

GD-02-DIN Universal GSM communicator and controller

The GD-02-DIN Universal GSM communicator and controller remotely controls and monitors the status of various appliances. Controlling can be performed using standard SMSes or by dialling in. The device includes 2 controlled outputs (1 low and 1 high power), which can be set to status mode or impulse mode. For monitoring the status of some process or equipment the GD-02-DIN has 2 inputs which react to grounding. Input activation and deactivation can be reported by an SMS with an option to be called. One of those inputs has a pulse counter function (can be connected to an electricity meter, water meter, gas meter and so on). The current status of the counter can be signalled by SMS. The device also has an input for connection of a GD-02T thermometer to measure temperature and also work as a thermostat with the possibility of switching and performing the setup of an economical / comfort temperature remotely. The device has a memory for up to 10 authorised telephone numbers. The built-in backup battery ensures the power when the mains fails. The product is designed to be mounted onto a DIN rail. Module programming can be realized by GD-Link 2.1.0 software (or higher) and a MicroUSB cable (supplied).

1. Using the GD-02-DIN

The GD-02-DIN offers the following operating modes:

- **CONTROL**, activates / deactivates the output with an option to set an impulse (1 s – 24 h). See chapter 5.1.
- **MONITORING**, it follows the status of devices connected to inputs IN1, IN2 (mains dropout, fault, etc.). See chapter 5.2.
- **TEMPERATURE MEASURING**, using the GD-02T temperature sensor the GD-02-DIN module measures the current temperature and reports exceeding preset limits. This mode allows setting up the reaction of the REL2 output when the temperature limits are reached. See chapter 5.3.
- **THERMOSTAT**, using the GD-02T temperature sensor the GD-02-DIN module measures the current temperature and according to the preset temperature (comfort / economical) switches the power relay output REL1 (for instance electricity heater, boiler, etc.). The comfort and economical temperature can be set remotely by an SMS and you can also switch between them. See chapter 5.4.
- **IMPULSE COUNTER**, allows the GD-02-DIN module to be connected to an external electric consumption meter equipped with a pulse output (such as an electricity meter, gas meter or hydrometer) and provides information about its current status remotely. See chapter 5.5.

2. Device description

LED indicators description:

PWR (green / yellow) Power	Green ON	Mains power (230 V) OK, back-up battery OK
	Yellow ON	Mains power fault, back-up battery OK
	Yellow flashes	Mains power fault, back-up battery LOW (Low voltage status reported = trouble status)
	OFF	Module switched OFF or discharged battery
GSM (green) GSM network	Green ON	GSM signal strength OK (GSM signal level > 20%)
	Green flashes	GSM signal strength is LOW (GSM signal level < 20%)
	OFF	GSM fault (No GSM signal)
IN1 (red) Input 1	OFF	Input in standby mode (inactive)
	Red ON	Input active
REL1 (red) Output relay 1	OFF	Relay REL1 in standby mode (Switched OFF)
	Red ON	Relay REL1 active (Switched ON)

Table 1: Status indication by the LED indicators

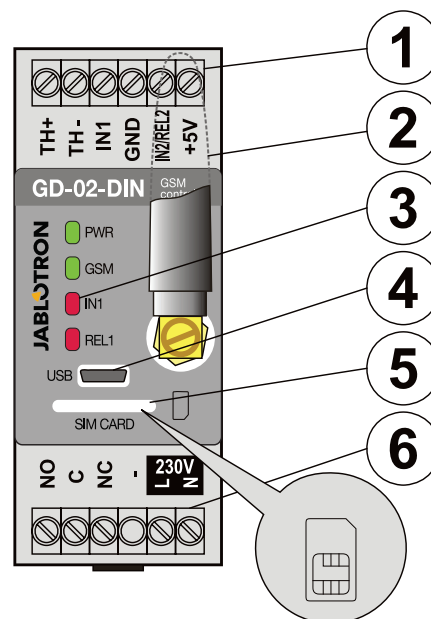


Figure 1: 1 – Low voltage terminals; 2 – GSM antenna; 3 – LED indicators; 4 – MicroUSB connector for connection to PC; 5 – SIM card slot; 6 – Power and mains terminals.

