# Hotel Room Control Unit

**Shenzhen GLMZK Intelligent Electric Co., Ltd.**

Hotel RCU Controllers • Smart Switches • Door Signs • Thermostats • GRMS Software

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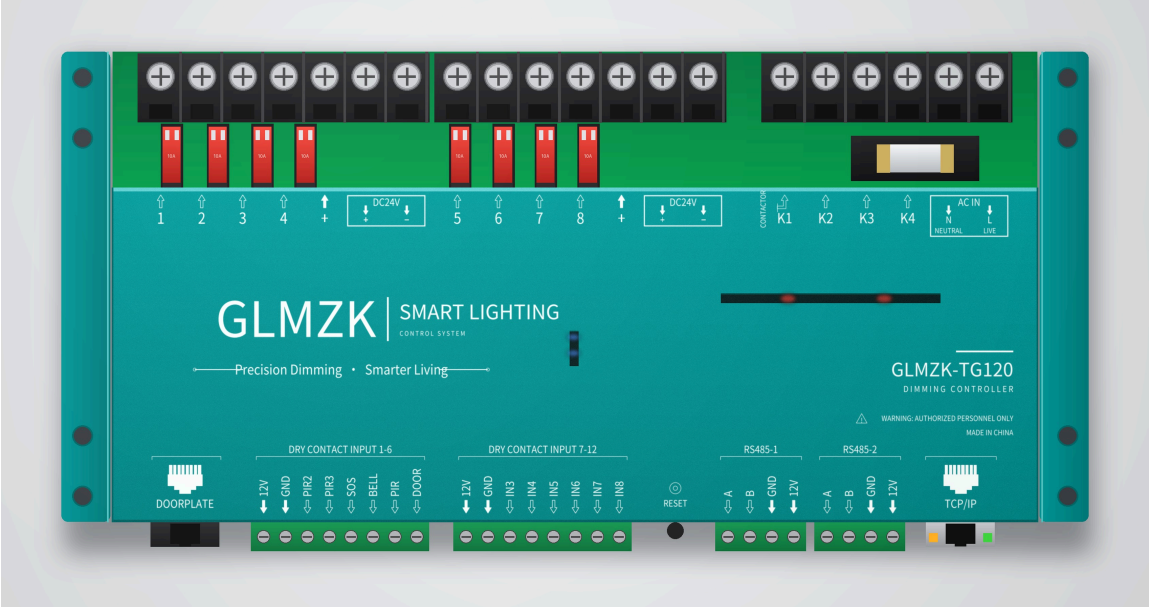
**GLMZK-TG120**

A full-dimming room control unit for hotel guest rooms, built around 24 V LED lighting. Eight constant-voltage PWM dimming channels and four relay circuits cover the whole room, while switch panels, thermostats and IR repeaters connect over a single RS485 bus. The network gateway is built into every unit, and the room continues to operate normally with no network at all.

## Key features

- Network gateway built in — each RCU is its own gateway, no separate gateway hardware required
- Three-level protection — per-channel replaceable fuse, shared relay fuse, on-board over-temperature protection
- $AgSnO_2$ relay contacts, UL and TÜV certified components, 100,000 electrical operations
- RS485 terminal carries 12 V — bus devices take data and power from one 4-core cable
- 60 V / 20 A MOSFET on every dimming channel — about 4× the 5 A channel rating
- Screw or DIN rail mounting; mains and low-voltage terminals on opposite sides
- Operates fully standalone — no network or cloud service needed for normal room operation
- Flicker-free dimming at ⩾ 5 kHz PWM, down to 1 % brightness
- Two independently powered dimming groups — size the power supply to the room
- Door display wired with standard network cable — no special training for the cabling contractor
- Real-time clock with battery backup and local configuration storage
- Terminals sized for real site work — 2 × 2.5 $mm^2$ per position, two positive positions per group

## Product view




GLMZK-TG120, export version with English housing labels (rendering).

