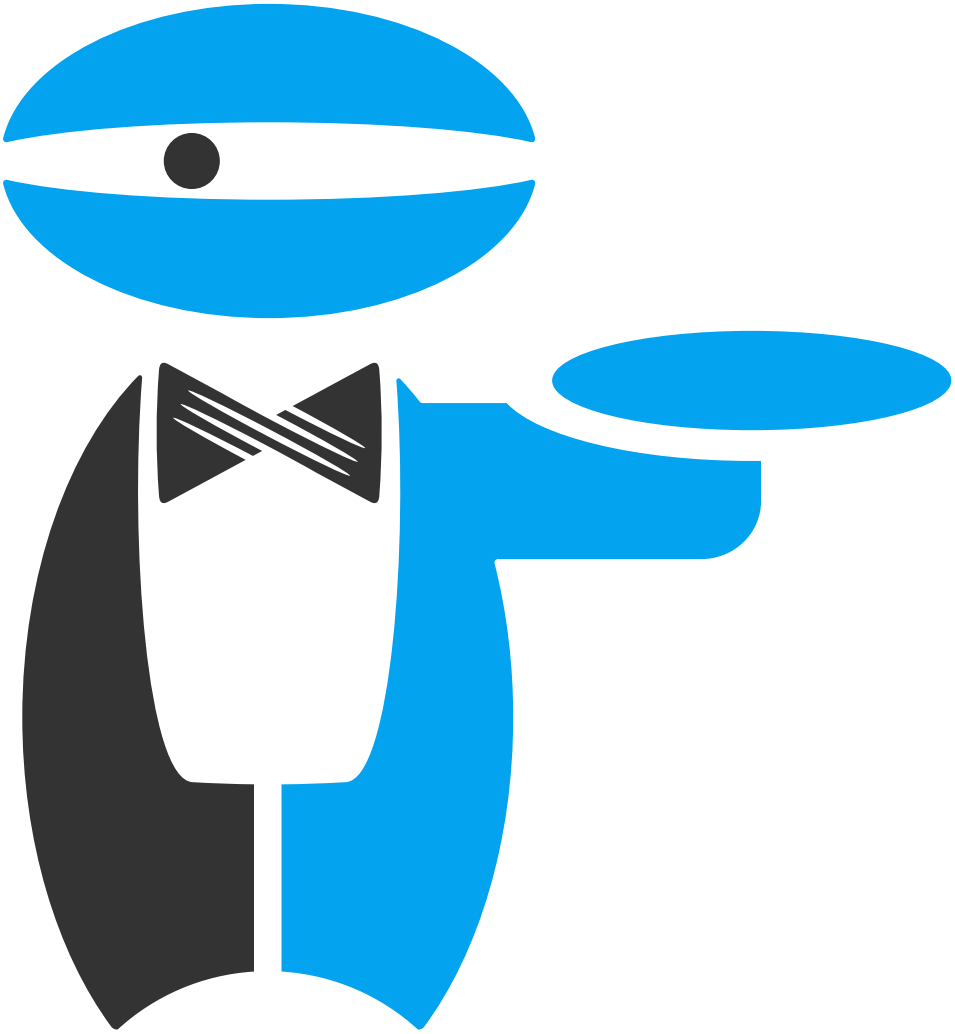

HIQ Home

User Manual v1.3.1

robotina

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Content

Features

Software

Hardware

Outline

home automation system

HIQ

comfort

simplicity

security

safety

flexibility

HIQ is a home automation system, including lights, blinds, heating and cooling; temperature monitoring, energy management, timetable, evant-based automation and security alarm.

HIQ consists both of hardware and software. Although basically simple, expansion capabilities are virtually unlimited. System is configurable, programmable, and allow integration of multiple HIQ installations into a single functional unit.

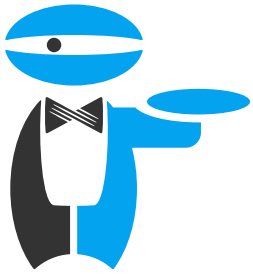
HIQ can be used for both a new project and renovation. Most of the work is done by a electrician, no specialized expert is needed. Configuration can be done by end-user.

System design is straight forward, there are no complicated compatibility or dependency rules.

HIQ is open to other home devices, either by integrating them in the system (e.g. touchless buttons), or cooperate on the signal level (e.g. professional alarm).

Features

unique concept and style



separate thermostat for each room

smartphone controls everything

manual or automatic operation

integration with other systems

HIQ

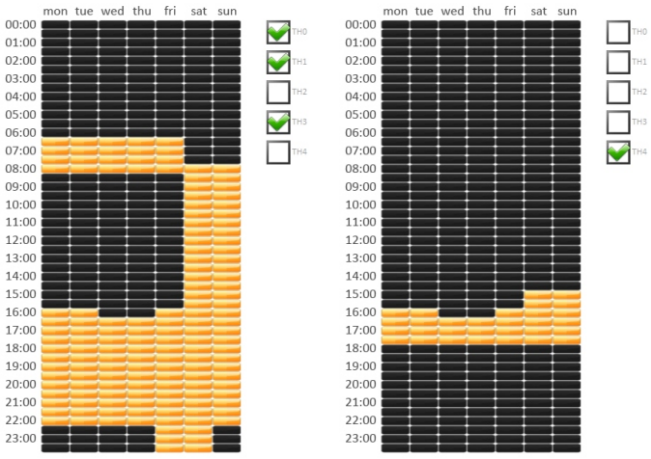
independent of internet connection

unlimited expansion possibilities

full user control over all parameters

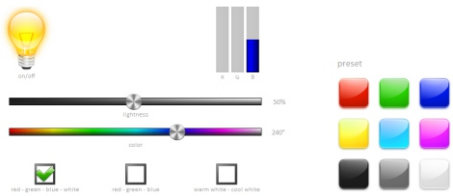
extremely simple to use

Multiple timetables



Things running up to your schedule. Select active hours, and devices to which they relate. Output can be manually overridden at any time.

Advanced RGB control



RGB mode allows control of hue, saturation and brightness; instead of individual red, green and blue channels.

White temperature mode goes between different shades of white, from cool daylight to warm incandescent tone.

Evo light synchronize light temperature with time of the day. At the evening, lights will smoothly slide into a warmer, cosy tone.

Utility

various lodging solutions

small house

large house

apartment building

urban house

farm house

bungalow

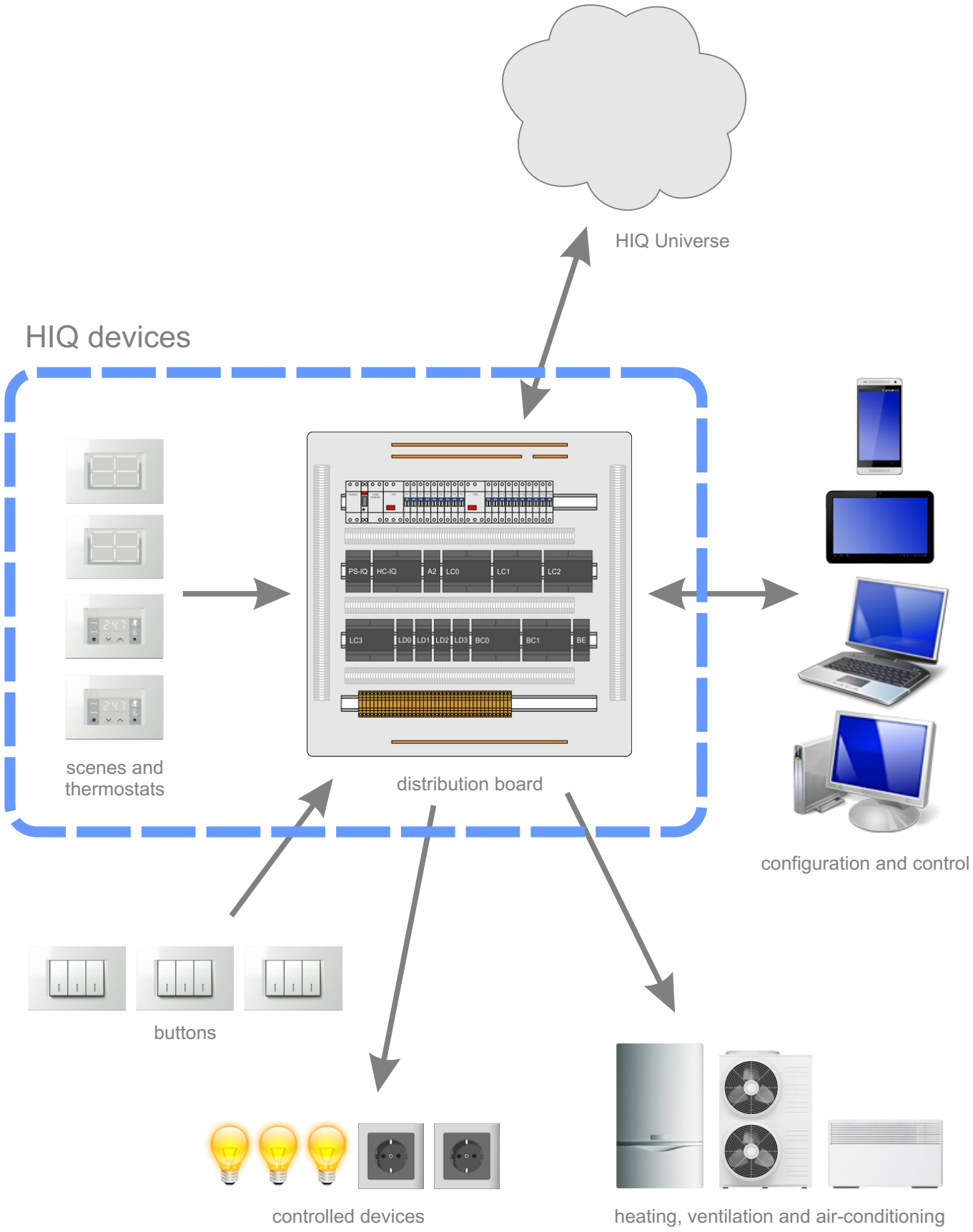
full renovation

new house

HIQ system is suitable for house or apartment, small or large, residence or weekend house. However, it is not the best choice for a partial retrofit, where a wireless solution may be prefered.

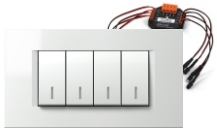
Concept

system architecture



Devices

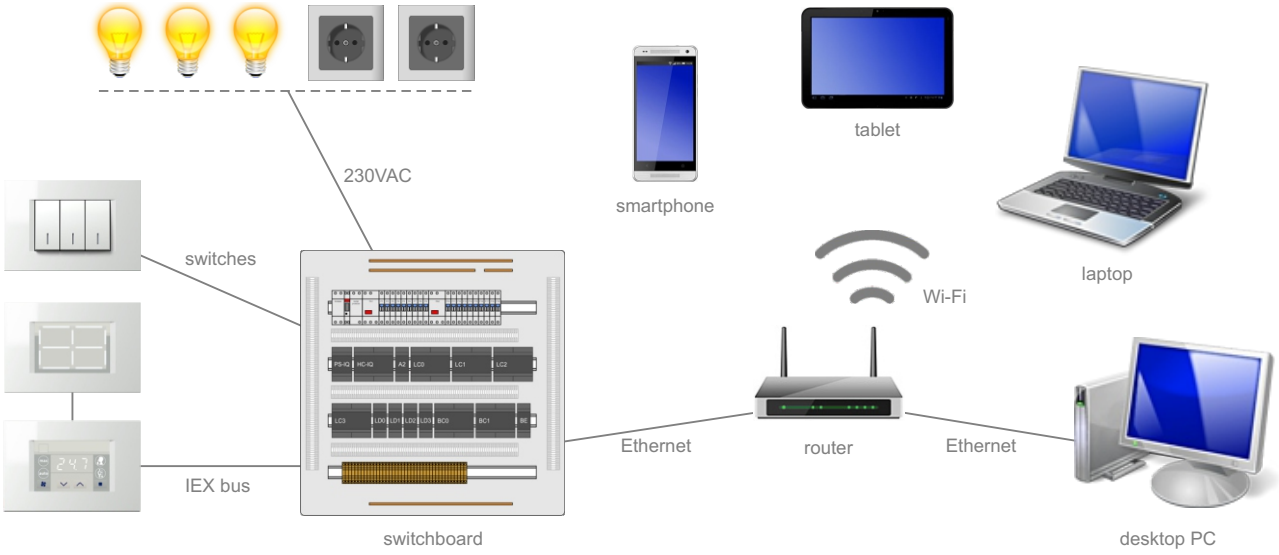
what are devices used for

Device		Used for	
	LC-10-IQ light controller		halogen and LED downlighters, all kinds of general-purpose lights
			managed socket for floor lamp, table fan, hi-fi system, projector, and all kinds of appliances
	LD-P4-IQ LD-D8-IQ universal dimmer		dimmable lights of all kinds
	LD-V4-IQ LED dimmer		LED stripes
	BC-5-IQ blinds controller		window blinds, shutters and jalousies, driven by a common up/down motor
	SC-4T-IQ scene controller		
	SC-4S-IQ scene controller		user-selectable arrangement of lights and blinds
	TH-1-IQ TH-2-IQ TH-3-IQ electronic thermostat		heating, cooling and fan control
	FC-1-IQ fan-coil controller	 	
	HC-IQ master controller		smartphone and PC connection, automation, timetable, alarm, energy and other functions

Expansion

out-of-the-box vs project-based features

Basic configuration



One home controller covers approximately 200m2, or one level in a multistory building.

Advanced system

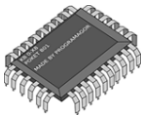
HIQ system offer many out-of-the-box functions. However, modern home automation is all about integration, and that is where the HIQ excels. HIQ is capable of connecting various devices into a functional system. Integration is project-based, each building is attuned to investor requirements.

Background

experience behind the product

Design
Cybrotech originate from industry control and automation, all devices are designed and build up to a much higher standards then usually expected in home automation.

Features
- hardware watch-dog
- transient supression
- short circuit tolerant outputs
- reverse polarity tolerant supply
- wide temperature range



Addressing
Devices are addressed automatically, not a single address is set by user.

Firmware
All devices are build to implement firmware upgrade, so the future for your investment is assured.

Responsive
From keypress to action, typical reaction time is 10 milliseconds.

CAN bus is a multi-master, deterministic bus which offer optimum between performance, network architecture and cost.

Power consumption
HIQ take a great care to use as little electricity as possible.

Autorange inputs always ensure a full scale motion.

No batteries
The whole system is operated from a single 24V power supply.

No hidden costs at any level - everything is simple and elegant (and beautiful, too).

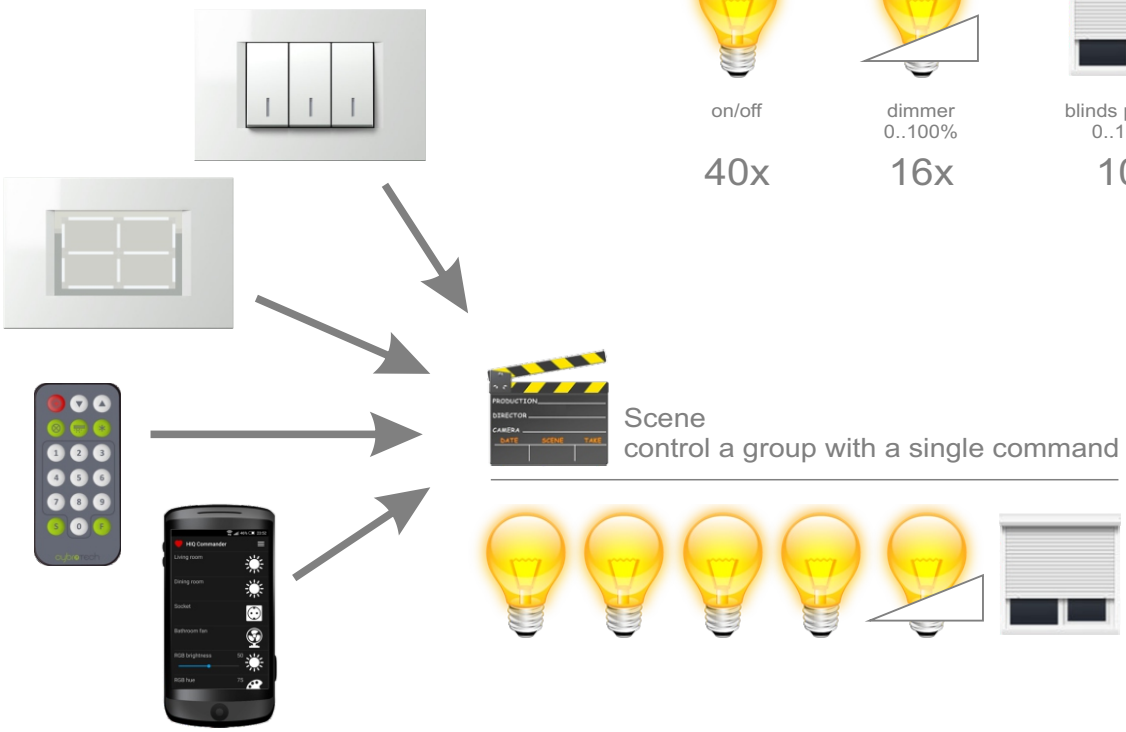
Programming tools are free, everybody is welcome to give it a try. Only a basic programming skills are needed. Join our group and discover how fun and simple house automation can be.

