



Grenton

Installation guidelines

2025

Table of contents

Building wiring

Electrical installation - 230V AC lighting	4
Electrical installation - 12-24V DC lighting	5
Electrical installation - roller shutters	8
Electrical installation - heating	10
Electrical installation - heating: temperature measurement	13
Electrical installation - touch panels and switches	16
Electrical installation - sensors	17
Electrical installation - water valves	20
Electrical installation - gates	23

Grenton TF-Bus

Bus cable - requirements	27
Serial data communication wiring	29
Star data communication wiring - bus "straightening"	30
Bus length	31
Forbidden bus looping	32
Forbidden branching	33

Wireless protocols

Z-Wave	34
Electrical installation - Z-Wave modules	35
System including Wi-Fi modules and CLU	36
System including Wi-Fi modules without CLU	37
Electrical installation - Wi-Fi modules	38

1-Wire bus

Data communication wiring	42
Analog IN/OUT module - sensors connection	43
Flush-mounted modules - sensors connection	44

DALI bus

Serial data communication wiring	45
Star data communication wiring	46
Mixed data communication wiring	47
Bus power supply	48
DALI bus - requirements	49
Number of ballasts	50

System communication

System with the one CLU class device	51
System with several CLU class devices	52
Mobile devices	53

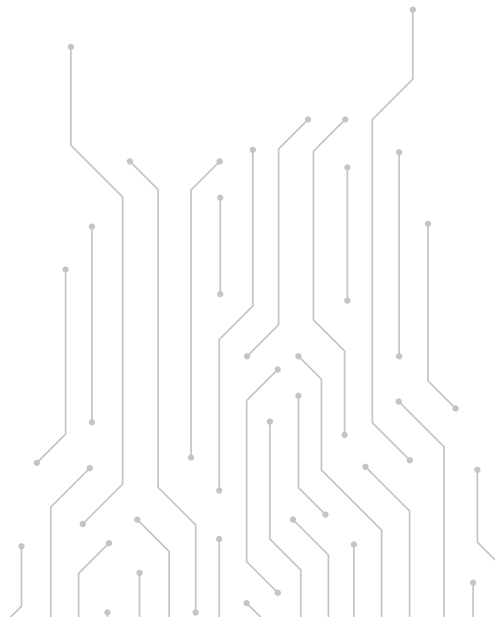
System power supply

Power supply unit selection	54
Power supply unit selection - example	55
System power supply	56
System power supply - 1 st example	57
System power supply - 2 nd example	58
Power supply of the system using a redundancy module	59

| Table of contents

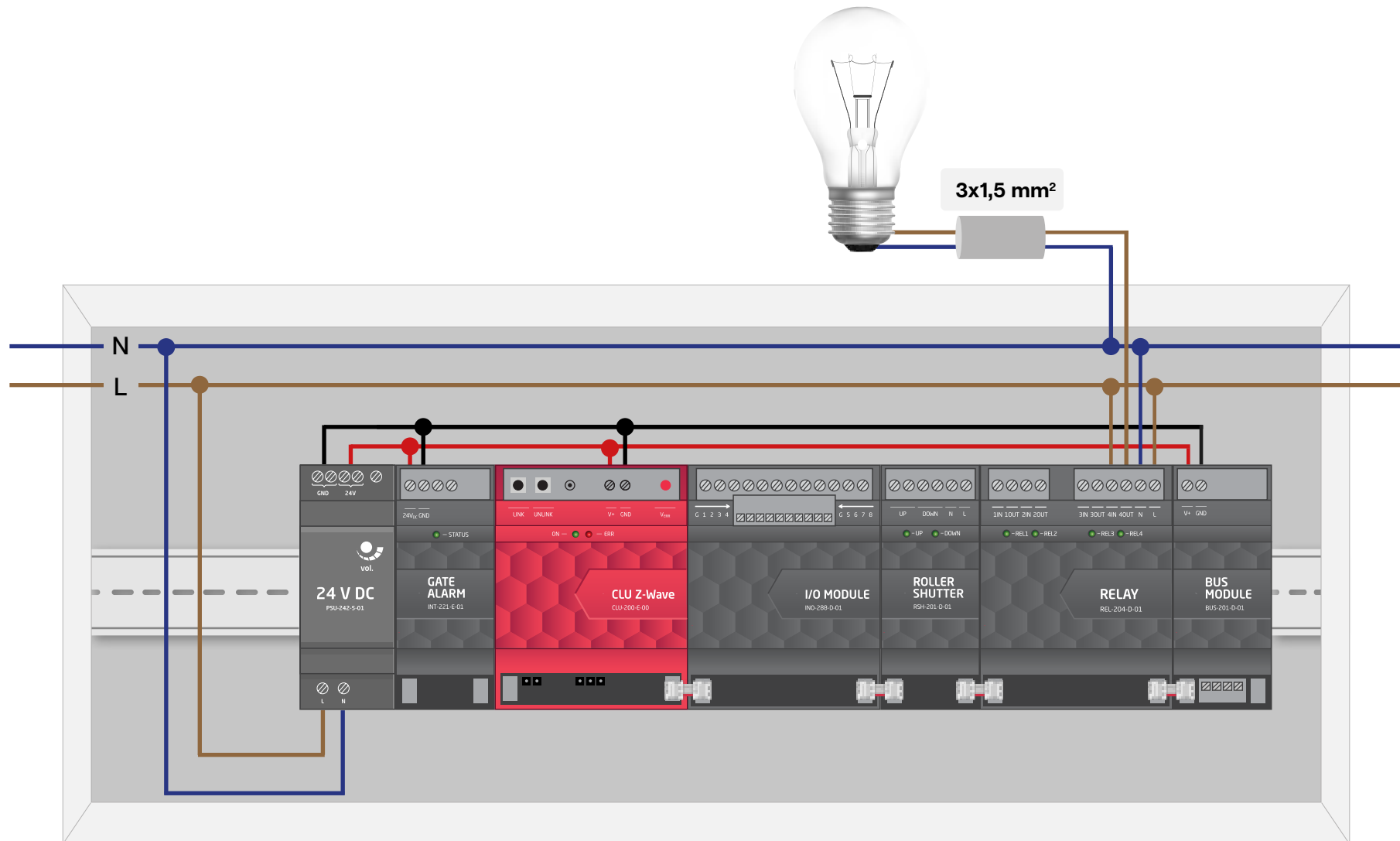
Bus termination	64
Bus termination	65
Termination - DIN modules	66
Termination - touch panels and flush-mounted modules	67
Multisensor	68
Placement - reading of sensor measurements	69
Radiation characteristics of IR emitter and operation range	70
LED strips control	71
Wiring diagram - RGBW LED strips	72
Wiring diagram - RGBW LED strips	73
Wiring diagram - CTT LED strips	74
Wiring diagram - CTT LED strips	75
Wiring diagram - W LED strips	76
Wiring diagram - W LED strips	77
Modules protection	78
Residual current circuit breakers and overcurrent circuit breakers for Relay module	79
Residual current circuit breakers and overcurrent circuit breakers for I/O 8/8 module	80
Residual current circuit breakers and overcurrent circuit breakers for Roller Shutter module	81
Residual current circuit breakers and overcurrent circuit breakers for Dimmer MOSFET module	82

Building wiring



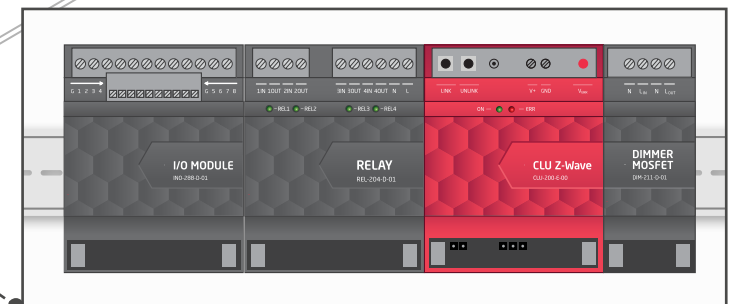
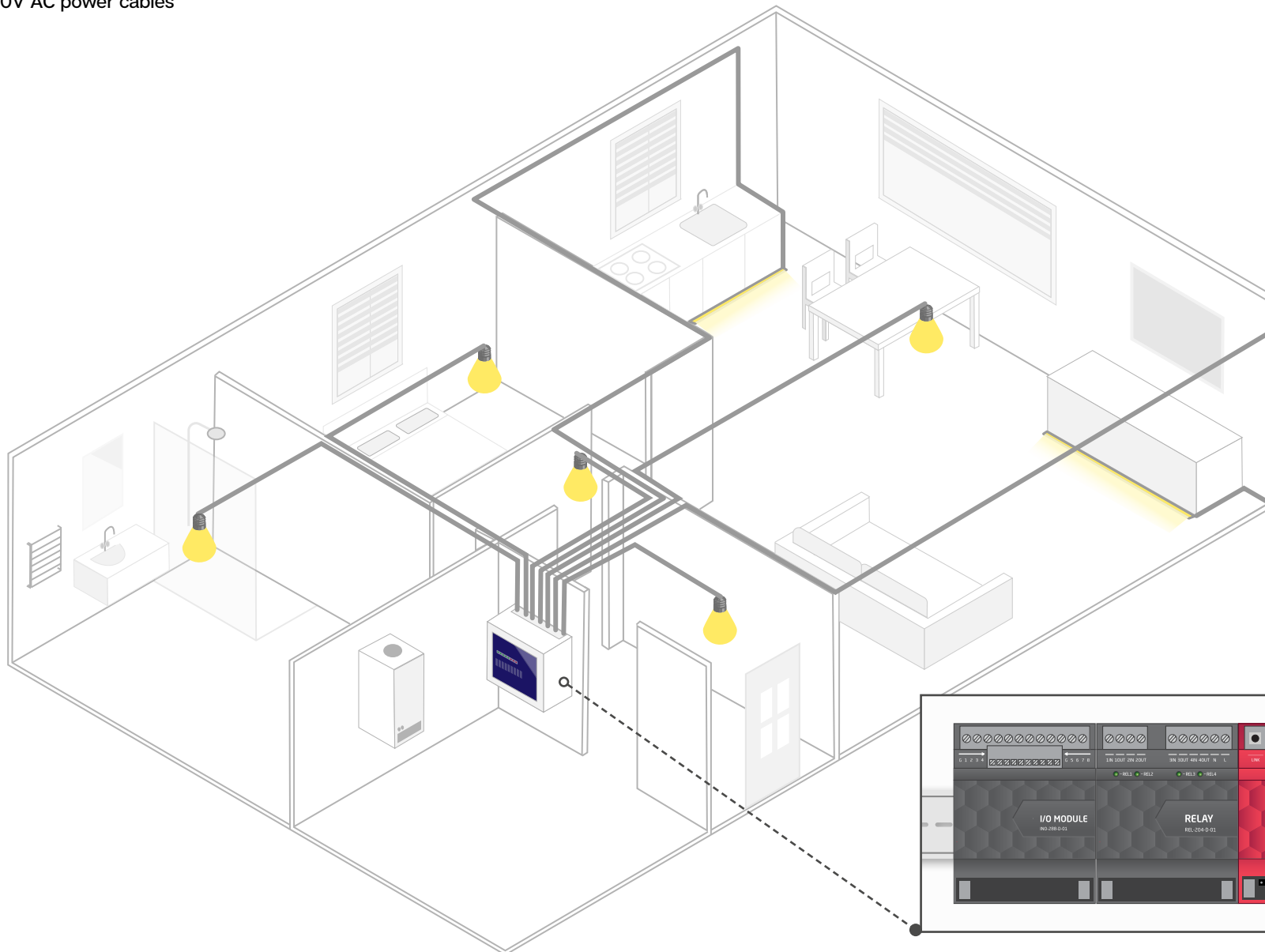
Electrical installation - 230V AC lighting

230V AC power cables



Electrical installation - 230V AC lighting

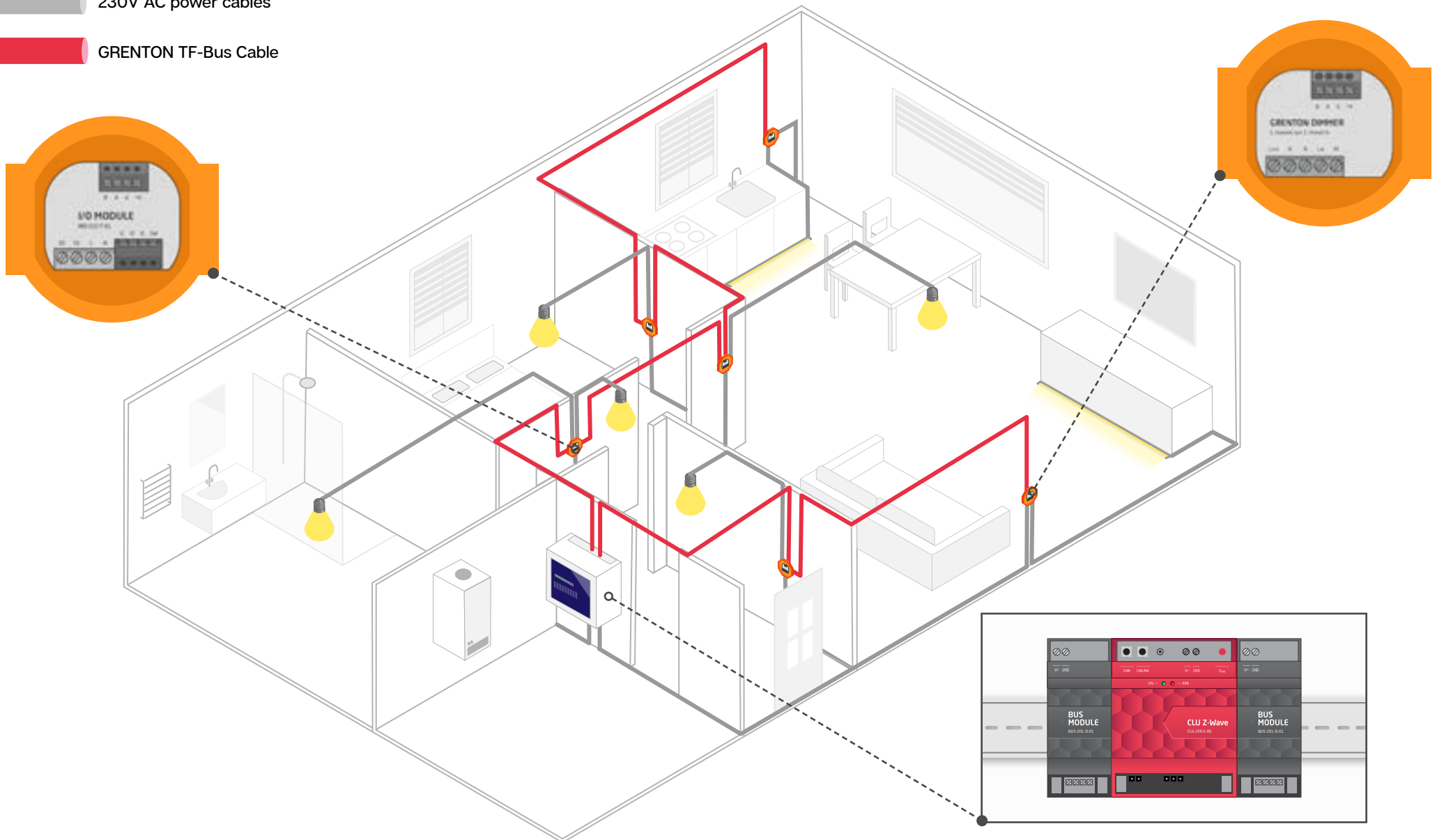
230V AC power cables



Electrical installation - 230V AC lighting

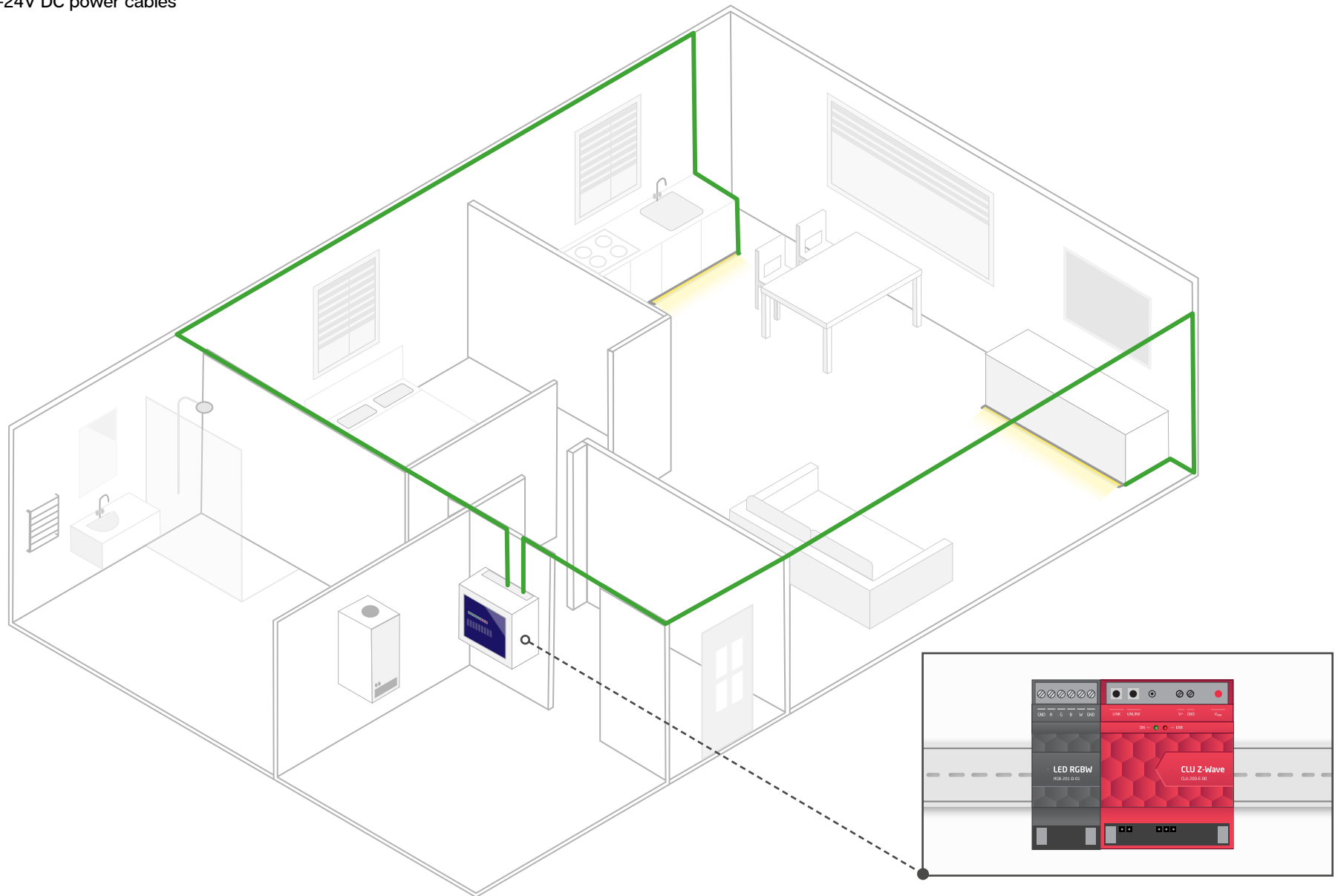
230V AC power cables

GRENTON TF-Bus Cable



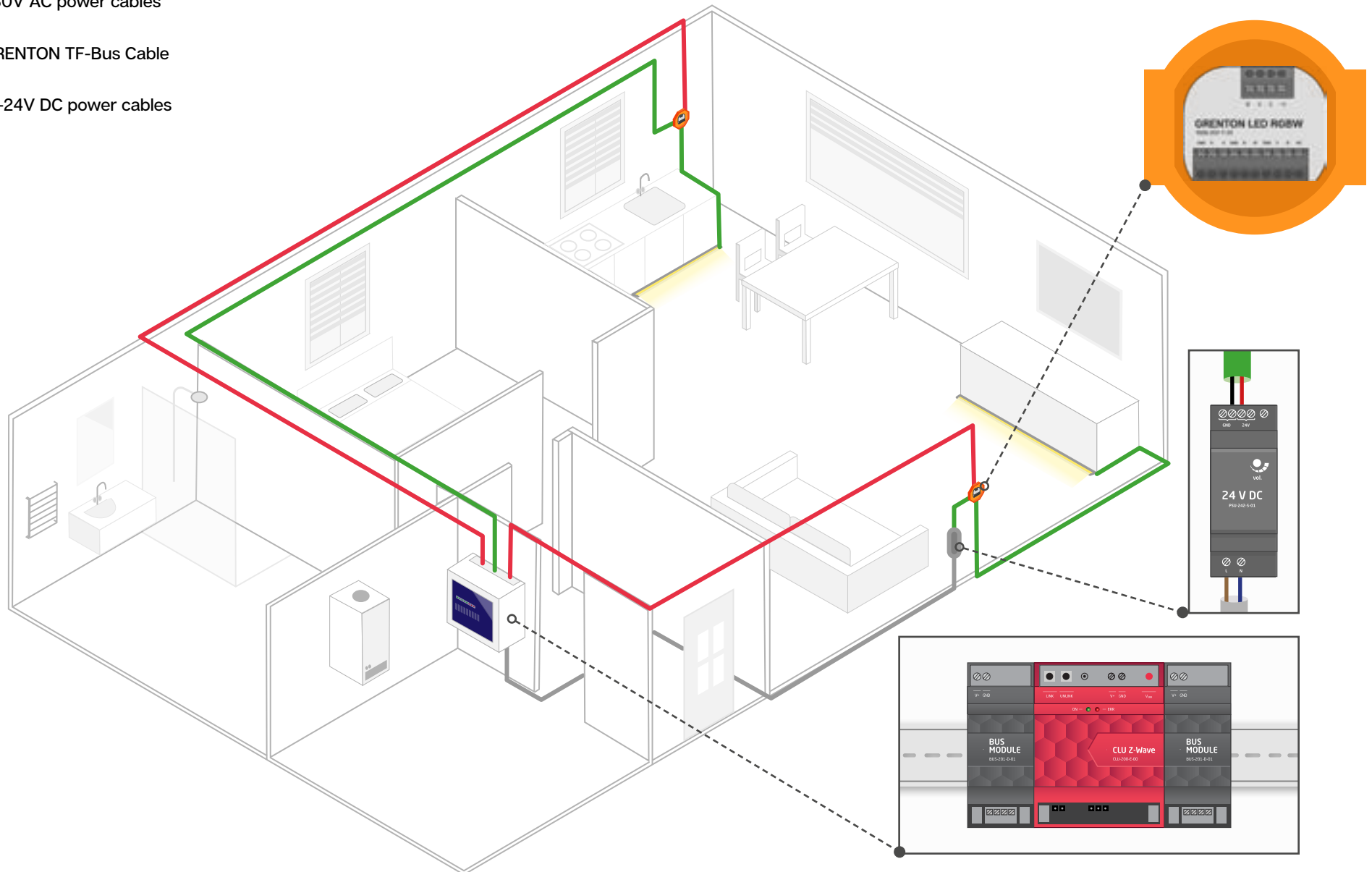
Electrical installation - 12-24V DC lighting

12-24V DC power cables



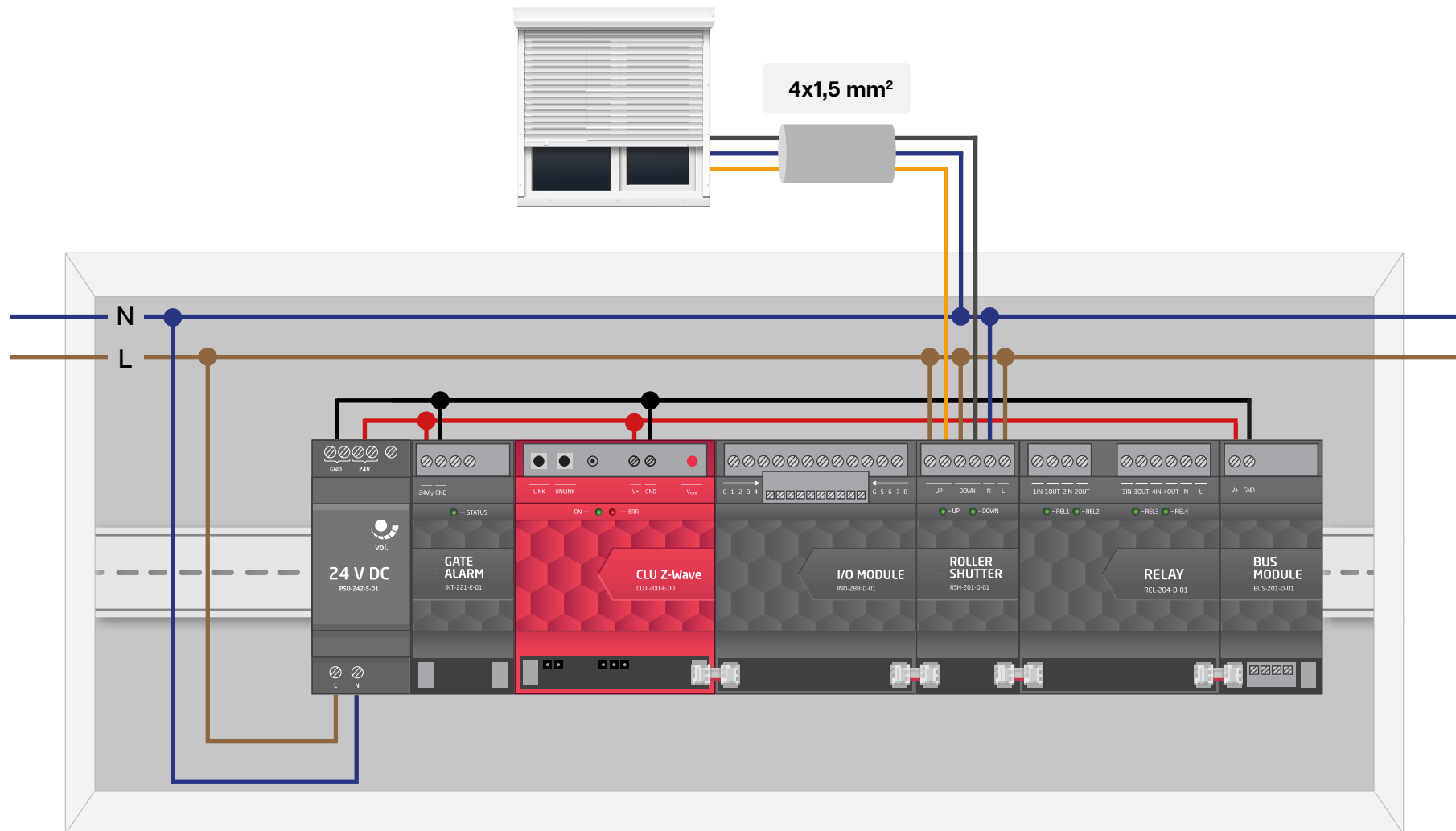
Electrical installation - 12-24V DC lighting

- 230V AC power cables
- GRENTON TF-Bus Cable
- 12-24V DC power cables



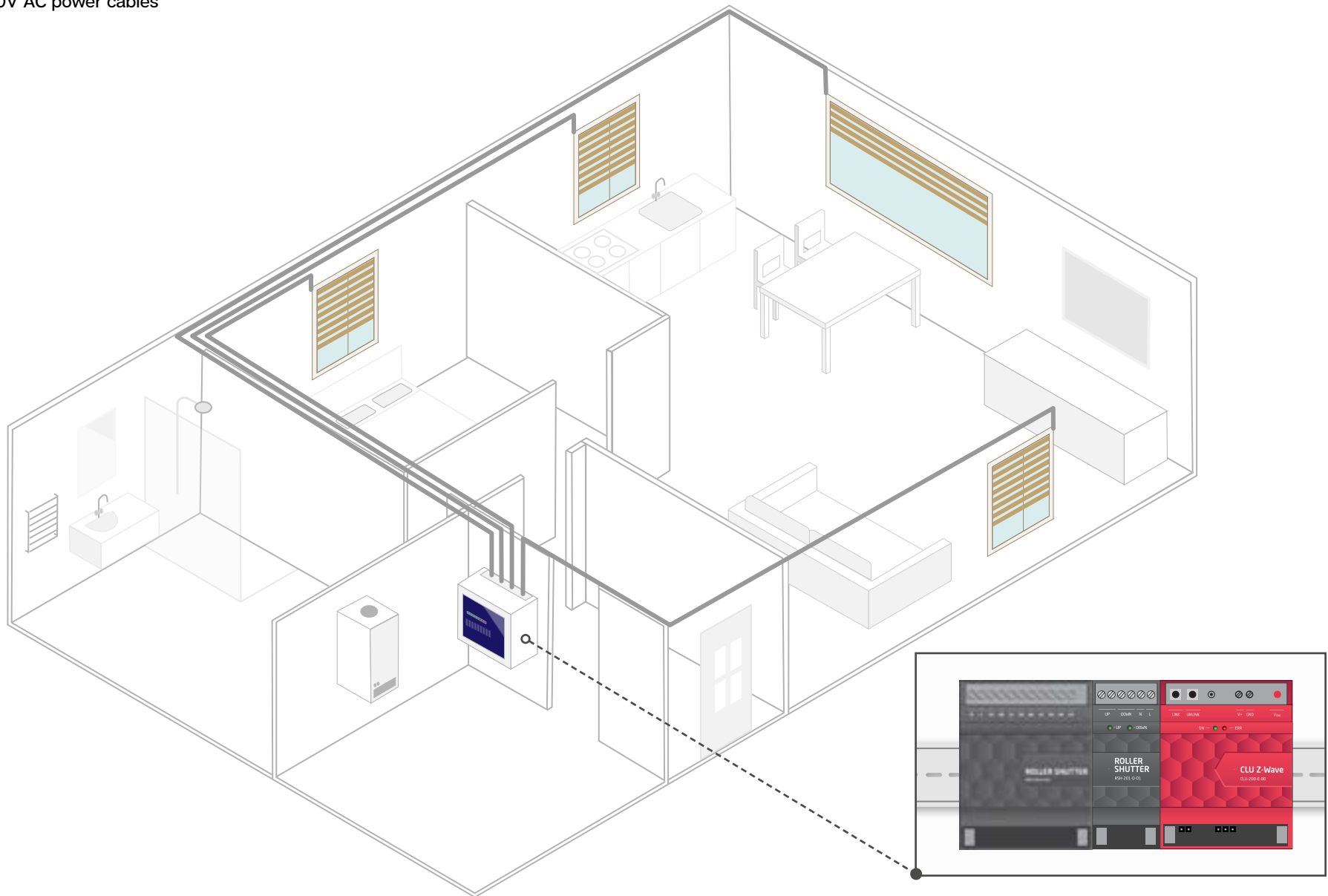
Electrical installation - roller shutters