## System architecture

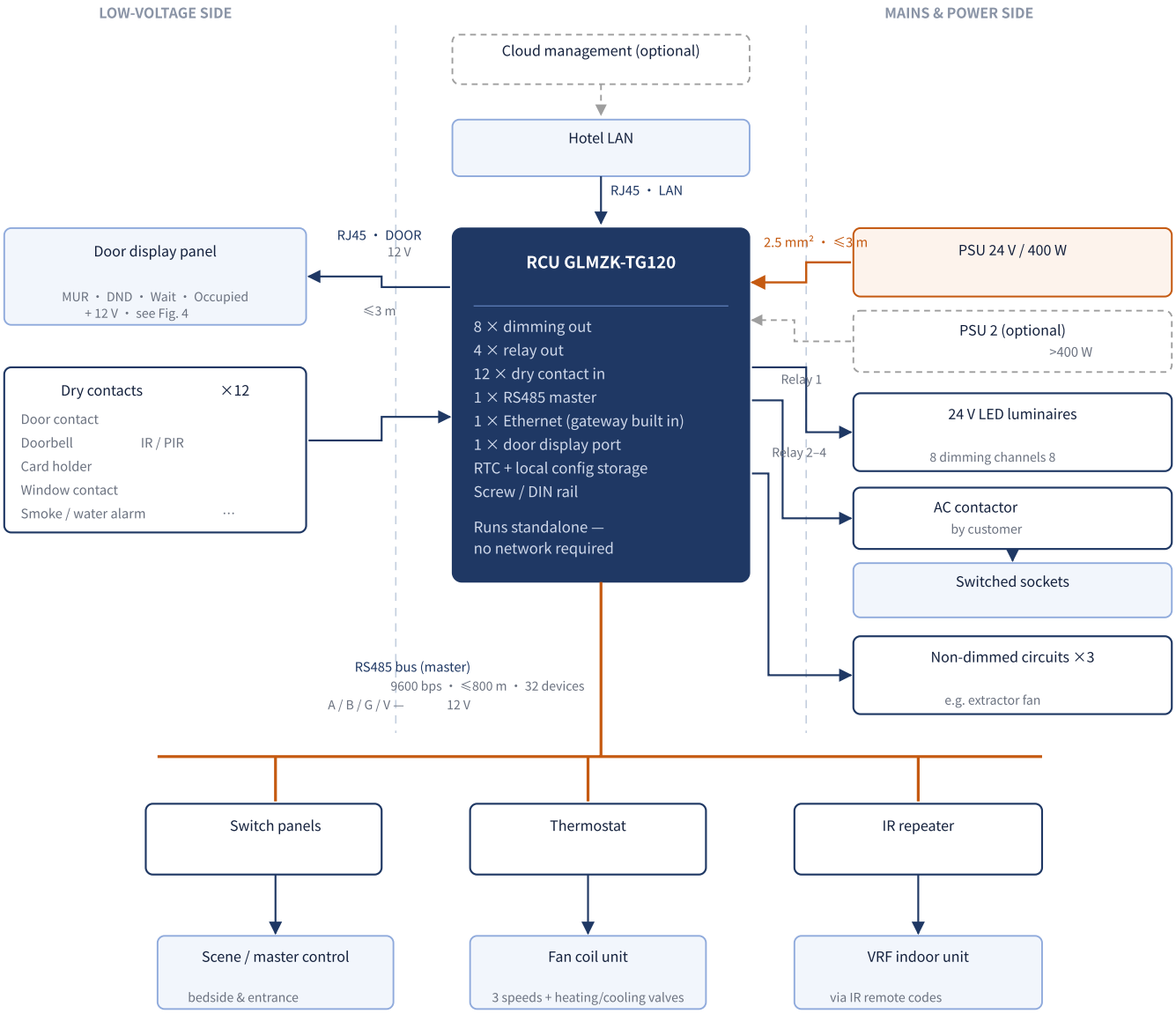



Fig. 1 — Typical guest-room system architecture.

