

Application Note

AN2006

DLS-C/FLS-C

Timed measurement characteristic example

V 1.03

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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

1.1 Measurement

In normal configuration, the DLS-C / FLS-C laser distance sensor adjust the measuring time depending on the signal conditions to ensure the measurement accuracy. This means, bad targets (dark surface) led to long measurement times while good targets (white or reflecting) led to short measurement times. Hence, measurement times can vary from about 0.1s up to 4s.

Depending on the application where the DLS-C / FLS-C laser distance sensor is used, the requirements for the measurement speed and/or the accuracy differ. With the configurable measurement characteristics, the DLS-C / FLS-C laser distance sensor offers a flexible feature to adapt to a wide range of requirements.

1.2 Measurement characteristic

The measurement characteristic controls the way measurements are done. The DLS-C / FLS-C offers various measurement characteristics such as:

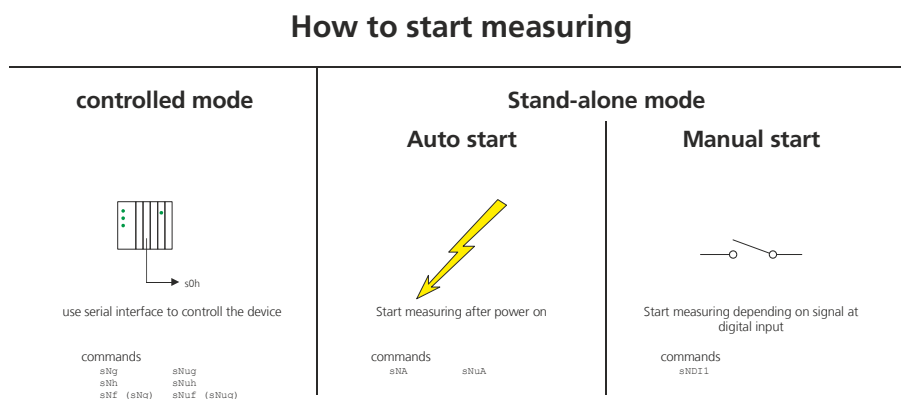
- Normal (factory setting)
- Fast
- Precise
- Natural surface
- Timed

Please see the technical reference manual for additional information.

The scope of this application note is the timed measurement characteristic, which offers a fixed sample rate. Signal conditions are not taken into account to control the measurement time.

1.3 Operation modes

The operation mode defines the start of the measurement. The DLS-C / FLS-C has two different operation modes with three kind of events to start the measurement. See the following graphic for an overview.



For each start event, an example is given below.

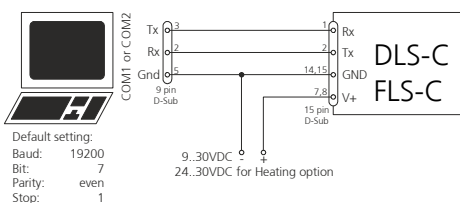


2 DLS-C / FLS-C Setup

2.1 Preparation

- The following items are needed to do the configuration of the FLS-C.
 - RS-232 Configuration cable FLS / DLS (Part no. 500200)
 - 24V DC Power supply
- Download the UtilitySW from the website www.dimetix.com and install it on a PC.

