User Manual

DITRA CORE LIGHT

DITRA
SOLUTIONS

Contents

Safe Operation

During installation, operation, maintenance, or repair of the device, all safety regulations must be followed.To ensure safe operation and reliable performance, adhere to the following:

Use the device strictly for its intended purpose.

Do not operate damaged devices.

Avoid mechanical impacts on the device.

Protect the device and cables from exposure to aggressive liquids.

Never disassemble the device while connected to 220 V AC power.

Report malfunctions to the manufacturer immediately.

Warning!

The device uses hazardous voltage AC 100-230V
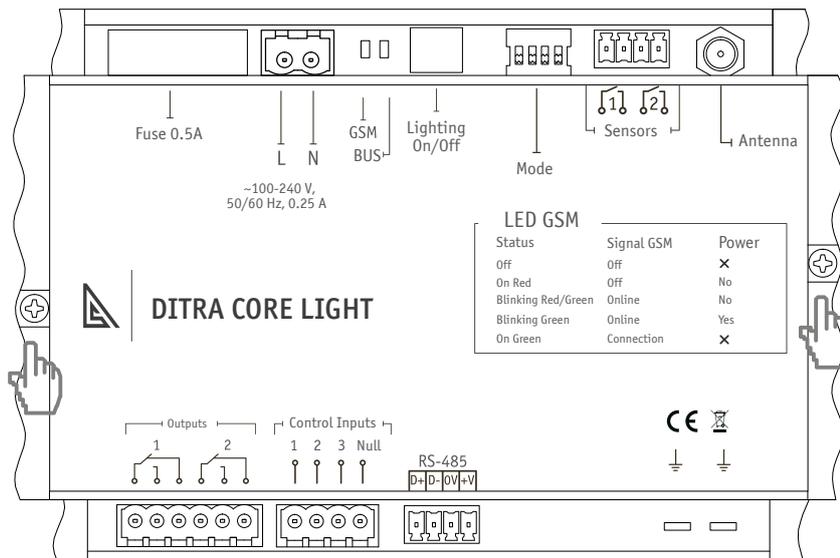
General Information

The DITRA CORE LIGHT controller is designed for lighting control and diagnostics. Its functions include remote management of starters and additional modules from the DITRA line, as well as data transmission to a centralized dispatch service. The device is mounted on a DIN rail in control cabinets or existing cabinets. The central DITRA CORE LIGHT controller can manage 4 independent lighting groups. Remote control is performed via the DITRA system software. Data from connected devices, meters, and sensors is collected via RS-485/CAN interfaces and sent to the DITRA server via GSM/GPRS.

Installation

1. Visually inspect the device to ensure there are no damages caused during transportation;
2. Open the device casing by unscrewing two screws on the front panel and removing the protective cover;

Fuse 0.5A   GSM   Lighting   Sensors
                   BUS   On/Off   Antenna
L   N   Mode

~100-240 V,
50/60 Hz, 0.25 A

LED GSM

Status	Signal GSM	Power
Off	Off	✕
On Red	Off	No
Blinking Red/Green	Online	No
Blinking Green	Online	Yes
On Green	Connection	✕

DITRA CORE LIGHT

Outputs   Control Inputs
1   2   1 2 3 Null
                              RS-485
   D+ D- 0V +V

CE

3. Insert an activated SIM card from a GSM operator with a positive balance and no PIN protection into the upper slot.

! Before installing the SIM card, it is recommended to first insert it into a phone and ensure that there is no PIN code on the SIM card, and that SMS and GSM/GPRS/3G functions are working properly.

5. Reattach the cover and mount the device onto a DIN rail in the electrical cabinet;

6. Install the GSM antenna in the optimal location for the best signal reception. Connect the antenna to the device's antenna port;
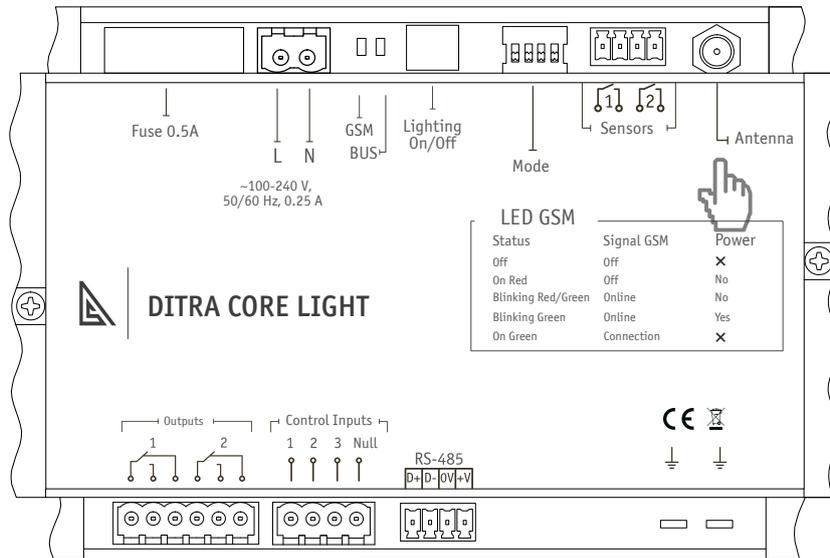