230V AC power cables



Electrical installation - roller shutters

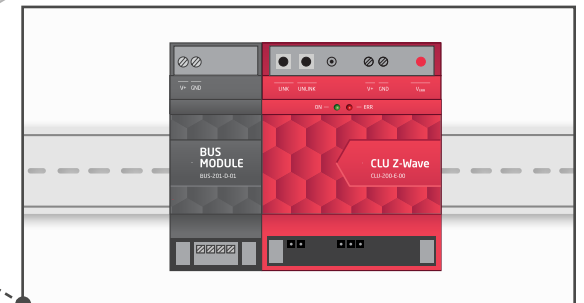
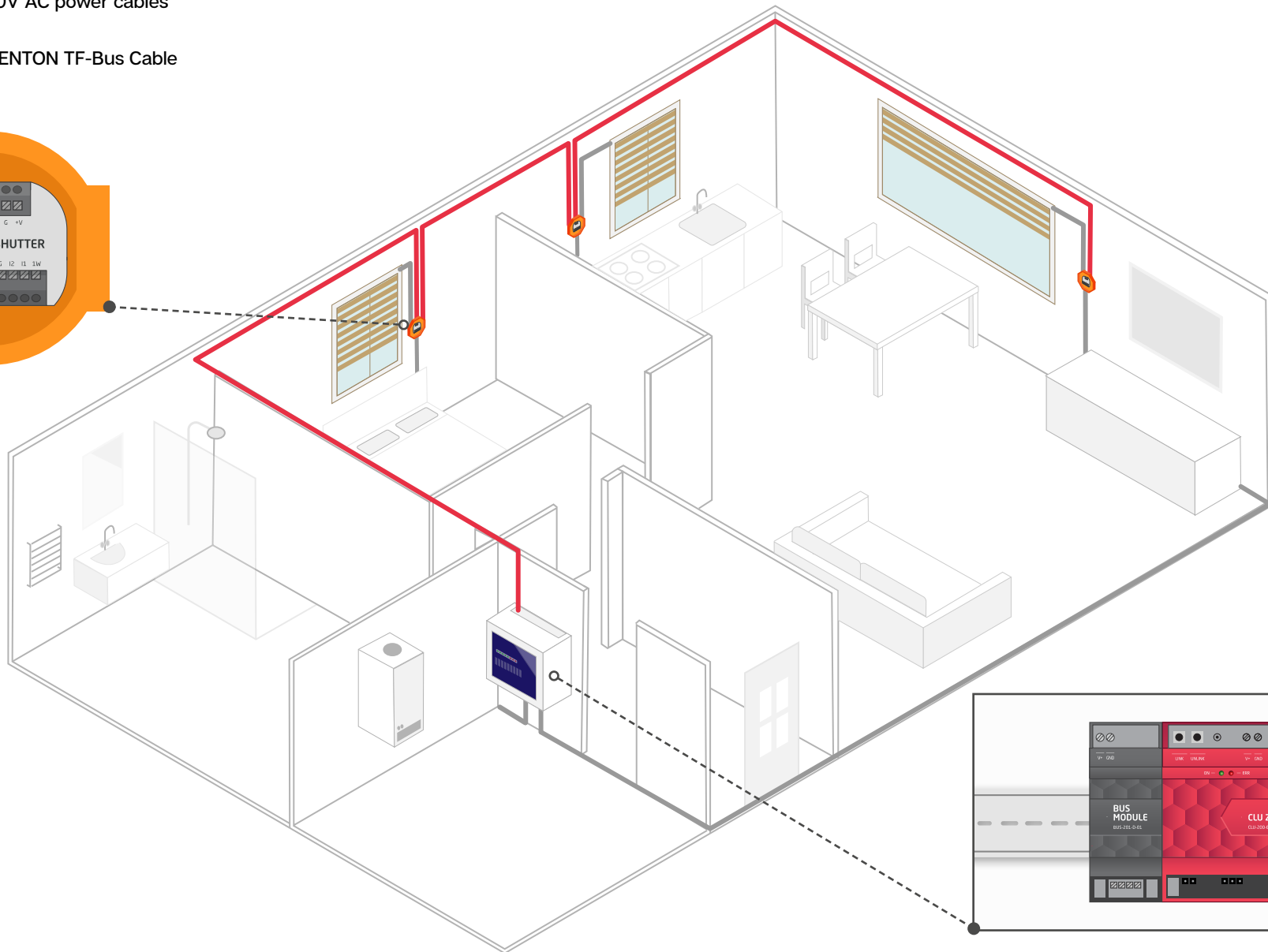
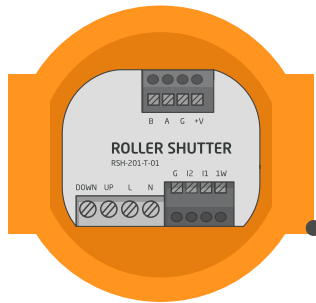
230V AC power cables



Electrical installation - roller shutters

230V AC power cables

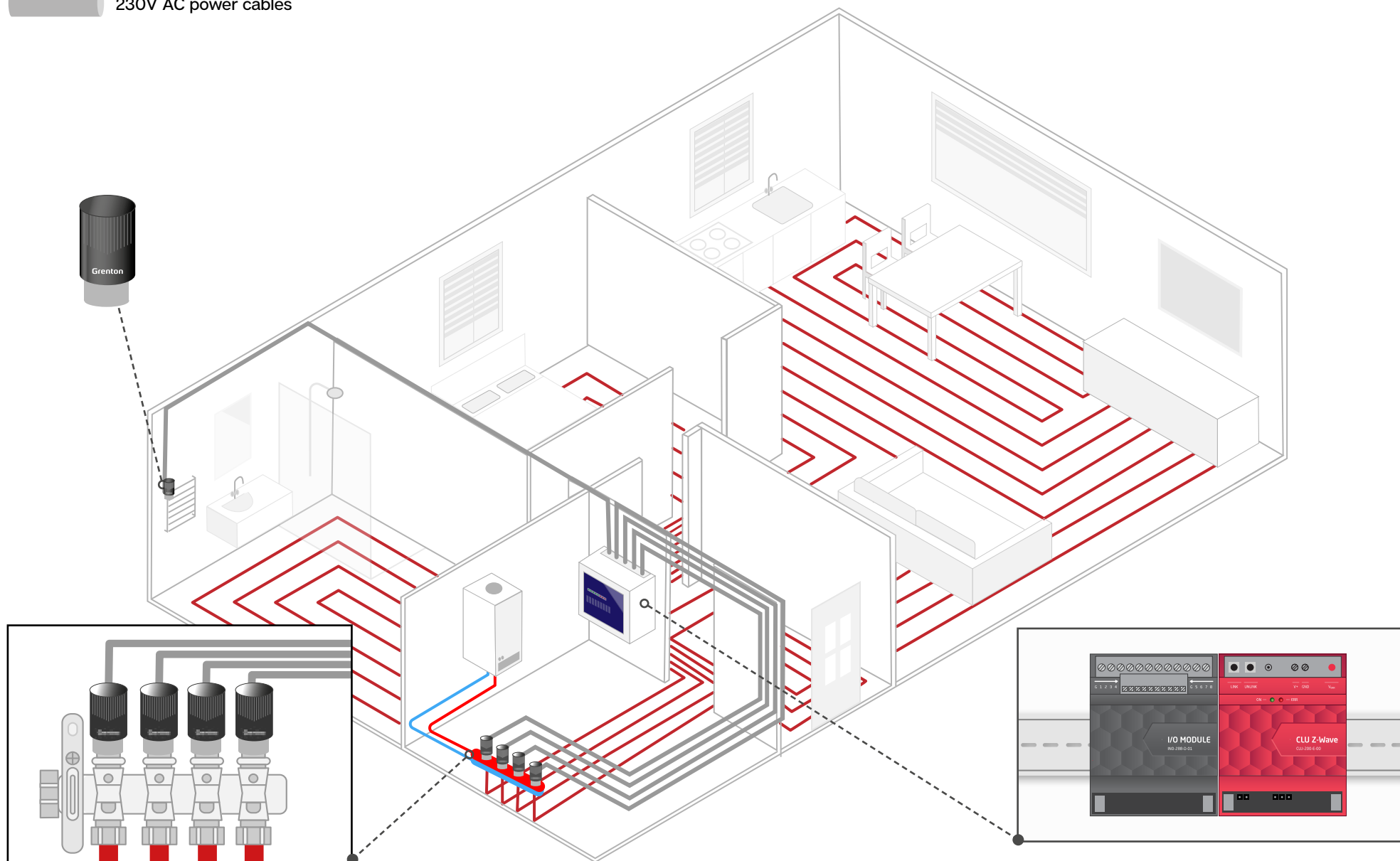
GRENTON TF-Bus Cable





Electrical installation - heating

230V AC power cables

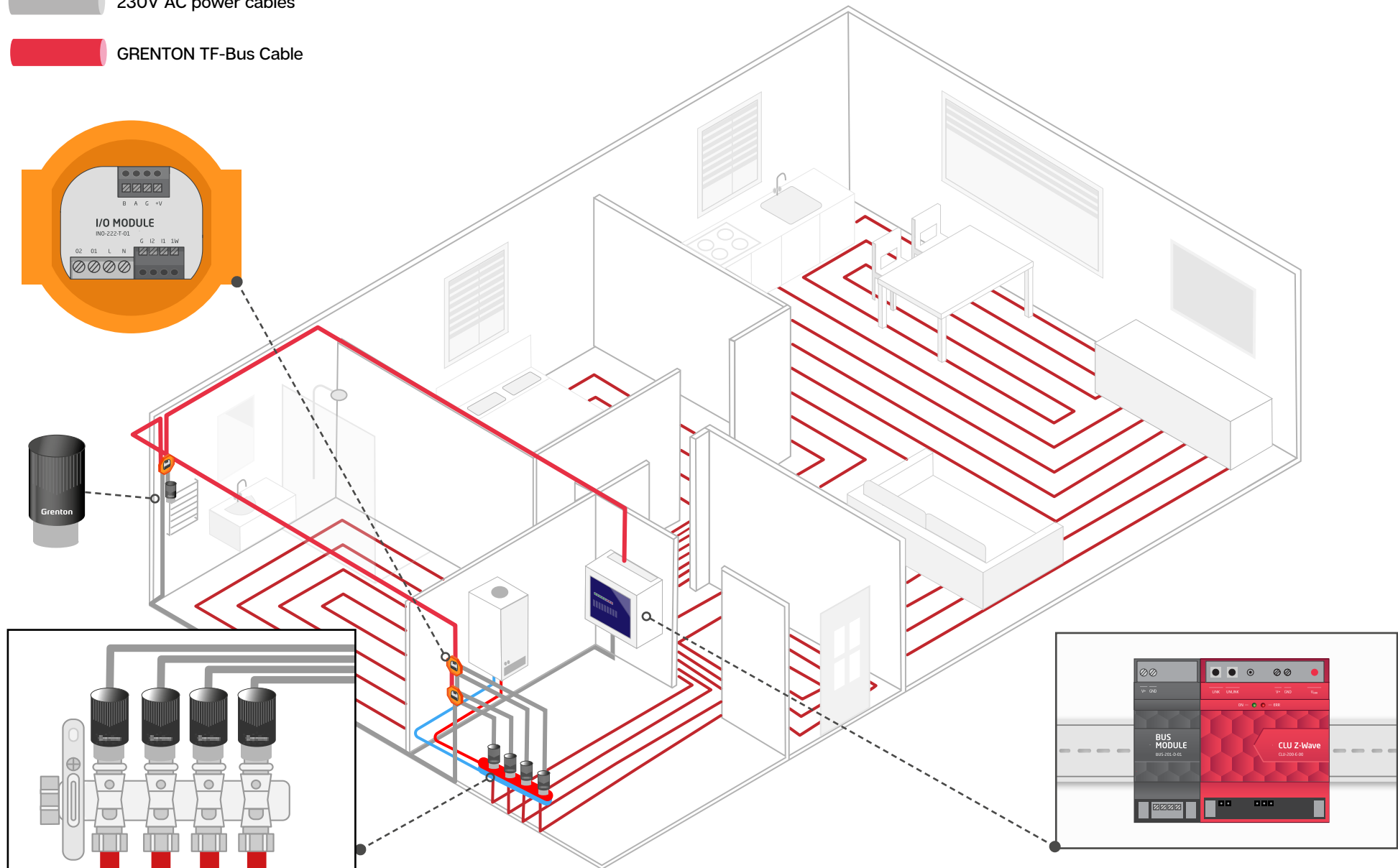


[back to Table of contents](#)

Electrical installation - heating

230V AC power cables

GRENTON TF-Bus Cable

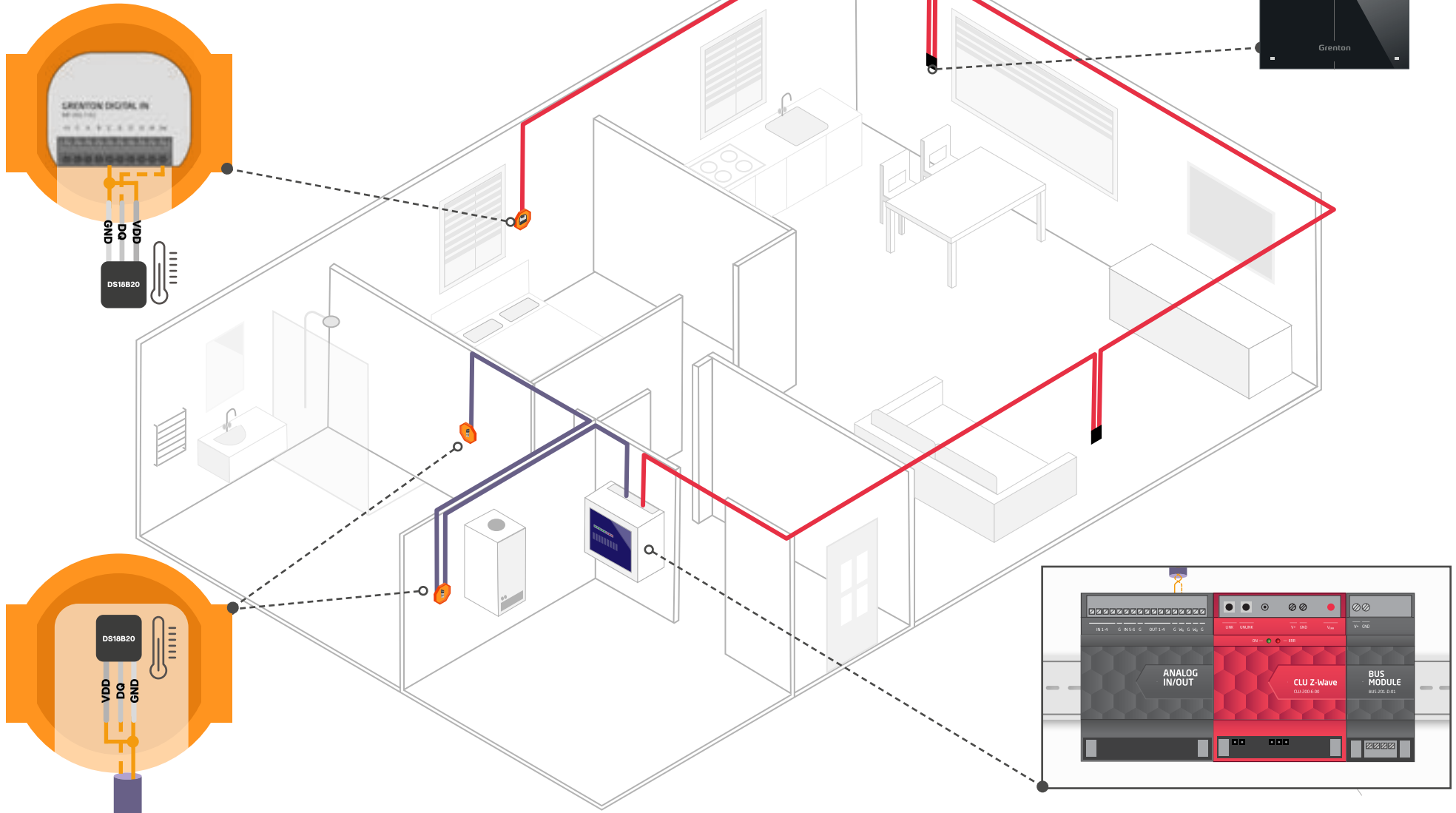


[back to Table of contents](#)

Electrical installation - heating: temperature measurement

Telecommunications cables

GRENTON TF-Bus Cable

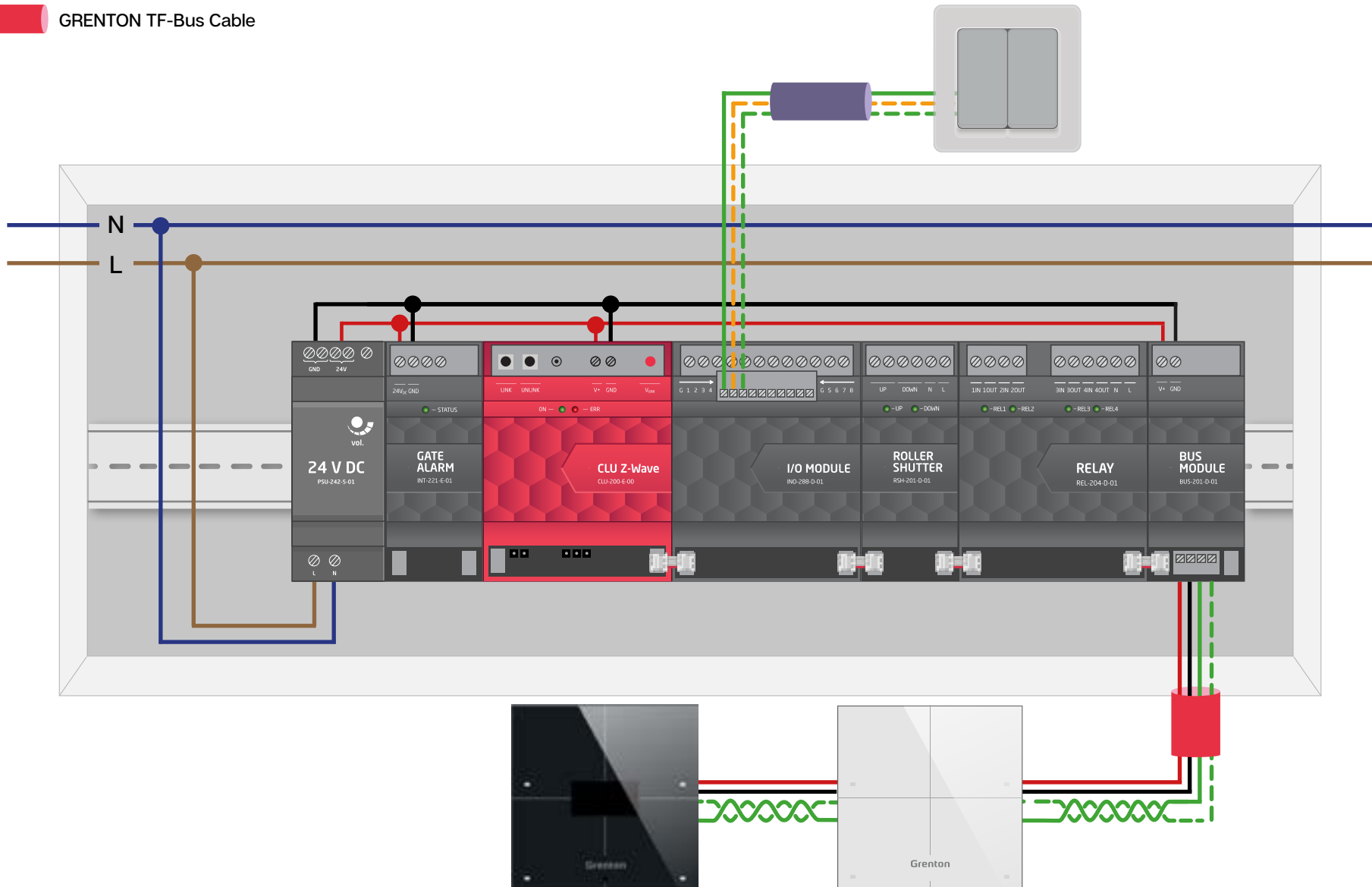


[back to Table of contents](#)