2.2 Connection



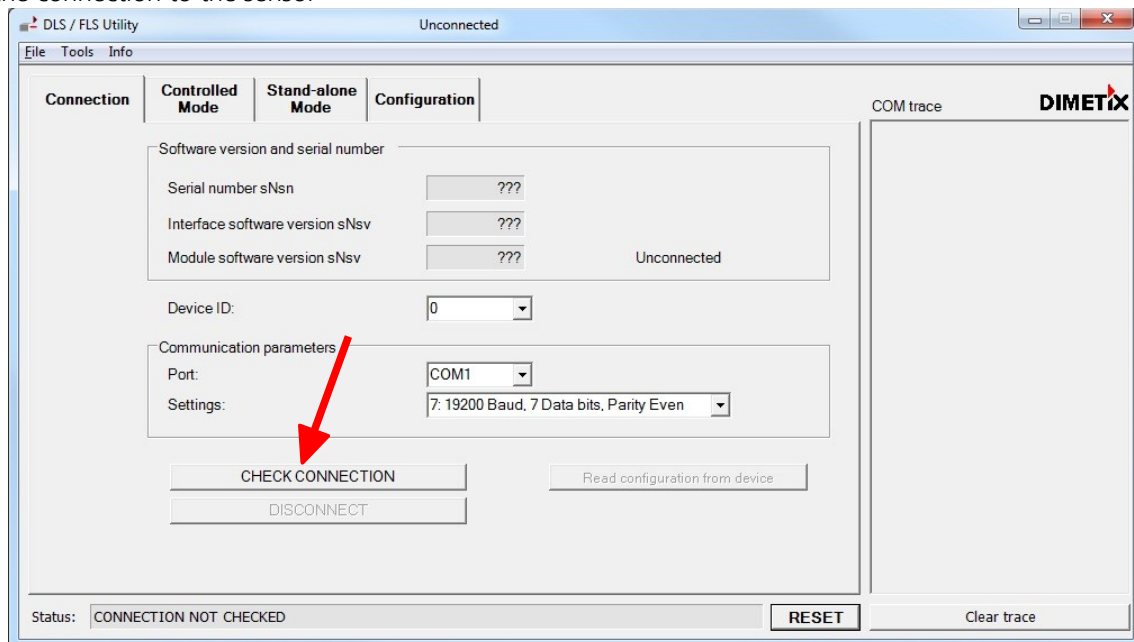
Connect the DLS-C / FLS-C Sensor to the PC and to the 24V DC Power supply as shown on 1.

Fig 1: Configuration connection

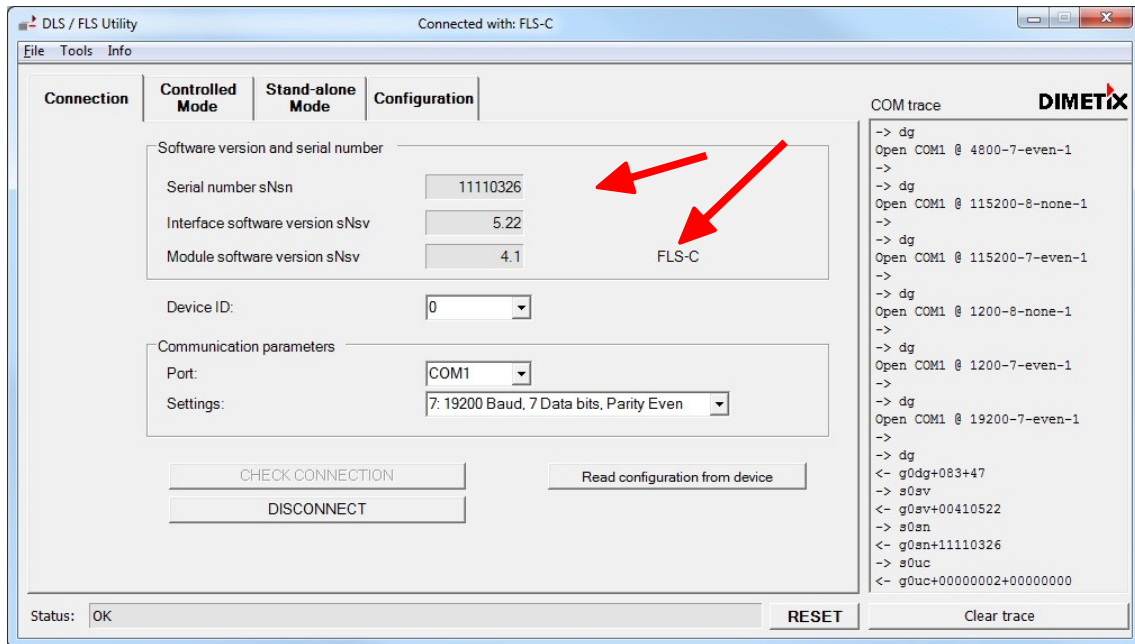
2.3 Setup of the DLS-C / FLS-C

After connecting the DLS-C / FLS-C sensor, start the UtilitySW and follow the steps below.

