LTE-R5-DINW

1. Introduction

The LTE-R5-DINW (*LTE rele*[5] for short) **is designed to be mounted on a DIN rail into a switchboard.** *LTE rele*[5] can control two independent electrical circuits in a building e.g. circuit of an accumulator stove and circuit for garage gate control. *LTE rele*[5] uses **GSM network and WiFi network**. If both connections are available, then WiFi is preferred. The control is made via SMS messages or by mobile application. After installation into an electrical box insert a SIM card of any GSM operator and the device is ready to operate.

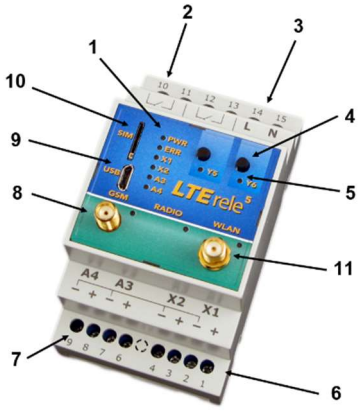
The *LTE rele*[5] has **2 digital outputs (Y5, Y6)** with a relay, which can control directly power circuits up to 230 V_{AC}/5 A. It's possible to control directly e.g. a thermoregulator circuit of a gas boiler or a coil of one phase contactor 230V AC. The contact of the contactor can then control either one phase high power appliance (e.g. electrical radiator) or a coil of three phase contactor of an accumulation stove.

The *LTE rele*[5] has also **2 digital inputs (X1, X2)** and **2 analog inputs (A3, A4).** Digital inputs are determined for potential free contacts. Analog inputs can be used for measuring the temperature, current or voltage. *LTE rele*[5] has built in two **automatic regulators** which use analog inputs from temperature sensors to maintain preset temperature. The temperature of sensors can be readout via SMS.

There is an internal **built in Li-POL accumulator** which allows to send an SMS in case of a power failure and to restore the output status after a power failure. It's also possible to monitor the status of inputs and temperatures via SMS during 230 V_{AC} power failure.

Internal **data logger** keeps records about events and valued of inputs.

① - device state indication
② - OUTPUT Y5, Y6 connectors
③ - 230V_{AC} Power supply connector
④ - Push buttons - local control Y5, Y6
⑤ - OUTPUT Y5, Y6 state indication
⑥ - INPUT X1, X2 connectors
⑦ - ANALOG INPUT A3, A4 connectors
⑧ - GSM antenna connector
⑨ - USB connector (for configuration)
⑩ - nano SIM card holder
⑪ - WiFi antenna connector



2. Package Content

- 1 pc *LTE rele*[5] (order code **LTE-R5-DINW**)
- 1 pc GSM antenna ANT05S (order code GSM-ANT05S)
- 1 pc WiFi antenna
- 1 pc temperature sensor GSM-C-T2 (based on KTY81-210), cable - 1 meter

3. Installation

1. To operate the *LTE rele*[5] a SIM card of any GSM operator is necessary. SIM card must be functional and active. Also some credit is necessary if SIM card is pre-paid. We recommend to deactivate the PIN code for installation.
2. The SIM card holder can accommodate **nano SIM card** only (12,3 x 8,8 mm).

Before inserting the SIM card into the *GSM rele*[5] device, we recommend to turn off setting of the "PIN code"!
Insert the active SIM card (= at least one call was made) to any mobile telephone and turn off the requirement of setting the PIN. On most mobile telephones, this option can be found in menu "Setting the telephone protection". or "Setup -> Security -> PIN control".
ATTENTION: *GSM rele5* must be mounted by qualified personnel only!

3. Insert this prepared SIM card (cut off corner first) into a SIM card holder. The proper insertion is indicated by a slight mechanical click noise. To remove the SIM card - press the SIM card in direction into the ***LTE rele***[5] until mechanical click. The SIM card can be the freely removed.

4. Now it's possible to connect the device to 230V AC power supply. If the power supply is correct, green LED **PWR** goes on and blue LED **GSM** is flashing slowly. After about 20 seconds, blue LED diode GSM starts flashing with a period 1 per 3 sec. (registered).
5. For the first tests of *LTE rele*[5] the connection of inputs and outputs is not important. Please keep in mind that the devices connected to OUTPUTS will be switched on during tests!
6. To test the *LTE rele*[5] press the push button bellow Y5 for a local control. The yellow LED diode for Y5 lights ON and relay for output Y5 switch on. Send an SMS from mobile phone (which will be mainly used to control the *LTE rele*[5]) in form **1234 OFF** to the telephone number of the SIM card inserted into the *LTE rele*[5]. This will switch off output Y5 and the yellow status LED for Y5 goes OFF. Simultaneously, the device automatically sends a confirmation SMS message on performing the operation. The password 1234 can be changed later in configuration. The *LTE rele*[5] reacts on the SMS text message from any telephone as long as the access password matches. The very first one (the sender of the first valid SMS message) will be remembered as master and will receive messages about events on *LTE rele*[5]. This user can also control the device by "ringing" on the device.
7. Try pulse on device. You can make pulse on Y6 for approx. 4 seconds by sending SMS in format **1234 PULSE** to *LTE rele*[5] (with default factory setting). The device makes pulse on the Y6. This pulse can be used for example for opening entrance gate. The pulse is indicated by yellow LED below Y6 push button.
8. Try regulation. By default the regulation of Y5 depends on temperature sensor connected to analog input A3. So connect a temperature sensor into a analog input A3. Send SMS in form of **1234 Y5 REG 25** to command the device to maintain temperature to 25°C. The range of regulation is between 0°C and +55°C. Regulation can be canceled by SMS with command **1234 Y5 OFF**.
9. A default factory setting of the *LTE rele*[5] can be recovered by an SMS in form **1234 !FACTORY.** If you made a backup configuration in **SeaConfigurator** , your setting can be then restored from backup configuration of **SeaConfigurator** program.
10. Names of input, outputs (and its states) and names of commands is possible to change in **SeaConfigurator** program. Visit www.seapraha.cz for download it for free and install the program to your PC.

