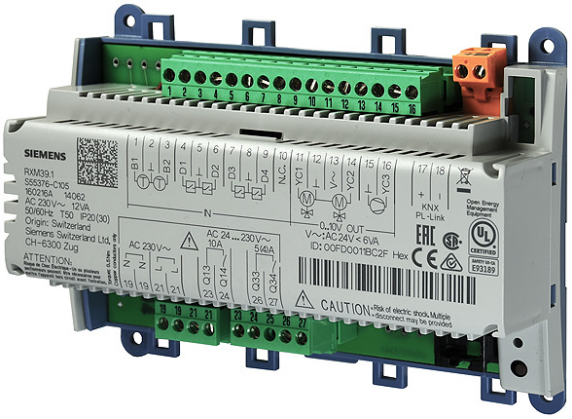
SIEMENS

3836



Desigo TRA

PL-Link I/O Block RXM39.1

Use with PXC3 series room automation station

- **The PL-Link I/O Block contains the inputs and outputs controlled by a room automation station via KNX PL-Link.**
- **KNX PL-Link bus communications**
- **Fan control (ECM fan, DC 0...10 V)**
- **Actuator control DC 0...10 V**
- **Electric heating control DC 0...10 V**
- **Potential-free relay contacts to release fan (5 A) and electric heater (10 A)**
- **2 Temperature inputs LG-Ni 1000**
- **4 digital inputs**
- **Operating voltage AC 230 V**
- **Plug-in screw terminals**

Use

The RXM39.1 PL-Link I/O Block allows control of a single fancoil unit by a PXC3 room automation station via the KNX PL-Link peripheral bus. It is optimized for fancoil installation and control in terms of housing, connection terminals and I/O mix.

The KNX PL-Link (PeripheraL-Link) is a two-wire bus system optimized for communication between peripheral devices (sensors, actors) and the modular PXC3 room automation stations in the domains or HVAC, lighting and shading.

Functions

The application on the room automation station determines the device functionality.

Type overview and ordering

Product number	Stock number	Name
RXM39.1	S55376-C105	PL-Link I/O Block

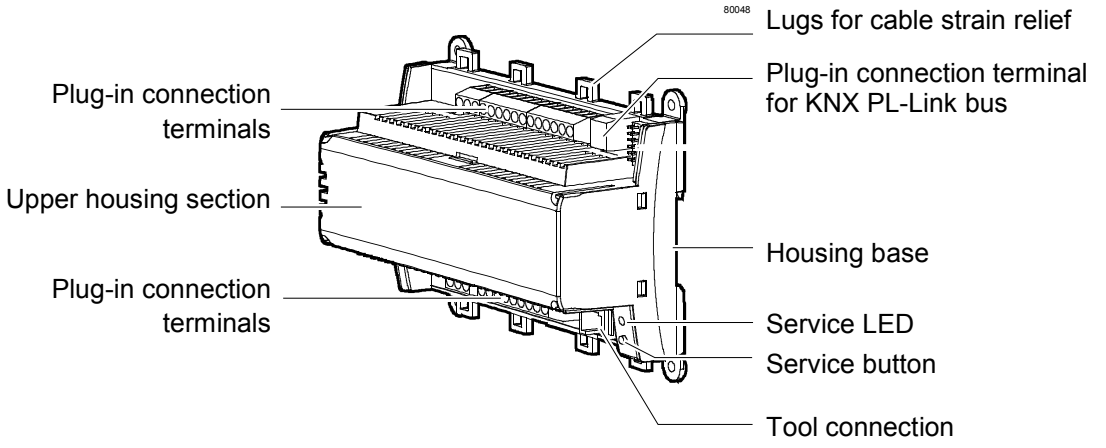
Note The device is supplied without terminal covers.
Terminal covers (RXZ30.1) can be ordered optionally.

Equipment combinations

- The RXM39.1 PL-Link I/O Block only works together with PXC3 series room automation stations.
- LG-Ni 1000 temperature sensors can be connected.
- DC 0...10 V actors from Siemens or third party can be connected.
- Signaling inputs relay outputs etc. see pages 10, 11.

Technical design

The RXM39.1 PL-Link I/O Block consists of a terminal base, upper part of housing, and circuit board with plug-in connection terminals on the side. In addition, the device offers a tool connection, a service LED and button.



