

## Application Note

### AN2001

#### D-Series

## Numeric digital display 500213

V 2.06

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for the latest version

#### 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 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. Two examples are provided as well.

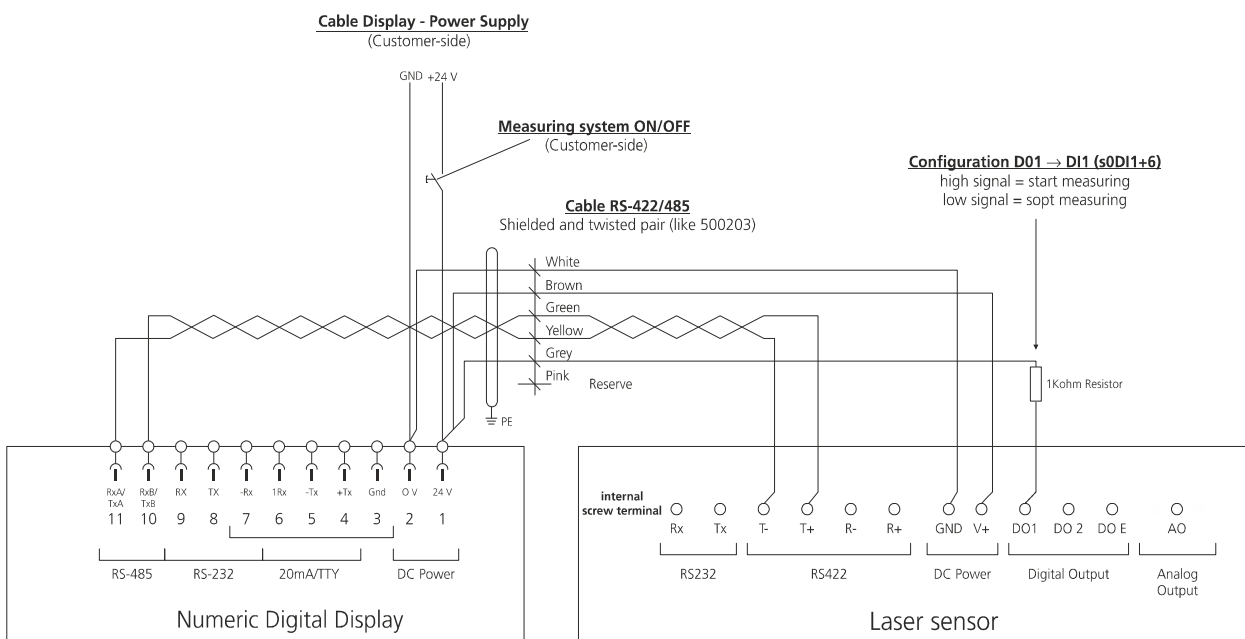
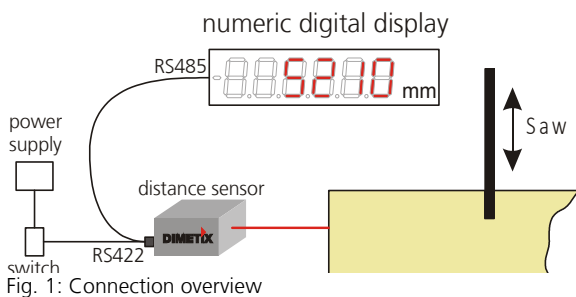
## 1.1 Requirements

- D-Series sensor or others (please check the sensor manual for this display feature)
- Numeric digital display (Dimetix part no. 500512)
- Computer with an USB or RS-232 interface
- The free software "Laser Sensor Utility"

## 2 Wiring

Figure 1 shows the connection of the components, while in figure. 2 the detailed wiring diagram can be found. Use a 6 pole shielded twisted pair cable 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.

The digital input D11 (DO1 Pin) is connected to 24 VDC via a 1 k resistor. This signal ensures the start of the measurement as soon as power is applied. Measurement results are transmitted from the sensor to the numeric display.



### 3 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](http://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.

