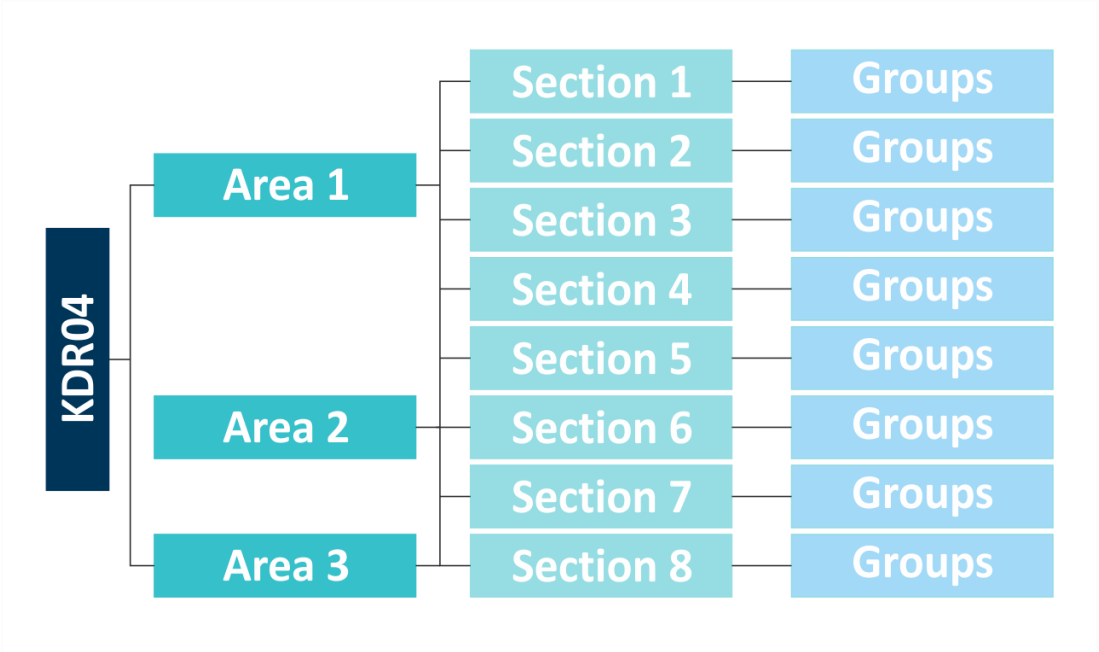
SEAK | LIGHTING CONTROL & ENERGY EFFICIENCY MANAGER

KDR04 Programmer (manual)

v1.06

Content

1 Hierachy of Seak Smart System



KDR04 Total numbers	Areas	3
	Sections	8
	Groups	150
	Intensity sensors	30
	Modules MDI8	50
	Modulators	31
	Groups of sensors	8
	Groups of modulators	8

Areas	Sections	4
	Groups	50
	Groups of modulators	6

Sections	Groups	50
	Groups of modulators	3

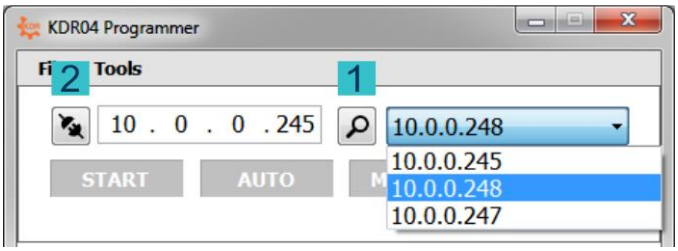
Groups of sensors	Intensity sensors	30

Groups of modulators	Modulators	31

Notes: The maximum number of components per area and section is not the same as the total number of components in KDR04

2 Connection to the KDR04 control unit

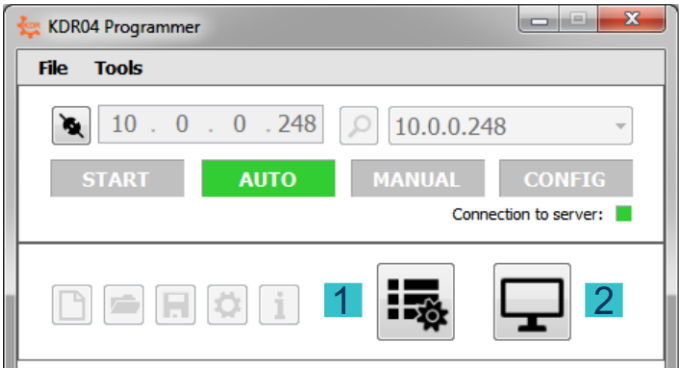
Clicking  will show the available XPort devices (KDR04). Select the KDR04 IP address and connect (2).



After connection, it displays the basic mode of the device:

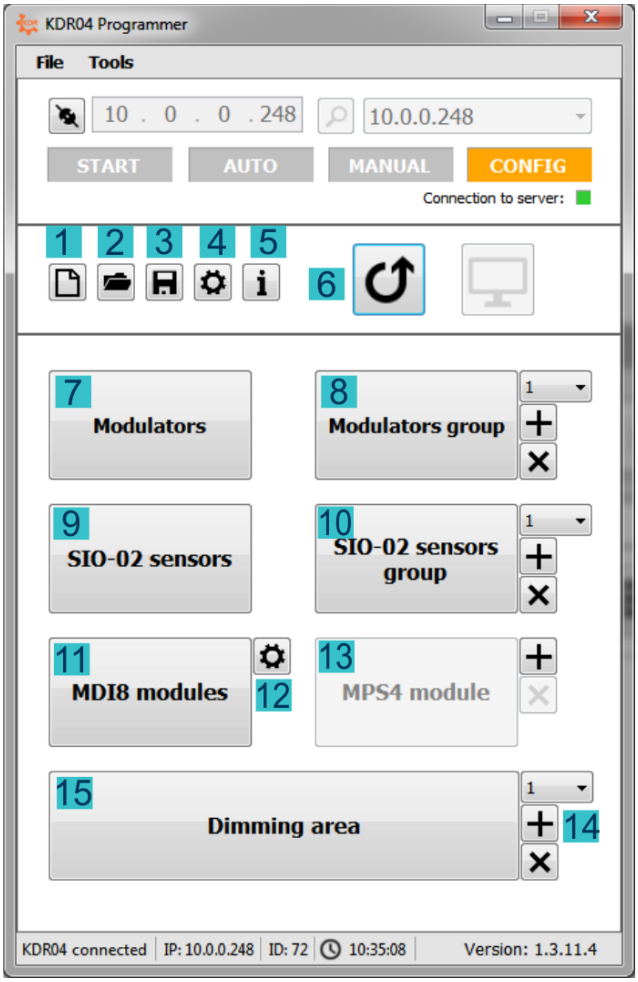
START – starting devices (approx. 10s.)
AUTO – automatic control mode
MANUAL - manual mode for testing groups and individual luminaires
CONFIG - configuration mode.

