

SMS Interface KNX SMS-K2050-1

User manual

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1. Introduction

1.1 Purpose and functionality

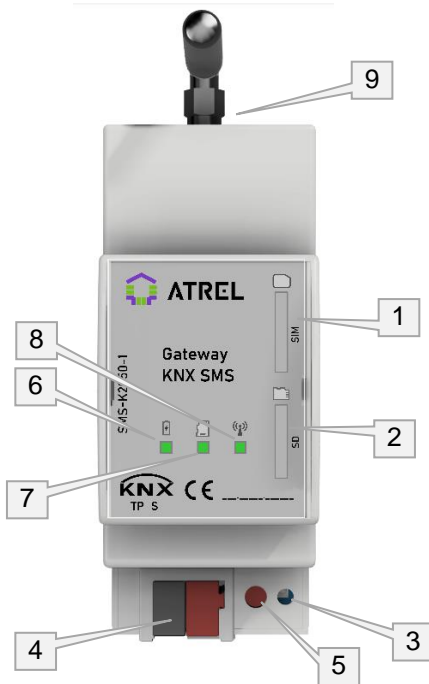
The KNX SMS K 2050-1 SMS interface (hereinafter referred to as the "Device") manufactured by ATREL is designed to quickly notify users of events occurring in the Smart Home system based on KNX technology and manage it. Working with it is organized in such a way that the content and phone numbers associated with each type of message can be changed directly by the end user at any time by editing the file on the SD card installed in the Device. Length SMS messages for both outgoing and incoming messages are limited to 120 characters, and you can use not only Latin characters, but also Latin alphabets. Messages containing non-Latin characters longer than 70 characters will be charged by the operator as two. The device does not require or establish Internet connections.

Attention! When the device is turned on for the first time (and after storage), it performs preparation – charging the internal energy storage devices for about 20 minutes. During this period, the indicator 6 flashes and the receive or send signal is displayed. SMS It doesn't work, but the Device can work with the bus, be programmed, and store outgoing messages in the buffer. SMS (up to 30 pieces), which will be sent after the preparation is completed.

Main functions:

- Real-time source for the devices on the KNX network
- Support for up to 20 different phone numbers of recipients/senders of messages
- Up to 50 types of outgoing informational messages, with or without one parameter
- Up to 20 types of incoming control messages, with or without one parameter
- Up to 10 "weekly timers", with or without value transfer to the bus
- Control of the device's SIM card balance (When granted access by the operator)
- Up to 8 different recipients for each type of message
- Receiving messages only from certain recipients (up to 8 in each type)

1.2 Device, controls



1. Socket for SIM maps (Micro SIM)
2. Socket for MicroSD
3. Programming indication
4. Bus connector KNX.
5. Programming button
6. Radio module power status indicator
7. Template status indicator
8. Radio module status indicator
9. SMA connector for antenna connection

The device is mounted on a standard 35mm DIN rail and requires an external GSM antenna to be connected to the connector (9). For work in areas with a weak GSM signal (for example, in metal cabinets), it is recommended to use a remote antenna. To find the best antenna location, you can use the "Signal Strength" Communication Object. The device connects to the bus using a standard KNX connector and does not require an additional power source. At the first power-up, as well as after a long downtime, preparation for the GSM communication module operation will take no more than 20 minutes.

You can download an individual address and its associated application program immediately after connecting the KNX bus, without waiting for the GSM communication module to be ready.