4. WiFi Setup

To communicate with the SEA CONFIGURATOR and SEA CML apps, the device uses GSM/LTE network and WiFi connection. If both ways are available, WiFi is preferred.

WiFi setup is done using Bluetooth connection using SEA CML app for mobile phones (both Android and iOS).

1. Connect your phone to the WiFi network, where you want LTE-R5-DINW to connect.
2. Turn Bluetooth ON on your phone.
3. Download the app **CML SEA** (see chapter 8.5) and open it.
4. Choose "NEW USER REGISTRATION".
5. Press the button "**TAKE A PHOTO OF THE QR CODE**" and point your phone at the device's nameplate, where the QR code is located. The pairing code is filled in automatically.
6. Enter your e-mail and password and press the "**SIGN UP**".
7. After successful registration, you will see the home page.
8. The app will report that the LTE-R5-DINW is not set up.
9. Click on the device and select "**SET UP VIA BLUETOOTH**". You must be in close proximity to the device during setup.
10. The app will start to search for and display available LTE-R5-DINW in your area.
11. Click to select your LTE-R5-DINW (the serial number of the device is in its name).
12. The app will ask for confirmation of the pairing. Select OK.
13. WiFi setup page pops up next. The WiFi network name will be filled in automatically. Enter your WiFi password and tap „**PAIR**".
14. After a successful connection, the homepage will pop up and the LTE-R5-DINW begins to send its status to our server.

5. Technical Specifications

Parameter		Symbol	Cond.	MIN.	TYP.	MAX.	Units
Dimensions	Width	W			52		mm
	Height	H			90		mm
	Depth	D			66		mm
Power supply *1)	Voltage	V		180	230	250	V AC
	Consumption				1	2	W
Backup power supply			integrated		1		day
Digital inputs	X1, X2 – potential free contact						
Digital outputs	Y5, Y6 – relay						
	Voltage	V_{OUT}				250 30	V AC V DC
	Current	I_{OUT}				5	A
	Power					1250 150	VA W
Analog inputs	A3, A4 - set by user as: Voltage 0-10V; Current 0-20mA (input resistance 75Ω); temperature for sensors: KTY (-50 to +150°C); Pt100 (-100 to +300°C); Pt1000 (-100 to +300°C)						
	Resolution			12			bit
GSM module	Technologies		GSM, UMTS/HSPA+, LTE				
WiFi module	Frequency			2,4			GHz
Bluetooth	Frequency			2,4			GHz
Humidity						90	%
Temperature	Storage without supply					3 *2)	months
	Operational	tA		-20		+45	°C

Use *LTE rele*[5] **- DIN inside the rack with IP44 or better!**
*1) Use breaker max. 10 A before *LTE rele*[5]. For power supply 230V_{AC} use lines min. 1 mm^2.
*2) The *LTE rele*[5] has to be connected to 230V_{AC} power supply every 3 months for 24 hours (due to internal accumulator).

6. Hardware

6.1 Connectors

2 digital inputs, 2 analog inputs and 2 digital outputs can be connected *LTE rele*[5].

L, N – main power supply 230 V AC

Y5, Y6 – digital outputs

A3, A4 – analog inputs

X1, X2 – digital inputs

Analog inputs can be used for temperature measurement using KTY81-210, PT100 or PT1000 sensor. Length of wires to the sensor is not limited, but be aware of resistivity of these wires. For KTY81-210 16 Ω means 1°C.

ATTENTION: Do not exceed the parameters of inputs and outputs – Chapter **Tech. Specification**.

For examples of connection see the chapter Examples of connection.

6.2 Buttons

LTE rele[5] has two buttons on front panel for local control of outputs Y5 and Y6. Every click on a button change state of corresponding output. Example: If output Y5 was switched off, after pressing the button Y5 the output will be switched on and after next pressing the output will be switched off again.