## Technical specification

| 1. Product identification | |
|---|---|
| **Product name** | Hotel Room Control Unit (RCU) |
| **Model** | GLMZK-TG120 |
| **Mounting** | Screw mounting as standard; optional DIN rail clips allow mounting on 35 mm DIN rail. The two methods are alternatives. |
| **Dimensions** | 238.5 × 109 × 45 mm (L × W × H) |
| **Weight** | 1.5 kg net |
| **Rail length occupied** | Approximately 240 mm of 35 mm DIN rail when rail-mounted |
| **Housing** | Metal housing; every port is labelled with the connected device and its number (English labelling on export versions) |
| **2. Electrical data** | |
| **Supply voltage** | DC 24 V (from an external switch-mode power supply) |
| **Recommended PSU** | 24 V / 400 W switch-mode power supply |
| **Supply wiring** | The power supply should be installed close to the unit; ⩽ 3 m recommended, using 2.5 $mm^2$ copper conductors |
| **Standby power** | < 3 W |
| **Max power** | < 8 W (excluding connected load) |
| **Operating temperature** | −10 to +55 °C |
| **Operating humidity** | 5–95 % RH, non-condensing |
| **Storage temperature** | −20 to +70 °C |
| **3. Dimming outputs** | |
| **Channels & type** | 8 × constant-voltage PWM dimming outputs, DC 24 V, common anode, for 24 V LED luminaires |
| **Grouping** | Arranged in 2 groups of 4 channels, each with its own power input terminal |

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| **Per-channel capacity** | Max 5 A (120 W) per channel |
| **Per-group capacity** | The output of each group is limited by the power supply assigned to it; ⩽ 400 W per group with a 24 V / 400 W supply |
| **Power configuration** | For typical guest-room loads the two groups can be linked to share a single 24 V / 400 W supply; for higher loads each group takes its own supply, giving up to 800 W total |
| **Control power** | Power input 1 also supplies the RCU control circuit and must always be connected |
| **Minimum dimming level** | 1% |
| **Modulation** | PWM |
| **Power stage** | Each dimming channel is switched by a 60 V / 20 A N-channel MOSFET ($R_{DS(on)}$ < 35 mΩ) — approximately four times the 5 A channel rating, giving substantial thermal and surge margin |
| **PWM frequency** | ⩾ 5 kHz — flicker-free, no visible banding on camera |
| **Short-circuit protection** | Each dimming channel is individually protected by a replaceable 10 A blade fuse; a short circuit on one channel does not affect the others |
| **Luminaire requirement** | Dimming outputs are for 24 V DC constant-voltage LED luminaires only; 230 V AC luminaires must be connected to the relay circuits |
| **4. Relay outputs** | |
| **Channels & rating** | 4 × relay outputs, 10 A / 250 VAC resistive; TV-5 250 VAC (5 A tungsten lamp load) |
| **Contact form** | 1 Form A (SPST, normally open) |
| **Contact material** | $AgSnO_2In_2O_3$ contacts, resistant to welding under inrush, suitable for lamp and inductive loads |
| **Relay life** | Electrical life 100,000 operations at 10 A resistive; mechanical life 1,000,000 operations |
| **Relay certification** | Relays are UL (E164730), TÜV (R50223752) and CQC certified components |
| **Circuit allocation** | 1 × relay drives an AC contactor which switches all controlled socket circuits in the room; 3 × relays directly control non-dimmed circuits such as the bathroom extractor fan |