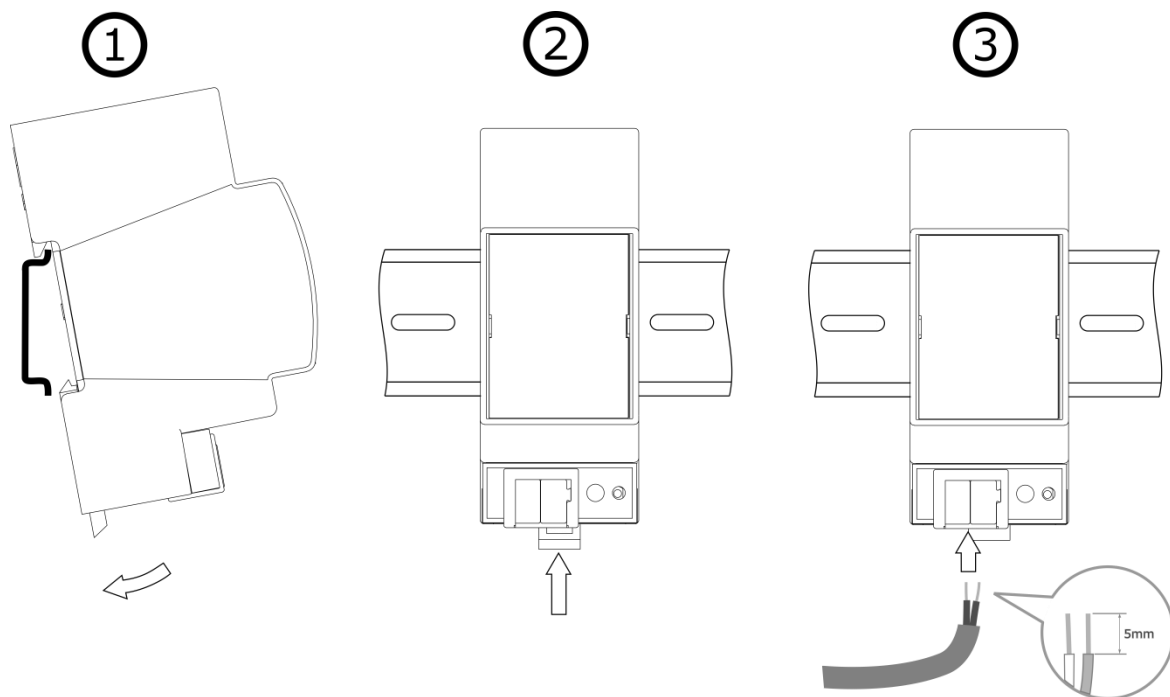
Basic elements of the device

1. The device works with SIM cards of GSM networks (2 G/4 G) in microSIM format. Installation is performed by Push-Push method with the key up (contact pads to the right). The SIM card must not be protected by a PIN or PUK code. Errors related to the operation of the SIM card are indicated by the indicator (8) (See Appendix 3).
2. The device works with microSD SD cards. Installation is performed by Push-Push method with the key up (contact pads to the left). The size of the SD card (partition on it) must be up to 16 GB, and must have a FAT 32 file system, as well as contain a specially prepared SMS file.INI (see section 1.6). Errors related to the operation of the SD card are indicated by the indicator (7) (See Appendix 3).
3. Red LED for programming mode indication.
4. KNX bus connector.
5. Pressing this button puts the device into programming mode, where the corresponding LED (3) lights up red. The programming mode is limited in time to 30 minutes, after which the Device automatically exits it. Pressing the button again also takes the device out of programming mode.
6. Green power status indicator for the radio module. Flashes with a period of 1sec. during the pre-production period. In the operating mode, a constant glow.

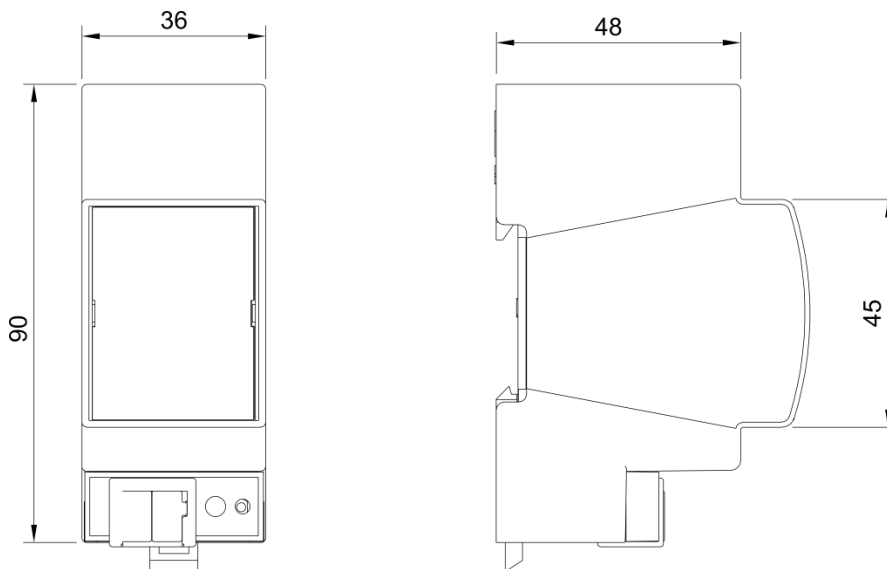
7. Green status indicator for templates. Blinks if there are no SMS templates in the device's memory or a microSD card reader error occurs. In full operating mode, a constant glow.
8. The radio module status indicator is green. Flashes with a period of 1sec. while connecting to the GSM network. In the operating mode, a constant glow.
9. Connector for connecting the antenna. SMA type.