7. If there is an electricity meter operating via RS-485 or CAN interfaces, connect the meter's interface to the corresponding port on the device (RS-485 or CAN);
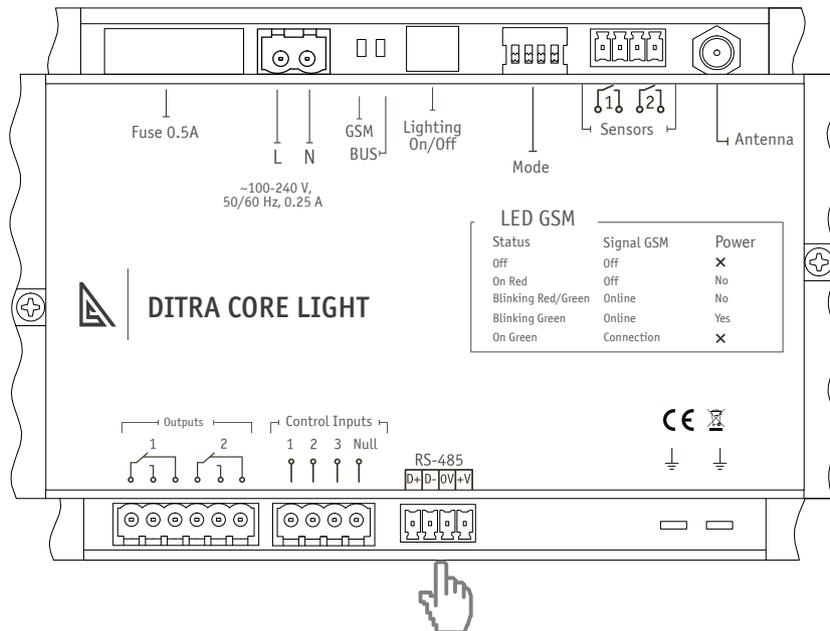
8. To change the MODBUS address, configure sections 1 and 2 of the «MODE» DIP switch as per the table:

| Section 1 Position	Section 2 Position	Adress
Off	Off	208 (default)
On	Off	209
Off	On	210
On	On	211

9. If monitoring 1 or 2 sensors for a break ("dry contact") is required, connect their contacts to the" SENSORS" port (commonly used for cabinet door opening and fire detection sensors);
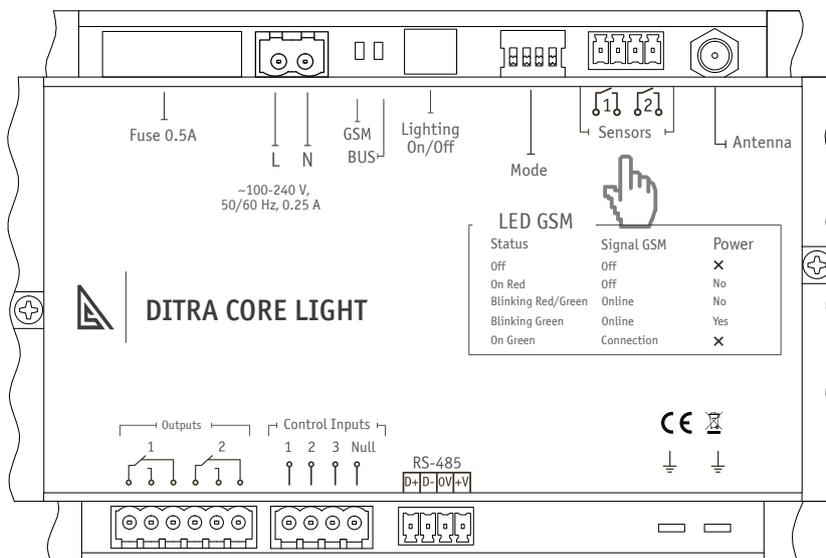

10. Set the security level for GSM network operation (access to the device and configuration changes) using section 3 of the DIP switch labeled "MODE" according to the table provided:

| Position of Section 3	Mode for Processing Incoming Calls and SMS
OFF	All calls and SMS messages are accepted from any phone numbers
ON	Calls, SMS, and device configuration are only allowed from phone numbers specified by the "DITRA" dispatcher

