

Application Note

AN2001

D-Series

Numeric digital display 500215

V 2.08

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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 Document scope

This document covers an Application Note written for the Dimetix D-Series laser distance sensors. The following topics are discussed:

- Safety instructions
- Application Note descriptions

2 Safety instructions



This Application Note is written for qualified system integrators to help doing an application specific sensor configuration.

Before using the D-Series sensor also the safety related information in the D-Series Technical Reference Manual must be consider.



WARNING

Looking into the laser beam may be hazardous to the eyes.

- Do not look into the laser beam. Make sure the laser is aimed above or below eye level. (particularly with fixed installations, in machines, etc.).



NOTICE

Take precaution against electrostatic discharge (ESD) when the D-Series laser distance sensors exchangeable cover is open.

- Generally the sensor with removed exchangeable cover is a sensitive device and can be damaged by electrostatic discharge.
- Only handle the device properly grounded and with care.
- No warranty will be granted on improper handling and / or ESD caused problems.

3 Description

With the appropriate configuration of Dimetix sensors, numeric displays can be connected directly to the sensor without the need of any additional controller. This Application Note shows how to connect such a display and describes the required configuration steps with the help of two examples.

3.1 Requirements

- D-Series sensor or others (please check the sensor manual for this display feature). Default communication settings: 19'200 Baud, 7E1.
- Numeric digital display (Dimetix part no. 500512) with Dimetix settings: 19'200 Baud, 7E1.
- Computer with an USB or RS-232 interface
- The free software "Laser Sensor Utility"

4 Wiring

Figure 1 shows the connection of the components, while in figure. 2 the wiring diagram can be found.

Use a shielded twisted pair cable with at least 4 poles to connect the display to the sensor. 24 VDC is used to power the display and the sensor. Take into account, that there is a significant voltage drop over the cable if the cable is long and the cross section is small.

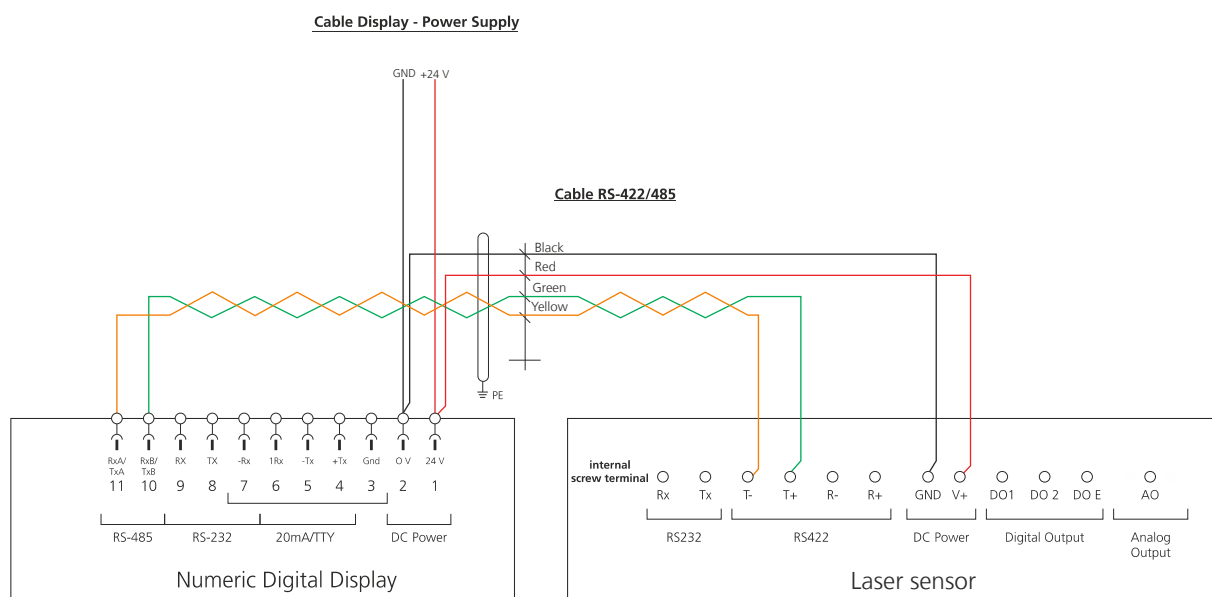
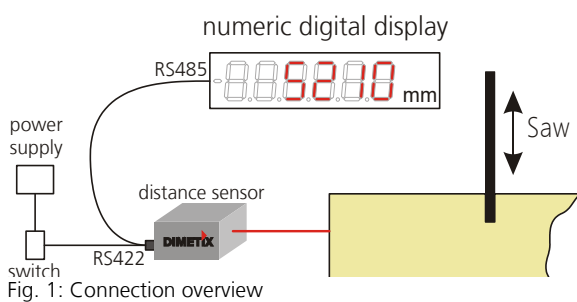