For more information about the meaning of indicators, see [Appendix 3](#).

1.3. Mounting and connections



1.4. Dimensions



1.5. Bus start and power loss mode

When connected to the KNX bus, the device is immediately ready for bus operation and simultaneously starts preparing the radio part, which can take up to 20 minutes (depending on the idle time). During this time, the indicator (6) flashes with a period of 1sec. After that, the device reads template data from the SD card (or uses previously loaded data from memory) and, if the appropriate settings are made in ETS, sends an SMS message to the designated recipients.

If the bus power is lost, the device sends a message to the designated recipients (if configured accordingly). It also stores currently unsent messages in non-volatile memory for sending them the next time you turn them on.

1.6. Creating and uploading templates

Updating templates in the device's memory is performed from the SMS. INI file on the microSD card. After successful loading of templates, indicator 7 will light up with a constant glow. You can remove the memory card after loading the templates.

The SMS.INI template file can be edited in a regular text editor (such as Notepad) in UTF-16 format. The template must not exceed 130 characters in length.

A special program is also provided for editing the template file smscfg.exe, which can be downloaded from the manufacturer's website at: <https://atrel.ru/knx-sms-interface-2050-1/>

If you need to clear the Device's memory, use the "clear file" button in the program smscfg.exe, after cleaning, insert the microSD card into the Device.

Sample SMS file.INI in [Appendix 1](#)

The entire content of the SMS. INI file is divided into blocks-sections: [TEL x], [BALANCE], [POWERUP], [POWERDOWN], [UNKNOWN COMMAND], [CONFIRM COMMAND], [MESSAGE Mxx], [COMMAND Cxx], [WEEKTIMER Txx]

1.6.1. [TEL x]

Sections describing the recipient's/sender's phone numbers. The "x" value is the ID of the phone number (from 1 to 20) that can be referenced in the TELIDS parameters of the [MESSAGE Mxx], [COMMAND Mxx] sections. The only parameter in the section is NUMBER with a value equal to the phone number in international format. Up to 20 phone numbers can be defined. **Attention! Sections must be defined in the file before other types of sections.**

Example:
[TEL 1]
NUMBER=+79001234567

1.6.2. [BALANCE]

Section that describes the parameters for requesting a personal account balance and analyzing possible operator responses. Possible parameters:

NUMBER-parameter used only for requesting a balance via SMS. It specifies the phone number to send the request to

SEND-balance request command, also used in request mode using the USSD command (required) and in the request mode via SMS (may be omitted)

ANSWER-Template for the operator's response that contains the balance. The place that contains the numeric value of the balance should be marked with the label "#v". An insignificant (variable) ending of an incoming message can be indicated by the "*" symbol in the template.

DEBTANSWER – Used when the operator uses a separate type of response message when the personal account balance is negative. The place that contains the numeric value of the balance should be marked with the label "#v". An insignificant (variable) ending of an incoming message can be indicated by the "*" symbol in the template.

Example:

```
[BALANCE]
NUMBER=111
SEND=11
ANSWER=Balance: #v p*
DEBTANSWER=Minus: #v p*
```

1.6.3. [LOW BALANCE]

Section that describes what will be sent and to whom if the personal account balance received from the operator is lower than the Minimum account Balance set in the parameter "[Minimum Account Balance](#)".

Parameters:

- PATTERN-A string containing the message text. It can contain a label for the #v parameter, where the device will insert the value of the personal account balance.
- TELIDS - A list of phone IDs to whom this message should be sent.

Example:

```
[LOW BALANCE]
PATTERN= Insufficient funds on the account: #v.
```


TELIDS=1,2,4

1.6.4. [POWERUP]

A section that describes what will be sent to and to whom when the device is powered up (after the Device enters operating mode and is connected from the cellular network).

Parameters:

- PATTERN - String containing the message text.
- TELIDS - A list of phone IDs to whom this message should be sent.