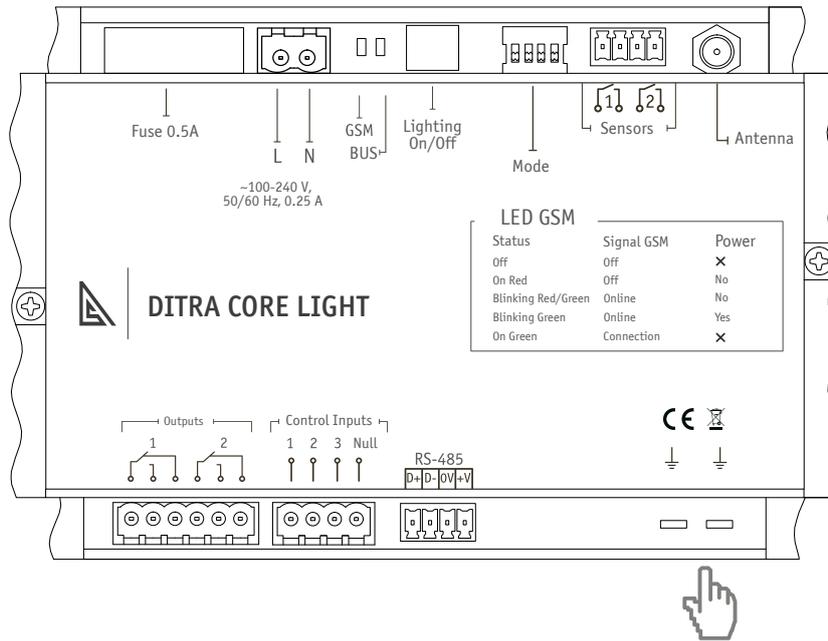Sections 1, 2, and 4 should be set to the OFF position by default
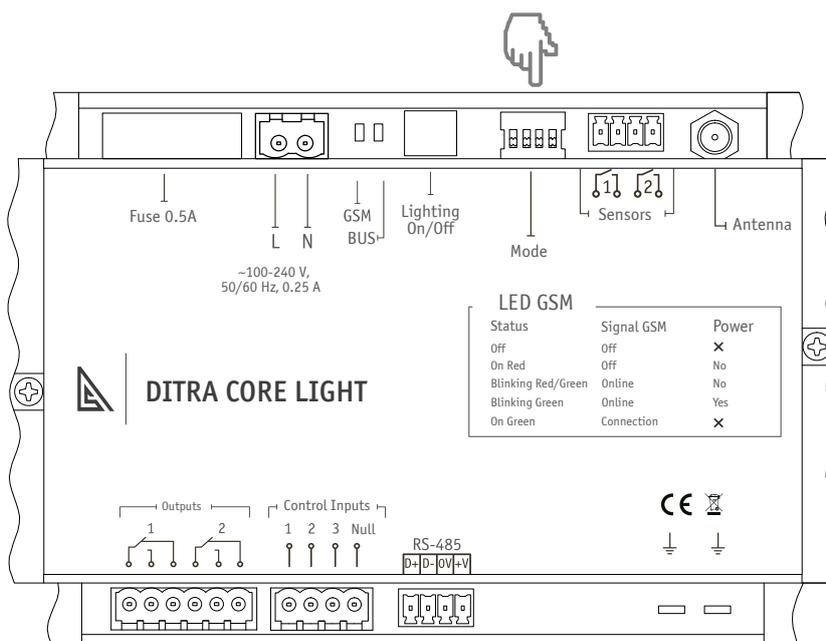
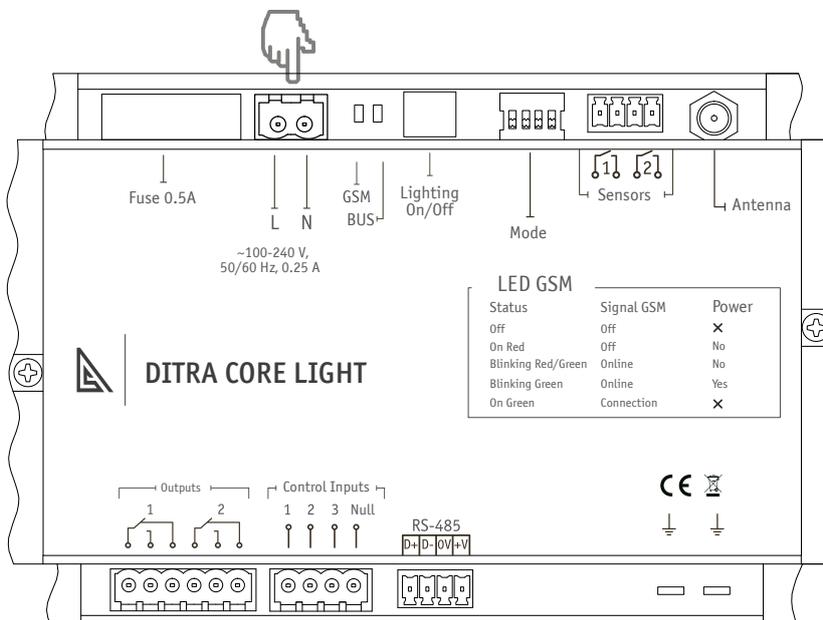**11. Connect the voltage monitoring points to the "INPUTS~220 V" port;**