Electrical installation - touch panels and switches

 Telecommunications cables

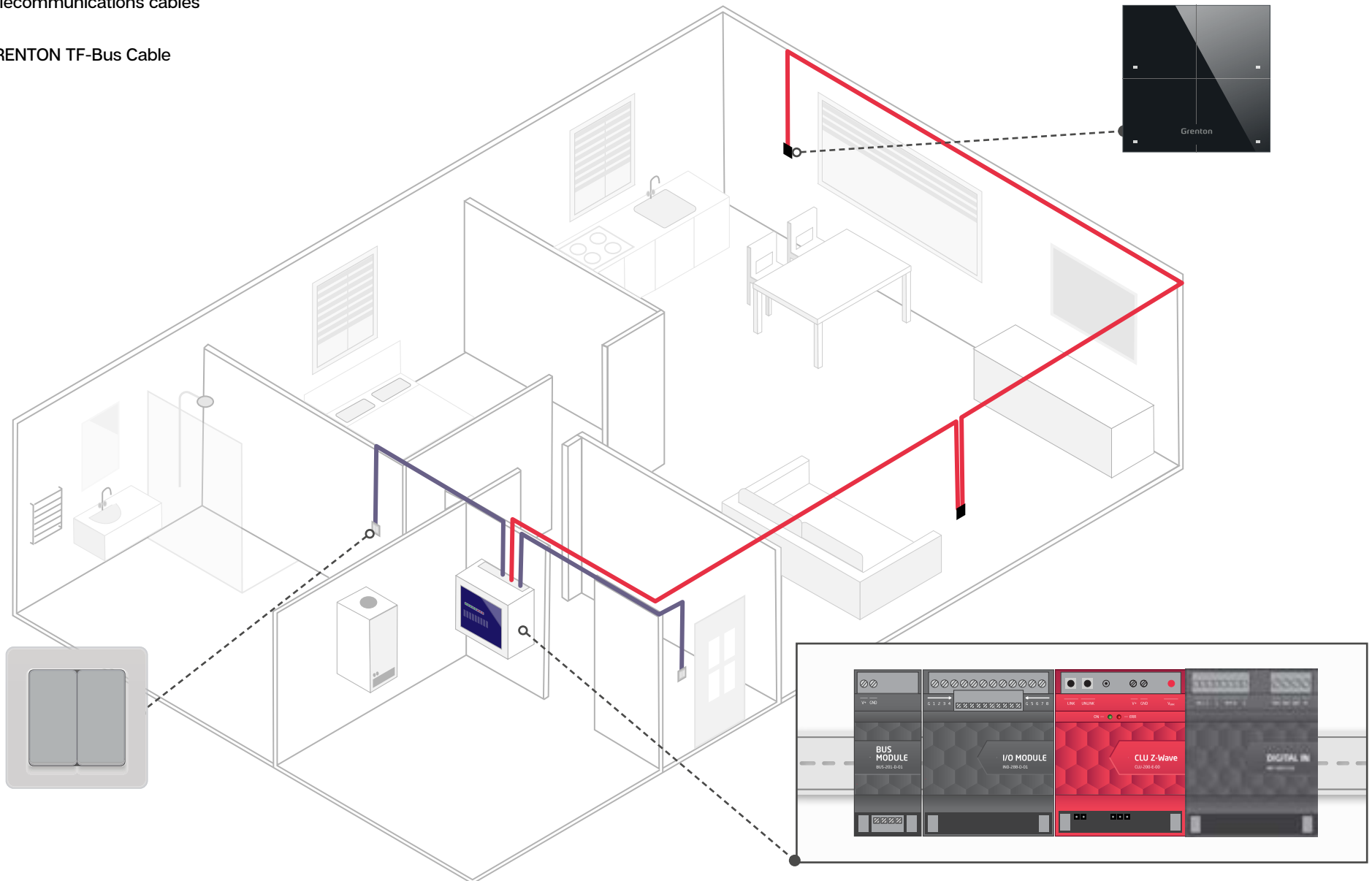
 GRENTON TF-Bus Cable



Electrical installation - touch panels and switches

 Telecommunications cables

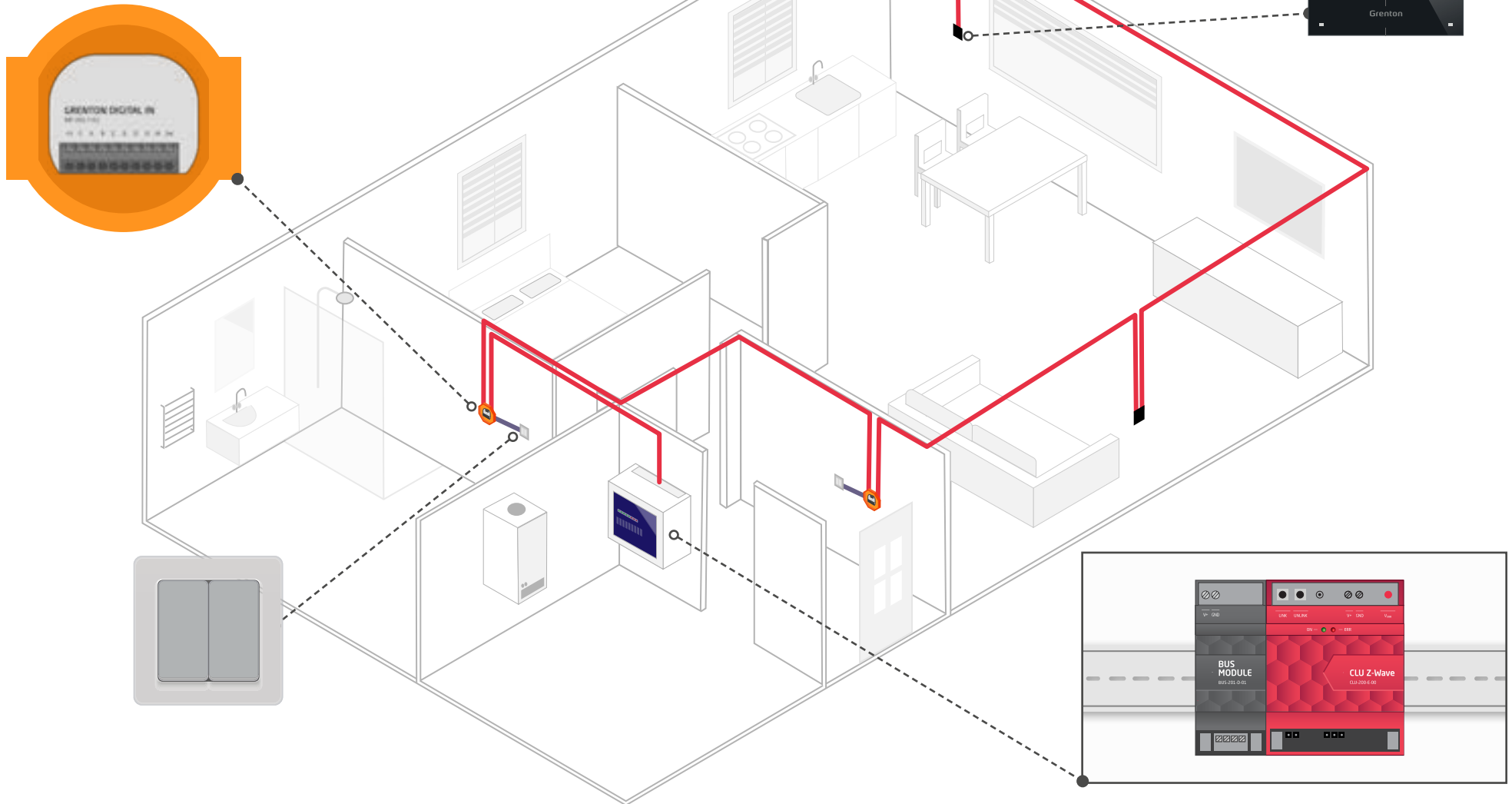
 GRENTON TF-Bus Cable



Electrical installation - touch panels and switches

 Telecommunications cables

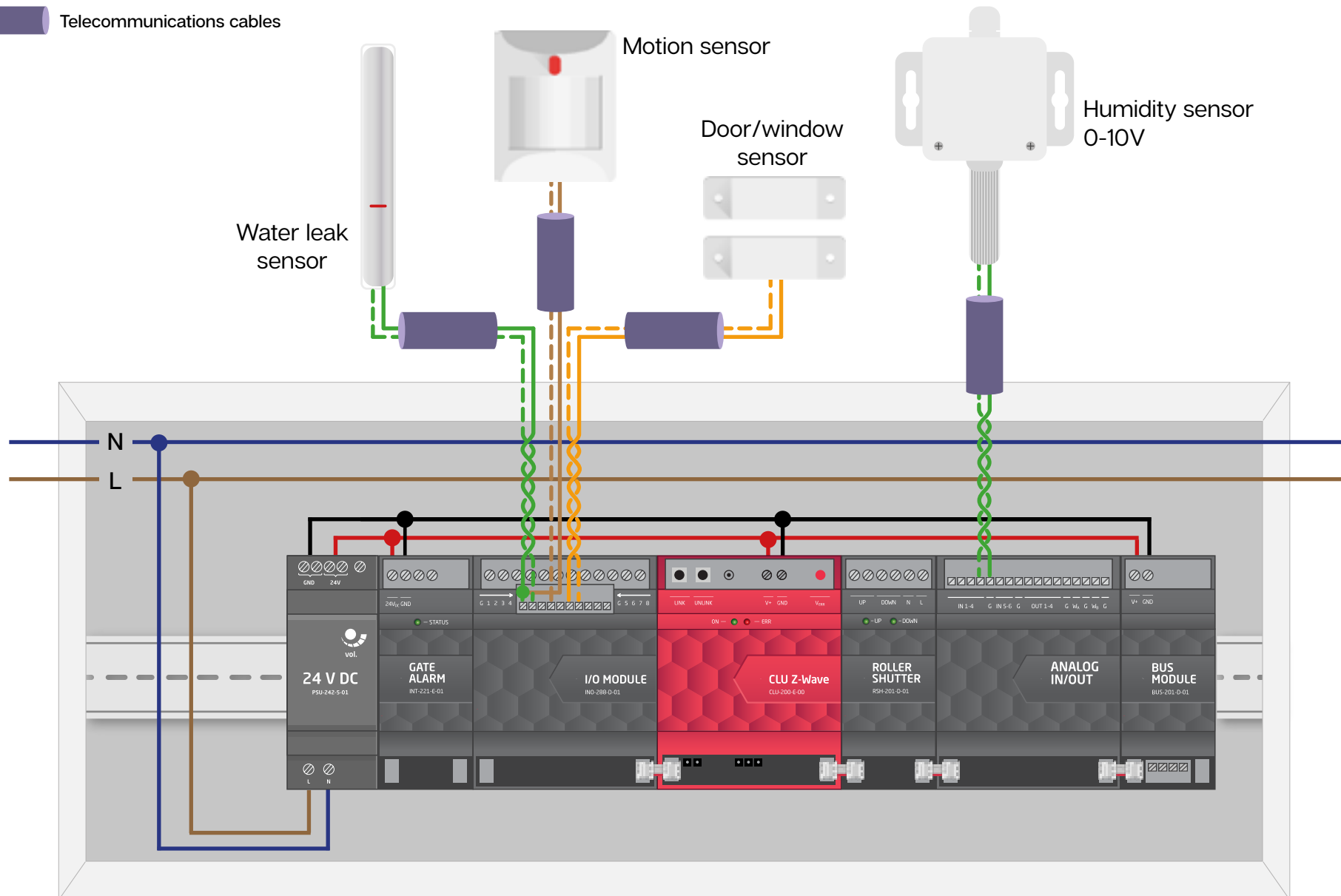
 GRENTON TF-Bus Cable



Electrical installation - sensors

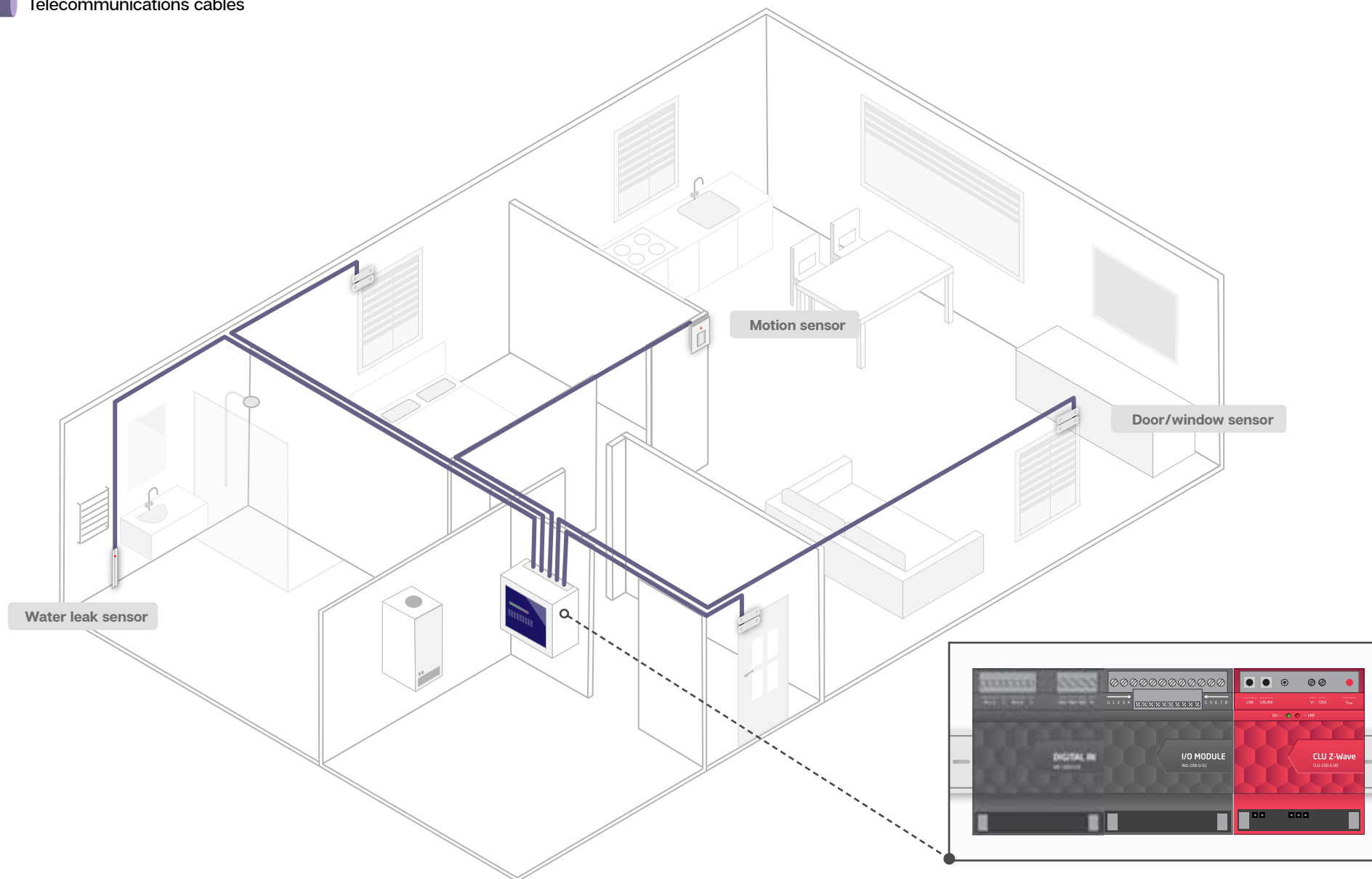


Telecommunications cables



Electrical installation - sensors

Telecommunications cables



Electrical installation - sensors

Telecommunications cables

GRENTON TF-Bus Cable

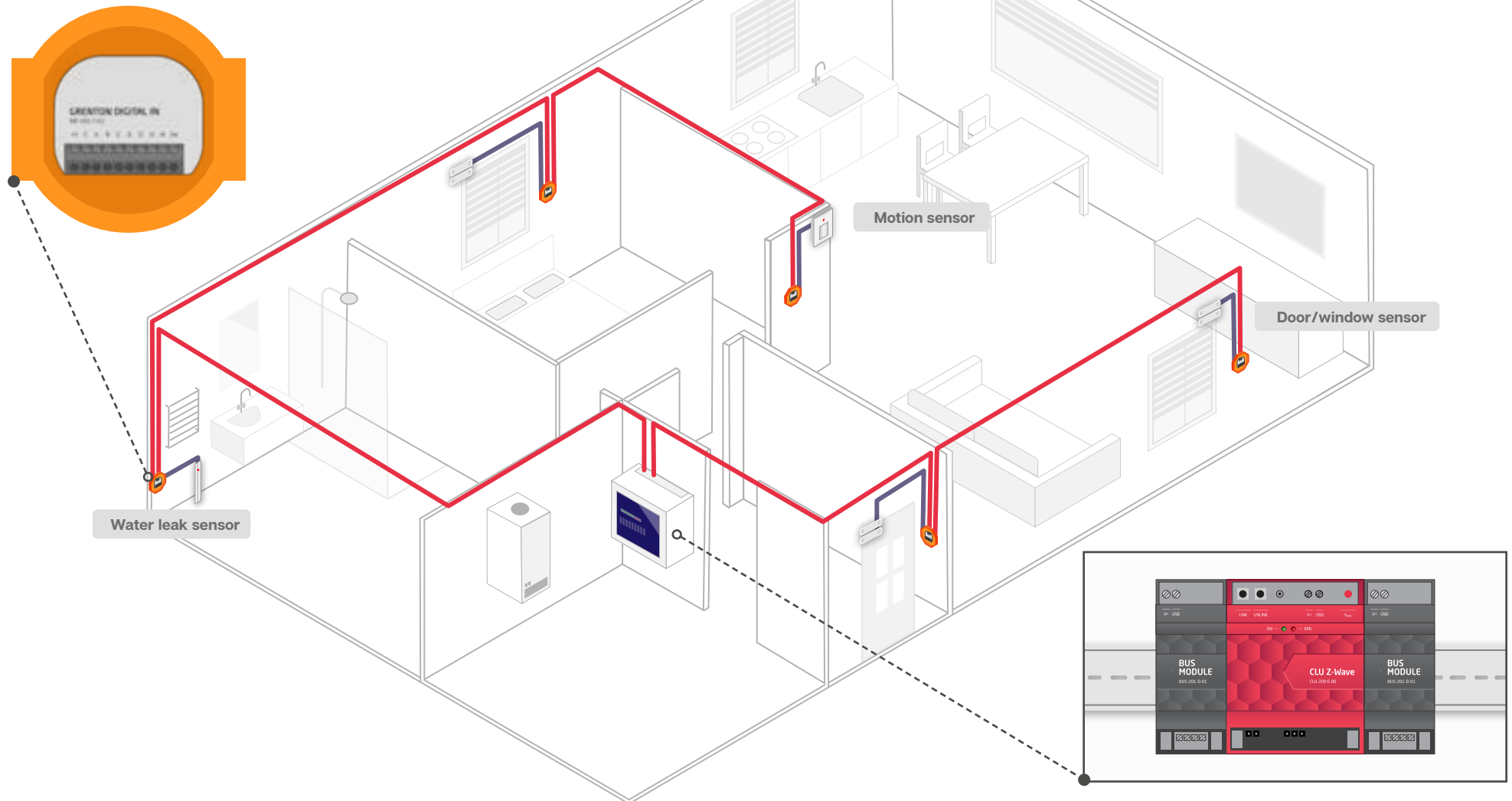


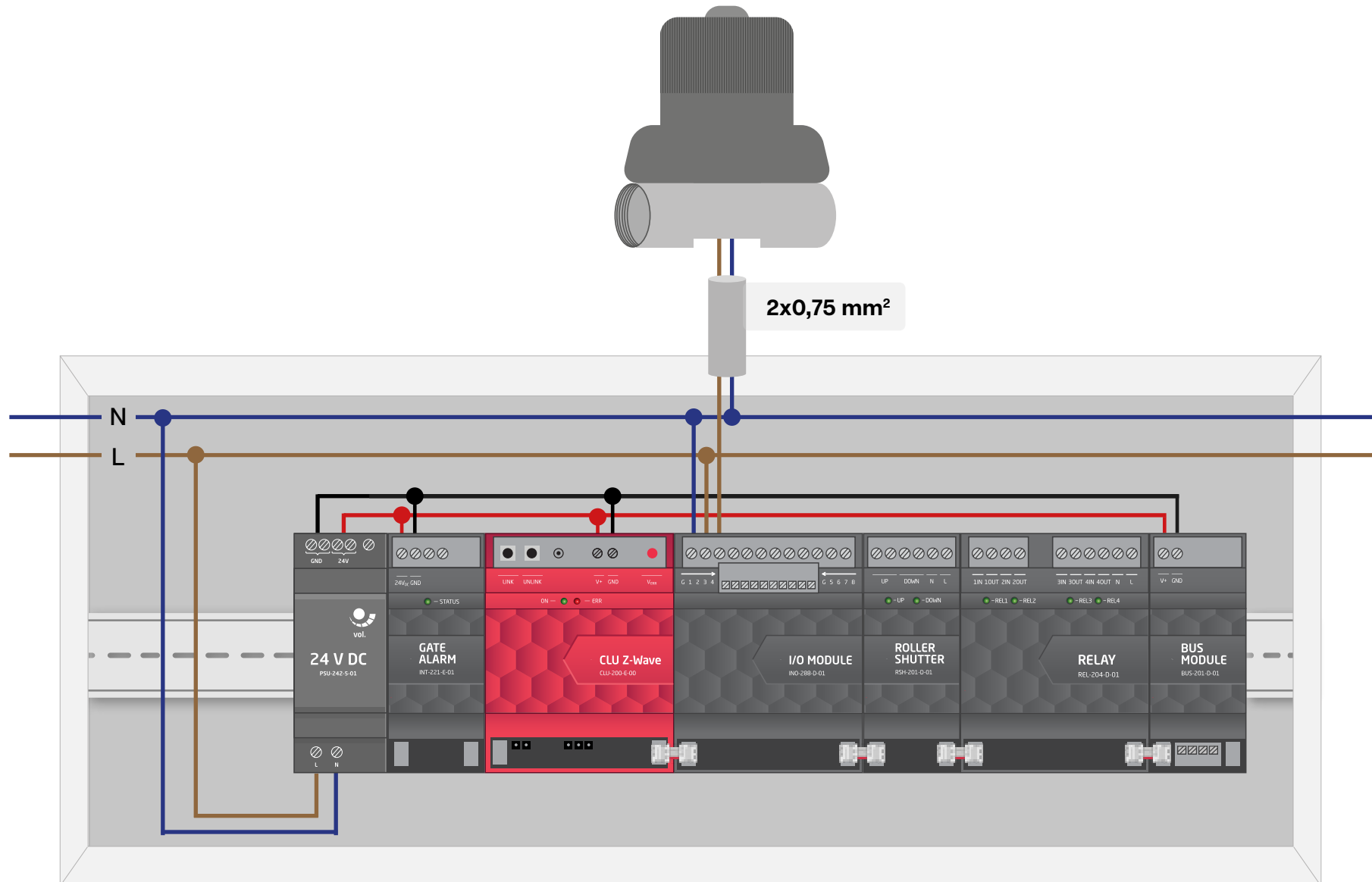
Diagram illustrating the wiring of a Z-Wave actuator to a Z-Wave Plus gateway. The gateway modules shown are 24 V DC, GATE ALARM, CLU Z-Wave, I/O MODULE, ROLLER SHUTTER, RELAY, and BUS MODULE. The actuator is connected to the I/O MODULE. The wiring connections are as follows:

- Ground (-) to pin 1
- Power (+) 9-24V DC to pin 2
- Valve control to pin 3
- Opening signaling to pin 4
- Closing signaling to pin 5

The actuator is labeled 7x0,5 mm².

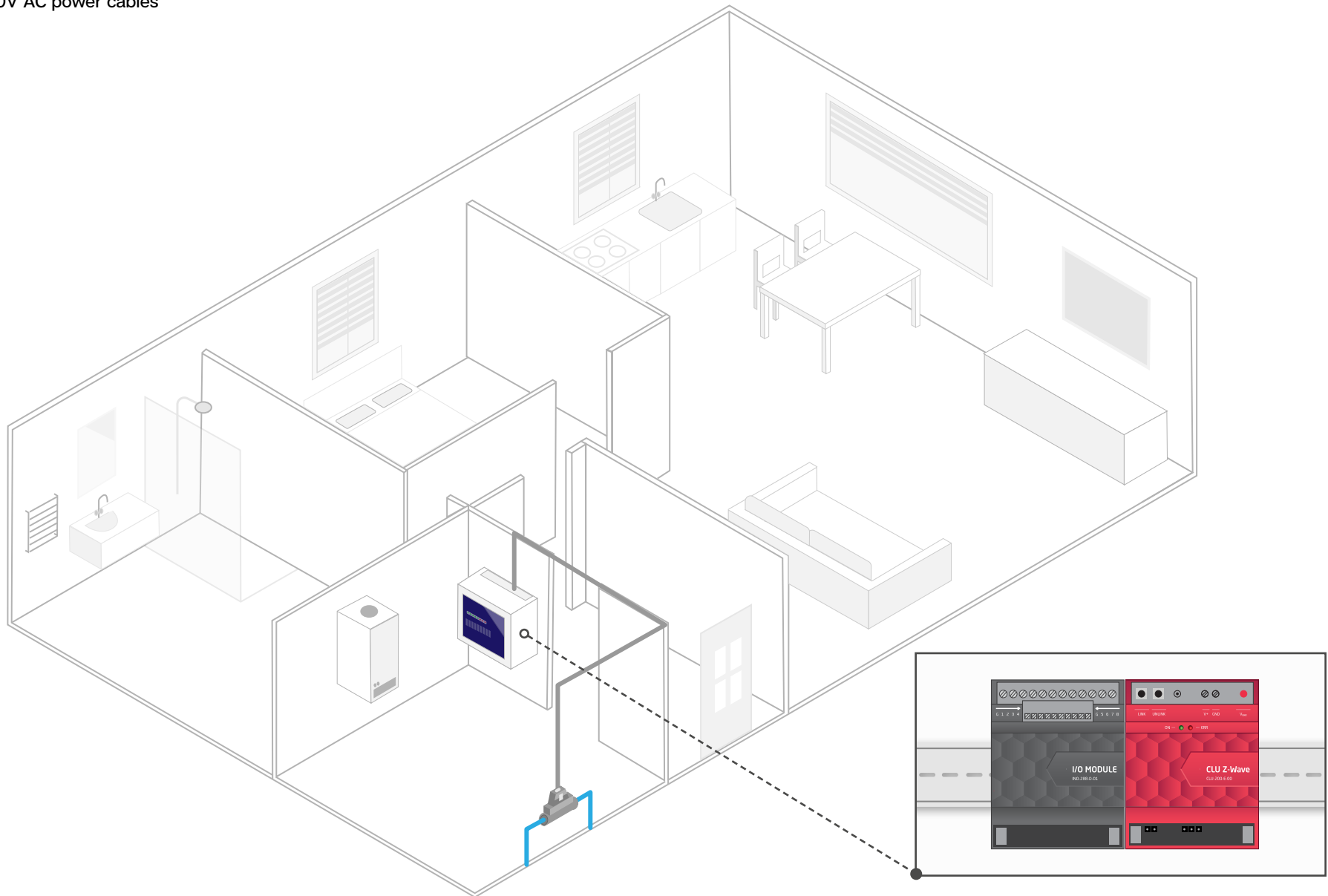
Electrical installation - water valves

230V AC power cables



Electrical installation - water valves

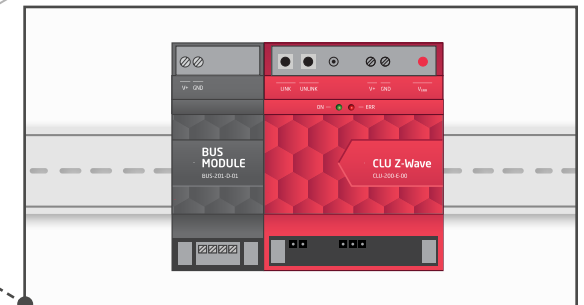
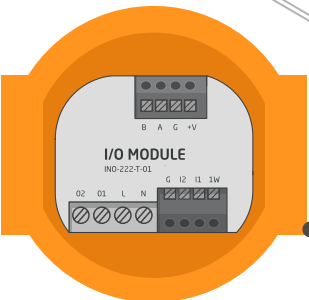
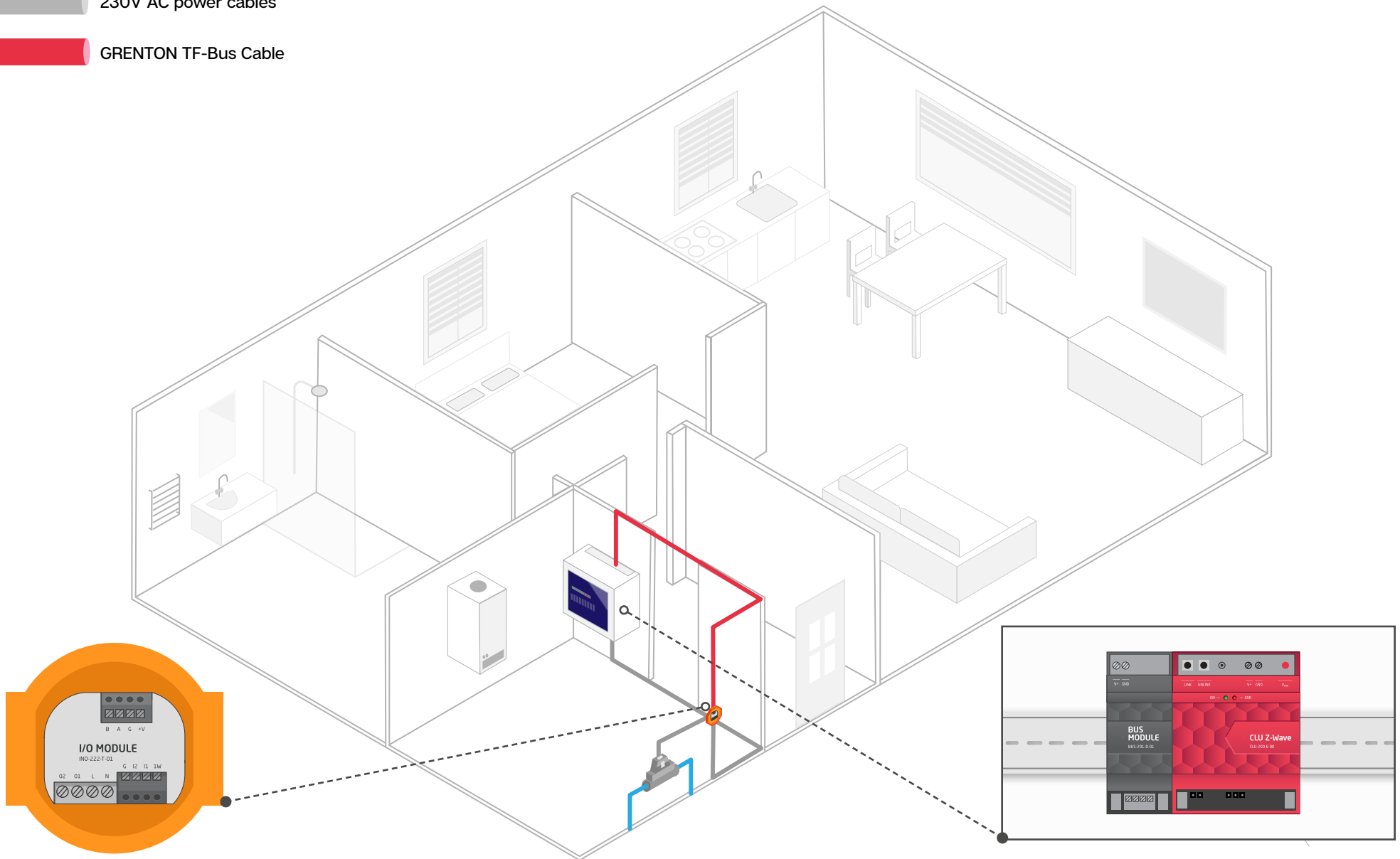
230V AC power cables



Electrical installation - water valves

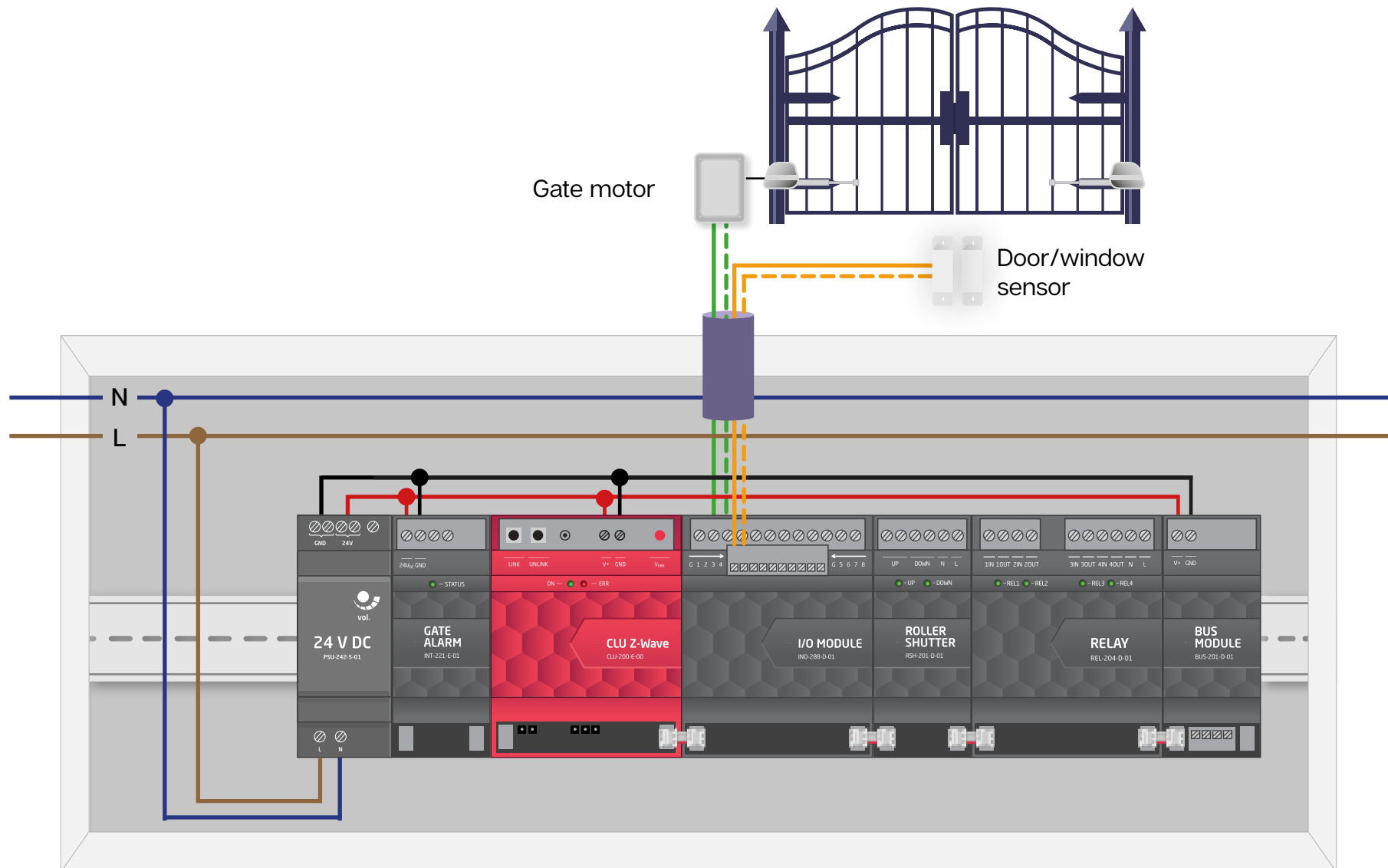
 230V AC power cables

 GRENTON TF-Bus Cable



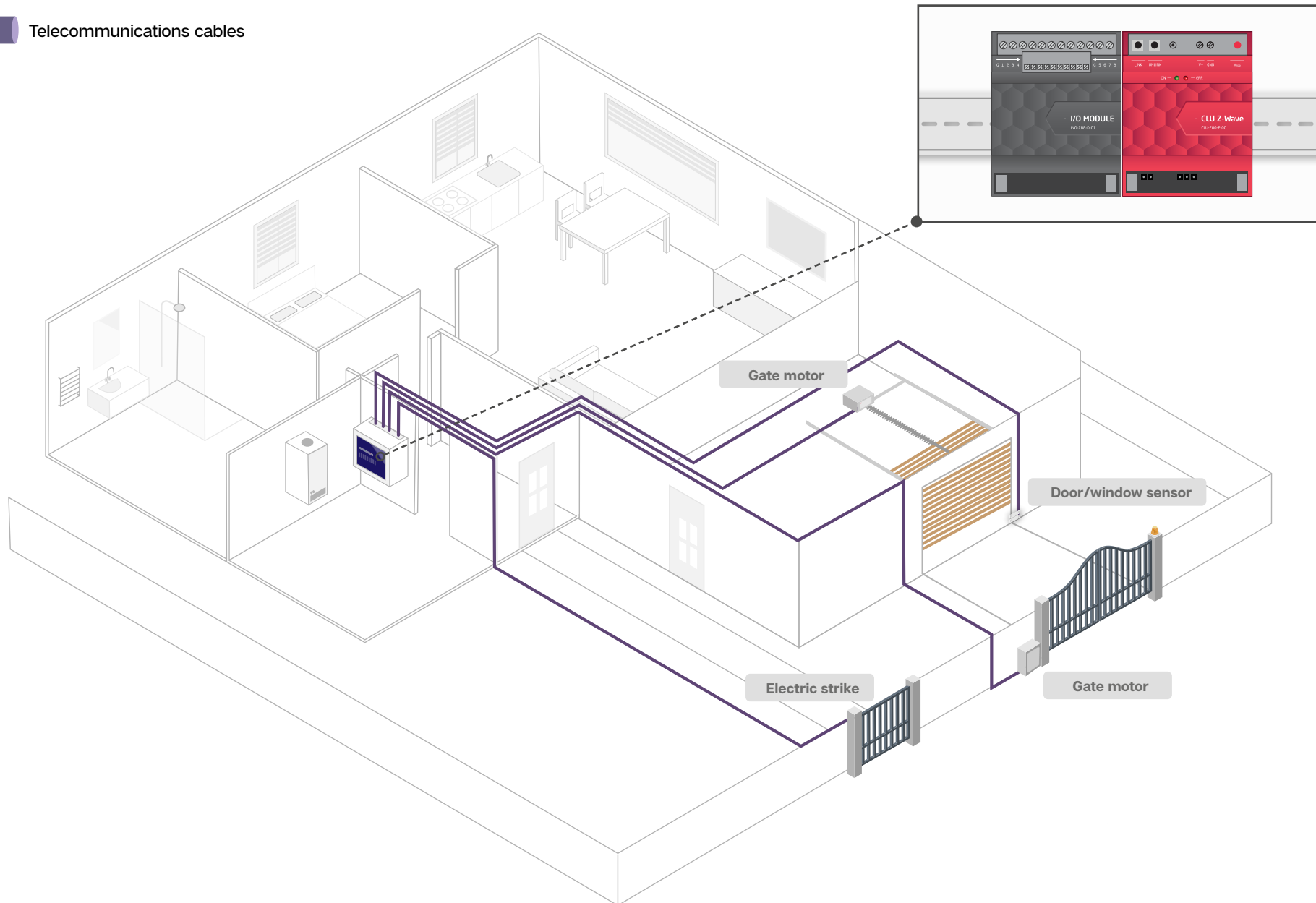
Electrical installation - gates

Telecommunications cables

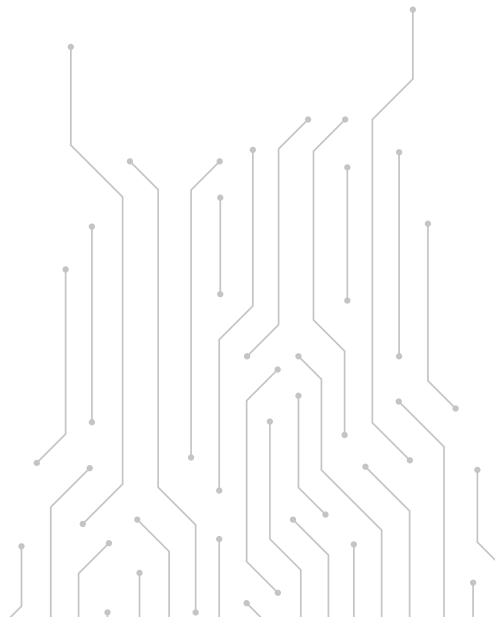


Electrical installation - gates

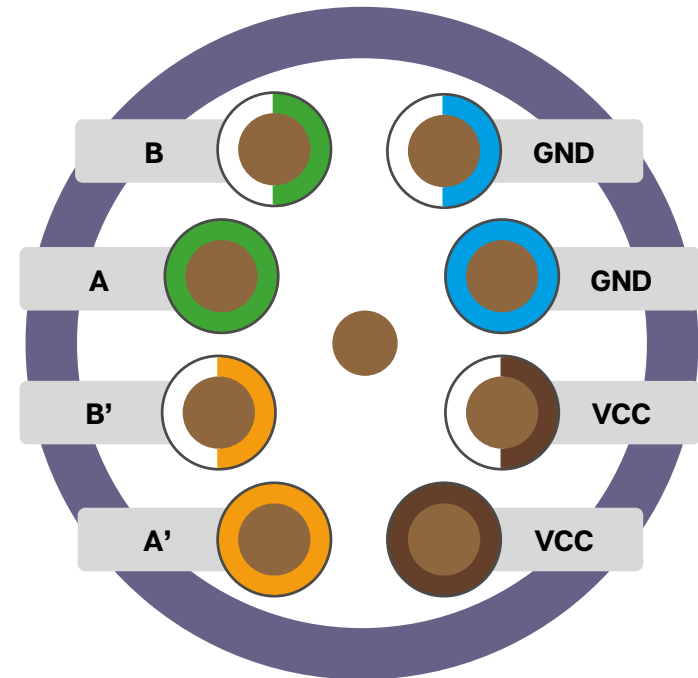
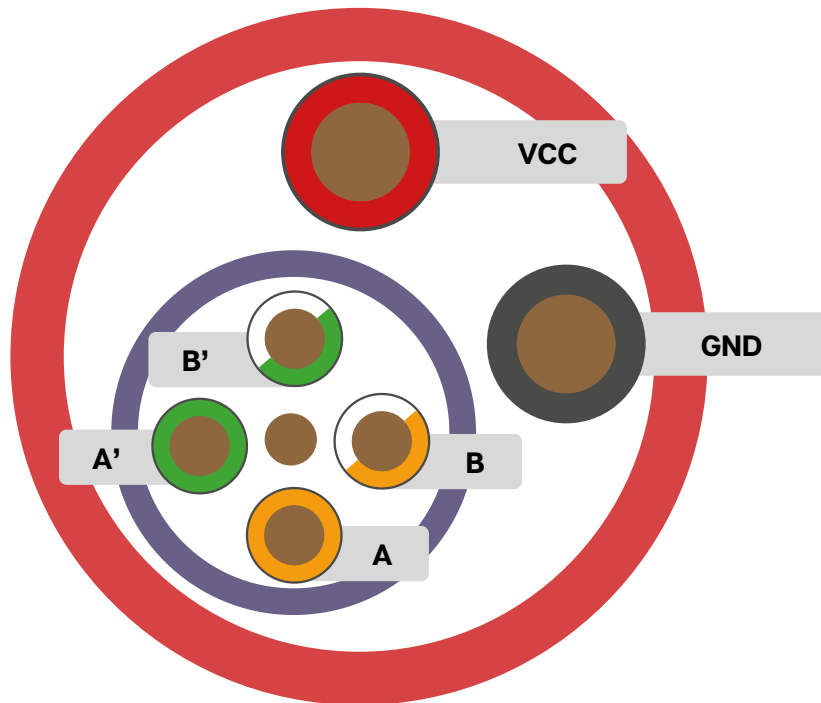
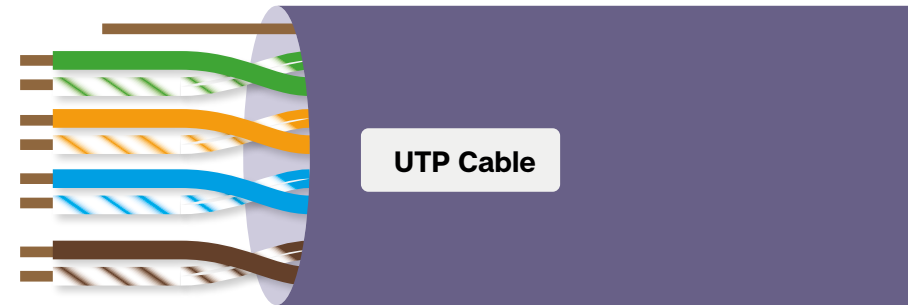
Telecommunications cables