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| **Design note** | The relay carries only the contactor coil, not the socket load, which significantly extends contact life |
| **230 V LED derating** | ⩽ 2 A per channel when switching 230 V LED luminaires |
| **AC contactor** | The AC contactor is selected and purchased by the customer according to the actual load; it is not part of our scope of supply |
| **5. Protection** | |
| **Dimming short-circuit** | Individually replaceable 10 A blade fuse per channel |
| **Relay circuit protection** | The four relay outputs share a single 20 A fuse; a short circuit on the mains side clears this fuse first, protecting the unit. The combined current of the four outputs must therefore not exceed 20 A. |
| **Protection coordination** | The 10 A channel fuse is rated well below the 20 A power device, so a short circuit clears the fuse before the semiconductor is stressed |
| **Control circuit fuse** | 2 A fuse on the control circuit |
| **Over-temperature** | On-board temperature sensing with automatic over-temperature protection |
| **Over-temp threshold** | Automatic reset once the board temperature returns to normal |
| **Bus surge protection** | RS485 bus protected by bidirectional TVS devices |
| **6. Communication** | |
| **RS485** | 1 × RS485 port; the RCU acts as bus master for our panels, thermostats, IR repeaters and other system devices. The bus is brought out on two 4-position terminals (A / B / G / V) — the same bus twice, so it can be looped in and out — and each terminal carries a 12 V output, so bus devices take data and power from a single 4-core cable. |
| **Protocol** | Proprietary protocol |
| **Baud rate / format** | 9600 bps, 8-N-1 |
| **Max bus length** | 800 m |
| **Max devices per bus** | 32 devices per bus |
| **Ethernet** | 1 × RJ45 (with magnetics) for connection to the hotel network |

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| **Gateway function** | The network gateway function is built into the RCU — each unit is its own gateway and no separate gateway hardware is required |
| **Standalone operation** | The RCU operates fully standalone — a network connection is not required for normal room operation. Ethernet is used for remote commissioning, diagnostics and management |
| **Cloud management** | Optional cloud-based remote management |
| **7. Door display interface** | |
| **Interface** | 1 × dedicated RJ45 port (non-Ethernet) for the door display panel, wired with standard network cable; the plug is crimped to the T568B sequence — see Fig. 4 for the pin assignment |
| **Signals** | Make-Up-Room (MUR), Do-Not-Disturb (DND), Please-Wait, occupancy status, plus 12 V supply for the door display |
| **Max cable length** | Recommended distance between the RCU and the door display ⩽ 3 m |
| **Pin assignment** | Pin 1 White/Orange +12 V \| Pin 2 Orange GND \| Pin 3 White/Green door panel K1 \| Pin 4 Blue Please Wait \| Pin 5 White/Blue DND \| Pin 6 Green MUR \| Pin 7 White/Brown Occupied \| Pin 8 Brown Doorbell (door panel K2) |
| **Door panel max current** | 2 A |
| **Important note** | The door-display port and the network port look identical but are not interchangeable; both are labelled on the housing and must be connected accordingly |
| **8. Inputs** | |
| **Mains detection** | The unit has a mains-detection input (N and L) for monitoring the supply status |
| **Dry contact inputs (DI)** | 12 × potential-free dry contact inputs: 6 × general signal inputs (IN 3–8) plus 6 × dedicated inputs (PIR, PIR 2, PIR 3, SOS, doorbell, door contact). Each 8-position terminal provides 12 V and common so connected devices can be powered from the unit. Input names match the housing labels. |
| **Analog inputs (AI)** | None |
| **Temperature measurement** | Not measured by the RCU — room temperature is sensed by the bus thermostat |
| **9. Functions** | |
| **Real-time clock** | Built-in real-time clock with battery backup; time is retained through power loss, enabling scheduled scenes, night mode and time-based energy saving |

