 0 sec for fastest possible measurements.
- (4) Press the “DOWNLOAD TO DEVICE” button to send the configuration to the FLS-C and to save it in the device. Immediately after downloading, the device starts to measure.

2.3.2 Manual operation mode

In the manual operation mode, the measurement is controlled by the digital input.

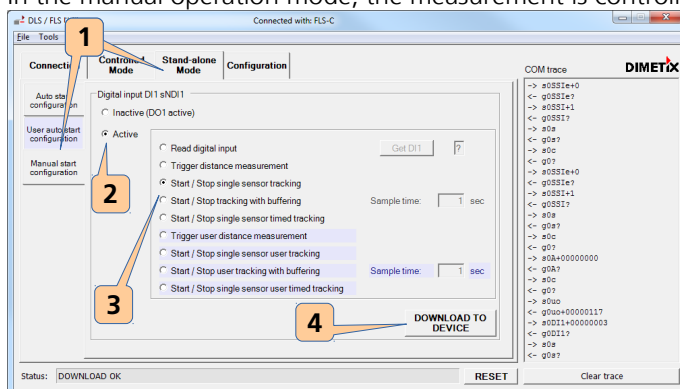


Fig. 4: Manual operation mode configuration

- (1) Choose the “Stand-alone Mode” tab and the “Manual start configuration” sub tab.
- (2) Activate the Digital Input (the Digital Output will be deactivated).
- (3) Choose an action for the Digital Input.
In Fig. 4 “Start/Stop single sensor tracking” is selected for fastest possible measurements. As soon as the Digital Input goes to the HIGH level the tracking will start.
- (4) Press the “DOWNLOAD TO DEVICE” button to send the configuration to the FLS-C and to save it in the device.

3 Wiring

3.1 SSI connection

Connect the FLS-C(H) to the SSI master as shown in fig. 5

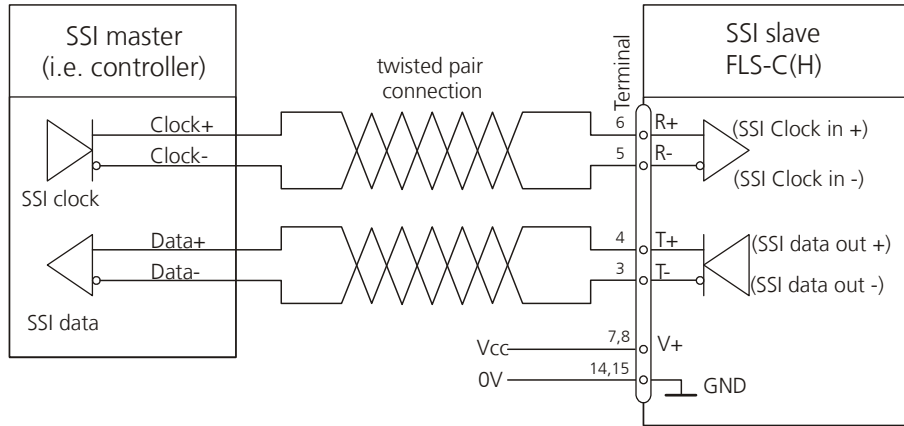
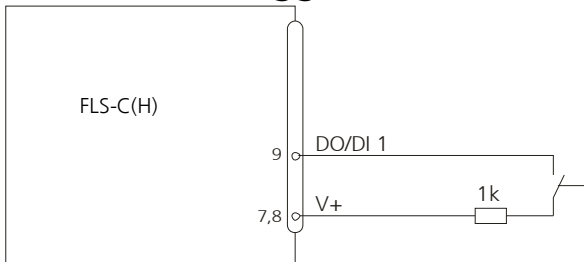


Fig. 5: Connection of a SSI master

3.2 External trigger connection



Connect a switch as shown in Fig. 6 to the digital input of the FLS-C(H).

Fig. 6: Connection for external triggering

3.3 Supported cable length

The maximum transmission rate depends on the cable length as shown in the following table. The transmission rate must be specified at the SSI master.

Max. cable length (typical)	max. transmission rate (typical)
< 12.5 m	< 810 kBaud
< 25 m	< 750 kBaud
< 50 m	< 570 kBaud
< 100 m	< 360 kBaud
< 200 m	< 220 kBaud
< 400 m	< 120 kBaud
< 500 m	< 100 kBaud