Application Note for Liquid Flow Sensors
LabVIEW Support for the RS485 Sensor Cable

Summary

A set of examples demonstrates the use of the RS485 Sensor Cable with National Instrument's LabVIEW. A library is provided which includes VIs for the most important commands. All other commands may easily be implemented by wrapping the C-DLLs provided by Sensirion.

Installation

The RS485 Sensor Cable LabVIEW Support Package ships as a .zip archive with the following content:

- *Sensirion_RS485SensorCable.llb*
  The library containing the VI's which implement the most important commands

- Directory *Support*
  Containing the DLLs 'ShdlcDriver.dll' and 'SensorCableDriver.dll' for 32bit operating system as well as their documentation 'SensorCableDllDocumentation.pdf'.
  Note: Make sure to keep the folder 'Support' in the same directory as the 'Sensirion_RS485SensorCable.llb'.

- Directory *Examples*
  Containing a set of examples illustrating the use of the Sensirion_RS485SensorCable.llb

To install the package, simply unzip the archive to the destination of your choice.

There are two packages available:
- for LabVIEW version 8.2.1 or higher, on 32 bit operating systems
- for LabVIEW version 2012 or higher, on 64 bit operating systems

Examples

The following examples illustrate how the Sensor Cable DLL functions may be used in LabVIEW:

- *Example_MinimalMeasurement.vi*
  Simple measurement with standard settings

- *Example_ConfigureMeasurement.vi*
  Configuration of the Sensor & Sensor Cable for measurement

- *Example_SingleMeasurement.vi*
  Single measurement including configuration and scaling of the output

- *Example_ContinuousMeasurement.vi*
  Continuous measurement with different configuration options and Totalizator

- *Example_Timing_In_ContinuousMeasurement.vi*
  Getting timing information in continuous measurement mode.

- Example_GetDeviceInfo
  How to implement a Sensor Cable DLL command. See the VI's block diagram and also the next section.

Calling a SensorCableDLL-function in LabVIEW

The following screen shots shows the implementation of a DLL-function in LabVIEW, using the example of the function GetDeviceInfo() in the VI Example_GetDeviceInfo.vi. This VI can be found in the 'Examples' directory of the distribution.
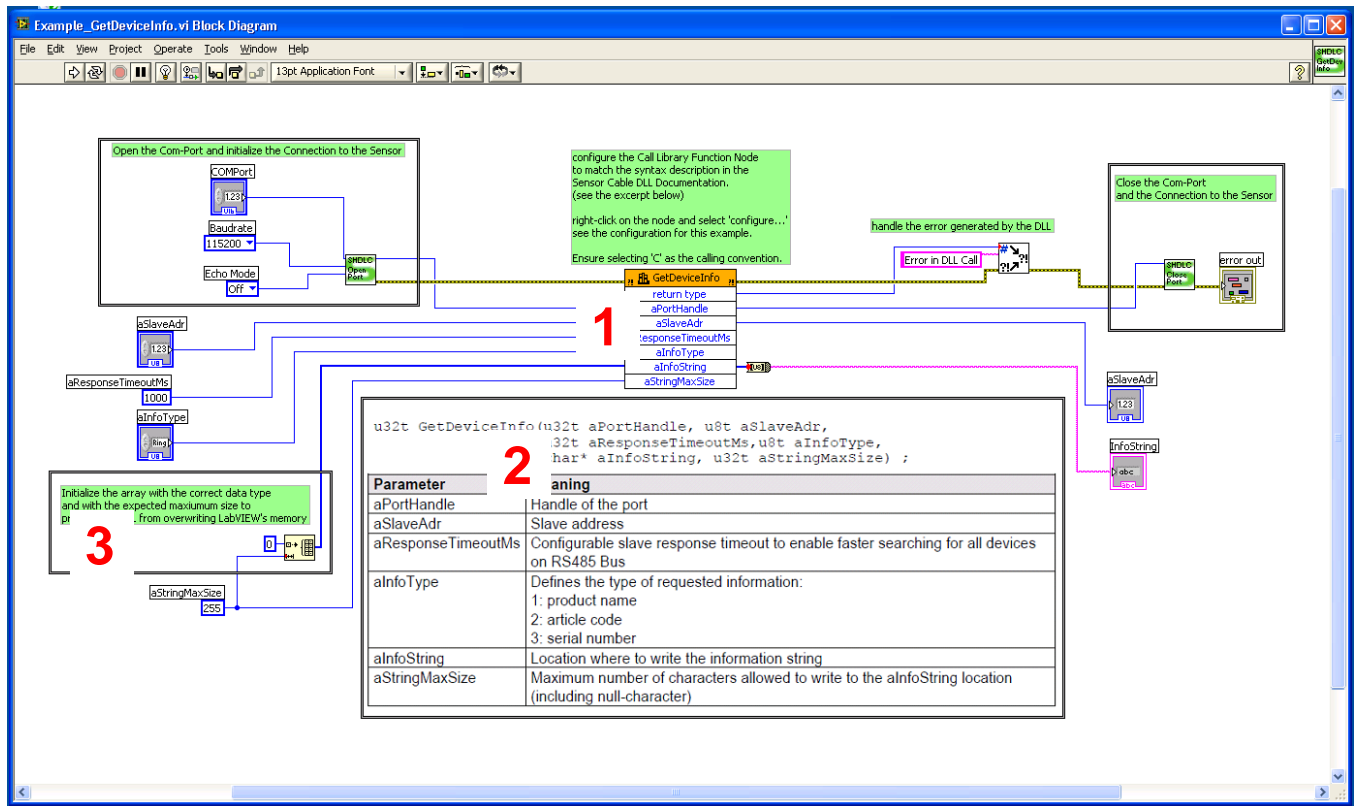