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| **Configuration storage** | Configuration and scenes are stored locally and retained through power loss |
| **Lighting scenes** | Multiple lighting scenes, editable on site |
| **Occupancy detection** | Card holder, cardless detection (door contact + PIR), or both |
| **Local configuration** | DIP switch, web interface, or PC configuration software |
| **Firmware upgrade** | Local, via PC software, or remote OTA |
| **10. HVAC control (via bus devices)** | |
| **Chilled-water FCU** | The fan coil unit is wired directly to our bus thermostat (6 wires for a single-valve / 2-pipe system, 7 wires for a two-valve / 4-pipe system, including neutral and earth). The thermostat connects to the RCU over RS485 for central control. A 4-relay version covers 3 fan speeds plus one valve (2-pipe); a 5-relay version covers 3 fan speeds plus heating and cooling valves (4-pipe) |
| **VRF / DX systems** | Controlled by an IR repeater reproducing the original remote-control codes, connected to the RCU over RS485. Our IR code library covers the majority of brands on the market; on/off, mode, fan speed and setpoint are supported |
| **Local control retention** | The thermostat retains full local control if the bus or the central system is unavailable |
| **11. Mechanical and wiring** | |
| **Mains-side terminals** | Barrier terminal blocks, 9.52 mm pitch, each position accepting up to 2 × 2.5 $mm^2$ conductors |
| **Terminal design note** | Each dimming group has a 7-position block: 1 × supply negative, 2 × supply positive (common anode) and 4 × dimming outputs. Two positive positions allow the four luminaire positive leads to be landed comfortably |
| **Low-voltage terminals** | Pluggable terminal blocks, 5.08 mm pitch: 2 × 8-position (signal inputs) and 2 × 4-position (RS485) |
| **Segregation** | Mains-side and low-voltage terminals are located on opposite sides of the unit, keeping the two systems physically separated |
| **Indicators** | On-board LED indicators for every relay and dimming circuit, for fast installation and commissioning |
| **12. Certification and warranty** | |

| | |
|---|---|
| **CE certification** | Certification not yet completed. CE assessment (EMC 2014/30/EU and LVD 2014/35/EU) can be arranged for project supply — please enquire for the current status and timescale. |
| **RoHS** | Not yet tested; can be arranged for project supply. |
| **Warranty** | 24 months |
| **13. Ordering** | |
| **Lead time** | 30 working days after order confirmation |
| **Country of origin** | Made in China |