Example:

```
[POWERUP]
PATTERN=SMS interface is active
TELIDS=1
```

1.6.5. [POWERDOWN]

Section that describes what will be sent to whom when the device is disconnected from the KNX bus (power failure).

Parameters:

- PATTERN - String containing the message text.
- TELIDS - A list of phone IDs to whom this message should be sent.

Example:

```
[POWERDOWN]
PATTERN=Power to the SMS interface is lost
TELIDS=1,2,4
```

1.6.6. [UNKNOWN COMMAND]

A section containing the text of a message that will be sent in response to a message that does not fit any of the templates known to the Device or the sender was not specified in the list of acceptable templates (TELIDS of the corresponding section [COMMAND Cxx]).

Parameters:

- PATTERN-String containing the message text

Example:

```
[UNKNOWN COMMAND]
PATTERN=The command was not recognized or accepted by the phone number
```

1.6.7. [CONFIRM COMMAND]

A section containing the text of the message that will be sent as confirmation of receiving the command. It can contain a single inclusion of the #v parameter label, which the Device replaces with the number of the executed command.

Parameters:

- PATTERN-String containing the message text

Example:

```
[CONFIRM COMMAND]
PATTERN=Command N #v accepted
```

1.6.8. [MESSAGE Mxx]

A section that describes what will be sent to and to whom when initiated by the corresponding telegram (and additional conditions are met). See "[Configuring Messages](#)"

Parameters:

- PATTERN-A string containing the message text. It can contain a single inclusion of the #v character combination, indicating to the Device the position where the numeric value of the object that initiated sending the SMS will be inserted.
- TELIDS - A list of phone IDs to whom this message should be sent.

Example:

```
[MESSAGE M01]
PATTERN=Underfloor heating supply temperature dropped below normal #v °C
TELIDS=1
```

1.6.9. [COMMAND Cxx]

A section that contains a template for the command that the Device can recognize and a list of senders that the command can be received from.

Parameters:

- PATTERN-A string containing the command text. It can contain a single inclusion of the #v label, which indicates to the Device the position from which a numeric value can be taken from the received SMS message.
- TELIDS - A list of phone IDs from which this command can be received.

Example:

```
[COMMAND C01]
PATTERN=Close the gate
TELIDS=1,2
```

1.6.10. [WEEKTIMER Txx]

Section that describes the time and day of the week when the weekly timer "Txx" is triggered, provided that its settings in the "[Time value Source](#)" parameter indicate that the data will be taken from the SD card.

Parameters:

- TIME-string in the format "HH:MM:SS", indicating the timer response time
- DAYS-string-a list of days of the week for which the timer needs to be triggered, (1-Monday... 7-Sunday". Values can be separated by commas.

Example:

```
[WEEKTIMER T01]
TIME=23:00:15
DAYS=1234567
```

The file can contain comment lines that must start with the ";" character. No longer than 200 characters per line.

2.Setup

2.1. Parameters. General

Objects are always available:

- GSM network error
- SIM Card error
- Error in one of the system SMS templates
- Resetting the radio module

For more information, see the description of [message objects](#).

| General | |
|-------------------|---|
| Bus power monitor | Enable keep alive notification <input checked="" type="checkbox"/> |
| + Message M01: | Period <input type="text" value="10"/> sec |
| + Control C01: | Number of message channels <input type="text" value="1"/> |
| + Week timer T01: | TTL for messages <input type="text" value="1"/> hrs |
| | Number of command channels <input type="text" value="1"/> |
| | Response at unknown command <input checked="" type="checkbox"/> |
| | Number of week timers <input type="text" value="1"/> |
| | Check account balance <input type="checkbox"/> |
| | System clock mode <input checked="" type="radio"/> Master <input type="radio"/> Slave |
| | Sending period <input type="text" value="Never"/> |
| | Check GSM signal level <input checked="" type="checkbox"/> |
| | Send on change <input checked="" type="checkbox"/> |
| | Sending period <input type="text" value="10 seconds"/> |

"Enable keep alive notification", "Period"

Acceptable values are {10...600} seconds.

The "Available" object passes "1" with the specified period.

"Number of message channels"

Acceptable values: {0...50}.

Determines the number of outgoing messages (SMS). The selected number of channels is available for configuration in the left tab, indicated by "Message Mxx", xx is the sequence number.