### 4 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.

#### 4.1 User output protocol configuration

This configures the displayed unit and the resolution. In this example the configuration of the displayed unit and resolution is done. This results in: Measured distance on the display in cm with a resolution of 1 mm.

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 ( <a href="http://www.dimetix.com/UtilitySW">www.dimetix.com/UtilitySW</a> ).
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

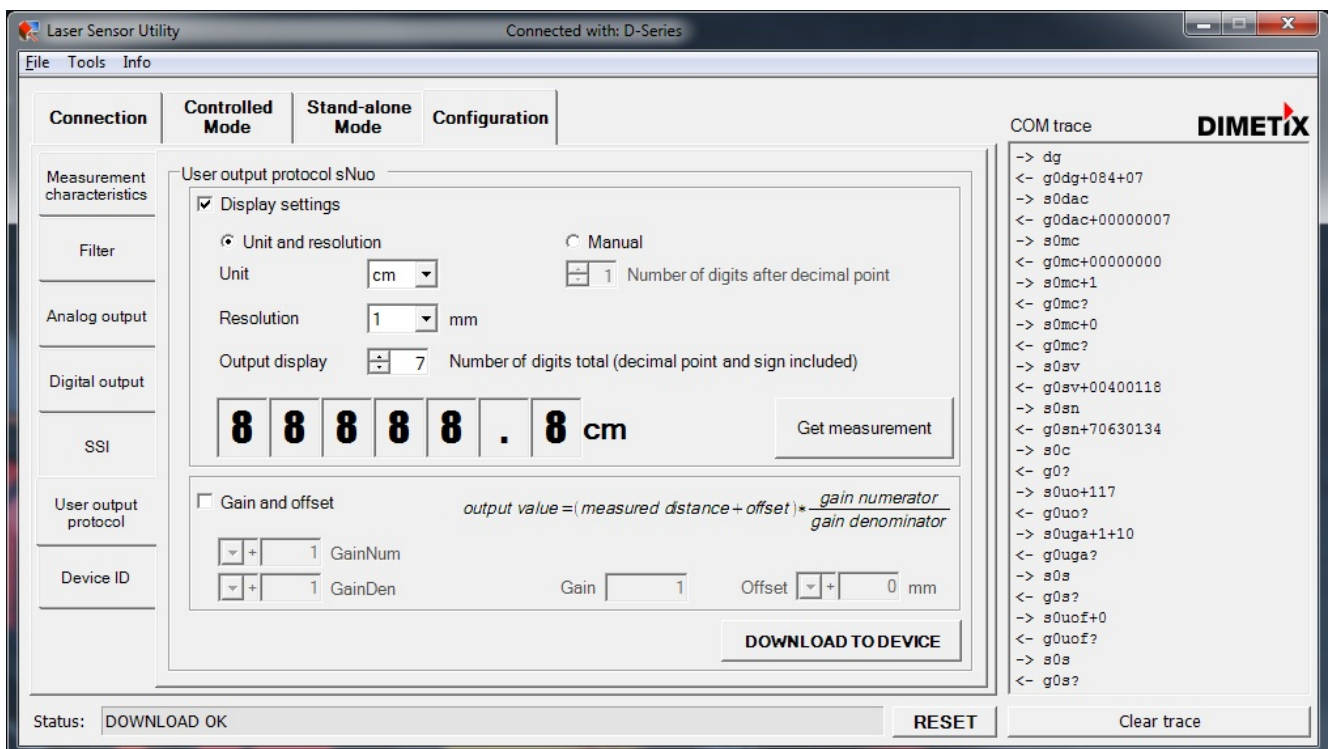


Fig. 3: Display settings

## 4.2 Measurement configuration

There are two different possibilities to start the distance measurements.

### 4.2.1 Autostart with serial output (without a digital input)

This works only if the interface board version is 1.17 or higher. Contact us, if you need a firmware update ([service@dimetix.com](mailto:service@dimetix.com)). The digital input DO1/DI1 with the resistor is not needed.