In automatic mode, it is possible to enter the configuration mode (1) or the monitoring mode (2)



3 Main window Configuration mode

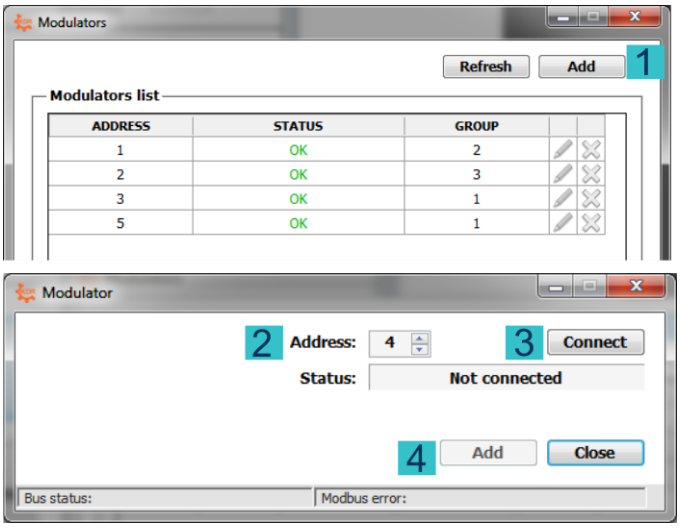
Clicking  will see the configuration mode with options:



1 – reset / create new settings (settings will also be erased in the connected KDR04)
2 – clear existing settings in KDR04 and set loaded settings from file
3 – export existing settings to file
4 – advanced settings of the KDR04 control unit
5 – displays the list of HW / SW inputs and outputs of the KDR04 control unit.
6 – deactivate configuration mode and return to automatic mode (at the same time the settings are saved in the EEPROM memory KDR04 and to server only for server solution)
7 – add/edit/remove of modulators
8 – add/set up a new groups of modulators
9 – add/edit/remove of SIO-02 sensors
10 – add/set up a new groups of SIO-02 sensors
11 – add/edit/remove of MDI8 modules
12– communication settings window with the MDI8 modules
13 – add a MPS4 current loop module
14 – add a control area
15 – settings of the currently selected control area

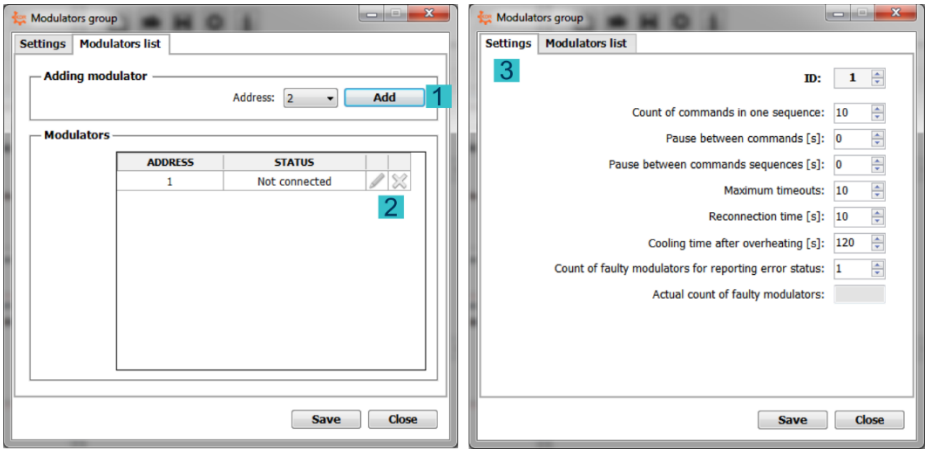
3.1 Window Modulator

3.1.1 Add modulator



In the modulator list, add the modulator (1) after entering the address (2) and the connection (3). Then add it to the list of modulators (4).

3.1.2 Modulators group



Individual modulators can be used if they are added to a group of modulators. You can add (1), edit, and delete (2) individual modulators within a group on the Modulators list tab.

Advanced settings of Modulators group (3):

Count of commands in one sequence - number of commands that will be modulated consecutively in one sequence
Pause between commands - pause time between each modulated command
Pause between command sequences - pause time between each sequence of commands
Maximum timeouts - the number of timesout times after which the given modulator is temporarily

discarded from the attended modulators in the group

Reconnection time - the time after which the disconnected modulator is again included among the attended modulators in the group

Cooling time after overheating - the time during which the KDR04 will not send the modulator commands that have overheated

Count of faulty modulators for reporting error status - number of fault modulators (disconnected from group operators) when a group of modulators report an error state

3.2 Window Sensors SIO-02

3.2.1 Add and calibrate the sensor SIO-02

In the SIO-02 sensor list, we add the sensor (1) after entering the address (2) and the connection (3). Then add it to the sensor list (4).

To calibrate the SIO-02 sensor, use the button pencil on the sensor in the SIO-02 list. In this panel, we can activate the automatic update of the data and display individual values.

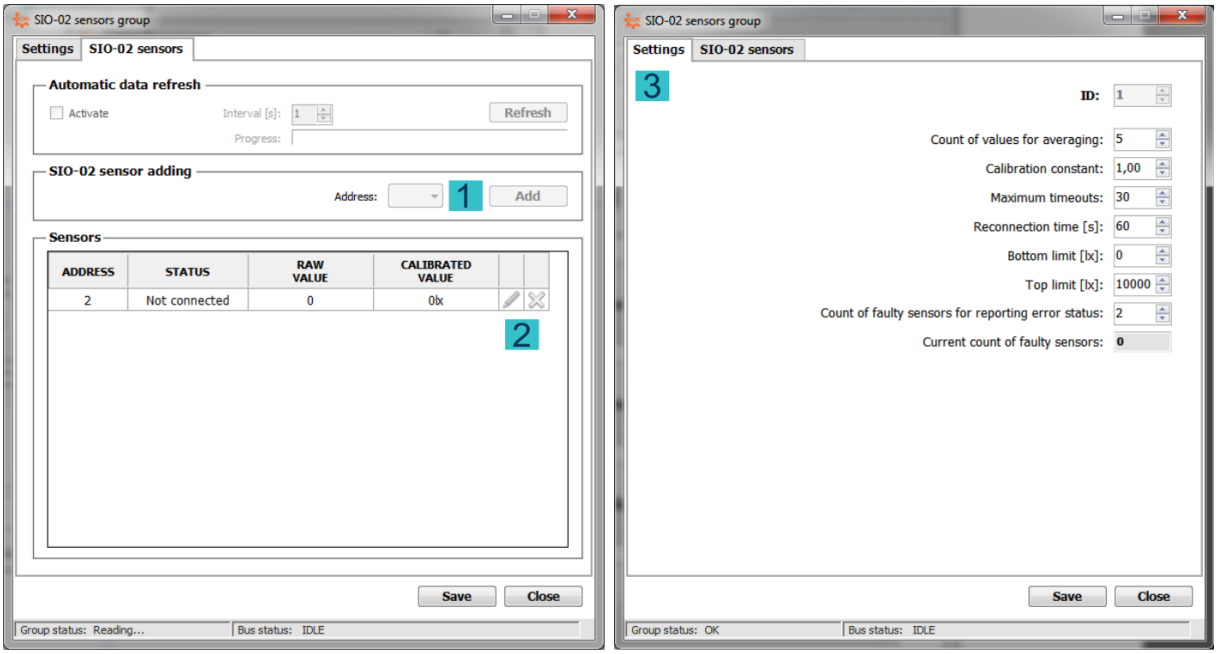
In the Calibration panel (5), the sensing characteristic of the SIO-02 sensor is calibrated, i.e., transfer between sensor values and sensed light intensity in luxes. Calibration is performed at two different levels of illumination.