6.3 LED Diodes

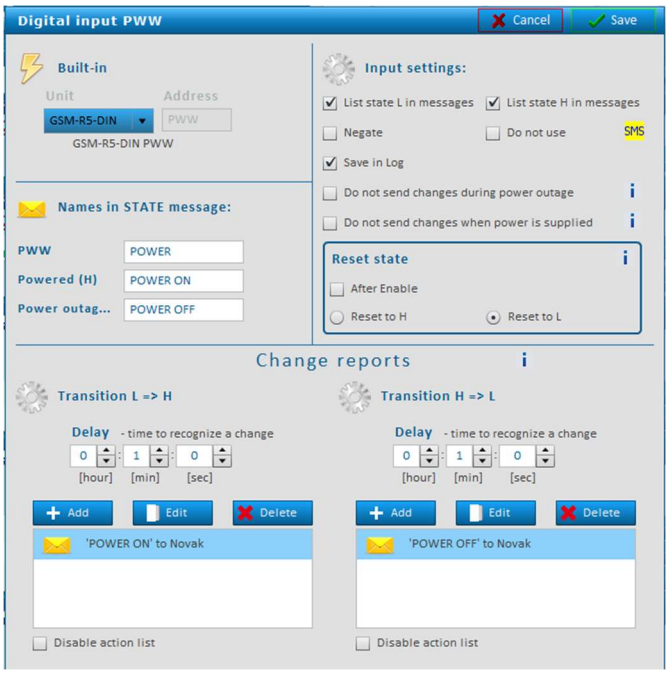
The front panel of ***LTE rele***[5] contains indication LED diodes **PWR**, **ERR**, **GSM** a LED diodes for indication inputs (X1, X2, A3, A4) and outputs (Y5, Y6).:

LED	COLOR	Meaning			
		Off	On	Blink 1 per 3s	1:1
PWR	green	device is off	powered from 230 V AC	powered from backup battery	-
ERR	red	no error	error	-	-
GSM	blue	No GSM signal	-	registered	Searching GSM net
RADIO	blue	Bluetooth is non-active	Bluetooth is active		
WLAN	blue	WiFi is not available	Connected to WiFi		Searching WiFi
X1 X2	green	Input is not activated	Input is activated	-	-
A3 A4	green	-	-	-	-
Y5 Y6	yellow	Output is disconnected	Output is connected	-	-

6.4 Backup battery

LTE rele[5] is equipped with backup 3.7 V Li-POL battery which enables to operate the ***LTE rele***[5] for several hours in normal mode in case of a 230 V_{AC} power failure (the battery life time depends on mode of usage). During the battery supply mode the ***LTE rele***[5] the **LED PWR** blinks at an interval of 1 for 3 seconds.

In case of failure of the main power supply, the device can send an SMS message. The settings are made in **SeaConfigurator** – the power supply is listed on the Digital inputs tab under the name PWW.



6.5 Antennas

LTE rele[5] is supplied with an external WiFi self-adhesive antenna and an external GSM self-adhesive antenna **GSM-ANT05S** with 2,5dB gain. It is not recommended to put this type of GSM antenna on metal surface (the signal quality will degrade). If a ***LTE rele***[5] is used in area with a low GSM signal, it's possible to use another type of the antenna with higher gain. See other antennas on www.seapraha.cz.

7. Configuration

Configuration of the ***LTE rele***[5] can be made in several ways.

7.1 Default Factory Configuration

When outputs Y5 or Y6 are switched on/off, the ***LTE rele***[5] sends an SMS message to the main user (to the telephone number from which it received the first valid command). The input signal must be stable for certain time (approx. 1 sec) to avoid sending unwanted SMS messages in case of interference on the input.

Temperature regulators are set up so that the OUTPUT Y5 is regulated by temperature sensor on INPUT A3 and OUTPUT Y6 from the temperature sensor on INPUT A4.

7.2 Configuration using PC via USB

The configuration (parameter setting) can be done using program **SeaConfigurator**. For connection to PC device has micro USB connector.

E.g. ***LTE rele***[5] can be set to inform of the 230V AC power failure or restoration via SMS.

7.3 Change of configuration via SMS

Some parameters of ***LTE rele***[5] can be configured via SMS:

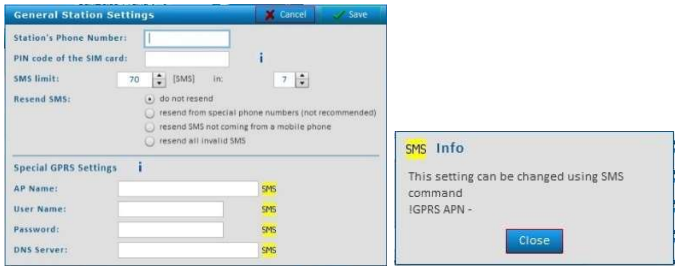
List of configuration SMS commands:

Command	Parameter	Meaning
!FACTORY	-	All parameters are setup to factory default. E.g. Reset to factory default in ***LTE rele***[5] (all custom configuration will be deleted.). 1234 !FACTORY
USER ADD	Phone number	Create new user with specified phone number. If phone number is already in the list an error is indicated. If phone number already exists and user is "disabled", User is enabled and no error is indicated. E.g. 1234 USER ADD +420123456789
USER DIS	Phone number	A "disabled" flag for the user is set. If and user is not in the list an error is indicated. E.g. 1234 USER DIS +420123456789
USER CHANGE	Phone number	Changes phone number on different one. If fist phone number isn´t there or second one is already int the list an error is indicated. E.g. Change user´s phone number from +420111111111 to +420222222222 1234 USER CHANGE+420111111111+420222222222
CODE ADD	Password	New user with specified password is added (password max. 20 digits). If the password already exists an error is indicated. If the password already exists and the user is disabled, the user is activated and no error is indicated. E.g. Add new user with password 9876 1234 CODE ADD 9876
CODE DIS	Password	A "disabled" flag for the code is set. If the user is not in the list an error is indicated. E.g. Disable user with password 9876 from controlling device. 1234 CODE DIS 9876
CODE CHANGE	Password	The first password in the list is replaced by the second password. If the first password does not exist in the list or the second is already in the list an error is indicated. E.g. Change password from 1234 to 9876 1234 CODE CHANGE 1234 9876
X1 !DIS	!DIS !ENA	Disable/enable changes from input/output. (Typical use is when error on input is occurred, on which ***LTE rele***[5] reacts by sending big amount of SMS messages.) E.g. **1234 X1 !DIS** … disables changes from input X1 **1234 X2 !ENA** … enables changes from input X2
REGISTER	number	Registration of sender of SMS messages as authorized person who can change settings of ***LTE rele***[5] via GPRS connection. Identification number has to match with number allocated from **SeaConfigurator**. E.g. 1234 REGISTER 987654

Caution

When configuring via SMS it is important to understand that changing parameters will cause mismatch with configuration saved in PC.

Parameters which can be changed/set via SMS are marked in **SeaConfigurator** with a yellow "SMS" field (see picture below). By clicking it, a window with a hint will appear.



8. Control

8.1 Remote control of *LTE rele*[5] via SMS

LTE rele[5] is controlled via SMS of the GMS network. Text SMS are in form:

<PASSWORD> <COMMAND> [<COMMAND >]

Password (access code)

Password is a main security item for ***LTE rele***[5] control. Command SMS are accepted from any phone number. It means anybody who knows the password and the phone number can control the ***LTE rele***[5]. The password is a string of digits (1 to 20) which must be on the beginning of any command SMS. Otherwise the SMS will be ignored. A text before the password is automatically ignored. It is useful when command SMS are sent from Internet GSM gates. The password can be changed using SEAConfigurator on the tab General or by a configuration SMS message.

Default password set up by manufacturer:

1234

Command

This part of a message specifies a requested action. See the following table for available commands. ***LTE rele***[5] commands are not a case sensitive, it's possible to use upper letters as well as lower letters.

Each command is preceded by Yx, where x is the number of controlled output. If output is not specified, the OUTPUT (Y5) is used as default. Commands **ON** and **Y5 ON** and **Y5ON** has the same meaning.

Command	Parameter	Meaning
Y5 ON	-	Switch on output Y5 (**Y6 ON** switch on output Y6)
ON	-	If no output is specified, switch on output Y5
Y5 OFF	-	Switch off output Y5 (**Y6 OFF** switch off output Y6)
OFF	-	If no output is specified, switch off output Y5
Y5 PULSE **Y5 RESET**	5	Switch on output Y5 for 5 seconds creating pulse. Reset output Y5 for 5 seconds.
PULSE **RESET**		If no output is specified, create 5 sec pulse on output Y5 If no output is specified, reset output Y5
REG	0 to 55	Setting of requested temperature and starts regulation mode. Request of status SMS (state of inputs, outputs, temperatures, signal quality and credit).
STATE	-	Request of status SMS (state of inputs, outputs, temperatures, signal quality and credit).

It´s possible to use multiple commands in one message separated by a space.

E.g.

`1234 ON` … switch on device connected to output Y5

`1234 Y5 ON` … switch on device connected to output Y5

`1234 Y6 OFF` … switch off device connected to output Y6

`1234 Y6 PULSE 5` … an OUTPUT Y6 will be switched on and then after 5 seconds will be switched off (Notes: if an output is already switched on, it will be just switched off after 5 seconds)

`1234 Y6 reg 5` … requested temperature for the function temperature regulation of OUTPUT Y6 will be set to + 5°C

Using multiple commands in one SMS message can look like this:

`1234 Y5 OFF Y6 REG 25` … switch off output Y5 and sets temperature regulation on output Y6 to 25 °C according to temperature sensor on input A3.

Confirmation

If a command message contains a valid password (access code) the ***LTE rele***[5] returns a confirmation message which informs if a command was accepted (see chapter Status SMS). If you don't want a confirmation message (e. g. when sending a command SMS from the Internet GSM gates) add a command "**NOBACK**".

E.g.

`1234 Y5 ON NOBACK` … ***LTE rele***[5] will switch on device on output Y5 and will not send message back.

Command	Meaning
NOBACK	No confirmation SMS will be sent

8.2 Local control of outputs

LTE rele[5] has 2 push buttons for local control of outputs Y5 a Y6 (see chapter 5.2).