Wire vs. wireless
- no batteries
- more reliable
- faster response
- less EMI pollution
- simpler setup
- lower price

We don’t sell switches, luminaries, computers, portable devices, tablets or phones; you have a freedom to select anything you like, buget models or expensive designer items. What we do sell is electronics, software and home automation experience at it’s finest.

Lights and blinds

control anything from anywhere



Light type


incandescent/halogen


compact fluorescent


compact LED E27/E14


LED strip 12/24V

Blinds type


classic blinds


slatted blinds


Roman shades


managed socket for a floor lamp, table fan, dehumidifier, electric mosquito repellent, hi-fi system


blinds control with an intermediate position

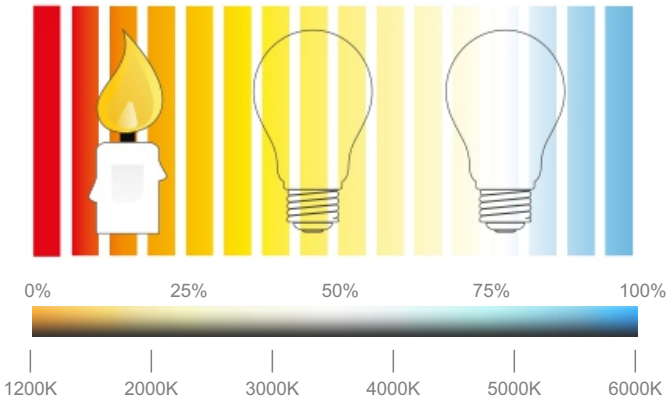
RGB dimmer

hue, saturation and brightness

In RGB mode, dimmer channels are connected to red, green, blue and white lights. White channel is optional. Instead of individual channels, user controls total brightness, hue and saturation.

RGB dimmer may be used in white temperature mode. Here, user controls brightness and white temperature. White light is obtained by mixing all four channels. For best result, use white strip 2700K (warm white) and RGB strip 5600K (cool white).

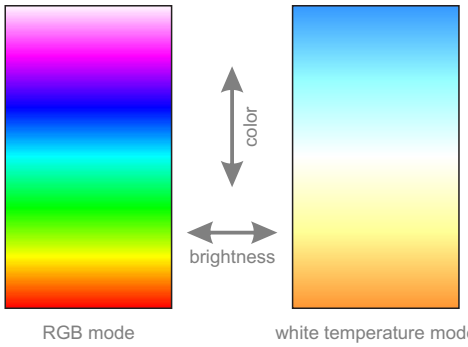
White temperature



In RGB mode, saturation goes from white to selected color (0..100%). In white temperature mode, saturation goes from natural white (white strip) to selected white (0..100%).

Color picker

Color picker is a quick way to choose a color, available with the HIQ Commander application. To control the RGB, just touch a color or slide finger over the screen.



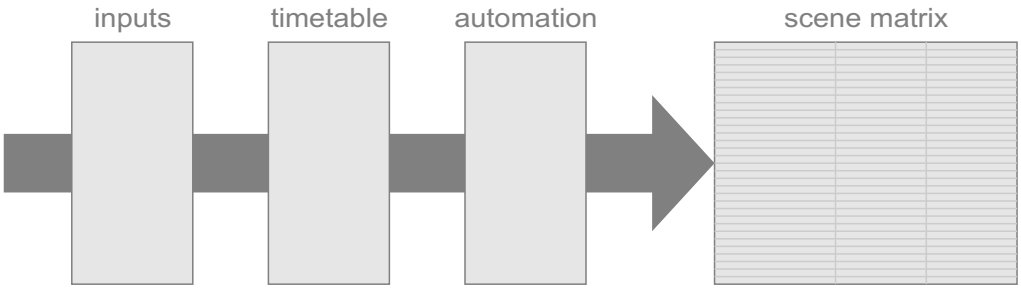
Color cycling

Automatically rotate through the available colors. Brightness and saturation are selected manually.

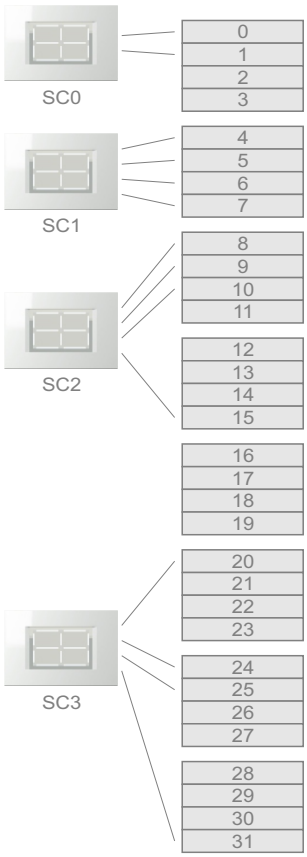
Scene

one key to rule them all

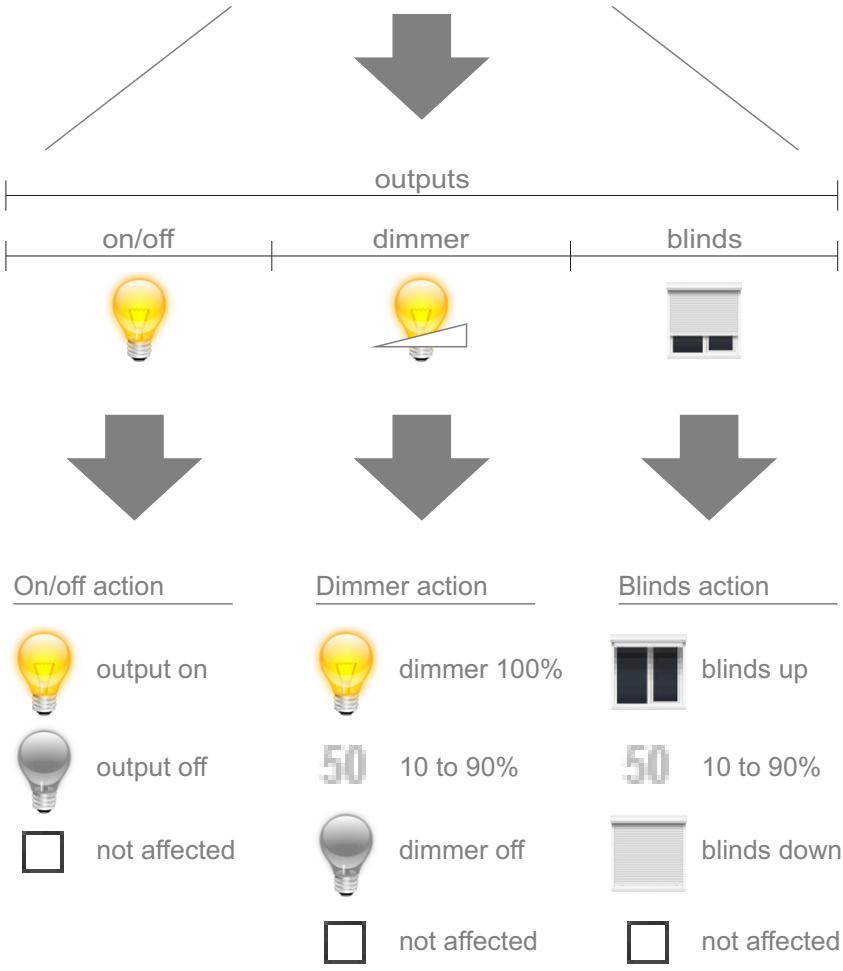
Scene is an user-defined memory to control lights, dimmers and blinds. Each output can be on, off or not affected by the scene.



Scene mapping

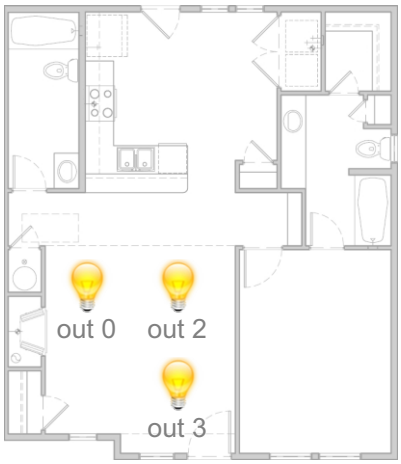


Each controller has up to 4 fully selectable scenes.



How to set a new scene

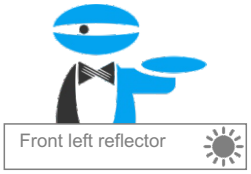
1. Identify lights that will be controlled by the scene



Using HIQ Configurator

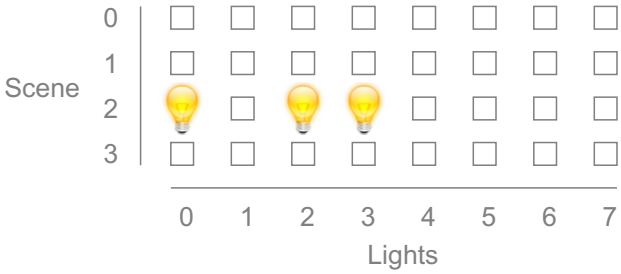
Open Lights+blinds page, check the output number

Using HIQ Commander



Press and hold until pop-up dialog appears, Information

2. Open HIQ Configurator / Scene editor and set the corresponding outputs



If you have scene controller, press write button to transfer new scene to the controller

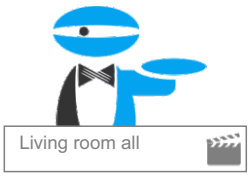
This procedure does two things: select which outputs are affected, and what to do with each output (on, off).

How to change a scene

Using HIQ Configurator

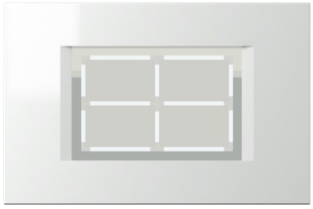
Open Scene editor and set the corresponding outputs

Using HIQ Commander



Press and hold scene button, then select Memorize

Using Scene controller



Press and hold a button, until a short beep

This procedure does not change which outputs are affected, only what each output does (on, off).

Automatic lights

where and how to use automatic lights

HIQ system offers several ways to automate lights. The appropriate configuration is selected based on the way how the space is intended to be used.

- smart light
- ready light
- motion sensor
- door sensor
- manual control

Smart light is based on presence and low light signal. It is used for living room and it can be combined with evo light.

Ready light take advantage of motion and door sensors. It is suitable for occasionally used spaces, such as bathroom.

Motion sensor automation cover hallway, stairs and porch. Light goes off after timeout.

Door sensor cover small rooms used temporary, like a closet, cloak or wardrobe.

Other areas, like a bedroom, can't be automated and must be handled manually.

Input mode and output mode settings

usage	input mode	output mode	function
on/off			press on, press off
on/off + timer			press on, press off when timer expires, light goes off
staircase			press on press again to reload the timer when timer expires, light goes off
doorbell			press on, release off
scene			press to set multiple lights press again to turn them all off
ready light			fully automatic light control
motion sensor			movement is keeping the light on when timer expires, light goes off
			movement is keeping the light on when timer expires, light goes off active only during the night
door sensor			open door to turn the light on close door to turn the light off
			open door to turn the light on close door to turn the light off active only during the night
not used			disabled, output not affected

manual control

ready light

motion sensor

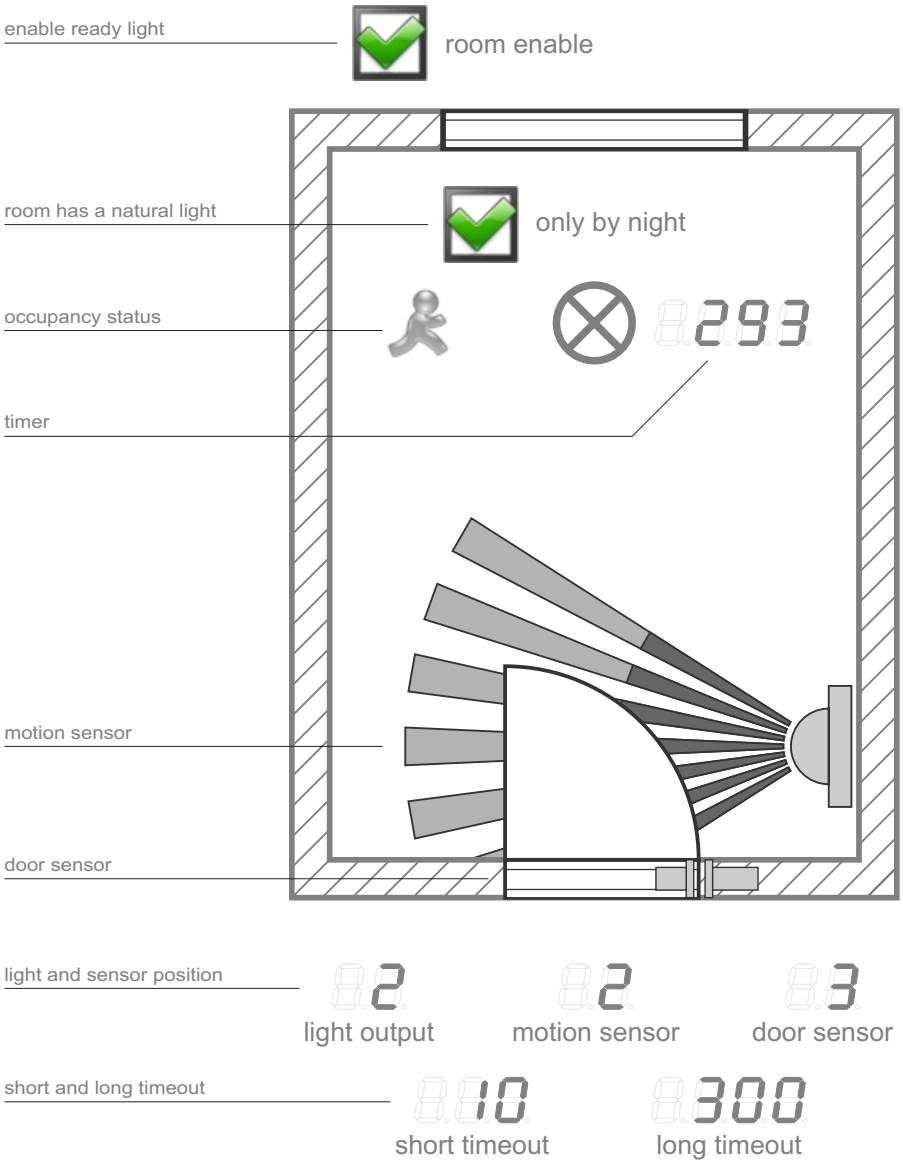
door sensor

Ready light

advanced automatic light control

Ready light is an advanced lighting system, based on motion and door sensors. It is best suited for closed spaces that residents don't occupy permanently.

Features:
- instant on as soon as door begins to open
- never turn off while somebody is inside
- quickly turns off when everybody is out



Input setup

Sensors are connected to spare inputs of light controller. Input must be configured to ready light mode.

Sensor placement

For a best result, sensor must be activated just after person closes the door.

Short timeout

Time from closing the door to light off. If time is too short, light may turn off after entering the room.

Long timeout

Time from leaving the room to light off, without closing the door.

Patent rights granted 2016-04-29 by patent office Slovenia, number 24867, class G06F 9/00.

How does it work

When door begins to open, reed sensor is activated and the light turns on. When a person enters the room and closes the door, PIR activation means person is surely in the room. As long as door is closed, light will stay on. When person leaves room and closes door, system will wait for a short time, then turn the light off. If the door is left open, long timeout is active. If the PIR sensor is not activated during that time, light switches off.