Terminals description:

Low voltage terminals:

- TH+/TH-:** Input meant for connection of the GD-02T digital temperature sensor. Other temperature sensors are not supported. Mind the correct sensor polarity (red = TH+, white = TH-). The measuring temperature range is from -30 to +125 °C.
- GND:** Common terminal for IN1, IN2 / REL2 and +5 V terminals
- IN1:** Allows connection of any floating contact such as a button, switch, relay contact, etc. It is connected between the IN1 and GND terminals. The input recognizes contact activation and also deactivation. A maximum of 24 V DC can be connected to this terminal.
- IN2/REL2:** Universal input / output terminal. The IN2 input terminal has similar behaviour to input IN1. It allows connection of impulse output of an electrical meter for example. The REL2 is a semiconductor signal output with an open collector (switches to GND) and is protected by a current fuse of 100 mA with a maximum connected voltage of 24 V DC.
- +5V:** Power output 5V / 100 mA with protection against shorting or overloading. This output has no backup when the mains power fails. It serves for switching of the external relay for example RB-524-DIN 250 V 16 A.

Power (high voltage) terminals:

- NO, C, NC (REL1):** Switching contact for power relay REL1 with the parameters 230 V / 16 A. The relay has galvanically separated contacts from the rest of the device and complies with safety requirements for isolation of up to 4 kV. This output is not backed up when the mains power fails. If the contact has been switched on, when the mains fails, it switches off and after the mains recovery the previous state can be restored (it depends on the parameter on the "Setting" tab in the GD-Link software).
- L, N:** Terminals for connecting the mains (230 V AC / 50 Hz)

Notes:

- If there is a requirement to install the GD-02-DIN controller in an outdoor environment an installation housing with a high IP cover index is needed.
- The REL1 a REL2 outputs can be switched on independently for a pre-defined time interval from 1 s to 24 hours (impulse). Both outputs can have their own text instructions for activation and deactivation.
- For inputs IN1 and IN2 the time filter can be set from 0.1 s to 30 min in pre-set steps.

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3. Installation and initial setup

 The device can only be connected to mains electricity by a person who has an adequate electrotechnical qualification. Do not connect the protective earth conductor. It is necessary to protect the module externally according to the specification mentioned in the Technical specifications chapter. Do not forget to connect the GSM antenna before you insert the SIM card (turn the device on)!

1. Attach the GD-02-DIN onto the required place on the DIN rail.
2. Connect the low voltage part (temperature sensor, inputs and possibly the REL2 output) of the controller first.
3. Then connect the mains and the REL1 output.
4. Screw on the supplied GSM antenna. If the GSM signal strength at the installation place is low (less than 40%), we recommend using an external GSM antenna, for instance type **AN-05**.
5. By inserting the SIM card the module is turned on. When no SIM card is inserted, and the device has no mains or internal backup battery connected – nothing is indicated. When inserting the SIM card (if the backup battery is not fully discharged) all LED indicators flash briefly on the GD-02-DIN front panel and then the module starts to indicate optically all the current statuses mentioned and described in *Table 1*.
6. Connect the GD-02-DIN using the supplied MicroUSB cable to the PC (max. USB cable length with extension can be 5 m).
7. Start the **GD-Link** software, see chapter 4.
8. Continue with chapter 5 according to the required operation mode.