Grenton TF-Bus

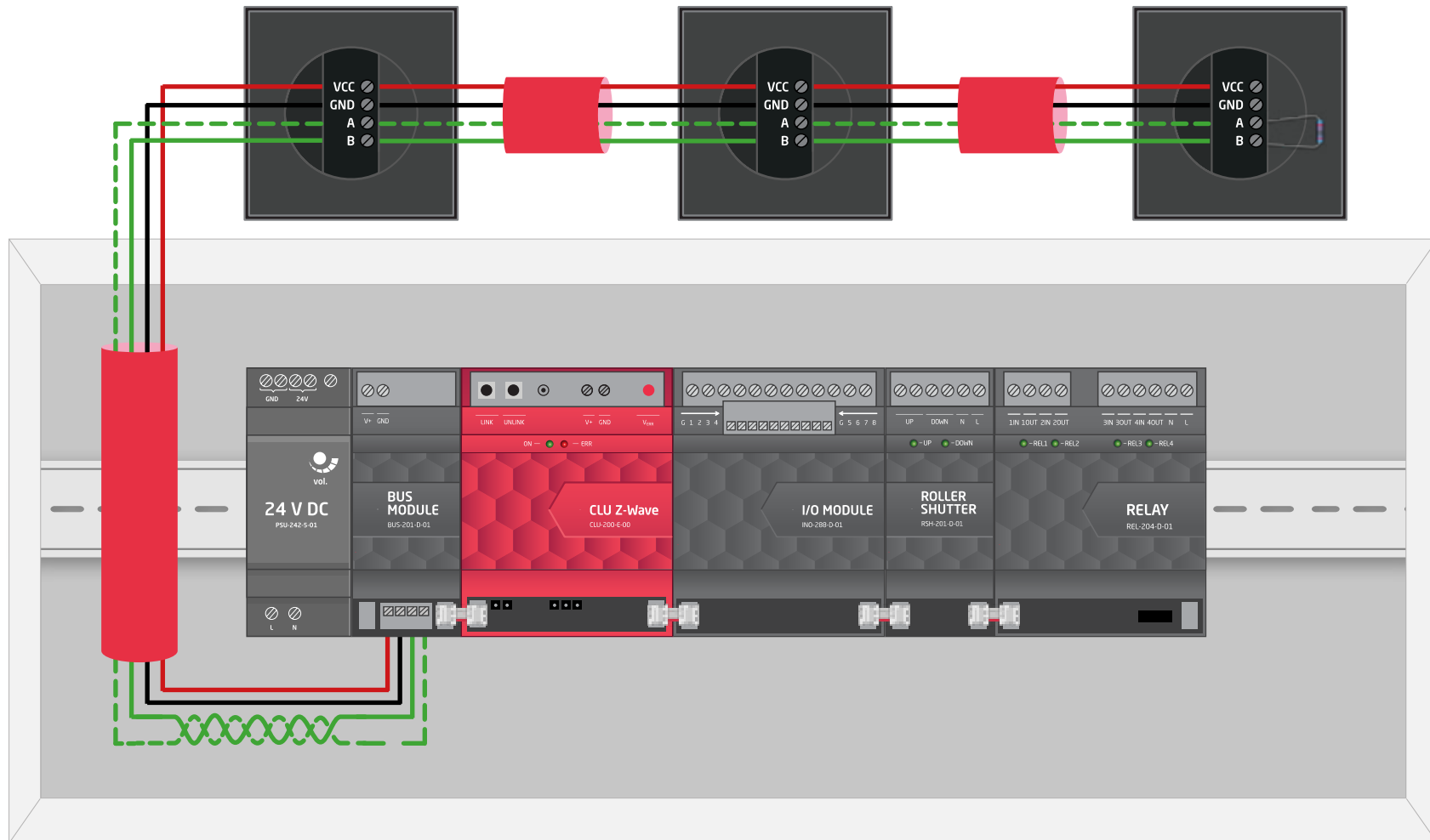


Bus cable - requirements



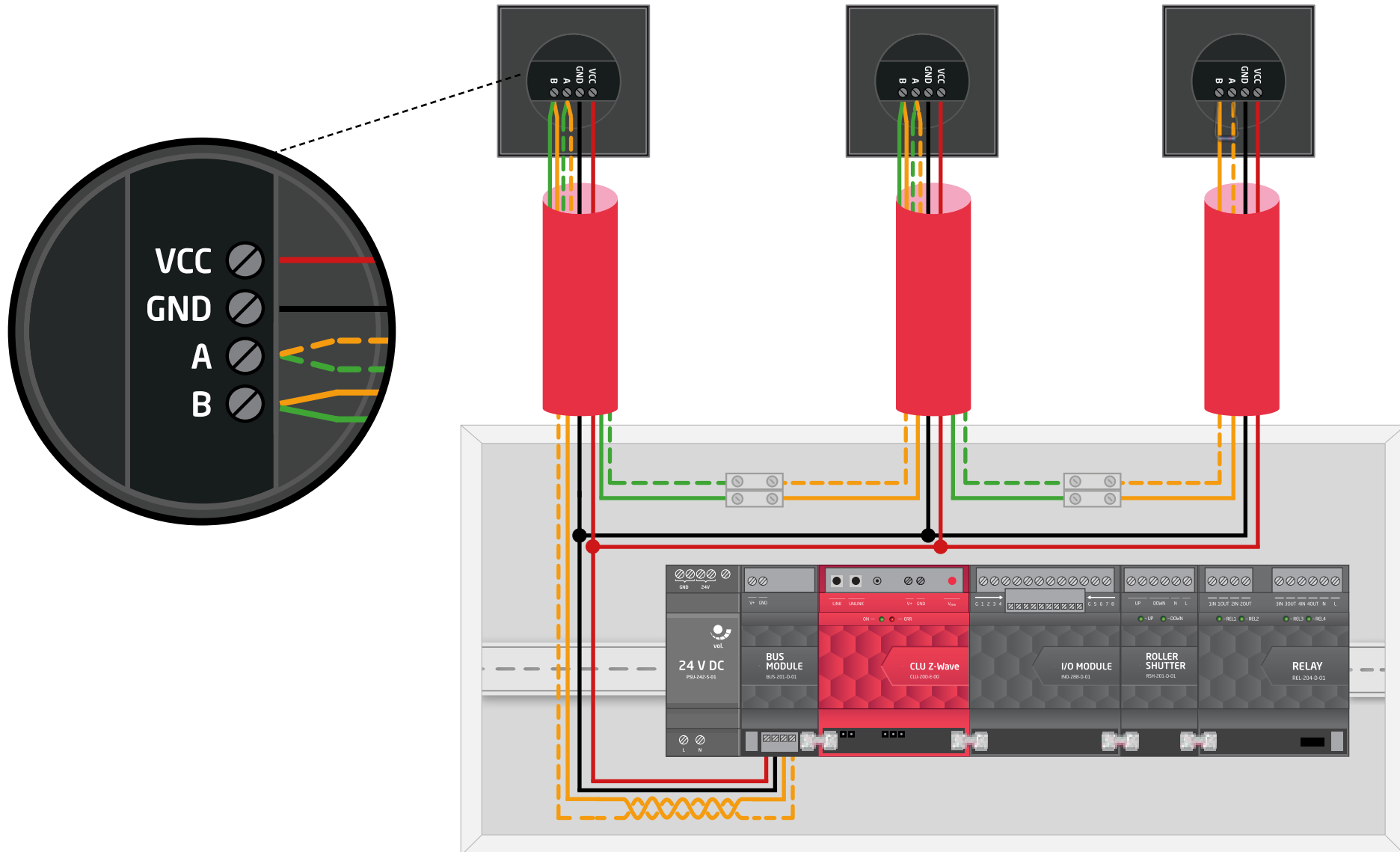
Serial data communication wiring

 GRENTON TF-Bus Cable

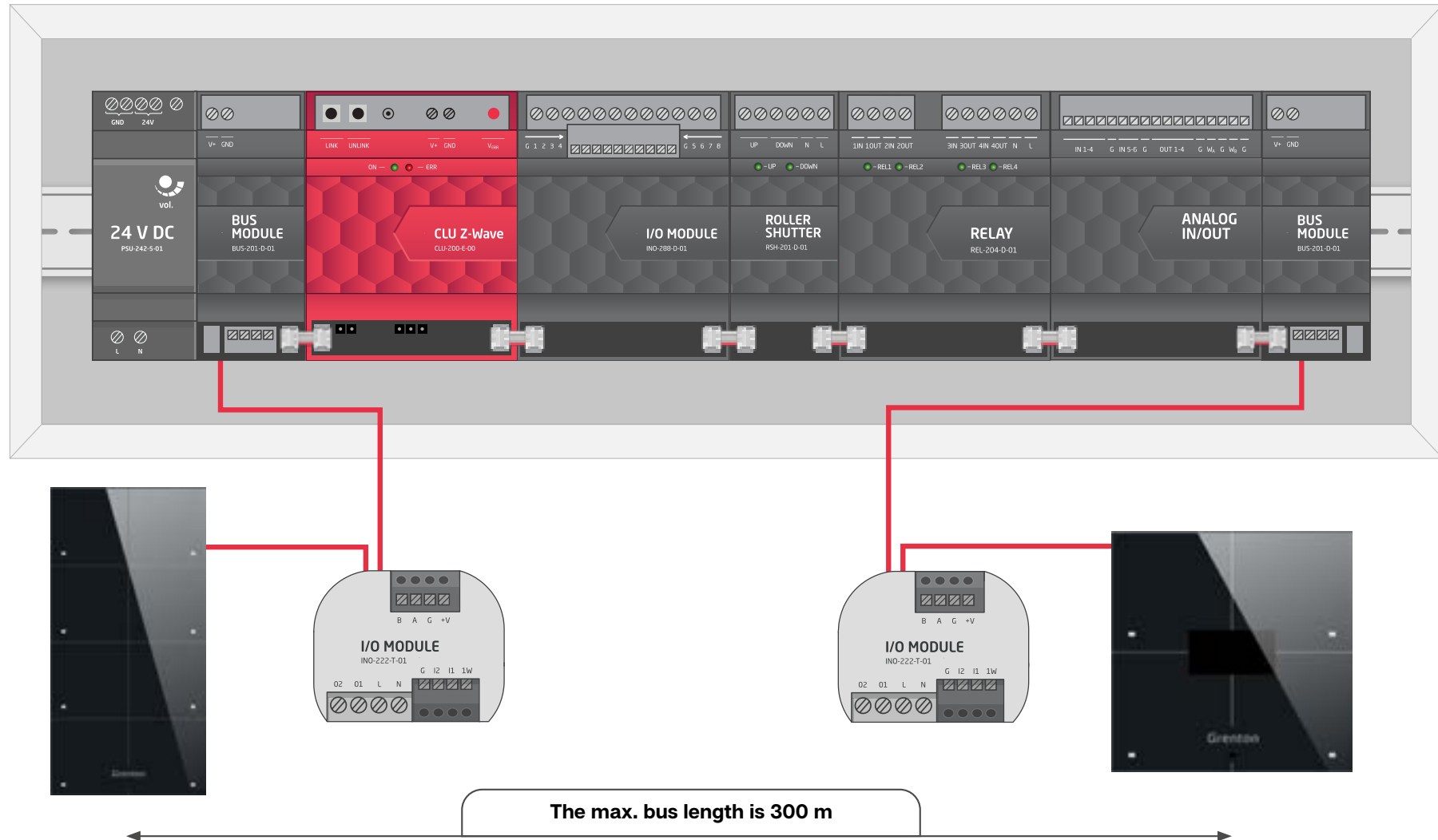


Star data communication wiring - bus “straightening”

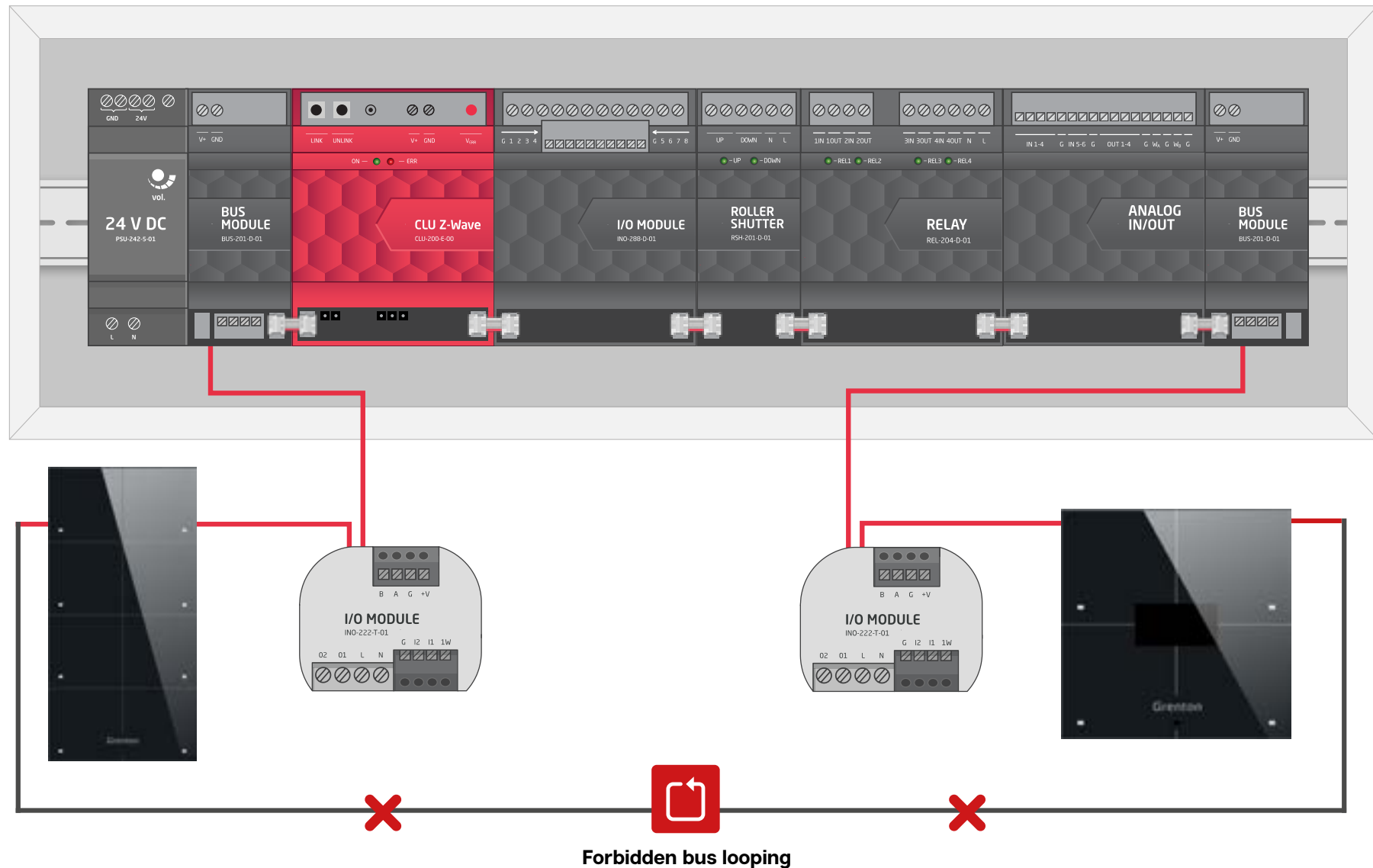
 GRENTON TF-Bus Cable



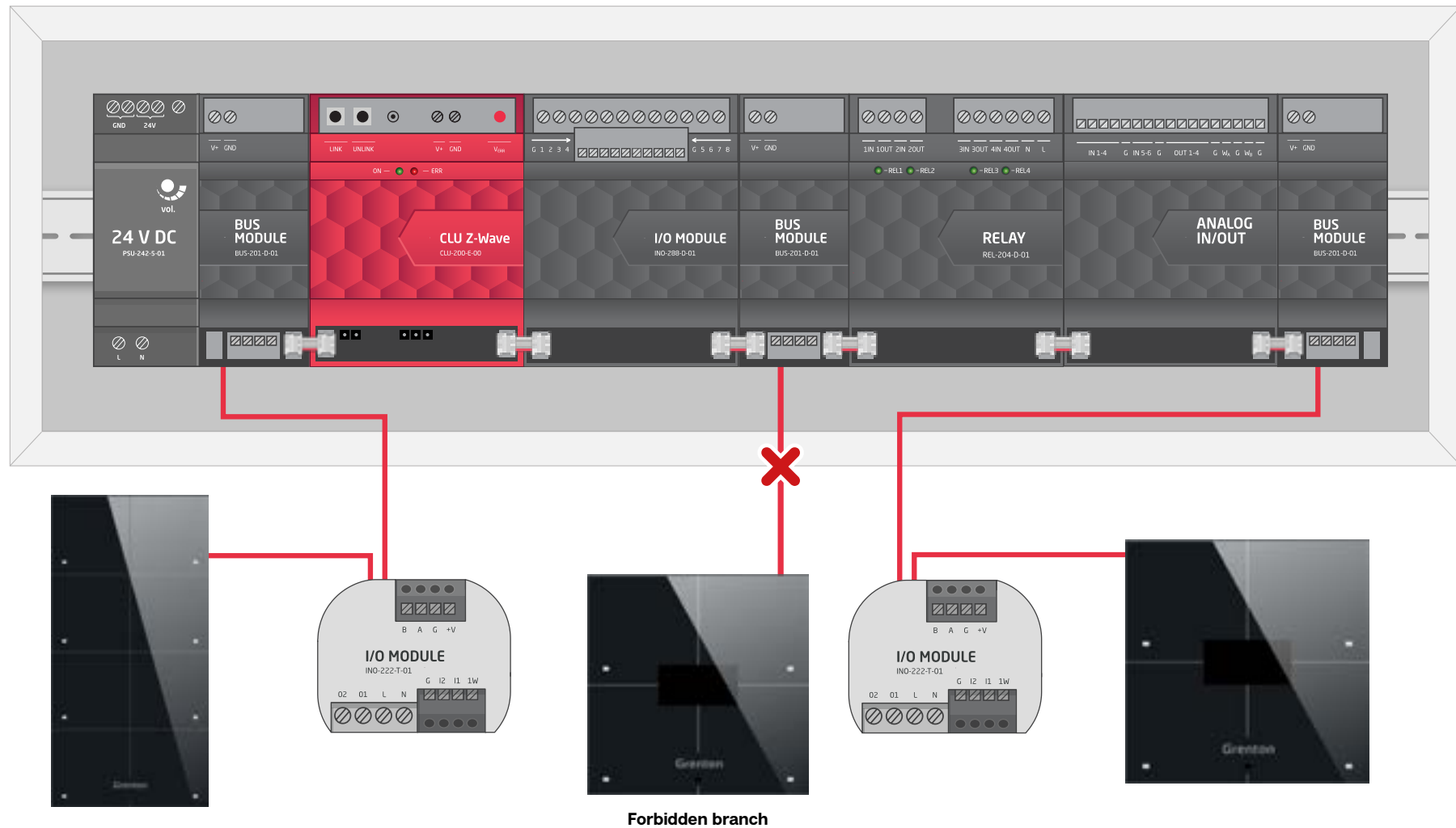
Bus length



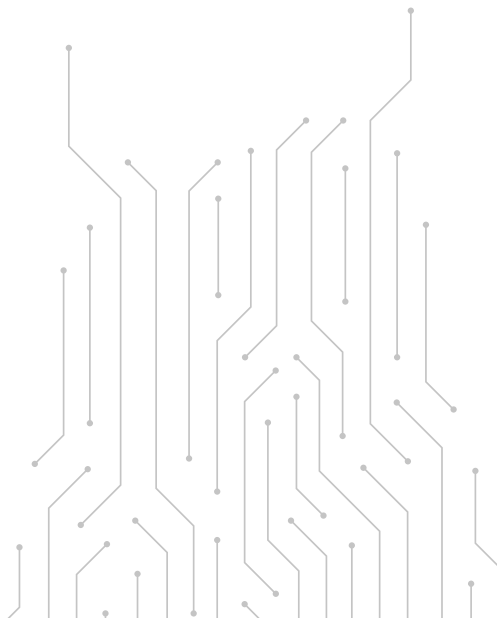
Forbidden bus looping



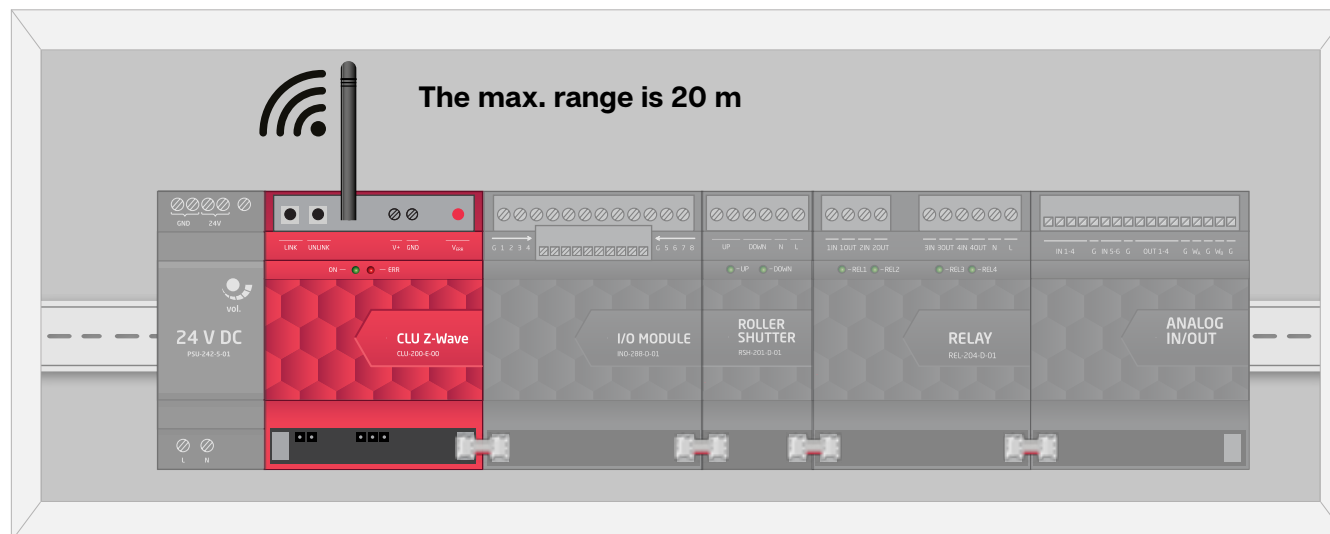
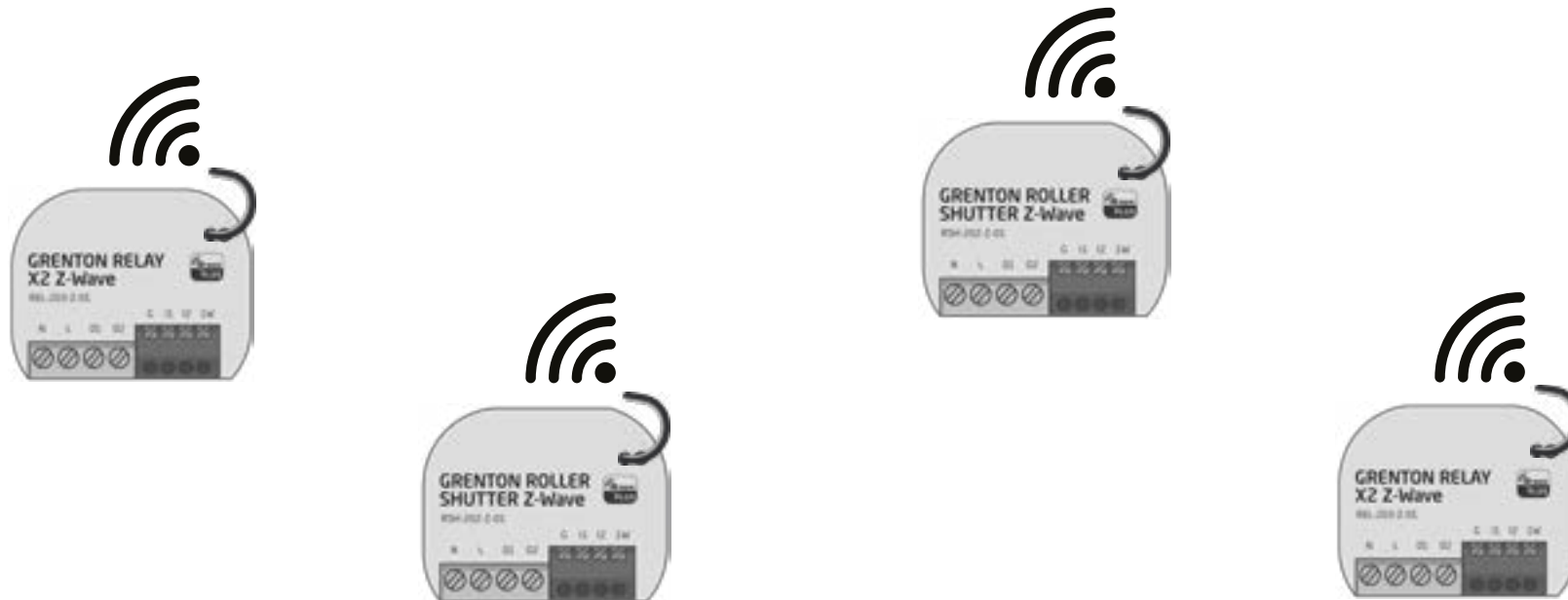
Forbidden branching



