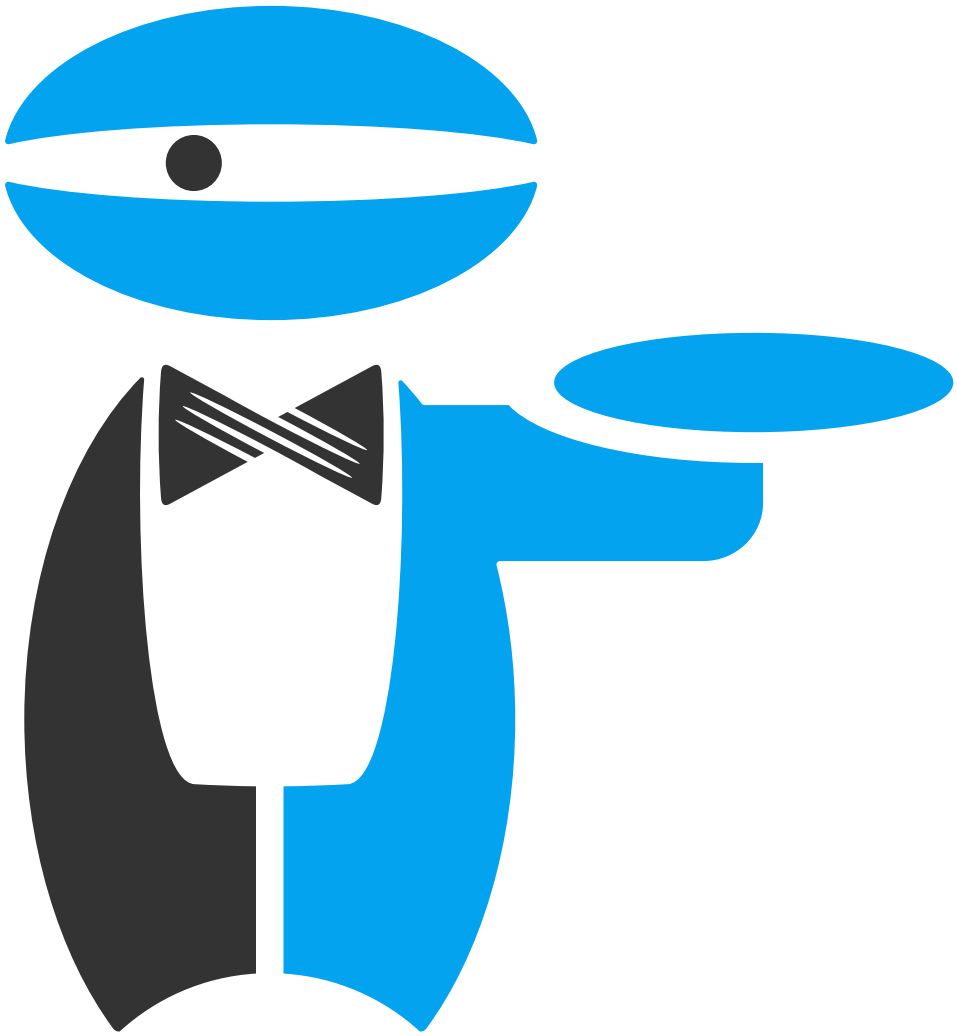

HIQ home automation

Manual v1.7 rev 11

robotina

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Content

General

Features

Software

Hardware

Overview

sensors - controllers - actuators - interface

HIQ

comfort

simplicity

security

safety

flexibile

cost-effective

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

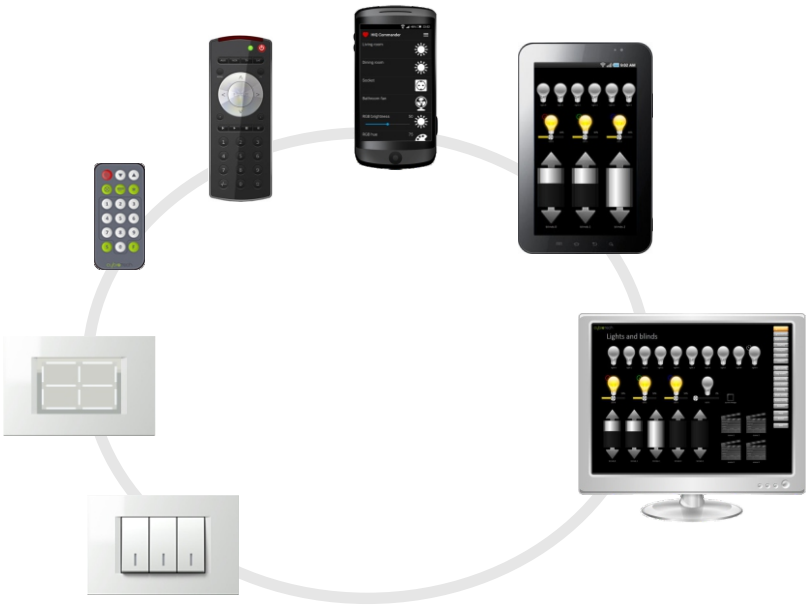
HIQ consists of both hardware and software. Devices are connected to each other with a common power supply and communication bus.

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. Most of the configuration is done by end-user.

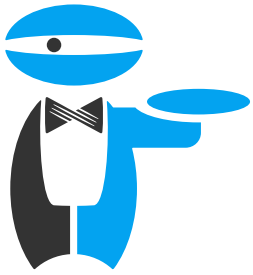
System design is straight forward, there are no complicated compatibility or dependency rules.

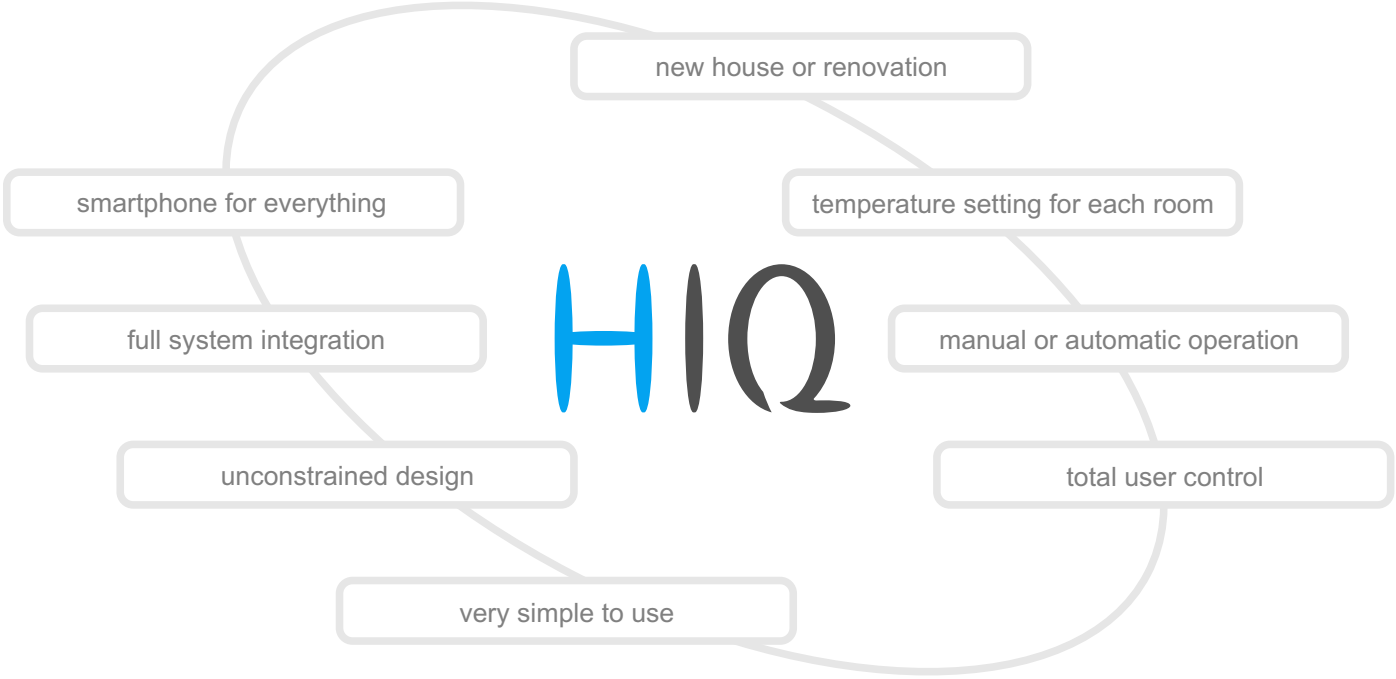
HIQ is open to other home devices, either by integrating them in the system (e.g. touchless buttons), or cooperate on the signal level (e.g. professional alarm).



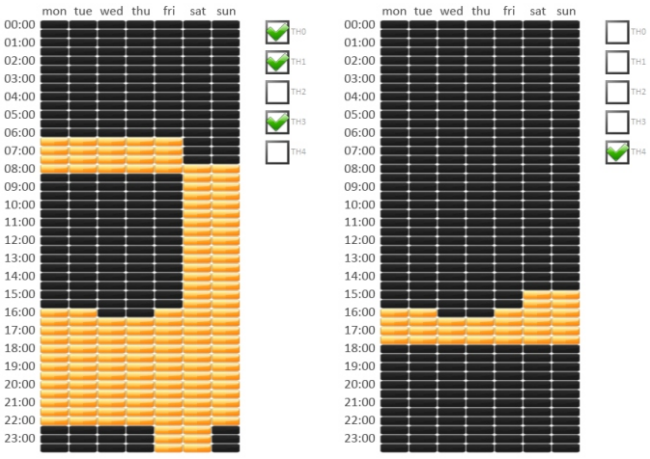
Features

new concept with unique features



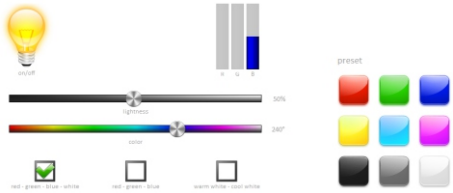


Multiple timetables



Set things running up to your schedule. To configure the timetable, select active hours, then select devices to be affected. You can manually override output at any time.

Advanced RGB control



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

In white temperature mode, output goes between different kinds of white, from bright daylight to warm incandescent light.

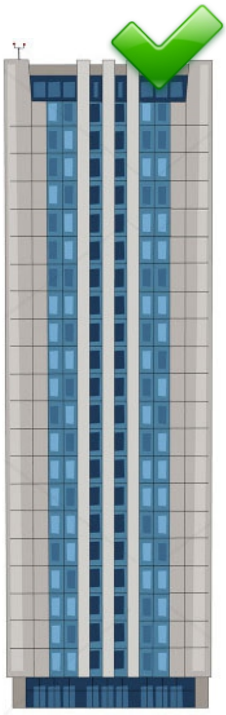
Evo light function provides synchronization between light temperature and time of day. In the evening, lights will automatically reach the warmer tone.

Feasibility

suitable for most lodging solutions

small house

large house



highrise

apartment building

office building

urban house

farm house

cottage

new house

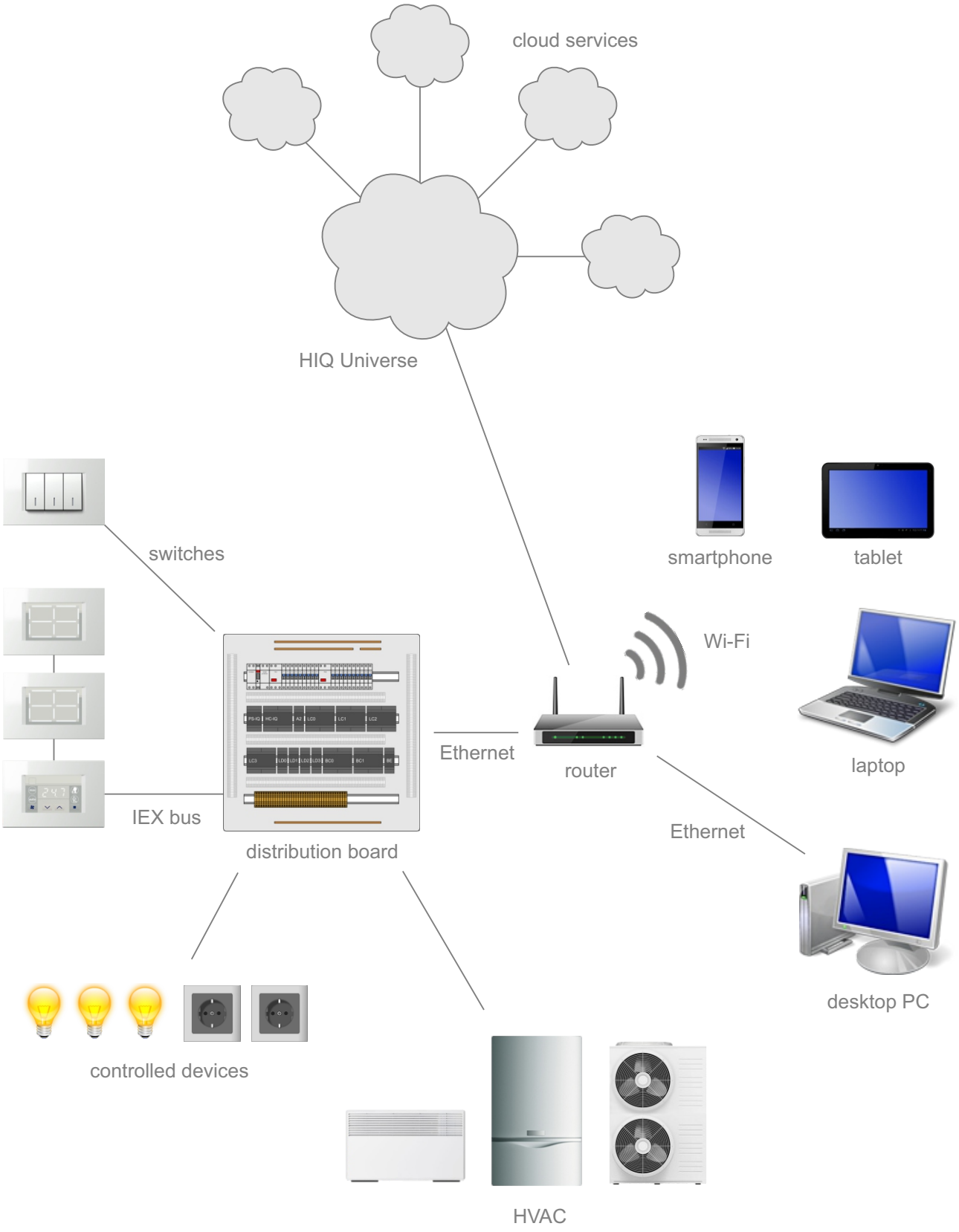
full renovation

partial retrofit

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 wireless solution may be prefered.