Steps	Description
5	Run the manual command input. "Laser Sensor Utility" → "Tools" → "Manual command input"
6	Send the command: sNum+2 (N for the sensor ID, e.g. for ID 0 => s0um+2) User mode for auto start with serial output enable
7	Send the command: sNA+0 (N for the sensor ID, e.g. for ID 0 => s0A+0) Set auto start configuration
8	Do a power cycle on the sensor (power off and on). The system will display the values.

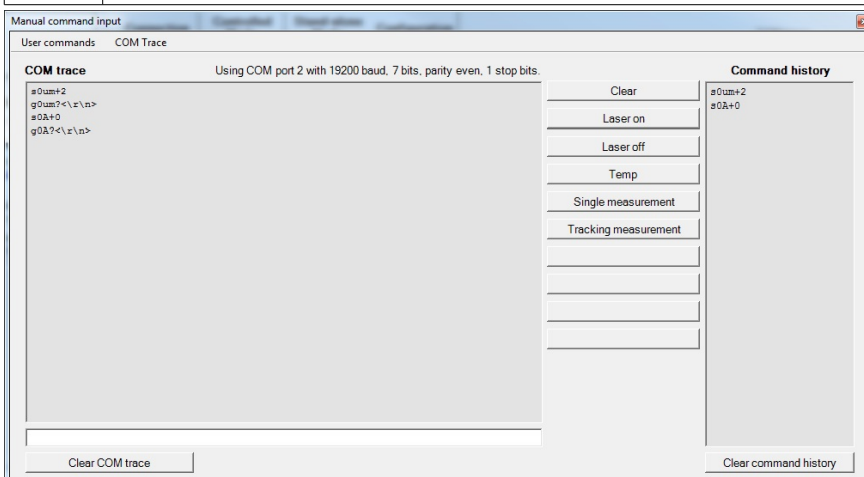


Fig. 4: Autostart with serial output

### 4.2.2 Measurement with digital input

Activates the digital input and configures it for auto start measurement.

Steps	Description
5	Choose the "Stand alone Mode" tab and the "Manual start configuration" sub tab
6	Select "Active" and "Start / Stop single sensor tracking"
7	Press the "Download to device" button to send and save the chosen configuration to the laser sensor
8	Do a power cycle on the sensor (power off and on). The system will running if the digital input is high.