8.3 Status SMS message

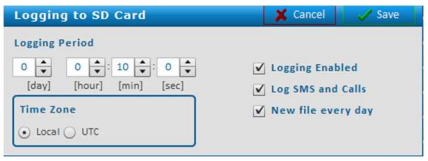
Whenever the command SMS contains valid password the ***LTE rele***[5] send back Status message.

Example of status SMS message	Meaning
Base station: Y5 ON OK	Command confirmation: Y5 is switched on.
X1=ON	State of input number 1
X2=OFF	State of input number 2
A3=28'C	State of input number 3
A4=5.0V	State of input number 4
Y5=ON	State of output number 1
Y6=OFF	State of output number 2
Power=good	Power state (from battery or power supply)
Battery=100%	State of battery charge
Signal=58%	State of GSM Signal

Note: if value of parameter **Signal** is ??, -- or== It´s an error.

8.4 Control using CML (for Smart phones)

This application can use smartphones with Android or iOS. Application makes easier control of ***LTE rele***[5] and state monitoring. You can download this application from Google Play or Apple Store for free, type into search „**CML SEA**". After installing the application, make the first registration, take a photo of the QR code of the device into the "paring code". The QR code you find in the ***LTE rele***[5] package. The device is paired to your WiFi network via Bluetooth, so it is necessary to have it switched ON on your phone. Then press the "Pair Wifi via Bluetooth" button in CML and fill in the required data.



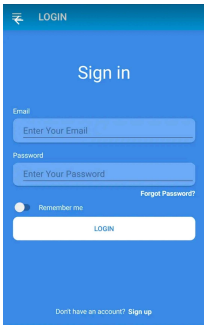
GET IT ON Google Play

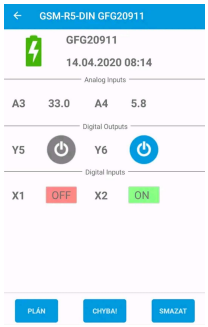
Download on the App Store

WARNING: For the functionality of the CML application, it is necessary to have an activated data tariff on the SIM card, which is inserted in the device. Transferred data can be charged by the operator according to the tariff agreed by you.

8.5 Enable CML

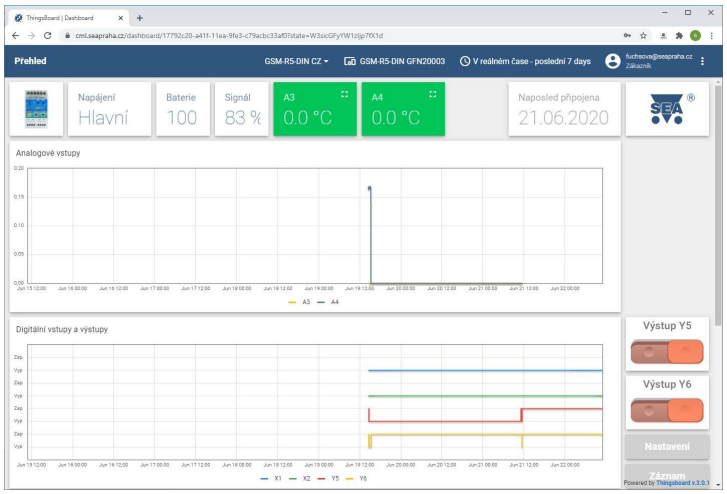
The CML function must be switched on in the GSM-Configurator in „Station settings", press the edit button in the „CML" line and check „Enable" in the CML window.





8.6 On-line data on a website

You can monitor the measured values, including the history, and display them clearly on the **cml.seapraha.cz** website. You can also control the outputs or set up e-mails with alarm messages directly from the website.



9. Datalogger

LTE rele[5] can save (log) detailed information about device´s actions. Saving period of analog values is set up in **SeaConfigurator** in settings of the station. Saved log can be used for analyzing activity of device. User can set up which information will be saved to log file during configuration of ***LTE-R5-DINW*** via **SeaConfigurator**.

Is possible to save information about input/output signals or received/send SMS messages. File type of log file is .csv (= Comma Separated Values). Name of log file is derived from actual date (data.csv).

There are two types of log records: periodic and event. Event record contains actual analog values.

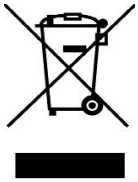
label	Meaning	Example
Time Local	Local date and time when event appears.	2020-04-01 15:32:14
type *1)	Type of saved record (number)	1
type2	Type of saved record (word)	period
phone/ event	Phone number/ Event	+420123456789
text/ action	Text of SMS message / Action	LTE-R5-DINW: input is on.
A3[°C] *3)	State of analog input A1	22,6
Y5	State of output Y5	0
Y5. cmd *2)	Output Y5 is regulated to value 28,0 (current value is 22,6)	,R22.6/28.0
X1	State of input X1	1
AP	Analog input "power" [V]	14,4
PWW	Digital input power	1
GSM. cell	Information about BTS	23002F,0404,047A_006E
GSM. sig	Current GSM signal strength [%]	35

*1) type (type2) - type of record
1 (perio) - periodical record specified by time
2 (event) - record about state change of input/output
3 (insms) - received SMS
4 (outsms) - sent SMS
5 (incall) - received SMS
6 (outcall) - sent SMS
7 (debug) - debug informations (only reason for restart)
8 (talk) - play audio (not included)
9 (fault) - error
32(firmware) - uploading firmware