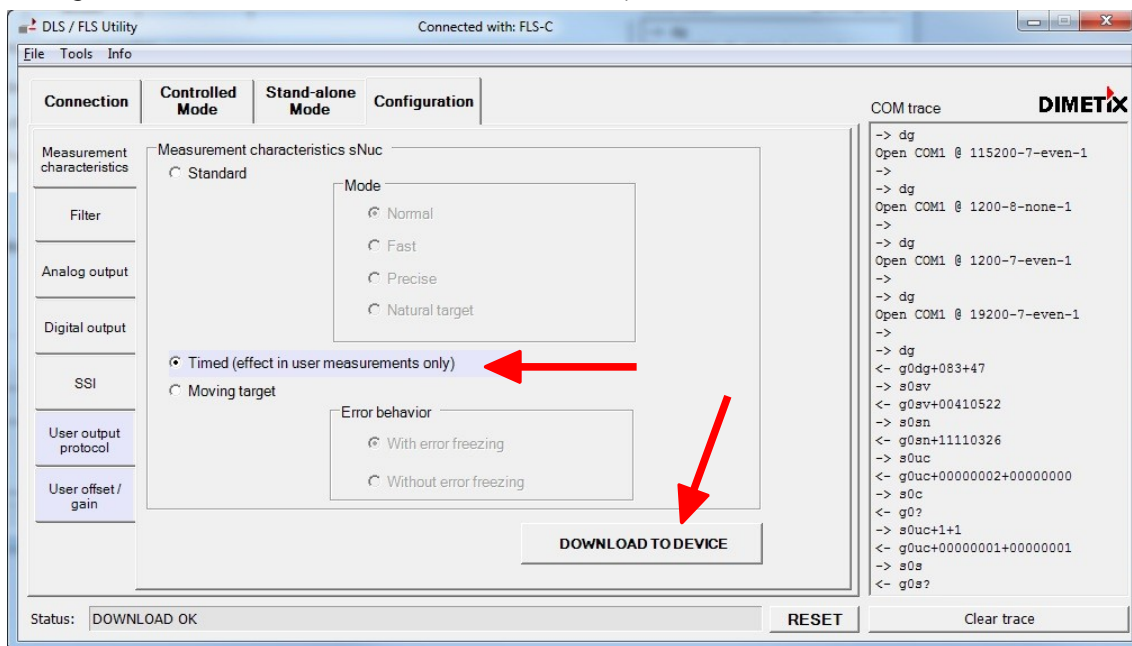
Check the connection to the sensor



The UtilitySW shows information of the connected device after successful connecting the Laser distance sensor.



Now change the measurement characteristic to Timed and press DOWNLOAD TO DEVICE



The next configuration step depends on the desired operation mode. Please continue with the chapter that fits your desired operation mode.