Service LED

The Service LED (3-color) indicates the device's operating status as follows:

Continuously OFF	• No power supply • Nothing to indicate.
Flashing 1 (1/4 s On, 7/4 s Off)	• Feedback for medium button pressure (yellow) • Feedback during process (yellow)
Flashing 2 (1s On, 1 s Off)	No device detection (red)
Continuously ON	• Programming mode (red) • Success (green)

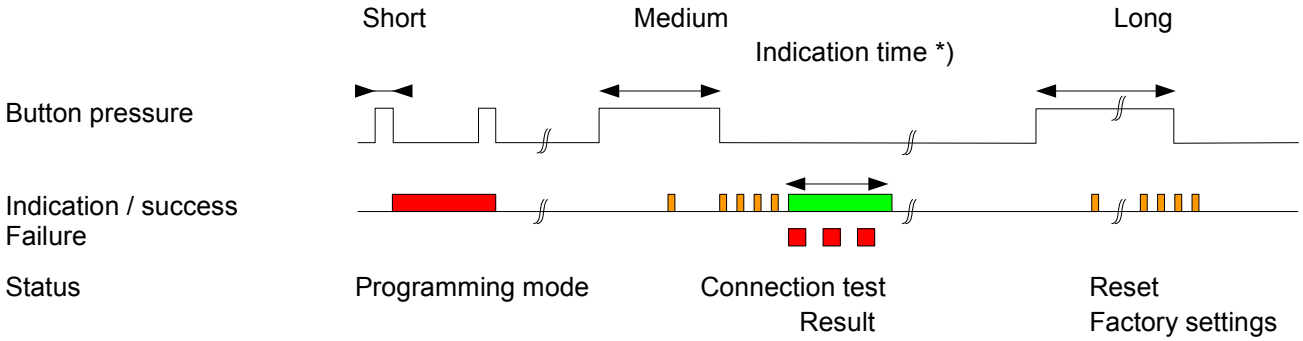
Service button

The device carries out the following commands from the service button:

Button pressure	Action
Short (< 0.5 s)	• Switch on/off programming mode • Do not indicate connection test result
(0.5...2.s)	• No action
Medium (2...20 s)	• Start connection test
Long (> 20 s)	• Start reset to factory settings

HMI concept

Operation and display interaction:



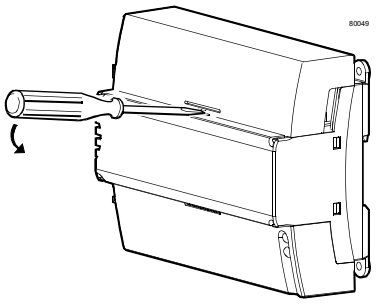
*) Indication time = 60 s; can be ended by briefly pressing the button.

Warning!

Only trained electrical installation staff may press the service button when the terminal cover is removed!
Adjacent terminal may be powered.

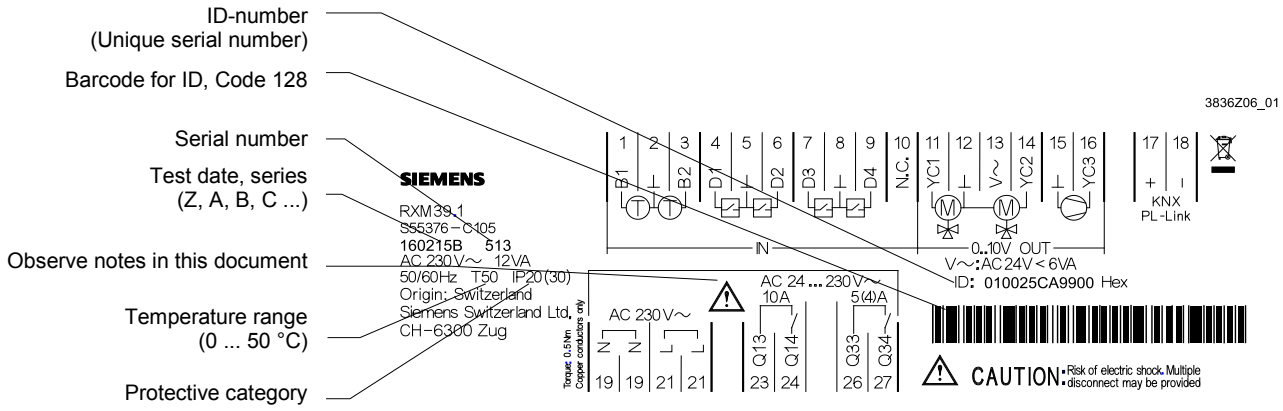
Terminal cover

The device is supplied without terminal covers protecting the connection terminals against touch and soiling. The service LED is visible also with installed terminal cover. The service button is pressed using a tool. Remove the cable entry glands to connect cables to the room automation station.