Recommendations:

- For long-term reliable operation it is recommended to use tariffed SIM cards. Avoid using pre-paid cards which may not work well when credit balance is low but which also have uncertain SIM card credit validity periods. If despite this warning you use a pre-paid card, use the function for automatically checking the credit balance. This will ensure the periodical checking of credit balance and if credit is low the module sends you an SMS with a warning sent to a pre-defined service number (this function must be supported by your GSM operator).
- Use any cell phone to check the SIM card is active by a phone call or by sending an SMS.
- To speed up logging onto the GSM network it is recommended to disable the PIN code requirement. It can be realized by disabling the PIN code requirement in the cell phone menu "PIN code ON/OFF". If it's necessary to keep the SIM card protected by a PIN code (preventing theft), enter a valid PIN code via the **GD-Link** software (tab – "Setting" and "SIM card PIN").
- With no SIM card inserted, the device is out of order and it cannot be used or configured by PC.

4. Configuration via the GD-Link SW

To configure the GD-02-DIN module by computer use **GD-Link** software. It serves for reading and changing the device settings locally connected by USB cable.

- The software is free for download from our website www.jabltron.com, Downloads / Software section.
- Follow the instructions of the installation wizard to install the software successfully. When the installation is done the PC creates a shortcut for the **GD-Link** software.
- The software requires OS Windows XP or newer.
- It is recommended workplace with letters size up to 120 dpi (standard is 96 dpi).
- The software also serves for FW update performance. During online Internet access the GD-Link SW checks if the FW is really current and if it detects that a new FW version has been released, the user is informed and it offers downloading. This file can be used to perform an FW update by clicking the option "Device / Upgrade firmware".
- Note: there is an option for checking the current SW version's availability and it is possible to enable / disable this in the SW menu GD-Link / Automatic update.

The GD-Link SW includes eight tabs:

Users – Setup for user telephone numbers, authorisation to control outputs and report assignment

Inputs – Serves for setting parameters related to inputs, activation / deactivation texts to be reported. If the input is pre-set to a Special function (for example Consumption meter), its setting is inaccessible (all settings can be performed on the selected tab).

Outputs – Serves for setting parameters related to outputs, texts for control and for reporting switching ON / OFF the outputs. To perform a test use the "TEST" button. If the output is pre-set to a Special function (for example Thermostat), its setting is inaccessible (all settings can be performed on the selected tab).

Thermometer – Serves for the activation and setup of the temperature monitoring function. Sets up temperature limits, texts send as an SMS report, etc.

Thermostat – Serves for the activation and sets up the Thermostat function (temperatures, SMS commands to control REL1 output, etc..).

Consumption meter – Serves for the activation and set-up of the Consumption meter function (units of a measured utility, the number of pulses equal to one unit and the default counter state). It also shows the history of measured values.

Setting – Serves for general settings such as the password for access to the SW and GSM dialler, SIM card PIN code, max. daily SMS limit or credit balance checking.

Information – Serves to check the device's important information (Reg-Key and production code), current status of inputs, outputs, temperatures, impulse counter status, number of sent SMSes, credit on a pre-paid SIM card and GSM data.

Note: The tooltips give you a quick description of programming options. Move the mouse cursor over the parameter which you want to have described and the software displays a description.

5. Operation modes

The GD-02-DIN offers the following operating modes:

5.1 CONTROL mode

This operational mode allows you to control the REL1 power output independently to the REL2 signal output by a pre-defined SMS text or by dialling in. One more option is using a bridge between IN1 triggering and REL1. Up to 10 telephone numbers can be stored in the device to control both outputs independently. **When a password is used outputs can be controlled by any telephone number not just by the numbers stored in the device.**

Set-up description:

- To apply this mode start the **GD-Link** software and in the „Users“ tab enter the required telephone numbers in the „Output control by dialling in / SMS“ column and give them authorisation to control outputs by SMS or by just dialling in. The telephone numbers are required to be in international format.
- In the „Outputs“ tab you can set "SMS commands to control the switching ON/OFF" of the both REL outputs or the "way of switching" (ON/OFF or Impulse) and also the SMS text by which control is confirmed to the person who is in control. The current status of outputs is indicated here.
- On the „Setting“ tab by the „Output status after power recovery“ parameter (outputs switched OFF or last known status) output properties can be set for when a mains dropout occurs and then recovers.