In order to achieve the most accurate calibration of the sensors, it is necessary to set the lower / upper level at the bottom / top current lighting intensity (6) (Warning: when setting the lower level of lighting, the current uncalibrated value must be greater than 0). Set the required calibrated value (value from luxmeter) for both levels and click the set button to save the current uncalibrated value for both levels.

If the sensors are not physically connected to the RS-485 bus, but a calibration setting list (referred to in section 2.2.1 SIO-02 Sensor List) is available, calibration can be performed manually after setting the current unbalanced value (7)

To set up light intensity during the calibration of individual SIO-02 sensors, you can use function the dimming of all luminaires (8).

3.2.2 SIO-02 sensors group



Individual sensors can be used if they are added to a group of sensors. On the Sensor Group List tab, you can add (1), edit, and delete individual sensors within a group (2).

Advanced settings of Group of SIO-02 sensors (3):

Count of values averaging - the final value is obtained after averaging the set number of values from individual sensors

Calibration constant - the constant that translates the resulting value from the sensors (if the sensors

are located outside the control points it is possible to adapt the measured illumination intensity to the real required data)

Maximum timeouts - the number of timout points after which the sensor is temporarily discarded from the average

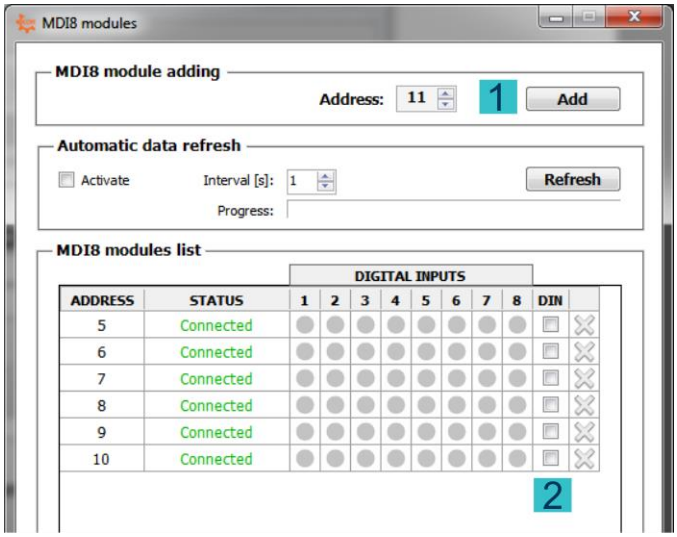
Reconnection time - the time after which the descarted sensor again is included in the averaging

Bottom/Top limit - the minimum / maximum value (lx) that a given group of sensors can acquire

Count of faulty sensors for reporting error status - number of faulty sensors (discontinued from average) when the sensor group reports an error status

3.3 Window MDI8 modules

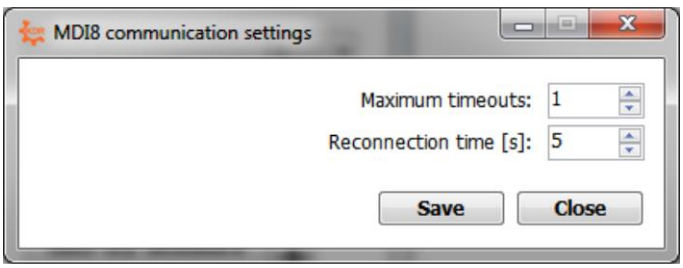
3.3.1 The groups of MDI8 modules



In the MDI 8 list, add the MDI 8 module after entering the address (1). By enabling the DIN option (2), it can be used as well as the DIN inputs of the KDR04 control unit. If this option is unchecked, the MDI8 can only be used for motion mode.

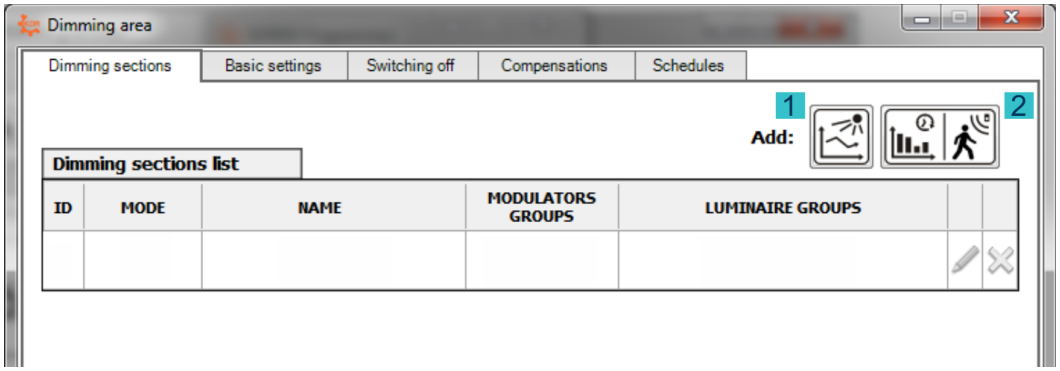
3.3.2 Set up communication MDI8 modules

Clicking  in Configuration mode window will shows the MDI8 communication setting.



4 Creating settings - area, section, group

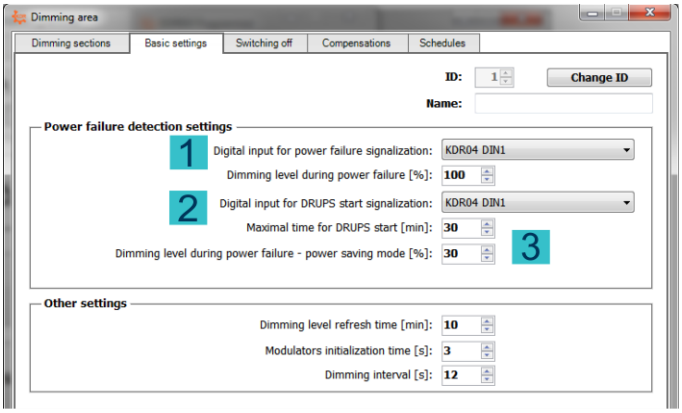
4.1 Dimming Area



In the list of control sections you can create:
1. Lighting control section with light intensity sensors.
2. Lighting control section for direct control / control with motion sensors.

Creating a section will follow after setting the next parameters of the dimming area.

