Using Cebo-LC in ProfiLab Expert

This document describes how to access Cebo-LC devices
from ProfiLab Expert.

Common information

The interface from ProfiLab Expert to the Cebo MSR API for Cebo-LC devices offers many features from the core API and is highly configurable. Starting from version 1.1, users can select which input and output channels should be accessible from ProfiLab Expert.

Library look up behavior

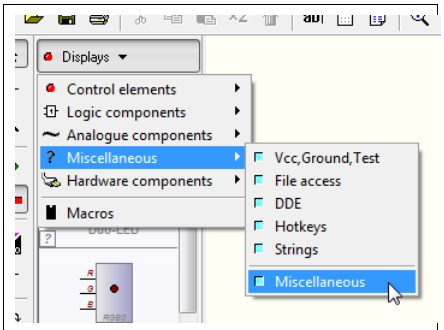
The ProfiLab Expert interface consists of three DLL files. The DLL to import into the project is **cebolc-profilab-1.1.dll**. This library requires the Cebo MSR base library **cebomsr-1.7-x86.dll**. As USB communication is handled using the open source **libusb** library, the base library itself needs to load **libusb-1.0.dll**.

ProfiLab Expert stores the path to the top level DLL as full path in its project. It is unlike that this will fail to load, other than the file is really not accessible or corrupted. But it is common that loading this file fails due to **its dependencies** could not be found. The places where the DLL's are searched for is described on this Website.

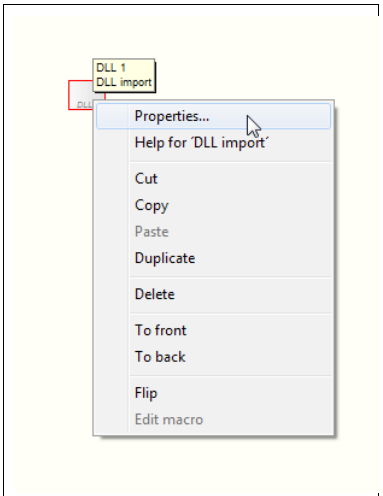
A good way to handle this, is to place **cebomsr-1.7-x86.dll** and **libusb-1.0.dll** into the ProfiLab Expert installation directory, next to **ProfiLab40.exe**. This works well when directly working with ProfiLab Expert. In the case of the **Compile** feature, ProfiLab Expert already puts **cebolc-profilab-1.1.dll** in the output folder. Copying the other two dependencies into the same folder completes the standalone project configuration.

Usage information

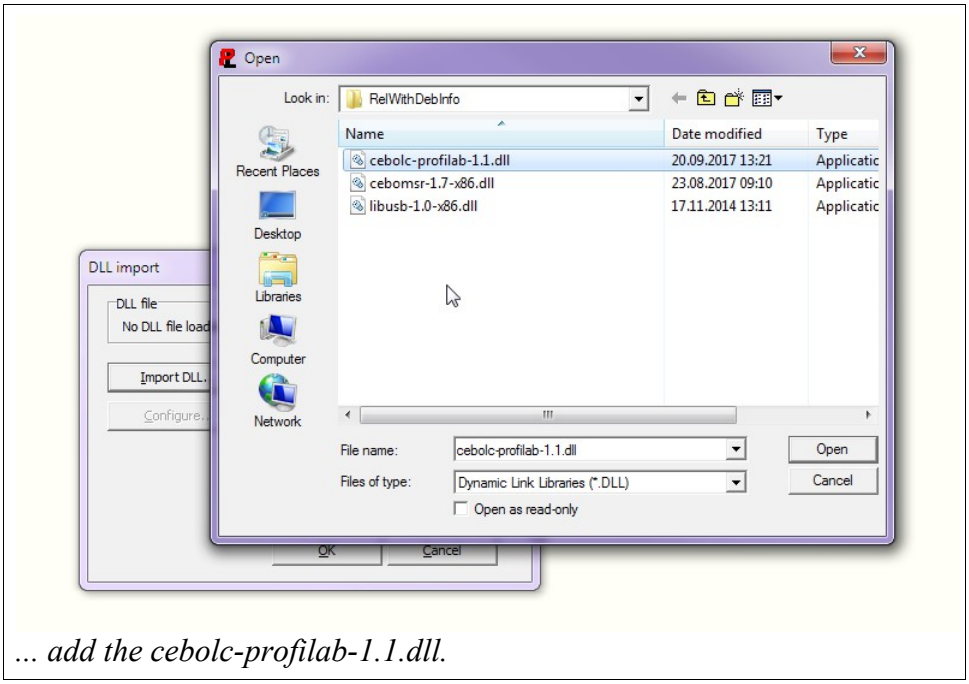
The interface uses the **DLL Import** feature that ProfiLab Expert offers as control to enhance its library. Follow the steps below to add a single instance.



Find DLL import in this section and add it.



From the controls properties ...