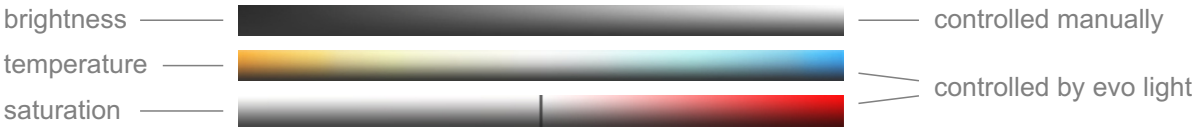
Evo light

automatic transition to warm evening lights

Evo light is a half-automatic system for controlling light temperature. It uses RGB dimmer in white temperature mode. Brightness is controlled by user, hue and saturation are controlled by the system.

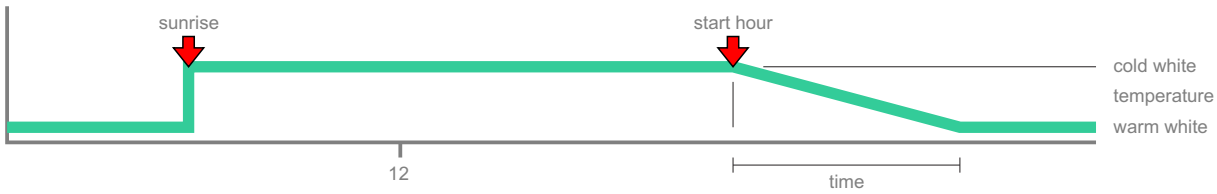
During the selected period, lights are going from a cool white to warm white, perfectly matching our natural daily cycle.

System can be combined with smart lights. In that case, operation is fully automatic, smart lights control brightness, and evo light control light temperature.



Term evo is a short for ‘evolution’. During the most of our evolutionary past, our ancestors were using no artifical lighting, so daily rhythm was synchronized by sunlight. Evo light is an attempt to mimic that natural conditions.

Operation



To configure evo light, first experimentally find the best light for early and late evening. Start hour and transition time should be configured so the warm light is reached at least one hour before bedtime.

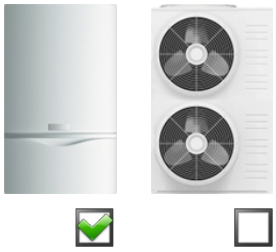
When dimmer is switched back to RGB mode, evo light will automatically stop. Enabling again, it will catch on correctly, recalculating the new parameters.

Note: evo light setup is located on RGB page.

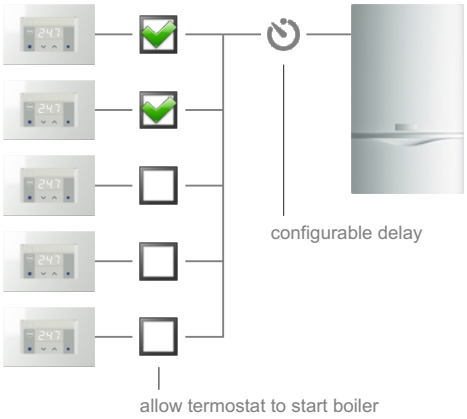
Heating and cooling

general features of heating/cooling system

Heating/cooling

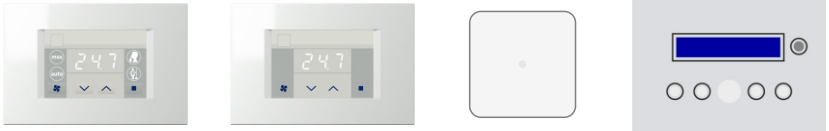


Energy demand



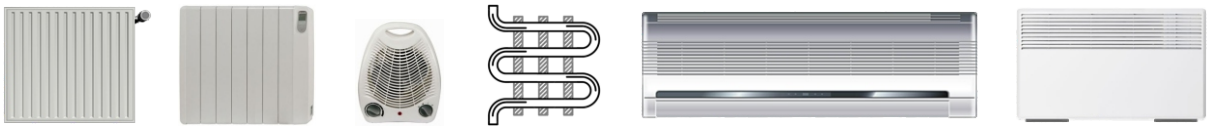
Up to five regulation zones are supported, each with their own thermostat. Generally, energy comes from boiler for heating and chiller for cooling, but other combinations are possible.

Thermostat



TH-1M-IQ | TH-1T-IQ | TH-2-IQ | TH-3-IQ

Actuator

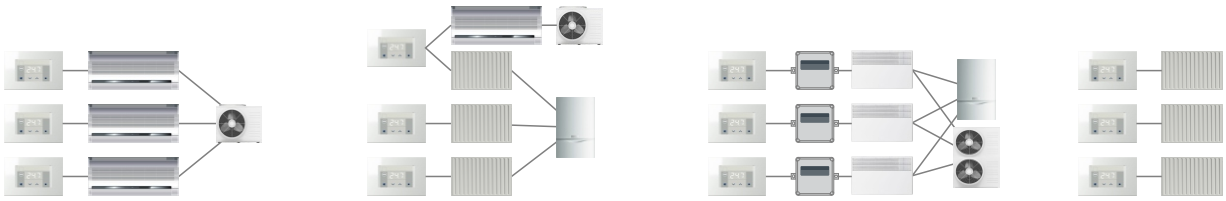


hot water radiator | electric radiator | electric fan heater | floor heating | air condition | fan-coil convector

direct | external 16A relay | fan coil actuator

System is versatile enough to handle most actuator options. Hot water valve is connected directly, others require either external power relay, or fan coil actuator. Different actuator types can be mixed.

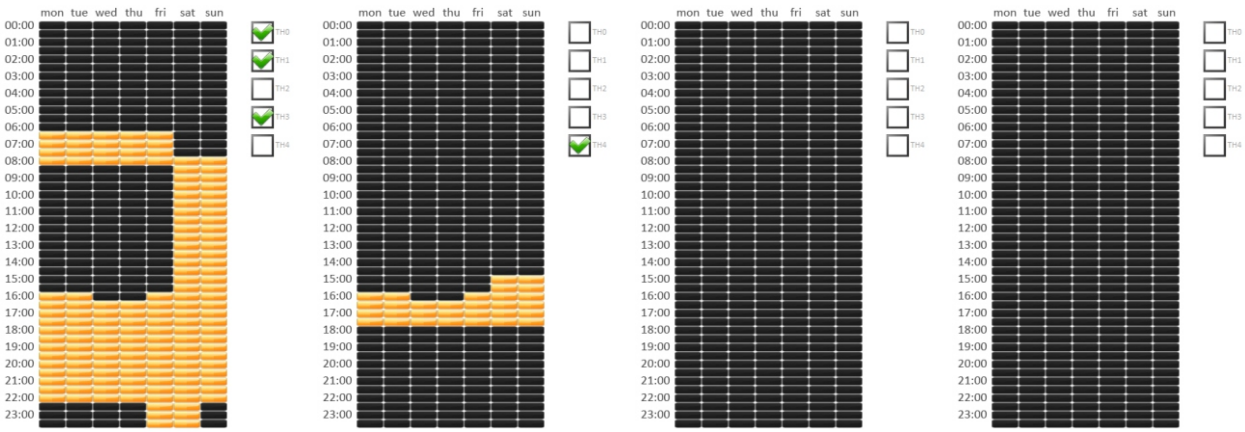
Examples



air condition heating and cooling | radiator heating, air condition cooling | fan coil heating and cooling | electric heating

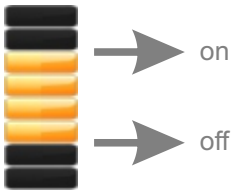
Timetable

weekly event scheduler

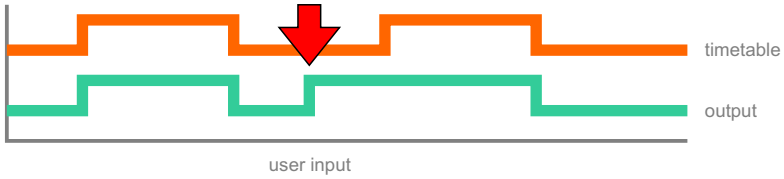


timetable 0 timetable 1 timetable 2 timetable 3

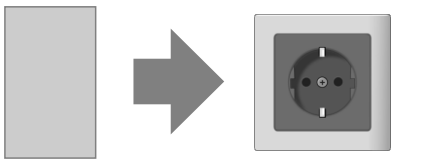
Selected part is a period when heating system is active. Each rectangle represents a half hour. Tables are fully independent of each other. To set multiple fields, hold left button and drag mouse. Each timetable can directly control one output or apply a scene.



Each block create on and off event.



When timetable controls an output, manual override is possible at any time, timetable will catch on with the next transition.



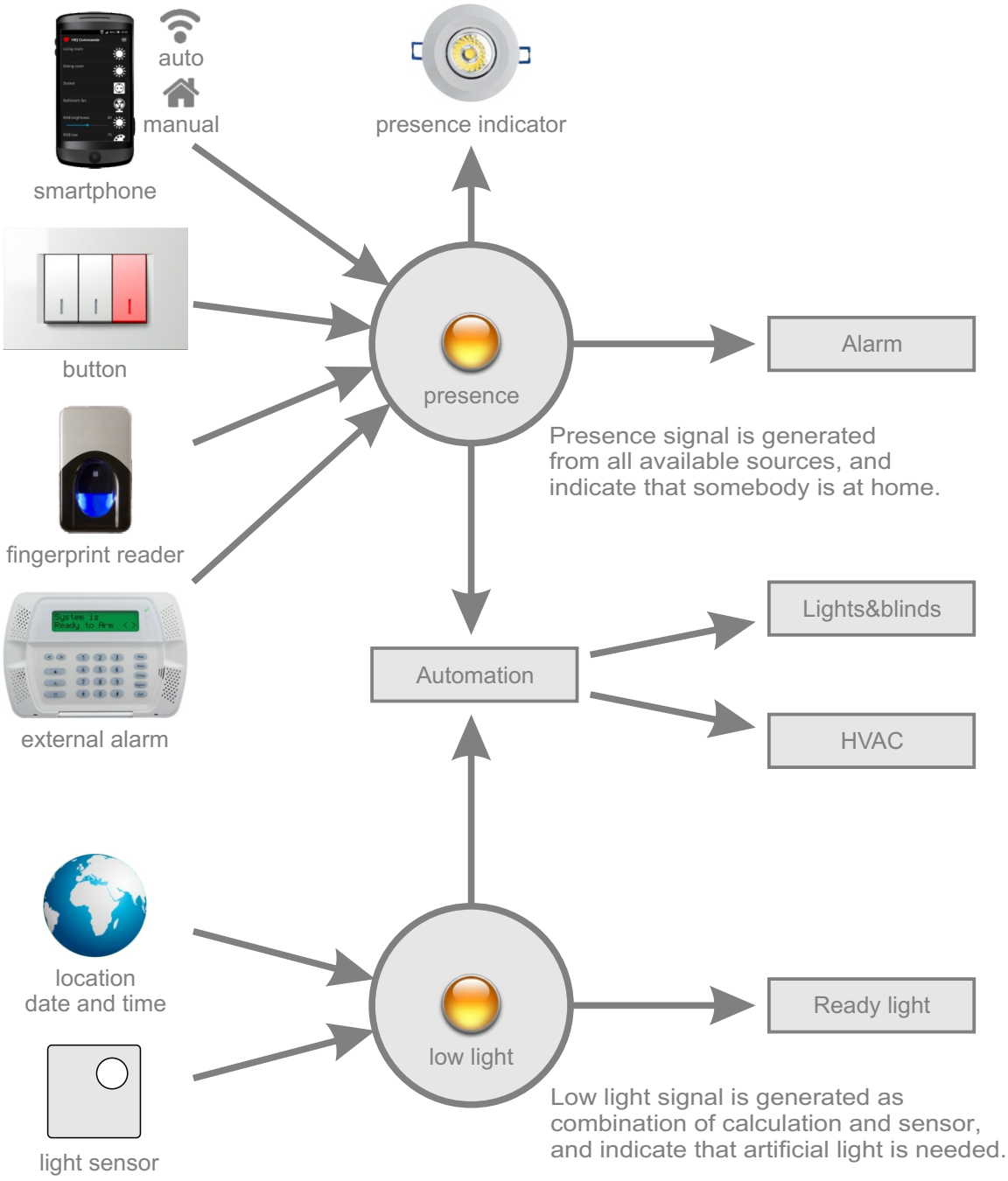
timetable managed socket

Timetable can be used to control mostly anything. Use a managed socket to create a time plan for your devices.

A list of hollidays can be configured. On a holliday, timetable is running as it is a Sunday.

Key concepts

low light and presence signals



Presence goes up and down as you are going out and comming home.

Low light goes up and down in accordance with the sunlight.

Automation

execute tasks automatically

Coming home
Let your house show how happy it is when you come back home. When phone connects to your wi-fi network, lights and heating will turn on automatically.

Leaving home
When you leave the house, smartphone disconnects from home wi-fi network, a few minutes later system will turn lights and heating off.

Smart lights
In the evening hours, when sunlight goes down, automatically set evening scene, turn on the lights and lower blinds. Works only when tenants are at home.

Random lights
When nobody is at home, discourage snooping with a simple deception: turn lights on and off to leave impression that house is not empty.

Comfort wake up
System will turn thermostat on a predefined number of minutes before smartphone rings, whenever you set the alarm.

Sunny wake up
Wake up naturally, by gradually lifting blinds and let the sunlight wake you up, a predefined number of minutes before smartphone alarm.

Default setpoint
When active, any setpoint adjustment is valid for about half hour, then it returns to the temperature defined in automation setup.

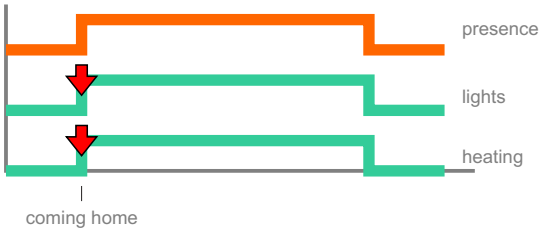
Bio offset
Following your natural biological rhythm (chronotype), let the house be a little warmer (or cooler) at the specified time of the day.

Connect charger
Do you charge your phone every day before going to bed? Use that action to automatically turn lights and heating off.

Disconnect charger
Phone is charged until morning, right? When disconnecting the charger, automatically turn lights and heating on.

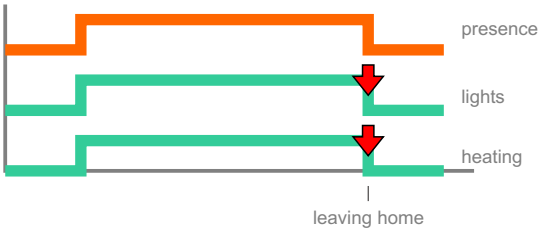
The most frequent question about home automation is - how to turn the damn thing off. However, regardless the inglorious reputation of smart machines, we strongly believe HIQ will gradually grow up into your daily routine. Events are generated automatically, you are in charge to assign actions according to your preferences.

Coming home



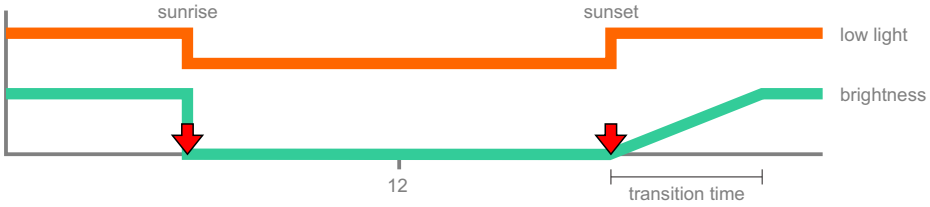
Use presence signal to set the scene and turn the heating on.

Leaving home



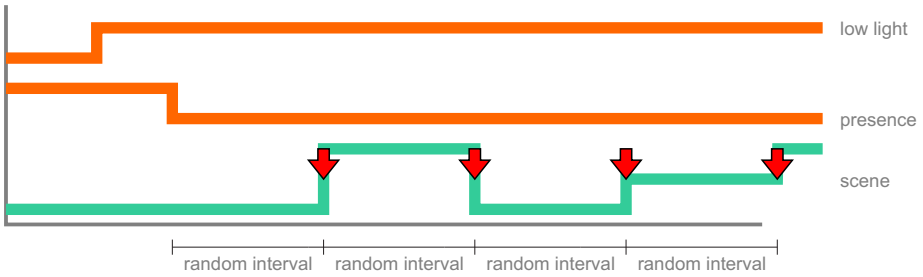
Use presence signal to turn the lights and heating off.

Smart lights



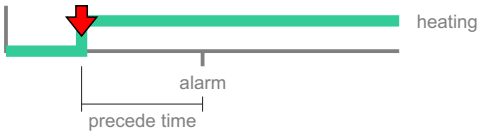
Automatic lights with an optional slope control, synchronized with the low light signal. Smart lights are also dependent on presence signal.