Fig. 2: Wiring diagram



5 Sensor configuration

The easiest way for an application specific sensor configuration is to use our free “Laser Sensor Utility” software. The download is provided on our website www.dimetix.com/products/software.

For the configuration process, connect the sensor over USB or RS-232 interface to the PC. More details can also be found in the Technical Reference Manual of the sensor.

The communication settings of the sensor must be set to the default values: 19200 baud, 7E1 (Setting no. 7). The numeric digital display settings must not be changed (Dimetix settings). This applies to both examples.

6 Simple application – Example 1

This is a simple application that directly shows the measured distance on the numeric digital display. No calculations (gain or offset) with the measured distance will be done before displaying it.

6.1 User output protocol configuration

Unit and resolution of the displayed measurement result can be configured via the Laser Sensor Utility software. In this example the unit is configured to cm and the resolution to 1 mm. This results in one digit after the decimal point.

Do the following steps with the “Laser Sensor Utility” software:

Steps	Description
1	Connect the laser sensor over USB or RS-232 to the PC, start the Laser Sensor Utility software and check the connection. Download and install the latest “Laser Sensor Utility” software (www.dimetix.com/UtilitySW).
2	Choose the “Configuration” tab and the “User output protocol” sub tab
3	Define the display value and resolution
4	Press the “Download to device” button to send and save the chosen configuration to the laser sensor