Example: Gate control by dialling in from up to 10 users.

- The application requires a contact to be connected to the REL2 output / GND and to the low voltage input of a controlled gate (Figure 2).
- Using the **GD-Link** software it is necessary to set the telephone numbers authorised to control the "REL2" output and also to check (tick) the option by „Output control by dialling in“ on the „Users“ tab.

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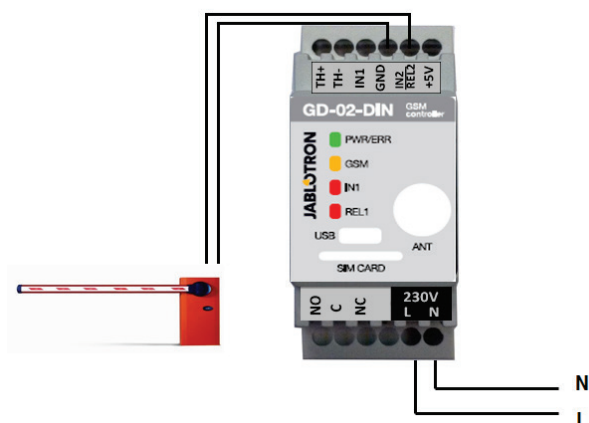


Figure 2: GD-02-DIN as a barrier controller.

5.2 MONITORING mode

This mode serves for monitoring the status of up to two devices using the IN1 / IN2 inputs. The inputs react to connection / disconnection to / from the GND terminal. If the monitored device is equipped with for example a Fault output then it can be connected with the GD-02-DIN and reported by SMS and also dialling in. Up to 10 telephone numbers can be stored in the device and the information reported by an SMS and also by dialling in.

Set-up description:

- Go to the **GD-Link** software at the „Users“ tab and store the required telephone numbers. *For the chosen numbers select in the columns „SMS report activation / deactivation“ and „Dial in...“ the type of reported information (SMS, dialling in or a combination of both).*
- At the „Inputs“ tab you can edit texts assigned to inputs IN1 / IN2 which are sent by an SMS when the inputs are activated / deactivated.
- When no activation / deactivation texts have been preset then no SMS and no call will be performed.
- Each input has an activation delay (0.1 s – 30 min) in pre-set steps. The delay can be used for installation where short pulses have to be eliminated (for example an SMS is sent if the activation of an input takes more than 60 s, input deactivation takes 1 s always).
- The IN1 input can be inverted, check (tick) the option „Input inversion“, see the „Inputs“ tab. The input is activated when connected to GND – this is standard behaviour. When an input is inverted, the input reacts oppositely (disconnection from GND is activation).
- Sent SMSes are counted by a daily counter and if it reaches the daily limit it can be blocked by the parameter „Activate daily SMS limit“ on the „Setting“ tab. When the limit is reached and blocked it can be unblocked by the SMS command „SMS RESET“. Unblocking and simultaneous counter resetting is performed automatically at midnight (at 00:00 hrs).
- The IN1 input can be linked to REL1, by the enabled option „Activation of the input will switch REL1 ON“.
- The current status of all inputs is visible at this tab in column „Current status“.

Example: Monitoring of the maximum level of a tank, including automatically water pumping.

- This diagram shows the connection of the level sensor to the IN1 and GND inputs. REL1's power output switches 230 V to power the water pump, see Figure 3.
- For REL1 to be switched ON automatically based on IN1 input triggering it is necessary to enable the parameter „Activation of the input will switch REL1 ON“. This ensures the water level triggers the level sensor and the water pump reduces the water level until the level sensor detects a water level reduction.
- To eliminate switching ON the water pump very often we recommend an appropriate delay for an input activation.
- The IN2 input can be used for connection of a second level sensor which serves for reporting a malfunction (tank overload or empty tank).