*3) A1:
O … disconnected;
Z … short circuit;
? … unknown (Device is not communicating after turning on.)
[°C] ... unit of measurement

*2) Y.cmd:
,R22.6/28.0 - R means regulation current temperature is 22,6°C / required temperature is28,0°C
- P is pulse
- Q is reset

10. Warranty



General warranty period is 12 months after purchase, when eventual malfunction device will be repaired free of charge in SEA company while shipping to SEA is paid by customer and SEA pays for shipping back to customer. For SW there is 24 months warranty under following conditions:

Both CPU and PC software is sold "as is". The software was created by the best software engineers in SEA and was carefully tested both in SEA and also by SEA customers using GSM applications products made in SEA. In spite of making all possible to get error free software it can happen, that the software in CPU or PC programming SW or their mutual interaction has some error under some specific conditions. If such error is found and the description of the problem including configuration file is sent by E-mail to SEA ltd., the error is removed free of charge and SEA will send new SW by E-mail to customer.

SEA ltd. has NO RESPONSIBILITY for any damage, lost, costs and any other problems direct or inducted, caused by such SW error, by eventual device malfunction from any reason or by undelivered SMS from the device.

The manufacturer, seller or installation company is not responsible for the amount of transferred data, connections, telephone calls, sent SMS, MMS, or other charged services of GSM network operators and is not responsible for the amount of fees for GSM network operators of the installed SIM card. Nor is it liable for the energy consumed by the equipment it controls or for any other damage.

CE Declaration of conformity

in accordance with the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC (R&TTE) and Directive 2011/65/EU (ROHS).

We SEA, spol. s r.o., Dolnoměcholupská 1537/21, CZ 102 00 Praha 10, Czech Republic, **ID**: 47117931 (**manufacturer**) **declare under our sole responsibility, that product** device for remote control and monitoring **type** LTE-R5-DINW **is in conformity with the following standards:**

health and safety:	EN 62368-1:2004
EMC:	EN 61326-1:2013
radio frequency:	EN 301 511 v12.5.1, EN 301 489-7 v1.3.1
ROHS:	EN 50581:2012

The last two digits of year in which the CE marking was affixed: 22

SEA s.r.o. (2)
Společnost pro elektronické aplikace
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Place of issue: Praha **Name:** Ing. Vladimír Rosůlek
Date of issue: 30.5.2022 **Grade:** Technical director

