

LockInRemote example program

LockInRemote is an example program written in Borland Delphi 6 and designed to show the possibilities of remote-controlling an eLockIn. Its graphical user interface (GUI) looks similar to the front panel and each button works the same way the real one does.

LockInRemote uses a TClientSocket object to set up a TCP connection to the eLockIn, working in non-blocking mode.

After starting the program, the screen will still be empty, because authentication is required first. Click **LockIn**→**Authenticate** to open the authentication menu. Enter your user name, password and the eLockIn's IP and click 'Connect'. If the eLockIn is found and your authentication data are valid, you will be logged in.

With the “**Log in on start-up**” one can make sure, that the eLockIn204 authenticates automatically, when LockInRemote ist started.

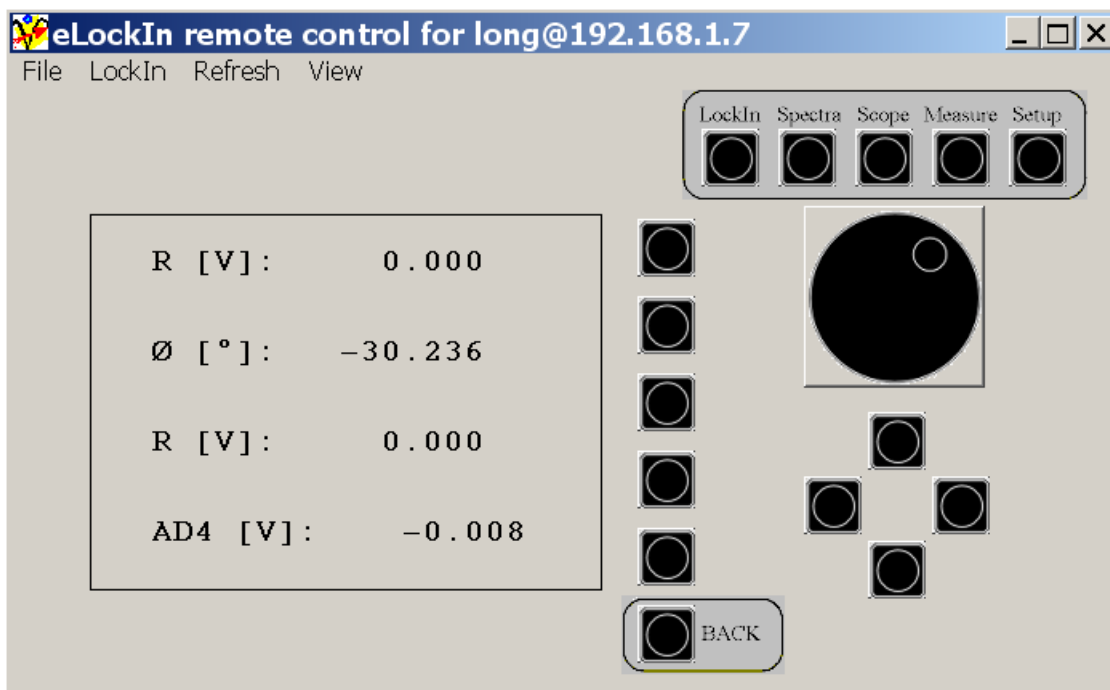
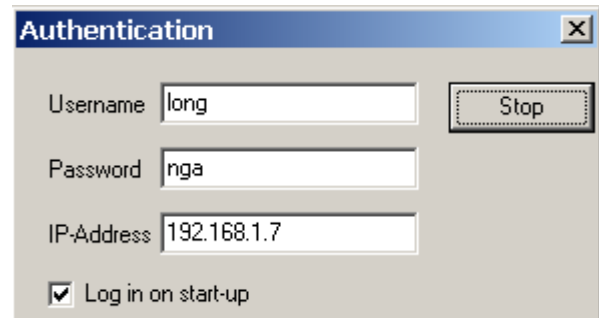
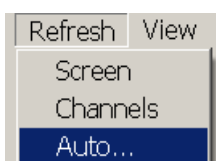


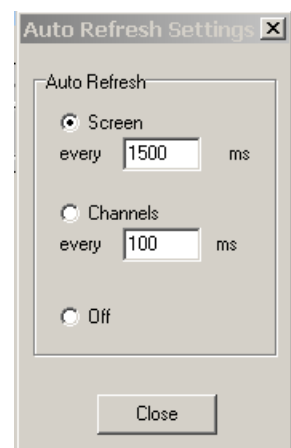
Figure 1: LockInRemote program surface.