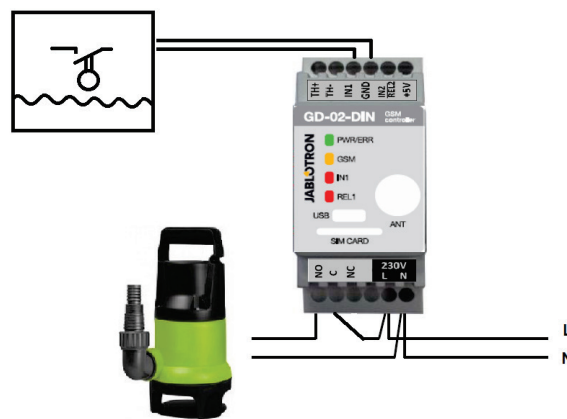


Figure 3: Monitoring of the maximum water level in a tank with automatic water draining using a water pump.

5.3 TEMPERATURE MEASURING mode

Thanks to the GD-02T sensor the temperature can be measured in the required place and crossing the lower and upper limit reported by SMS.

Set-up description:

- Mind the correct polarity when the digital thermo sensor is connected (red wire =TH+, white wire=TH-). See figure 4.
- Using the **GD-Link** software at the „Thermometer“ tab enable function „Temperature monitoring“.
- An SMS report about reaching the temperature limit (upper / lower) is realized by an activation / deactivation of the IN2 input. So it is necessary to enable the parameter „Users / SMS report activation/deactivation / IN2“.
- On the „Thermometer“ tab set the required values by the parameters „Upper temperature limit“ and „Lower temperature limit“. Temperature setup range from -30 to +125 °C.
- For monitoring limits a fixed hysteresis +0/-3°C is defined (tolerance because of thermal fluctuations).

Caution: The lower temperature limit has to be set lower than the upper temperature limit by at least 3 °C (because of the hysteresis).

- An SMS report about temperature out of the selected range can also be sent in a service SMS. For reporting it is necessary to program the required telephone numbers via the **GD-Link** software on the „Users“ tab into the „Phone number“ column. Check the option in the column „Service SMS“ and then on the „Thermometer“ tab in the „SMS report to service phone numbers“ settings reporting of the „Exceeding upper/lower temperature limit“.

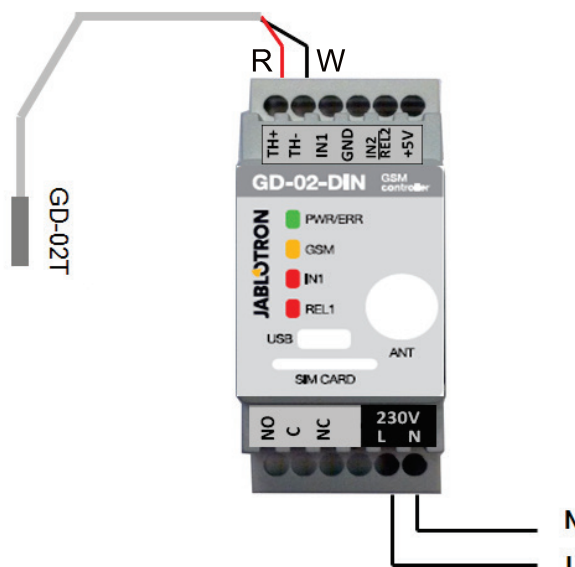


Figure 4: Measuring the temperature
R – red wire; W – white wire

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5.4 THERMOSTAT mode

To apply this mode, connect a GD-02T digital thermometer sensor. The mode allows controlled switching of the heater by the REL1 output to regulate the temperature in the premises. Pre-set the comfort and economical temperatures. The user can switch between these two temperatures by an SMS command or by dialling in. Both temperatures can be changed by a PC connected locally or remotely using programming SMSes.