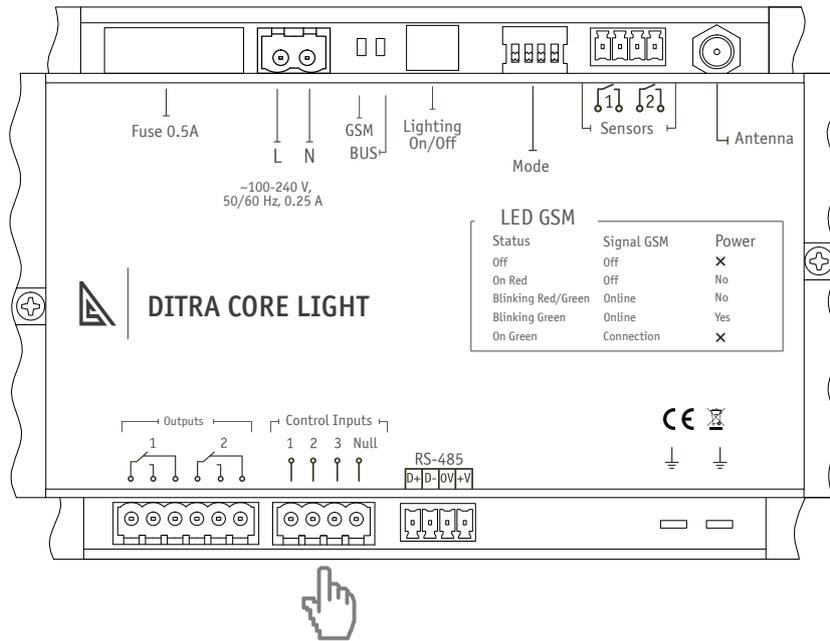
12. Connect the control circuits of the starters to the "OUTPUTS" port;
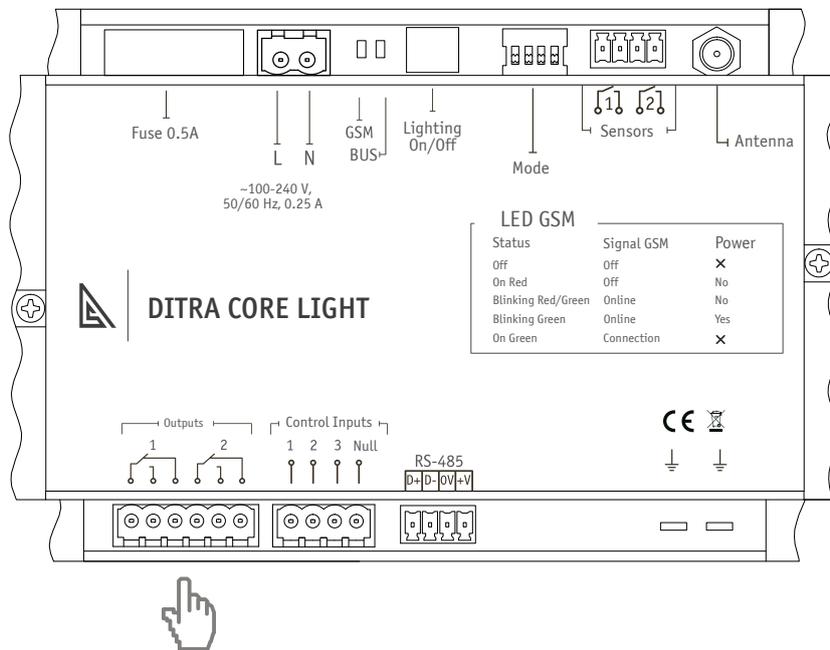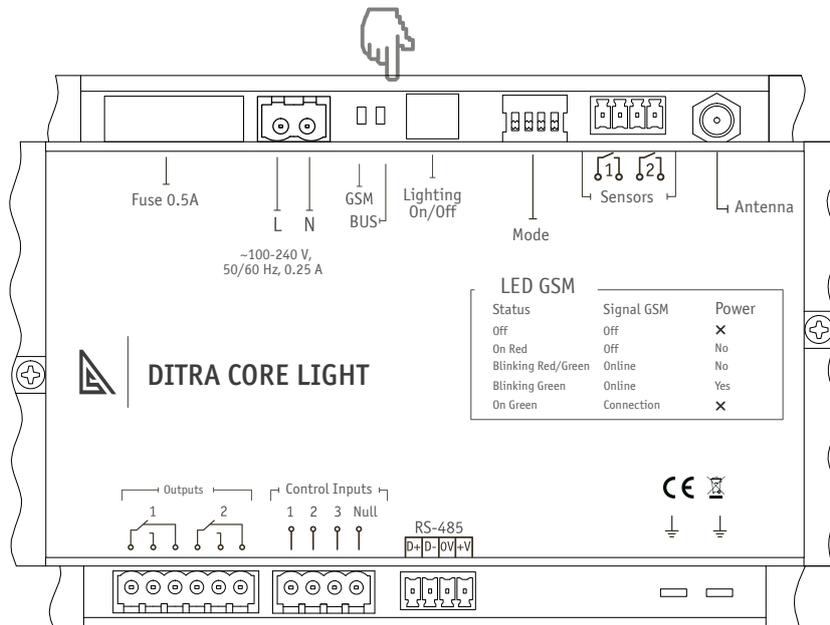
13. Connect the grounding circuit to the grounding terminal;