Wireless protocols

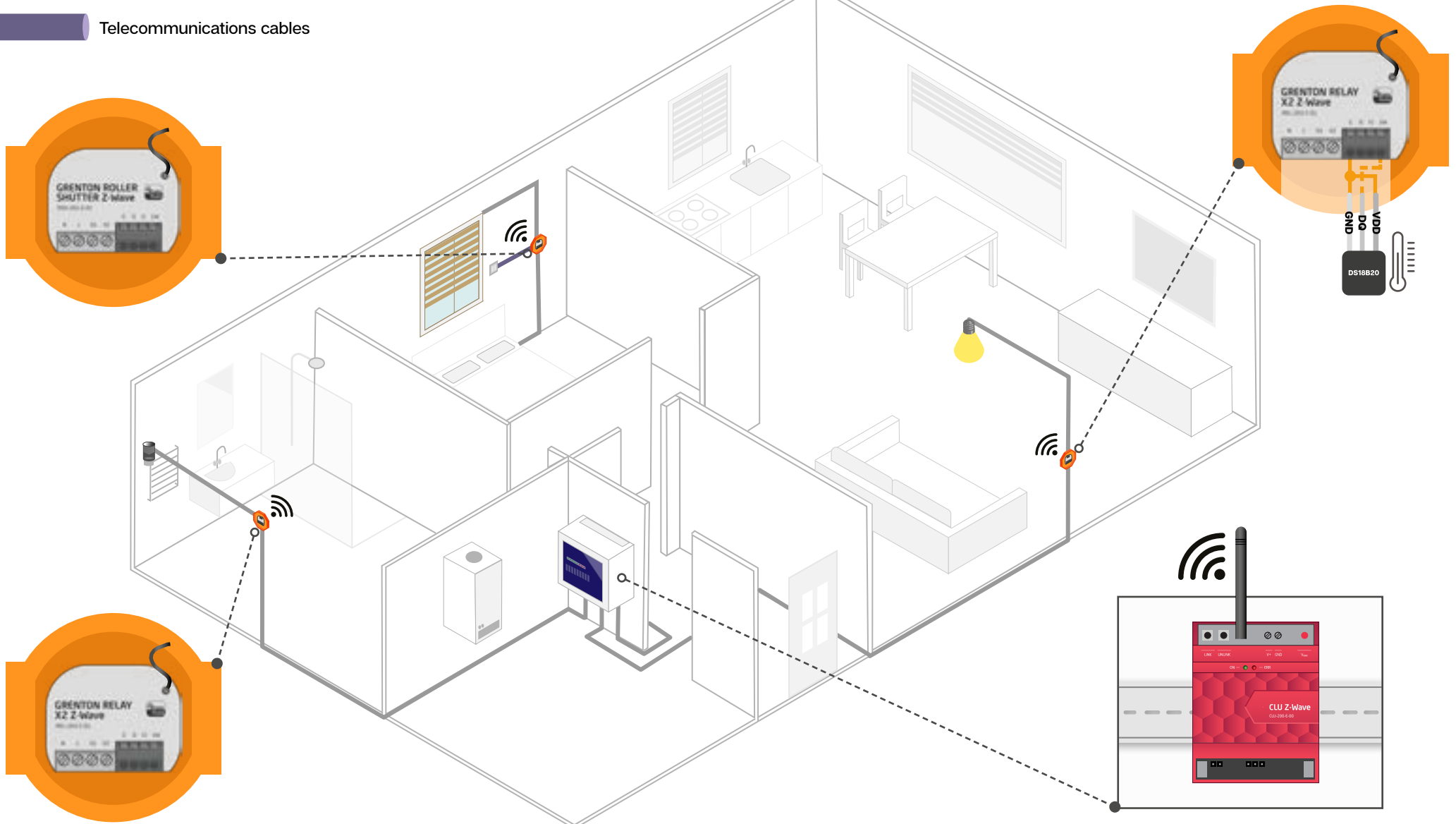


Z-Wave



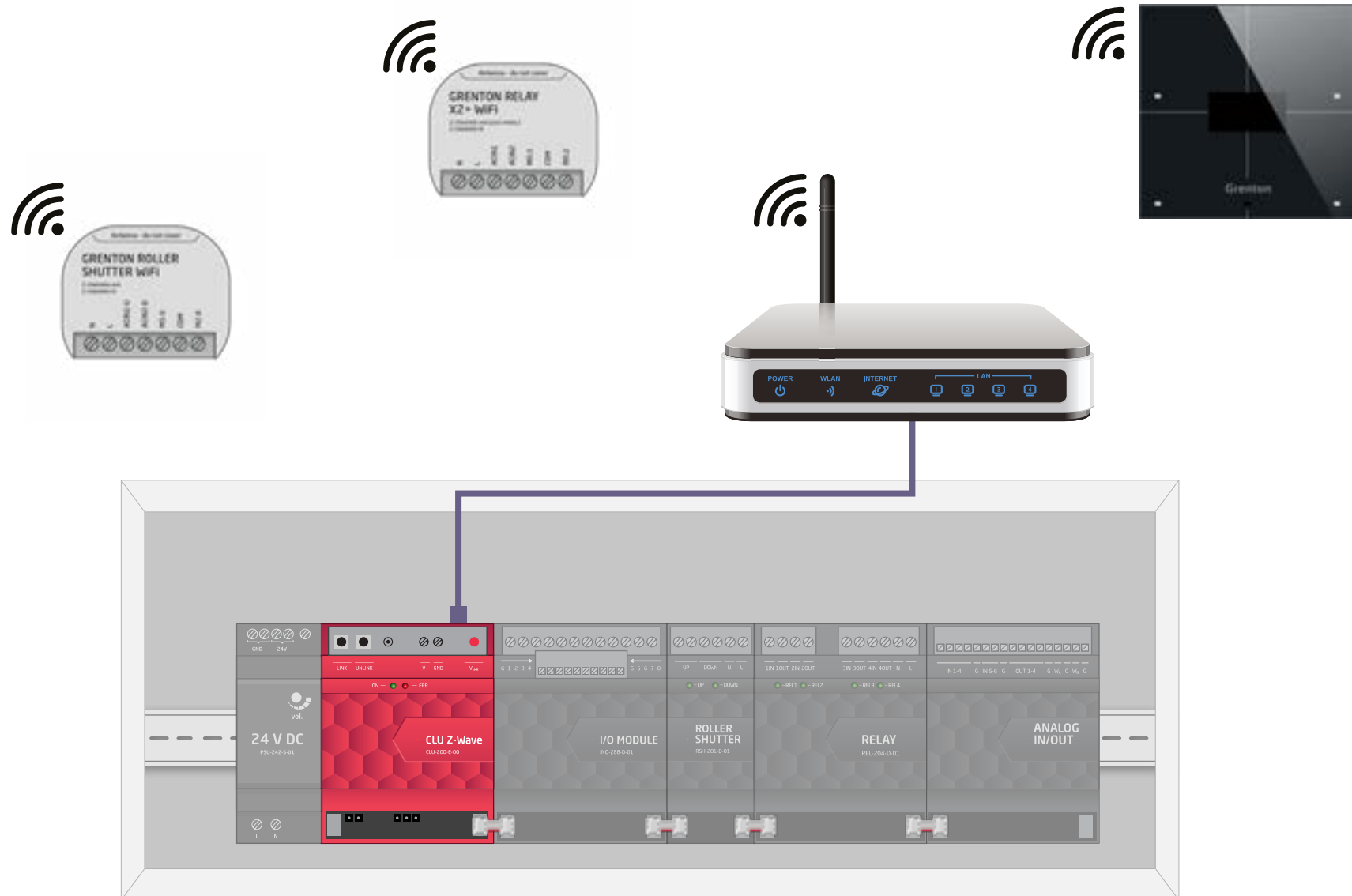
Electrical installation - Z-Wave modules

- 230V AC power cables
- Telecommunications cables



System including Wi-Fi modules and CLU

Telecommunications cables

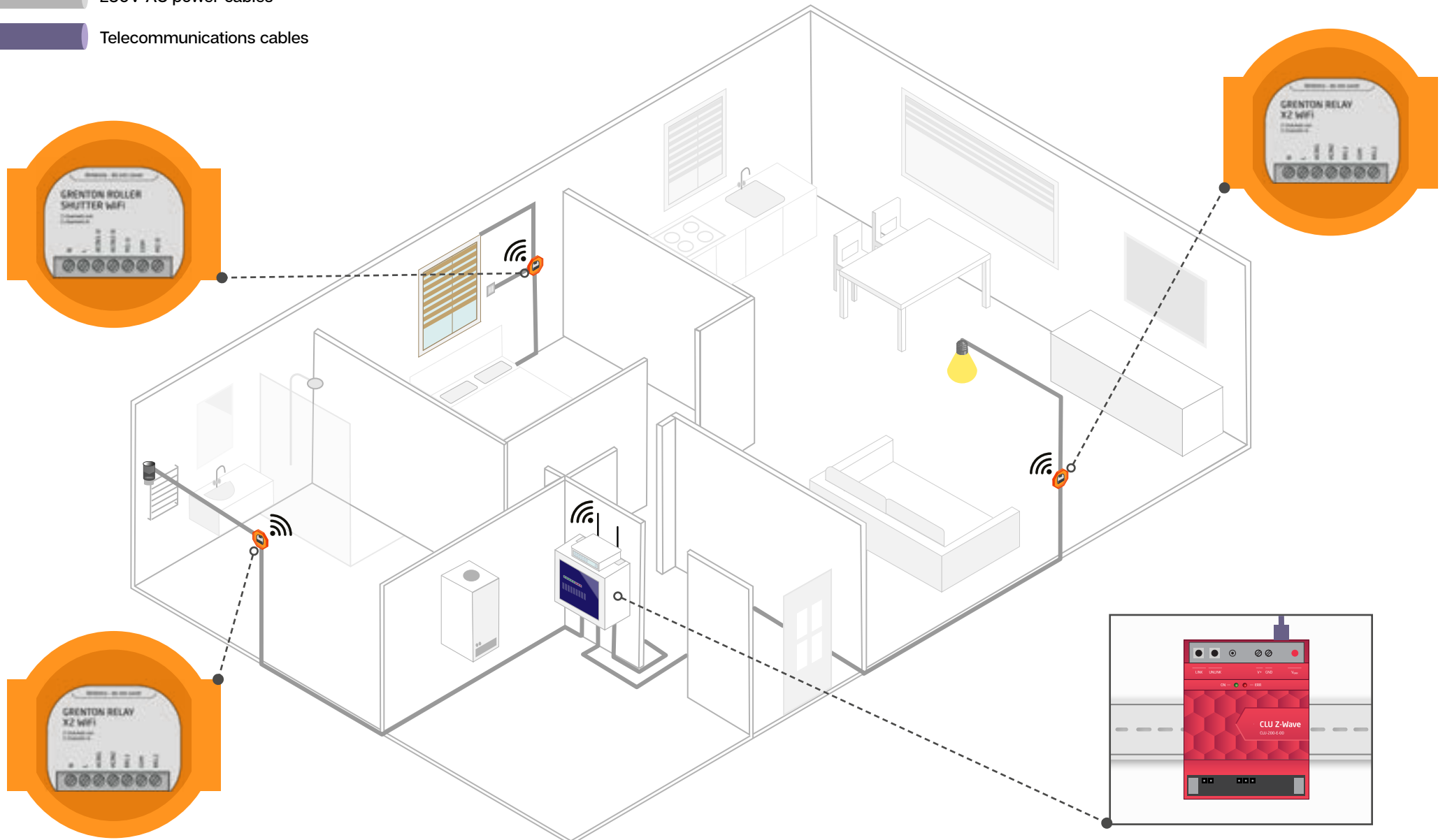


System including Wi-Fi modules without CLU

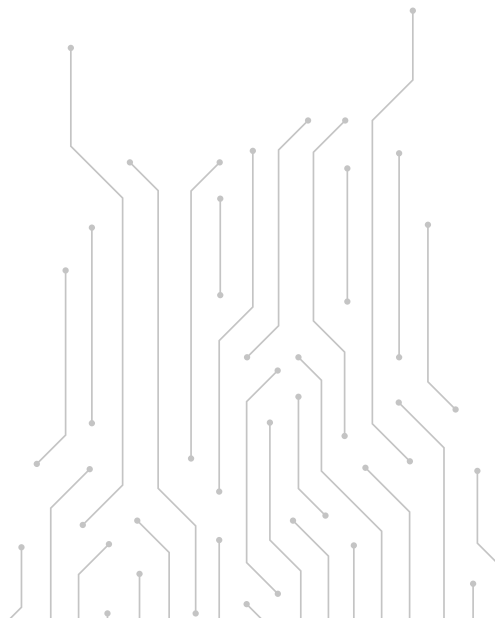


Electrical installation - Wi-Fi modules

- 230V AC power cables
- Telecommunications cables

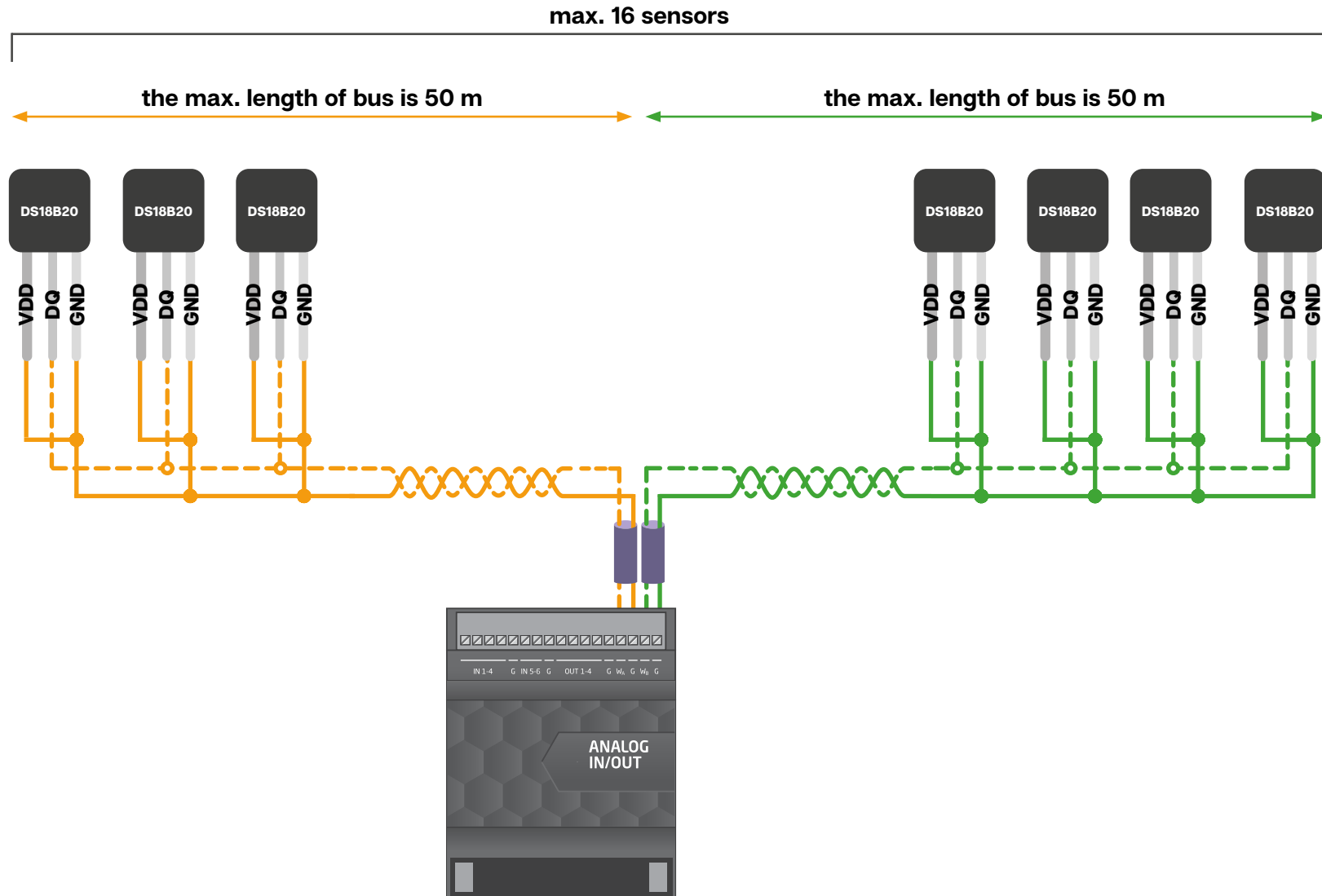


1-Wire bus



Data communication wiring

Telecommunications cables

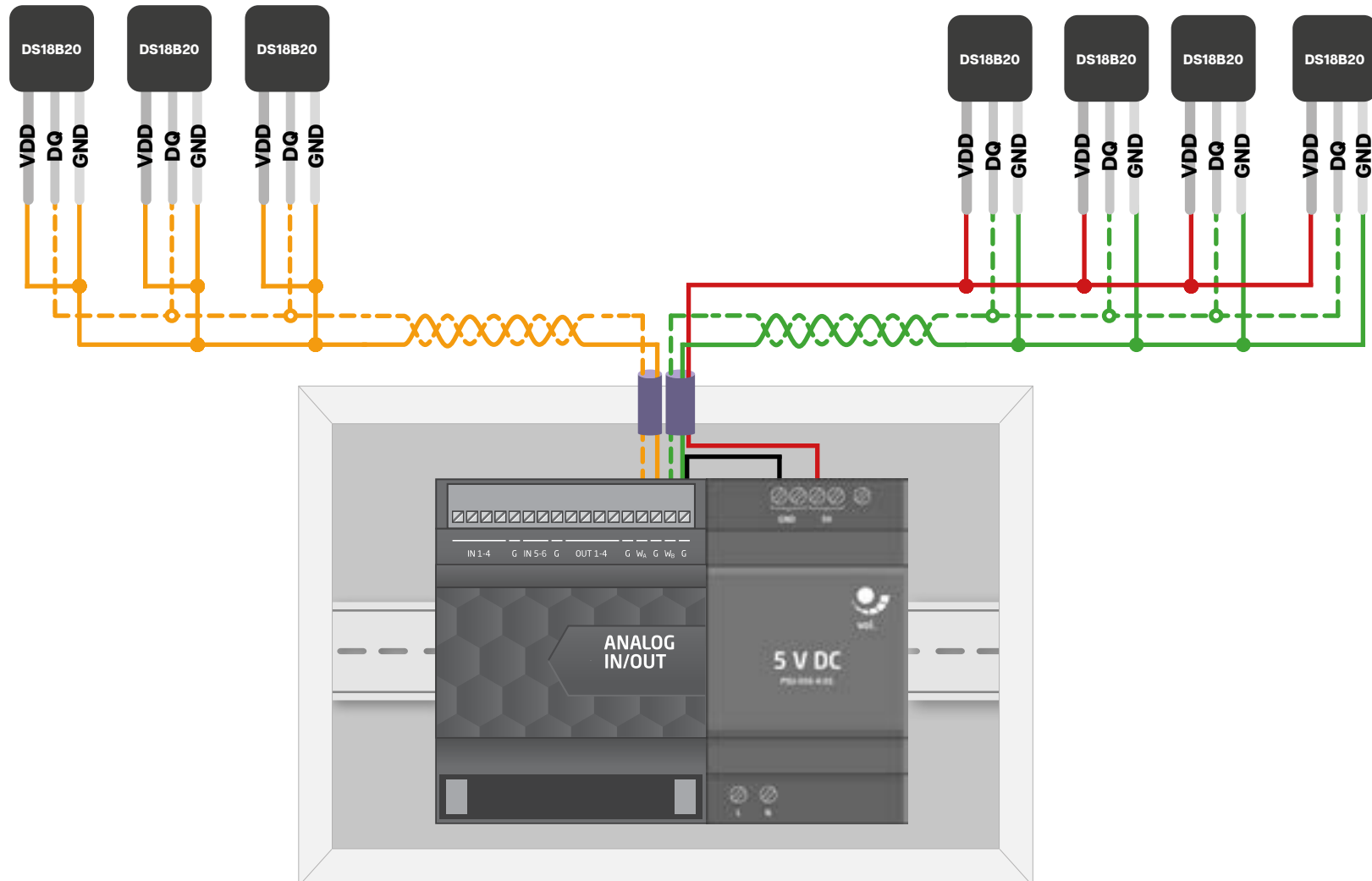


Analog IN/OUT module - sensors connection

Telecommunications cables

Two-wire connection (power directly from the data line - "parasite power")

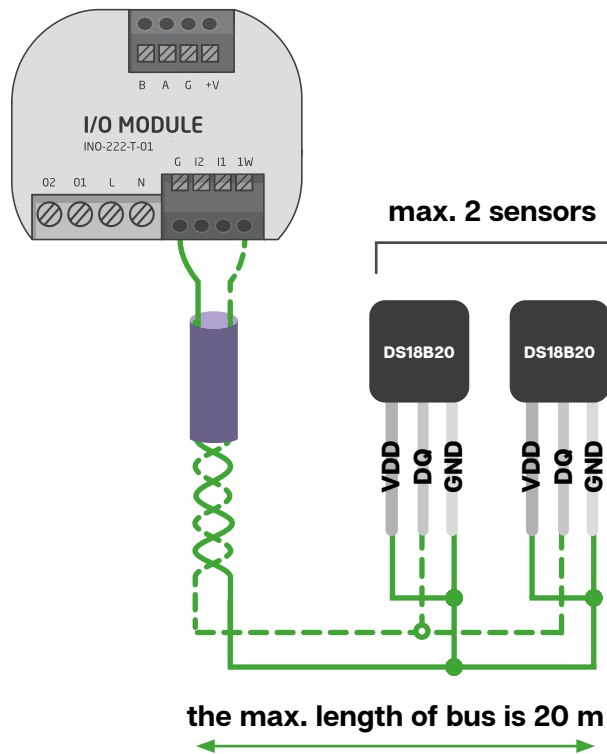
Three-wire connection (power from an external power supply unit)



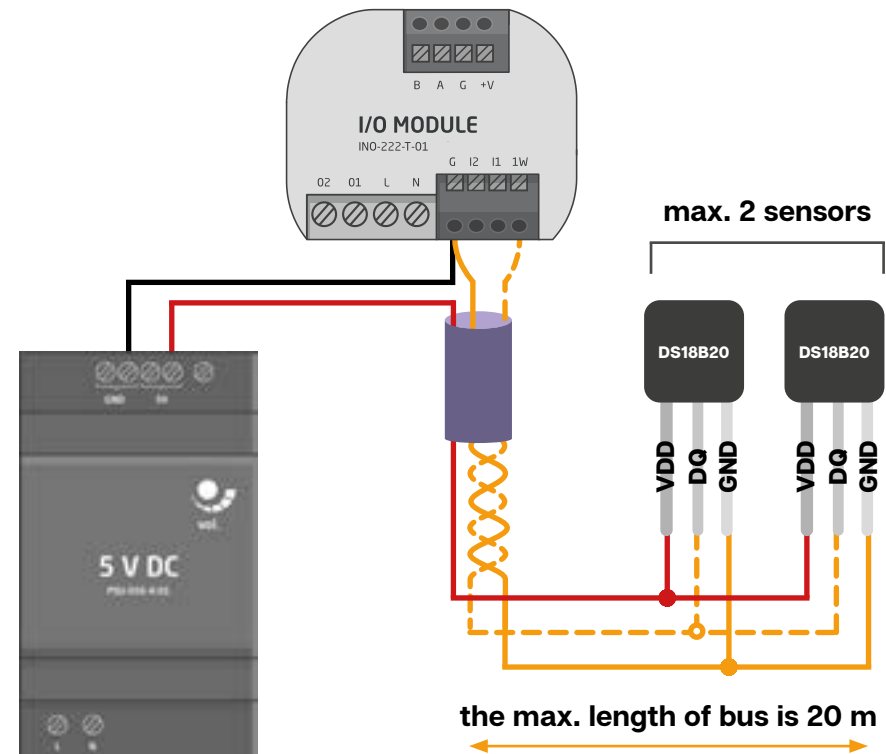
Flush-mounted modules - sensors connection

Telecommunications cables

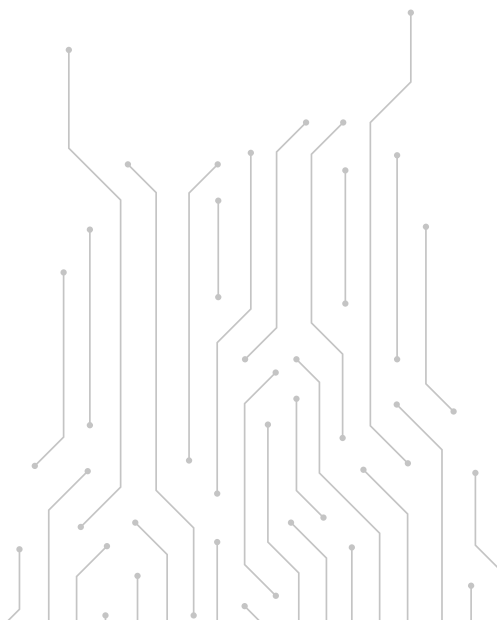
Two-wire connection (power directly from the data line - “parasite power”)



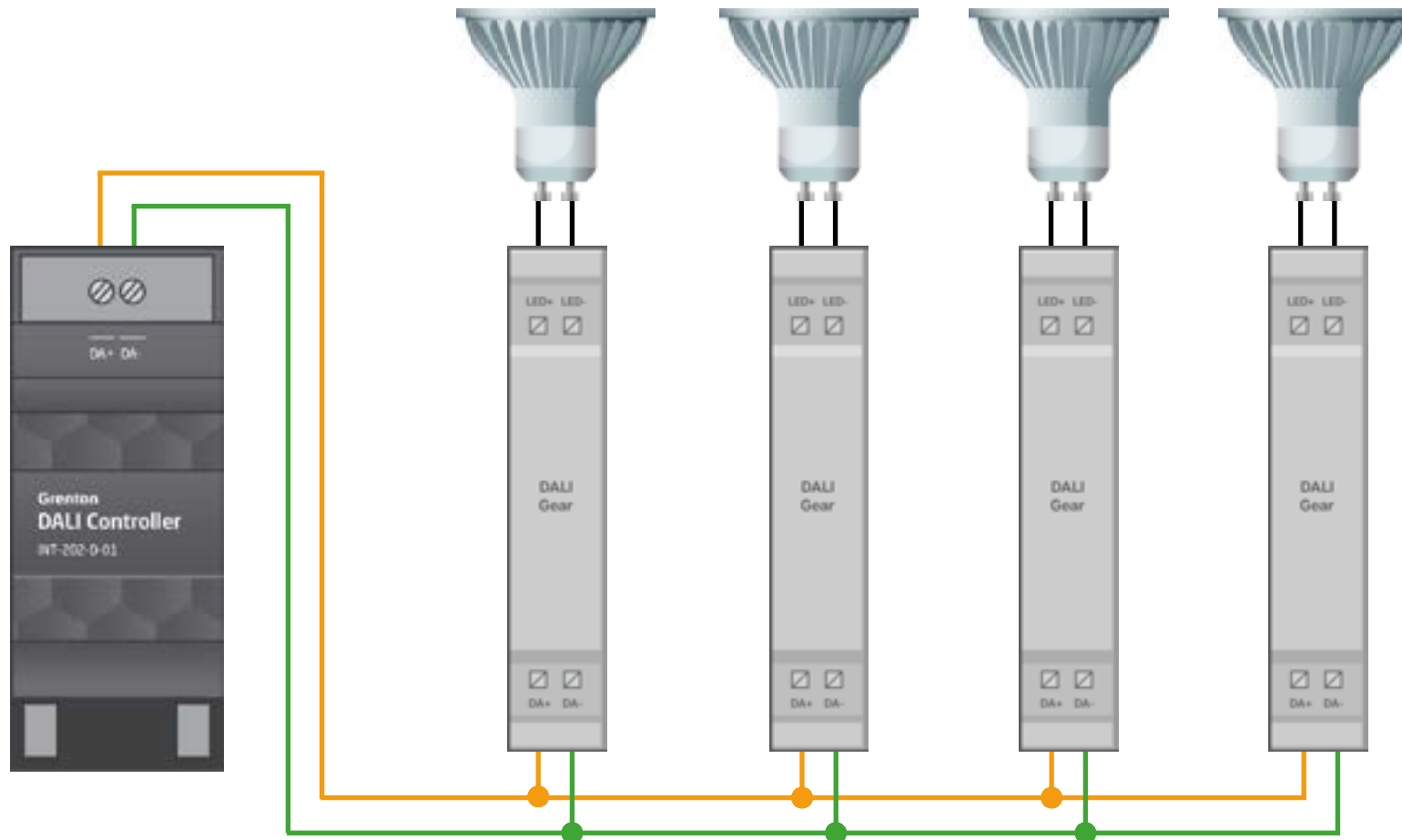
Three-wire connection (power from an external power supply unit)