The core element for calling a dll function is the 'Call Library Function Node' (1). It must be configured to match the prototype of the C-function as described in the *SensorCableDllDocumentation.pdf* (2).

Note: Some functions are part of the ShdlcDriver.dll and some are part of the SensorCableDriver.dll.

In the VI, ensure to initialize the array with the correct data type and size (3), otherwise the DLL may overwrite LabVIEW's memory at runtime causing the program to crash.

In the configuration dialog, specify the calling convention as 'C' (4).
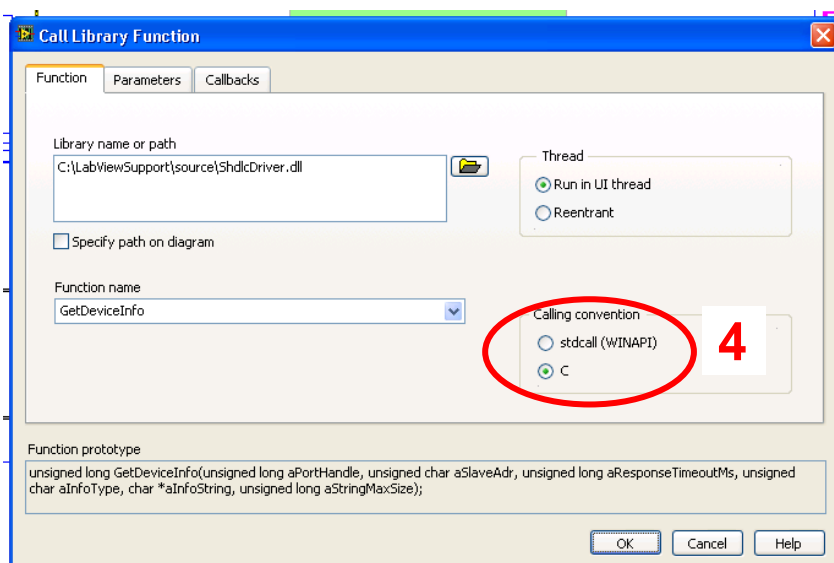
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