Remove terminal cover

Label

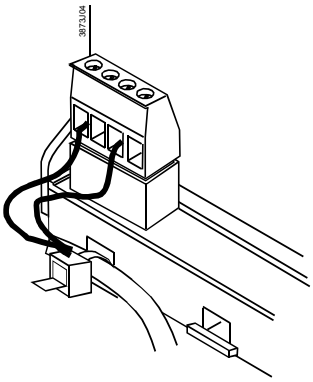


Connection terminals

All connection terminals are plug-in terminals. The terminals are separated to prevent faulty wiring for terminals connected to AC 230 V (supply, relay outputs).

Note

Cable strain relief for lines for terminals 19 ... 28 (AC230 V) is mandatory. Attach the lines to the related lugs on the housing base using cable blinders (see picture, right).



Warning!

Plug-in terminals connected to power must be removed from power prior to plug-in or plug-out!

Communication

The PL-Link I/O Block RXM39.1 contains the following interfaces:

- KNX PL-Link terminals.
- RJ45 tool plug for FW upgrade (proprietary, a Siemens connection cable is required).

Warning!

- Only trained electrical installation staff may connect the tool plug (RJ45)! Adjacent terminal may be powered.
- Do not connect Ethernet to the RJ45 plug! The device at the other end might be destroyed!

Disposal

The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the devices through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Installation manual TRA, CM111043, contains all information required to engineer the KNX PL-Link bus (topology, repeater, etc.)

Power lines AC 230 V

- The PL-Link I/O Block is operated on AC 230 V power. The device directly supplies power to actuators (valves, dampers). As a result, no separate AC 24 V supply is required for the field devices.
- The sizing and fusing of the power lines are oriented to overall load and local regulations.
- Supply circuits are interrupted as soon as plug 19/21 is removed from the device. (Bridges 19-19 and 21-21 are located on the print, not the plug; see terminal diagram page 11).
- The power lines must be fused on the device with strain relief.

Potential-free relay outputs AC 230 V

- The potential-free relay outputs allow for switching loads
  - Up to AC 250 V, 10 A (1.8 kW) (Q14, electric heating release).
  - Up to AC 250 V, 5 A (4 A) (Q34, fan release).
- The sizing and fusing of the power lines are oriented to overall connected load and local regulations. The switching circuits must be externally fused (≤ 10 A); no internal fusing.
- The lines must be fused on the device with strain relief.

Caution!

- **Electric heaters MUST be equipped with a seperate safety thermostat**

DC 0...10 V outputs

– Actuators

- The DC 0 … 10 V outputs YC1, YC2 supply max 1.5 mA.
- The AC 24 V output G (next to YC2) supplies max. 6 VA.

– Fan control

- The DC 0 … 10 V output YC3 supplies max 1.5 mA.

Behavior without a process value (power-on, missing KNX PL-Link communication

- The outputs are inactive
- The device is in Backup mode
- After a timeout (2 x heartbeat time) the outputs go to Backup value

AC 24 V supply for field devices (G)

- The field devices (valve and damper actuators are supplied directly by the PL-Link I/O Block). Separate AC 24 V supply is required only if the field devices consume more than 6 VA.

Cable length for field devices with AC/DC 24 V supply

- Active sensors and actuators with **AC 24 V supply**: The admissible cable length is calculated based on a max. voltage drop of 7% (1.68 V) of the AC 24 V supply voltage at the sensor/actuator.
- Active sensors and actuators with **A/DC 24 V** supply: The admissible cable length is calculated based on a max. voltage drop of 1% (0.24 V) for actors and 0.5% for active sensors..

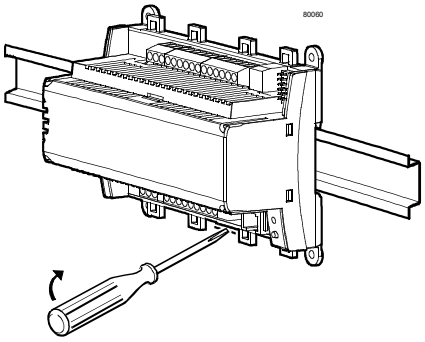
See the notes on active sensors and actors in the TRA installation guide, CM111043.

Digital inputs

For time critical functions as light and blinds, use KNX PL-Link pushbuttons. D1..D4 are not suitable for these purposes because of the low sampling rate.