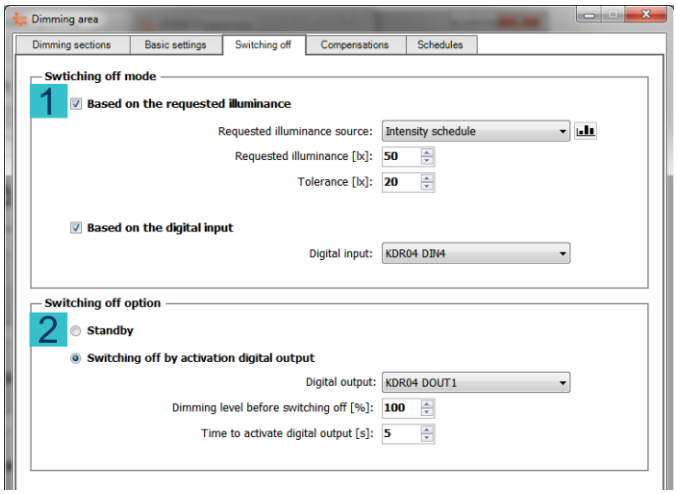
4.1.1 Power failure detection settings



In this tab we can configure 2 digital inputs:
1. Digital input for power failure signalization
2. Digital input for DRUPS (diesel rotary UPS) start signalization.

If this does not occur, the lamps will switch to the set dimming level after the set maximal time for DRUPS start (3), in order to save the UPS backup battery.

4.1.2 Switching off tab

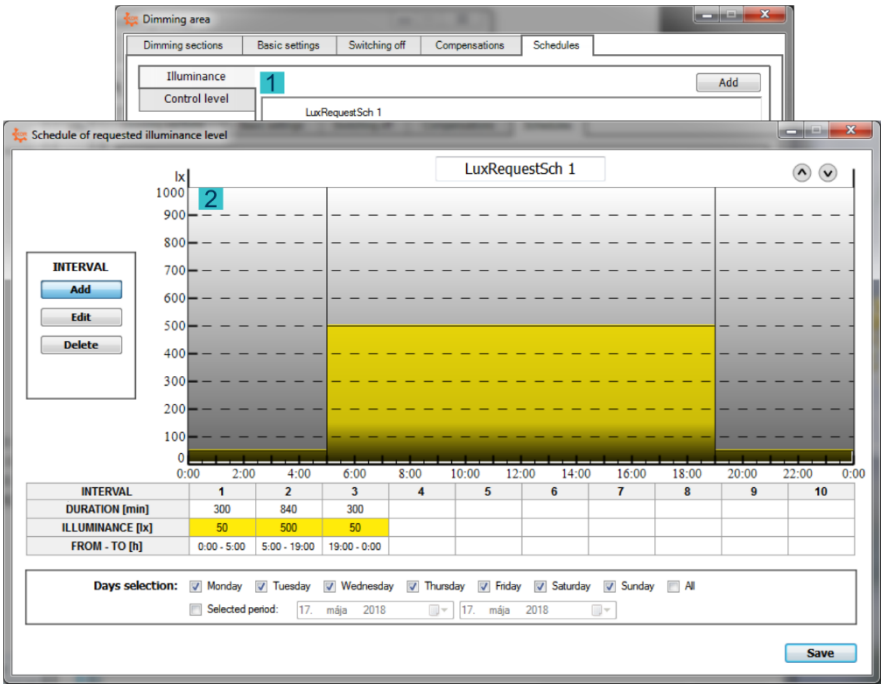


Luminaires can be switched off not only based on the digital input but also the required illuminance (1) and that: - set up requested illuminance source

- set up requested illuminance, when the switching off mode will be activated and its tolerance are to be performed

In this tab it is possible to turn off all the lights in the area and choose the way to turn off the luminaires (2).

4.1.3 Creating illuminance/control level schedules

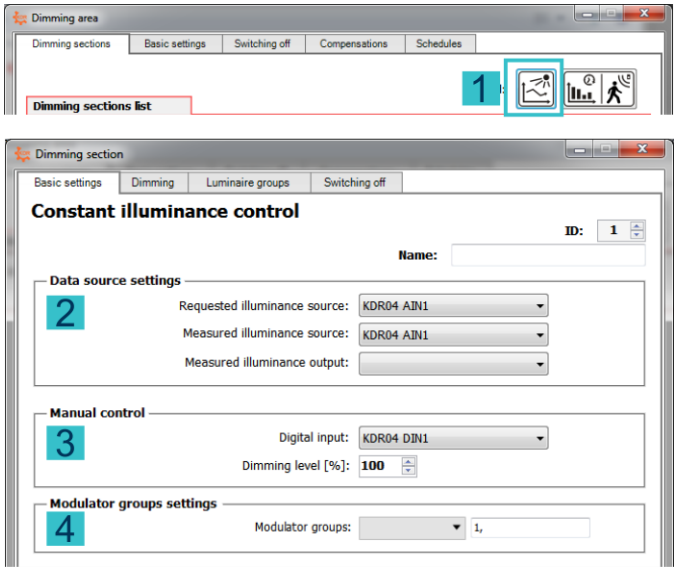


In the Schedules tab, we create two different types – for illuminance mode (illuminance schedule) and for direct motion / motion mode (schedule with control lighting level) (1).

After adding and naming, set the control level (2) and select days (3). We also create other types of schedules in the same way.

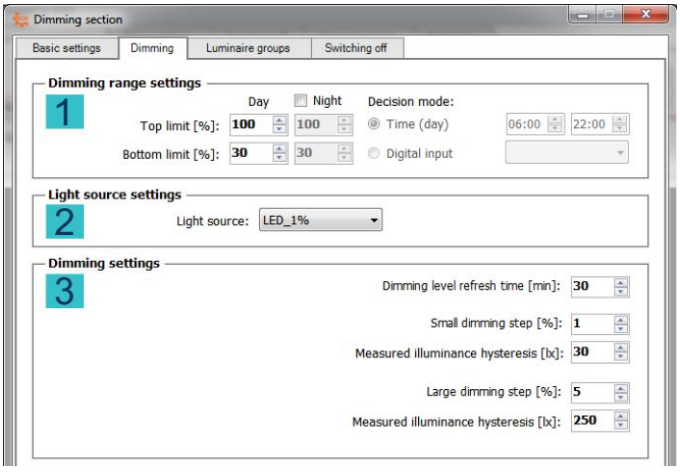
4.2 Dimming section – Constant illuminance control

4.2.1 Basic settings



In the basic settings of dimming section for constant illuminance control (1), we set the requested/measured illuminance level (2). If necessary, also a digital input for manual control (3). For automatic control, the digital input must be active, otherwise the section switches to manual control. We also select a group of modulators (4) for a given control section. If it is necessary to send the scanned lighting intensity to another system, it is possible to set the measured illuminance output.