"TTL for messages "

Acceptable values: {1...48} hour

Retention period of the outgoing message. The reasons why messages may be waiting to be sent are temporary lack of communication or power. If the power is turned off, the device will attempt to send a

queue, if any. Everything that fails to be sent will be stored in non-volatile memory and sent on subsequent activation, provided that the relevance parameter for each of the saved messages is met. The maximum queue size is 30 messages.

"Number of command channels"

Acceptable values: {0...20}.

Determines the number of incoming control commands (SMS messages). The selected number of channels "Team With xx" is available for configuration.

"Response at unknown command "

Acceptable values: {Off/On}

If you receive an SMS with an unrecognized (missing in the templates) command or a recognized one but sent from a phone number that is not linked to this command, the Device returns the text from the [UNKNOWN COMMAND] template to the sender. The message will only be sent if the phone number is registered in one of the [TEL x] sections.

"Number of week timers"

Acceptable values: {0...10}

Activated only if you select "Get time from cellular network."

Defines the number of weekly timers processed by the Device. The selected number of channels "Timer T xx" is available for setting. Receiving the exact time signal via the GSM channel is activated.

"Check account balance"

Acceptable values: {Off/On}

Enabling device functions when requesting a balance from the provider. Opens the ETS "Account Balance" tab for configuration. See Section 2.2.1 Working with Personal Account balance.

"System clock mode"

Acceptable values: {Master/Slave}

Connecting objects:

- Current time and day of the week (3 bytes of DPT_Time [10.001])
- Current date (3 bytes DPT_Date [11.001])
- Current date and time (8 bytes DPT_DateTime [19.001])

When set to "Master": the device starts the real-time clock and regularly synchronizes it with the cellular network time. The time is passed to the corresponding time objects and used in [week timers](#).

With the value "Slave": the device starts a real-time clock, which must be initialized by writing time and date values to the corresponding objects.

"Sending period"

This setting is only available if the "[Clock Mode](#)" parameter is set to "Master".

Acceptable values: {"Never", "1 minute", "10 minutes", "30 minutes", "1 hour", "3 hours", "6 hours", "24 hours"}

The period when the time and/or date are automatically sent to the bus.

"Check GSM signal level"

Acceptable values: {Off/On}

The following map items are connected:

- GSM signal strength, % (DPT_Scale [5.001])
- Request for GSM Signal Strength (DPT_Trigger [1.017])

When this option is disabled, the Device periodically checks the GSM signal strength (see "Sending period") or on request and sends it to the bus. This function is designed for optimal positioning of the antenna during installation.

"Send on change"

Acceptable values: {Off/On}

For each new value of the measured signal strength, the value will be sent to the bus regardless of the value of the "Sending period" parameter.

"Sending period"

Acceptable values: {Never, 10 seconds, 30 seconds, 1 minute, 10 minutes, 30 minutes}

The period when the measured signal level is automatically sent to the bus.

2.2. Parameters. Account balance

Connecting objects:

- Balance (2 bytes, DPT 8.000). Optionally, see "[Method of sending the account balance](#)".
- Balance (4 bytes, DPT 13.000). Optionally, see "[Method of sending the account balance](#)".
- Balance request (1 bit, DPT 1.017)
- Balance request error (1 bit, DPT 1.005)
- Insufficient balance warning (1 bit, DPT 1.005)

| | | |
|--------------------|---|---|
| General | i Patterns in BALANCE section | |
| Bus power monitor | Balance check period | <input type="text" value="1"/> days |
| Account balance | Method of sending the account balance | <input type="text" value="2 bytes, only whole part"/> |
| + Message M01: | Minimum account balance | <input type="text" value="50"/> |
| + Control C01: | Enable SMS about low balance | <input checked="" type="checkbox"/> |
| + Week timer T01 : | i Pattern in LOW BALANCE section | |

The exchange parameters with the provider are described in the [BALANCE](#) section of the SMS.INI configuration file. 2 types of requests are supported:

- via SMS
 - Section parameters in this case:
 - NUMBER - the phone number to send SMS to.
 - SEND - the balance request command.
 - ANSWER - template for the operator's response with the balance value
 - DEBTANSWER-template for the operator's response with the balance value if the response format for negative balances differs from positive ones.
- using the USSD command. For USSD to work properly, it is necessary that the operator supports 2G network operation (For example, Tele 2 operator does not have 2G coverage in Moscow and the Moscow region, and therefore the balance cannot be obtained by the device using the USSD command)

Section parameters in this case:

- SEND - the balance request command. Starts with * or #. Ends with #.
- ANSWER - template for the operator's response with the balance value
- DEBTANSWER-template for the operator's response with the balance value if the response format for negative balances differs from positive ones.