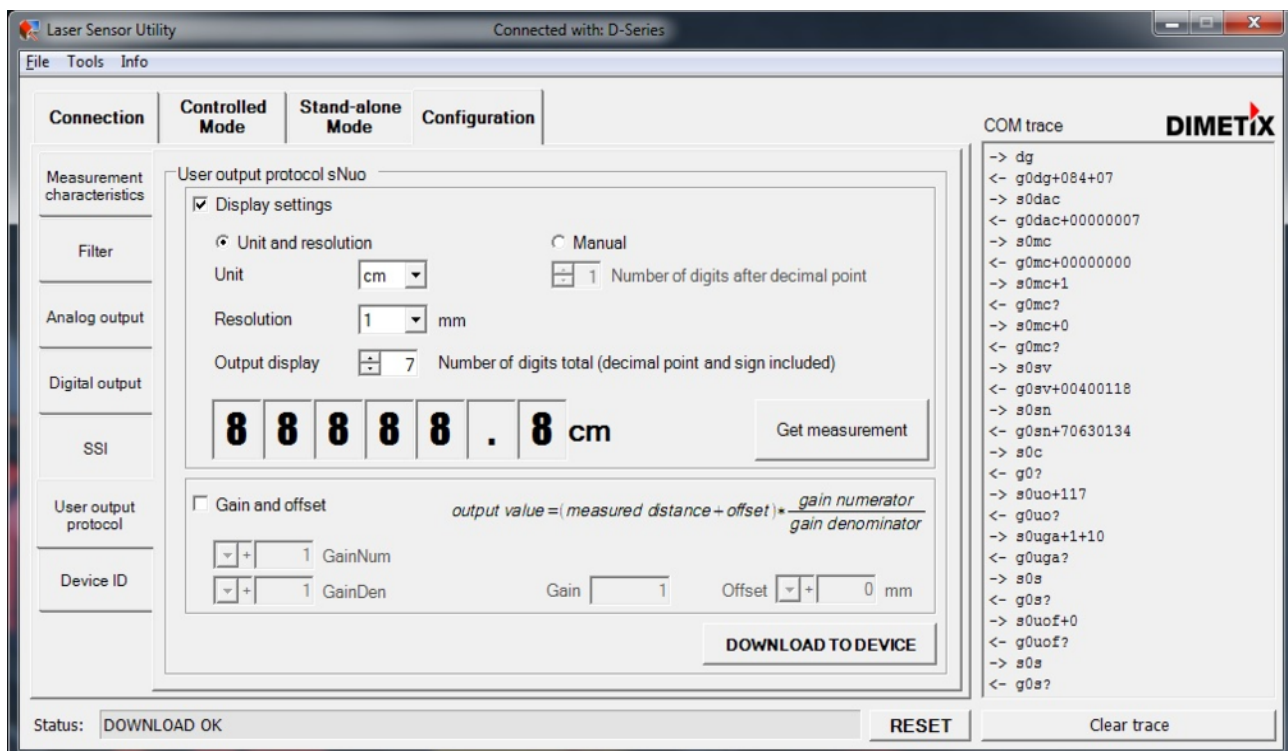


Fig. 3: Display settings



6.2 Autostart with serial output configuration

The sensor must be configured to automatically start measuring after power on and to send the measurement results over the serial interfaces (RS232, RS422/485 and USB)

This works only if the interface board firmware version is V1.17 or higher. Contact us, if you need a firmware update (service@dimetix.com).

Steps	Description
5	Choose the "Stand-alone Mode" tab and then the "Auto start configuration" sub tab
6	Select "Autostart configuration sNA" → Select "ON" check box
7	Select "Activate output via serial interface" → Select check box
8	Click "Download to device"
9	Switch +24V off and on again