Set-up description:

- Mind the correct polarity when the digital thermo sensor is connected (red wire =TH+, white wire =TH-).
- A controlled device has to be connected via the REL1 (see Figure 5) power output contacts in this mode.
- Warning: pay attention to the maximum switching load of the REL1 output (230V/16A resistive load).**
- Using the GD-Link software on the “Thermostat” tab enable the function “Activate thermostat (REL1) mode”. Set the “Comfort (TC) and Economical (TE) temperatures”. For the Thermostat mode „Hysteresis” can be set for regulation within a 0.1–9°C limit (tolerance because of thermal fluctuations).
- For the Thermostat mode SMS commands can be modified for switching between the Comfort and Economical temperature („SMS command for activation Comfort/Economical temperature”).
- Switching between Comfort and Economical temperature is also possible by just dialling in from authorised telephone numbers preset for REL1 control.

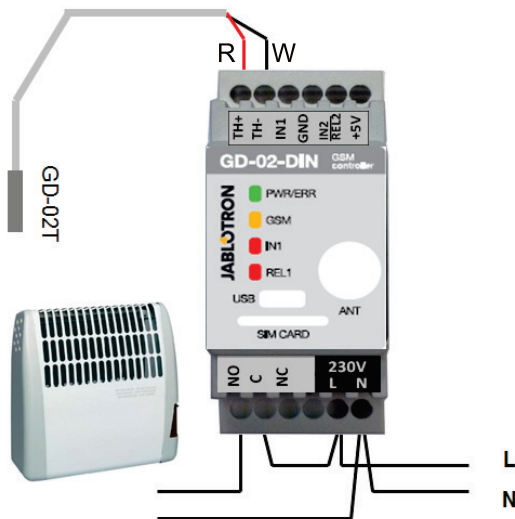


Figure 5: Measuring the temperature and electric heater control.
R - red wire; W - white wire

5.5 IMPULSE COUNTER mode

This mode allows management of the consumption of various utilities such as electrical energy, water, gas, etc... connecting to the impulse output of the slave (supplementary) electricity meter, hydrogen meter, gasometer or any other measuring instruments with an impulse output.

Caution: If you want to use a measuring instrument/appliance owned by the third party provider (for example an electricity meter on the main switchboard box) you have to contact them and make an arrangement related to the way of connection to the pulse output of the measuring instrument. This output is typically protected by a seal and requires removing to be accessed. A utility company usually requires the connection of some additional protection according to their guidelines (galvanical isolation, etc.). If possible a much better and cheaper solution is to install a secondary measuring instrument with an impulse contact connected to the GD-02-DIN.

Set-up description:

- The GD-Link software in the „Consumption meter” tab enables the function „Activate consumption meter mode”.
- Also sets the default counter state, pulses per unit and unit type, for example kWh or m³.
- By an SMS request „[PASSWORD] CNT” check the current counter status.
- You can also use the automatic SMS function, the current impulse counter status is included. Go to the „Users” tab and check the option „Automatic SMS” and on the „Setting” tab enable function “Automatic SMS”, then enter the period and time when it is to be sent.

Example: Monitoring of electric energy consumption.

- This mode requires connection between the impulse output and a secondary electricity meter using terminals IN2 and GND on the GD-02-DIN (see Figure 6). The electricity meter can be single-phase or three-phase.
- In the GD-Link software on the „Consumption meter” tab enable the function „Consumption meter mode” and pre-set the default values for counting (counter status, number of pulses for one unit and the measuring unit).

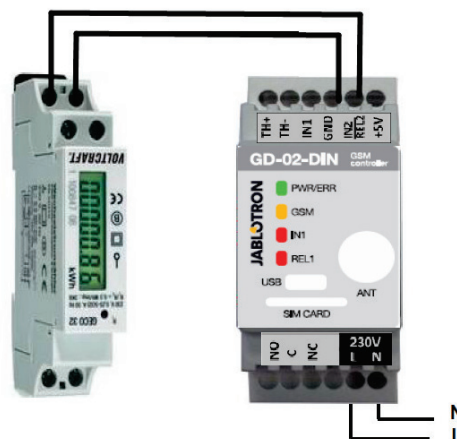


Figure 6: Electricity meter mode

6. Control

The GD-02-DIN communicator can be controlled by SMS commands or by dialling in.