"Balance check period"

Acceptable values: {1...30} days

The frequency with which the device will ask the operator for the current value of the personal account balance.

"Minimum account balance"

Acceptable values: {0...65535}

If the Device receives an account balance less than the specified value from the operator, a "Balance Failure Warning" will be sent to the bus, the radio module status indicator (8) will light up with short single shutdowns, and if the ["Enable SMS about low balance"](#) is enabled, SMS messages will be sent to all recipients subscribed to it.

"Method of sending the account balance"

Acceptable values: {"Do not send", "2 bytes, whole part only", "4 bytes, value multiplied by 100"}

"Enable SMS about low balance"

Acceptable values: {Off/On}

If you receive a balance value from the operator that is less than set in the "[Minimum Account Balance](#)" parameter, an SMS will be sent with the text and the list of recipients specified in the [\[LOW BALANCE\]](#) section of the SMS.INI file.

2.3. Parameters. Power monitoring

Settings section that describes the device's behavior when connecting / disconnecting the KNX bus (power supply/loss).

| | |
|--------------------|--|
| General | SMS about KNX power up <input checked="" type="checkbox"/> |
| Bus power monitor | <i>i</i> Pattern in POWERUP section |
| Account balance | SMS about KNX power down <input checked="" type="checkbox"/> |
| + Message M01: | <i>i</i> Pattern in POWERDOWN section |
| + Control C01: | |
| + Week timer T01 : | |

"SMS about KNX power up"

If the option is selected and the corresponding template is available (see [\[POWERUP\]](#) in the SMS file.INI) After connecting to the KNX bus and entering operating mode (it may take up to 20 minutes), the device sends a text message specified in the template to the list of recipients from the template (the TELIDS parameter).

"SMS about KNX power down"

If the option is selected and the corresponding template is available (see the [\[POWERDOWN\]](#) section in the SMS file.INI) When the KNX bus is disconnected (de-energized), the device sends a text message specified in the template to the list of recipients from the template (TELIDS parameter).

2.3. Parameters. Configuring messages

The settings sections (M01...M50) describe the operation of the device with each type of information message (outgoing SMS)

[Objects](#) are always available for each message:

- "Accepted" (1 bit, DPT_Ack, Out). Sending "1" if all the filters defined below, the presence of the template and recipients of the message are met. Otherwise, as well as in case of early cancellation of sending due to a new telegram that does not meet the filters, "0" is sent within the time specified in the ["Latency time"](#).

- "Sending error" (1 bit, DPT_Alert, Out). Sending "1" if there is no template for the message. Possible reasons: lack of communication at the time of initiation, sim card, insufficient personal account balance.
- "Lock" (1 bit, DPT_Enable, In). Login to block sending SMS via this channel. "0" will be passed to the "Accepted" communication object every time the channel is initiated.

| | | |
|---------------------|--|---|
| General | Name | T Hall |
| Bus power monitor | Value type | Temperature, °C |
| Account balance | Locking function | <input checked="" type="checkbox"/> |
| Message M01: T Hall | Invert value | <input checked="" type="checkbox"/> |
| | Startup value | Unlocked |
| | Execution control objects | <input checked="" type="checkbox"/> |
| Settings | | |
| + Control C01: | Sending conditions | |
| + Week timer T01 : | Latency time | 1 sec |
| | Filter by Δ with the last value | <input type="radio"/> Pass all values (with repetitions) <input checked="" type="radio"/> Pass values that differ by ... |
| | Δ values from | 1 °C |
| | Pass condition | Less |
| | Value | 10 °C |
| | Minimum sending interval | 1 minute |
| | One-time sending by event | <input checked="" type="checkbox"/> |
| | Event source | <input checked="" type="radio"/> Message <input type="radio"/> Command |
| | Activating message | M01 |
| | Value to send | <input checked="" type="radio"/> First after event <input type="radio"/> Last before event |

"Name"

Acceptable values: any string of up to 30 characters

Symbolic name of the channel in ETS for easy configuration of channels and communication objects.