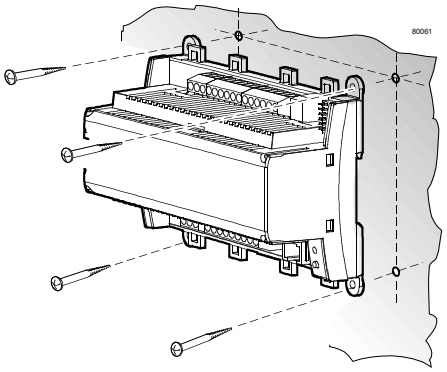
Mounting notes

The PL-Link I/O Block can be mounted in any position using the following attachment methods:



Mounting on tophat rail

The housing base contains a snap-on option to mount on tophat DIN rails, type EN50022-35x7,5 (snap off using screwdriver)



Direct mounting

Four predrilled holes to mount using screws
(drilling diagram, see "Dimensions").
The housing base has higher support surfaces.
Screws: Max. dia. 3.5 mm

Observe the following for mounting:

- Heat generated during operation must be removed; make sure the air circulates sufficiently around the device.
- Easy access for service.
- Comply with local installation regulations!

The mounting instructions including drilling template is printed on the device packing.

Commissioning notes

Secure state

Outputs are inactive (relay off, analog outputs 0 V, when an application does not use an output.

Functional test

The outputs can be controlled and the inputs queried as part of a special test mode (SSA).

Caution!

- **The thermal fuse in the transformer may be triggered in case of extended overload (ca. 4 minutes) or short circuits.**
  The device must then be replaced.
- **The AC 24 V side does not have protection against faulty wiring on AC 230 V.**
- **AC 230 V mains power for supply and relay must be switched off prior to plugging in and removing plug-in terminals (risk of electric shock!)**
- **Supply circuits are interrupted as soon as plug 19/21 is removed from the device. (Bridges 19-19 and 21-21 are located on the print, not the plug; see terminal diagram page 11).**

Operating notes

- When power is off, all outputs are inactive
- When KNX PL-Link communications fails, all outputs go to the configured backup values (after 2 x Heartbeat time).

Technical data

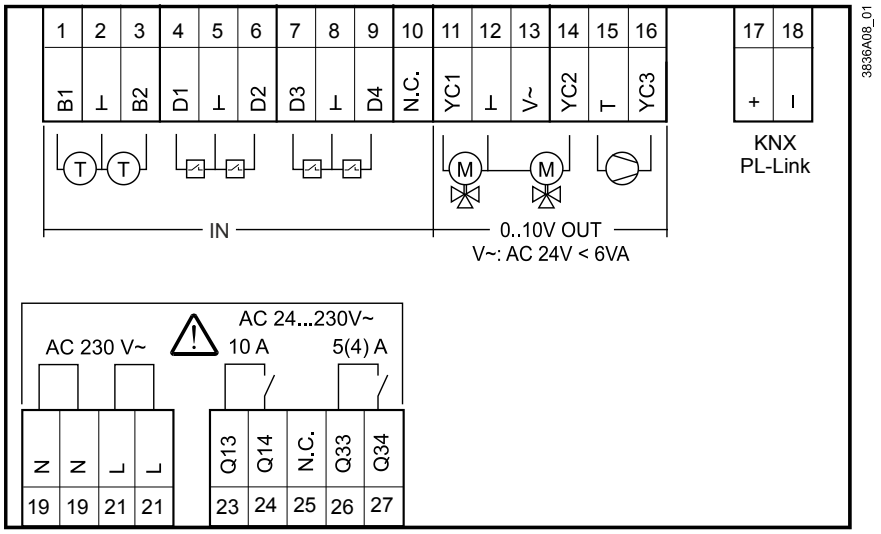
⚠ Power	Rated voltage	AC 230
	Frequency	50 / 60 Hz
	Power consumption incl. connected field devices	Max. 12 VA
	Internal fuse	Thermal, irreversible
	External supply line protection (EU)	Slow-blow fuse max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898
⚠ Protection	Protection against faulty wiring on AC 230 V	No protection for On / outputs
Inputs		
Status inputs (D1...D4) (for potential-free contacts)	Quantity	4
	Contact voltage.	DC 16 V
	Contact current	DC 5 mA
	Contact transfer resistance	Max. 100 Ohm
	Contact insulation resistance	Min. 50 kOhm
	Switching time:	Min. 20 ms “ON”, min. 20 ms “OFF”
	Heartbeat	1 s
	For time critical functions as light and blinds, use KNX PL-Link pushbuttons. D1...D4 are not suitable for these purposes because of the low sampling rate.	
	Protection against faulty wiring on AC 24 V	Protected
Measured value input B1, B2	Connectable temperature sensor	LG-Ni 1000
	Quantity	2
	Measuring range	0...50 °C
	Sensor current	0,5 mA
	Resolution	0.1 K
	Measuring error at 25 °C sensor temp. (without line resistance)	Max. 0,5 K
	Heartbeat	10 s
	Protection against faulty wiring on AC 24 V	Protected
DC 0...10 V outputs (SELV)	Quantity	3 (YC1...YC3)
	Voltage range	0...10 VDC
	Under / over range	DC-0.1...10.5 V
	Output current	Max. 1.5 mA
	Resolution (accuracy)	11 bit (100 mV)
	Time constant	100 ms.
	Protection against overload	Short circuit proof
AC 24 V supply for field devices (G,G0)	Output power	Max. 6 VA