14. Apply mains power to the "~100-240 V" connector;

15. Ensure that after powering on the device, the "BUS" LED is lit and the "GSM" LED starts flashing at a frequency of 1 Hz within a few seconds to a few minutes. If the "GSM" LED flashes briefly with long pauses, try improving the signal quality by adjusting or relocating the GSM antenna.

Fuse 0.5A

L   N

GSM
BUS

Lighting
On/Off

Mode

Sensors   1   2

Antenna

~100-240 V,
50/60 Hz, 0.25 A

DITRA CORE LIGHT

LED GSM

Status	Signal GSM	Power
Off	Off	✕
On Red	Off	No
Blinking Red/Green	Online	No
Blinking Green	Online	Yes
On Green	Connection	✕

Outputs

1   2

Control Inputs

1   2   3   Null

RS-485
D+ D- 0V +V

CE

Testing and Controling via SMS

Control of the device and checking its status are performed by sending SMS requests to the device's number. SMS requests are entered in English using 16-bit Unicode encoding. Alternatively, requests can be typed in 7-bit English encoding. Both uppercase and lowercase letters are accepted.

The device's response may take from a few seconds to several minutes, depending on cellular network load and whether the device is connected to the server.

To test connectivity with the device, call the device's number (the number of the installed SIM card) from a mobile phone. The device should answer the call, at which point the blinking of the "GSM" LED changes to steady illumination. After the call ends, the GSM LED resumes blinking.

Device Status Check

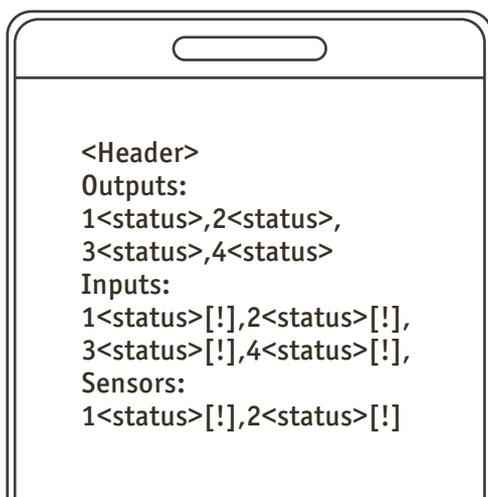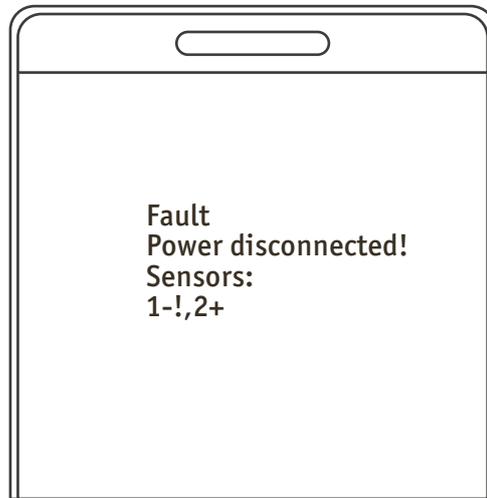Send an SMS with text "STAT". The device responds with a message in the following format:

```
<Header>
Outputs:
1<status>,2<status>,
3<status>,4<status>
Inputs:
1<status>[!],2<status>[!],
3<status>[!],4<status>[!],
Sensors:
1<status>[!],2<status>[!]
```

Fig. 6
Device Status Response

<Header>	«Normal», «Warning», or «Fault», depending on errors detected
<status>	'+' (on, active) or '-' (off, inactive).
	For outputs: the active state means relay closed;
	for inputs: AC voltage present; for sensors: closed state
[!]	If an error is detected on an input or sensor, the error source is marked with an exclamation mark (!) following the status symbol

A similar message can be sent by the device when the state changes, provided the user's mobile phone number is registered in the device as one of the recipients of event notifications. To enable this, contact the DITRA dispatcher for configuration.

Warning
Outputs:
1+,2+,3+,4-
Inputs
1+,2-!,3+,4-
Sensors:
1-!,2+

Fault
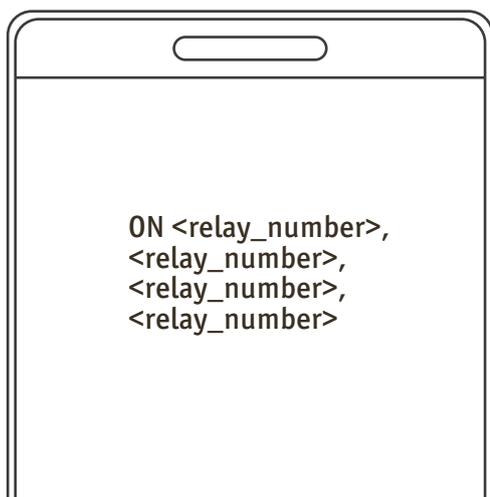Power disconnected!
Sensors:
1-!,2+