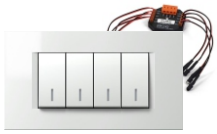
Layout

from a switch to the cloud computing



Usage

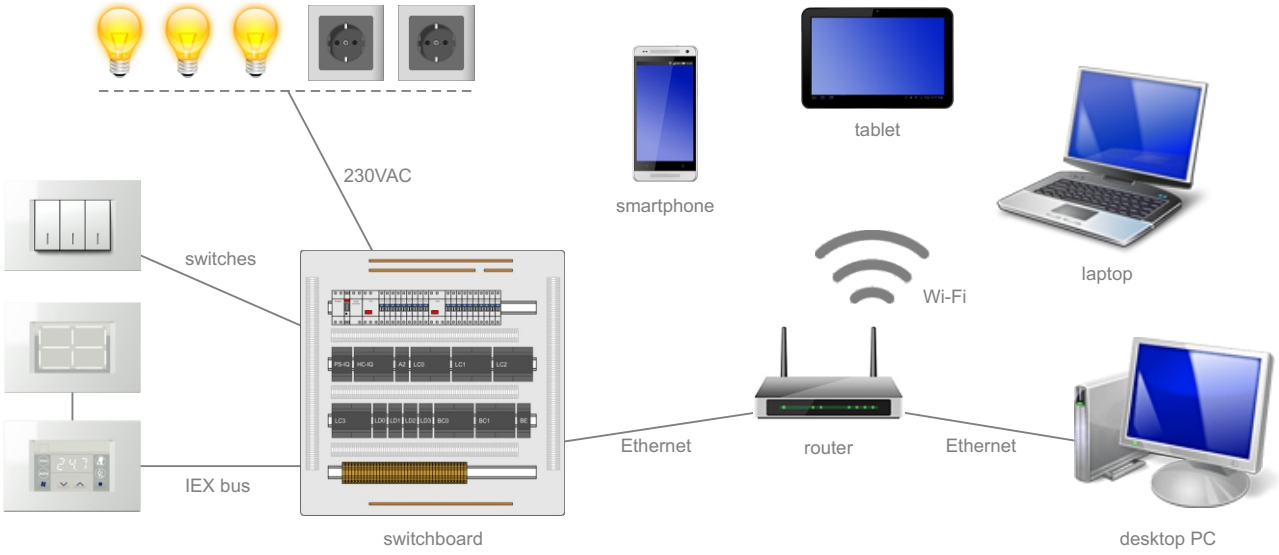
what all this hardware is for

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-V4-IQ LED dimmer		LED stripes
	LD-P4-IQ LD-D8-IQ universal dimmer		dimmable lights of all kinds
	BC-5-IQ blinds controller		window blinds, shutters and jalousies
	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 and project-based features

Basic configuration



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

Advanced system

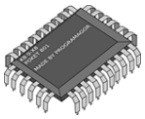
HIQ system offer many out-of-the-box functions. However, modern home automation is all about integration, and that is where the HIQ excels. HIQ is capable of connecting various devices into a functional system. Integration is project-based, each building is attuned to investor requirements.

Background

technical 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).

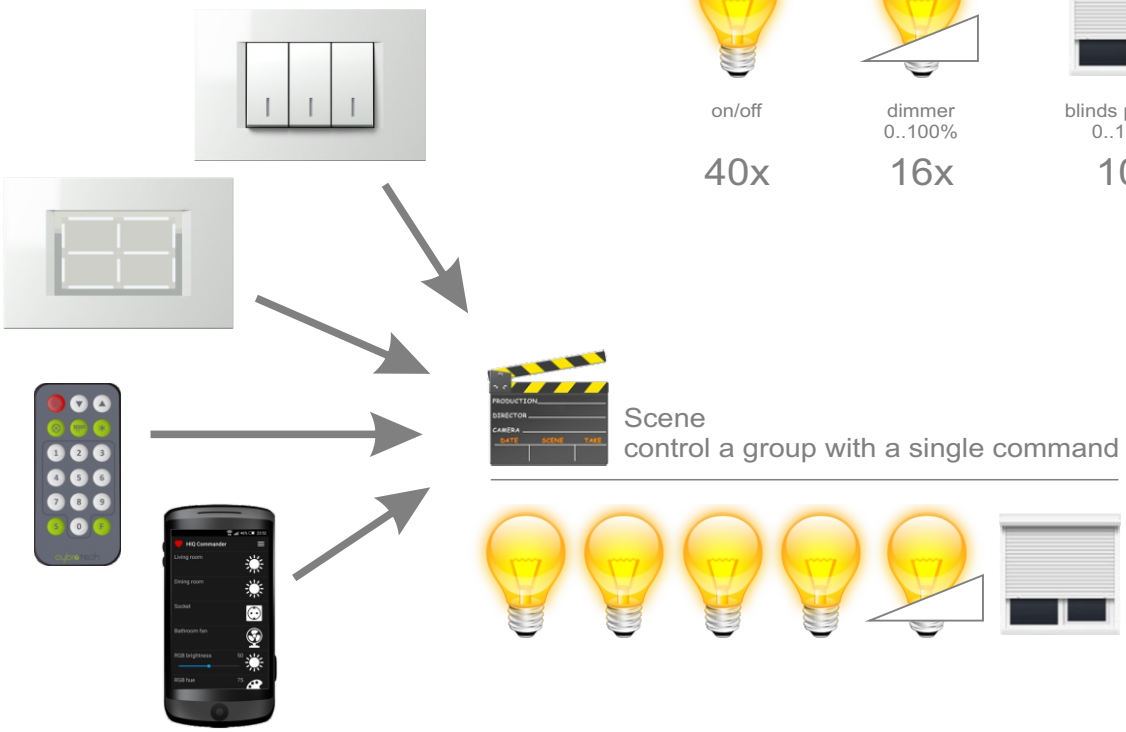
Programming tools are free, everybody is welcome to give it a try. Only a basic programming skills are needed. Join our group and discover how fun and simple house automation can be.

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 everything from everywhere



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

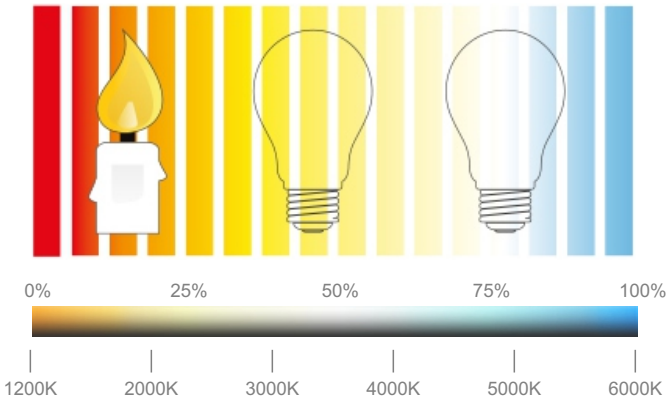
RGB dimmer

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).

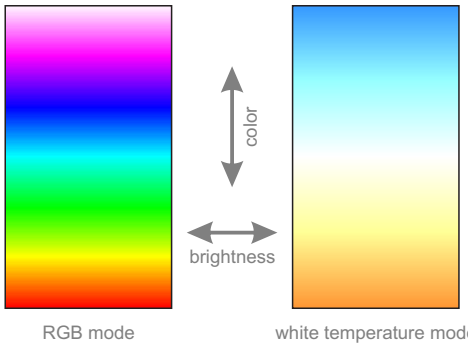
White temperature



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.



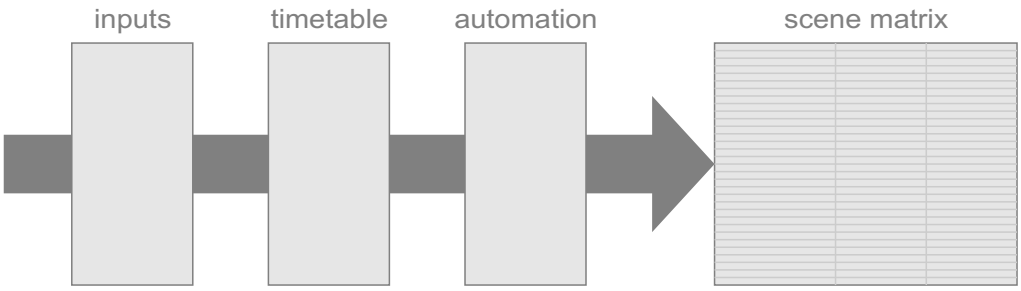
Color cycling

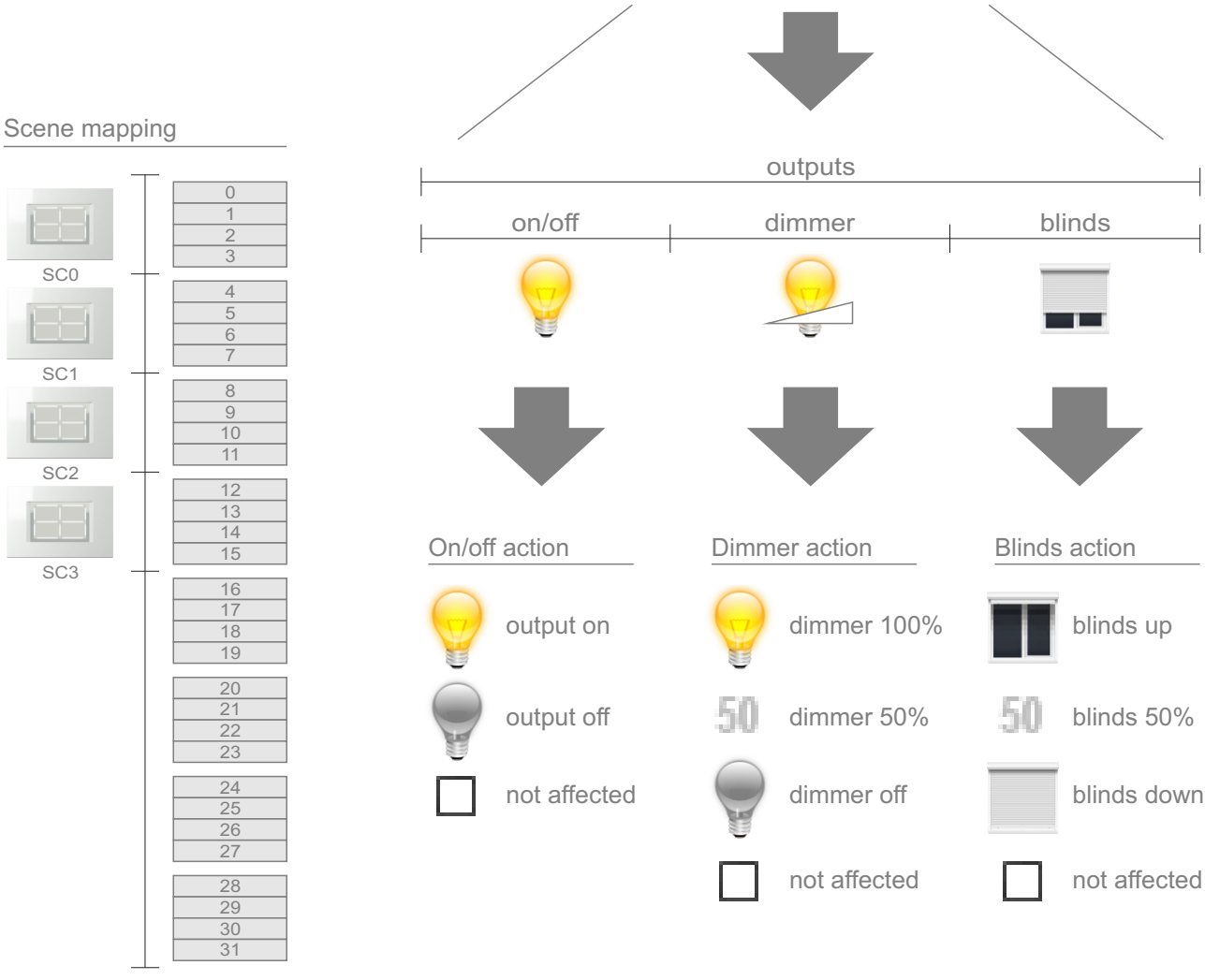
Automatically rotate through the available colors. Brightness and saturation are selected manually.

Scene

one touch to rule them all

Scene is user-defined memory including lights, dimmers and blinds. Each output is either defined by scene (on/off, lightness and position), or not affected.





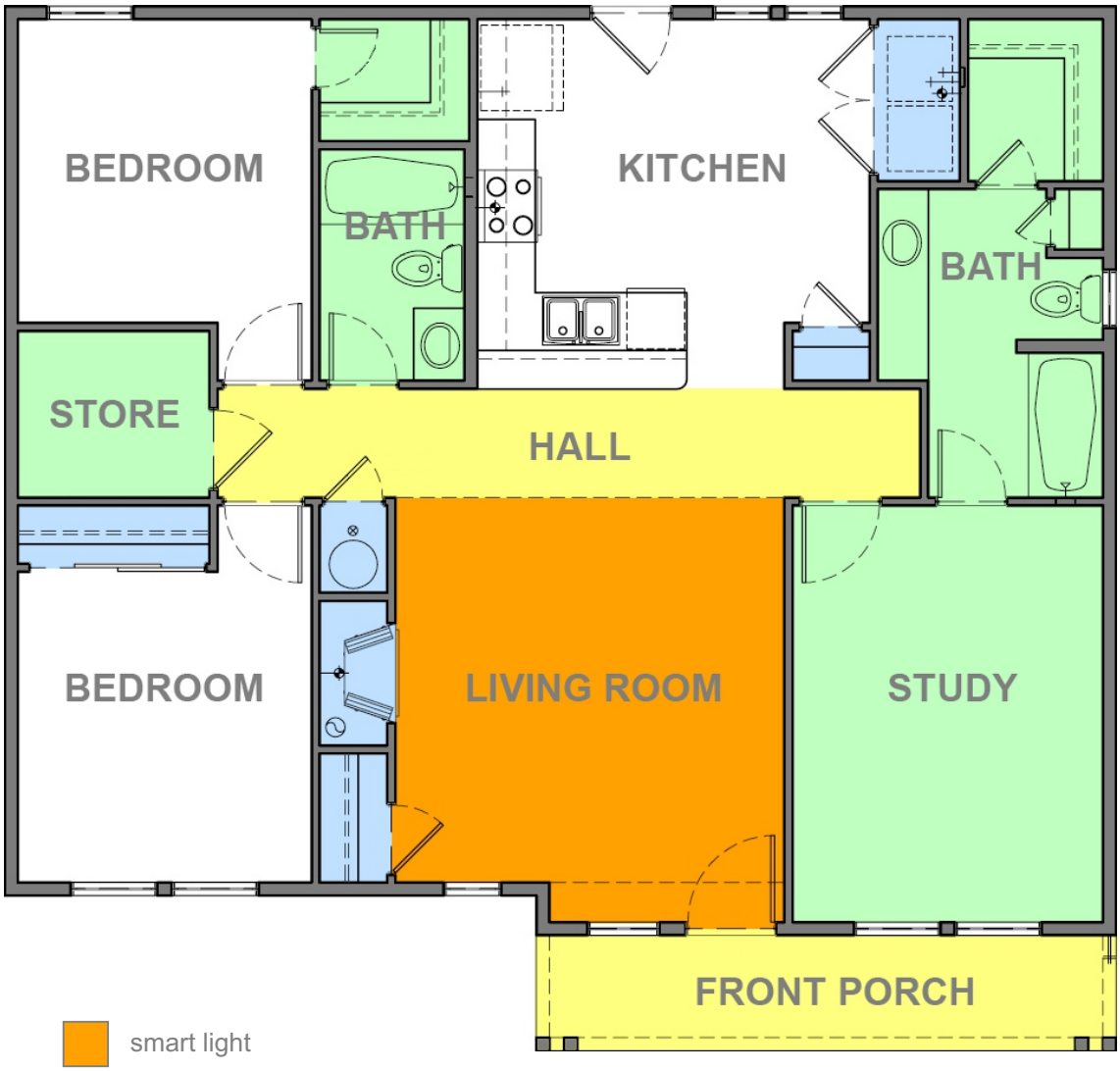
Hint: use scene 31 to turn all lights off.