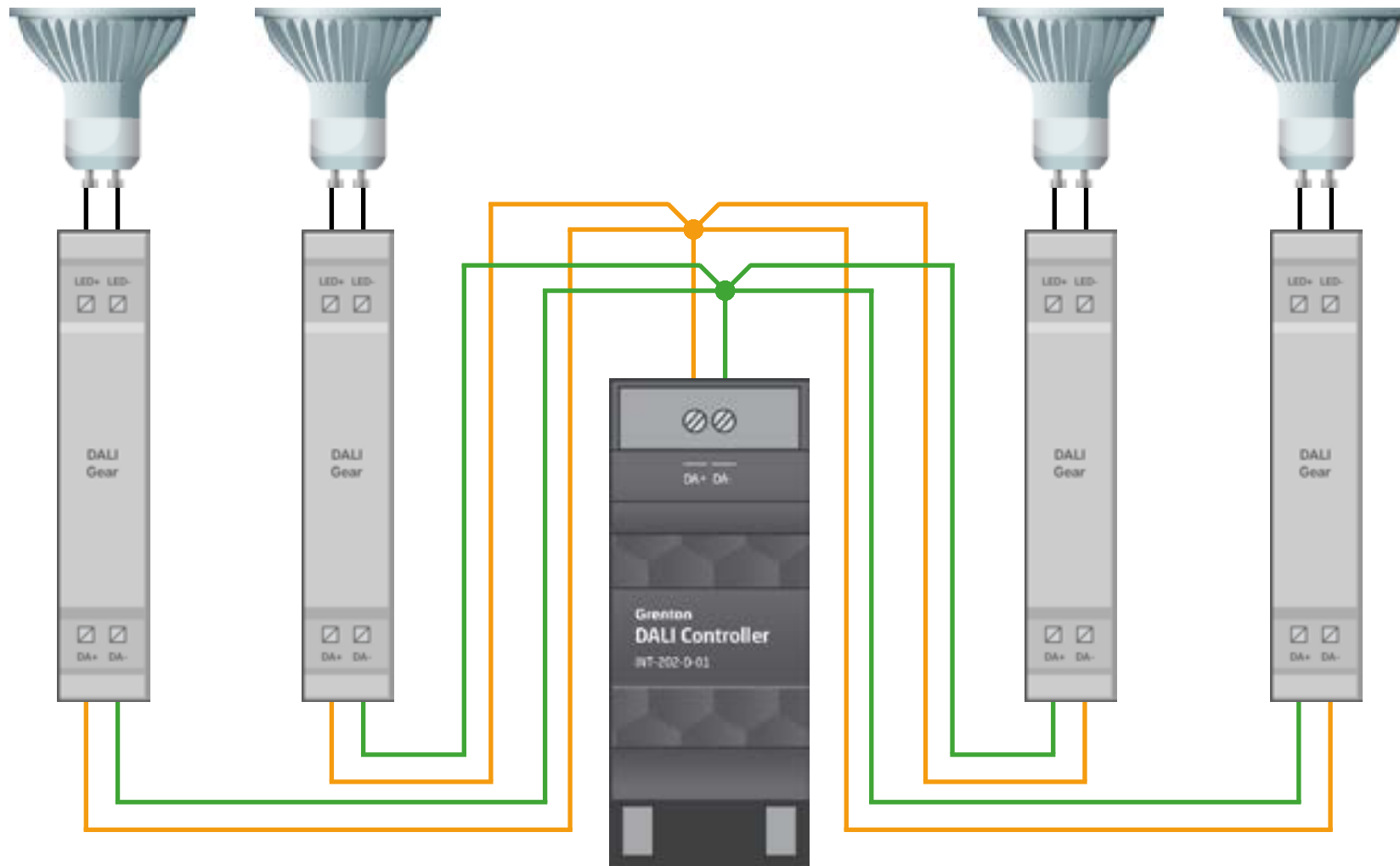
DALI bus



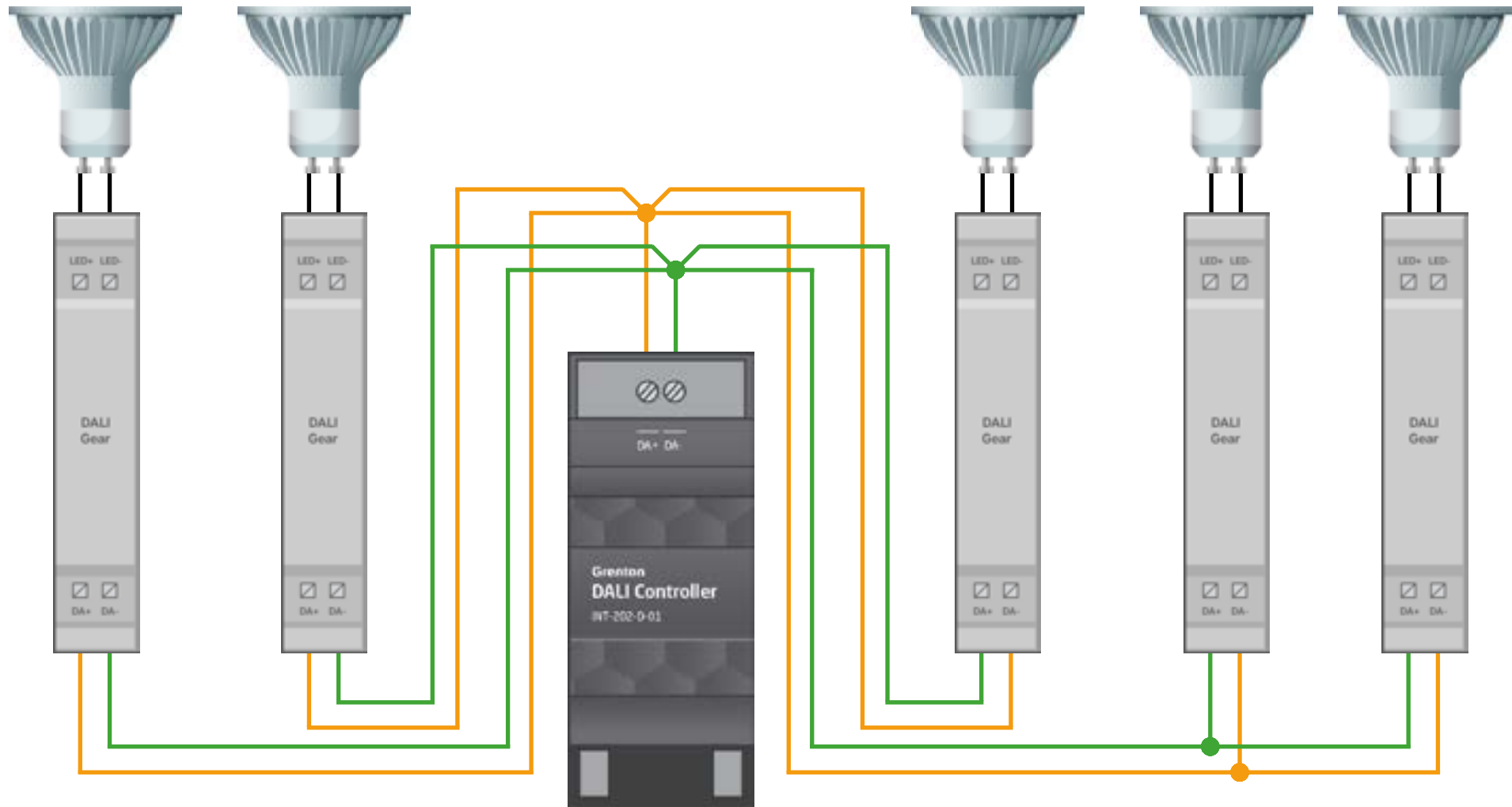
Serial data communication wiring



Star data communication wiring

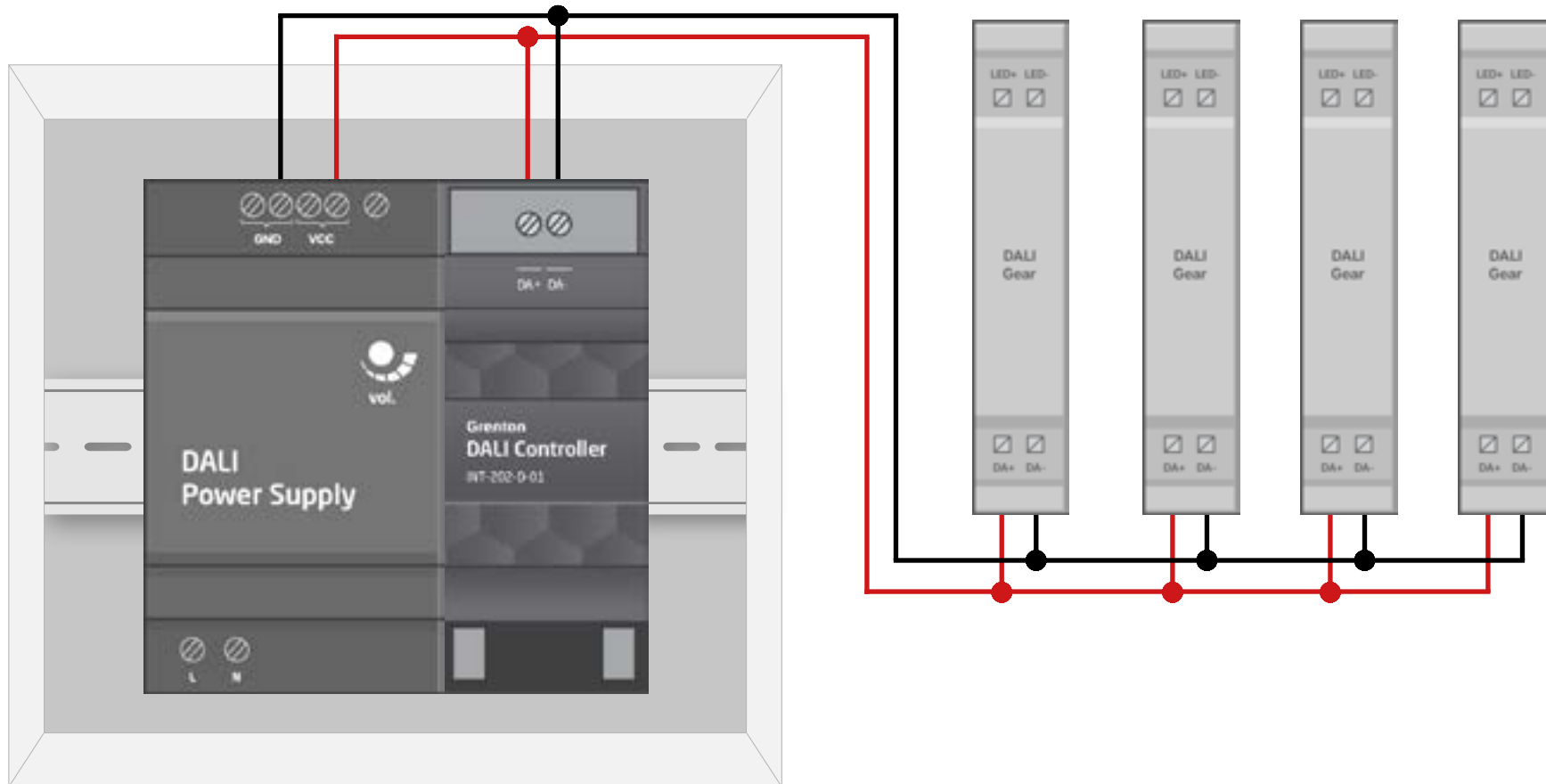


Mixed data communication wiring



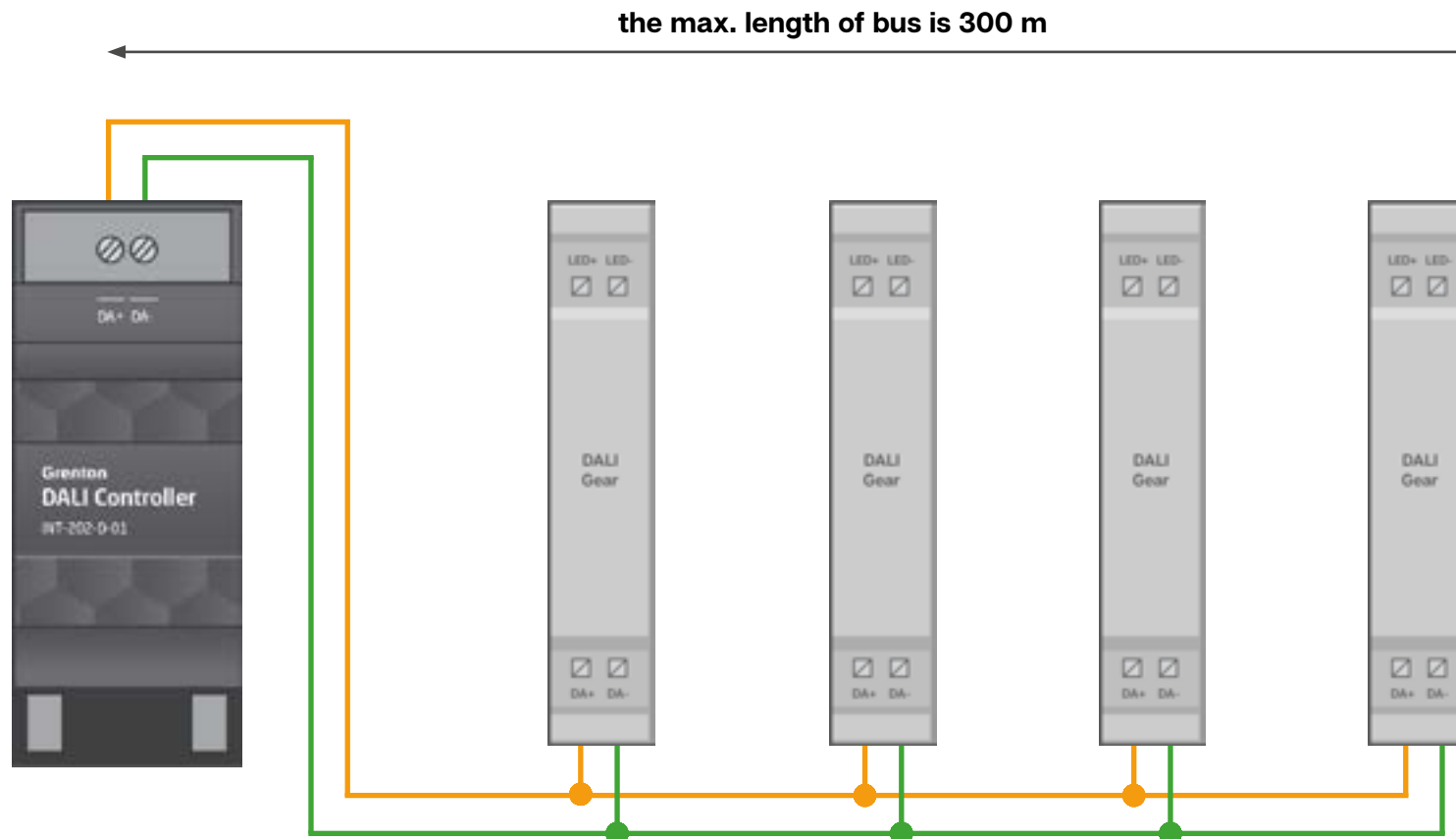
Bus power supply

The maximum output current of the power supply unit is 250 mA



DALI bus - requirements

- Recommended cable cross-section is 1.5 mm²
- No polarity for the DALI bus
- Looping, short-circuiting the bus or connecting other buses are not allowed
- DALI bus voltage is 13-20V

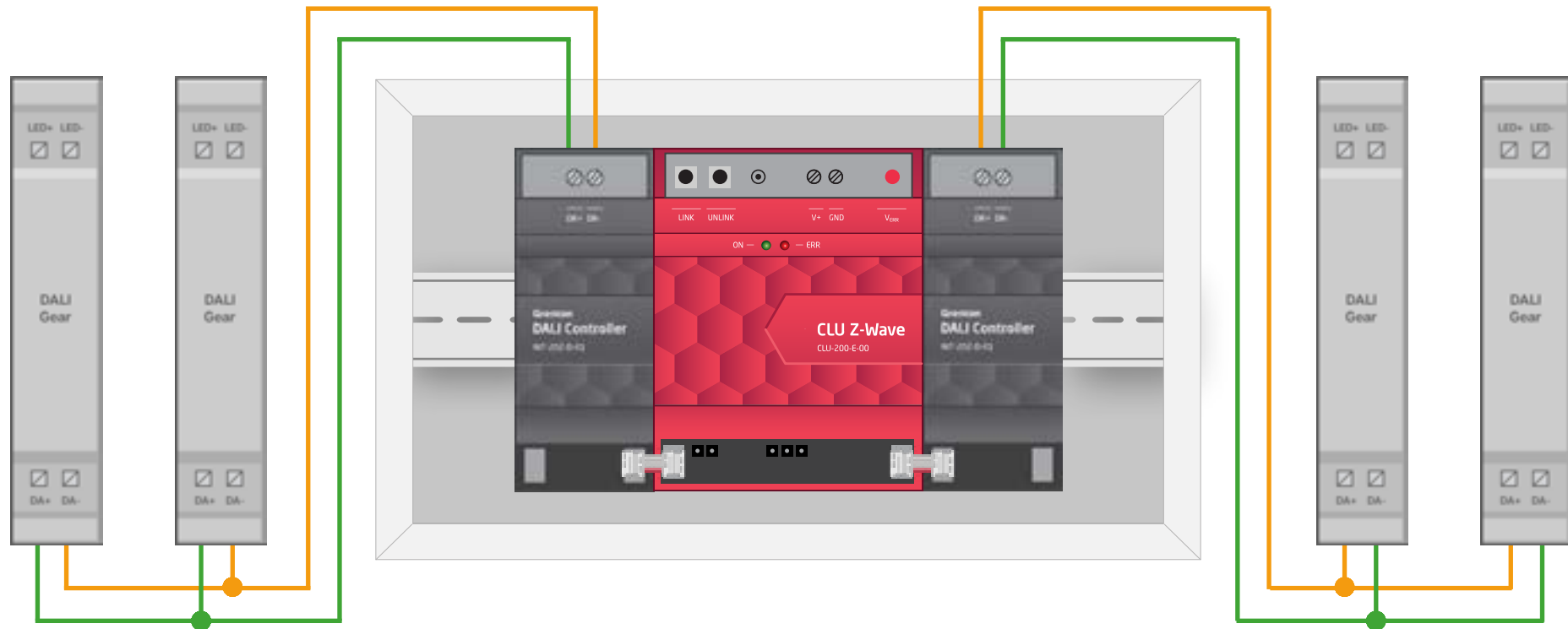


Number of ballasts

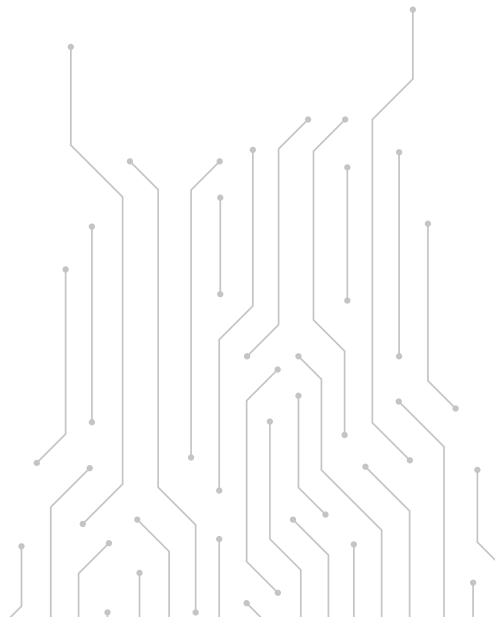
max. 128 ballasts per 1 CLU

max. 64 ballasts per 1 DALI Controller

max. 64 ballasts per 1 DALI Controller

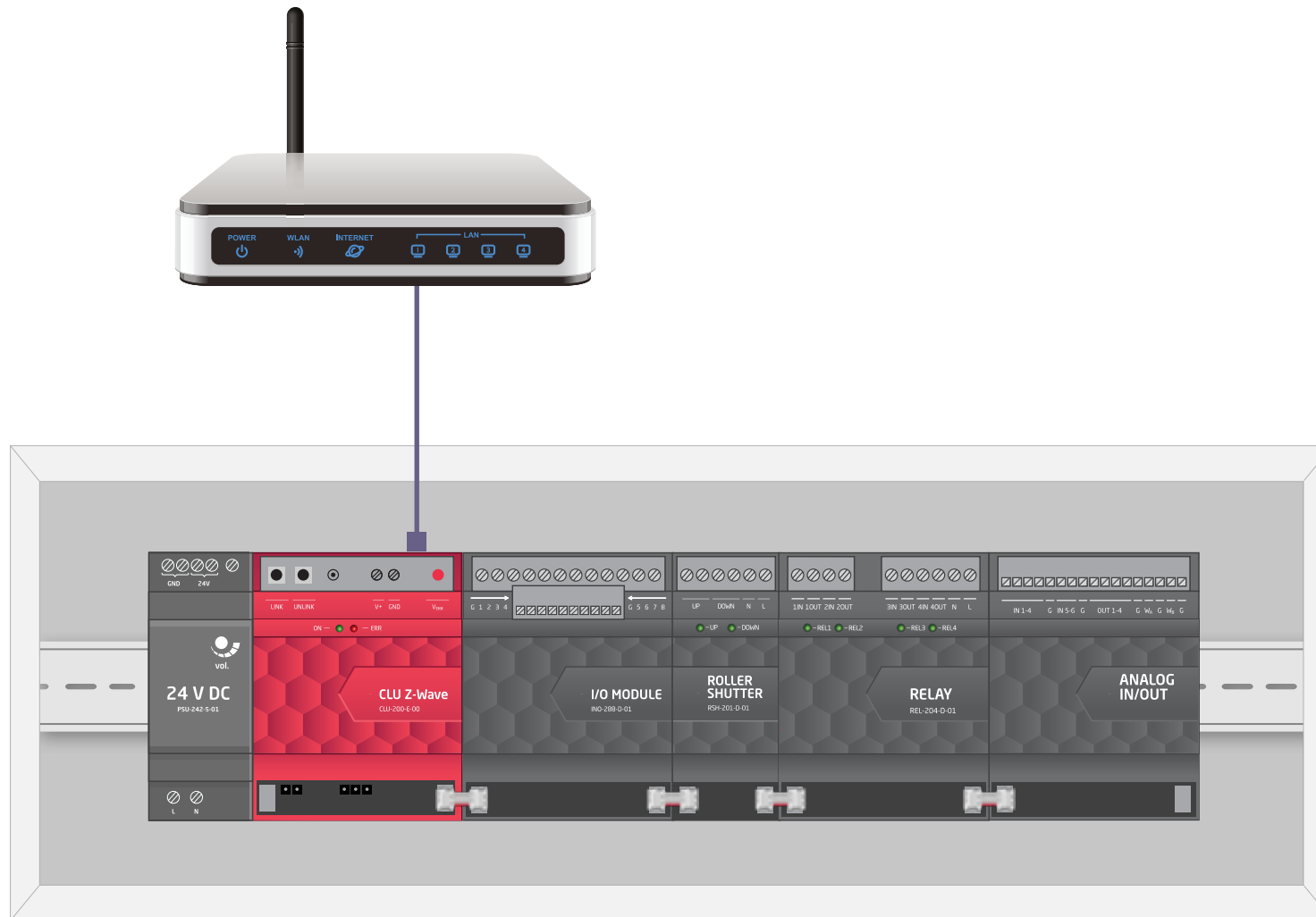


System communication



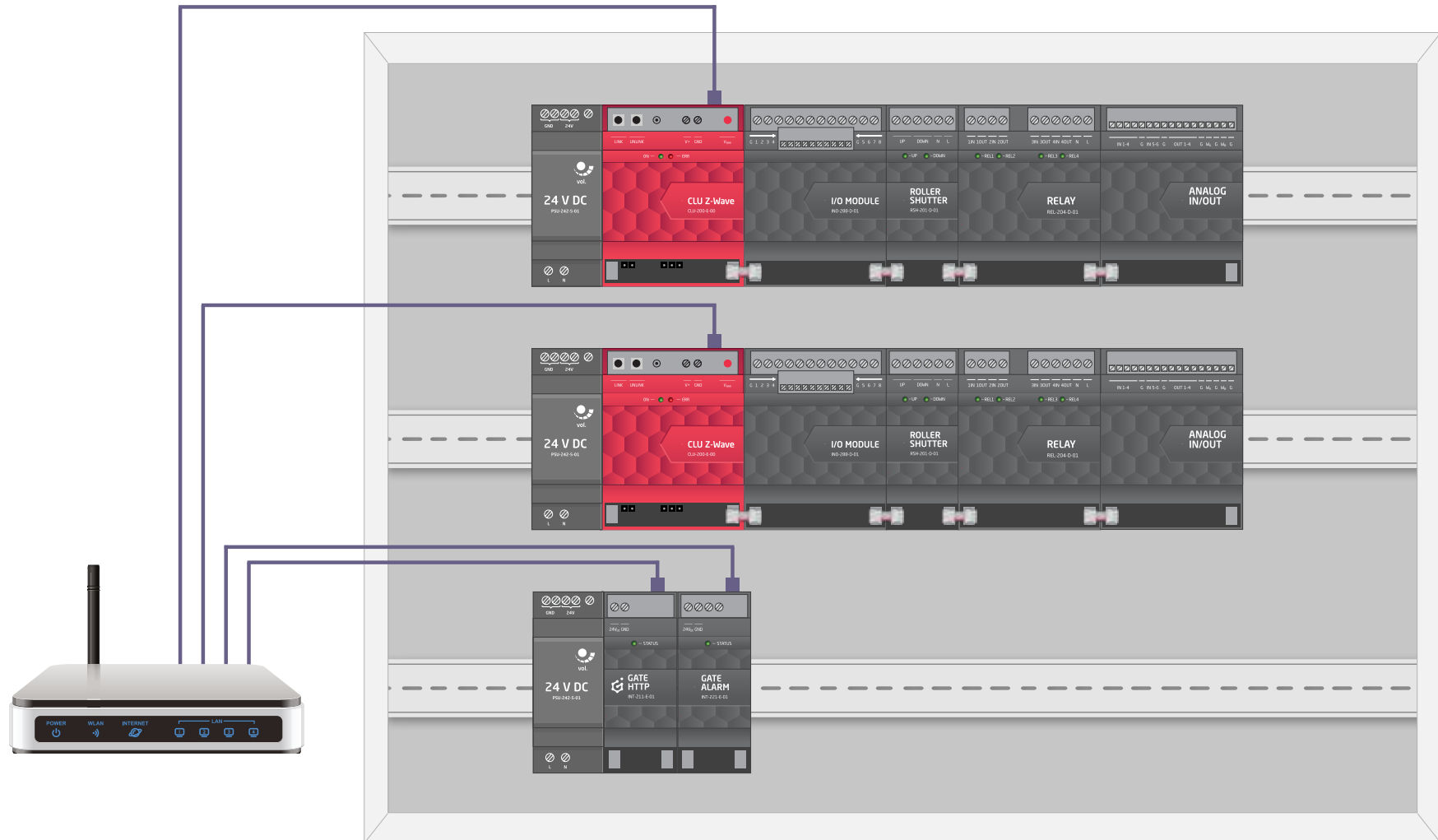
System with the one CLU class device

Telecommunications cables



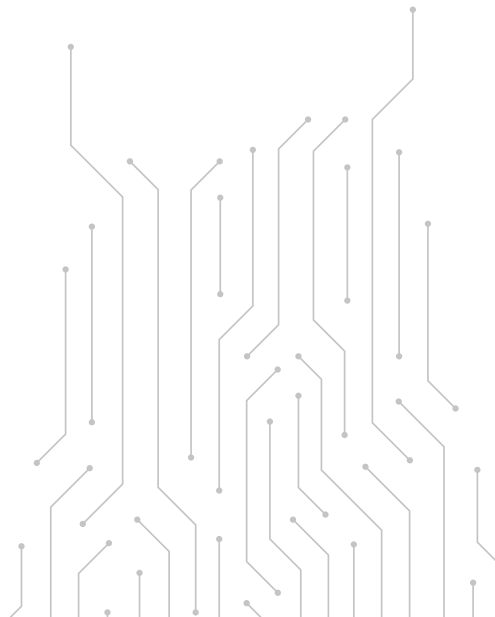
System with several CLU class devices

Telecommunications cables





System power supply

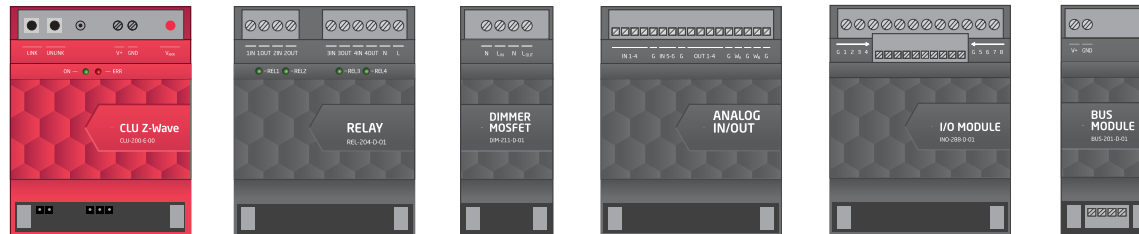


Power supply unit selection

The power of the power supply unit should be calculated by summing:

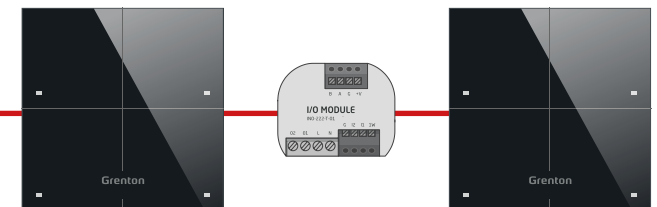
- The current power consumption of all modules in the system,
- 30% of the buffer taking into account voltage drops on the bus and possible expansion of the system

DIN-mounted modules



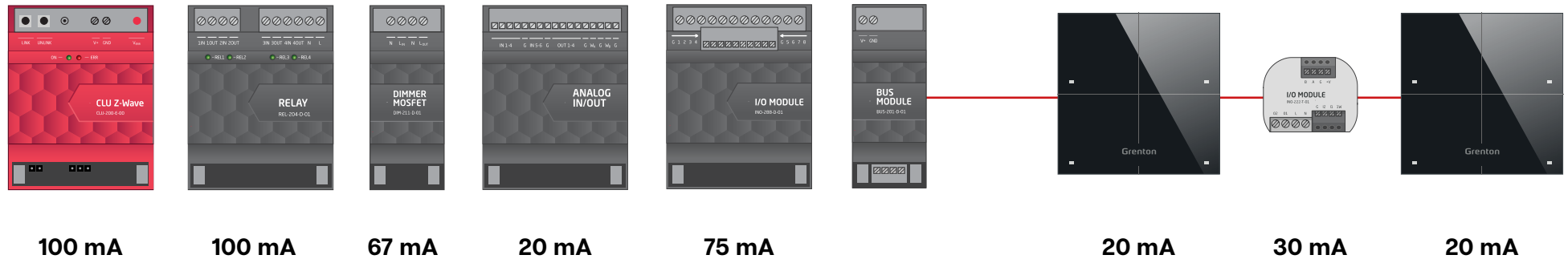
Power consumption

Touch panels and flush-mounted modules



Power consumption
+
Voltage drop

Power supply unit selection - example



Max. summary power consumption for above modules is **432 mA**

Max. summary power consumption + 30% buffer

$$432 \text{ mA} + 30\% = 561.6 \text{ mA}$$

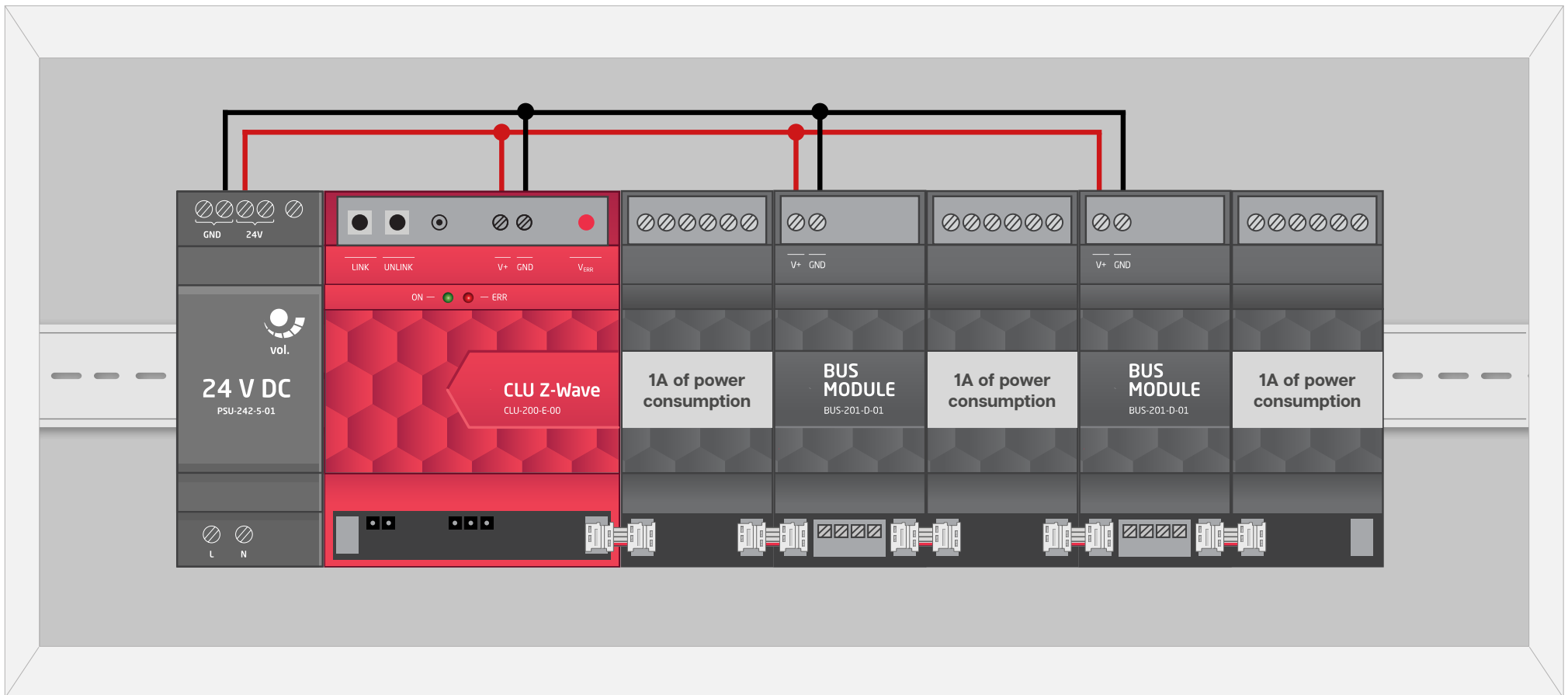
Min. power of a power supply unit = **561.6 mA**