4.2.2 Section dimming settings



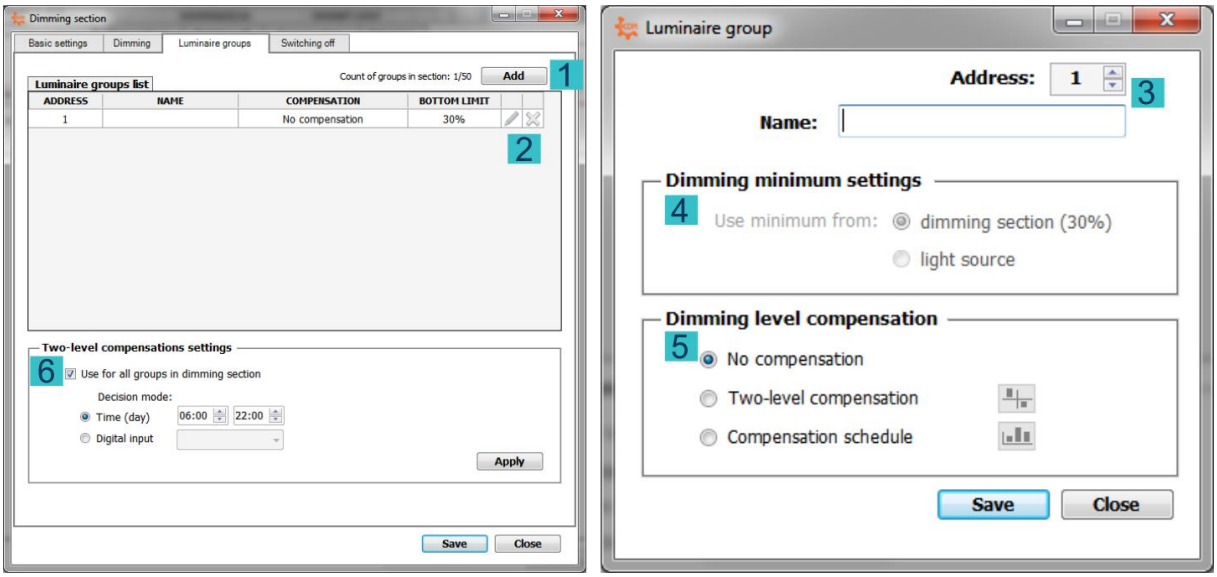
In the Dimming tab, set the control dimming range (top and bottom limits that limit the range of the control levels) (1), the light source (2) and the dimming settings (3):

Dimming level refresh time – if no control is required at the set time, the last control command is sent to that group.

Small dimming step and competent measured illuminance hysteresis – the control will be performed after the specified control steps, if the difference between the requested and levels of illumination is greater than the specified hysteresis for the small control step.

Large dimming step and competent measured illuminance hysteresis – the control will be performed after the specified control steps, if the difference between the requested and levels of illumination is greater than the specified hysteresis for the large control step.

4.2.3 Luminaire groups

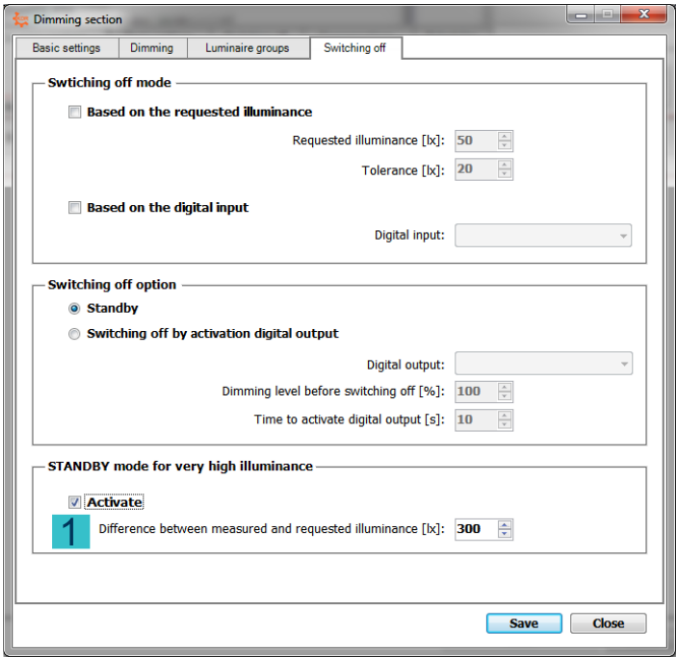


In the Luminaire Groups tab, it is possible to add (1), edit and remove (2) new groups of luminaire in that section.

When creating a group, it is necessary to choose address and name luminare group(3) firstly. Subsequently, it is necessary to set the dimming minimum - to use the minimum from the dimming section or the light source (4). The control group can be set to dimming level compensation (5), a 2-level compensation or a compensation schedule.

In the Two-level compensation settings panel (6), it is possible to set the two-level compensation decision for all groups at once (Caution! By applying the settings, each group is assigned a two-level compensation)

4.2.4 STANDBY mode when the desired level of lighting is exceeded



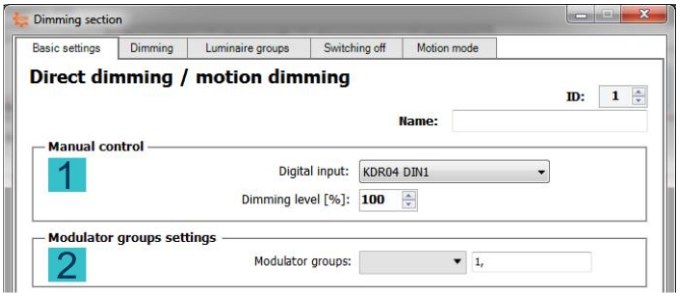
In constant illuminance control mode with sufficient illumination, the control drops to the control threshold of the section where it stops - no luminaires are switched off (transition to STANDBY mode).

In the Switching off tab, it is possible to activate (1) and set the difference between measured and requested illuminance, when overrun, it switches to STANDBY mode.

It is important to choose a big enough difference, especially if the higher section minimum is set up. The luminaires remain in STANDBY mode if the level of light is lowered below its desired value. If so, the minimum possible control command is sent to the luminaires.

4.3 Dimming section – Direct dimming/ motion dimming

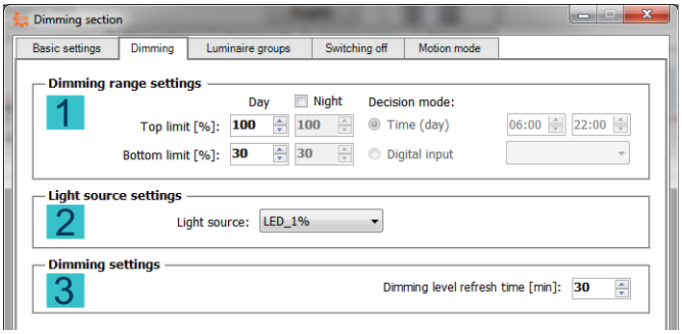
4.3.1 Basic settings



In the basic settings of dimming section for direct dimming/motion dimming we set the digital input for manual control, the dimming level of lighting (1) and the modulator groups (2) for the dimming

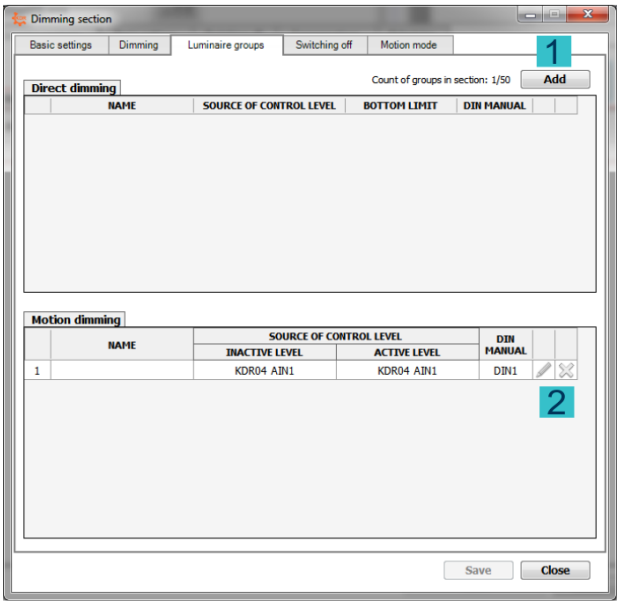
section. For automatic control, the digital input must be active, otherwise the section switches to manual control.