⚠ Relay output Q14	Relay type	Monostable, NO contact
	Contact rating at alternating current	
	Switching voltage	Max. AC 250 V
	Max. permissible load (resistive)	Max. 1.8 kW
Caution ⚠	External supply line protection	See section power supply
⚠ Relay output Q34	Relay type	Monostable, NO contact
	Contact rating at alternating current	
	Switching voltage	Max. AC 250 V, min. AC 19 V
	Rated current resistive / inductive	Max. AC 5 A / 4 A ($\cos\varphi$ = 0.6)
	Switch-on current (200 ms half-time)	Max. 20 A
	Switching current at AC 19 V	Min. AC 10 mA
	Contact rating at direct current	
	Switching voltage	Max. DC 250 V, min. DC 5 V
	Switching current at DC 5 V	Min. DC 100 mA
	Switching output	Max. 20 W
	Inductive load L/R	Max. 7 ms
Caution ⚠	External supply line protection	See section power supply
KNX PL-Link bus	Interface type	Galvanically isolated
	Transceiver	TP-UART
	Bus power	5 mA
	Baud rate	9.6 kbps
	Protection against faulty wiring AC 24 V	Protected
	Bus topology: See installation guide TRA, CM111043	
Line connections	Connection terminals for signals and power supply (plug-in screw terminals)	Solid or stranded 0,25 ... 2.5 mm2 or 2 x 1.5 mm2
	Connection terminals for KNX PL-Link bus (plug-in screw terminals)	Solid or stranded wire 2 x max 1.0 mm^2 e.g. YCYM 2x2x0.8
	Cable length	See TRA installation manual, CM111043
	Tool connection cable	Max. 3 m
Protection data	Housing protection to EN 60529	IP30 with terminal cover and wall mounting without tophat rail IP20 for all other mounting types
Protection class	Suited for use in Protection class I – or Protection class II - Plants	
Ambient conditions	Operation	Class 3K5 as per IEC 60721-3-3
	Temperature	0 ... 50 °C
	Humidity	< 85% r.h.
	Transport	Class 2K3 as per IEC 60721-3-2
	Temperature	– 25 ... 70 °C
	Humidity	< 95% r.h.

Standards, directives and approvals	Product standard	EN 60730-1	Automatic electrical controls for household and similar use
	Electromagnetic compatibility (Applications)		For use in residential, commercial and industrial environments
	EU conformity (CE)		See CM2T3876xx *)
	UL certification (US)		UL 916
	RCM conformity (EMC)		CA2T3874en_C1 *)
	EAC conformity		Eurasia conformity
Environmental compatibility	Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal)		CM2E3876 *)
Dimensions	Refer to “Dimensions”		
Weight	Without/with packaging		0,603 kg / 0.641 kg

*) The documents can be downloaded from http://siemens.com/bt/download.

Connection terminals



	Old [1]	New [1]	Terminal	
Measured value inputs	B1	B1	1	Measured value input for LG-Ni 1000 sensor
	M	M	2	Ground for measured value input
	B2	B2	3	Measured value input for LG-Ni 1000 sensor
Status inputs [2]	D1	D1	4	Status input
	GND	GND	5	Ground for status inputs
	D2	D2	6	Status input
	D3	D3	7	Status input
	GND	GND	8	Ground for status inputs
	D4	D4	9	Status input
DC 0...10 V outputs	YC1	YC1	11	Positioning output DC 0...10 V (actuator, electric heater)
	G0	G0	12	Unit ground
	G	G	13	Actuator supply AC 24 V, max. 6 VA
	YC2	YC2	14	Positioning output DC 0...10 V (actuator)
	G0	G0	15	Unit ground
	YC3	YC3	16	Positioning output DC 0...10 V (EMC fan)
KNX PL-Link	+	+	17	Data line +
	–	–	18	Data line –
Power	N	N	19	Neutral conductor
	L	L	21	Phase conductor AC 230 V +/- 10%
Relay outputs	Q13	Q13	23	Supply for Q14
	Q14	Q14	24	NO contact AC max. 250 V, 10 A (release for electric heater)
	Q33	Q33	25	Supply for Q34
	Q34	Q34	26	NO contact AC max. 250 V, 5 (4) A (fan release)

[1] Old / New: Manufacturing date < / ≥ 2015-10-29

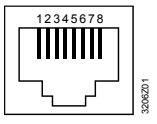
[2] For time critical functions as light and blinds, use KNX PL-Link pushbuttons. D1...D4 are not suitable for these purposes because of the low sampling rate.