Scene is initially created with HIQ Configurator. Once saved, it can be modified with a long press.

Automatic lights

where and how to use automatic lights

Benefits of automation depend mostly on how the space is used:



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

Smart light is based on low light and presence signal, and it is used for a main living space. It can be combined with evo light to control light temperature during the evening.

Ready light take advantage of door and motion sensors. It is suitable for a space used occasionally, like a bathroom.

Motion sensor cover open spaces, hallway or porch.

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

Other areas, like a bedroom, are handled manually.

Simple automation

light automation based on a single sensor

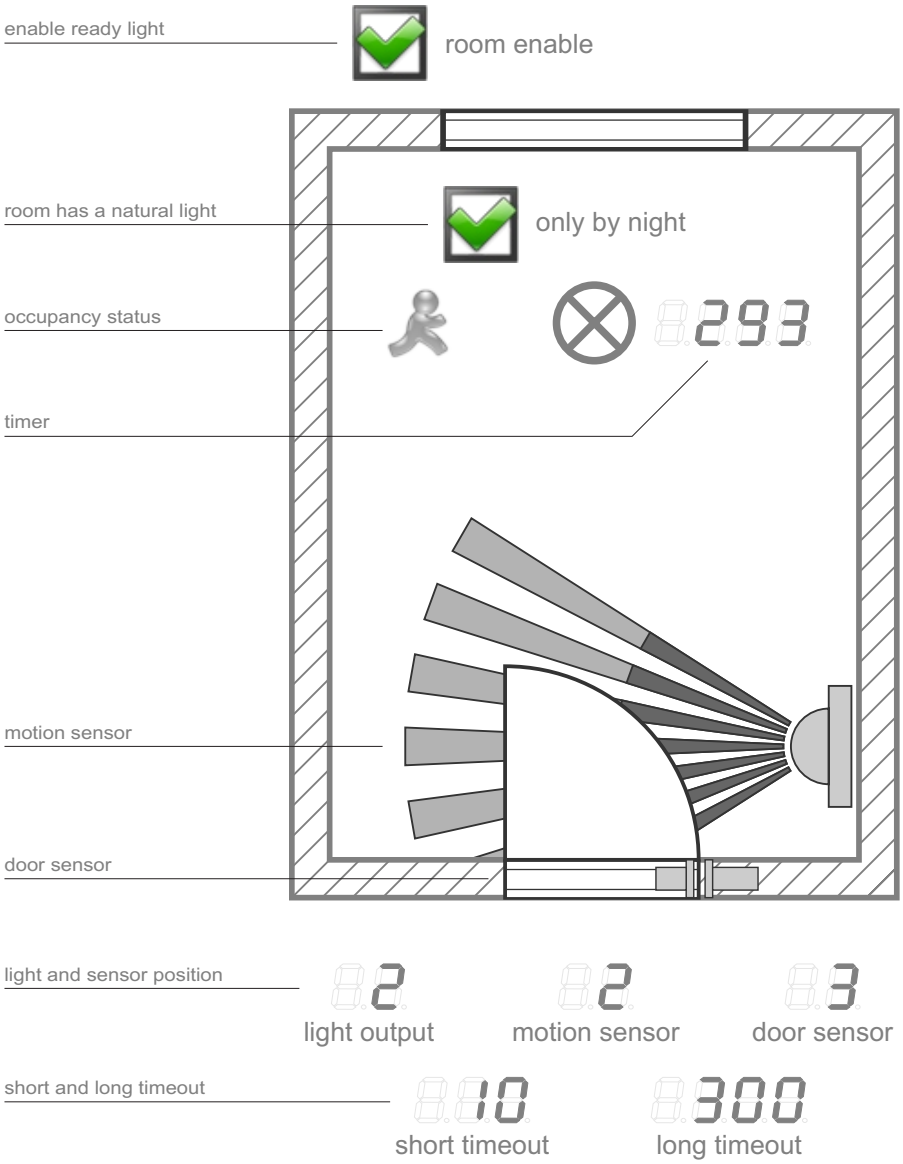
usage	input mode	output mode	description
on/off			press on, press off
on/off + timer			press on, press off in case light is left on, timer turns it off
staircase			press on press again to reload the timer when timer expires, light goes off
doorbell			press on, release off
scene			press to set multiple lights preas again to turn the scene off
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
ready light			advanced automatic light control
not used			input only, used for custom functions

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 it works

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.

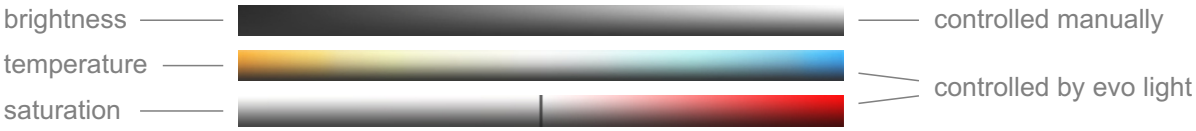
Evo light

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.

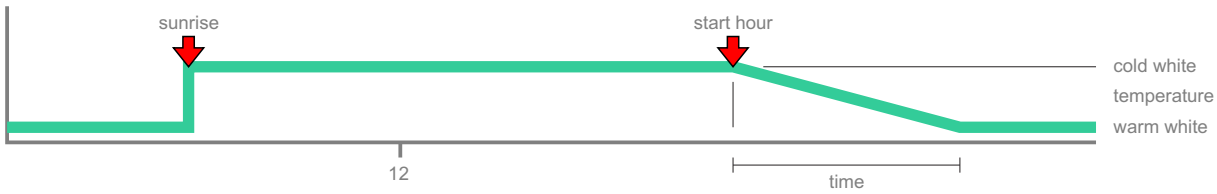
During the selected period, lights are going from a cool white to warm white, perfectly matching our natural daily cycle.

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.

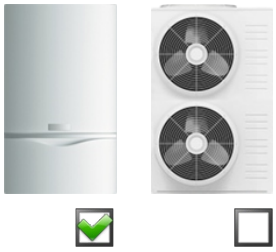
When dimmer is switched back to RGB mode, evo light will automatically stop. Enabling again, it will catch on correctly, recalculating the new parameters.

Note: evo light setup is located on RGB page.

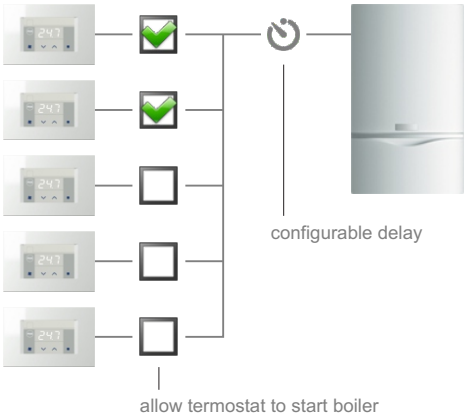
Heating and cooling

general features of heating/cooling system

Heating/cooling



Energy demand

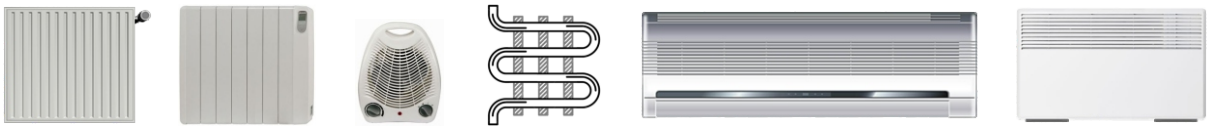


Up to five regulation zones are supported, each with their own thermostat. Generally, energy comes from boiler for heating and chiller for cooling, but other combinations are possible.

Thermostat

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

Actuator

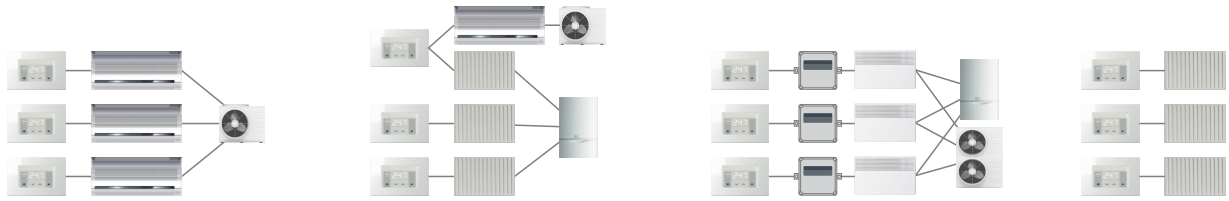


hot water radiator | electric radiator | electric fan heater | floor heating | air condition | fan-coil convector

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.

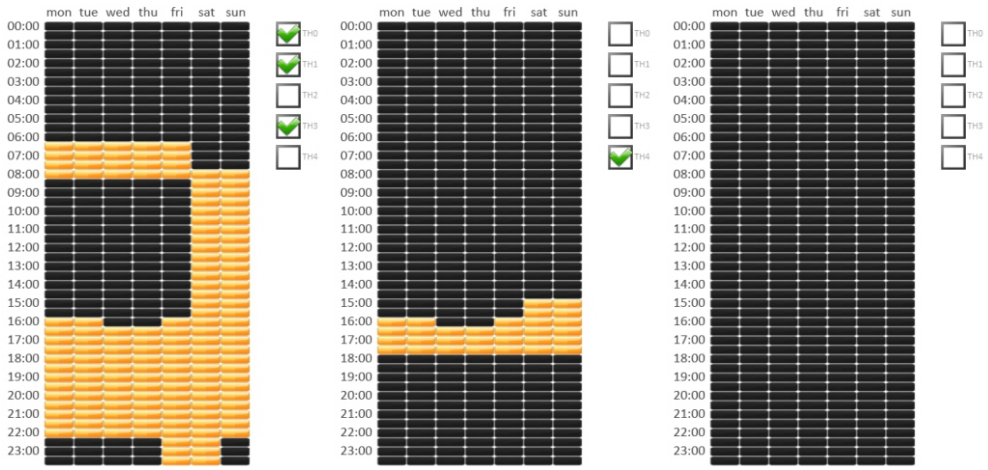
Examples



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

Timetable

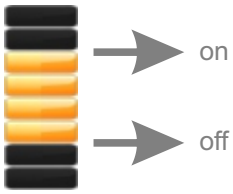
weekly event scheduler



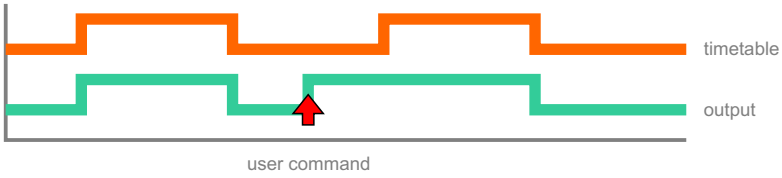
timetable 0 timetable 1 timetable 2

Each timetable can directly control an output or apply a selected scene.

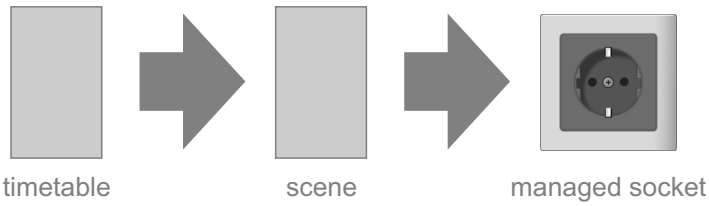
Selected part is a period when heating system is active. Each rectangle represents a half hour. Tables are fully independent of each other. To set multiple fields, hold left button and drag mouse.



Each block create on and off event.



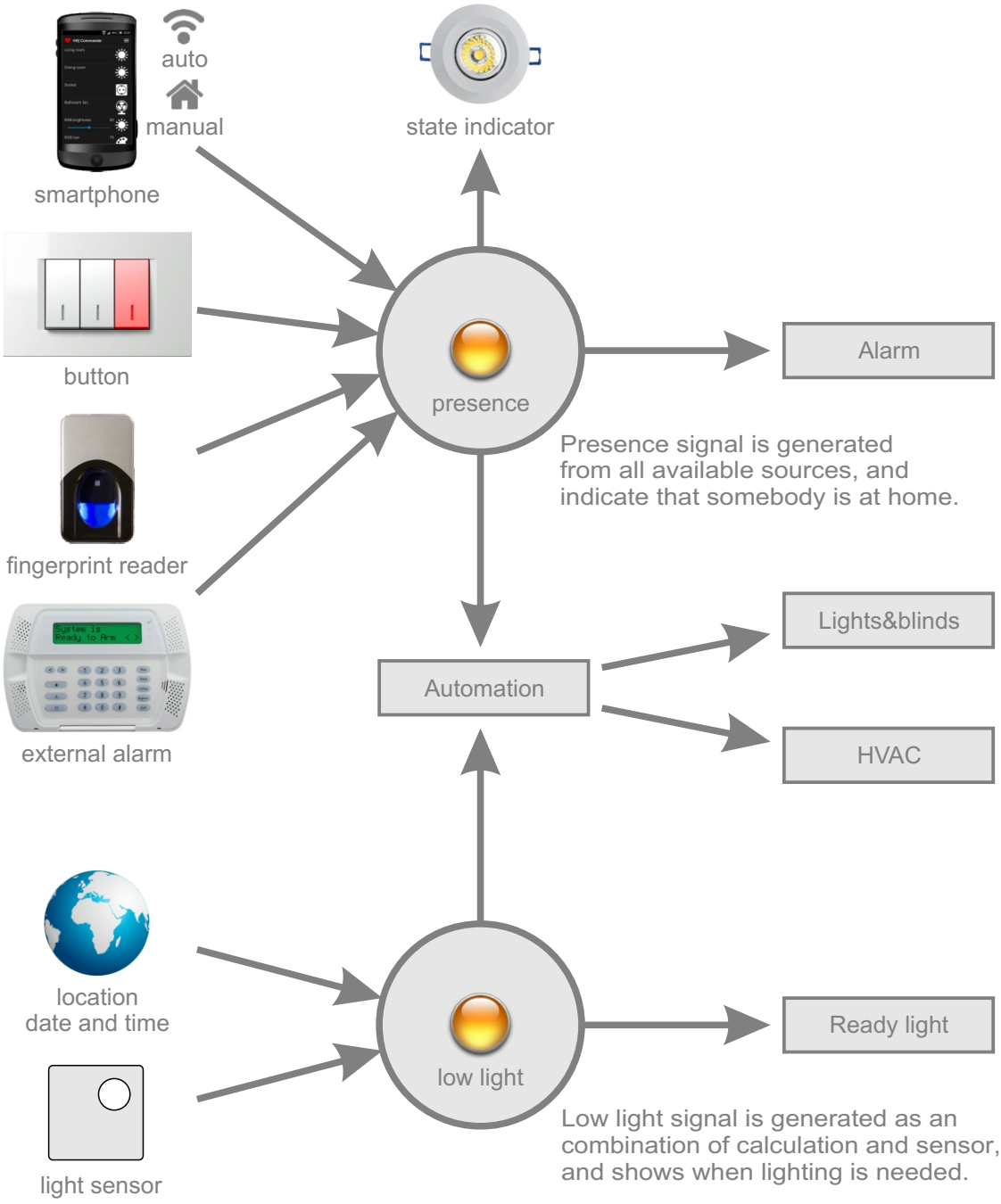
When timetable controls an output, manual override is possible at any time, timetable will catch on with the next transition.