3 Controlled mode

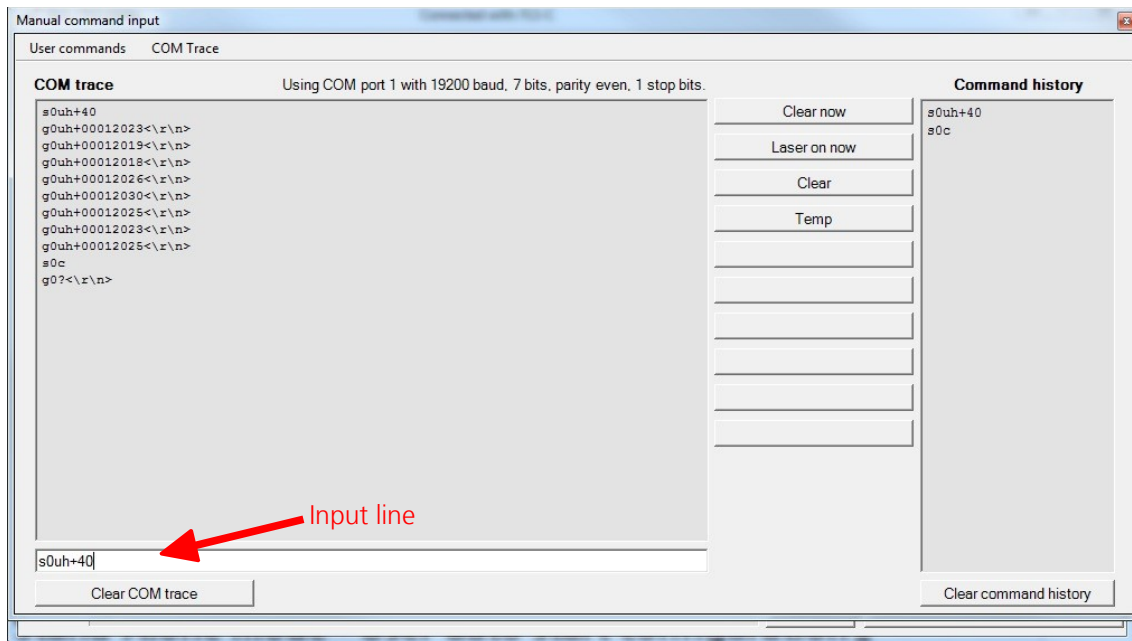
In controlled mode the measurement is started with a command. Below the command is sent to the DLS-C / FLS-C Laser distance sensor with the UtilitySW.

Before doing the following configuration do the configuration described under 2 DLS-C / FLS-C Setup on page 4.

In the UtilitySW open the Manual command input window by clicking the menu Tools/Manual command input. The following window opens.

Type the command s0uh+40 into the input line and press enter. The command is sent to the Laser distance sensor and the measurement results are received.

The command s0uh+40 sets the timing for the measurement to $40 \cdot 10\text{ms} = 0.4\text{s}$. The measurement is now executed with 0.4s independent of the target surface.