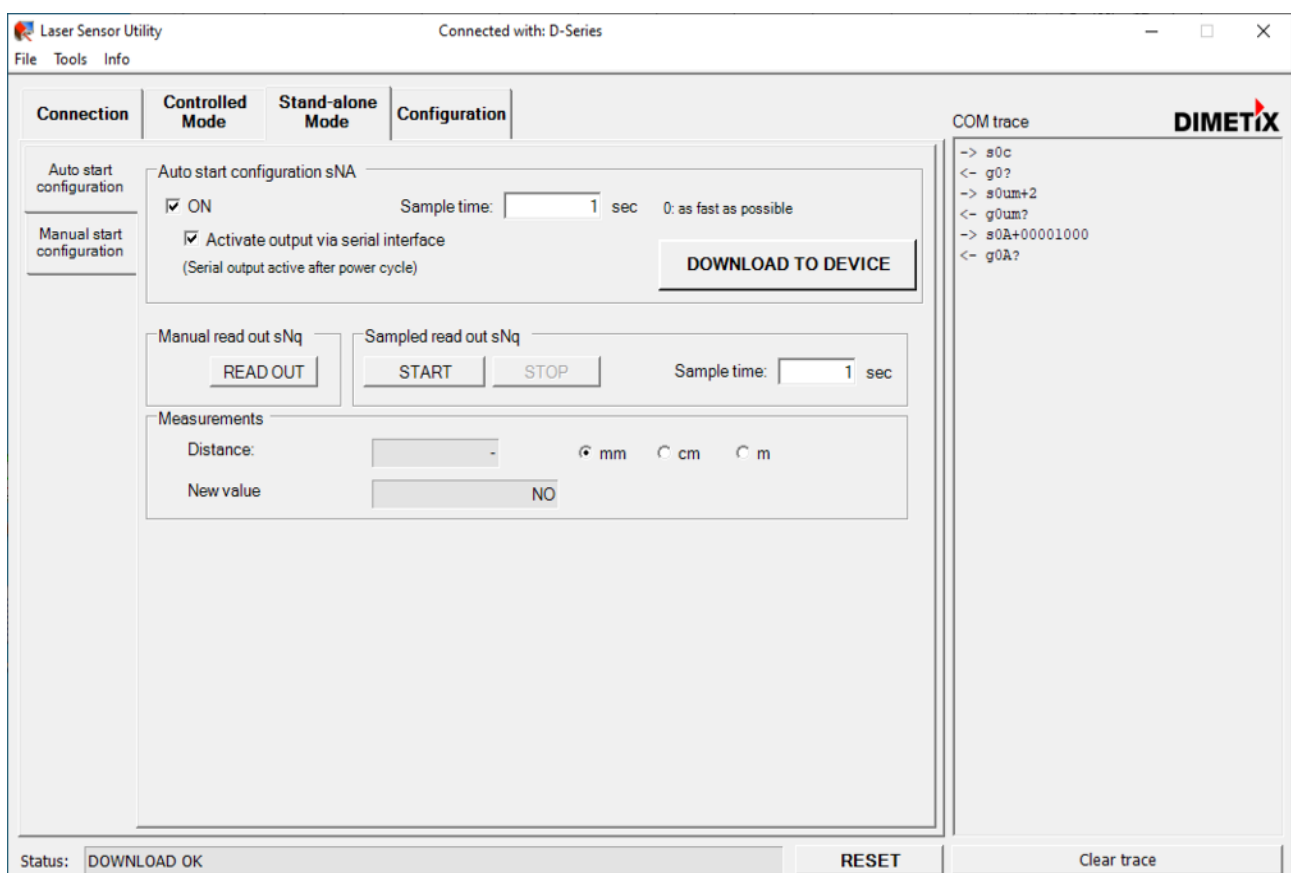


Fig. 4: Settings "Autostart with serial output"



7 Advanced application - Example 2

In this example an element of different length is to be cut off by a saw. The following shows how to use a laser sensor together with an external display to show the millimeter precise length of the piece before it get cut.

Since the length of the cut-off piece can not be measured directly, some calculation have to be carried out before the length can be displayed. The Dimetix laser sensor is able to do this calculations, hence no additional controller is necessary. This sample shows the necessary steps to configure the sensor.

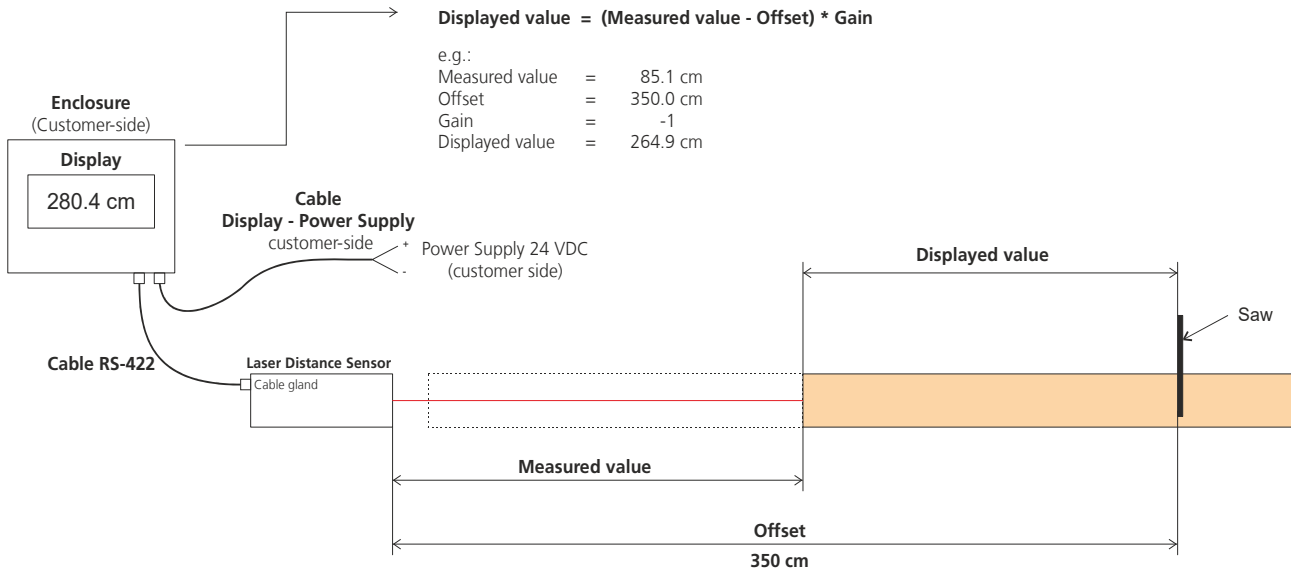


Fig. 5: Overview of example 2

7.1 User output protocol configuration

This configures the displayed unit and the resolution. In this sample the value is displayed in cm with a resolution of 1 mm. Furthermore it configures the gain and offset for the application.