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

Key concepts

low light and presence signal



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

Low light goes up and down once a day.

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.

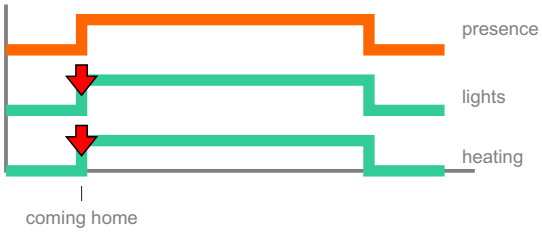
Disconnect charger
Phone is charged until morning, right? When disconnecting the charger, automatically turn lights and heating on.

Call notification
When you receive a call, selected light will turn on and off a couple of times, to bring the attention when phone is away or silenced.

Text notification
When you receive a text message, selected light will turn on and off a couple of times, to bring the attention when phone is away or silenced.

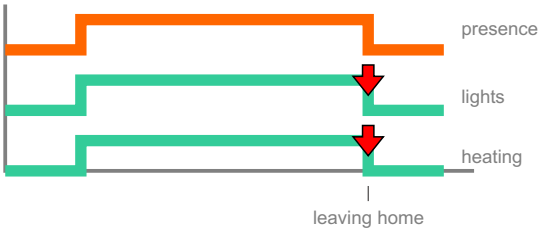
The most frequent question about home automation is - how to turn the damn thing off. However, regardless the inglorious reputation of smart machines, we strongly believe HIQ will gradually grow up into your daily routine. Events are generated automatically, you are in charge to assign actions according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

Coming home



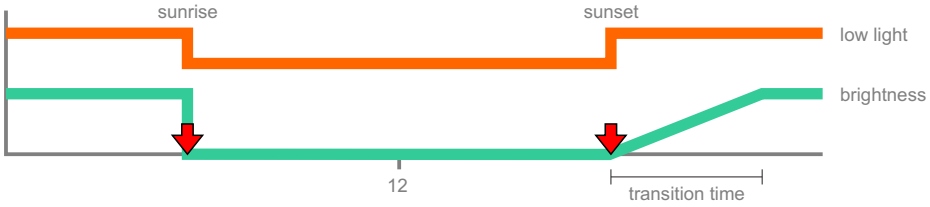
Use presence signal to set the scene and turn the heating on.

Leaving home



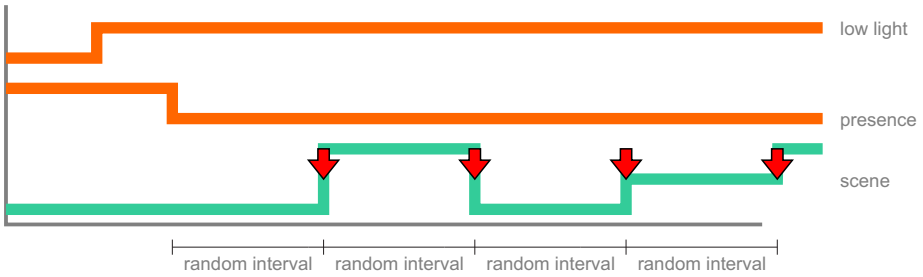
Use presence signal to turn the lights and heating off.

Smart lights



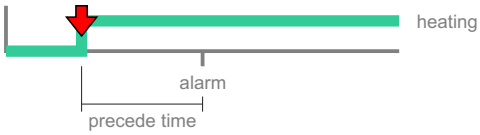
Automatic lights with an optional slope control, synchronized with the low light signal. Smart lights are also dependent on presence signal.

Random lights



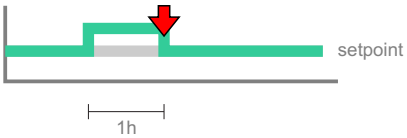
Turn the lights on and off to leave the impression that house is not empty, to discourage burglars.

Comfort wake up



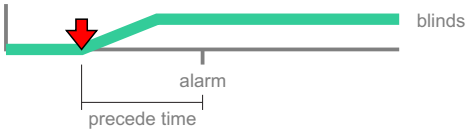
Turn the heating on a few minutes before the alarm clock.

Default setpoint



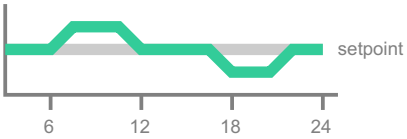
When setpoint is adjusted manually, one hour later return it to the predefined value.

Sunny wake up



Lift the blinds up a few minutes before the alarm clock.

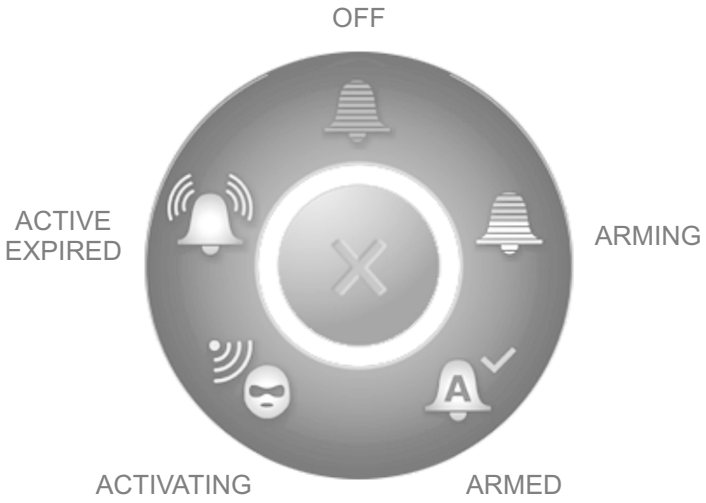
Bio offset



A minute 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

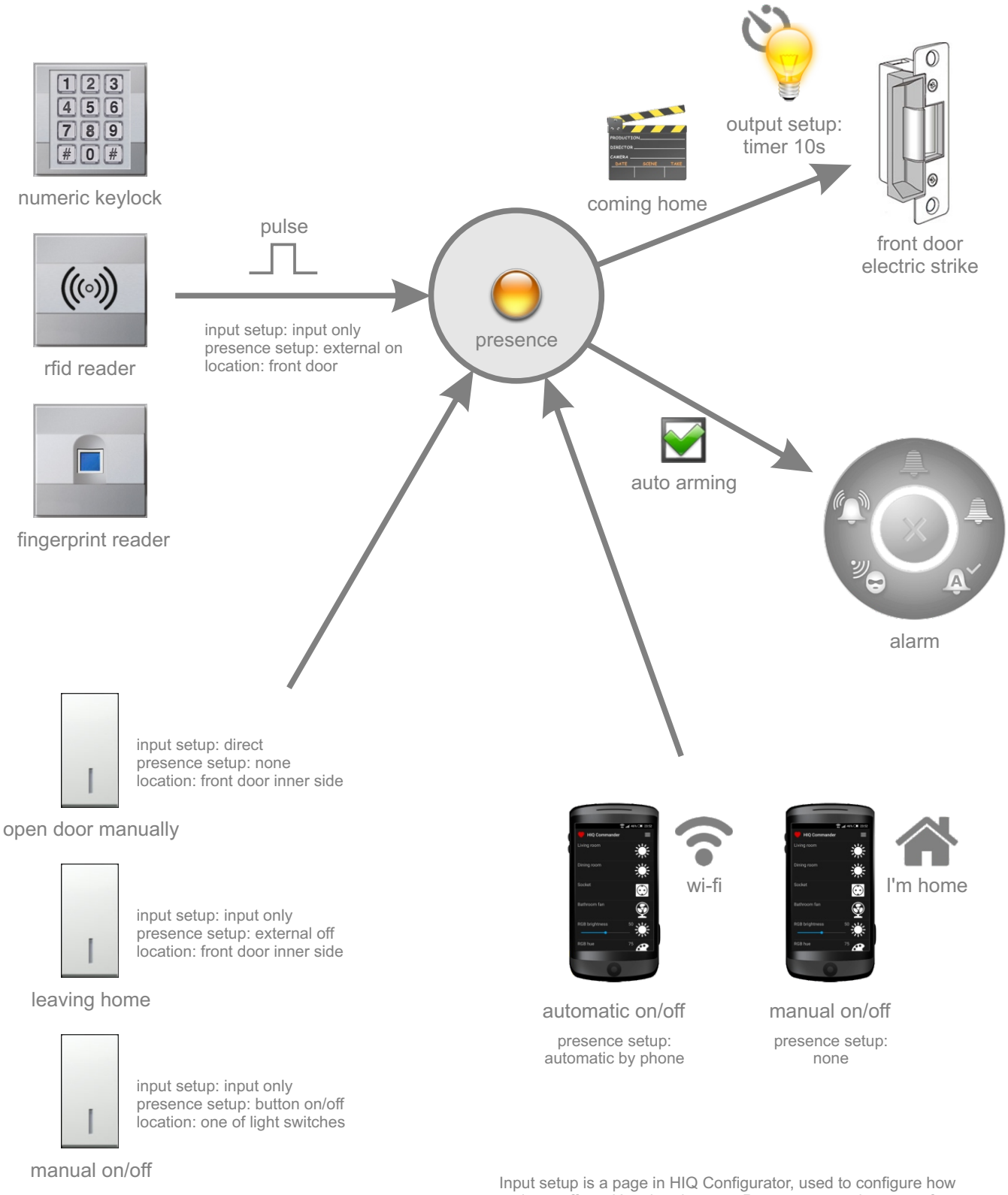
zone 0
residents at home
minimum security

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.

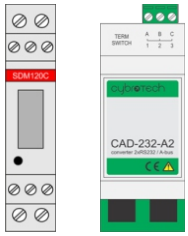
Energy

electricity measurement

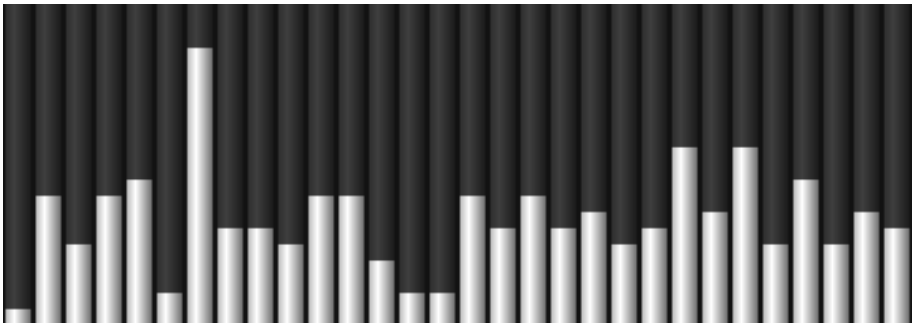
Energy monitoring is the first step to efficient energy usage. Once knowing how much energy something is using, one can make a rational strategy for saving.

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

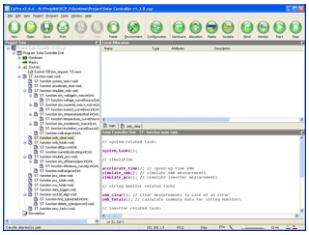
1. Turn the output off.
2. Reset relative power.
3. Turn the output on.