Optimal parameters of the power supply unit for this example

24 VDC 600 mA

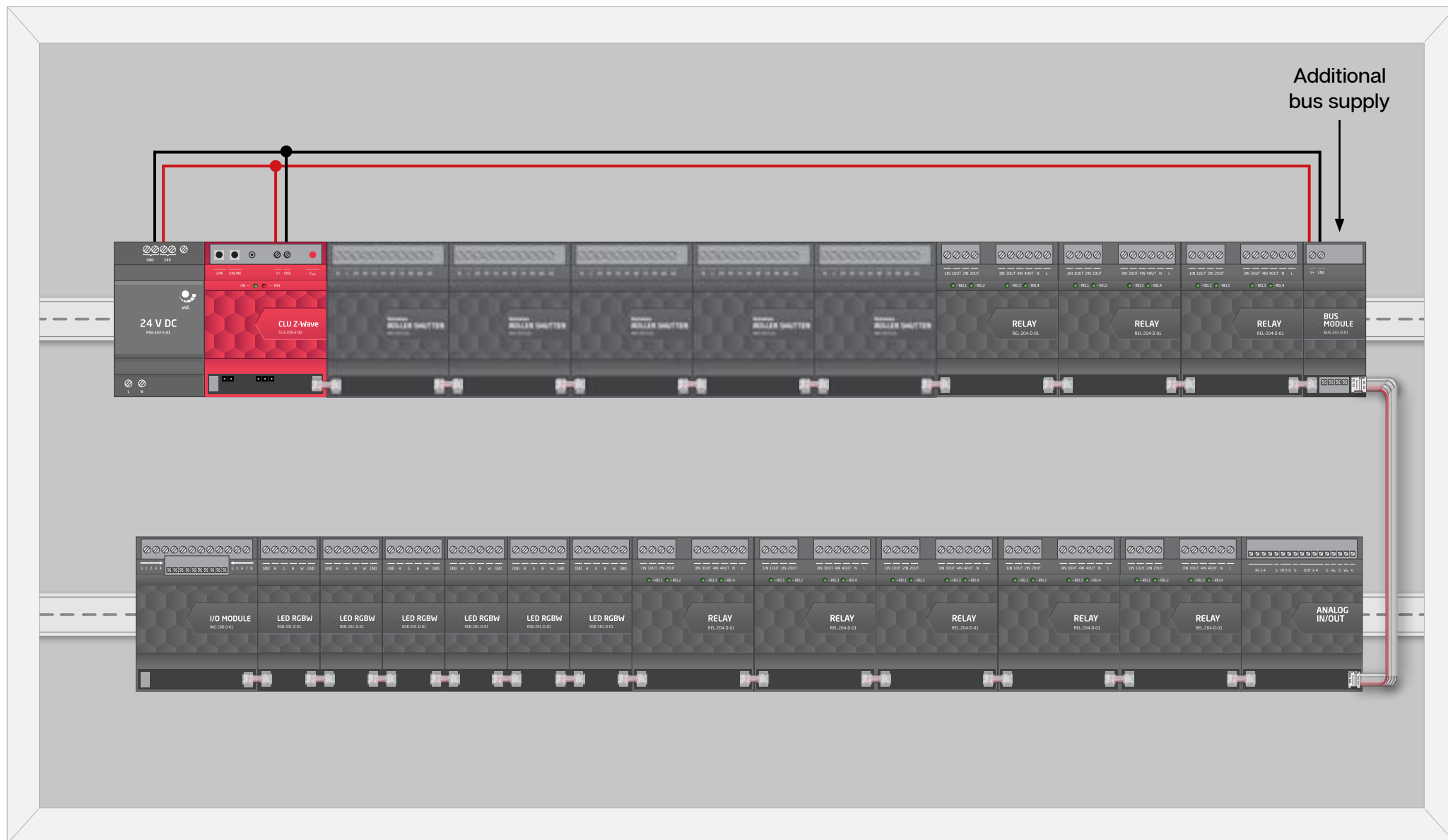
System power supply



24V DC power supply unit

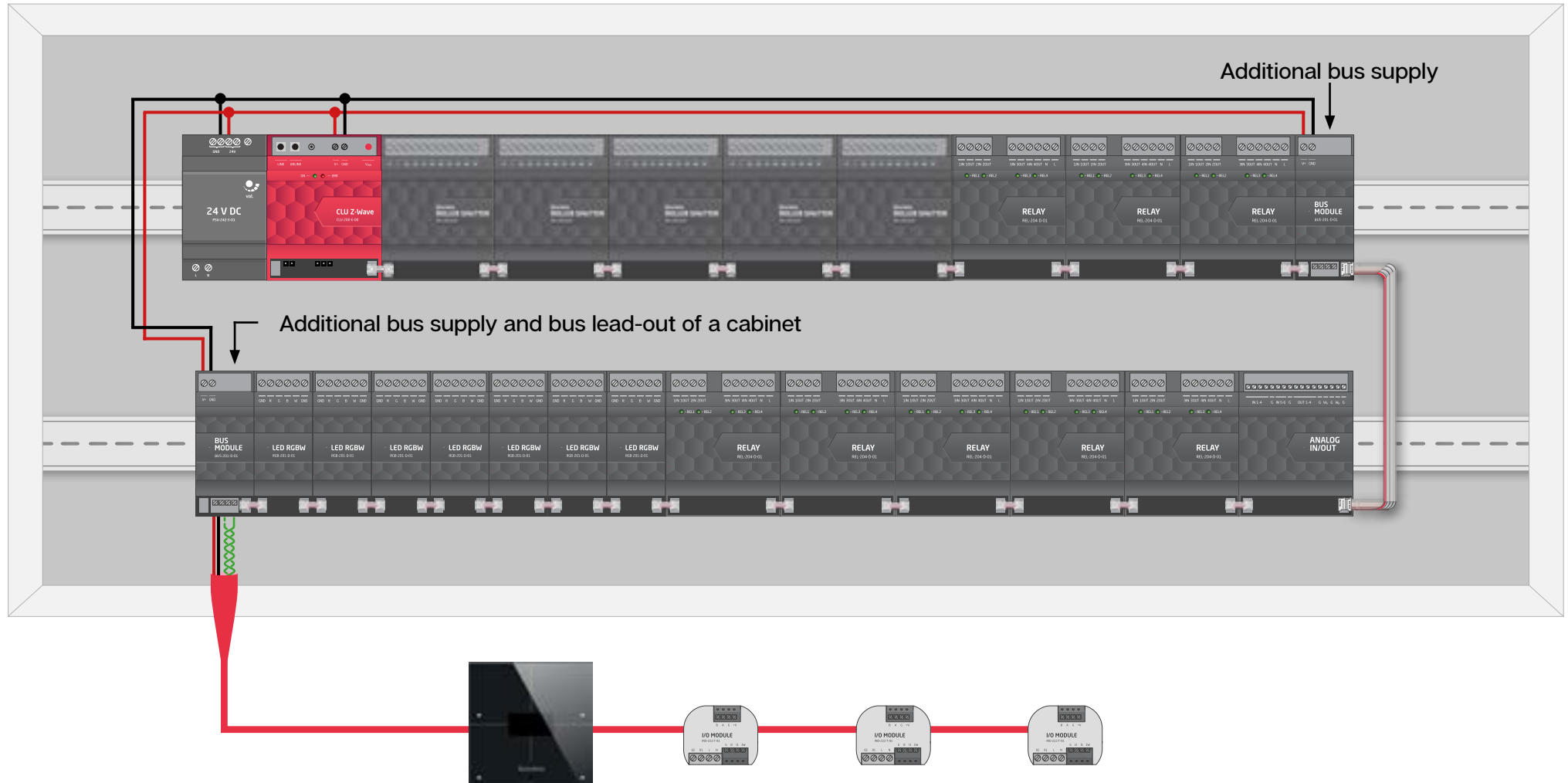
Min. 3A

System power supply - 1st example



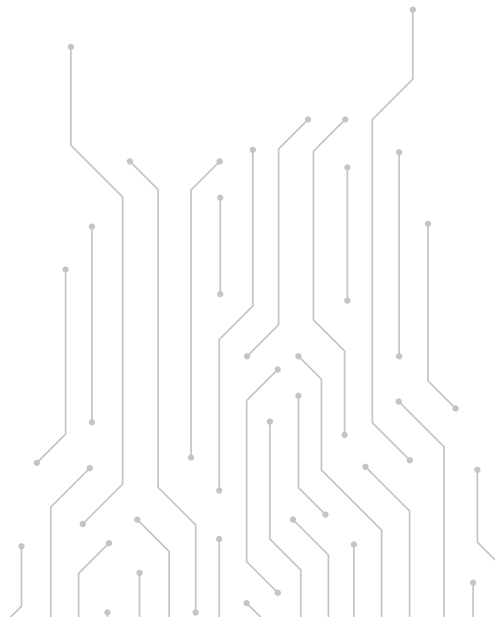
System power supply - 2nd example

GRENTON TF-Bus Cable



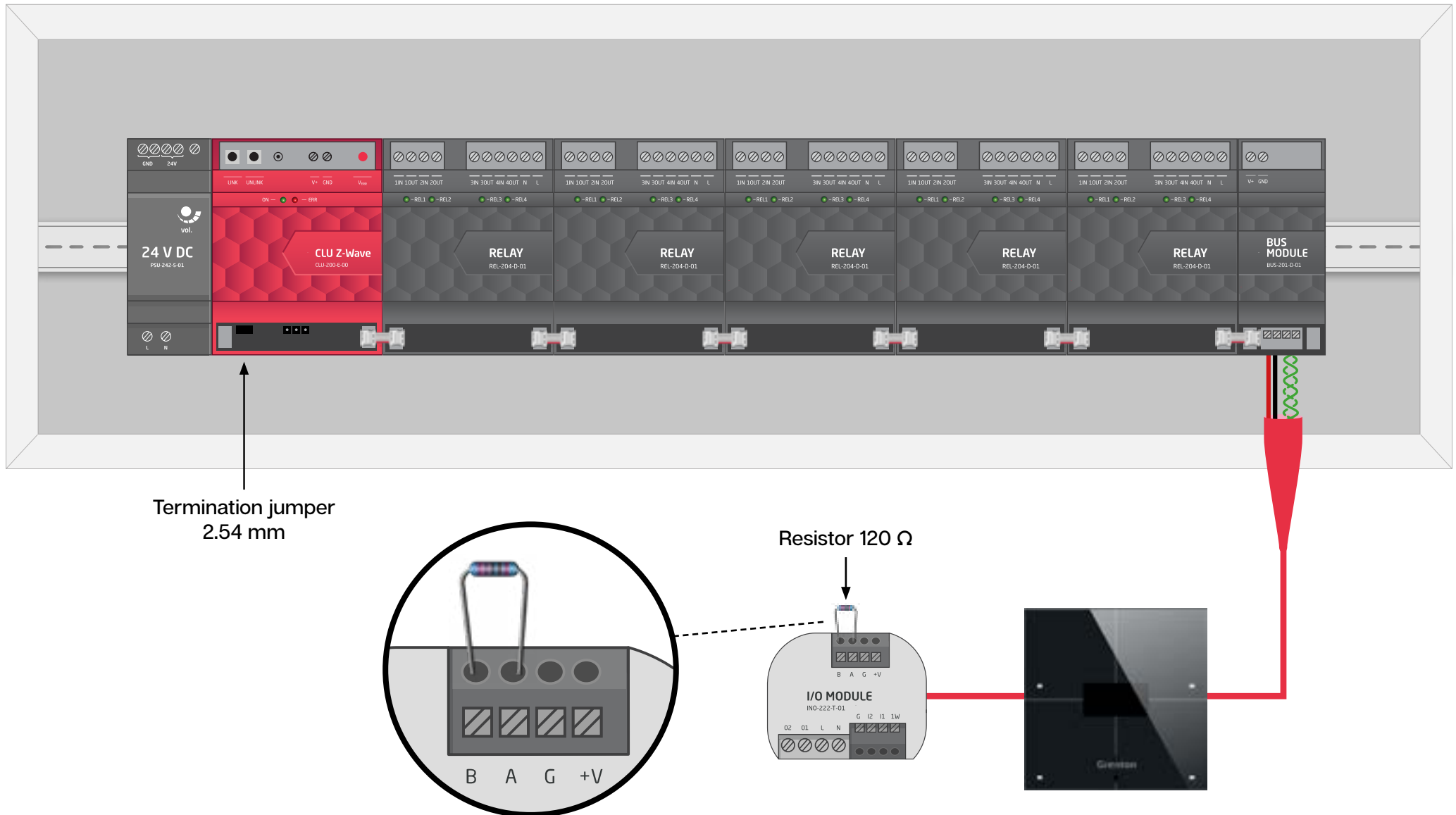


Bus termination

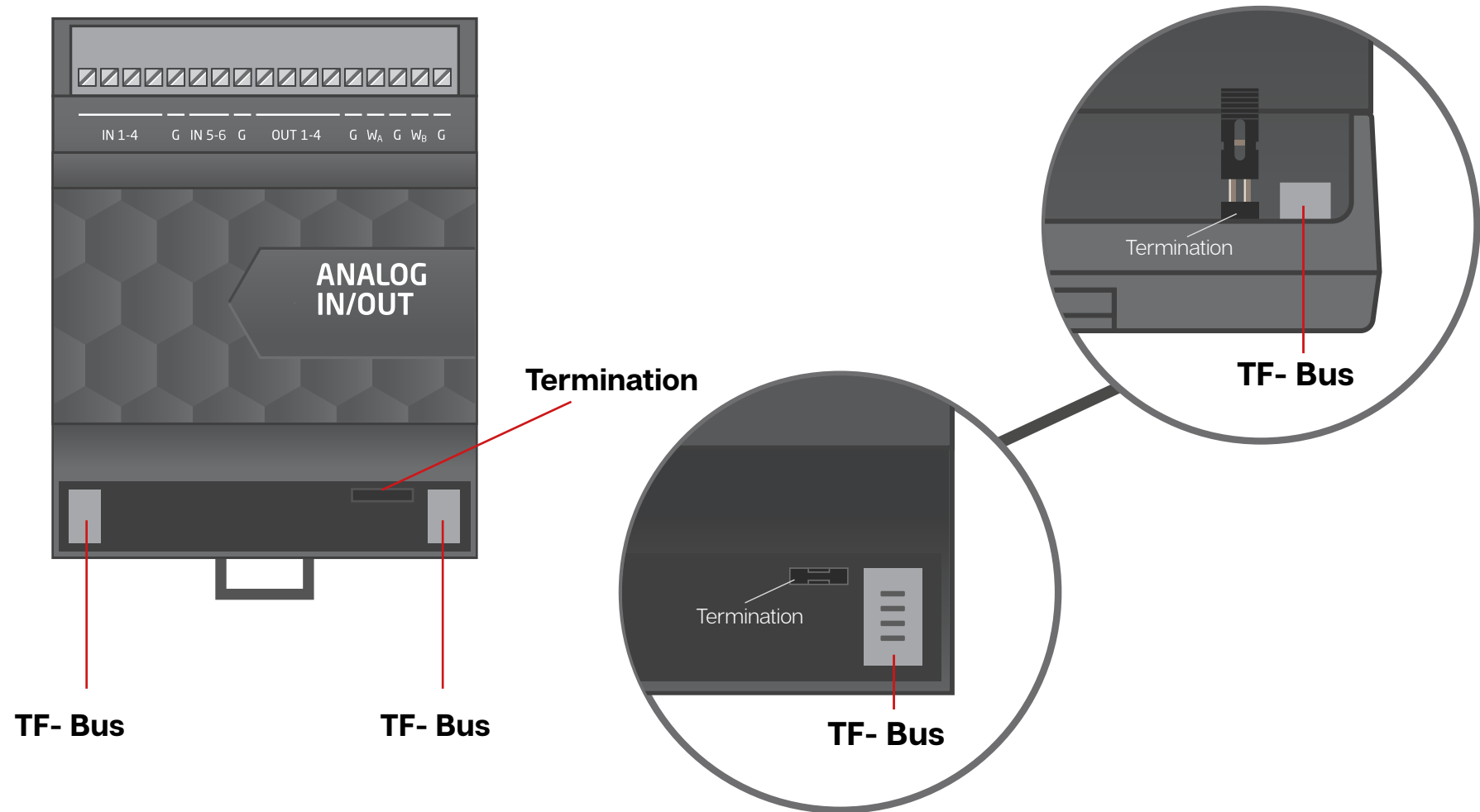


Bus termination

GRENTON TF-Bus Cable

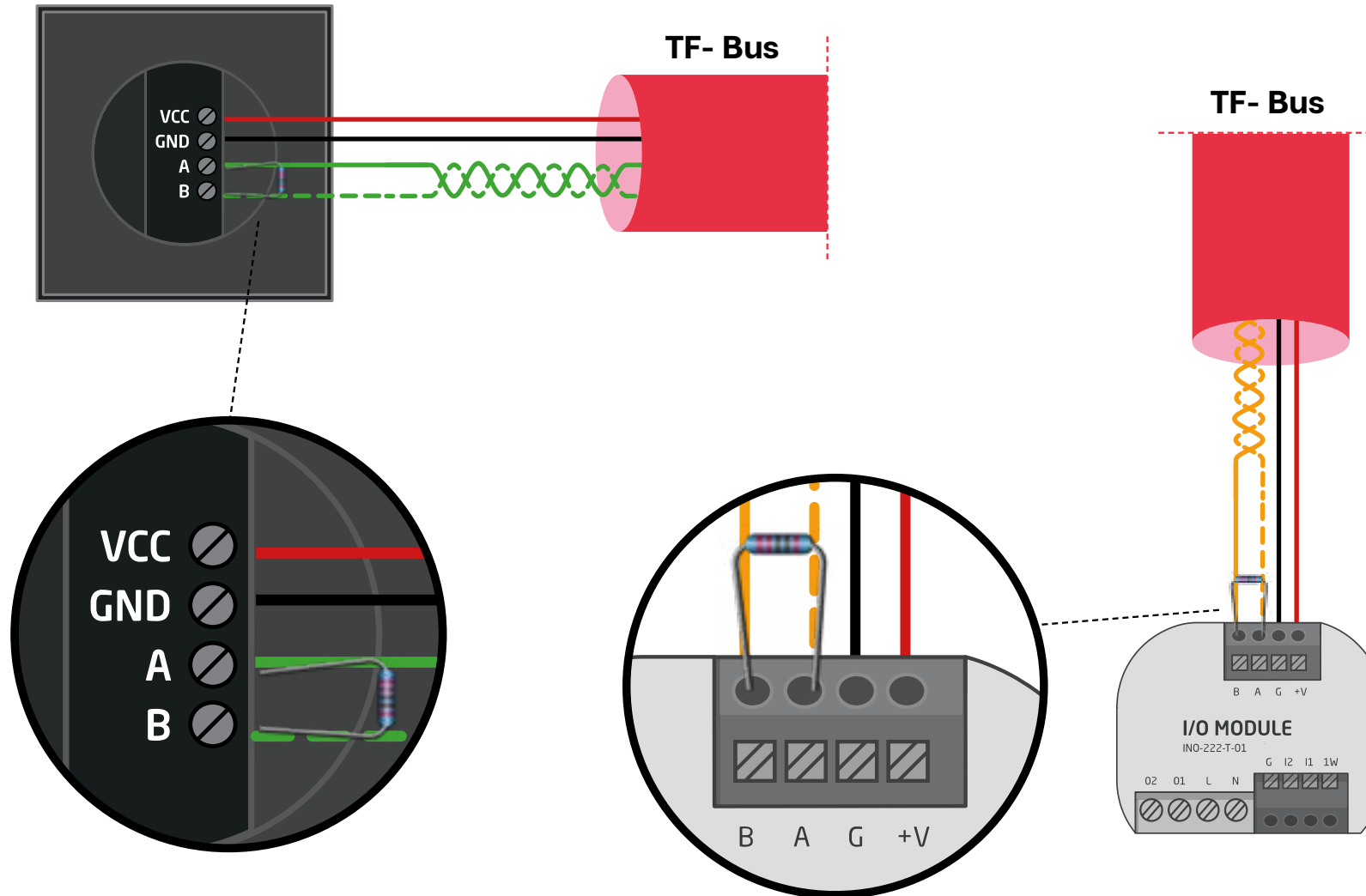


Termination - DIN modules

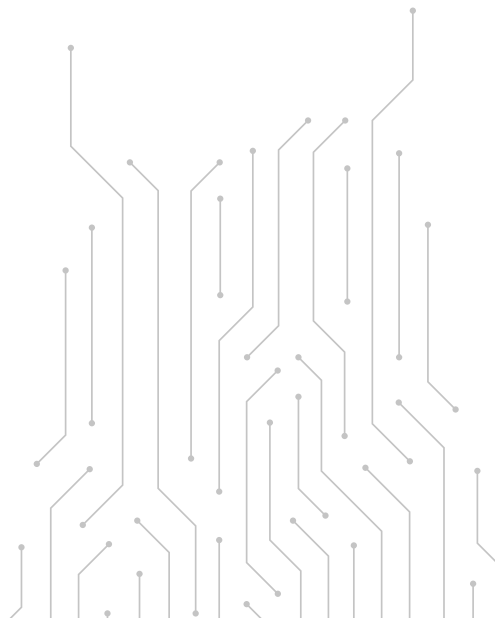


Termination - touch panels and flush-mounted modules

GRENTON TF-Bus Cable



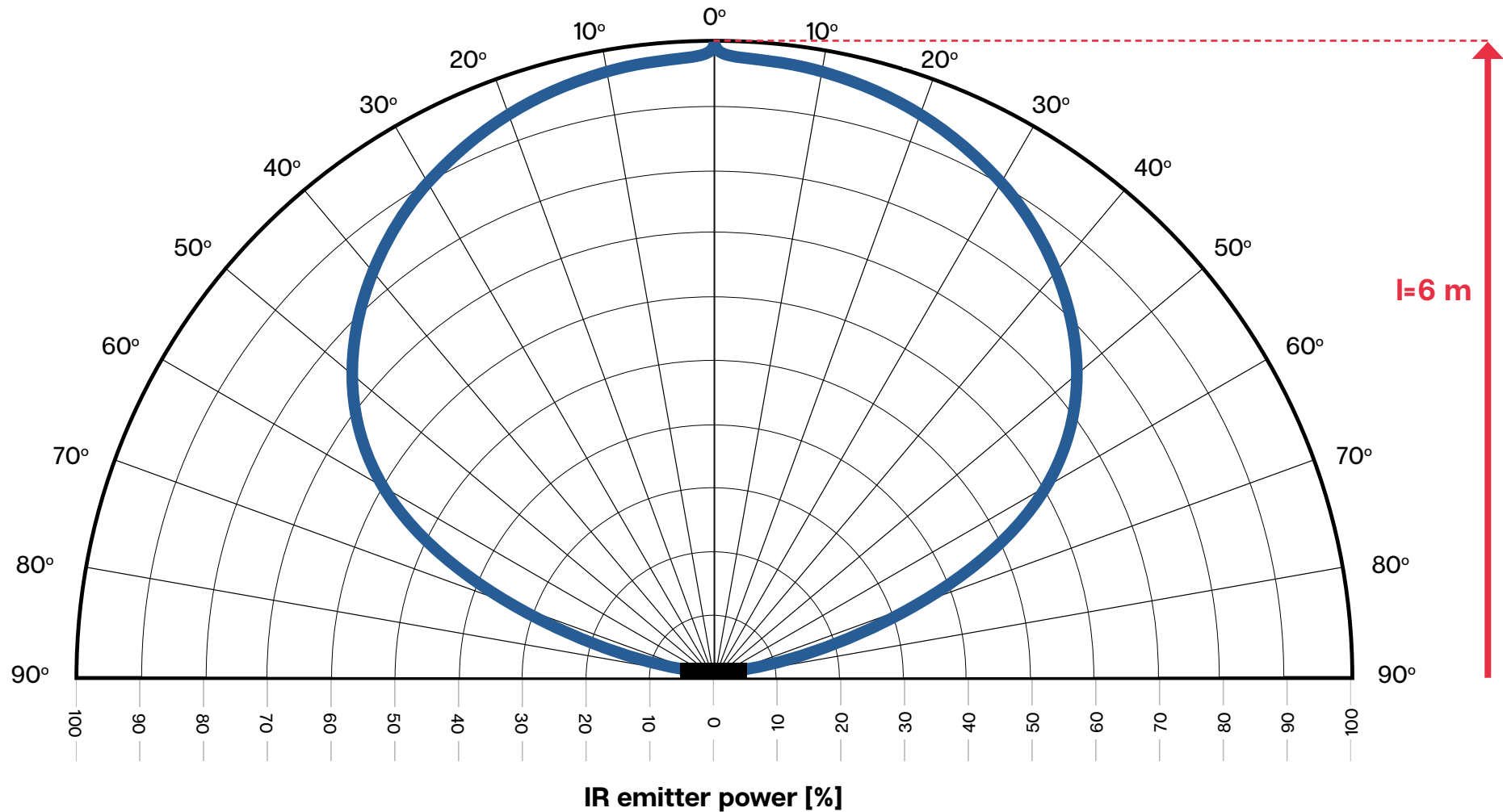
Multisensor



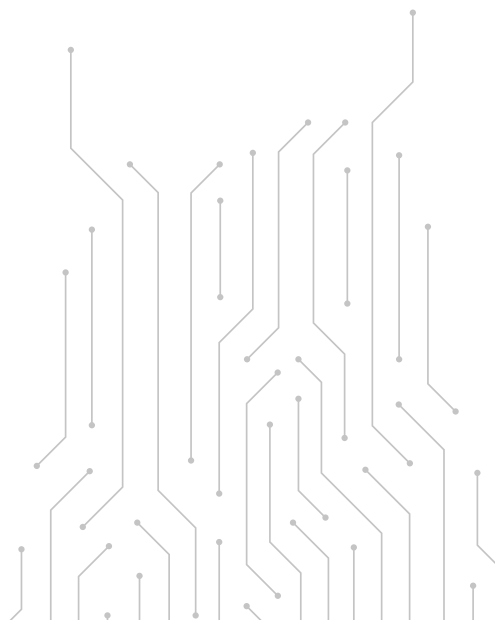
Placement - reading of sensor measurements



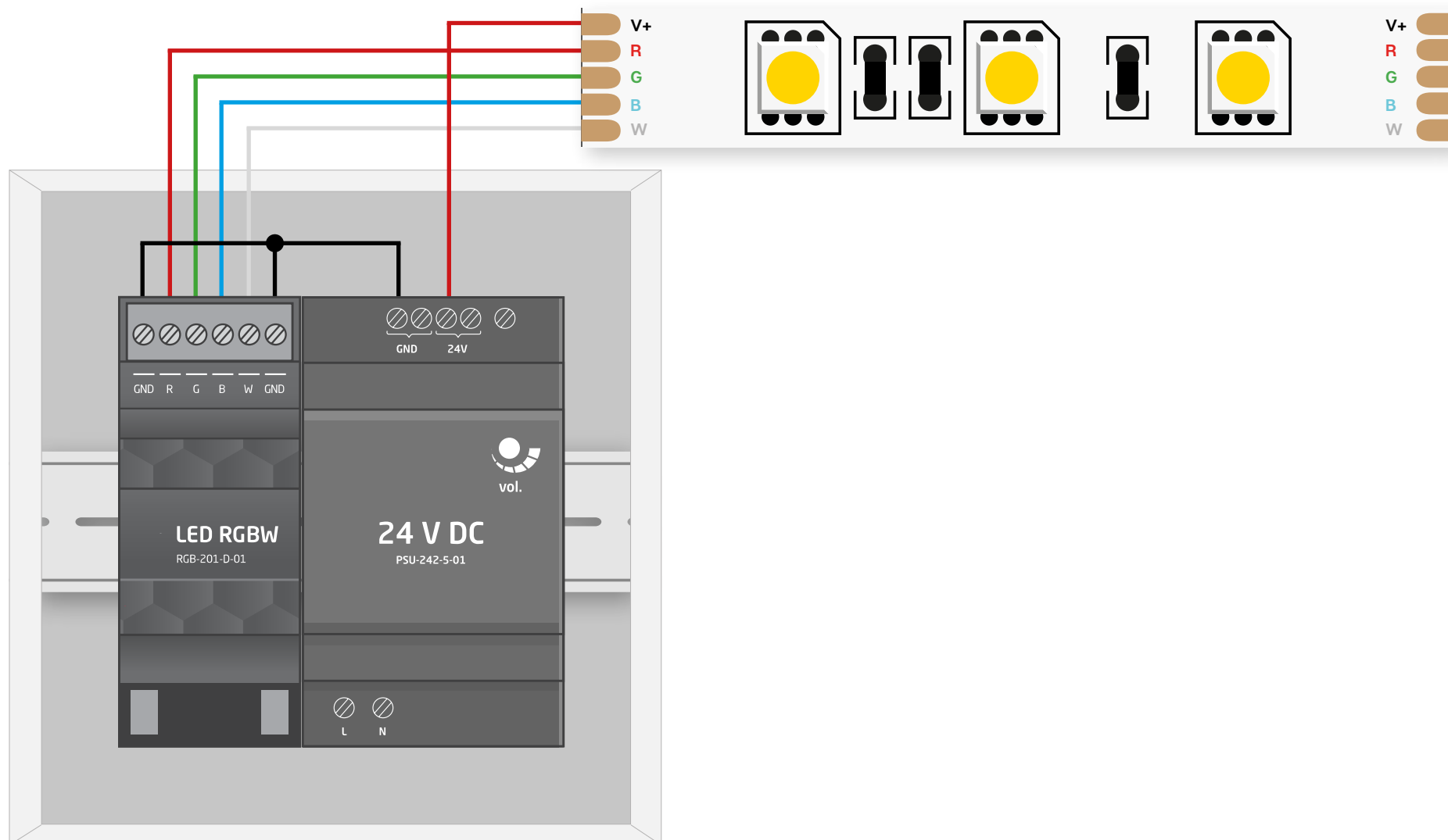
Radiation characteristics of IR emitter and operation range