- To be controlled by SMS commands and for SMS reporting of the command confirmation pre-set the authorisation for the specific telephone numbers. Then fill in the texts for every input and output.
- To be controlled by dialling in (ON / OFF / timer or change thermostat mode) on the “Users” tab set the „output control by dialling” (in the case of thermostat control it is necessary to set dialling in for REL1) at the required telephone number positions.
- When the “Password” is set on the „Setting” tab it allows you to control the GD-02-DIN outputs from non-stored telephone numbers (only SMS commands). If control is performed from stored numbers only, then the password can be disabled completely (protection against abuse is by identification of it’s own telephone number).

7. Control, set-up and configuration by SMS

The device checks every incoming SMS and if the SMS includes a valid command with a valid format it reacts to it. A correct control command format has to be:

Password command

(password space command)

- Password:** a valid access password (factory default 1234), can be modified on the „Settings” tab or by a programming SMS with the „PSWD” parameter, see table of programming SMS instructions.
- Command:** a fixed command or pre-set control text, see the table of programming SMS instructions.

General rules of SMS command use are as follows:

- An SMS always includes “Password and command”
- The password requirement for commands can be disabled in the GSM communicator settings (“Settings / Use password for: SMS control”). If the requirement is enabled it is valid for all numbers. When the password requirement is disabled, the GD-02-DIN can only be controlled from stored telephone numbers; the password is not present in the SMSes.
- There is always a space between the password and the command and its value.
- A programming SMS which changes the device settings and also changes the password always requires entering the current password. For changes of other parameters a password is only required when password requirement is enabled.
- Capital and small letters are treated equally.
- We recommend using texts with no diacritics.

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- Confirmation of a performed SMS command is only sent to the telephone number from which the command has been sent.
- If the GSM unit receives an SMS with a command syntax error or an SMS is not recognized, then the parameter „Forward incomprehensible SMS“ ensures its forwarding with the senders telephone number to the service telephone number with the enabled parameter „Service SMS“. If the command has been sent from an unauthorised telephone number, the device answers that the command could not be performed.

Table of programming SMS instructions:

System SMS commands	
[PASSWORD] HELP	Basic information with an available SMS command
	Example: 1234 HELP
[PASSWORD] STATUS	Device status request
	Example: 1234 STATUS
[PASSWORD] DINFO	Device information request
	Example: 1234 DINFO
Programming SMS commands	
[current PASSWORD] PSWD [new PASSWORD] *	Password change
	Example: 1234 PSWD 4321 changes password from 1234 to 4321
[PASSWORD] PSWD OFF *	Disabling password for authorised telephone numbers
	Example: 1234 PSWD OFF
[PASSWORD] PSWD ON *	Enabling password for all telephone numbers
	Example: 1234 PSWD ON
Mode: Controlling chapter 5.1	
[PASSWORD] [Text for REL1 output switching ON]	REL1 output switching ON
	Example: 1234 ON1
[PASSWORD] [Text for REL1 output switching OFF]	REL1 output switching OFF
	Example: 1234 OFF1
[PASSWORD] [Text for REL2 output switching ON]	REL2 output switching ON
	Example: 1234 ON2
[PASSWORD] [Text for REL2 switching OFF]	REL2 output switching OFF
	Example: 1234 OFF2
Mode: Monitoring chapter 5.2	
[PASSWORD] SMS RESET	Reset of reached SMS sending limit
	Example: 1234 SMS RESET
Mode: Temperature measuring chapter 5.3	
[PASSWORD] TMP	Current temperature requirement
	Example: 1234 TMP
[PASSWORD] ATH xx	Upper temperature limit
	Example: 1234 ATH 30
[PASSWORD] ATL xx	Lower temperature limit
	Example: 1234 ATL 05
Mode: Thermostat chapter 5.4	
[PASSWORD] TMP	Current temperature requirement
	Example: 1234 TMP
[PASSWORD] [Text for Comfort temperature:]	Switching to comfort temperature
	Example: 1234 COMFORT
[PASSWORD] [Text for Economical temperature:]	Switching to economical temperature
	Example: 1234 ECO
[PASSWORD] TC xx	Comfort temperature setup