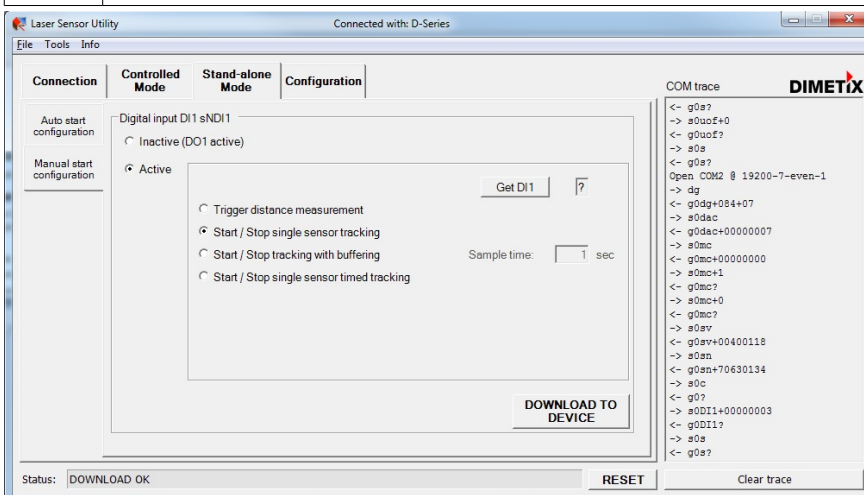


Fig. 5: Measurement with digital input

## 5 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.

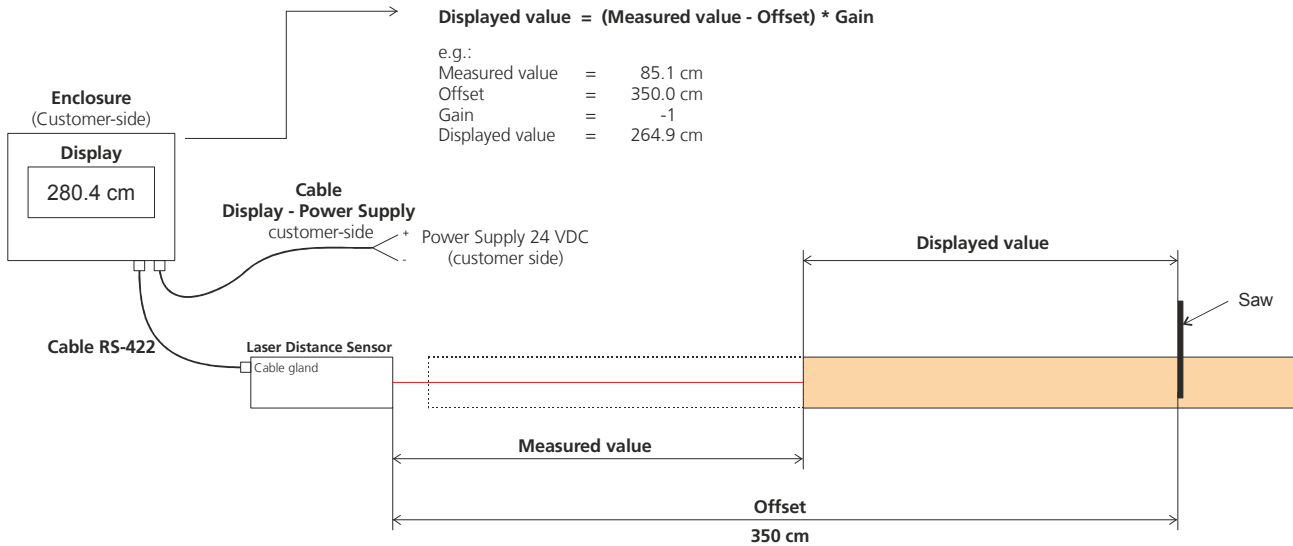


Fig. 6: Overview of example 2



## 5.1 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 ( <a href="http://www.dimetix.com/UtilitySW">www.dimetix.com/UtilitySW</a> ).
2	Choose the “Configuration” tab and the “User output protocol” sub tab
3	Define the display value and resolution

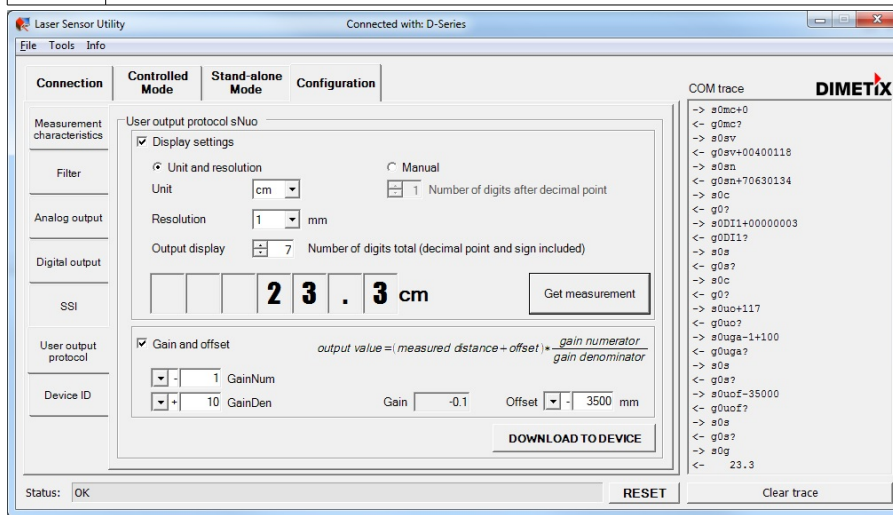


Fig. 7: Autostart with serial output

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

## 5.2 Measurements configuration

There are two different possibilities to start the measurement for this application. The configuration steps are already described in the chapter 4.2.1 Autostart with serial output (without a digital input) and 4.2.2 Measurement with digital input.