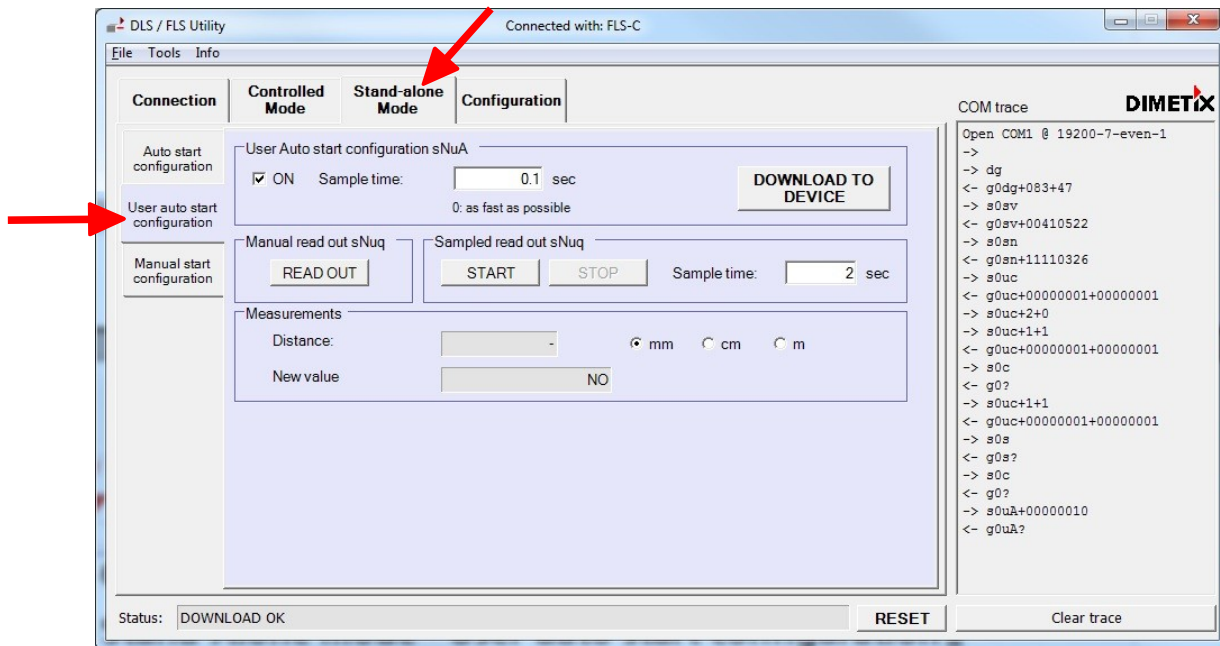


4 Stand-Alone mode - User auto start configuration

In this configuration the DLS-C / FLS-C laser distance sensor start measuring as soon as the power is on.

Before doing the following configuration do the configuration described under 2 DLS-C / FLS-C Setup on page 4.

In the UtilitySW select ON set the sampling time and press DOWNLOAD TO DEVICE. The laser distance sensor starts to measure with the programmed timing. This setting is stored in the device and every time the device is powered on, measurement will start.



5 Stand-Alone mode - User Manual start configuration

User Manual start means the distance measuring is activated by the external digital input. After the configuration is done, the measurement must be started by an external digital signal.

5.1 Configuration

Before doing the following configuration do the configuration described under 2 DLS-C / FLS-C Setup on page 4.

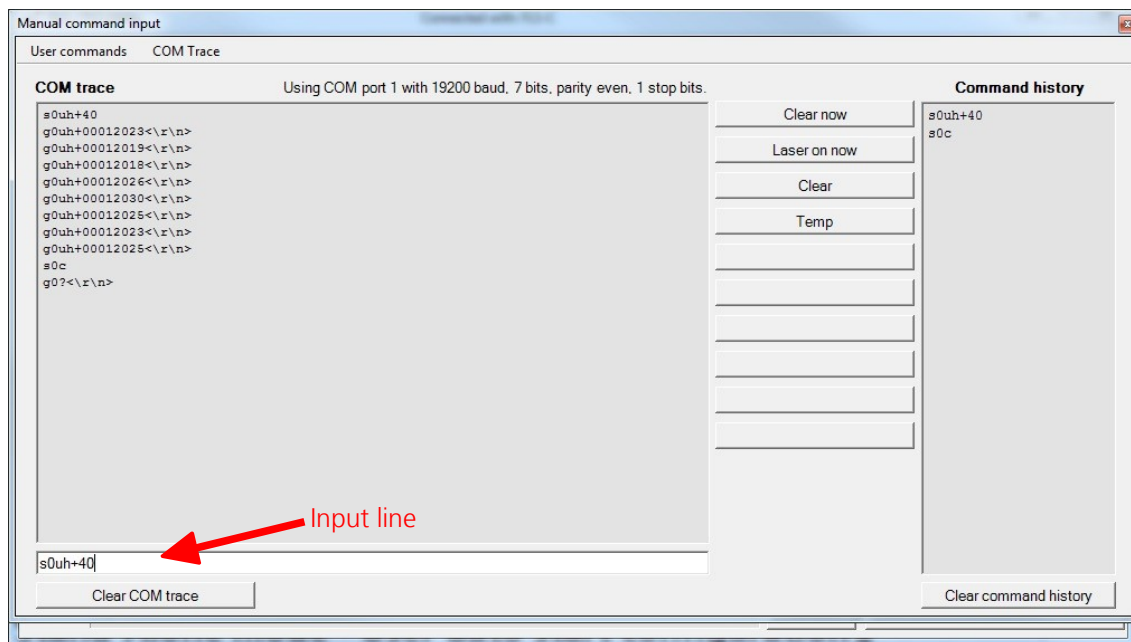
First set the sample time by issue the corresponding measurement command.