Note ⊥ (M, G0 and GND) are galvanically connected

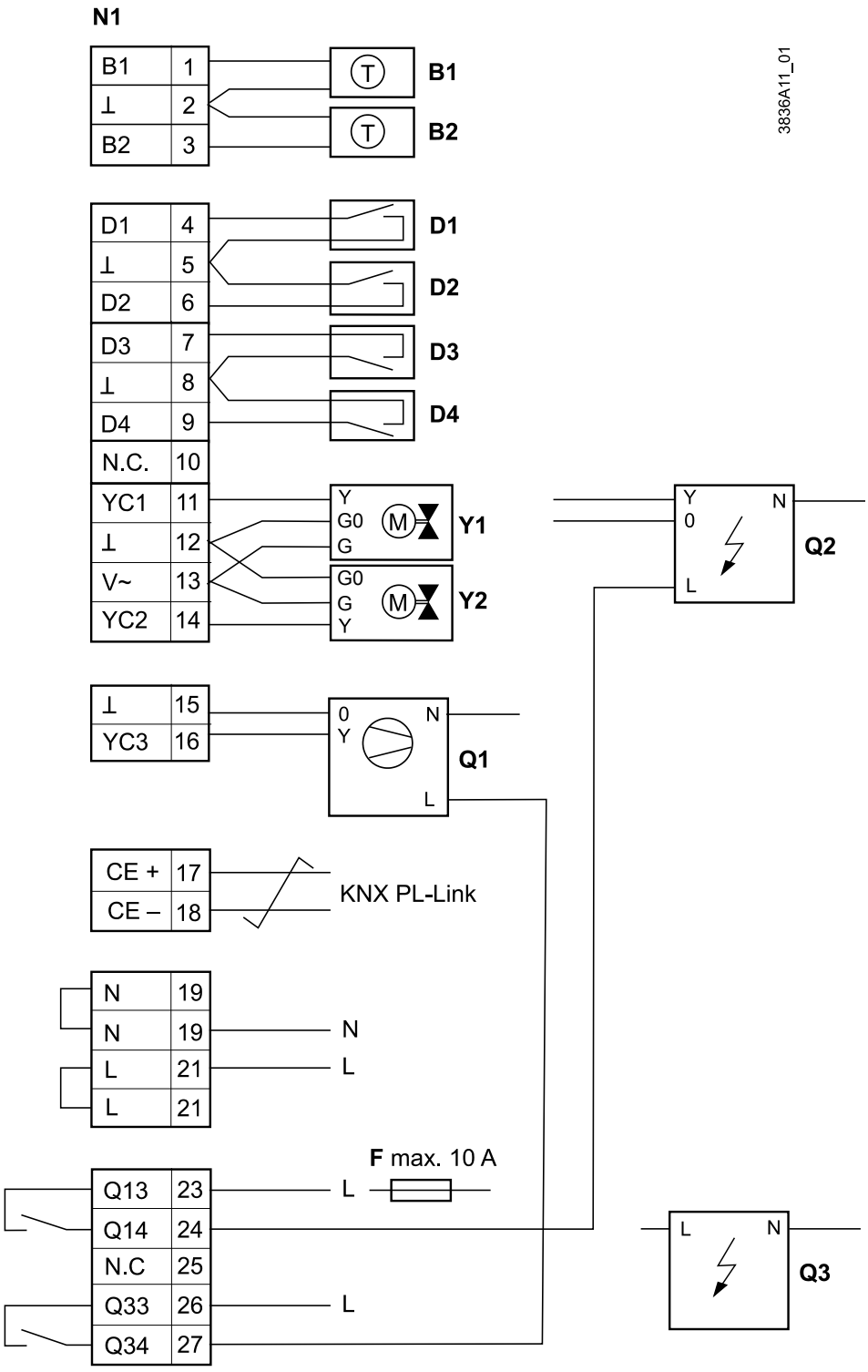
Caution!

- Note the technical data for relay outputs: AC max. 250 V, 5 (4) A, or max. 10 A
- Comply with local installation regulations!