4.3.2 Section dimming settings



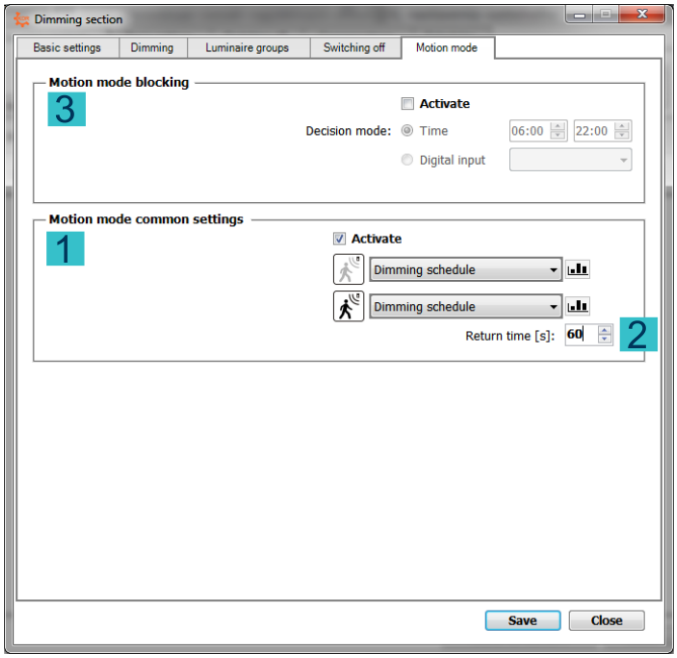
Setting the dimming in the dimming section consists in set the dimming range settings (top and bottom limits limiting the range of control levels) (1), light source settings (2), and set up a dimming level refresh time (3).

4.3.3 Luminaire groups



In this tab add (1), edit, and remove groups (2) in the direct and motion mode sections .

4.3.4 Motion mode settings

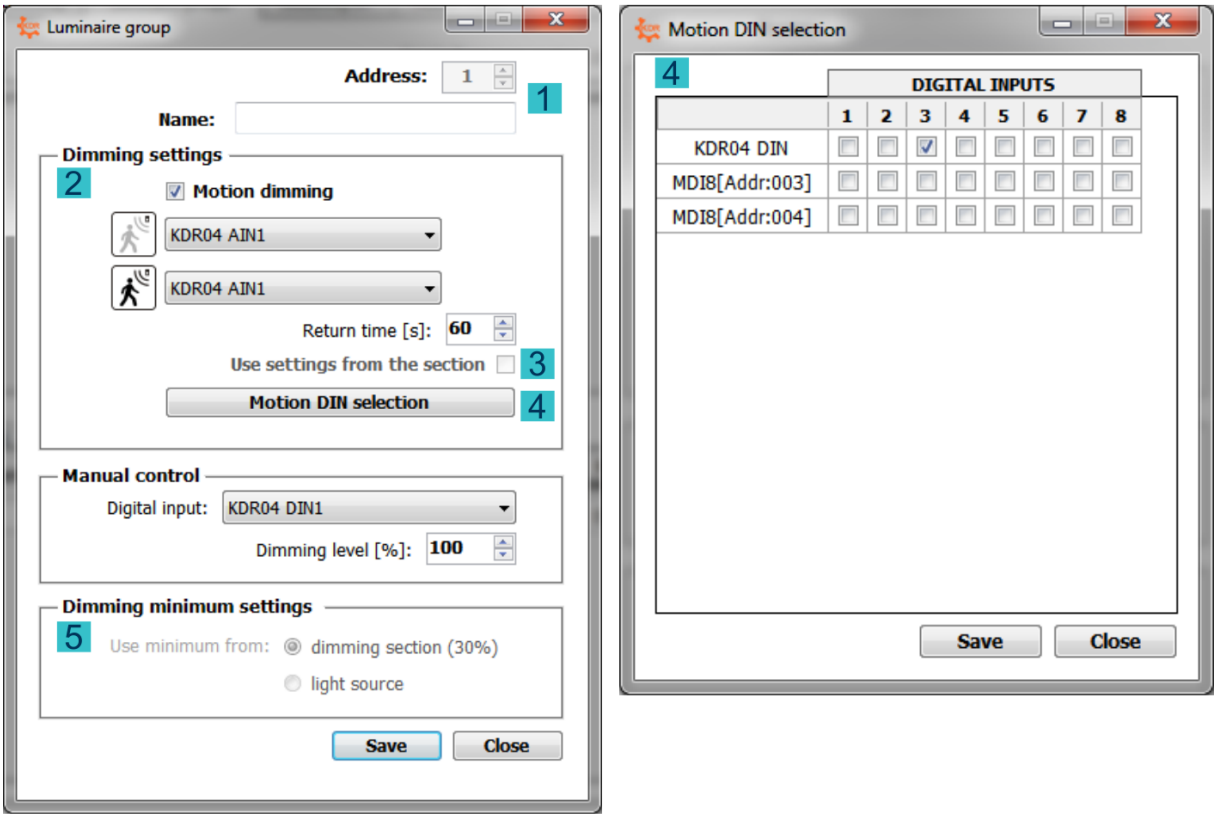


The KDR04 control unit does not have a special section for motion mode. In direct mode, however, groups can be set to "second" level (active level - level if motion is detected). In this way, it is possible to create a group that will be dimming, if motion is detected. The motion setting for the group will be described in next chapter.

The software allows to set a common level setting for all groups in section (1) after selecting the control level source for the active / inactive level. Within this module, the return time is set (return time from active to inactive if no further movement is detected) (2).

If necessary, it is possible to temporarily block the motion mode within the specified time interval or DIN, by activating the panel Motion mode blocking (3).

4.3.5 Luminaire group – direct dimming/motion dimming



Adding a new group is done in one window for both modes. Firstly it is possible to name and choose the group address (1).