In the UtilitySW open the Manual command input window by clicking the menu Tools/Manual command input. The following window opens.

Type the command `s0uh+40` into the input line and press enter. The command is sent to the Laser distance sensor and the measurement results are received.

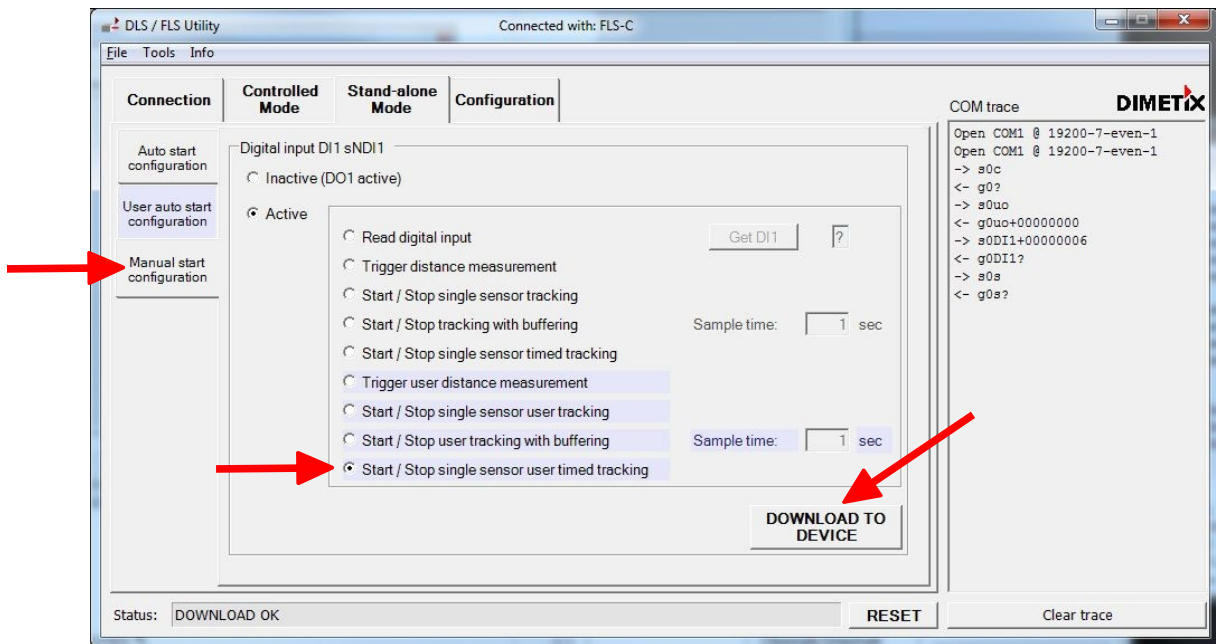
Now when the device is measuring, stop the measuring with the `s0c` command.

The command `s0uh+40` sets the timing for the measurement to $40 \cdot 10\text{ms} = 0.4\text{s}$. The measurement is now executed with 0.4s independent of the target surface.



Now the sample time is set and the digital input must be configured.

Close the Manual command input window and navigate to the Manual start configuration.



Set the DI1 to active and select Start / Stop single sensor user tracking. Click DOWNLOAD TO DEVICE. Now the sensor is configured.

5.2 DI connection

Connect the DI1 as shown in Fig. 1. As soon as the switch is closed the Laser distance sensor start measuring and stop measuring when the switch is opened.

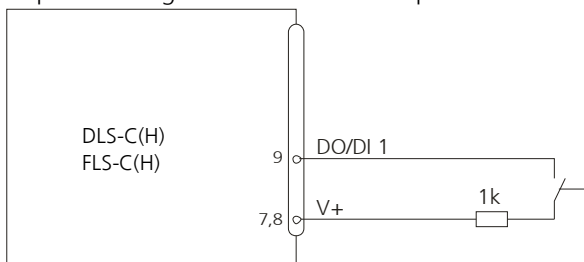


Fig. 1: Connection for external triggering