Random lights



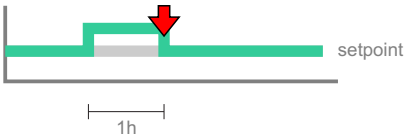
Turn the lights on and off to leave the impression that house is not empty, to discourage burglars.

Comfort wake up



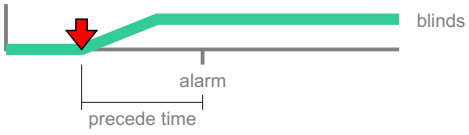
Turn the heating on a few minutes before the phone starts ringing.

Default setpoint



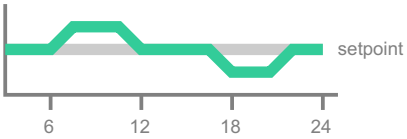
When setpoint is adjusted manually, one hour later it will return to predefined value.

Sunny wake up



Lift the blinds up a few minutes before the phone starts ringing.

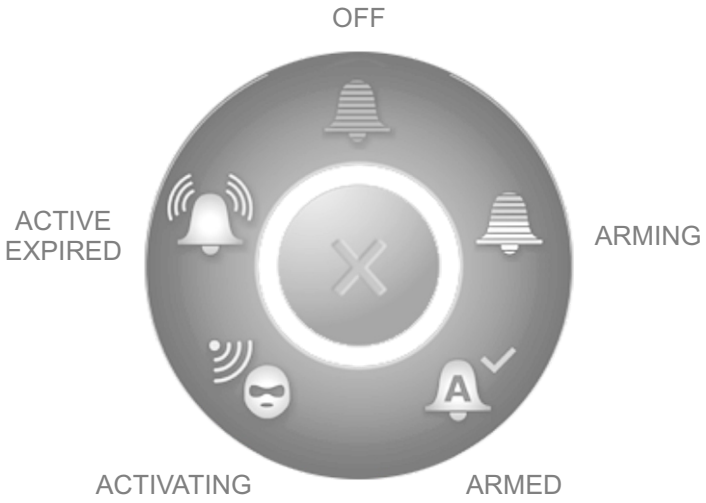
Bio offset



Small temperature correction depending on time of the day. Adjustable up or down.

Alarm

security at no additional cost



OFF	alarm inactive
ARMING	alarm turned on and will be armed when time expires (default 30s)
ARMED	alarm ready, no intrusion
ACTIVATING	sensor activated, alarm has to be turned off before delay time expires (default 30s)
ACTIVE	burglary, siren output active
EXPIRED	delay time expired, siren is turned off (default 120s)

Alarm on/off

- longpress on a selected wall switch
- smartphone using HIQ Commander
- smartphone by connecting to wi-fi (Android only)
- PC with HIQ Configurator
- PC with HIQ Configurator and 4-digit code
- automatically with presence signal

On/off indicator

- small light connected to an output
- blinking of a selected light
- smartphone with HIQ Commander
- PC with HIQ Configurator

Zone covering example

zone 0 - house exterior
zone 1 - ground floor, living area
zone 2 - first floor, sleeping area

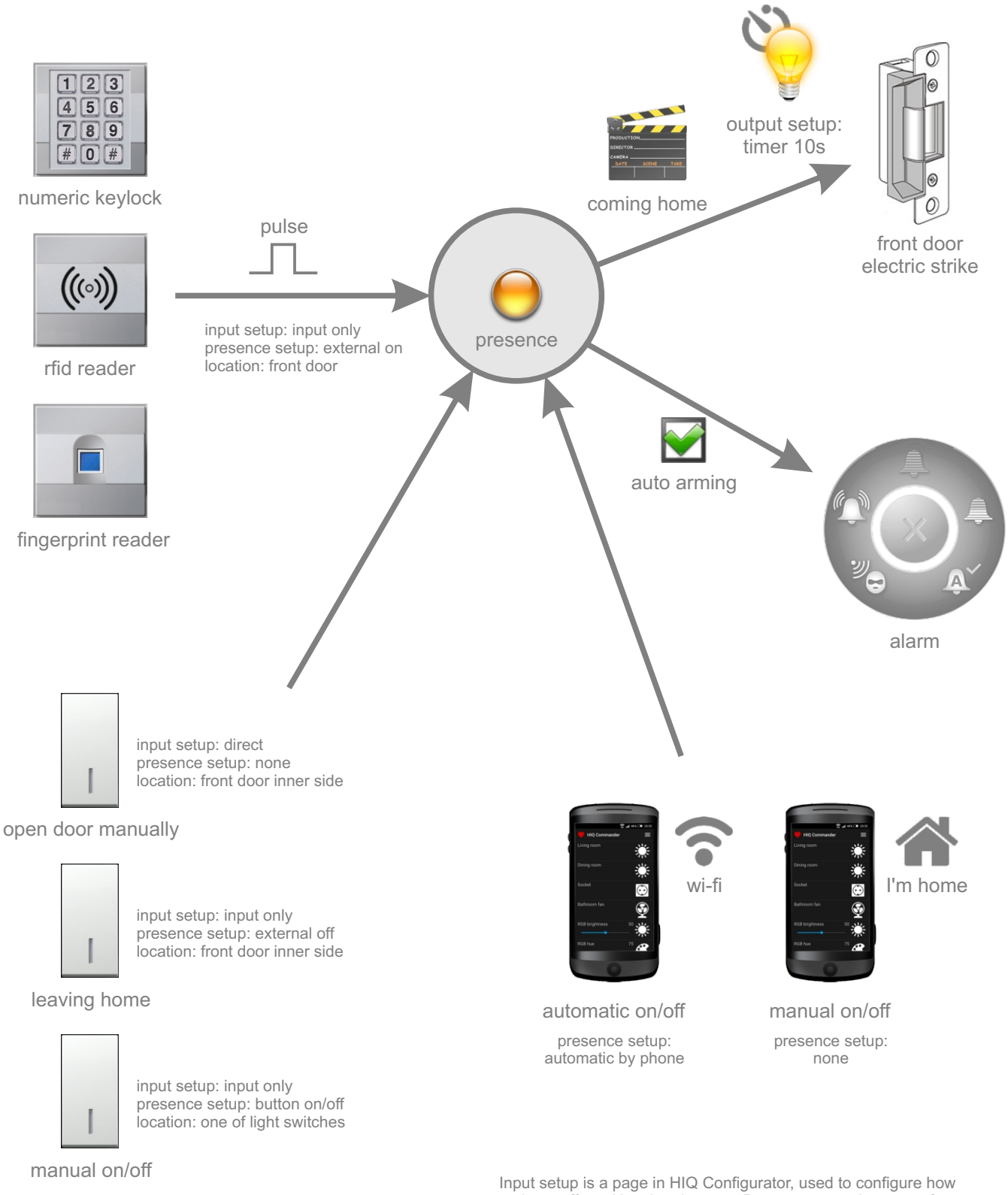
zone 0
residents at home
minimum security

zone 0+1
residents sleeping
partial security

zone 0+1+2
residents away
full security

Access control

unlock front door automatically



Input setup is a page in HIQ Configurator, used to configure how an input affects it's related output. Presence setup is a part of Automation, used to configure what will activate the presence signal, and what will be activated by the presence signal. Location is a place where device is expected to be installed.

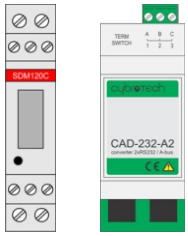
Energy

electricity measurement

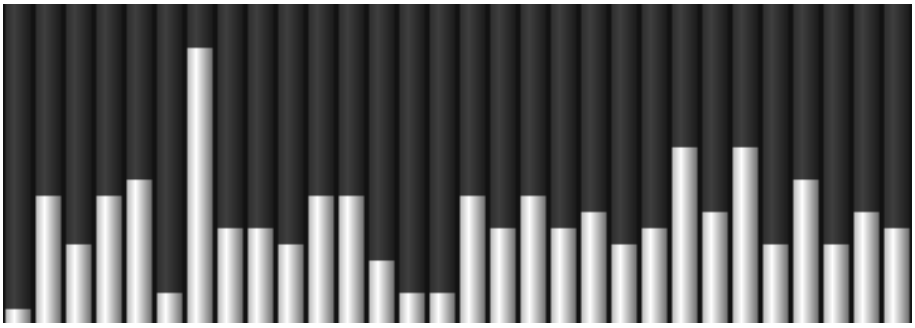
Energy monitoring is the first step to efficient energy usage. Once knowing how much energy something is using, one can make a rational strategy for saving.

Required hardware

SDM-120C power meter
CAD-232-A2 converter



Energy consumption in last 30 days [kWh]



Bargraph for last 30 days is a quick way to check for an excess consumption.

Energy by output

Power count - a number how many times the output is turned on.

Working hours - total number of hours the output spent in on state.

Nominal power - output power configured by user. It can be measured by resetable power meter, or read from the label.

Current power - output power at the current moment.

Energy today - total energy used from last midnight, expressed in Watt-hours.

Energy total - total energy consumed by the specific output.

How to measure device power

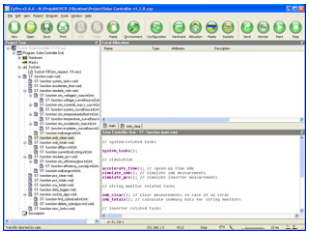
1. Turn the output off.
2. Reset relative power.
3. Turn the output on.

A few seconds later, measured relative power is displayed. If the reading is not stable, temporary turn off any load which may consume variable amount of power.

Measured rating may be used to set the nominal power on ‘By output’ page.

Customization

get the maximum out of your system



integrated development environment

The goal of customization is to add functionality related to some specific needs. HIQ system is flexible and open for all kinds of modifications. This page will give a short overview how to start with modifications.

Customization is for the one who wants to get the maximum out of the system. It requires a basic programming skills. Programming language is «structured text», a kind of simplified Pascal. Development environment (editor, compiler, on-line monitor) is called CyPro, and it is free to download from the company web site.

standard HIQ system

custom program

custom devices

Modify HIQ program
- load program source directly from controller
- put your code into custom_algo module
- send modified program back to controller

Combine HIQ and non-HIQ modules
- all HIQ modules are fully IEX compatible
- delete unused HIQ modules from hardware setup
- add your own selection of IEX modules
- modify program according to your needs

HIQ Commander for non-HIQ applications
- allocate variables for autodetection manually
- use allocated variables in your cybro application
- check Cypro example HiqCommanderDemo

Non-standard HIQ configuration
- custom selection of modules, e.g. 10x LC-10-IQ
- hardware setup, manually add new modules
- adjust program and mini scada up to your needs

Modify HIQ Mini View for your house
- no special tools are needed
- configuration consist of one text file and images
- use Notepad to change configuration file
- use an image editor to create custom graphics

Connect HIQ systems together
- create system as big as you like
- use sockets as a link between controllers
- implement all kinds of commands

Example

Task: add counter how many times light is switched on

1. CyPro

- allocate variable lc00_qx00_count, make it retentive
- add the following lines of code into program
- send program to controller

2. Mini scada

- open CyBroMiniView.xml in text editor (Notepad)
- add object to xml configuration, inside the first page
- use scada (ctrl-E) to move object to the right place


```
if fp(lc00_qx00) then
  lc00_qx00_count:=lc00_qx00_count+1;
end_if;
```

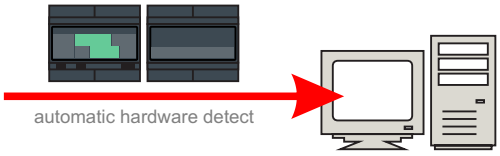
```
<object>
  <type>led</type>
  <var>c1000.lc00_qx00_counter</var>
  <digits>4</digits>
  <decimals>0</decimals>
  <zeroblanking>1</zeroblanking>
  <sign>0</sign>
  <ledcolor>$FF0000</ledcolor>
  <height>42</height>
  <x>100</x>
  <y>100</y>
</object>
```

HIQ Configurator

system setup and configuration

www.cybrotech.com

Install



Package content

HIQ Configurator
- control center
- system configuration
- diagnostics and repair

HIQ Timeplot
- temperature timeplot
- consumption timeplot
- 1080p screen requred

HIQ View
- floorplan control
- configurable by user
- based on mini scada

HIQ Simulator

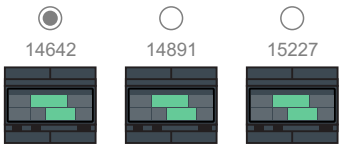
test HIQ features without the actual hardware

System configuration

System limits

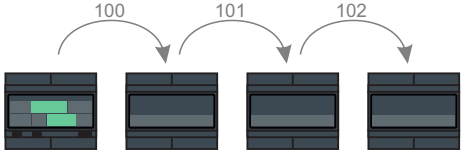
1x	HC-IQ main controller	one central controller
4x	LC-10-IQ light controller	40 on/off outputs
4x	LD-V4-IQ LED dimmer	16 dimmer channels
or 4x	LD-P4-IQ universal dimmer	
or 2x	LD-D8-IQ DALI dimmer	
2x	BC-5-IQ blinds controller	10 blinds
4x	SC-4-IQ scene controller	16 scenes
5x	TH-1-IQ thermostat	5 regulation zones
5x	FC-1-IQ fan-coil controller	

Autodetect



To select a controller to work with, use Autodetect function.

Autoaddress



To get modules address in right order, use Autoaddress.

Rename

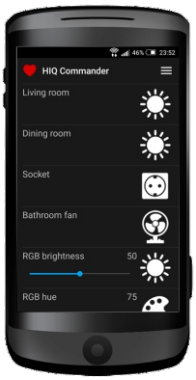
ctrl-E - edit mode
right click - rename
ctrl-E - return to normal mode

HIQ Commander

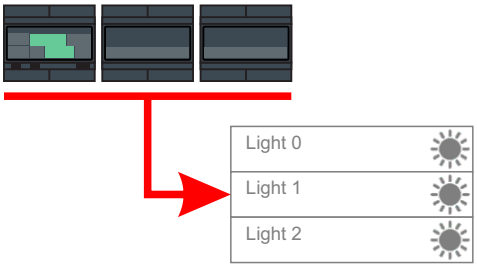
application for your smartphone

Google Play

App Store



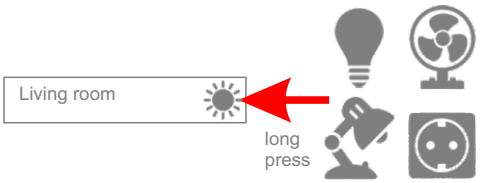
Autodetect all devices



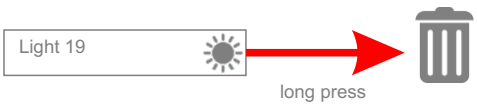
Autodetect must run in local network. If internet is available, configuration automatically registers on HIQ Home server, enabling remote access.

Rename

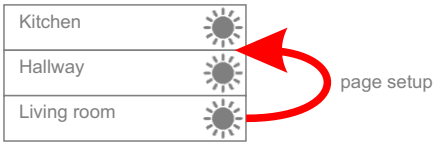
Change icon



Remove



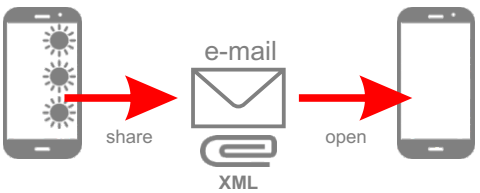
Rearrange



Features

Features		
direct control for lights	✚	✚
direct control for blinds	✚	✚
direct control for thermostats	✚	✚
comming home leaving home	✚	✖
warm wake up sunny wake up	✚	✖
smart lights random lights	✚	✚
default setpoint bio offset	✚	✚
connect charger disconnect charger	✚	✖
export configuration to another phone	✚	✚

Copy configuration to another phone



- click Share
- click share icon
- select your mail application
- enter recipient, send email

- open received email
- click the attachment
- when asked, select HIQ Commander
- click OK to accept new configuration

Application limits

HIQ Commander can handle more devices then what is limited by the system:

10x LC
10x LD
10x BC
10x TH

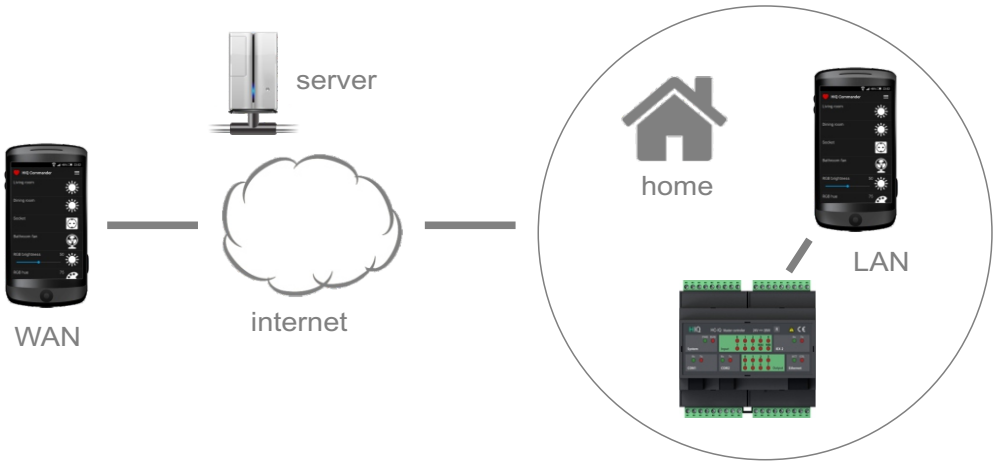
Additional devices may be used in custom projects.