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;
```

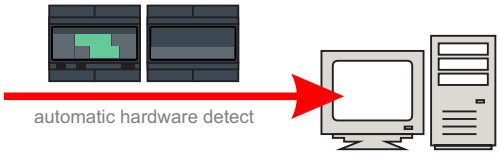
```
<object>
  <type>led</type>
  <var>c1000.lc00_qx00_counter</var>
  <digits>4</digits>
  <decimals>0</decimals>
  <zeroblanking>1</zeroblanking>
  <sign>0</sign>
  <ledcolor>$FF0000</ledcolor>
  <height>42</height>
  <x>100</x>
  <y>100</y>
</object>
```

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

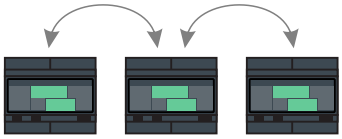
HIQ Simulator
test HIQ features without the actual hardware

System configuration

System limits

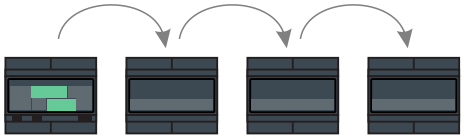
1x	HC-IQ main controller	one central controller
4x	LC-10-IQ light controller	40 on/off outputs
4x	LD-V4-IQ LED dimmer	16 dimmer channels
or		
4x	LD-P4-IQ universal dimmer	
or		
2x	LD-D8-IQ DALI dimmer	
2x	BC-5-IQ blinds controller	10 blinds
4x	SC-4-IQ scene controller	16 scenes
5x	TH-1-IQ thermostat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

Autodetect



To swich from controller to controller, use Autodetect function.

Autoaddress



To get all modules in order, use Autoaddress function.

Rename

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

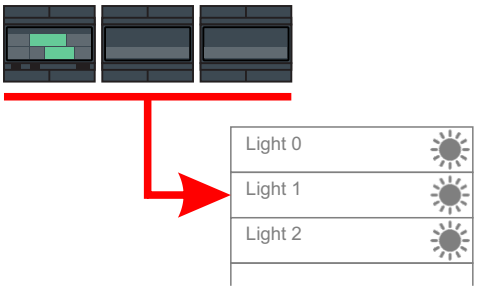
HIQ Commander

application for your smartphone

Google Play

App Store

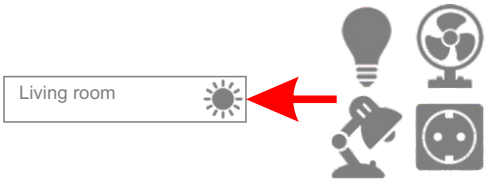
Autodetect



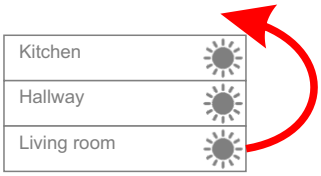
Autodetect must be executed in local network, to discover installed HIQ components and register them on the server. Multiple controllers are listed one after another.

Rename

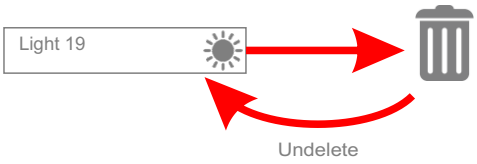
Change icon



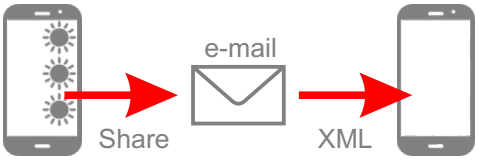
Rearrange



Remove



Copy configuration



Features

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

Application limits

HIQ Commander will autodetect more devices then nominal system limits:

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

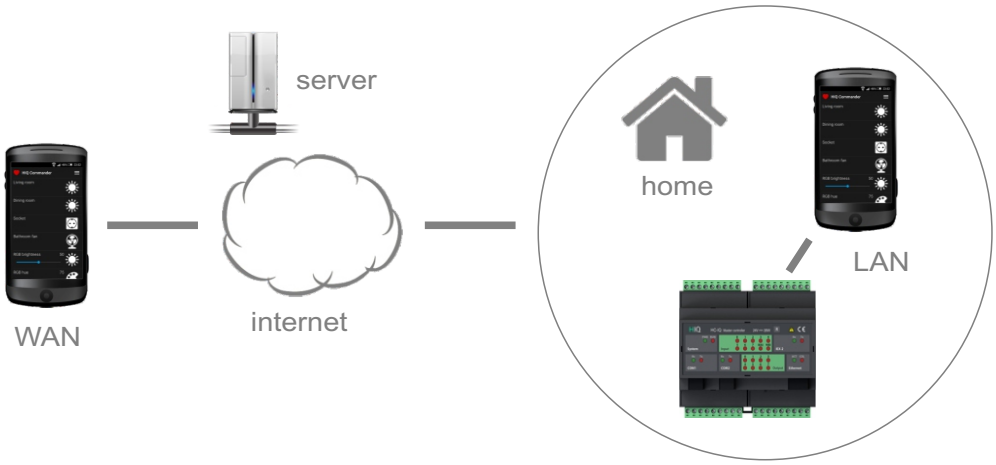
Additional devices are used for project-based features. Number of master controllers is not limited.

HIQ Home

cloud access and management

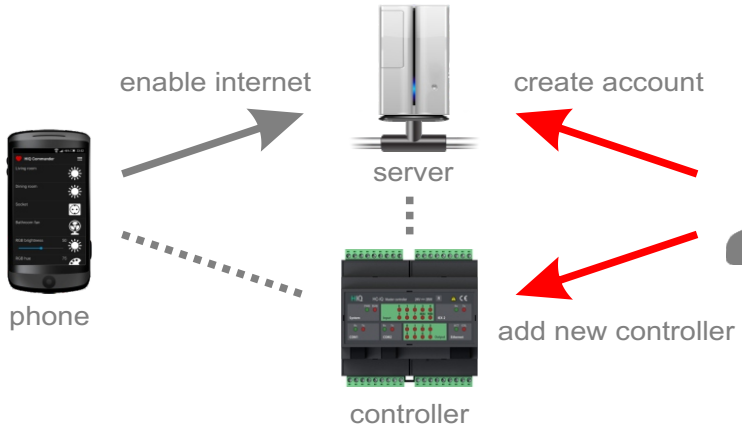
my.hiq-home.com

Local and internet connection



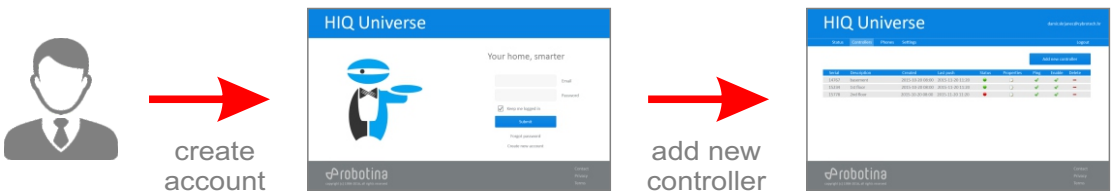
LAN / WAN switching is fully automatic. Number of phones is not limited.

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

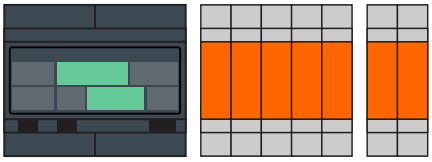

disable particular phone


close network for new phones

HIQ Universe also gives access to advanced services, provided by different providers.

HC-IQ master controller

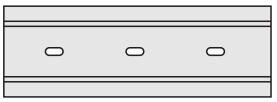
home automation main controller



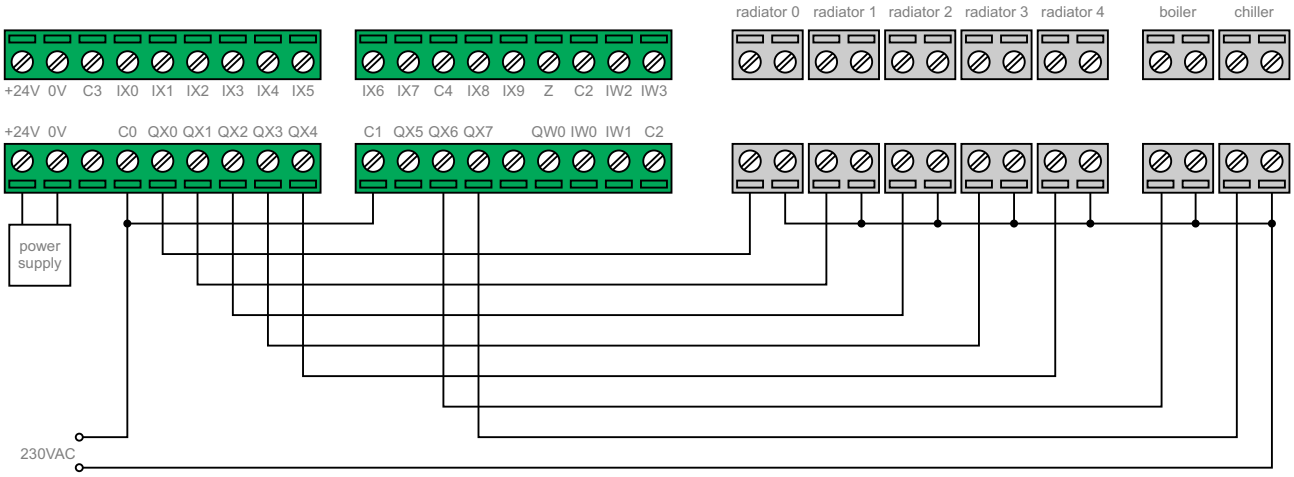
QX0 - radiator 0
QX1 - radiator 1
QX2 - radiator 2
QX3 - radiator 3
QX4 - radiator 4
QX5
QX6 - boiler
QX7 - chiller

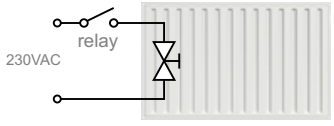
installation relay 16A/230V

Mounting: 35mm DIN rail 6M

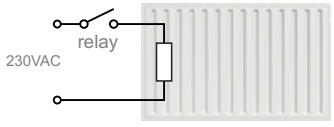


106





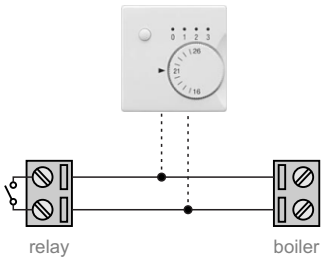
hot-water radiator



electric radiator

air condition
control through power suppy

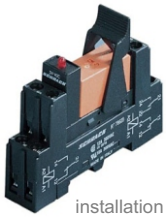
air condition
control through window switch input



old thermostat used as a backup

Features

smartphone connection
alarm
HVAC
timetable
automation
scene link
internet connection



installation relay

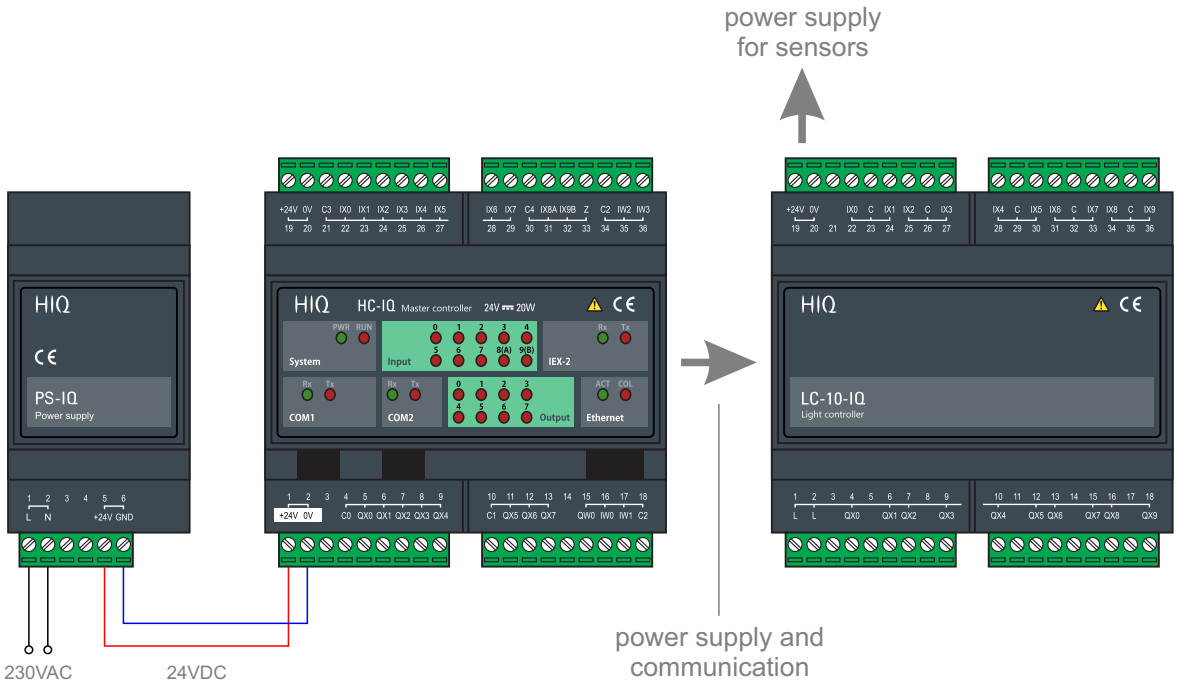
Internal relay is used for valves, other loads are recommended to use an additional 16A installation relay.

IEX-2 © HIQ

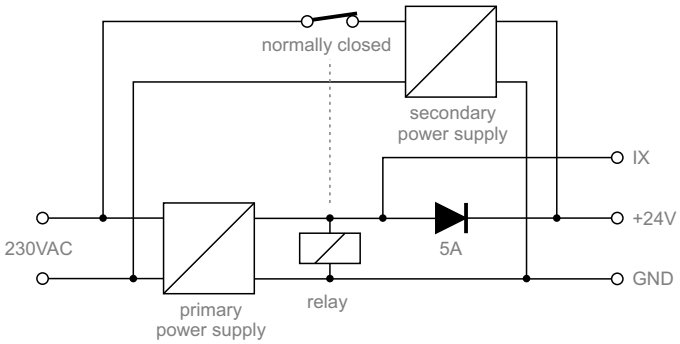
Relay outputs:	3A/250V resistive load only
Communication:	Ethernet 100M
Power supply:	24V/50mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	DIN rail
Dimensions:	106x108x58mm
Weight:	360g
Standards:	EN 61000-6-2, EN 61000-6-3, EN 61131-1, EN 61131-2, EN 61000-3-2, EN 61000-3-3

PS-IQ power supply

power source for the whole system



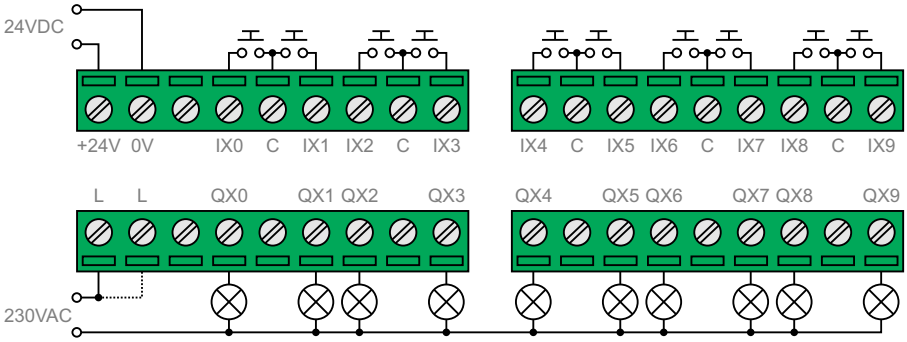
Backup power



Power supply is usually the most vulnerable part of the system. To prolong service life, secondary power supply may be added. When primary source is broken, the secondary takes on, so the operation is not interrupted. As secondary supply is connected to power only when first breaks, the same service life can be expected as the primary one. A spare input is used as failure indicator.

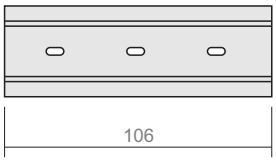
LC-10-IQ light controller

10 relay outputs

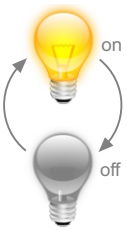


When total output power is 2kW or more, connect mains power supply to both L terminals.

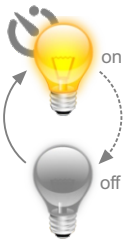
Mounting: 35mm DIN rail 6M



Output mode



on/off mode
button turns the light on and off



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

Input mode

toggle (press on, press off)

timer extend edge (press to reload)

timer extend level (counting when released)

direct (press on, release off)

inverse (closed off, open on)

Input mode defines how input affect the output. Basic functions are handled internally by light controller, night mode and ready light are handled with master controller.