	Example: 1234 TC 25
[PASSWORD] TE xx	Economical temperature setup
	Example: 1234 TE 06
Mode: Impulse counter chapter 5.5	
[PASSWORD] CNT	Current counter status request
	Example: 1234 CNT
[PASSWORD] CNT xxxxxx.yyy	Impulse counter reset to default
	Example: 1234 CNT 123456.789

Note: * = These SMS commands always require entering the password even if the password requirement is disabled.

Example of a STATUS SMS request:

GD-02-DIN reports:

GSM signal:	75%	(GSM signal strength)
AC power:	OK	(status of AC power)
Battery:	100%	(status of backup battery capacity)
SMS:	2	(status of sent SMS counter)
Input IN1:	Deactivated	(status of input 1, active / inactive)
Input IN2:	Counter	(status of input 2, active / inactive)
Output REL1:	ON	(status of output 1, ON / OFF)
Output REL2:	OFF	(status of output 2, ON / OFF)
Temperature:	20.5°C	(current temperature-measured)
Thermostat:	TC	(thermostat mode Eco / Comfort)
TC:	28°C	(preset Comfort temperature)
TE:	20°C	(preset Economical temperature)
T-Low:	5°C	(preset low temperature limit)
T-High:	26°C	(preset high temperature limit)
Counter:	124 kWh	(status of an impulse counter)
Time:	12:34:56	(time when SMS has been sent)
Date:	12.03.2015	(date when SMS has been sent)

8. Technical specifications

Power	230 V AC / 50 Hz, protection class II.
Wattage	average standby 0.5 W (1.2 W relay switched on)
Protected	1 A; type A
Internal backup battery	Polymer Lithium-ion 300 mAh
Backup time	3 hours
GSM module bands	GSM/GPRS Quad Band 850 / 900 / 1800 / 1900 MHz

Relay 1 contact load:

Maximum switching voltage	250 V AC; 24 V DC
Resistive load (cosφ=1)	max. 16 A
Inductive, capacitive load (cosφ=0.4)	max. 8 A
Minimum switching DC power	10 mA; 5 V DC

The relay has galvanically separated contacts from the rest of the device and complies with safety requirements for isolation of up to 4 kV.

TH inputs for digital thermometer (GD-02T) range -30 to +125 °C
(max. cable length 3 m)

Input IN1 Input is activated when connected to GND, max. 24 V
Universal input/output IN2/REL2 Input is activated when connected to GND, max. 24 V

Input is compatible with impulse output of Class B electricity meters according to the EN 62053-31

Output switches to GND, output protection 100 mA, max. voltage 24 V

Auxiliary power output +5 V DC / max.100 mA, no backup

Operational temperature range -20 °C to +50 °C

IP covering front panel IP20

Dimensions (no antenna) 90 x 36 x 58 mm

Safety EN 60950-1

EMC EN 301 489-7, EN 55022 and EN 61000-6-3

Radio transmissions ETSI EN 301 511



The GD-02-DIN complies with the essential requirements of directives 1999/5/EC, 2011/65/EU, when used for its intended purpose. The original of the conformity assessment can be found at www.jablotron.com, Technical Support section.



Note: Although this product does not contain any harmful materials we suggest you return the product to the dealer or directly to the producer after use.