HIQ Universe

cloud access and management

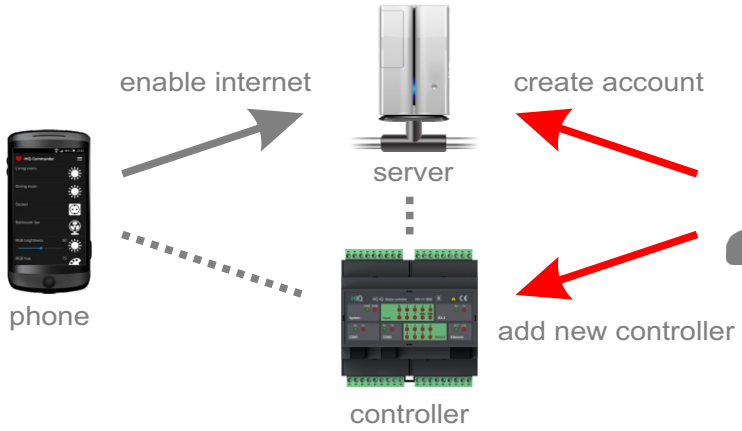
my.hiq-home.com

Local and internet connection



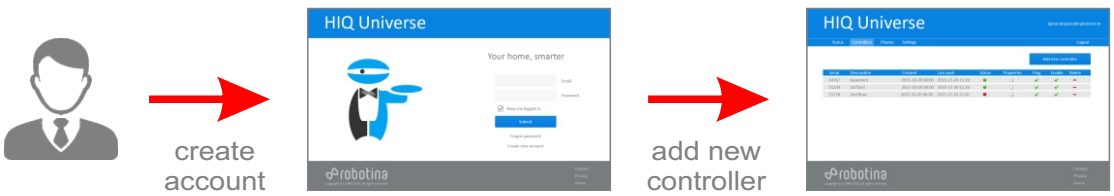
LAN / WAN switching is fully automatic. Number of phones is not limited.

Remote access and management



HIQ account consists of two parts, remote access and user account. Remote access is automatically created with autodetect command. User account is created by registering on my.hiq-home.com, and it allows management of connected controllers and phones.

Account management



manage controllers

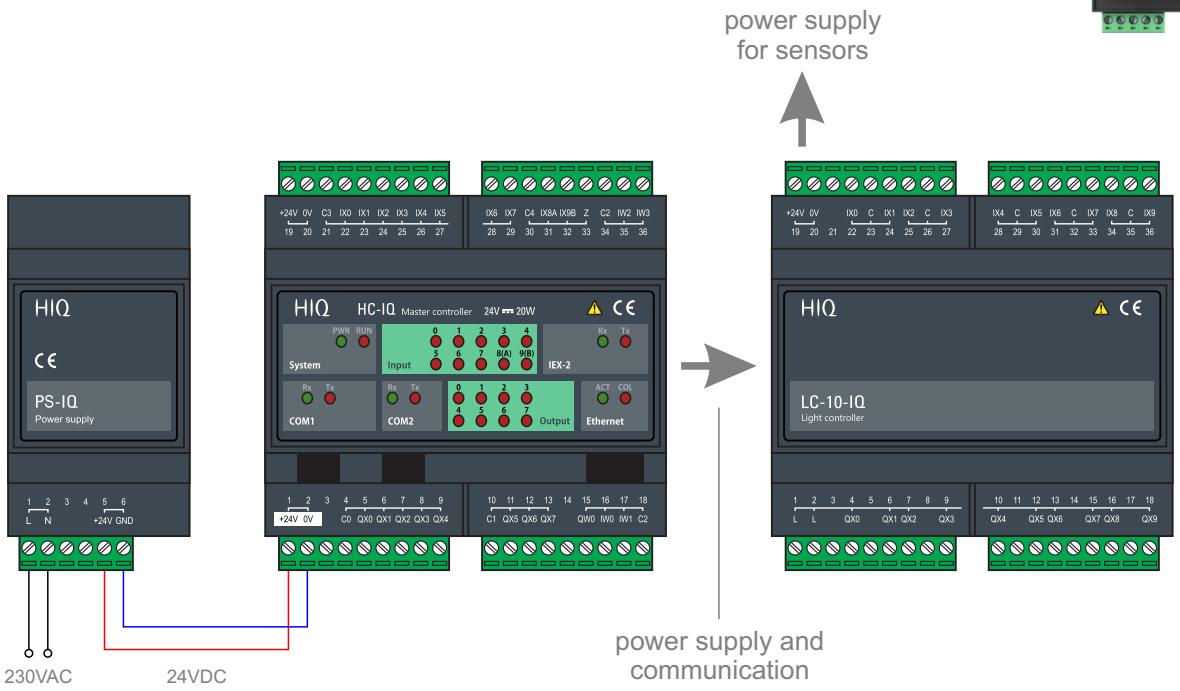
disable particular phone

close network for new phones

HIQ Universe may also give access to advanced services, provided by various providers.

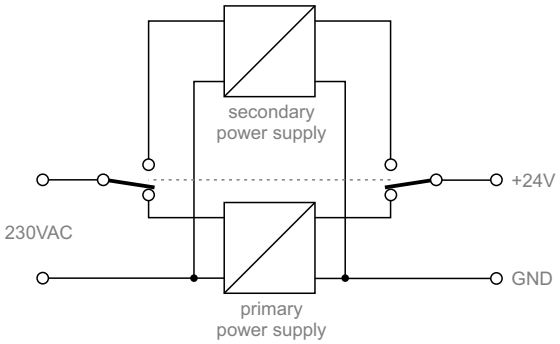
PS-IQ power supply

power source for the whole system

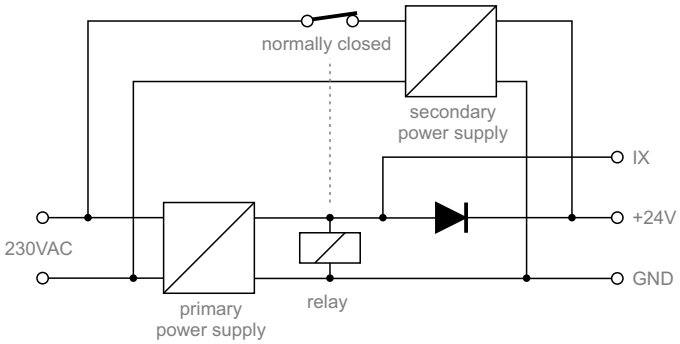


Secondary power supply

manual switching



automatic switching



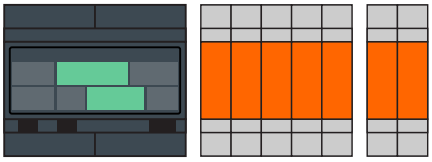
In case of primary power supply failure, secondary supply is used to ensure uninterrupted operation. Switching to secundary power may be manual or automatic. In case of automatic switching, a spare input (ix) is used to indicate the failure.

Technical specifications

Input:	100..240Vac, 50/60Hz
Output:	24V 2A (50W)
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	DIN rail

HC-IQ master controller

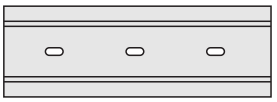
home automation central hub



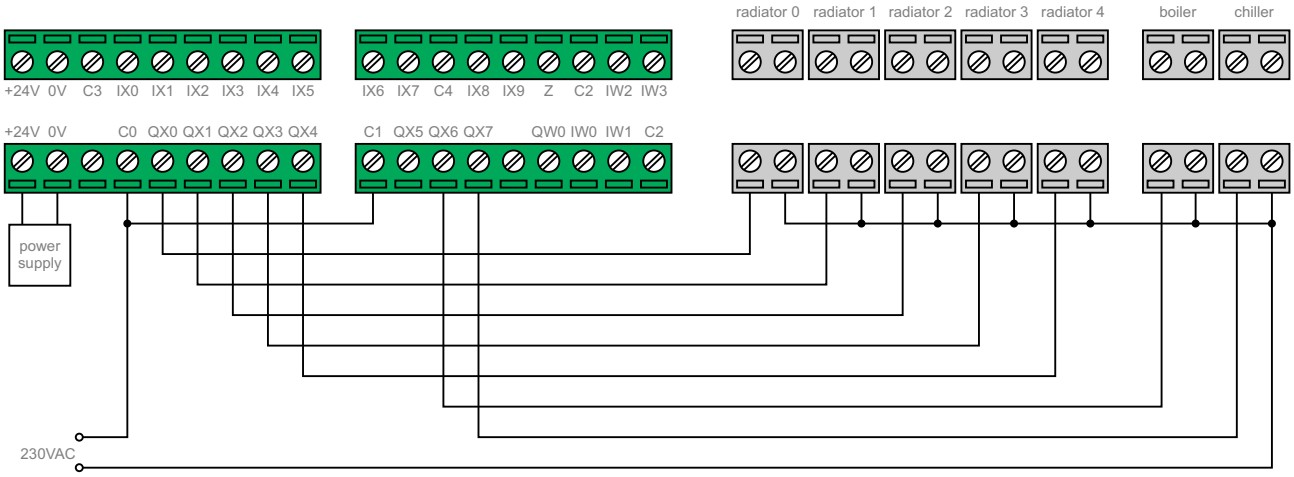
QX0 - radiator 0
QX1 - radiator 1
QX2 - radiator 2
QX3 - radiator 3
QX4 - radiator 4
QX5
QX6 - boiler
QX7 - chiller

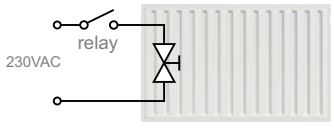
installation relay 16A/230V

Mounting: 35mm DIN rail 6M

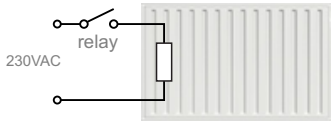


106





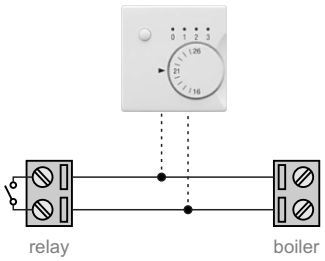
hot-water radiator



electric radiator

air condition
control through power suppy

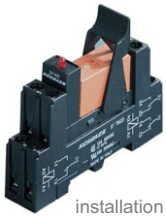
air condition
control through window switch input



old thermostat used as a backup

Features

smartphone connection
alarm
HVAC
timetable
automation
scene link
internet connection



installation relay

Internal relay is used for valves, other loads are recommended to use an additional 16A installation relay.

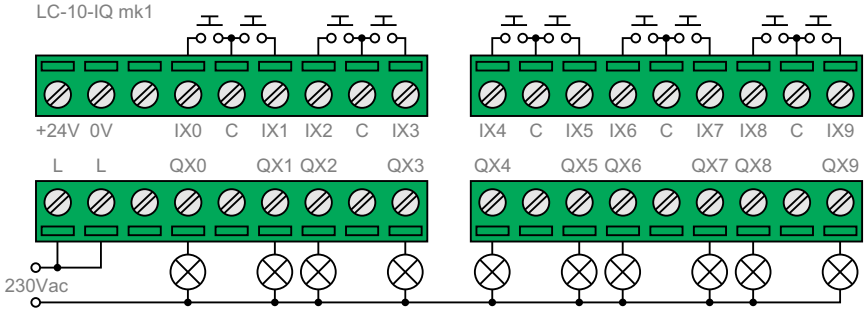
Technical specifications

Relay outputs:	3A/250V resistive load
Communication:	Ethernet 100M
Power supply:	24V 50mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	DIN rail
Dimensions:	106x108x58mm
Weight:	360g
Standards:	EN 60730-1

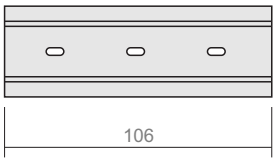
LC-10-IQ light controller

10 relay outputs

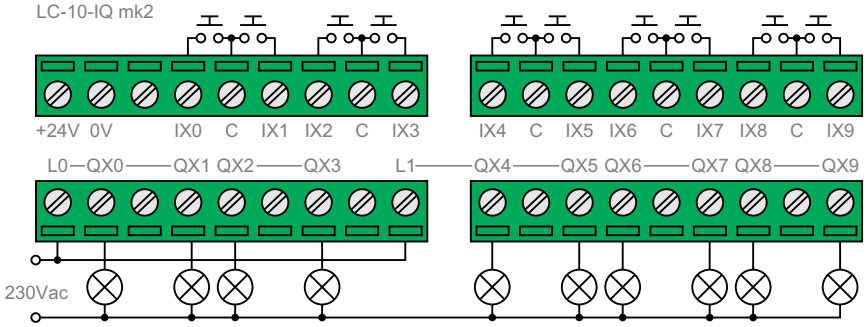
LC-10-IQ mk1



Mounting: 35mm DIN rail 6M



LC-10-IQ mk2



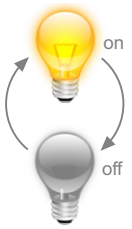
Features

8A nominal output current

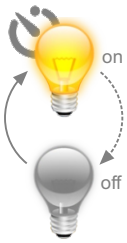
power outage:
<10min - lights come back
>10min - lights will stay off

managed socket
for devices such as dehumidifier, hi-fi system, floor lamp, portable fan, electric mosquito repellent...

Output mode



on/off mode
button turns light on and off



timer mode
button turns light on, and it automatically goes off after the predefined time

Circuit protection

6A MCB (miniature circuit breaker) type B is recommended.

mk1 (1x10): When total power of all channels is less then 1400W, a single 6A MCB is connected to both L terminals. Otherwise each channel should have a separate 6A MCB.

mk2 (4+6): When total power of each group is less then 1400W, two 6A MCBs are connected to terminals L0 and L1. Otherwise each channel should have a separate 6A MCB.

Managed socket should always have a separate 6A MCB. Each output must be connected to a single socket. Socket must have a noticeably different front plate with the label: "Caution: 1400W max".

Input mode

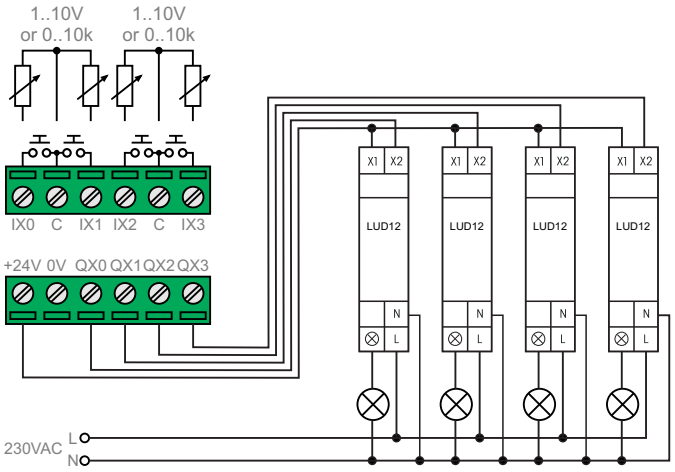
Input mode define how an input affect the output. Toggle, staircase, doorbell, motion and door sensor are handled internally. Scene and ready light are handled by master controller.