Features

8A output relays are rated 8A, for bigger load use external installation relay or contactor

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

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

To prevent damage, socket must be marked "Caution: managed socket, 1400W max". We also recommend a distinct front color. Each output must be connected to a single socket.

Circuit protection

It is recommended to use miniature circuit breaker (MCB) 6A, tripping characteristics B. Therefore, output power is limited to 1400W per channel.

When total power of all channels is less then 1400W, a single MCB may be used. Otherwise, each channel should have a separate MCB. Managed sockets are always protected individually.

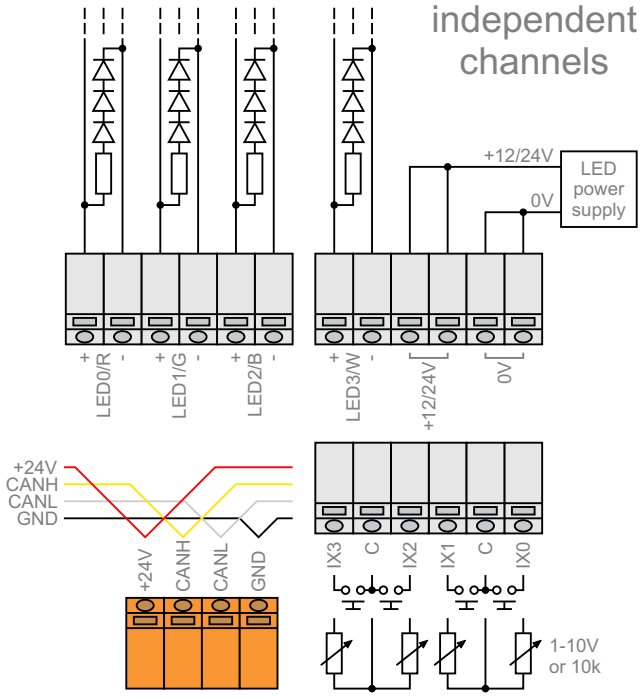
IEX-2 © HIQ

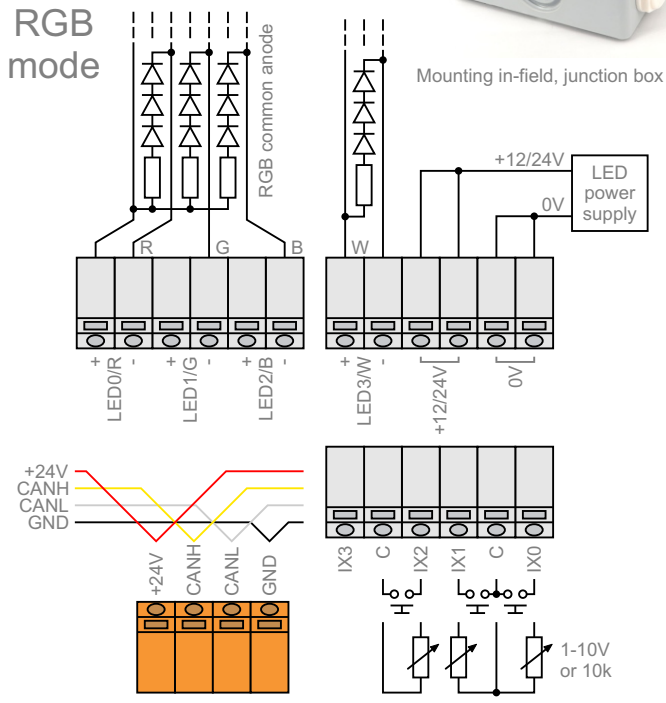
Output power per relay:	
- incadescent / halogen 230V	800W
- halogen 12V with transformer	400W
- LED with transformer or compact	400W
- fluorescent with electronic ballast	400W
- parallel compensated fluo lamps	250W/30uF
- electric heater	1400W
Total output power for all relays:	4000W
Maximum input cable length:	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 61000-6-2 EN 61000-6-3 EN 60730-1

LD-V4-IQ LED dimmer

4-channel constant voltage dimmer for LED stripes

Mounting in-field, junction box or drywall





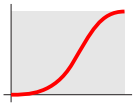
Features

RGB mode
hue, saturation, brightness
instead of individual RGB

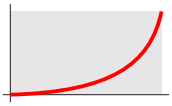
white temperature mode
adjust hue in range from
warm white to cold white

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

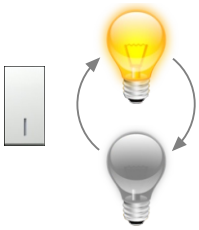
S-shaped on/off curve:
- soft start and landing
- fast and slow mode
- reduce electric noise



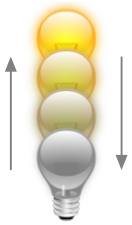
exponential output curve:
- natural feeling
- lowest level is 0.025%
- smooth transition



Operation



short press: on/off



long press: 0..100%

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

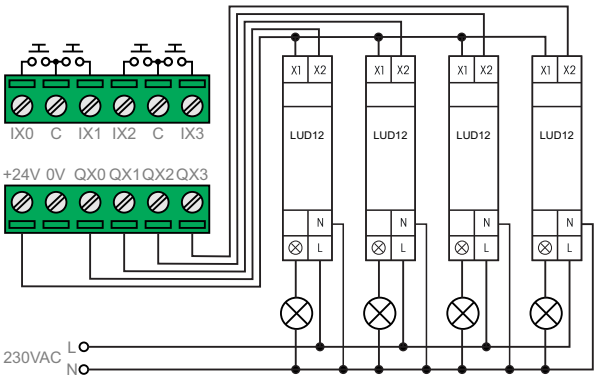
maximum current	
output	supply
1x10A	1x10A
2x10A	2x10A
3x6.7A	2x10A
4x5A	2x10A

IEX-2 © HIQ

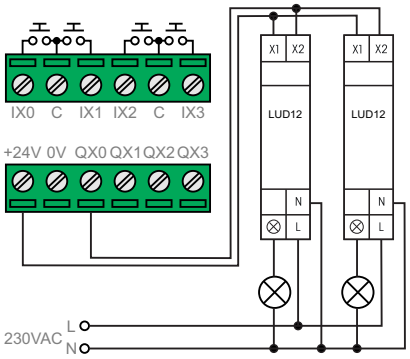
LED power supply:	12/24V (10..28V)
Total output power:	240W at 12V 480W at 24V
Max current per terminal:	10A
PWM frequency:	500Hz
Output resolution:	12-bit
Power supply:	24V/25mA
Galvanic separation:	supply/outputs
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	108x86x46mm
Weight:	160g
Standards:	EN 61000-6-1 EN 61000-6-3 EN 60669

LD-P4-IQ universal dimmer

4-channel dimmer with a separate power driver

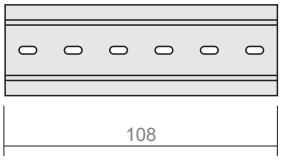


Standard connection with four independent power drivers



Power increased with a parallel connection of drivers

Mounting: 35mm DIN rail 2M + 4x1M

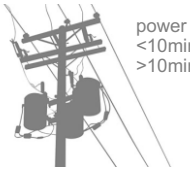


Features

RGB mode
hue, saturation, brightness
instead of individual RGB

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

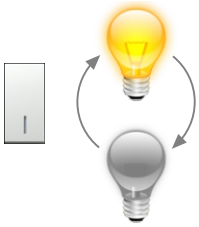
button or potentiometer input:
- autodetect input mode
- mixed controlls possible
- potentiometer auto-range



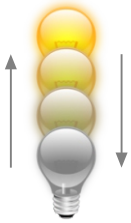
power outage:
<10min - lights come back
>10min - lights will stay off

- 400W power MOSFET
- automatic load detection
- low noise zero switching
- electronic overload protection
- overtemperature shutdown

Operation

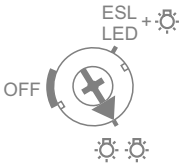


short press: on/off



long press: 0..100%

Driver rotary switch



switch must
be adjusted
to indicated
position

Output options

incandescent/halogen

compact fluorescent

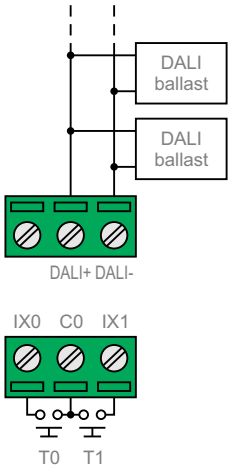
compact LED E27/E14

IEX-2 © HIQ

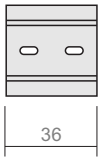
Lamp power supply:	230V
Output power per driver:	100W
Drivers per output channel:	unlimited
Driver control signal:	PWM 100Hz 24V
Power supply:	24V/25mA
Galvanic separation:	supply/outputs
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	36x108x58mm
Weight:	80g
Standards:	EN 61000-6-1 EN 61000-6-3 EN 60669

LD-D8-IQ DALI dimmer

8-channel dimmer for DALI ballasts



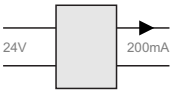
Mounting:
DIN rail 2M



Features

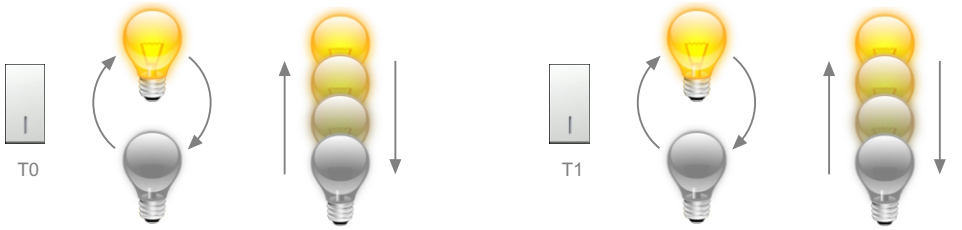
8x — control 8 independent groups

64x — drive up to 64 individual ballasts



internal DALI current source,
no additional power needed

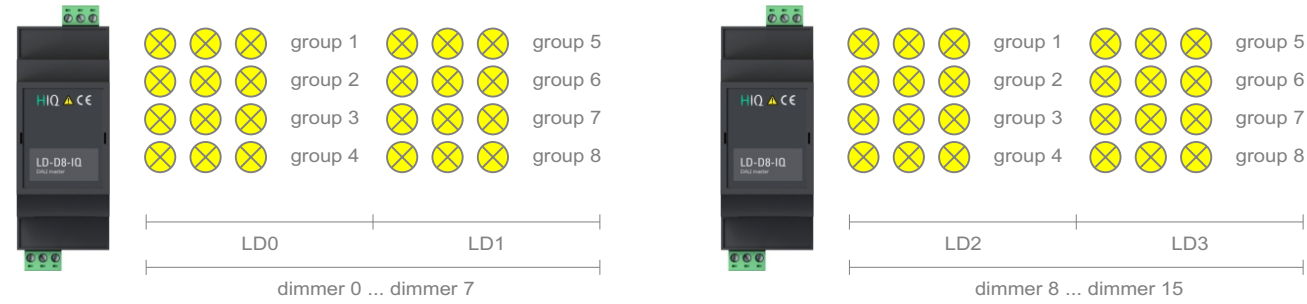
Operation



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

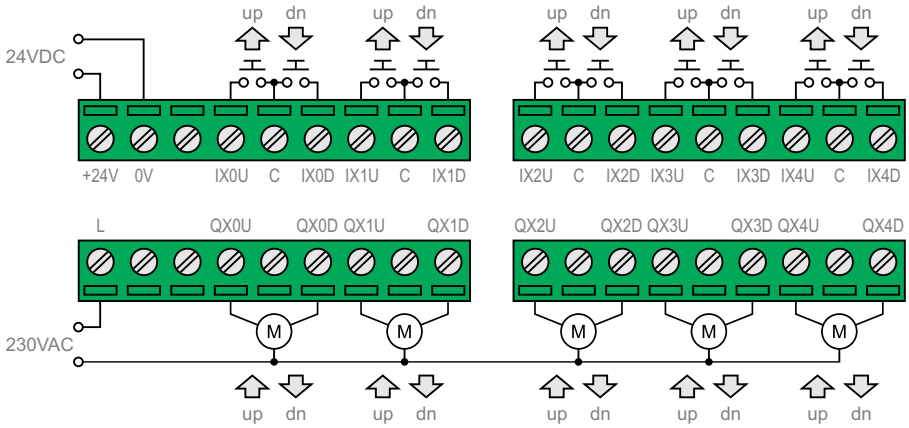
compact fluorescent

IEX-2 © HIQ CE

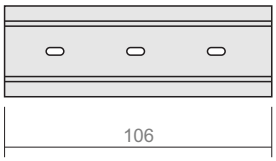
Digital inputs:	internal pull-up 12V, 2mA
DALI output:	200mA, up to 64 ballasts
Power supply:	24V/120mA
Galvanic separation:	none, ballasts must be SELV
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Dimensions:	36x108x58mm
Weight:	80g
Standards:	EN 61000-6-2 EN 61000-6-3

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.