Tool connection socket Proprietary socket, type RJ45



1 KNX PL-Link +	5 +12VDC
2 KNX PL-Link –	6 RxD
3 Unused	7 TxD
4 Unused	8 GND / ⊥



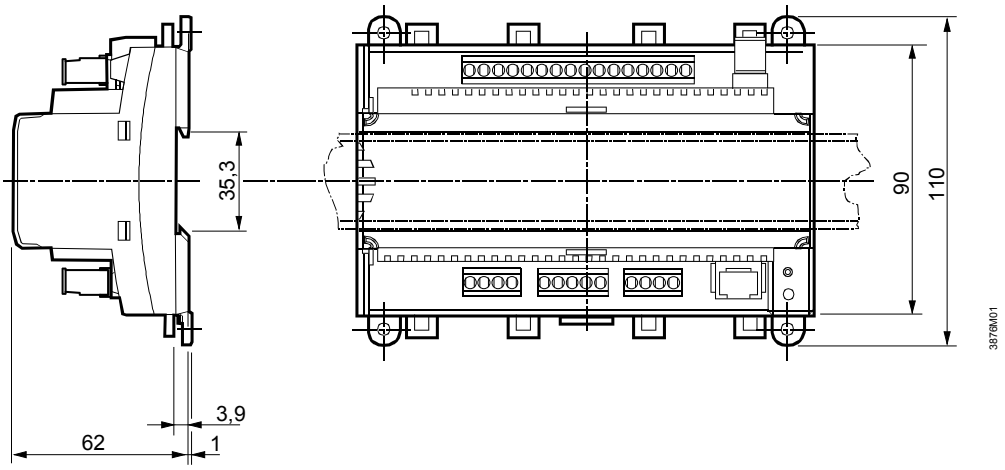
N1	PL-Link I/O Block RXM39.1
B1	Temperature sensor LG-Ni 1000
D1...D4	Potential-free contacts (window contact, presence detector, etc.) *Do not use for operation of light and blinds*
Y1, Y2	DC 0...10 V actuators
Q1	ECM fan with DC 0...10 V control
Q2	Electric heating with DC 0...10 V control
Q2	Electric heating with 10 A relay