How to display data



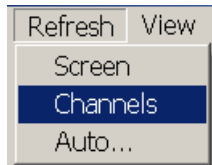
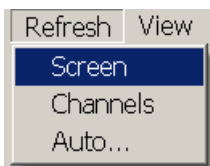
One might want to select 'Auto ...' from the 'Refresh' menu in order to choose how the eLockIn's data should be presented. It opens a panel (see right image), in which one can select

- Screen (This causes the program to retrieve a new screen shot continuously. The displayed screen of the eLockIn is transferred as JPG. Typical transfer rates for screen shots are 1.5 s)
- Channels (The data of the 4 selected channels are displayed only.)



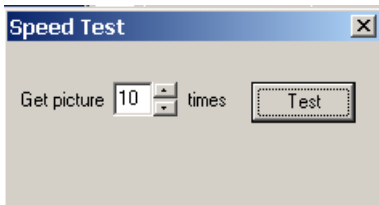
They are transferred in HTML format. Typical transfer rates can be 10 ms or less.)

- Off (no automatic screen or data refresh).



It is possible to get new screen/channel data by refreshing them manually as well. For this, the two functions Refresh/Screen and Refresh/Channels are available in the Refresh menu. Calling these functions refreshes them only once.

Interface Speed



In the 'Options' menu a simple speed test is offered. Click 'Test Speed' to check the abilities of your network connection. Choose a number n and click 'Test'. The same picture will be retrieved n times from the eLockIn, while the time is measured. Later, speed, time per picture and a bit rate for the connection speed will be displayed.

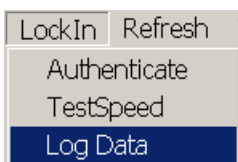
It is possible to improve the transfer speed by freezing the lockin display refreshing by “STOP” in the Spectra display or the Oscilloscope Display of the eLockIn204.

Usage of the Panel button's

All the buttons on the right side of the panel have the same functionality as their counterparts on the eLockIn. The row of buttons next to the screen represents different meanings, depending on which option is currently assigned to them on the display.

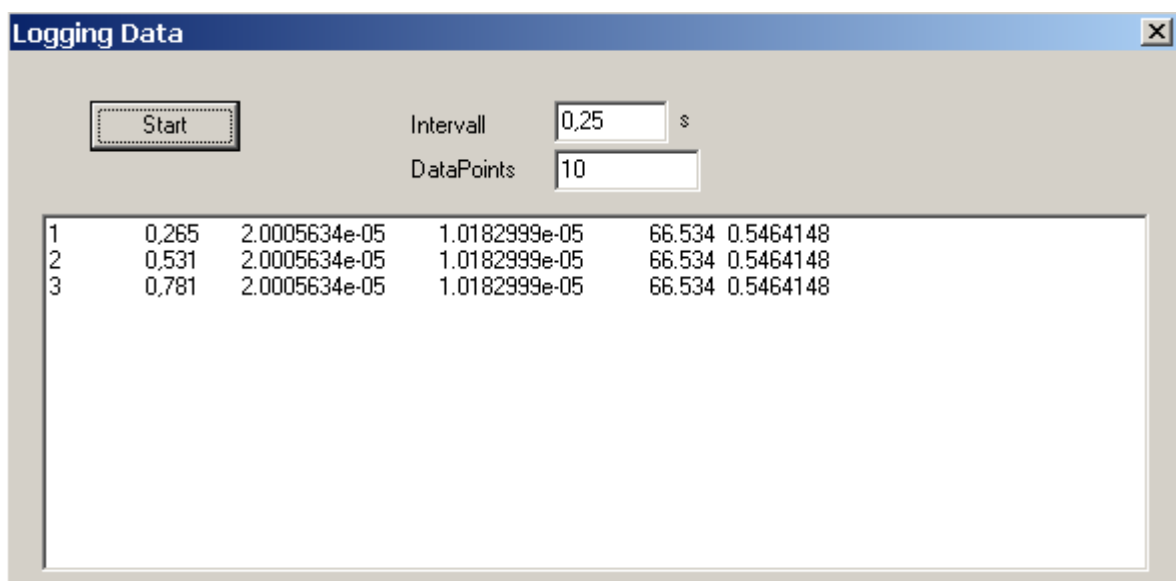
By clicking into the buttons, one can control the lockin directly over the Ethernet as if it were controlled manually.