# Terminal assignment and wiring

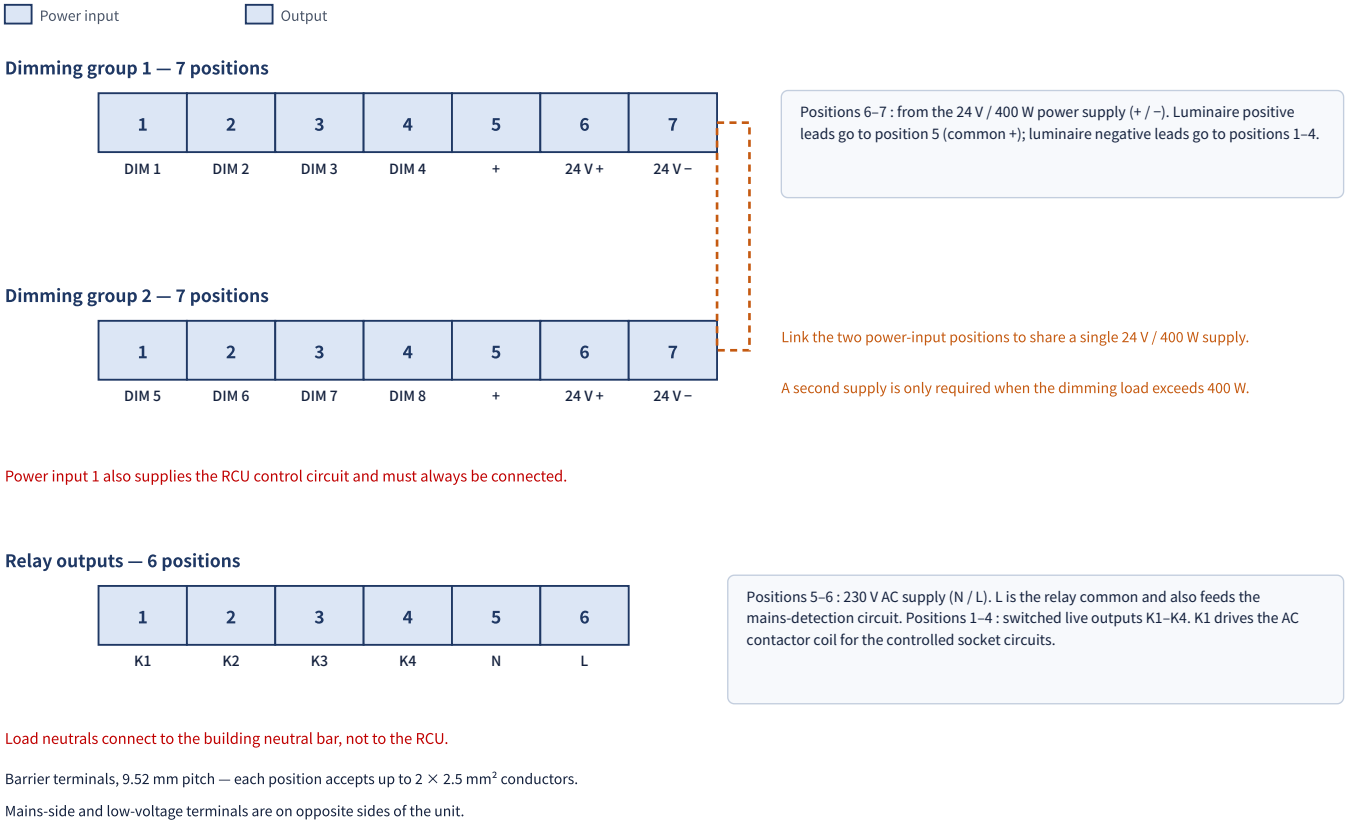
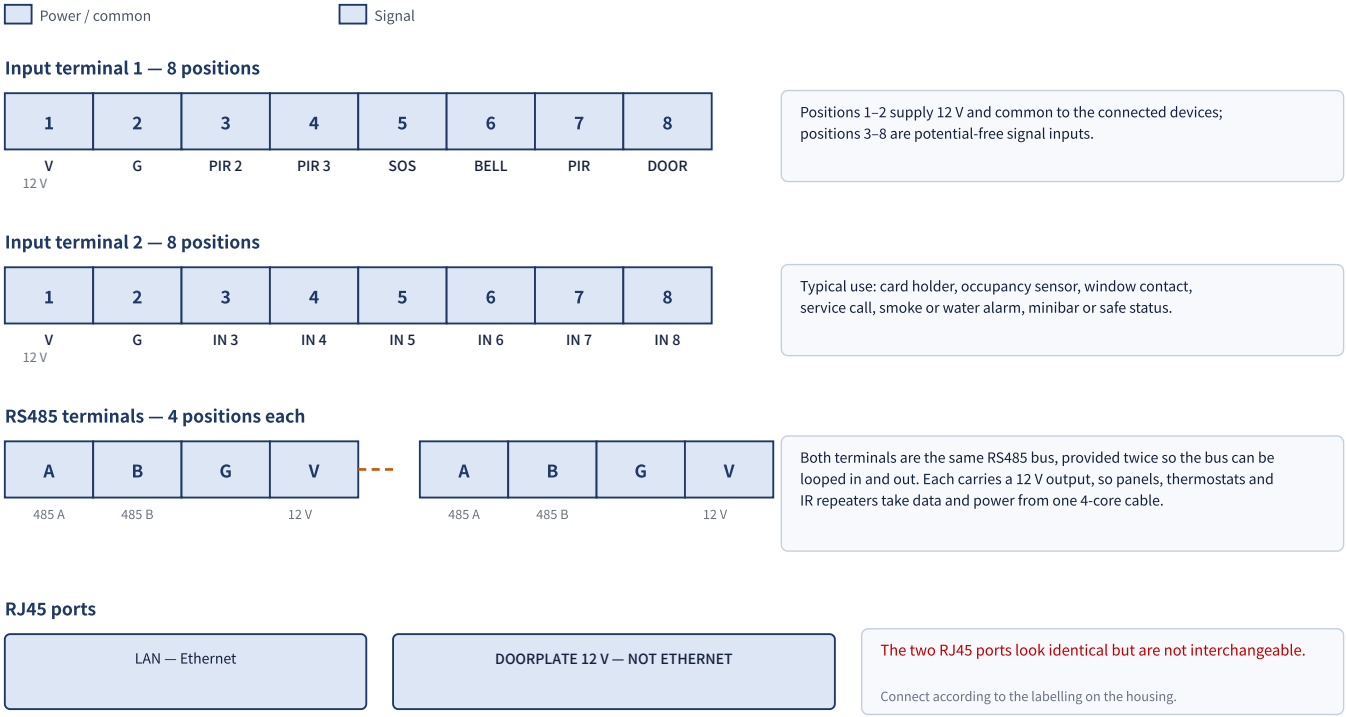