Twisted pair

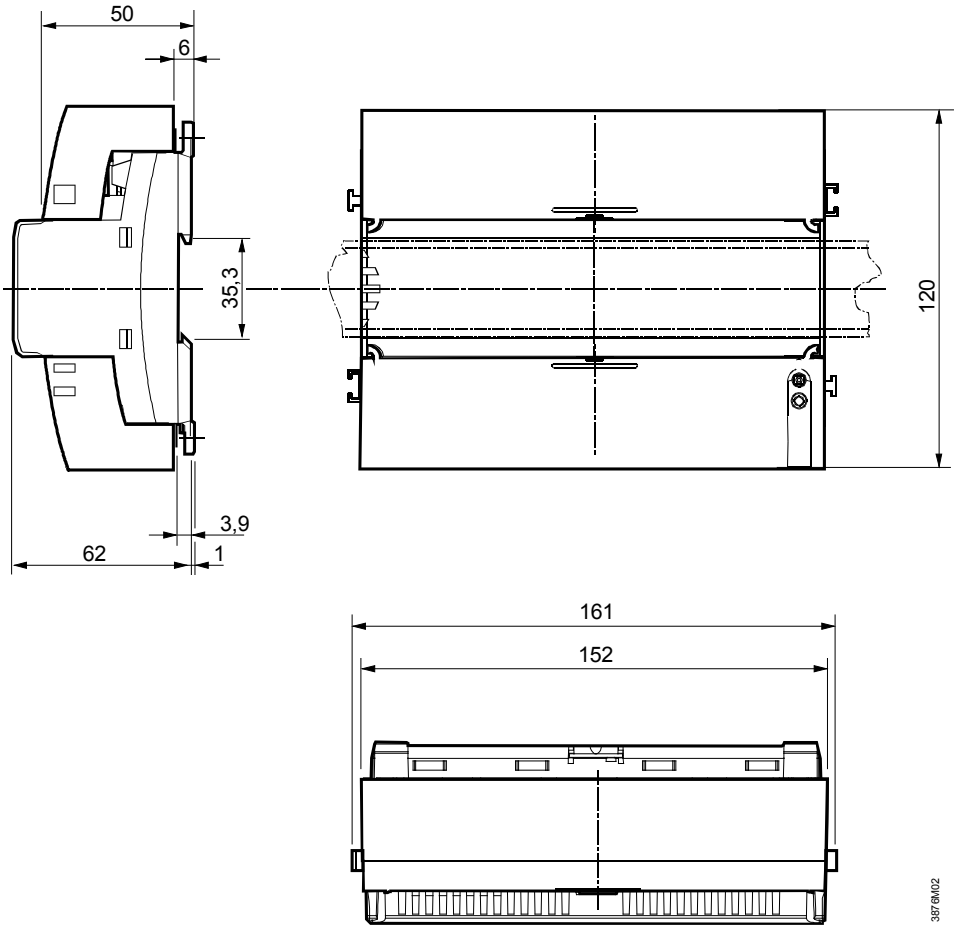
Dimensions

All dimensions in mm

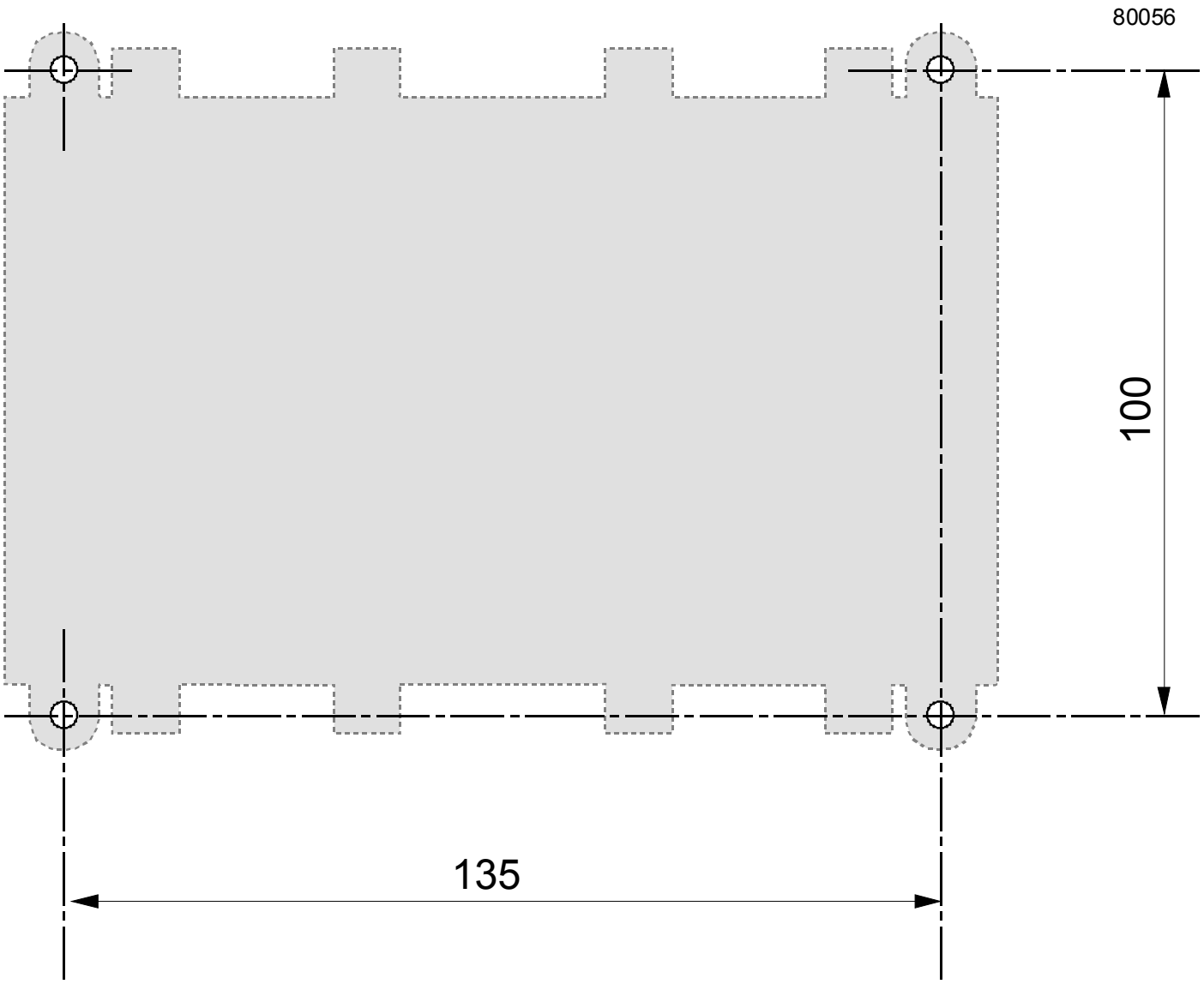
Without terminal cover



With terminal cover RXZ30.1
(to be ordered separately)



Drilling diagram 1:1



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