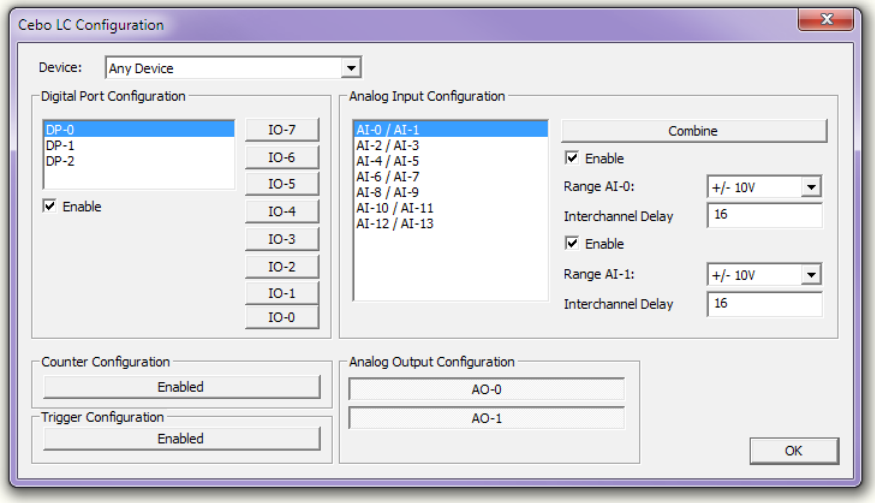


... add the cebolc-profilab-1.1.dll.

Repeat this procedure to access more than one Cebo-LC.

Interface configuration

Clicking on the **Configure ...** button in the controls properties opens the configuration dialog.



Configuration

Device

The device selection box allows a unique mapping to a specific device. This is only useful if more than one Cebo-LC device is connected to the PC. If 'Any Device' is selected, the first accessible device is used. This option should only be used if a single Cebo-LC is present, because the order is unpredictable and the **first** device can be anyone. The dropdown box contains the serial number of all devices found in the system.

Digital Port Configuration

The Cebo-LC hardware has 3 digital ports, which are just a collection of single IO's. DP-0 and DP-1 have 8 I/O's each and DP-2 has 4. To configure a specific port, select it in the list box. The respective **Enable** check box is used to enable or disable the specific port, all it's IO's. To define the behavior of the IO's, the buttons labeled 'IO-0' to 'IO-7' are used. A selected IO is an output. By default, all IO's are input.

Analog Input Configuration

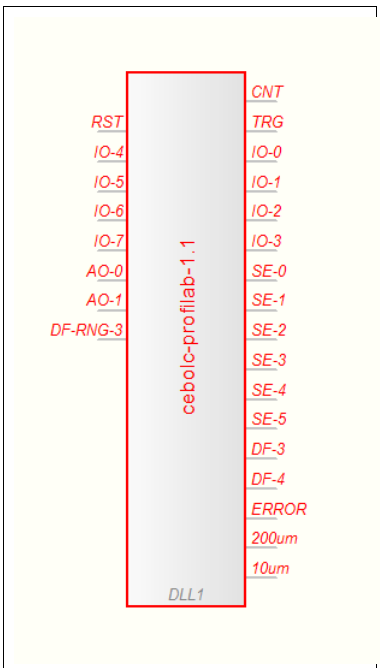
Cebo-LC has 14 single ended analog inputs. These can be combined pair-wise, so each pair is a differential input, e.g. SE-0 + SE-1 = DF-0, SE-2 + SE-2 = DF-1. Based on this, the configuration dialog is designed to handle the analog inputs pair-wise. Selecting a pair in the list box offers its configuration. If the **Combine** button is selected, the inputs are a differential pair, otherwise both are single ended.
Independent to this, each input has an identical configuration. First of all, the input can be enabled or not. If not, data for this input is not measured, reducing the capture time, increasing the measurement and update rate. So it's good practice to disable all unused inputs.
The voltage range can be selected for each input. There are 5 different settings: ± 10V, ± 1V, ± 0.1V, ± 0.01V and "external". When selecting a range, the interchannel delay for this channel is set to the default value for this range. If "external" is selected, the ProfiLab Expert box gets a pin on the incoming side, which can be used to control the range from a ProfiLab Expert control. Input range is than selected by setting the input value to 0 for ± 10V, 1 for ± 1V, 2 for ± 0.1V and 3 for ± 0.01V.

Other Configurations

Besides the settings above, Counter, Trigger and Analog Outputs can be enabled and disabled.

ProfiLab Expert symbol

Depending on the configuration, the ProfiLab Expert symbol changes its pins. As ProfiLab Expert does not support autorouting, existing connections can be invalidated after layout changes. So best practice is to first configure the settings and connect afterwards.



Example layout

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CRITICAL APPLICATIONS

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Revision history

Version	Date	Comment	Author	Approved
1.1	Sep, 25 2017	Initial release	th	th