Fig. 2 — Mains and 24 V terminal assignment.

# Low-voltage terminals and ports




Pluggable terminal blocks, 5.08 mm pitch.

All signal inputs are potential-free (dry contact); do not apply external voltage.

Fig. 3 — Low-voltage terminal assignment.

# Door display port — RJ45 pin assignment

**RJ45 plug, T568B**




Contacts viewed from the front, latch down

This port carries 12 V — it is NOT Ethernet.

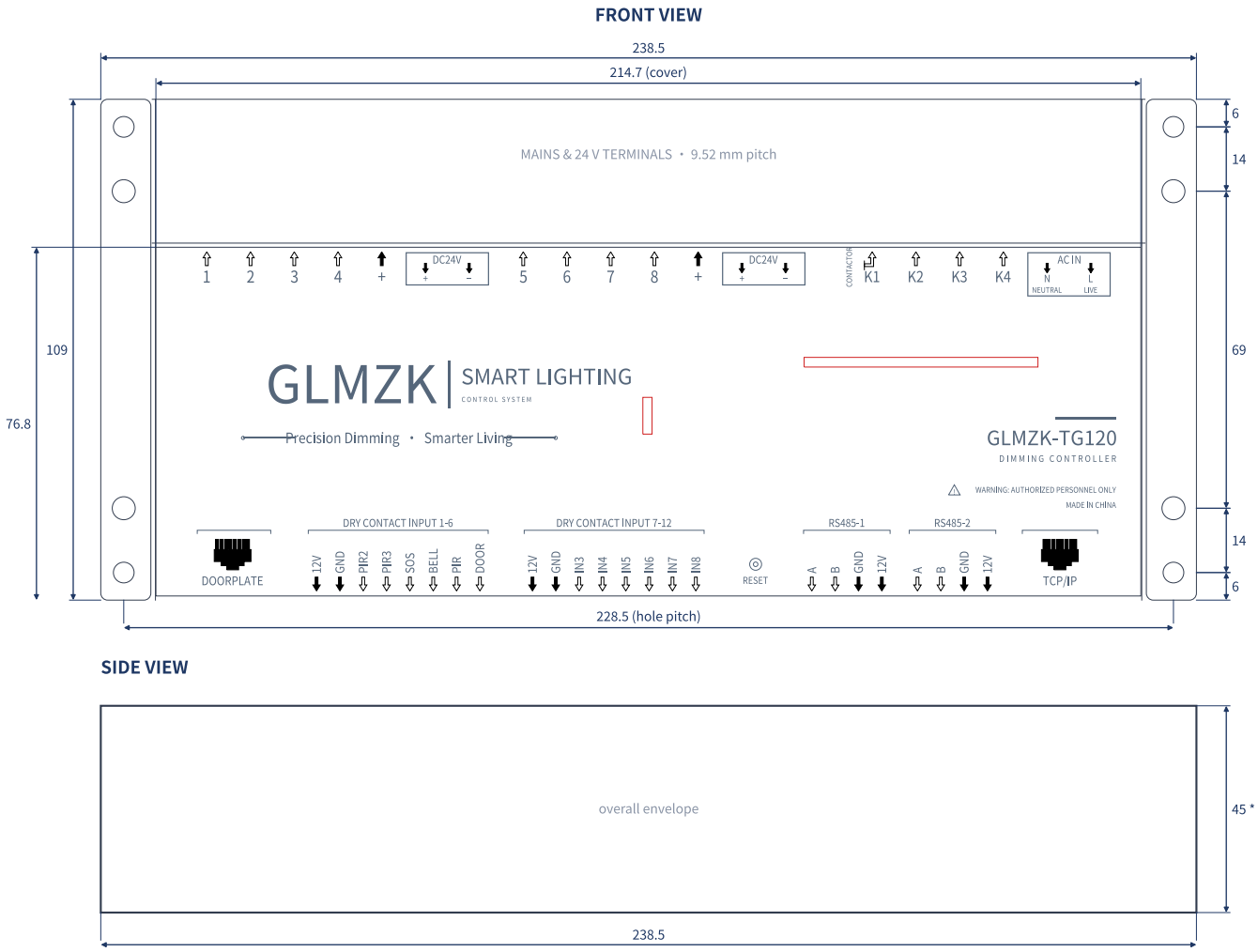
Never connect it to a network switch.

