L420
PC software guide

May 2012

1   Program description

Application L420 is designed to service L-420 radiometer-photometer and measuring quantities visualization. It requires Windows operating system and RS232 serial port. In the absence of a free RS232 serial port on your computer, USB to RS232/DB9 adapter can be used. Program works using SONBUS protocol.

2   User Interface

Main program window consists of:
– Main menu.
– Meter identification data.
– Results panel.
– Measuring range selection list.
– Serial port selection list.
– Serial port status bar.

2.1 Main menu

Main menu is located in the upper side of main program window.
Menu commands:

2.1.1 Command

Start detector zeroing – command send to meter – starts procedure of detector dark current zeroing.

Start measuring system zeroing
– Run – command send to meter – starts procedure of measuring system zeroing on currently selected measuring range.
– Run and store – command send to meter – works as described above, but at the end of the procedure, measuring system zeroing factor is stored in non-volatile memory.

Automatic zeroing – after turning it on, start measuring system zeroing commands will be sent to meter when its temperature will change by 5°C since last zeroing. If current loop is turned on, this setting should be turned off, because in this mode meter makes system zeroing automatically by itself, using the same algorithm.

Change address
– SONBUS protocol – command send to meter – SONBUS address changing.
– MODBUS protocol – command send to meter – MODBUS address changing

Set default range – command send to meter – setting measuring range, which will be selected after device power on. Currently selected range will not change.

Set number of conversions – command send to meter – changing length of moving average filter built-in meter.

Auto range – If this option is selected, software selects optimum measuring range.

Calibration
– Run – opens calibration window.
– Import history log – overwrites calibration history log file. There is a synchronization method which relies on the ignoring the already existing records.
– Export history log – copies calibration history log to binary file.

Quit – closes application.

2.1.2 View

Show Min/Max/Average – turns on / off viewing of minimum, maximum and average value calculated from received results. The average is calculated from additional software moving average filter, independent of meter's one.

Reset Min/Max/Average or ☒ button located below results panel – resets minimum, maximum and average value.

Moving average – changing length of additional software moving averaging filter.

Measures history log – opens window which allows to register result received from meter.

Calibration history log (visible only when calibration history log data file exists) – opens window which allows viewing history of all calibrations made on this computer. Calibration history log can be exported to text file.

2.1.3 Help

Instruction manual – opens this instruction manual file.

About meter – opens window with currently connected meter identification data.

About program – opens window with L420 information.

http://www.sonopan.com.pl – opens manufacturer web page with default internet browser.

2.2 Meter identification data

It is located below main menu bar. It contains currently connected meter data :
– meter type,
– serial number and year of production.

2.3 Results panel.

It is located below meter identification data. Central place of this panel occupying measured quantity value (calculated by the meter using their moving average filter) with their unit. If currently selected measuring range is overloaded, there is additionally displayed OVER indicator.

NOTE. L-420 meter has very high dynamic range, which also depends on calibration and zeroing factors. Correctly measured value can be (1.125 × result calibration factor) times higher than measuring range upper limit (over indicator appears after exceeding this value) and (-0.125 × result calibration factor) lower than lower value (under range is not indicated).

In the upper side of result panel (if turned on by **Show Min/Max/Average)**, there are:
– min – minimum value of all meter's conversions,
– min – maximum value of all meter's conversions,
– avg – additional software moving average filter output, independent of meter's one.
These values are reset by turning on **Show Min/Max/Average** or by **Reset Min/Max/Average** menu command. If there is an measuring range overload. These values are marked red if it contains at least one result received from meter with overload status.

In the lower side of results panel, there are also located:
– on the left – receiving data indicator, which pulses green when data frame is received. Red color means communication problem.
– on the right – meter inner temperature is presented.

2.4 Measuring range selection list.

This list is located near results panel. Selected range is active to powering off the meter. After next power on, default range will be selected.

2.5 Serial port selection list.

This list is located in the lower side of main program window.

The selection is made from a list of currently available in the operating systems serial communication ports.

2.6 Serial port status bar.

Status is displayed on the bar located on the lowest side of main program window. It can take values:

Connected	–	Meter is connected and working properly.
Disconnected	–	None serial port is selected.
Communication lost	–	There is no expected response from meter. Meter is turned off or data cable is disconnected.
Data frame error	–	Data frame received from meter contains errors. Possible reasons: high level of electromagnetic disturbances, receiving buffer overflow due to heavy operating system load..
Communication error	–	Data transmission error reported by operating system. Possible reasons: high level of electromagnetic disturbances or transmission parameters in meter and in program are not matched.
Busy, Access denied	–	Selected port is used by other application.
Port not found	–	Selected serial port is not present.
COM port error	–	Other error reported by operating system.