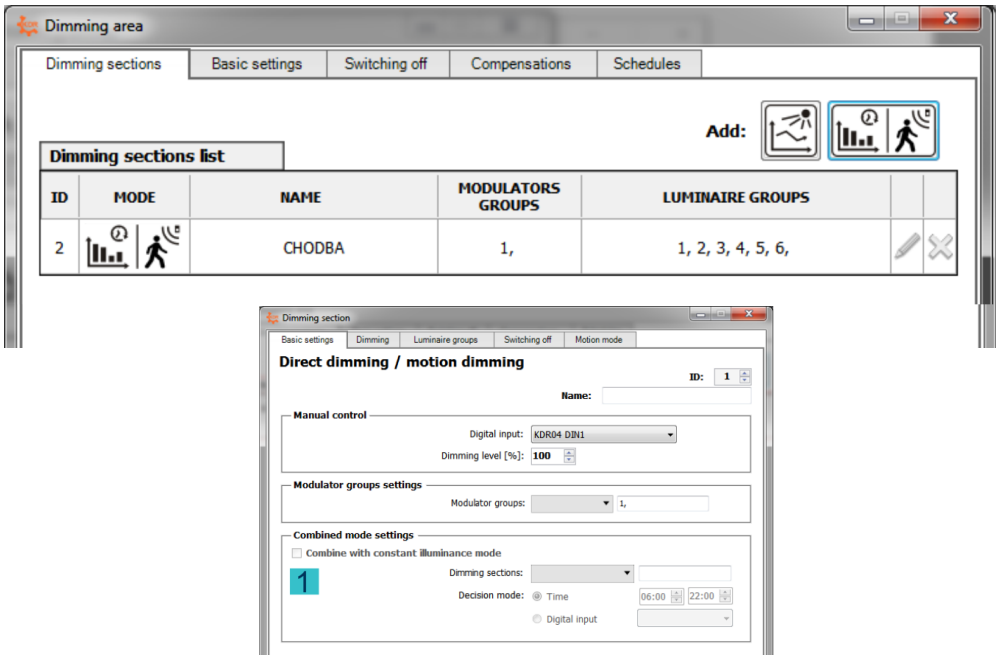
To set the motion mode for a group, it is necessary to enable the box (2) (otherwise it will be only a direct dimming group).

By enable the Use settings from section (3), you can apply common motion mode settings from the section (it is still necessary to select the source of the required level for the active and inactive level and set the return time).

By enable, we assign motion sensors (DIN inputs either from KDR04 or primary from MDI8 modules) via the Move DIN selection button (4). The maximum number of DIN motion is 10.

Finally, it is necessary to set the dimming minimum settings - Apply the minimum from the dimming section or light source (5).

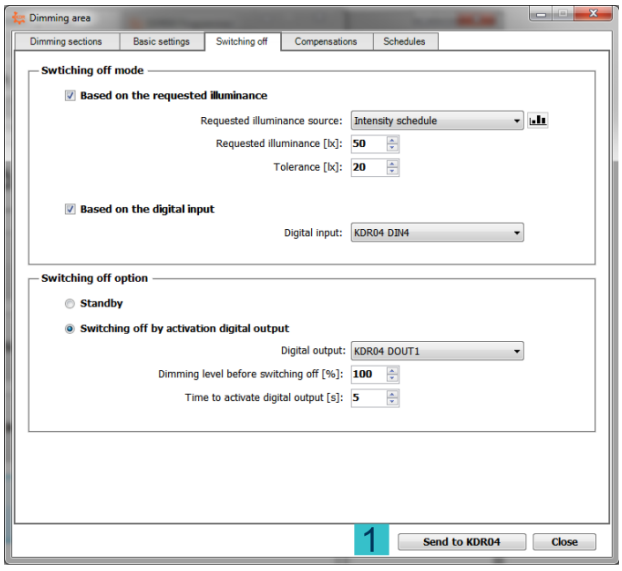
4.4 Dimming section – Combined mode settings



If it is necessary for area to be controlled at day on based illuminance and at night through direct dimming / motion dimming, it is possible to combine both modes together (combined mode). This mode can be set exclusively from the dimming section in direct dimming / motion dimming. The mode can be activated by enable the option (1). Next, you need to select the dimming sections (only sections in the constant illuminance control) with which the current section will be combined. Finally, you need to choose the time or digital input that will decide to activate the selected section.

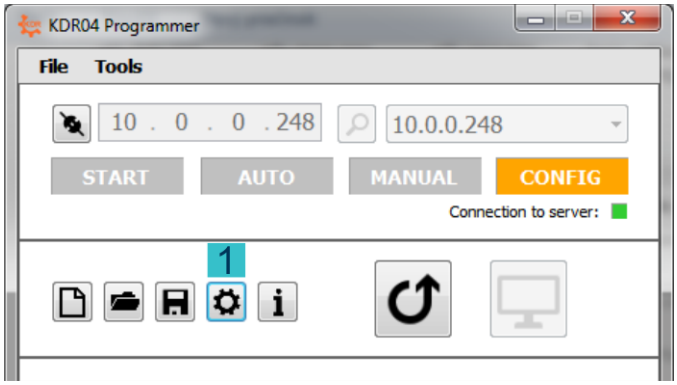
4.5 Send the settings to the KDR04 control unit

Once all the necessary sections, groups, and settings have been created, all these settings must be sent to the KDR04 control unit - by pressing the Send to KDR04 button (1)

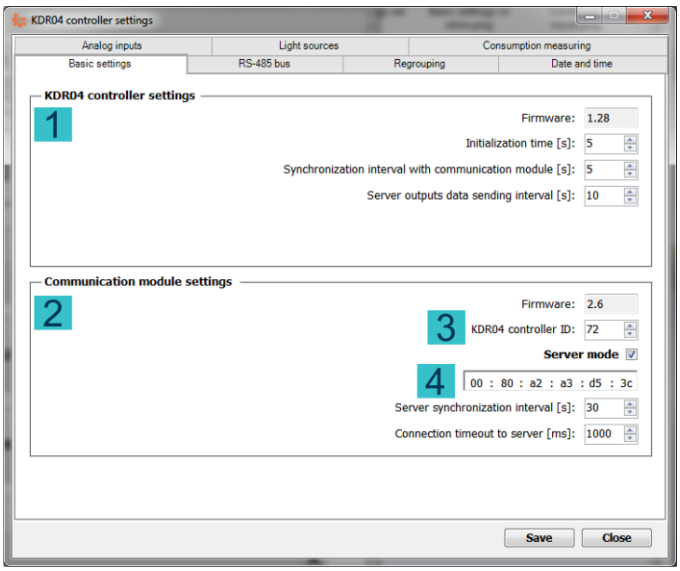


5 Advanced KDR04 controller settings

The advanced settings are displayed by clicking on the Configuration mode panel (1)



5.1 Basic settings



In Controller settings panel (1) you can set up:

Initialization time – the time required for a correct start of the control unit when it is turned on

Synchronization interval with communication module – the interval in which information will be exchanged between the KDR04 control unit and its communication module

Server outpus data sending interval – the interval in which the KDR04 controller will send the server output values

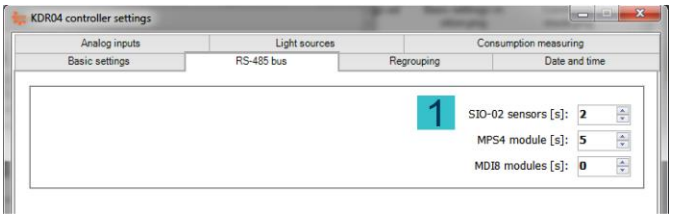
In Communication module settings panel (2) you can set up KDR04 controller ID (3), enable server mode for activation (4) and set up parameters:

MAC address LAN2 – MAC address LANTRONIX XPORT (used to authenticate the KDR04 control unit on the server)

Server synchronization interval – the interval in which the communication module will communicate regularly with the server

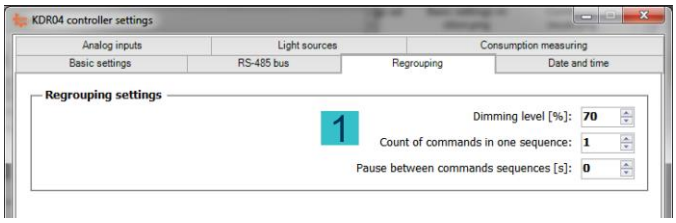
Connection timeout to server – timeout time when connecting to the server

5.2 RS-485 bus



In RS-485 bus tab you can set interval communication with devices (SIO-02, MPS4, MDI8).