Do the following steps with the "Laser Sensor Utility" software:

Steps	Description
1	Connect the laser sensor over USB or RS-232 to the PC, start the Laser Sensor Utility software and check the connection. Download and install the latest "Laser Sensor Utility" software (www.dimetix.com/UtilitySW).
2	Choose the "Configuration" tab and the "User output protocol" sub tab
3	Define the display value and resolution

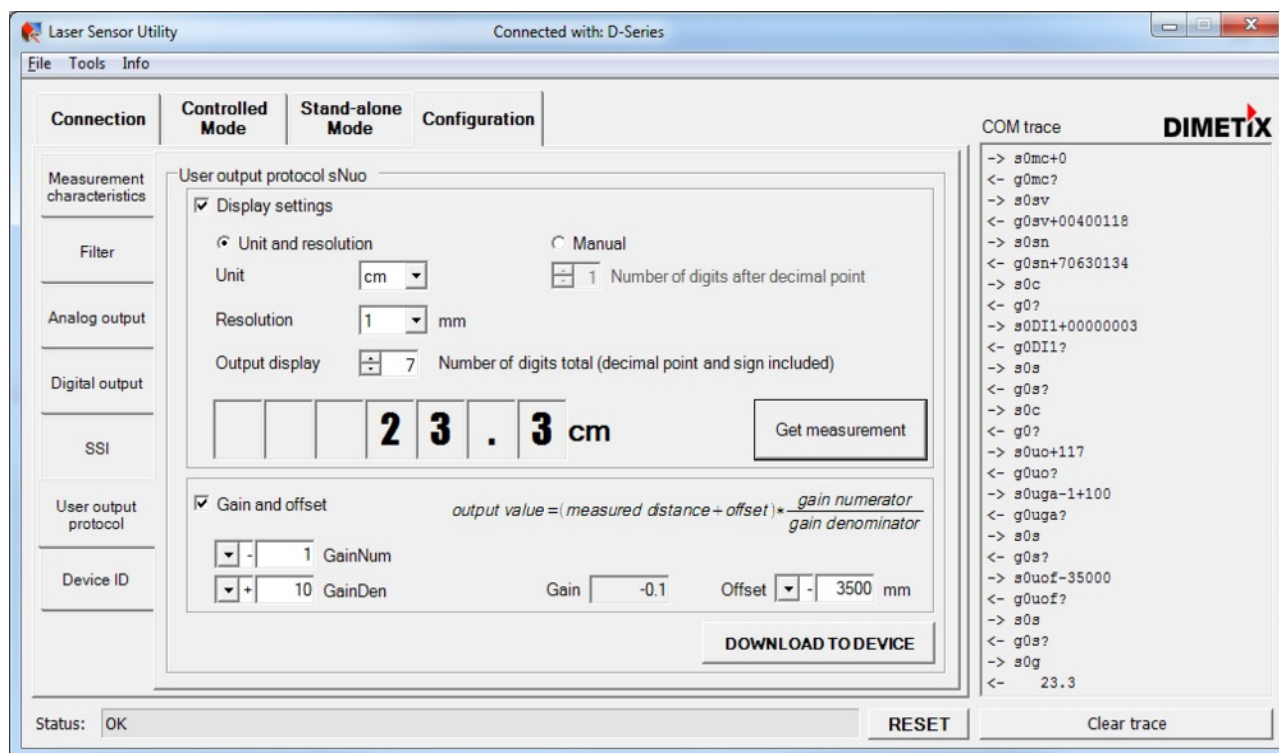


Fig. 6: Autostart with serial output

Steps	Description
4	Activate the gain and offset check field
5	Configure the offset and gain for the application
6	Press the "Download to device" button to send and save the chosen configuration to the laser sensor

7.2 Autostart configuration

The configuration steps are the same as in the first example and are described chapter 6.2 Autostart with serial output configuration.