Fig. 7
Example status message
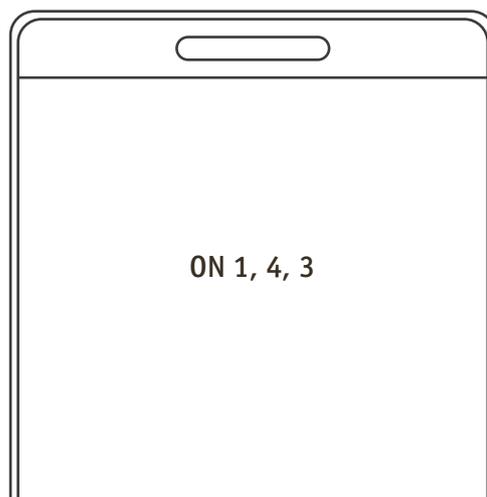(warning: error at control
point #2, sensor #1 open)

Fig. 8
Example status message when
device power is disconnected

Relay Control

To activate one or more relays, send an SMS with the command:

ON <relay_number>,
<relay_number>,
<relay_number>,
<relay_number>

ON 1, 4, 3

Fig. 9
Command format
for relay activation

Fig. 10
Example command to
activate relays 1, 4, and 3

<relay_number>: relay numbers for activation (1–4).

To deactivate one or more relays, send an SMS with the command:

OFF <relay_number>,
<relay_number>,
<relay_number>,
<relay_number>

OFF 2,3
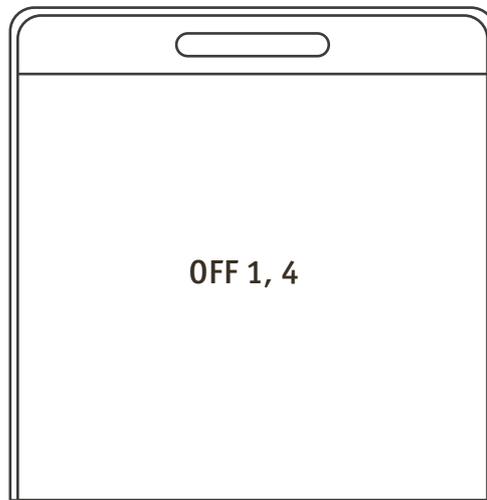
Fig. 11
Command format for relay deactivation

Fig. 12
Example command to deactivate relays 2 and 3

To turn on the relay – "ON" and to turn off the relay – "OFF", with the sequential numbers from 1 to 4

ON 1,2,4

OFF 1, 4

Fig. 13
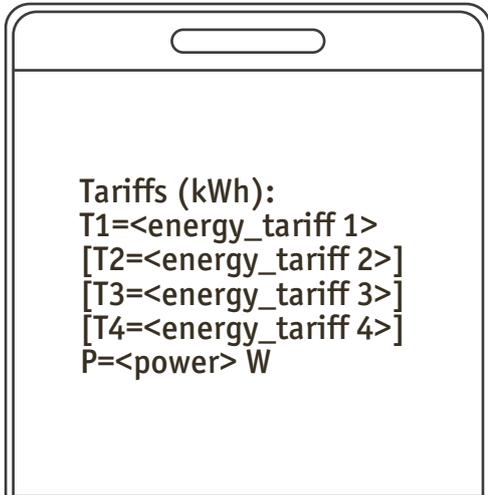Example command to
activate relays 1, 2, and 4

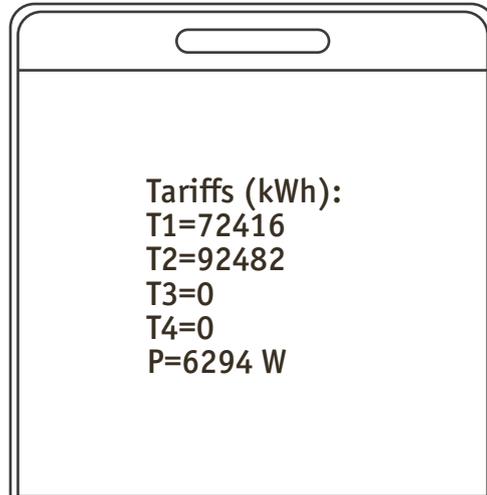**Fig. 14**
Example command to
deactivate relays 1 and 4

After sending relay control commands, the device replies with a status message
(see previous section).