2. Use stopwatch to measure travel time in both directions.
3. Mark a position on the window (e.g. 75%), then move blinds a few times up and down, without reaching the top or bottom. If the desired position shifts up, increase down time (or decrease up time) and check again. Repeat procedure until the positioning is precise enough.

IEX-2 © HIQ

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 61000-6-2 EN 61000-6-3 EN 60730-1

SC-4-IQ scene controller

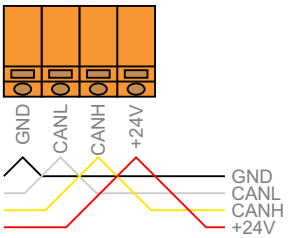
4-button universal scene controller

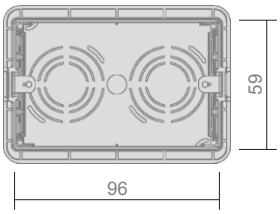
SC-4T-IQ

- 4 configurable touch buttons
- IR receiver + haptic feedback

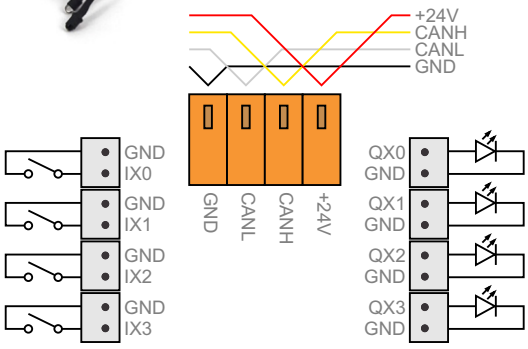
SC-4S-IQ

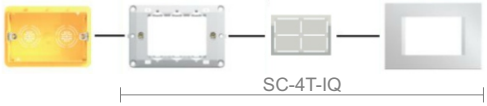
- 4 button inputs and 4 LED indicators
- connect to any classic button system
- extra-small size fits into any mounting

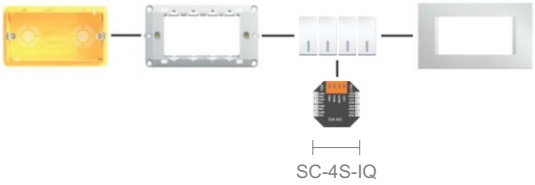




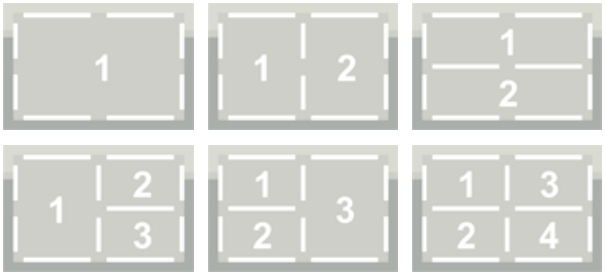
mounting: rectangular box 3M







Panel layout (SC-4T-IQ)



Button action

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

Remote controller

0	set scene 0 (code 1152)
1	set scene 1 (code 1153)
2	set scene 2 (code 1154)
. . .	
9	set scene 9 (code 1161)
	set scene 10 (code 1162)
. . .	
	set scene 31 (code 1183)

Inverse scene

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

Memorize scene

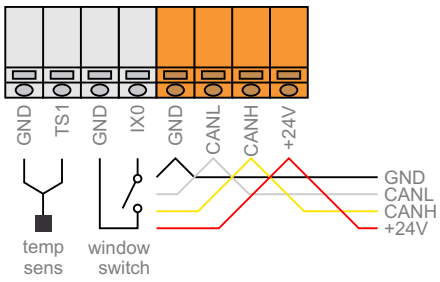
long press, confirmed by beep, store current state as a new scene

IEX-2 © HIQ

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
Mounting:	rectangular box 3M (SC-4T) any installation box (SC-4S)
Dimensions:	122x80x23mm (SC-4T) 49x49x7mm (SC-4S)
Weight:	80g (SC-4T) 20g (SC-4S)
Standards:	EN 61000-6-2 EN 61000-6-3

TH-1-IQ thermostat

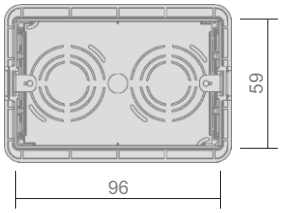
simple electronic thermostat



TH-1T-IQ
touch buttons

TH-1M-IQ
mechanic buttons

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

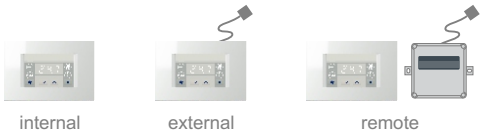
Display when off

off

dashes


temperature

Temperature sensor


internal external remote

Remote measurement should be handled by plc program

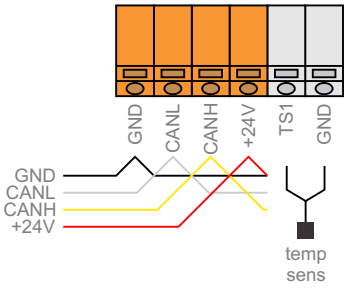
IEX-2 © HIQ

Window switch input:	internal pull-up 12V, 2mA
Temperature measurement:	internal and external
Measurement range:	0..45°C
Default offset:	-2.5°C
Power supply:	24V/15mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	rectangular flush box
Dimensions:	122x80x23mm
Weight:	80g
Standards:	EN 61000-6-2 EN 61000-6-3

TH-2-IQ thermostat

blind electronic thermostat

Mounting: on wall



Signalisation

- device not addressed
- device selected
- setpoint change up
- setpoint change down

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

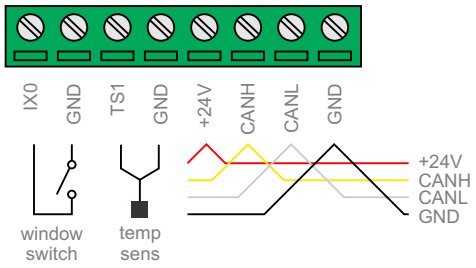
Remote measurement should be handled by plc program

IEX-2 © HIQ

Temperature measurement:	internal and external
Temperature range:	0..45°C
Default offset:	-1.4°C
Humidity range:	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
Mounting:	wall surface
Dimensions:	71x71x27mm
Weight:	50g
Standards:	EN 61000-6-2 EN 61000-6-3

TH-3-IQ thermostat

thermostat with display and configurable buttons

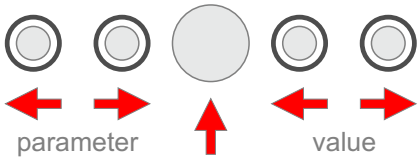


Mounting: regular 60mm junction box

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



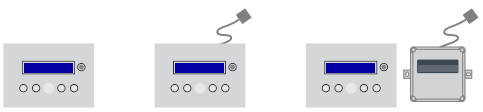
press and hold

- 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

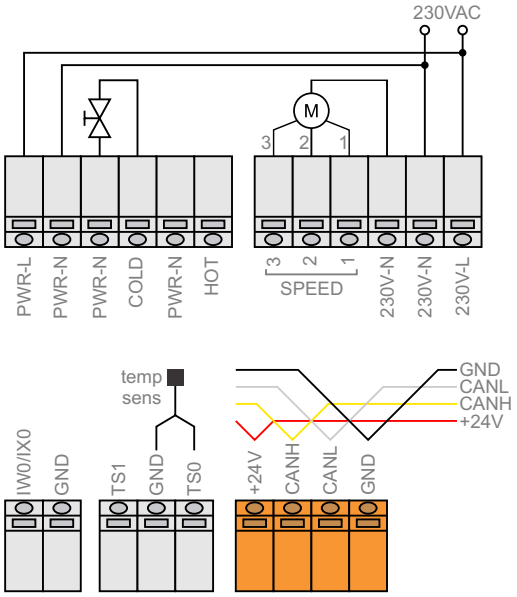
Remote measurement should be handled by plc program

IEX-2 © HIQ

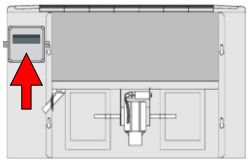
Temperature measurement:	internal and external
Measurement range:	0..45°C
Default offset:	-2.0°C
Power supply:	24V/25mA
Ingress protection:	IP20
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	wall surface
Dimensions:	136x96x36mm
Weight:	450g
Standards:	EN 61000-6-2 EN 61000-6-3

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

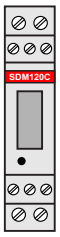
With heating, fan is delayed 60 seconds after valve, to prevent a blow of cool air. This delay is not implemented for cooling.

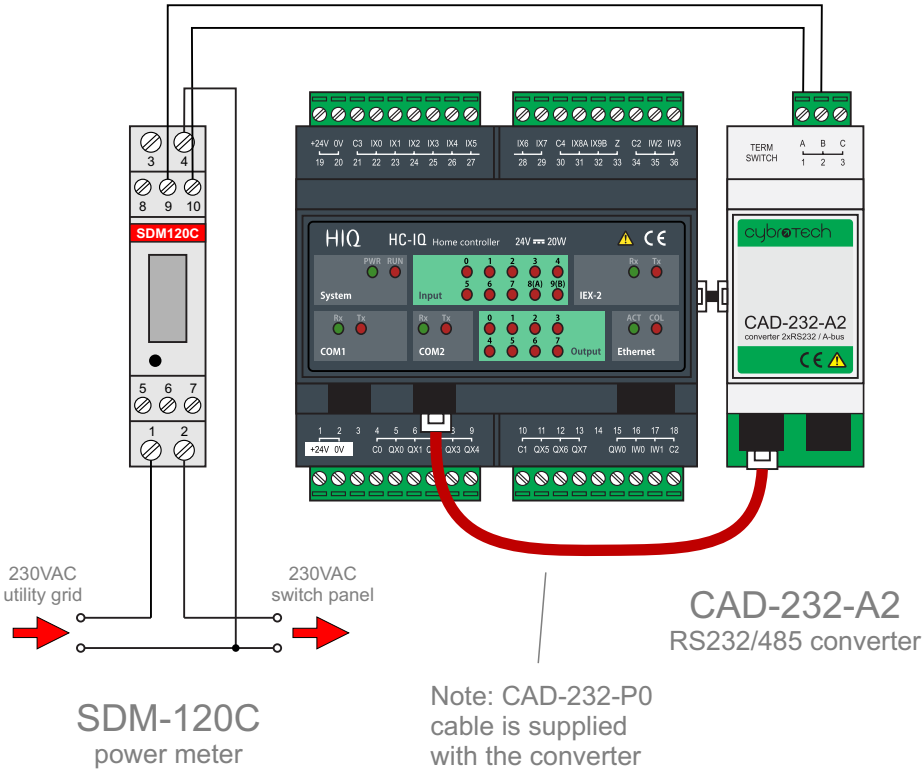
IEX-2 © HIQ

Relay outputs:	3A/250V
Temperature measurement:	external sensor ES or ES-A
Power supply:	24V/45mA
Operating temperature:	0..45°C
Storage temperature:	-20..75°C
Relative humidity:	0..95% n/c
Mounting:	inside the fan coil unit
Dimensions:	108x86x46mm
Weight:	150g
Standards:	EN 61000-6-2 EN 61000-6-3 EN 60730-1

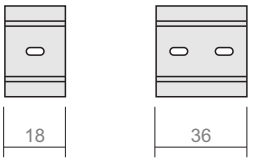
SDM-120C power meter

voltage, power, relative power and energy





Mounting: 35mm DIN rail 1M + 2M



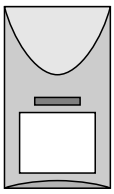
IEX-2 © HIQ

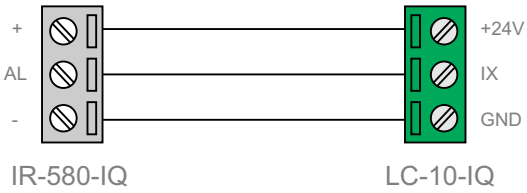
Nominal voltage:	230VAC, 110VAC
Voltage range:	77..300VAC
Maximum current:	45A
Operational frequency:	50..60Hz
Power consumption:	2W
Communication setup:	2400 8e1
Modbus address:	1
Communication cable:	CAD-232-P0
Ingress protection:	IP51
Operating temperature:	-25..55°C
Storage temperature:	-30..70°C