5.3 Regrouping



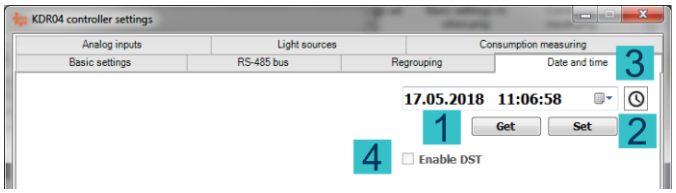
In Regrouping tab you can set up:

Dimming level – level of lighting during the regrouping

Count of commands in one sequence – the number of commands that will be modulated consecutively without a pause

Pause between commands sequence – pause time between individual send sequences

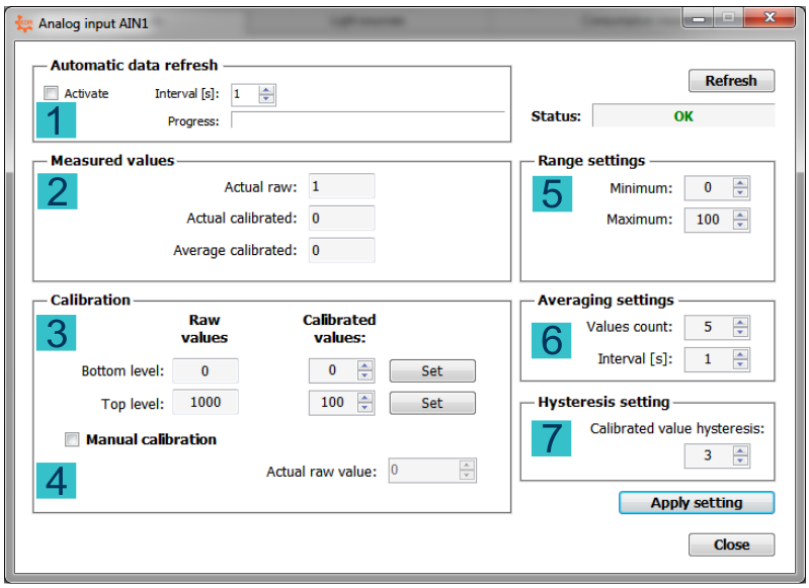
5.4 Date and Time



Press the Get button (1) to load the current time from the KDR04 control unit, the clock button (2) returns the system time from the PC and the set button (3) sets the currently displayed time to the KDR04 control unit. You can activate the automatic summer / winter time. Activate (4)

5.5 Analog input

Clicking the button with the name of the analog input will display the analog input setting window.



In this window you can enable automatic recovery of analogue input values from KDR04 (1). The current calibrated and uncalibrated value is displayed as well as the average value (2).

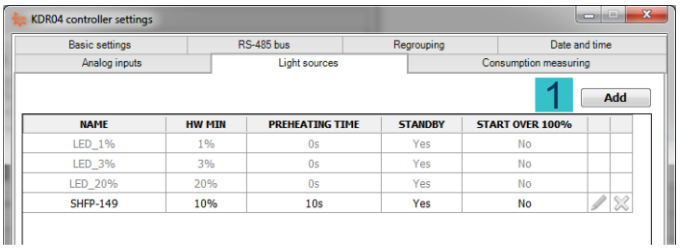
In the Calibration panel (3), the analog input range is calibrated. To set the top / bottom level, you have to first set the required calibration value for the bottom / top level and then click the Set button to save the current uncalibrated value for the appropiate bottom / top level.

To manually calibrate the analog input, you must select the appropriate option (4) and then set the current uncalibrated value to the required level and continue as mentioned above. In this case, the measured value or the specified value is not used.

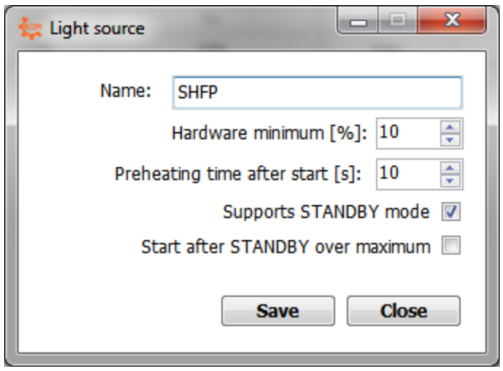
In other panels, you set:

5. Minimum and maximum range - values measured outside the set range will be considered as a error status and the control system will respond to it by sending a 100% level
6. Averaging settings of measured value
7. Hysteresis settings - hysteresis indicates how much the calibrated input value must be changed to be considered a new value. This determines the sensitivity of the analog input to a small value change

5.6 Light sources

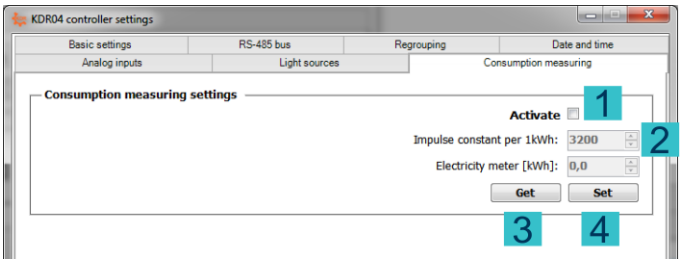


The first 3 light sources (in gray) are default light sources that can not be changed or removed. Create a new light source by clicking the Add button (1), where you set other parameters:



Hardware minimum – minimum, below which it is not possible to control a type of luminaires
Preheating time after start – time after switching on, when the luminaires can not be controlled
Support STANDBY mode – indicates whether the luminaires supports STANDBY mode.
Start after STANDBY over maximum – indicates whether the luminaires should be turn on to the maximum intensity for returning from STANDBY mode.

5.7 Consumption measuring



To activate the KDR04 consumption measurement, tick the Activate option (1). Consequently, it is necessary to set the Impulse constant per 1kWh (2), which must be the same as the impulse output of the electrometer that is connected to KDR04. To view actual consumption, it is also necessary to read the current counter of the electrometer, also in KDR04 (3). You must confirm the settings by pressing the Set button (4).