Meter Data Request

To request energy meter data, send an SMS with the text "METER" to the device's SIM number.
The device replies with:

Tariffs (kWh):
T1=<energy_tariff 1>
[T2=<energy_tariff 2>]
[T3=<energy_tariff 3>]
[T4=<energy_tariff 4>]
P=<power> W

Fig. 15
Device response to a meter
data request

Tariffs (kWh):
T1=72416
T2=92482
T3=0
T4=0
P=6294 W

Fig. 16
Example response for a 2-tariff meter

<energy_tariff 1>	Total energy under tariff 1 (for multi-tariff meters) or overall energy (for single-tariff meters)
<energy_tariff 2-4>	Energy under tariffs 2, 3, and 4 (for multi-tariff meters)
<power>	Current active power consumption

Error Message (if no meter is connected or communication fails):

NO DATA

Fig. 17
Error message for meter
connection failure

Additional SMS Commands

Additional SMS commands allow you to:

Initialize a server connection. Set power-saving modes.
Test connected modules in the DITRA CORE LIGHT system.
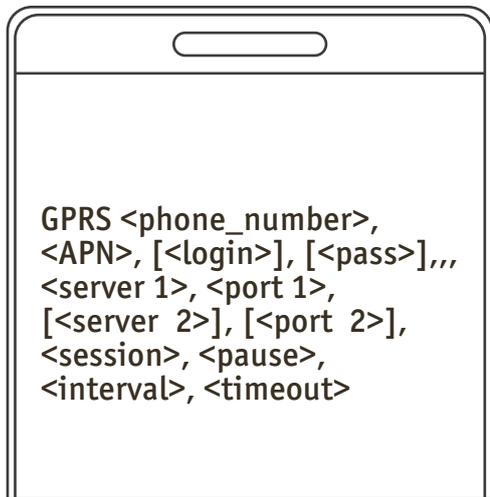Send control commands to other modules.

```
GPRS <phone_number>,
<APN>, [<login>], [<pass>],,,
<server 1>, <port 1>,
[<server 2>], [<port 2>],
<session>, <pause>,
<interval>, <timeout>
```

Fig. 18
Internet session initialization command

<phone_number>	Device SIM number in international format (starts with "+")
<APN>	GPRS access point (APN is requested from the SIM card operator. Each operator has its own unique APN)
<server 1>, <port 1>	Primary server IP and TCP port (provided by DITRA engineer)
<server 2>, <port 2>	Backup server IP and port (optional) (provided by DITRA engineer)
<session>	Session duration (in 10-second increments, 2–250) **240** by default
<pause>	Pause between sessions (in 10-second increments, 1–180) **6** by default
<interval>	Status update interval (in 10-second increments, 1–60; 255 = no updates) **12** by default
<timeout>	Connection timeout (in 10-second increments, 3–60) **6** by default

If successful, you will receive a response message:
<phone_number>,<APN>,,,,,<server1>,<port1>,<server2>],[<port2>],<session>, <pause>,<interval>,
<timeout>

Power Saving Mode Control

To activate power-saving mode, send an SMS with the command: "DIMM"

[NOREPLY] DIMM <power_

Fig. 19
Power-saving mode control command

<power_level>	Output voltage (0–240) or power percentage (0–100%) for all connected dimmers or energy-saving devices

After setting the mode on all connected energy-saving
devices, the DITRA CORE LIGHT responds with a message:

OK <power_level>

Error <power_level>

Fig. 20
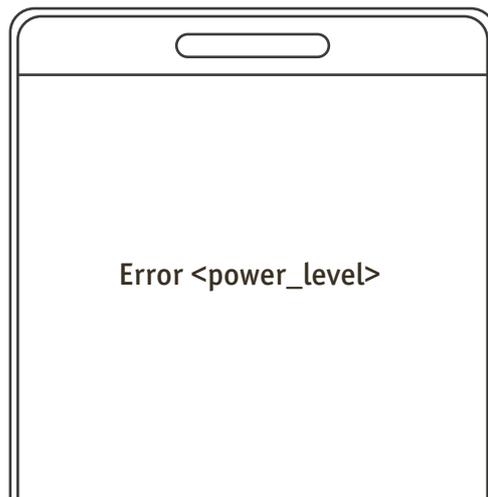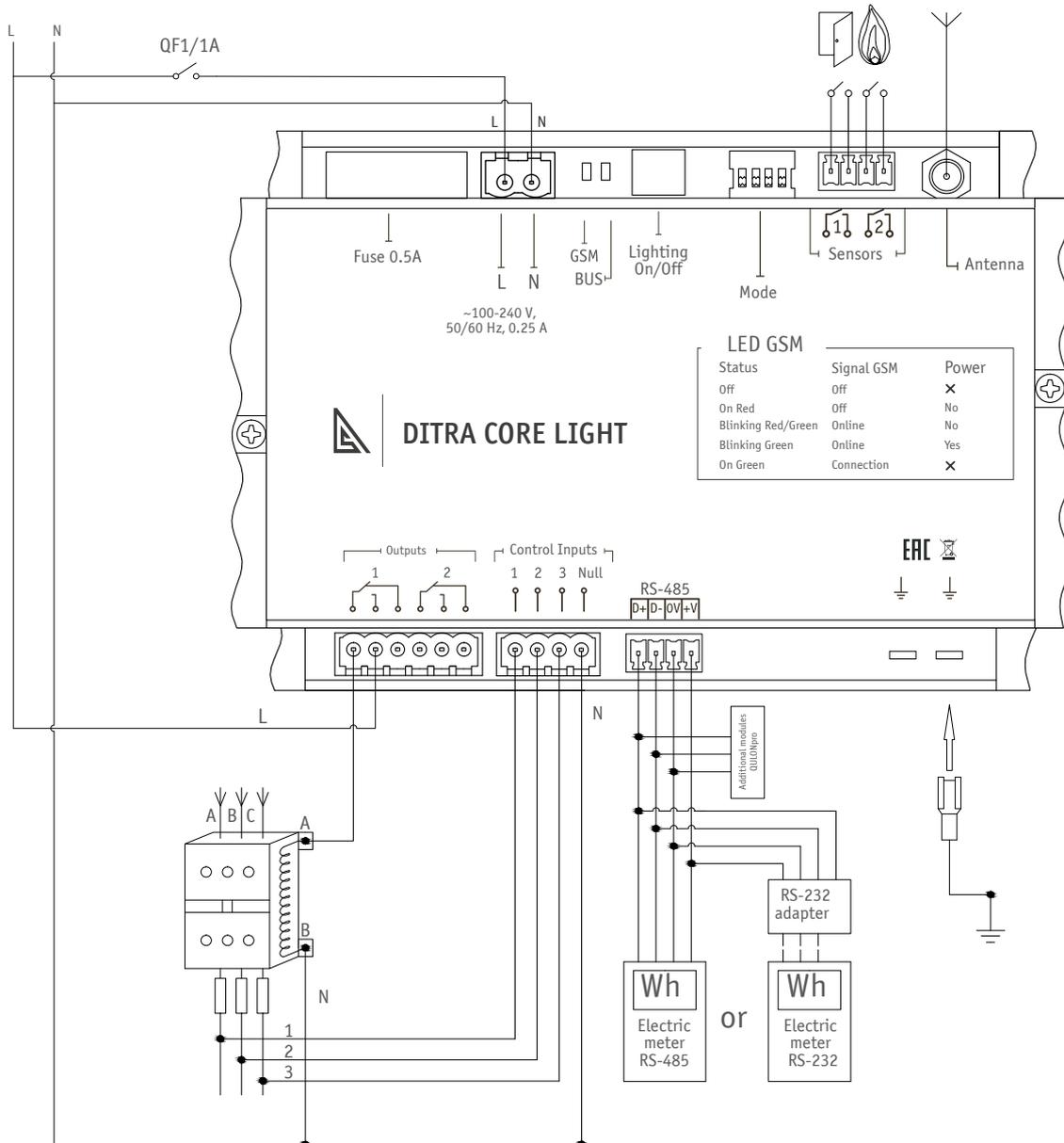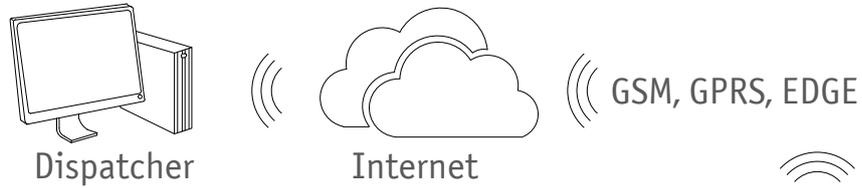Response for successful mode
activation

Fig. 21
Response in case of an error during
mode assignment on at least one
energy-saving device

Connecting DITRA CORE LIGHT in the cabinet

Dispatcher

Internet

GSM, GPRS, EDGE

L   N

QF1/1A

L   N

Fuse 0.5A

L   N

~100-240 V,
50/60 Hz, 0.25 A

GSM
BUS

Lighting
On/Off

Mode

Sensors

Antenna

LED GSM

Status	Signal GSM	Power
Off	Off	✕
On Red	Off	No
Blinking Red/Green	Online	No
Blinking Green	Online	Yes
On Green	Connection	✕

DITRA CORE LIGHT

Outputs

1   2

Control Inputs

1   2   3   Null

RS-485

D+ D- 0V +V

L

N

A B C

A

B

N

1
2
3

Additional modules QULONpro

RS-232
adapter

Wh

Electric
meter
RS-485

or

Wh

Electric
meter
RS-232

Dispatcher Usage

The setup and control of the outdoor lighting system is performed from the dispatcher's console using a specialized analytical software complex «DITRA». When the «DITRA CORE LIGHT» is configured, local control can be carried out using the «On/Off» button located on the device housing.

To turn on the object, press and hold the «On/Off» button for 2-3 seconds. To turn off the object, press and hold the «On/Off» button again for 2-3 seconds.

Technical Maintenance

Device maintenance, troubleshooting, and repairs must be performed by qualified personnel. The device should be free of dirt and dents, and all connecting cables and wires must be in good condition and securely fastened.

Transportation and Storage

The device, when packaged in the manufacturer's container, can be transported over any distance by rail, road, or in sealed aircraft compartments. During transportation, the packaging must be protected from precipitation. The arrangement and securing of the cargo in transport vehicles must ensure stable positioning during transit. Shifting of the cargo during transportation is not permitted. Within city limits, the device may be transported without packaging, but with mandatory protection against precipitation and impacts.

The presence of acid vapors, alkalis, or other aggressive substances in the air is not allowed.

Notes

Notes

Notes

DITRA SOLUTIONS

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