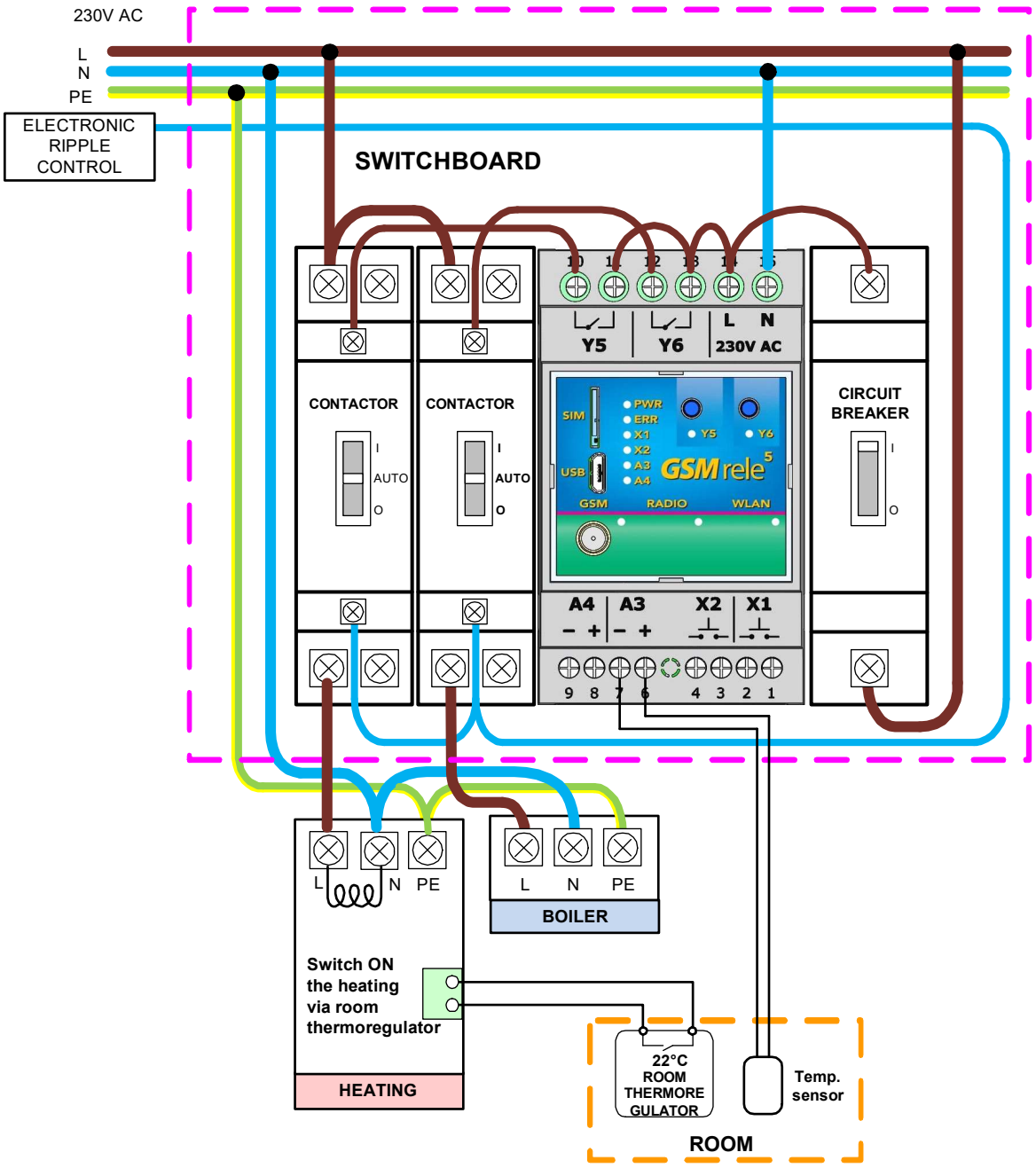
11. Examples of connection

11.1 Heating control

Centralized control of loads connected to switchboard is typical for electric heating. Electronic ripple control causes disconnection of electrical heating in time of high tariffE.

This wiring controls power for electric heater. An electrician would said, that outputs of ***LTE rele***[5] are connected into series with centralized control of loads. Outputs of ***LTE rele***[5] controls contactors and they control heater and boiler.

On the picture you can see one phase contactors, but three phase contactors can be used as well. – But those could require bigger current through coil. Make sure, that you don´t exceed allowed current on outputs of ***LTE rele***[5] *(see Technical specifications).*



This wiring works like that. Temperature sensor A3 is able to regulate (switch on/off) output V3. Switching output V3 on/off by temperature sensor A3 is set in factory configuration.

In **SeaConfigurator** in settings of output Y5 select freezing temperature (set on 5°C and mark "enabled").And thermoregulator in room set on comfortable temperature (e.g. 22°C). Heater control wirelessly through commands 1234 Y5 ON (heat up to 22°C) a 1234 Y5 OFF (turn off heater). If temperature drops below 5°C Output Y5 will be switched on and regulates to nonfreezing temperature. If you have enabled heating to freezing temperature in **SeaConfigurator**, you can´t switch off heating by command 1234 Y5 OFF. If you need to switch off the heater is possible to disable output by command 1234 Y5 !DIS and then enable again by command 1234 Y5 !EN.

If you want to heat up on higher temperature (for example on 15°C) than is freezing temperature, you can use command 1234 TEPL 15. If selected temperature in command will be higher (e.g. 25°C) than temperature set on thermoregulator , heater will be turned on until it reaches temperature set on thermoregulator (for example on 22°C).

Output Y6 is possible to use for same circuit with heater. (By factory settings output Y4 is regulated by sensor A4.) or it can be used for boiler, eventually for gate control etc.

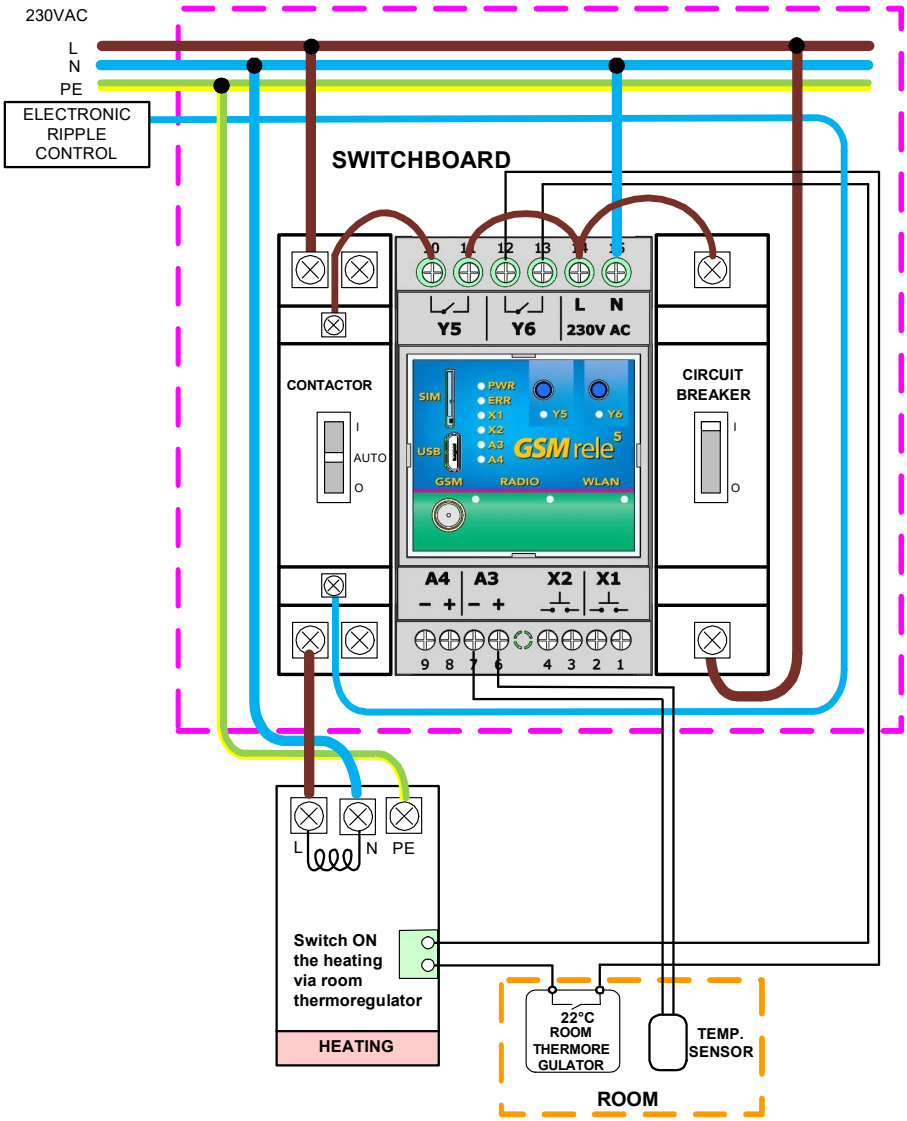
Temperature alarm setting is independent on temperature regulation (temperature alarm is setting temperature bounds in **SeaConfigurator**, it can send SMS message if temperature drops or exceeds selected temperature).