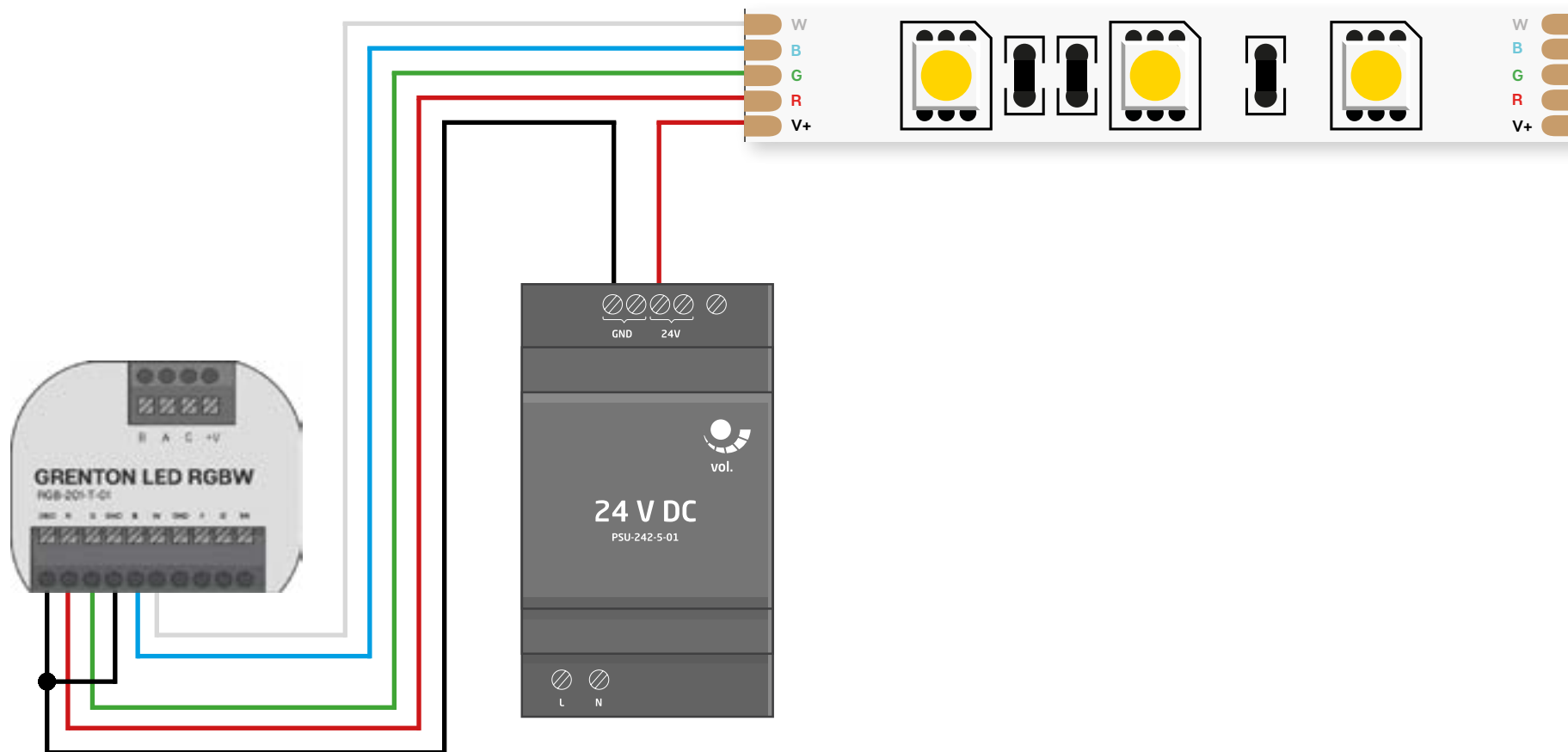
LED strips control



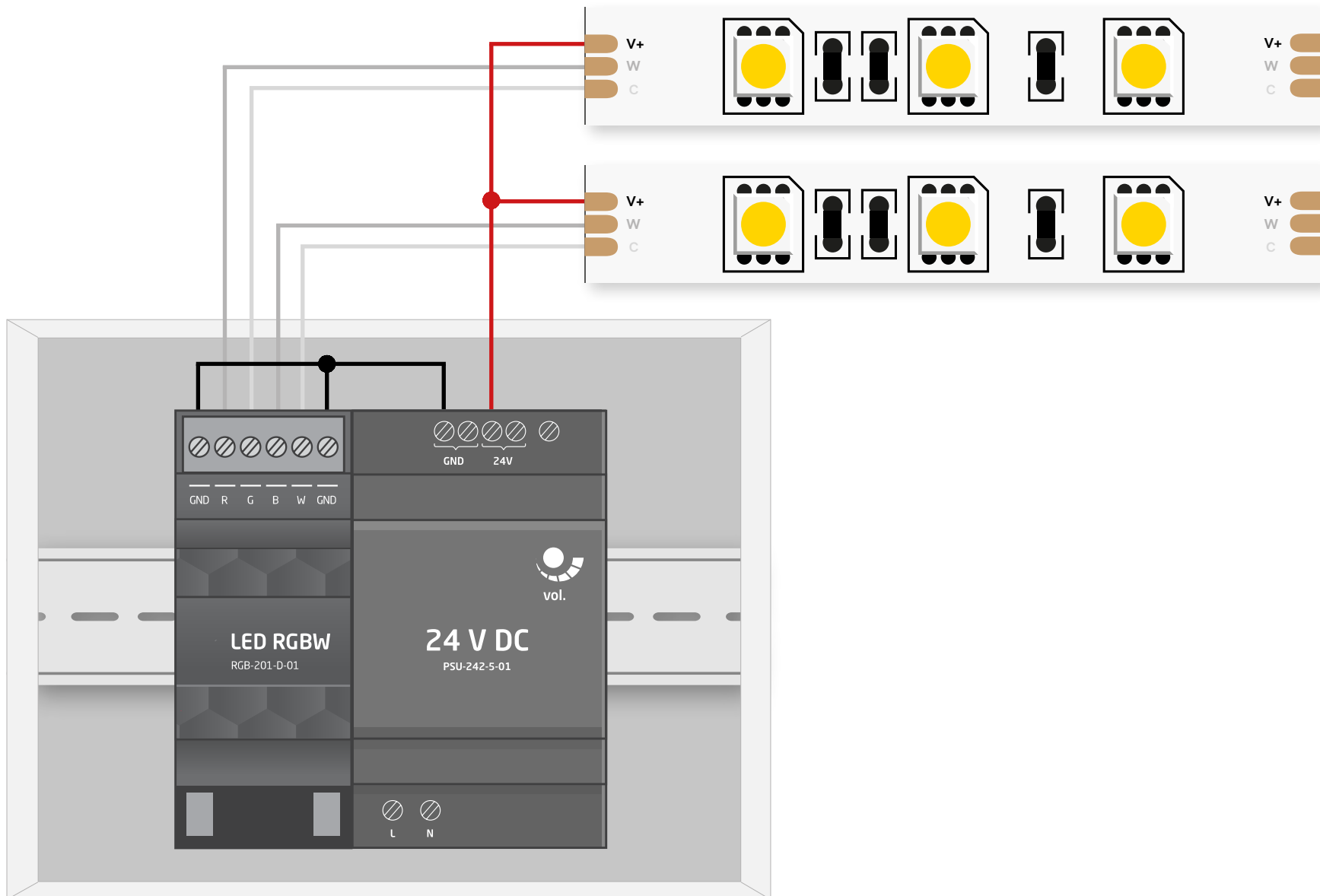
Wiring diagram - RGBW LED strips



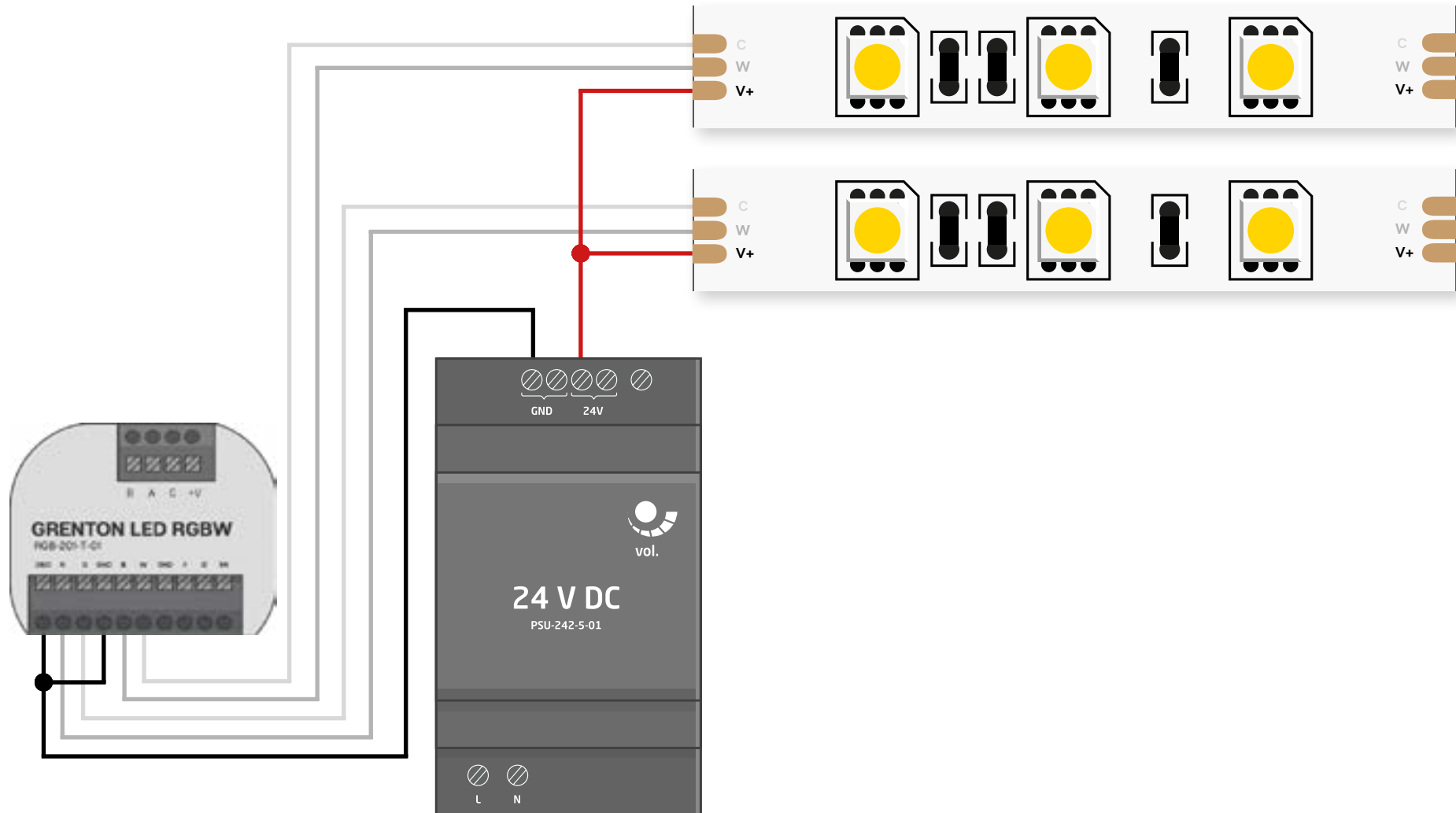
Wiring diagram - RGBW LED strips



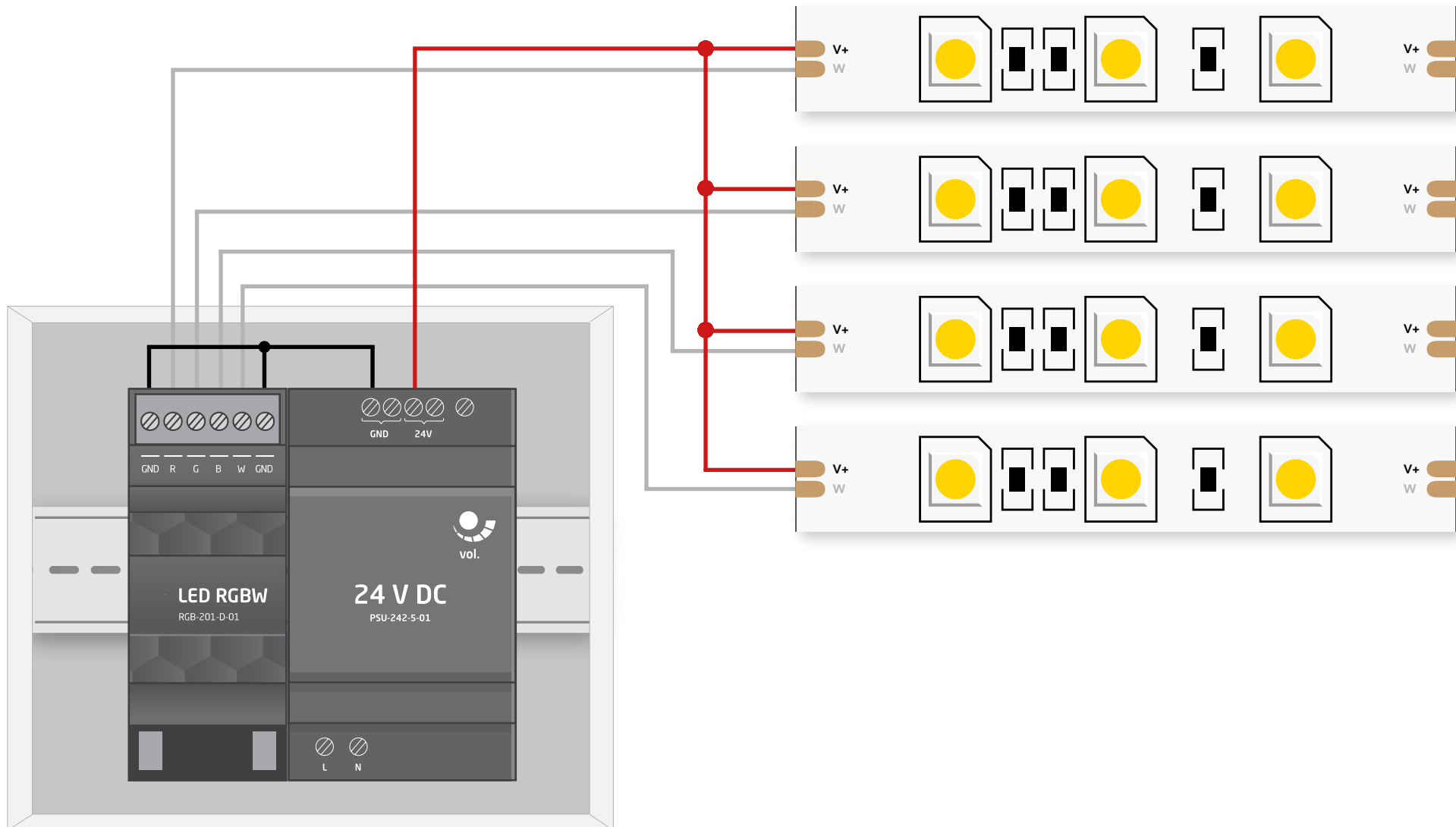
Wiring diagram - CTT LED strips



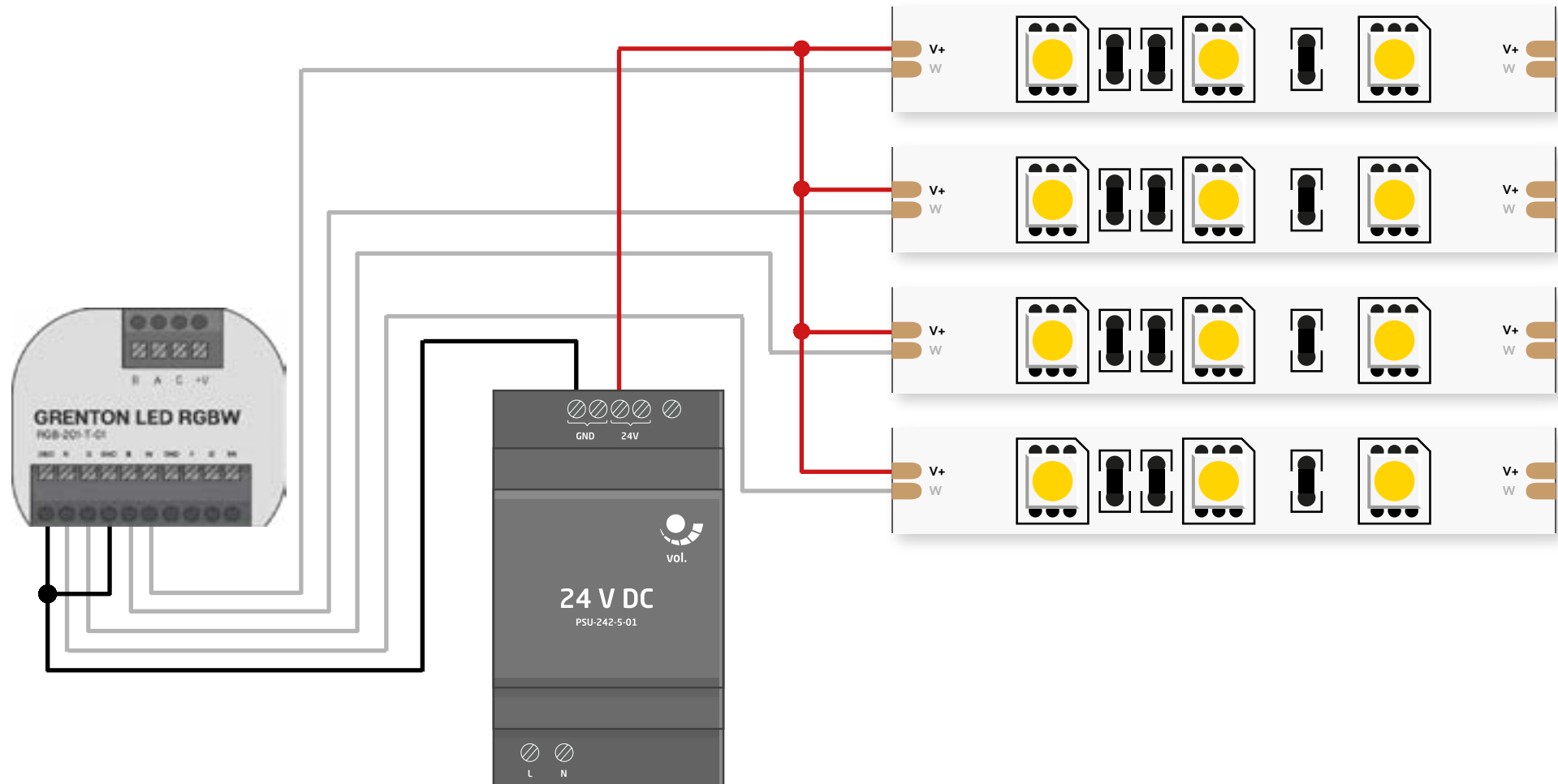
Wiring diagram - CTT LED strips



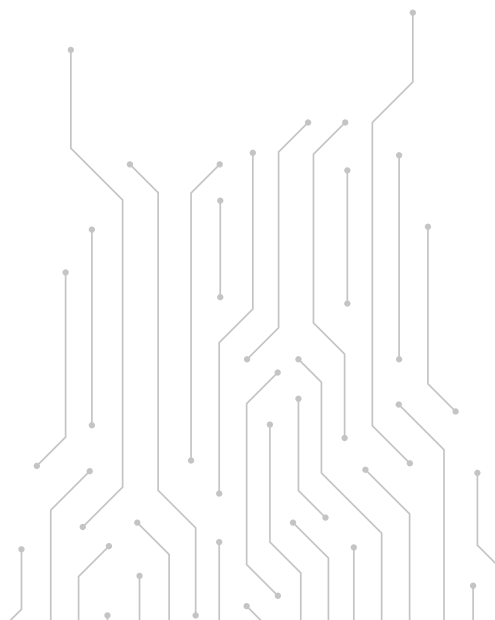
Wiring diagram - W LED strips



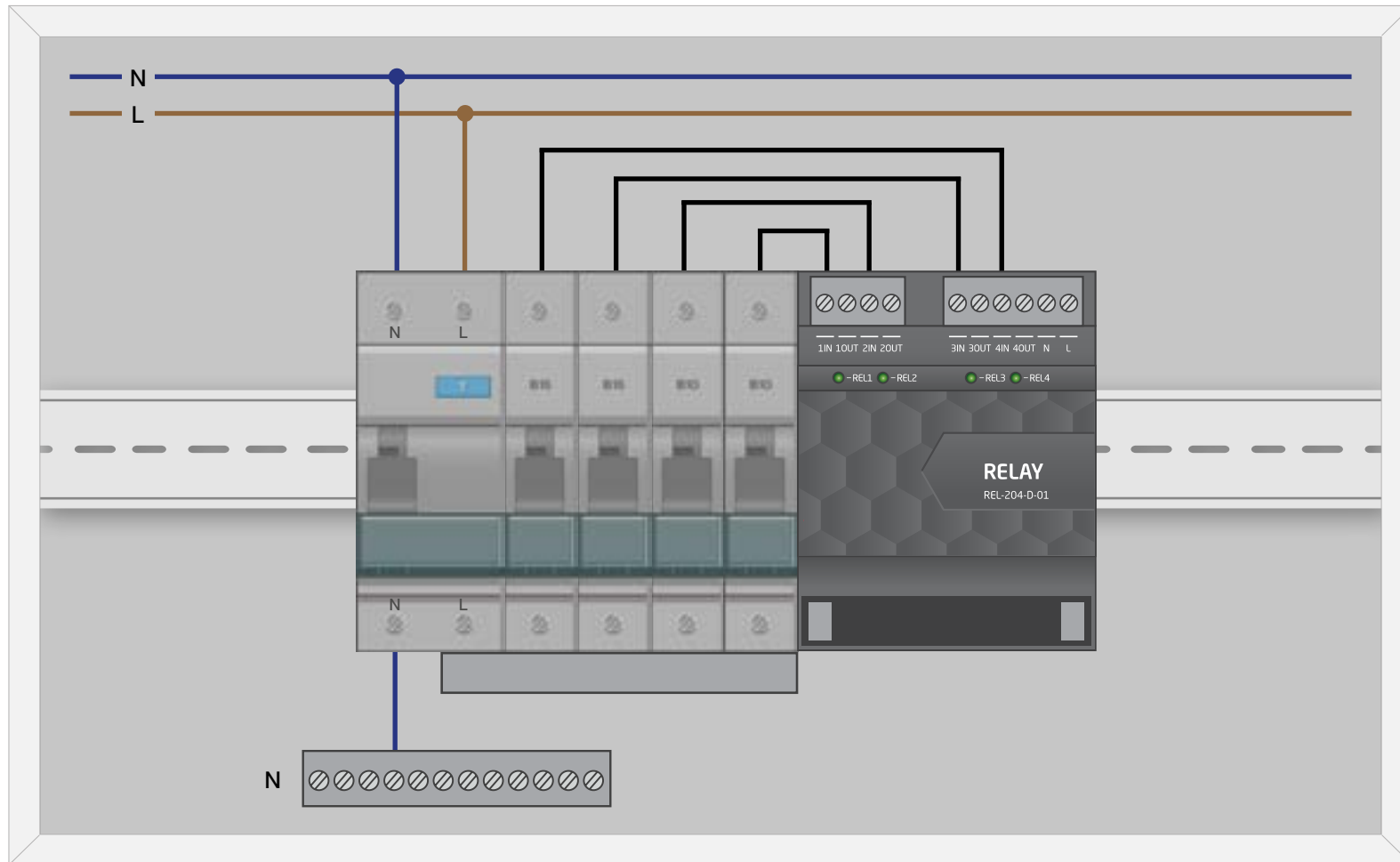
Wiring diagram - W LED strips



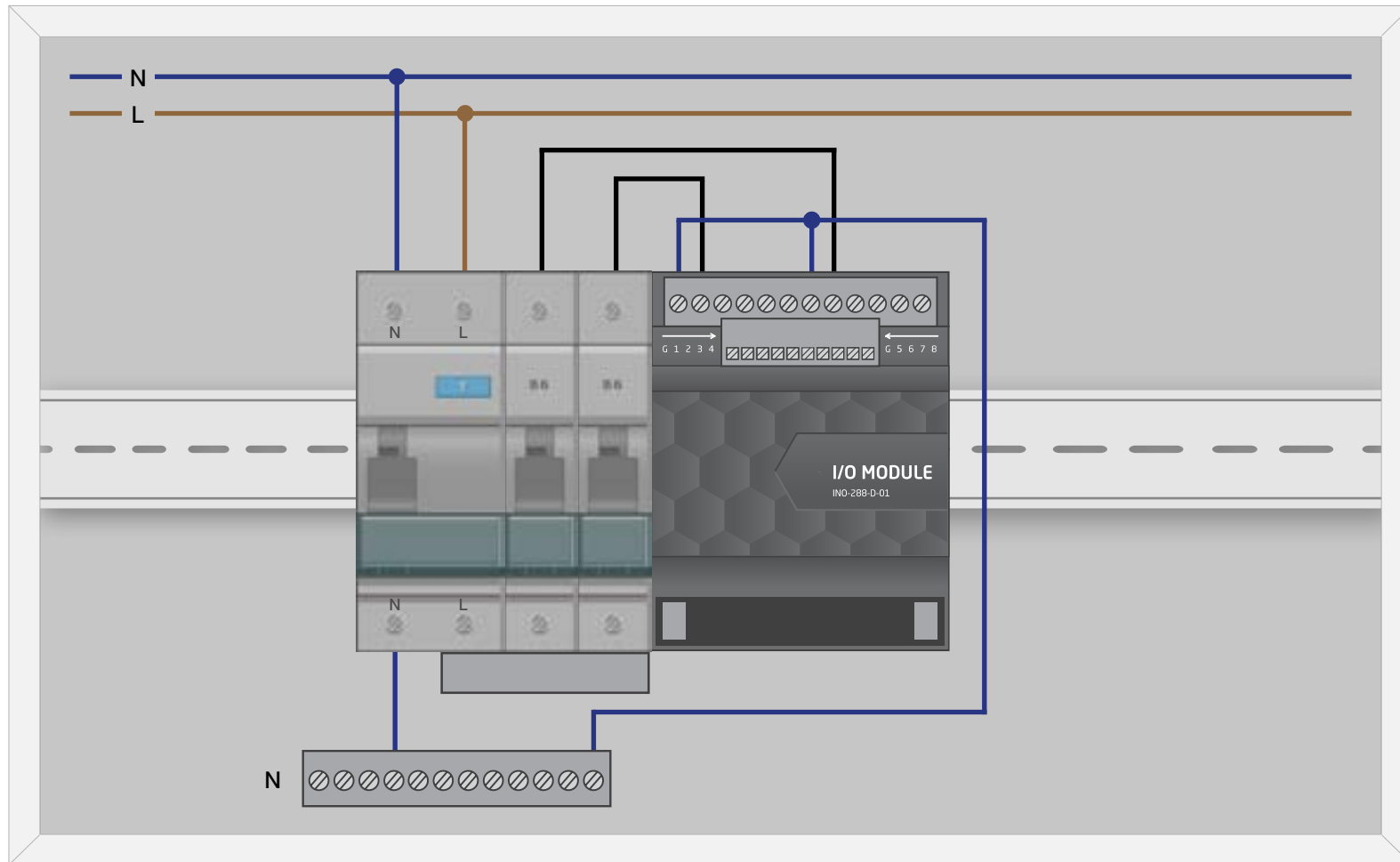
Modules protection



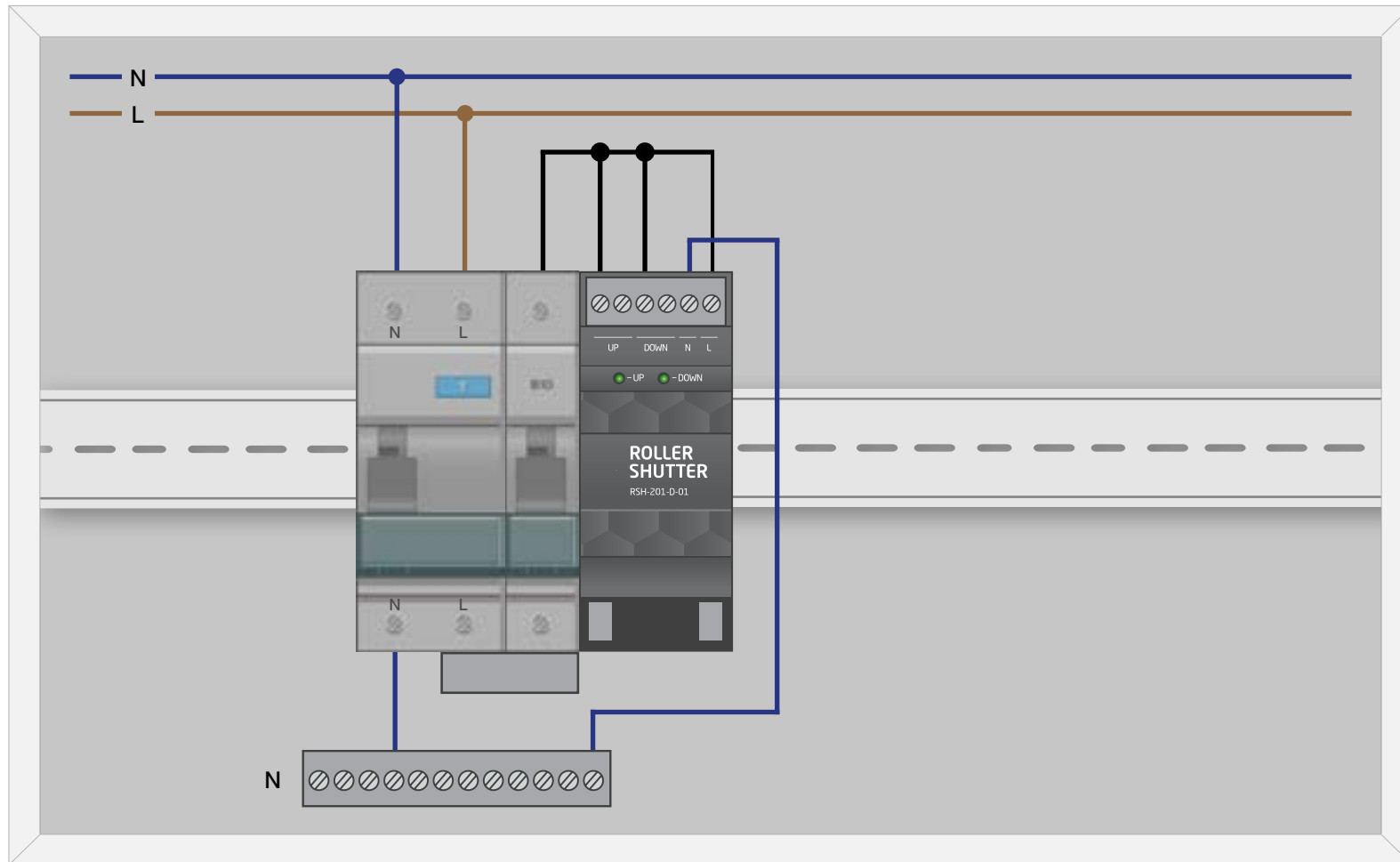
Residual current circuit breakers and overcurrent circuit breakers for Relay module



Residual current circuit breakers and overcurrent circuit breakers for I/O 8/8 module



Residual current circuit breakers and overcurrent circuit breakers for Roller Shutter module



Residual current circuit breakers and overcurrent circuit breakers for Dimmer MOSFET module