Technical specifications

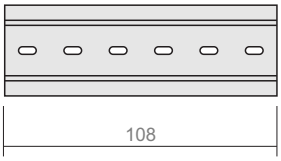
Output power per relay:	
- incadescent / halogen 230V	800W
- halogen 12V with transformer	400W
- LED with transformer or compact	400W
- fluorescent with electronic ballast	400W
- parallel compensated fluo lamps	250W/30uF
- electric heater (any resistive load)	1400W
Expected contact life:	20000 (100% load) 100000 (50% load)
Total output power all channels (mk1):	4000W
Total output power per group (mk2):	2800W
Maximum length of input cable:	50m
Power supply:	24V 120mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	106x108x58mm
Weight:	250g
Standards:	EN 60730-1

LD-P4-IQ universal dimmer

4-channel dimmer with a separate power driver



Mounting: 35mm DIN rail 2M + 4x1M

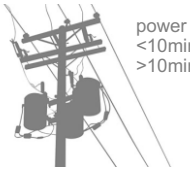


Features

RGB mode
hue, saturation, brightness
instead of individual RGB

white temperature mode
adjust hue in range from
warm white to cold white

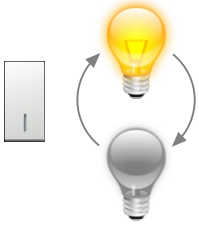
button or potentiometer input:
- autodetect input mode
- mixed controlls possible
- potentiometer auto-range



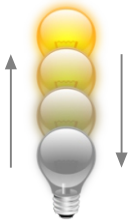
power outage:
<10min - lights come back
>10min - lights will stay off

- automatic load detection
- low noise zero switching
- electronic overload protection
- overtemperature shutdown

Operation

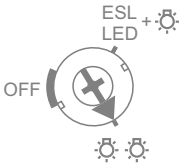


short press: on/off



long press: 0..100%

Driver rotary switch



switch must be
adjusted to the
indicated position

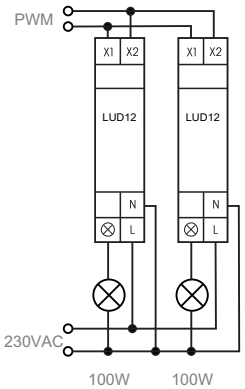
Output options

incandescent/halogen

compact LED E27/E14

compact fluorescent

Parallel connection to
increase output power



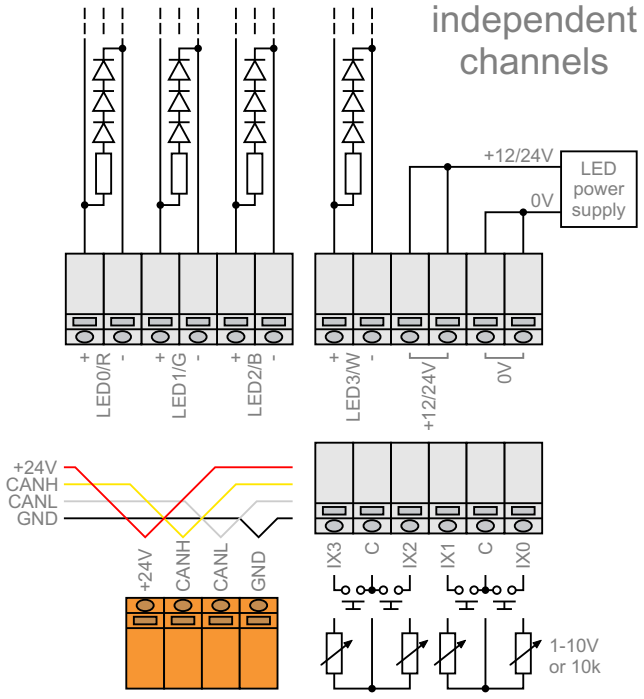
Technical specifications

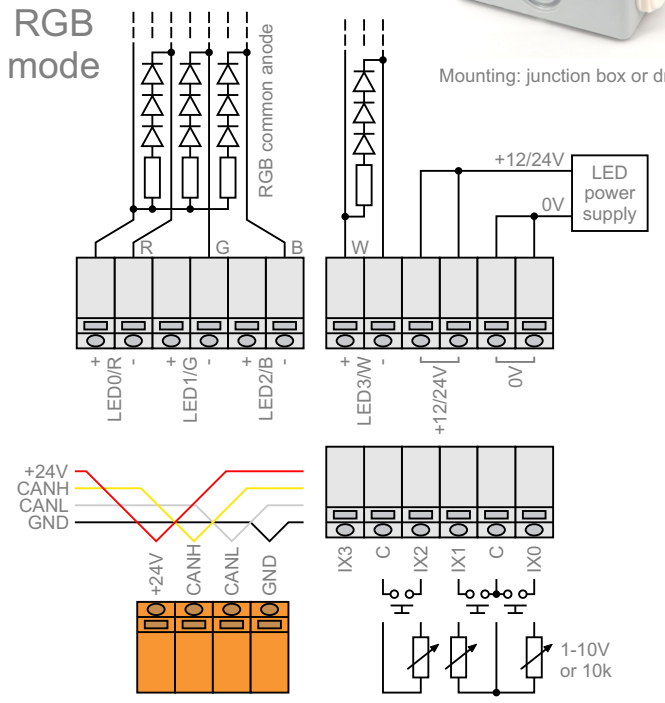
Lamp power supply:	230V
Output power per driver:	100W
Drivers per output channel:	1..10
Driver control signal:	PWM 100Hz 24V
Power supply:	24V 25mA
Galvanic separation:	supply/outputs
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	36x108x58mm
Weight:	80g
Standards:	EN 60730-1

LD-V4-IQ LED dimmer

4-channel constant voltage dimmer for LED stripes

Mounting: junction box or drywall





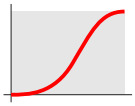
Features

RGB mode
hue, saturation, brightness
instead of individual RGB

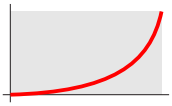
white temperature mode
adjust hue in range from
warm white to cold white

button or potentiometer input:
- autodetect input mode
- mixed controlls possible
- potentiometer auto-range

S-shaped on/off curve:
- soft start and landing
- fast and slow mode
- reduce electric noise



exponential output curve:
- natural feeling
- lowest level is 0.025%
- smooth transition



500Hz

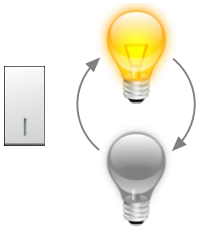
high frequency PWM:
- no flickering
- avoid headache
- reduce eye-strain

output protection:
- overcurrent
- overvoltage
- undervoltage
- watch-dog

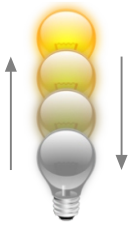
power outage:
<10min - lights come back
>10min - lights will stay off

maximum current	
output	supply
1x10A	1x10A
2x10A	2x10A
3x6.7A	2x10A
4x5A	2x10A

Operation



short press: on/off



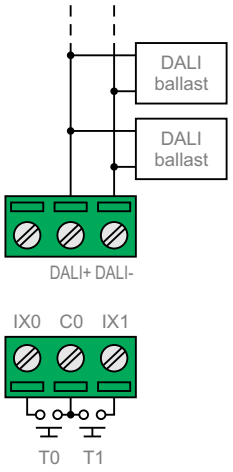
long press: 0..100%

Technical specifications

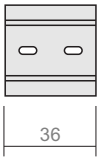
LED power supply:	12/24V (10..28V)
Total output power:	240W at 12V 480W at 24V
Max current per terminal:	10A
PWM frequency:	500Hz
Output resolution:	12-bit
Power supply:	24V 25mA
Galvanic separation:	supply/outputs
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	108x86x46mm
Weight:	160g
Standards:	EN 60730-1

LD-D8-IQ DALI dimmer

8-channel dimmer for DALI ballasts



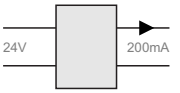
Mounting:
DIN rail 2M



Features

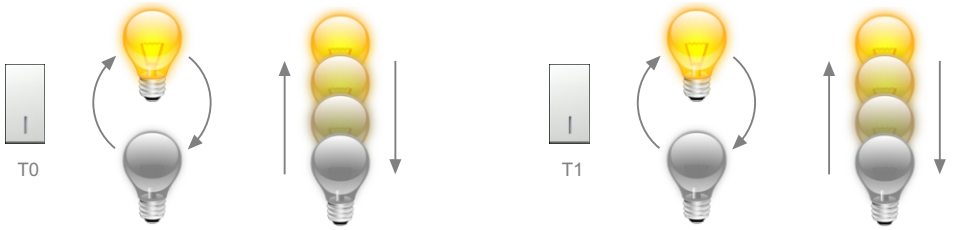
8x — control 8 independent groups

64x — drive up to 64 individual ballasts



internal DALI current source,
no additional power needed

Operation



short press: on/off — long press: 0..100% — short press: on/off — long press: 0..100%

Groups 3 to 8 don't have physical input, so they can't be controlled directly, only as a scene or with a phone.

Ballast configuration

Configure ballasts into groups 1 to 8. LD-D8-IQ can't control individual ballasts.

Output options

incandescent

fluorescent

LED lights of any kind

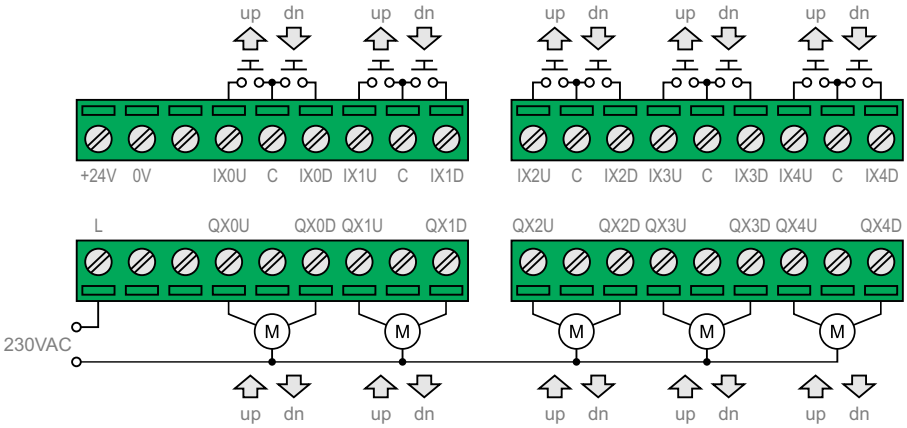
compact fluorescent

Technical specifications

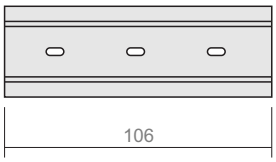
Digital inputs:	internal pull-up 12V, 2mA
DALI output:	200mA, up to 64 ballasts
Power supply:	24V 120mA
Galvanic separation:	none, ballasts must be SELV
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	36x108x58mm
Weight:	80g
Standards:	EN 60730-1

BC-5-IQ blinds controller

5-channel blinds position controller



Mounting: 35mm DIN rail 6M



Features

short press: move up/down

short press while moving: stop at the position

long press: stop after released

75%

short press: move to intermediate position

automatic position related to scene

up and down buton

automatic correction
at boundary position

Travel time adjustment

1. Adjust top and bottom limit switch (electrician).
2. Use stopwatch to measure travel time in both directions.
3. Use HIQ Configurator to enter measured values.
4. Check accuracy: move blinds to 50%, mark position. Move blinds about half way up and down, few times, without reaching the top or bottom. Move to 50% again. If the actual position is above the mark, slightly increase down time. Below the mark, increase up time. Repeat until positioning is perfect.

Technical specifications

Output power per relay:	200W
Total output power (all relays):	2000W
Maximum input cable length:	50m
Power supply:	24V 60mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	106x108x58mm
Weight:	250g
Standards:	EN 60730-1

SC-4-IQ scene controller

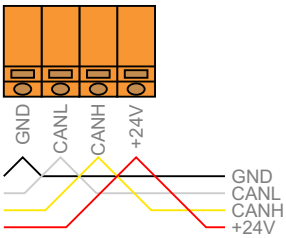
4-button universal scene controller

SC-4T-IQ

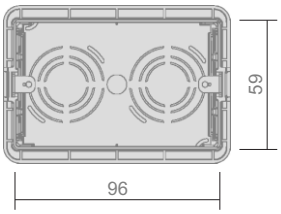
- 4 configurable touch buttons
- IR receiver + haptic feedback

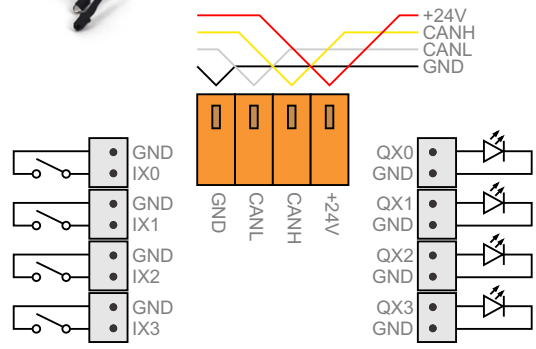
SC-4S-IQ

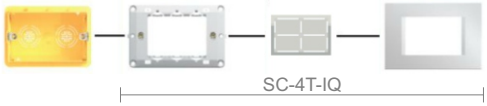
- 4 button inputs and 4 LED indicators
- connect to any classic button system
- extra-small size fits into any mounting

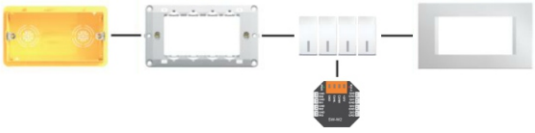


Mounting: rectangular box 3M





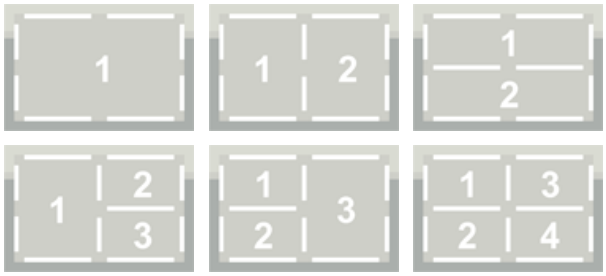




SC-4S-IQ

mounting: any instalation box

Panel layout



Select between a few possible key configurations.

Button action

on/off | 0..100% | blinds up/down | scene

Select a function for each key. Blinds can be controlled with a single-button and two-button configuration.

Inverse scene

second press force all lights to off, blinds are not changed

Memorize scene

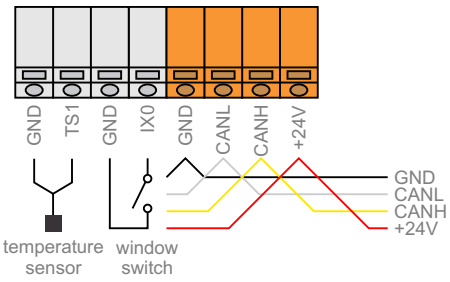
long press, confirmed by beep, store current state as a new scene

Technical specifications

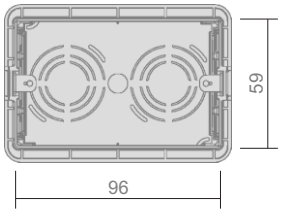
IR remote receiver:	RC5 36kHz
Power supply:	24V 25mA (SC-4T) 24V 35mA (SC-4S)
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	122x80x23mm (SC-4T) 49x49x7mm (SC-4S)
Weight:	80g (SC-4T) 20g (SC-4S)
Standards:	EN 60730-1

TH-1-IQ thermostat

simple electronic thermostat



Mounting: rectangular box 3M



Features


on/off


setpoint


fan control


fan max
maximum output for a limited time


secondary setpoint when thermostat is off


manual measurement correction


window switch
shut down heating when window is open


night mode
attenuate display during the night

Fan options


fan speed 0 or 1


fan speed 0, 1 or 2


fan speed 0, 1, 2 or 3


maximum output for a limited time

Display when on


measured temperature


setpoint temperature


fan speed

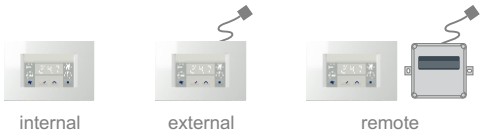
Display when off

off

dashes

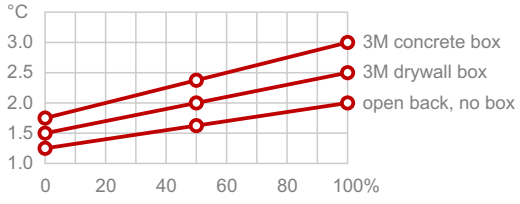

temperature

Temperature sensor



Remote means temperature is taken from another device

Temperature offset



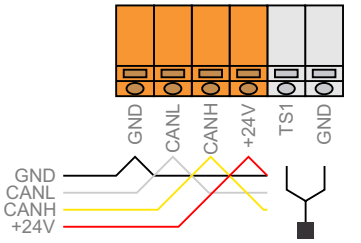
Recommended temperature offset vs. lightness and mounting type

Technical specifications

Window switch input:	internal pull-up 12V, 2mA
Temperature measurement:	internal or external
External temperature sensor:	ES any model
Power supply:	24V 15mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	122x80x23mm
Weight:	80g
Standards:	EN 60730-1