Relative humidity:	85%
Mounting:	DIN rail
Dimensions:	119x17.5x62mm
Weight:	85g
Standards:	IEC 62053-21

IR-580-IQ and other sensors

motion sensor, door sensor, light sensor

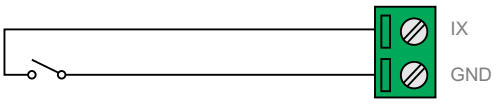
Motion sensor





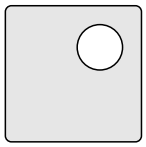
IR-580-IQ LC-10-IQ

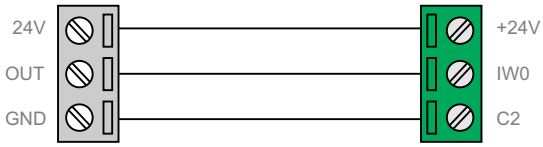
Door sensor



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.

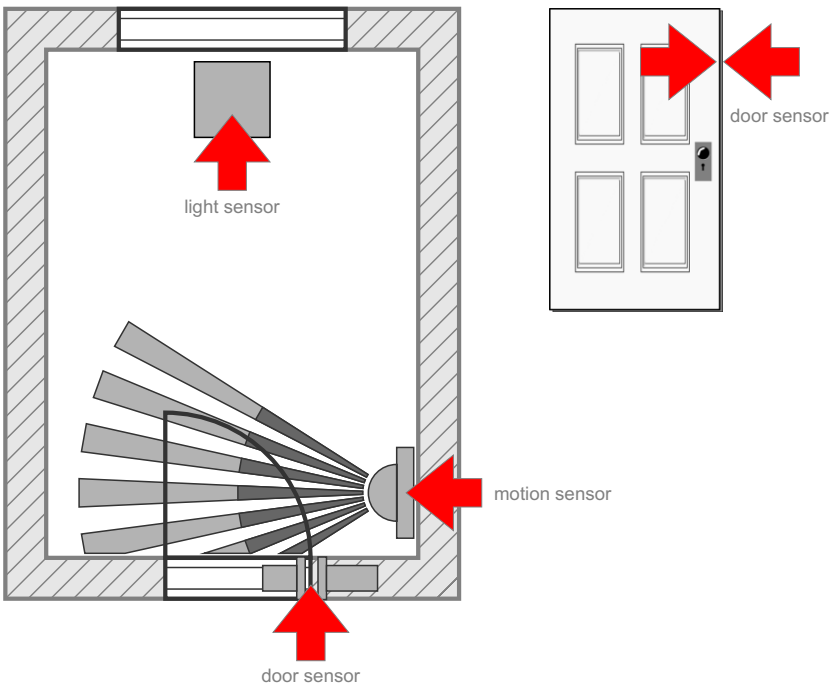
Door sensor is mounted on the knob side, usually about 20cm from the top. Magnet goes into the door, contact goes into the doorpost.

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. Best option is west or south 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

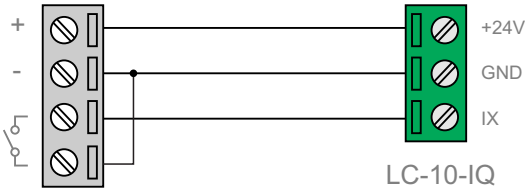


IEX-2 © HIQ

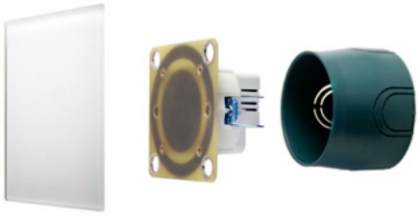
Door sensor	-
Switch type:	reed switch, normally open
Dimensions:	25x7mm
Weight:	12g
Motion sensor	
Output type:	NPN o.c. 75mA
Power supply:	24V 10mA
Operating temperature:	20..50°C
Storage temperature:	-20..75°C
Dimensions:	100x60x42mm
Weight:	85g
Light sensor	
Output type:	0..10V
Power supply:	24V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

AS-24RA touchless switch

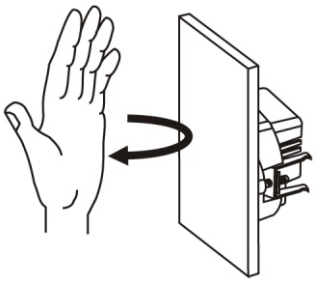
no-contact wall mounting switch



Mounting: regular 68mm junction box



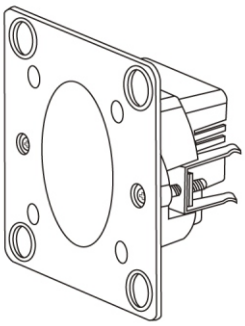
Operation



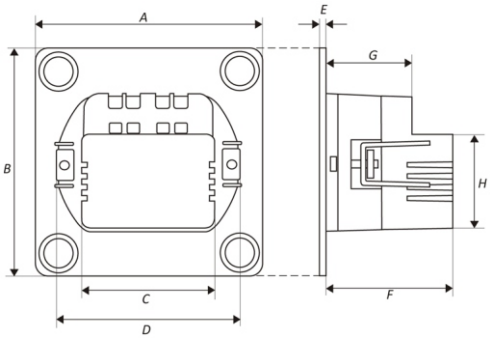
Features

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



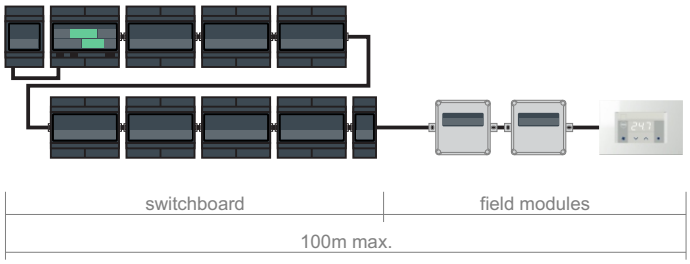
A (width)	70mm
B (height)	70mm
C (back housing width)	40mm
D (back housing width)	59mm
E (plate thickness)	1.6mm
F (depth)	34.4mm
G (depth)	25.5mm
H (back housing height)	28.5mm

IEX-2 © HIQ

Switch model:	AS-24RA
Detection distance:	2..10cm adjustable
Detection delay:	200ms
Output type:	NPN o.c. momentary
Power supply:	24V 6mA
Operating temperature:	0..50°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.

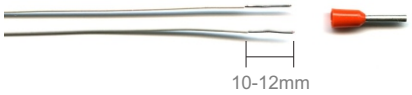
Devices inside switchboard are addressed sequentially, from left to right. Devices outside of switchboard (field modules) are addressed in order of ascending serial numbers - lowest serial number gets the first address, second lowest the second, and so on.

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.

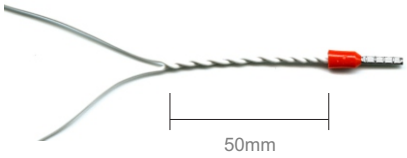
Bus wiring

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

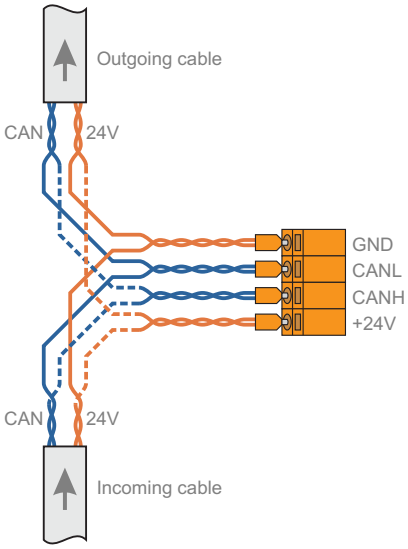


2. Crimp wires together into a ferrule.

3. Wrap wires together for a few centimeters.

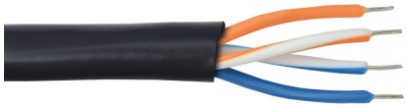


4. Push ferrules into clamps.



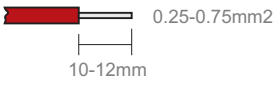
Recommended bus cable

unshielded twisted pair 2x2 0.5mm2

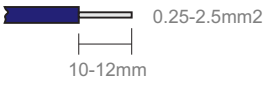


Wire stripping

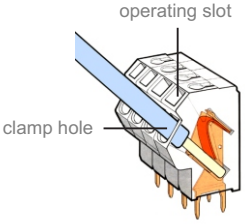
Bus wires (orange terminals)



Other wires (gray terminals)



Push-wire handling



Solid wire insertion

1. Push wire in the clamp hole

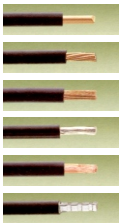
Stranded wire insertion

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

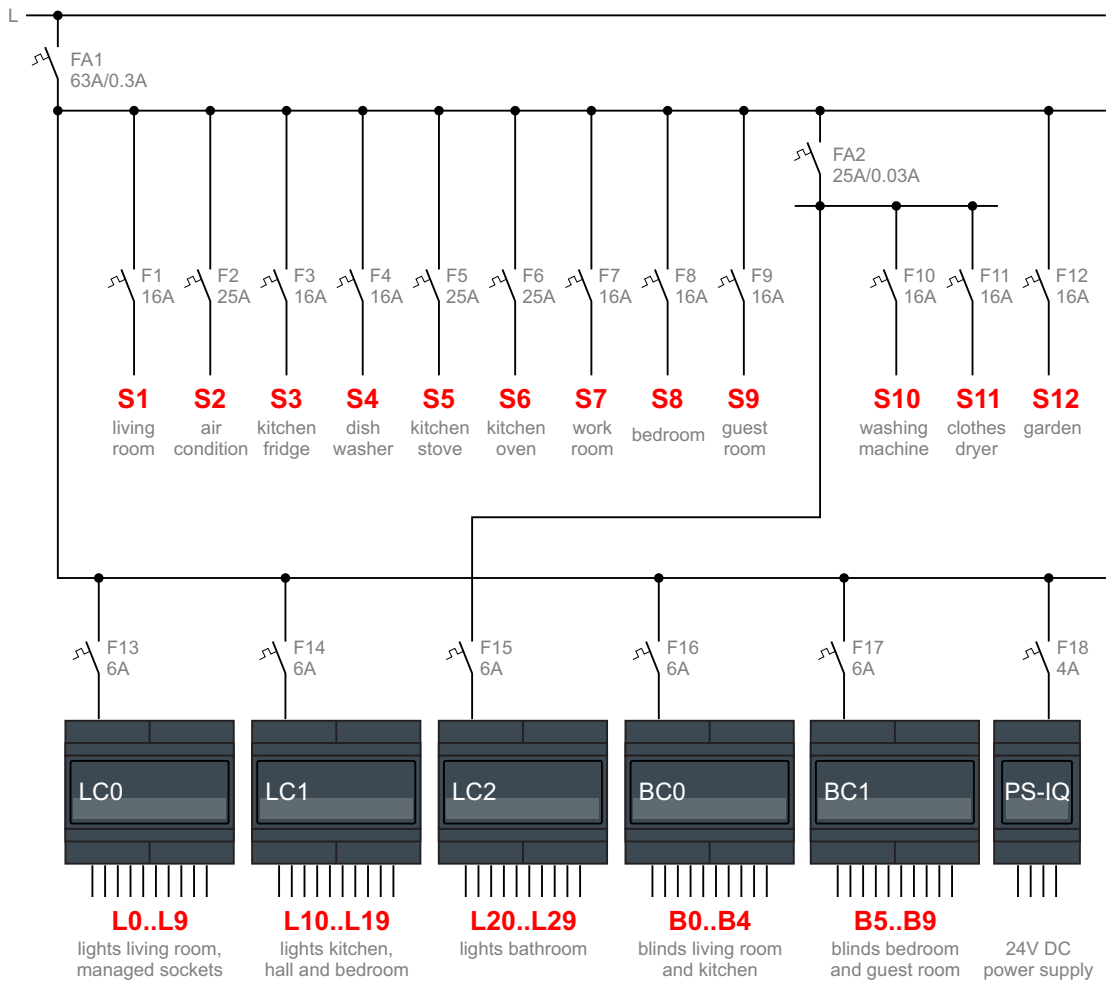
Solid/stranded wire removal

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

Wire type

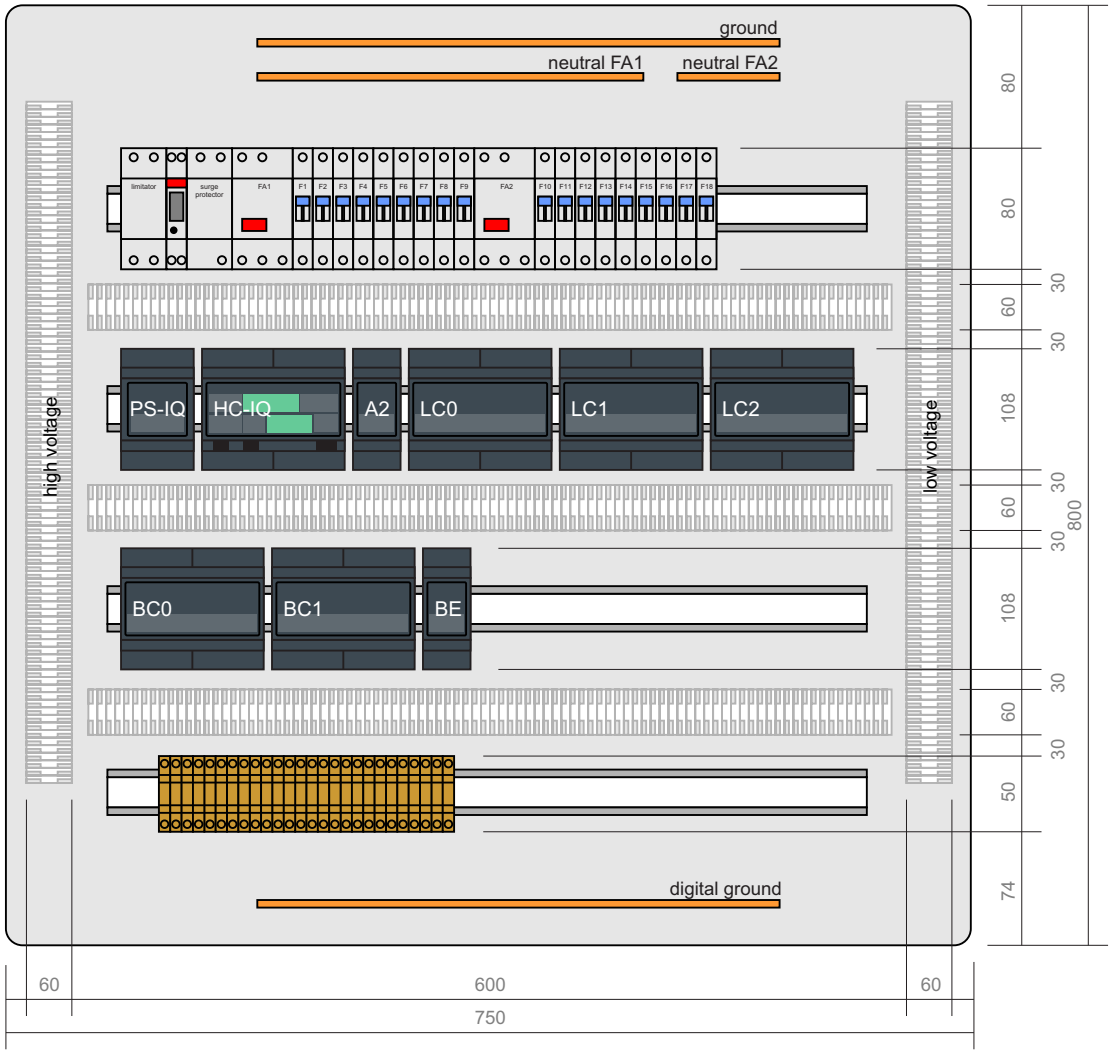


Schematic diagram



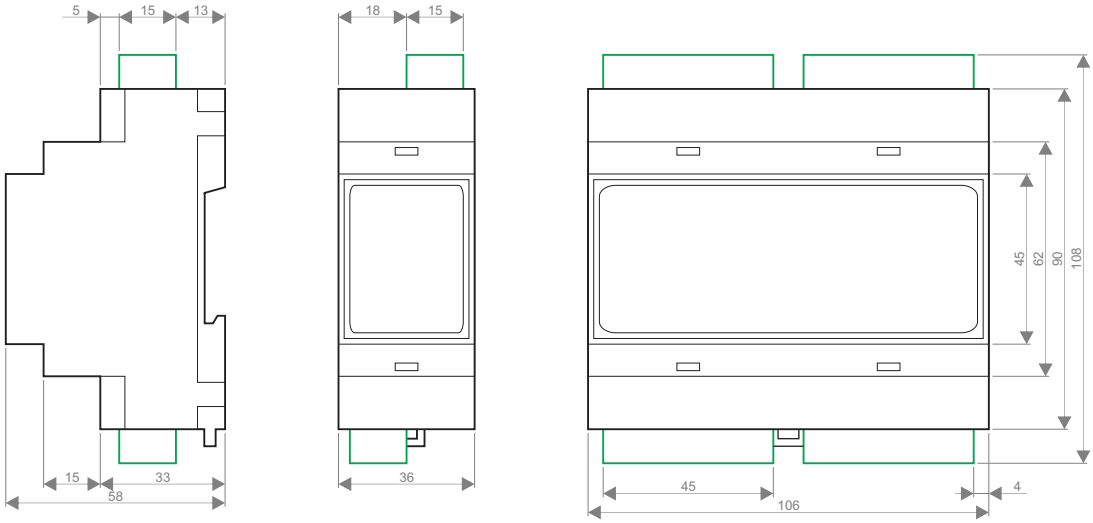
This diagram represents a typical schematic diagram for a 200m2 house. Circuits S1 to S12 are standard unmanaged power sockets. Circuits L0 to L29 are used for lights and managed sockets. Circuits B0 to B9 are used for electric blinds. FA1 and FA2 are residual current switches. 24V DC is power supply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

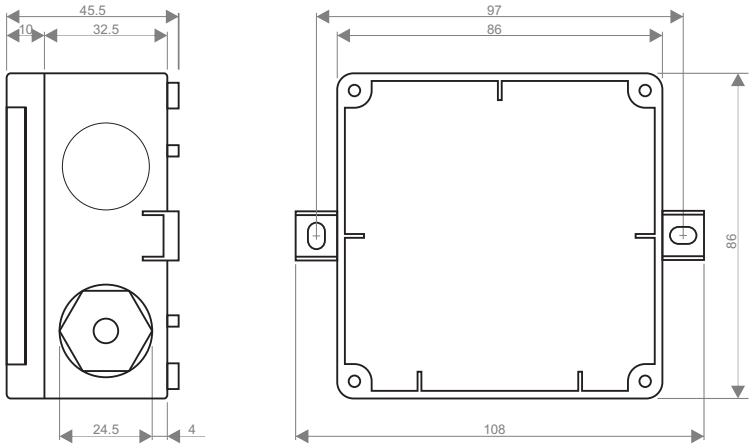
Switch panel

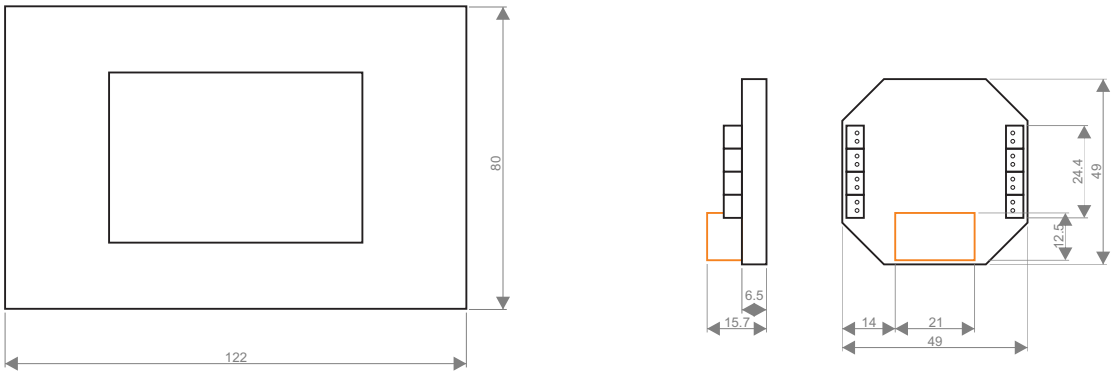


This diagram represents a typical switchboard layout. Four DIN rails are used, top row for fuses, next two rows for HIQ modules, and the last row for interconnecting terminals. Above and below are ground and neutral rails.Digital ground is a common rail for input switches and sensors. 30mm is a minimum 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
6.5
15.7
24.4
49
12.5
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

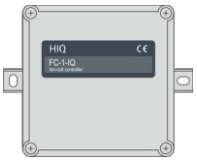
LD-D8-IQ
8-channel
DALI dimmer

SC-4T-IQ
touch screen
scene controller

SC-4S-IQ
scene controller for
standard buttons

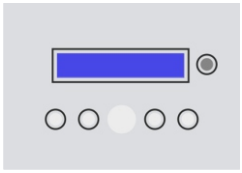
TH-1T-IQ
thermostat with
touch buttons

TH-2-IQ
blind thermostat



FC-1-IQ
fan-coil
actuator

TH-1M-IQ
thermostat with
mechanical buttons



TH-3-IQ
thermostat with
scene buttons

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

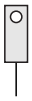
CAD-232-A2
232/485 converter
(including cable)

Order code

cables and accessories

RE-2
IR remote controller

ES
temperature sensor



ES-A
temperature sensor

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
cable for 232/485 converter

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-24RA
touchless switch