| Pin | Wire colour | Function | Note |
|---|---|---|---|
| 1 | White / Orange | +12 V supply | |
| 2 | Orange | GND | |
| 3 | White / Green | Door panel input K1 | |
| 4 | Blue | Please Wait | |
| 5 | White / Blue | Do Not Disturb (DND) | RJ45 crimped to T568B sequence |
| 6 | Green | Make Up Room (MUR) | |
| 7 | White / Brown | Occupied / check-in | |
| 8 | Brown | Doorbell (door panel K2) | |

Maximum cable length between the RCU and the door display: 3 m.
Use standard Cat5e/Cat6 patch cable.

Fig. 4 — Door display RJ45 pin assignment, T568B.

## Outline drawing




All dimensions in mm. Terminal identification: see Fig. 2 and Fig. 3.
Front view shows the export-version housing labelling (English). Red outlines: light-guide openings in the cover.
8 × mounting holes: Ø4.5 (outer pair) / Ø5 (inner pair); positions and diameters from the V2 housing drawing.
* Height 45 mm carried over from Rev. A — to be confirmed against the production housing.

Fig. 5 — Outline drawing, dimensions in mm.

A DXF version of this drawing is available on request.

## Scope of supply

### Supplied with the system

- RCU GLMZK-TG120
- Switch and control panels
- Bus thermostat (4- or 5-relay version)
- IR repeater for VRF systems
- Door display panel
- Card holder / occupancy devices
- 24 V / 400 W power supply

### To be provided locally

- AC contactor for the socket circuits
- 24 V LED luminaires
- Cabling, conduit, circuit breakers
- Network switch port per RCU
- Back boxes, if sourced locally
- Installation labour and commissioning on site

**Important installation notes**

1. Power input 1 also supplies the RCU control circuit and must always be connected.

2. The door-display port and the network port use identical RJ45 connectors but are not interchangeable. Connect according to the labelling on the housing.

3. Dimming outputs are for 24 V DC constant-voltage LED luminaires only. 230 V AC luminaires must be connected to the relay circuits.

4. Refrigerators, minibars, safes and network equipment must be fed from an uncontrolled circuit, not from the contactor-switched socket

5. Mechanical dimensions in this revision refer to the current hardware. Rev. A — dimensions may be updated in the next hardware revision; please confirm before finalising enclosure or panel design.