TH-2-IQ thermostat

blind electronic thermostat



Mounting: on wall

LED indicator

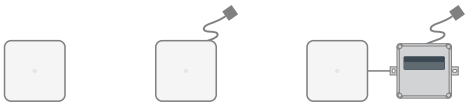
- device selected (white)
- setpoint increased (red blink)
- setpoint decreased (blue blink)

Features

- on/off
- setpoint
- fan control
- fan max
  maximum output for a limited time
- precise temperature measurement
- manual measurement correction
- secondary setpoint when thermostat is off
- humidity meter

all functions handled
by a mobile phone

Temperature sensor



internal external remote

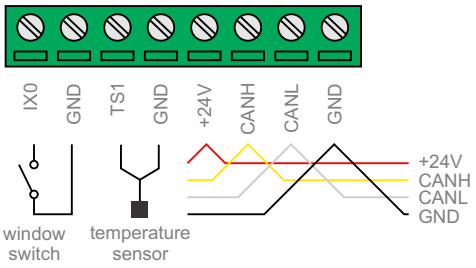
Remote means temperature is taken from another device

Technical specifications

Temperature measurement:	internal or external
External temperature sensor:	ES any model
Default offset:	-1.4°C
Humidity measurement:	internal, 0..100%rh
Power supply:	24V 10mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	71x71x27mm
Weight:	50g
Standards:	EN 60730-1

TH-3-IQ thermostat

thermostat with display and configurable buttons



Mounting: round 60mm junction box

Features

on/off

setpoint

fan control

fan max
maximum output for a limited time

secondary setpoint when thermostat is off

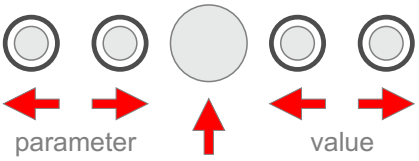
manual measurement correction

window switch
shut down heating when window is open

night mode
attenuate display during the night

humidity meter

Configuration



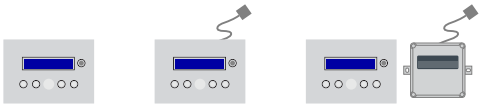
press and hold

- on/off
- setpoint
- fan speed
- fan max
- scene

Features

- massive aluminium body
- glass power plate
- white blue alphanumeric display
- mechanical buttons with a click
- button function fully configurable
- IR reciver

Temperature sensor



internal external remote

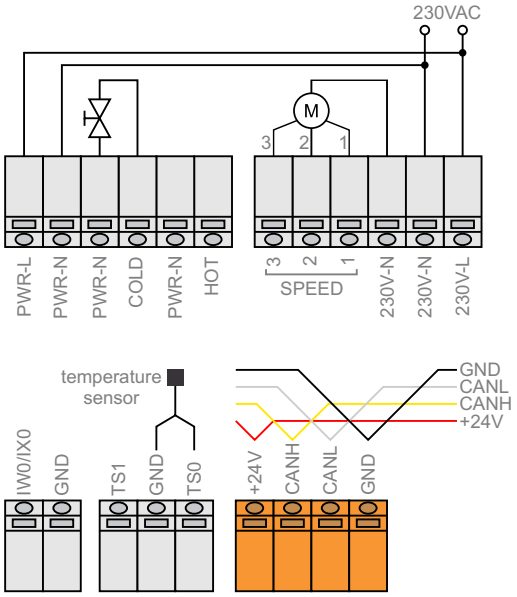
Remote measurement should be handled by plc program

Technical specifications

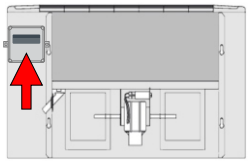
Temperature measurement:	internal or external
External temperature sensor:	ES any model
Default offset:	-2.0°C
Humidity measurement:	internal, 0..100%rh
Power supply:	24V 25mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	136x96x36mm
Weight:	450g
Standards:	EN 60730-1

FC-1-IQ fan-coil actuator

3-speed fan coil actuator



Mounting: inside fan-coil



fan coil
- 2-pipe system
- electromechanical valve
- 3-speed fan
- both heating and cooling

Features

simple
no adjustments, no jumpers or DIP switches, configuration is completely performed on PC

flexible
can be used with a wide range of home, office and industrial convectors

fallback mode
device continue operation even in case that communication is broken

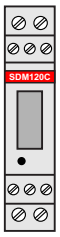
With heating, fan is delayed 60 seconds after valve, to prevent a blow of cool air. This delay is not implemented for cooling.

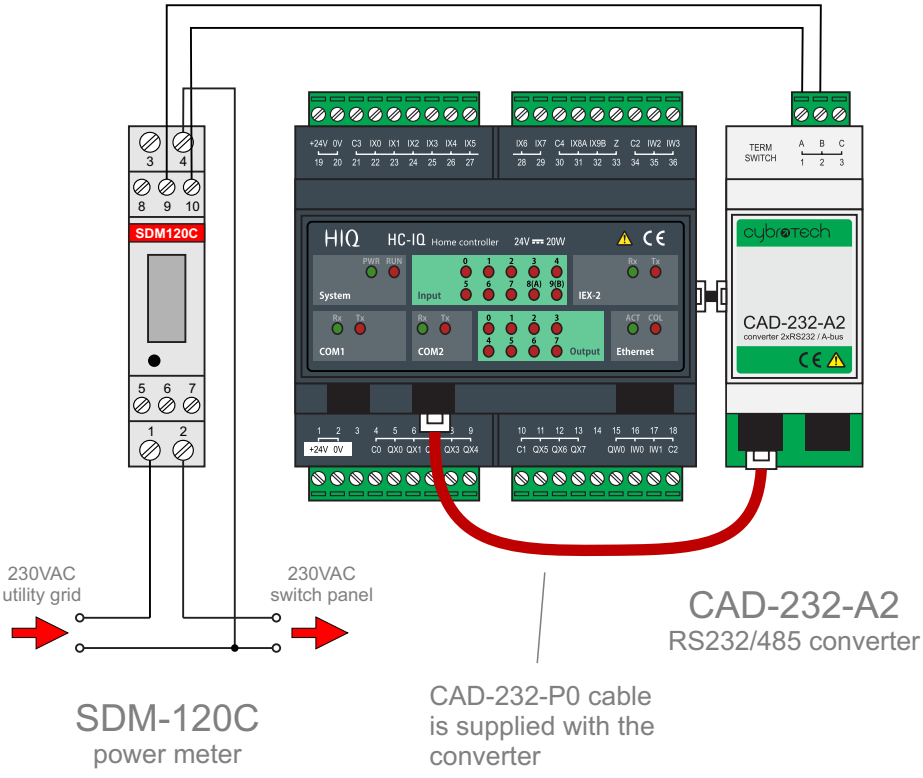
Technical specifications

Relay outputs:	3A/250V
Temperature measurement:	external
External temperature sensor:	ES any model
Power supply:	24V 45mA
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	108x86x46mm
Weight:	150g
Standards:	EN 60730-1

Power meter

voltage, power and energy



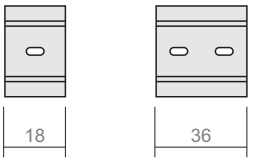


SDM-120C
power meter

CAD-232-A2
RS232/485 converter

CAD-232-P0 cable is supplied with the converter

Mounting: 35mm DIN rail 1M + 2M



SDM120C CAD-232-A2

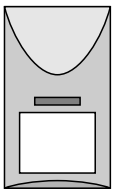
Technical specifications

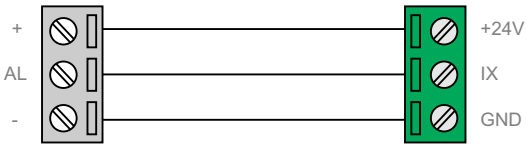
Nominal voltage:	230VAC, 110VAC
Voltage range:	77..300VAC
Maximum current:	45A
Operational frequency:	50..60Hz
Power consumption:	2W
Communication setup:	2400 8e1
Modbus address:	1
Communication cable:	CAD-232-P0
Ingress protection:	IP51
Operating temperature:	0..55°C
Storage temperature:	-20..75°C
Relative humidity:	85%
Dimensions:	119x17.5x62mm
Weight:	85g
Standards:	EN 60730-1

Motion, door and light sensor

sensors for automation and alarm

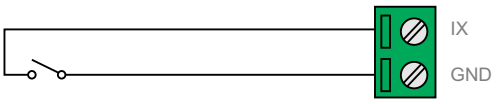
Motion sensor





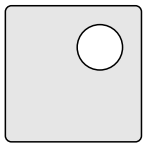
IR-580-IQ LC-10-IQ

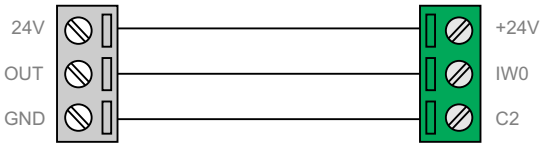
Door sensor



REED-SW LC-10-IQ

Light sensor





RHKF-U HC-IQ

Motion sensor is mounted above or lateral to room entrance. People entering the room must intersect sensor beams. At the moment when closing the door, person should be in the area of maximum sensitivity.

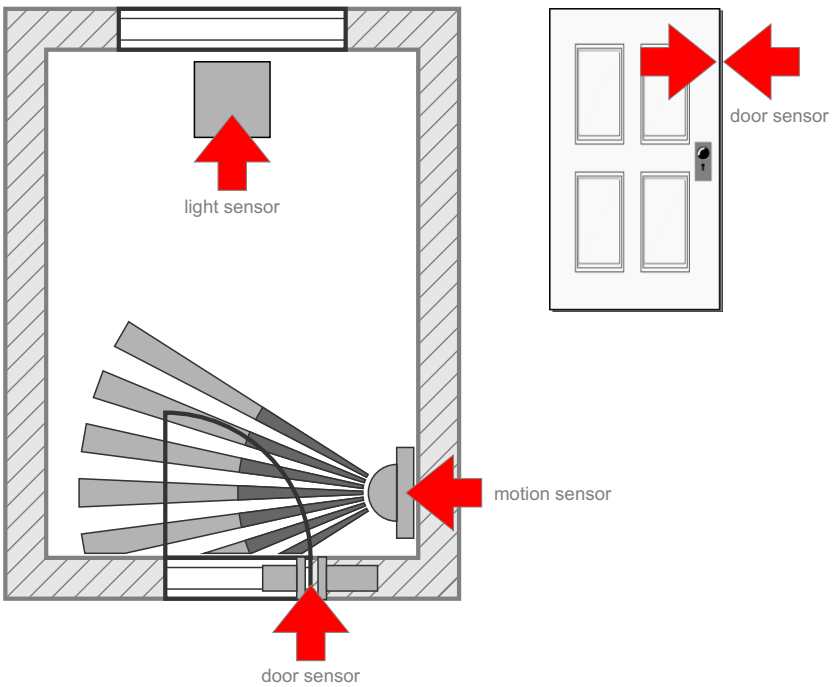
Door sensor is mounted on the knob side, usually about 20cm from the top. Magnet goes into the door, contact goes into the doorpost.

Sensors are connected to spare LC-10-IQ inputs. Input type must be configured as sensor input.

Light sensor is mounted on top of an outside looking window, south or west side.

For a room with more then one entrance, door sensors are connected in series (sensor is closed when door is closed), and motion sensors are connected in parallel.

Mounting



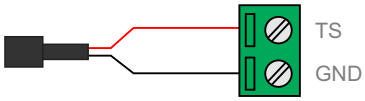
Technical specifications

Motion sensor	-
Output type:	NPN o.c. 75mA
Power supply:	24V 10mA
Operating temperature:	20..50°C
Storage temperature:	-20..75°C
Dimensions:	100x60x42mm
Weight:	85g
Door sensor	
Switch type:	reed switch, normally open
Dimensions:	25x7mm
Weight:	12g
Light sensor	
Output type:	0..10V
Power supply:	24V 80mA
Operating temperature:	0..50°C
Storage temperature:	-20..75°C
Dimensions:	85x85x27mm
Weight:	65g

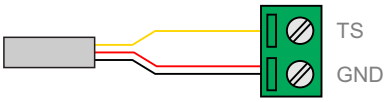
Temperature sensor

indoor and outdoor measurement

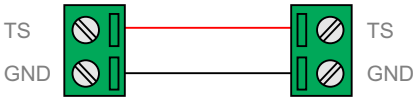
ES-P



ES-B



ES-W

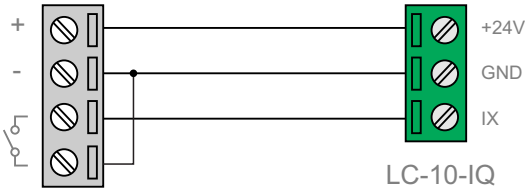


Technical specifications

ES-P	-
Housing:	heatshrink tube
Operating range:	-50 to +100°C
Degree of protection:	IP50
Cable length:	2m
ES-B	
Housing:	steel tube
Operating range:	-50 to +100°C
Degree of protection:	IP67
Cable length:	5m
ES-W	
Housing:	plastic box, white
Operating range:	0 to +50°C
Degree of protection:	IP20
Dimension:	71x71x27mm
Common	
Sensor type:	DS18B20 digital sensor
Accuracy:	±0.2°C typ. (-10 to +85°C) ±0.5°C max. (-10 to +85°C) ±2.0°C max. (-50 to +100°C)
Cable length:	20m max.
Recommended cable:	UTP 0.25..0.5mm2

Touchless switch

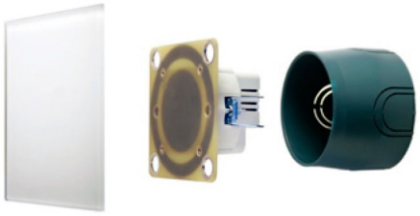
no-contact wall mounting switch



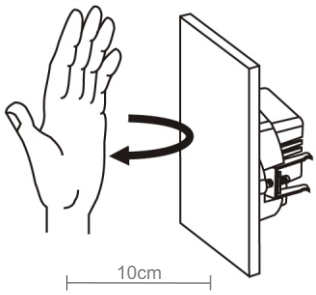
AS-24RA

LC-10-IQ

Mounting: standard 68mm junction box



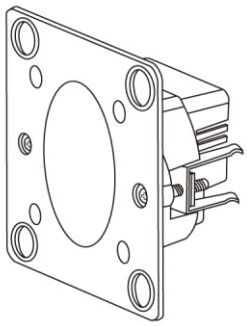
Operation



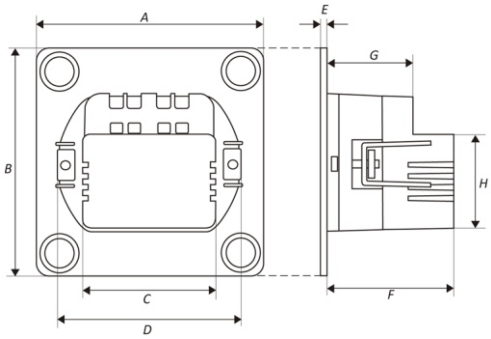
Features

reliable way to detect a hand through most materials
countless decorative switchplates
switchplates attach via magnets and are easily exchanged
range adjusted with potentiometer
low power consumption
excellent noise immunity

Drawing



Dimensions



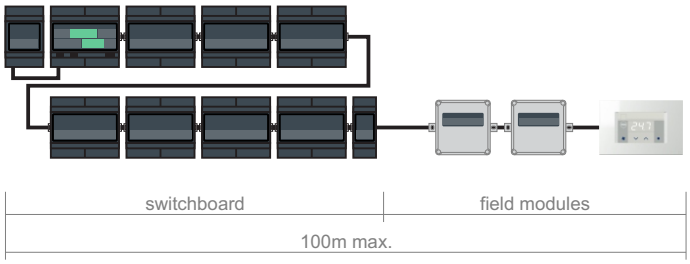
A (width)	70mm
B (height)	70mm
C (back housing width)	40mm
D (back housing width)	59mm
E (plate thickness)	1.6mm
F (depth)	34.4mm
G (depth)	25.5mm
H (back housing height)	28.5mm

Technical specifications

Switch model:	AS-24RA or AS-24RB
Detection distance:	2..10cm adjustable
Detection delay:	200ms
Output type:	NPN o.c. momentary
Power supply:	24V 6mA
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Weight:	85g

Wiring

Switchboard and field modules



Power supply must be connected to the first (leftmost) device. When devices are connected, autoaddress procedure must be started using HIQ Configurator.

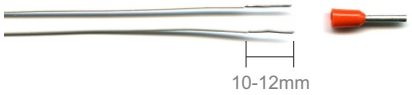
Devices inside switchboard are addressed sequentially, from left to right. Devices outside of switchboard (field modules) are addressed in order of ascending serial numbers - lowest serial number gets the first address, second lowest the second, and so on.