Retrieving data rows



The function LockIn/Log Data allows to get subsequent data sets. These data are taken directly from the front panel of the eLockIn. The data on the front panel are updated with the parameter “Setup / TimeOut” on the eLockIn204.

When “Log Data” is called this window opens:



One can set an **interval** time, after which the next data set is taken. **DataPoints** is the number of

acquired points. With “**Start**” the data acquisition is started. The white screen displays in each line one acquired data set. The first row is the number, the 2nd row is the time elapsed after start. The last four rows display the four data channels displayed currently on the LockIn screen of the eLockIn204.

If one gets the same data set twice, the interval time is too short with respect to the updating time of the eLockIn display. One has either to reduce the TimeOut of the eLockIn; or one has to chose a longer interval time.

When “**Start**” is pressed, old data in the screen are deleted.

Retrieving Acquired Spectra

File	LockIn	Refresh	\
Save as ...			
Screen	Ctrl+J		
Spectra	Ctrl+S		
Oszi	Ctrl+O		
Exit	Ctrl+F4		

With this function, acquired spectra on the eLockIn can be taken as ASCII data sets. It is necessary, that a spectrum is available in the memory (on the Spectra screen) for this function.

If no spectrum is available, an error message is displayed.

All four data channels are stored, even if not displayed on the Spectra screen.

Retrieving oscilloscope data

File	LockIn	Refresh	\
Save as ...			
Screen	Ctrl+J		
Spectra	Ctrl+S		
Oszi	Ctrl+O		
Exit	Ctrl+F4		

Oscilloscope data are stored in the memory of the eLockIn, only. This function takes these values and stores them in an ASCII file. All four data channels are stored, even if not all data channels are displayed in the oscilloscope.

As the data in the oscilloscope change frequently, it might be necessary to re-store the on the eLockIns hard drive before copying them.

Therefore, this function asks: “Save data before retrieve?”. If “No”, the data are the formerly stored data on the eLockIn. In case of “Yes”, the data are saved freshly and then retrieved on order to save them on the local PC.

Save eLockIn Screen

The function [File/Screen] or “Ctrl+J” save the currently displayed screen of the eLockIn as JPG-file. It asks for a file location.

Additional functions

View	About
Refresh Time	
Send Command	

The “**Refresh Time**“ in the View menu displays a number in the main windows, which equals the time required for the current data transfer. It is always the last measured refresh time.

When refreshing the whole lockin screen, this time is in the order of 1500 ms; while the refresh of the data might take 10 ms to 50 ms, only.

“**Send Command**” opens a small window in the bottom of the main window, which allows to send text command to the eLockIn. These command equals the remote commands for the front panel knobs. Sending an “8” for instance, activates the LockIn menu.

Selection of the Data location on the eLockIn

In older software versions of the eLockin-series, the data (oscilloscope data, spectra, currently displayed data) are located in the root directory. In order the separate these user data from instrument

specific data, a data-directory has been introduced later: `./data/`.

Starting from RemoteLockIn Version 1.0b, this directory can be changed in the ini-file *lockin.ini*, which is called from the RemoteLockIn.exe. The Entry

[LockIn]

DataDir="/data"

realizes, that the data are searched in the sub-directory "`./data`".