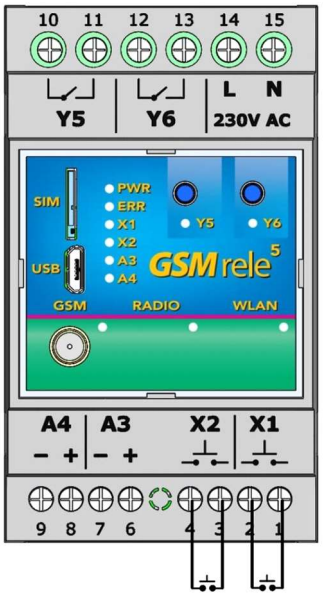
11.2 Comfortable temperature control

If you need regulate higher temperature than temperature set on thermoregulator. You can use different wiring, where you disable thermoregulator by output Y6.

Command 1234 Y6 OFF will enable thermoregulator A3 to regulate heater. Heater will heat until it reaches selected temperature. Those commands can be sent in one SMS message simultaneously.

Regulation to 25°C	1234 Y6 OFF Y5 TEPL 25	(thermoregulator is disabled)
Regulation to 22°C	1234 Y6 ON Y5 OFF	(thermoregulator is set to 22°C)
Regulation to 7°C	1234 TEPL 7	(thermoregulator is disabled)





11.3 Digital inputs

Example of connection of inputs X1 and X2 as contact status detector:

If you need to monitor a potential free contacts (for example magnetic contacts of the alarm circuit or relay contacts), connect them directly to inputs X1 and X2.

12. Frequently Asked Questions (FAQ)

What is necessary to use the ***LTE rele[5]:***

- Good quality GSM signal in a place where *LTE rele[5]* will be used (at least 2 bars on your mobile phone)
- Sufficient credit on a pre-paid SIM card
- No phone call redirection
- The user has to know to operate his mobile phone (PIN usage deactivation)
- Note: Users who knows to operate older version of GSM RELAY version 2 can use older SMS command form: E.g. 1234 ON3 OFF4

Problem description	Possible reason	Solution
LED GSM (blue) flashes 1:1 (slow)	SIM card is not functional	Test the SIM card in your mobile phone. Try to make a call and receive a call from another mobile phone. Try to send a receive SMS message.
	New SIM card is not activated yet	Switch off using PIN on a SIM card. Cancel all call redirection for a SIM card. (Ask your mobile operator for help if necessary). New SIM card has to be activated. (Ask your mobile operator for help if necessary).
LED GSM (blue) is off (dark)	Low credit on a pre-paid SIM card	Check credit on a pre-paid SIM card. (Ask your mobile operator for help if necessary).
LED ERROR (red) is on (lights permanently)	Weak/poor GSM signal	Test the SIM card in your mobile phone. The mobile phone should show the signal level at least 2 bars.
The pulse on an output is not generated based on incoming ring signal (e. g. for a gate opening)	The incoming phone calls for a SIM card are redirected	Cancel all phone call redirections for the SIM card
***LTE rele[5]* sends SMS message, that „connection to configuration server failed: error 5/0 0,1,1"**	GPRS connection was interrupted, when ***LTE*** *rele[5]* ring user, who doesn´t react for too long.	Restore GPRS connection from **SeaConfigurator**.
The temperature from an external temperature sensor is wrong. Too long lines to an external temperature sensor.	Too long lines to an external temperature sensor	The accuracy of temperature depends on a line length to an external temperature sensor (16 Ohms means 1°C). Use thicker wires to temperature sensor.