Inside the switchboard, bus is connected with 4x flat cable and RJ9 connectors. Outside the switchboard, bus is connected with a unshielded twisted-pair cable and orange push-wire terminals.

Maximum bus length is 100 meters. Up to that length, bus can be connected with no special rules, branching is allowed. Longer bus (up to 300m) is possible, but cable must be connected in line (no branches/trunks), and last device must be terminated with a 120ohm resistor between CANL and CANH.

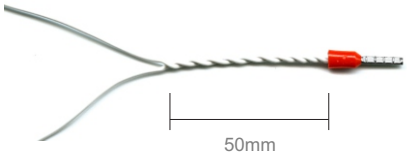
Bus wiring

1. Take one ingoing and one outgoing wire together, and remove insulation for about 10-12mm.

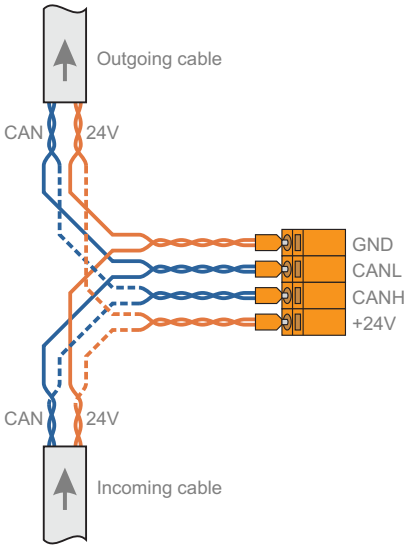


2. Crimp wires together into a ferrule.

3. Wrap wires together for a few centimeters.

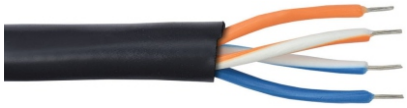


4. Push ferrules into clamps.



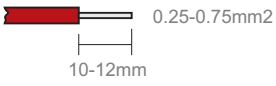
Recommended bus cable

unshielded twisted pair 2x2 0.5mm2

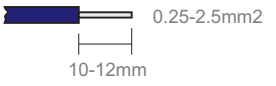


Wire stripping

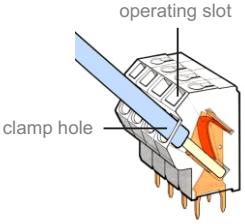
Bus wires (orange terminals)



Other wires (gray terminals)



Push-wire handling



Solid wire insertion

1. Push wire in the clamp hole

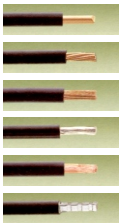
Stranded wire insertion

1. Push screwdriver in the operating slot
2. Insert wire in the clamp hole

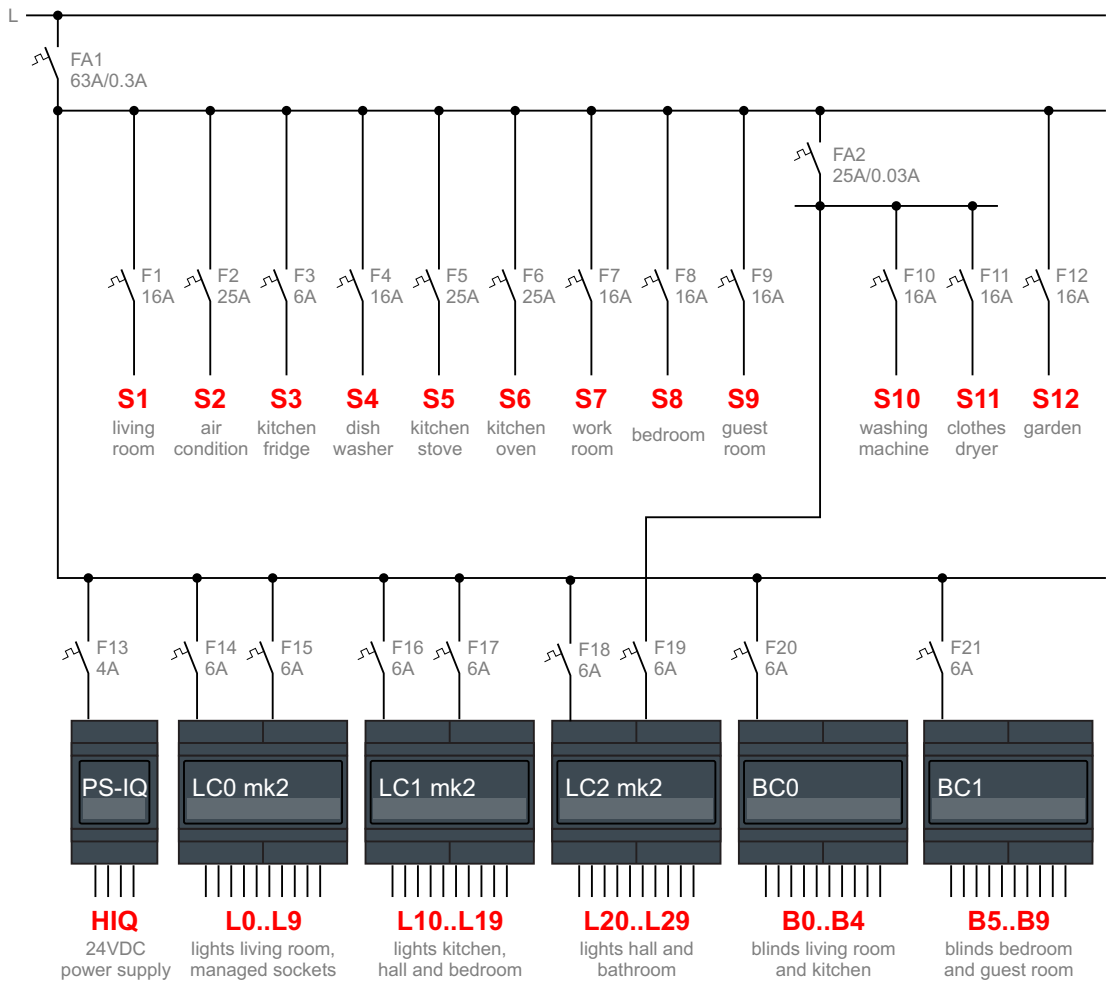
Solid/stranded wire removal

1. Push screwdriver in the operating slot
2. Remove wire

Wire type

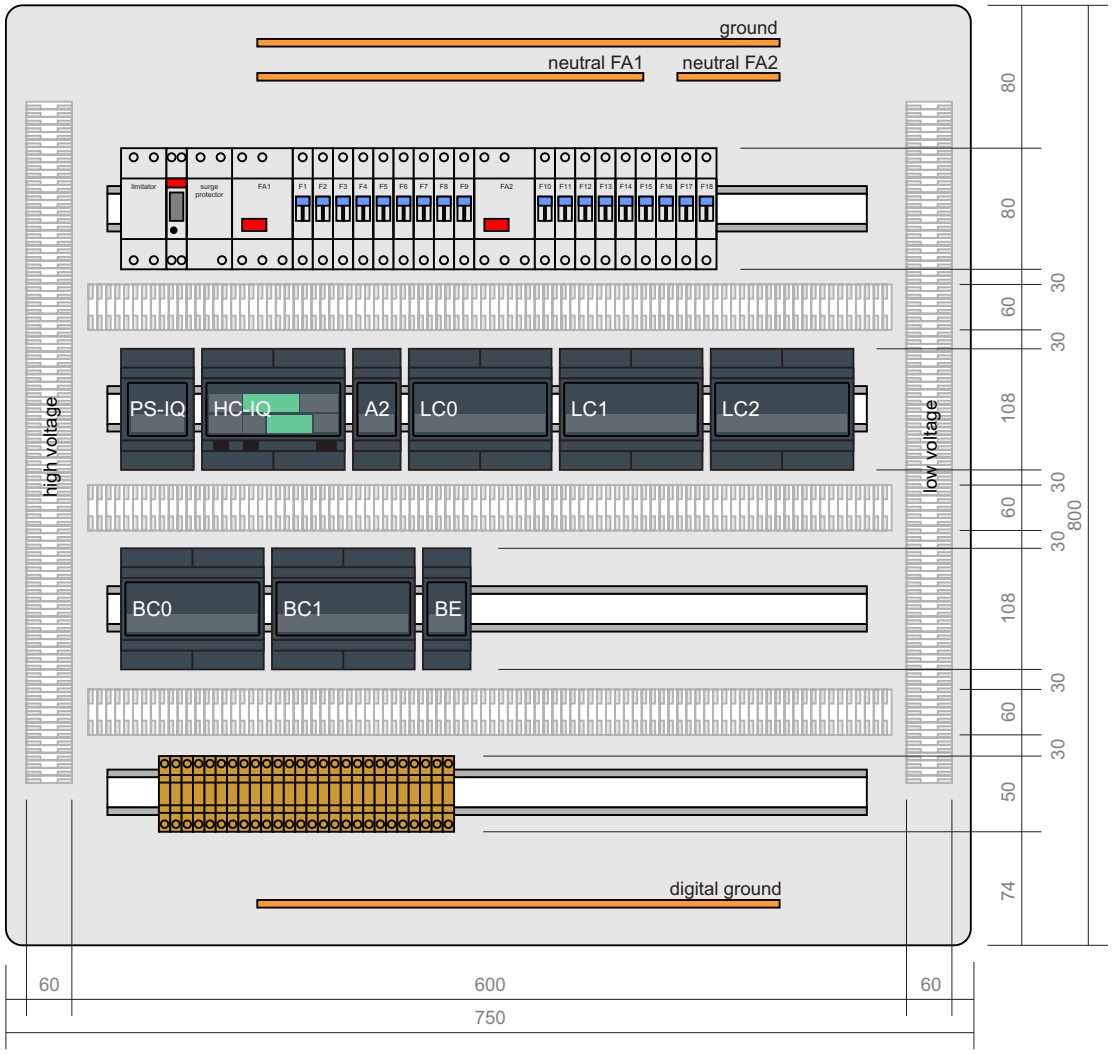


Schematic diagram



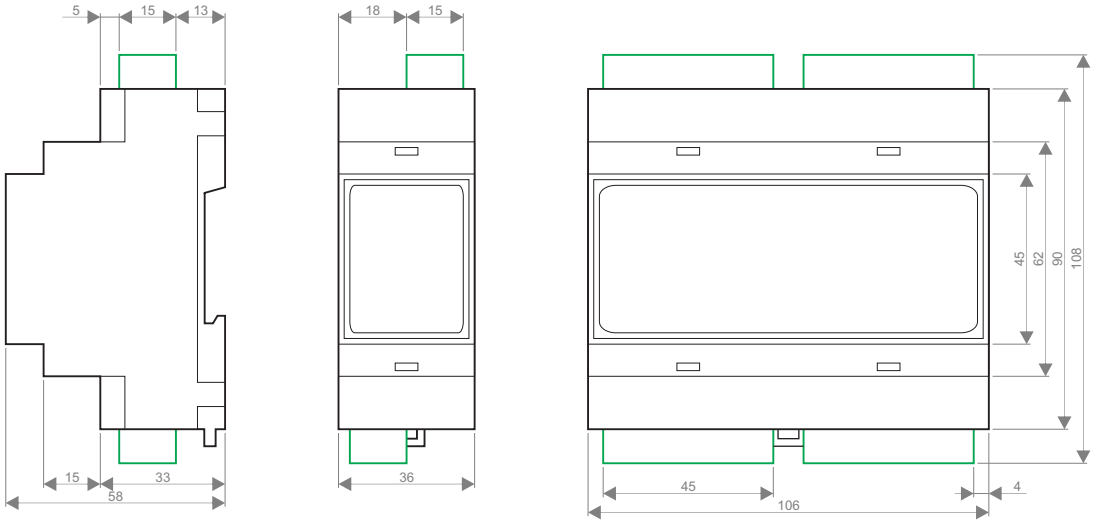
This is a typical schematic diagram for a 200m2 family house. Circuits S1 to S12 are standard appliances and power sockets. Circuits L0 to L29 are lights and managed sockets. Circuits B0 to B9 are electric blinds. FA1 and FA2 are residual current switches. 24VDC is power supply for HIQ devices.

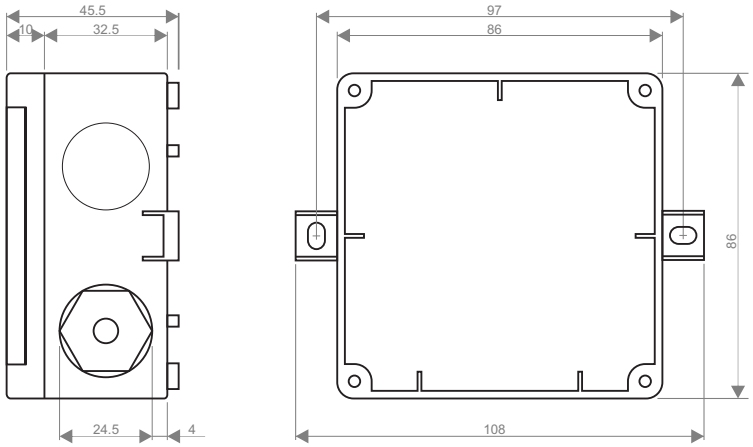
Switch panel

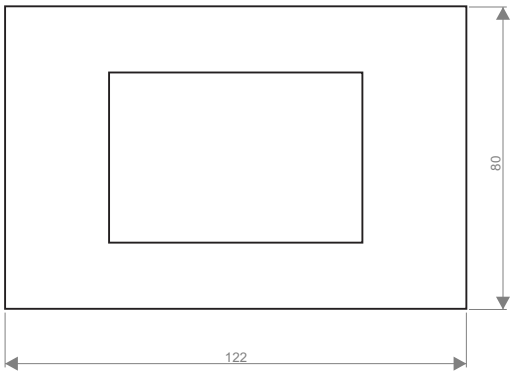


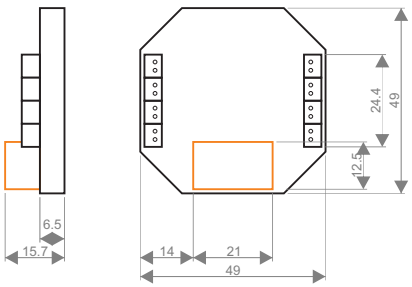
This diagram represents a typical switchboard layout. Four DIN rails are used, top row for fuses, next two rows for HIQ modules, and the last row for interconnecting terminals. Above and below are ground and neutral rails.Digital ground is a common rail for input switches and sensors. 30mm is a minimum recommended distance for safe handling of terminals and wires.

Dimensions


5
15
13
18
15
45
62
90
108
15
33
58
36
45
106
4


45.5
10
32.5
97
86
86
24.5
4
108


80
122


24.4
49
12.5
6.5
15.7
14
21
49

Order code

devices and sensors

LC-10-IQ
light controller
with 10 outputs

LD-P4-IQ
4-channel
universal dimmer

LUD-12
power driver

LD-V4-IQ
4-channel
LED strip
dimmer

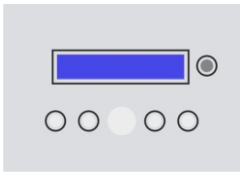
BC-5-IQ
5-channel
blinds controller

LD-D8-IQ
8-channel
DALI dimmer

SC-4T-IQ
touch screen
scene controller

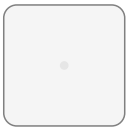
SC-4S-IQ
scene controller for
standard buttons

TH-1T-IQ
thermostat with
touch buttons



TH-3-IQ
thermostat with
scene buttons

FC-1-IQ
fan-coil
actuator



TH-2-IQ
blind thermostat

HC-IQ
master controller

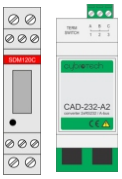
PS-IQ
power supply 24V

BE-PROT
bus adapter +
surge protector

IR-580-IQ
motion sensor

REED-SW
door sensor

RHKF-U
light sensor



SDM120C
power meter

CAD-232-A2
232/485 converter
(including cable)

Order code

cables and accessories

ES-P
temperature sensor

ES-B
temperature sensor

ES-W
temperature sensor

RE-2
IR remote

CAD-P0
bus cable 2.5cm, RJ9/RJ9
connecting devices in switchboard

CAD-P2
bus cable 2m, RJ9/RJ9
connecting rows in switch panel

CAD-232-P0
15cm crossed, RJ9/RJ9
cable for power meter

CAD-2-BUT
2x mini-button

OL30-PW
3M decorative cover

NM30
mounting frame for
3M rectangular box

SM11-PW-NT
push button 1M

SM41-PW-NT
push button 1M
up/down

AS-24R
touchless switch