"Value type"

Acceptable values: {"Switching", "Scenario", " Percentage %", "Temperature, °C", " Relative Humidity, %", "1 byte unsigned", "2 bytes unsigned"}

Depending on the "Value type" option, you can configure the response to incoming telegrams of a certain type. The value received from an incoming telegram can be sent in the body of the outgoing SMS text. To do this, use the #v tag in the template. For more information about creating templates, see [1.6. Loading Templates](#)

"Locking function"

Acceptable values: {Off/On}

Enabling the block message sending function.

"Invert value"

Acceptable values: {Off/On}

With the value "On": sending a message is blocked by the value "0" of the object "Blocked", otherwise with the value "1".

"Initial value"

Acceptable values: {"Enabled", "Disabled", "Last value"}

The value of the "Locked" object set by the device at the time of switching on. The "last value" is the state stored in non-volatile memory when the device is disconnected from the bus.

"Latency time "

Acceptable values: {0...600} seconds

Time required to stabilize the condition. Re-arrival of the telegram will either restart the delay countdown if the filtering conditions are met, or otherwise cancel sending the message.

"Filter by Δ with the last value"

Acceptable values: {"Pass all values (with repetitions)", "Pass only new values" (for the "Switch" and "Script" types), " Pass values that differ by..." (for other types)}.

Filtering consecutive messages by value difference (hysteresis).

- when "Pass all values (with repetitions)" - inactive, all messages pass.
- when "Transmit only new values" - only messages initiated by telegrams with a value different from the previous one is skipped.
- when "Transmit values that differ by..." - only messages initiated by telegrams with a value that differs from the previous one by the value set by the parameter " Δ values from" are skipped.

" Δ values from"

Acceptable values: corresponds to the selected parameter type.

Difference value, which is a condition for sending the message.

"Sending condition"

Acceptable values: {"Any", "Greater than", "Greater than or Equal to", "Less than", "Less than or Equal to"}

Sets a condition for filtering by the value (below) of the incoming telegram.

"Value"

Acceptable values: corresponds to the selected parameter type.

"Minimum sending interval"

Acceptable values: {"1 minute", "5 minutes", "10 minutes", "30 minutes", "1 hour", "3 hours", "6 hours", "12 hours", "24 hours"}

This parameter specifies the minimum interval between sending messages of the same type. Telegrams that initiate activity earlier than the specified time limit will be ignored.

"One-time event dispatch"

Acceptable values: {Off/On}

When you select "On", a special filtering mode is enabled, in addition to all other options, which uses a dependency on sending another message or receiving a command. The ID of another message or command is selected in the additional parameter "[Activating message](#)" (see below). Sending/receiving it will trigger a one-time activation of this message. For example, this way you can set up a one-time message about canceling an event that was previously sent to another message.

"Event Source"

Acceptable values {"Message", "Command"}

Choose whether to send another message or receive a command as an event.

"Activating message"

Acceptable values: {"M01" ... "M50"}

ID of the message that will trigger the activation of sending this message.

"Activating command"

Acceptable values: {"C01" ... "C20"}

ID of the command that will trigger the activation of sending this message.

"Value to send"

Acceptable values: {"First after the event", "Last before the event"}

- "First after event" - SMS will be sent both after activation and after the next value arrives in the corresponding message object, its value (if the #v parameter label is present in the template) will be inserted into the SMS text.
- "Last before event" - SMS will be sent immediately after activation with the value that was received in the corresponding message object. It is convenient to use the functionality in conjunction with commands – to request any parameter of the Smart Home.

2.4. Parameters. Configuring commands

Settings sections (C01...C20), describing how the device works with each of a set of specific types of commands (incoming SMS).

For each command (C01...C20) in the SMS.INI file, the corresponding template must be defined in the form of sections [COMMAND C01] ... [COMMAND C20].

The section should contain the parameter "PATTERN=..." containing the message text with the possible location of the incoming parameter indicated by the label #v and the parameter "TELIDS=...": a comma-separated list of ID phone numbers that are allowed to initiate this command. For more information about creating templates, see [1.6. Loading Templates](#)

| | | |
|------------------------|----------------------------|---|
| General | Name | All Off |
| Bus power monitor | Type of incoming parameter | None |
| Account balance | Constant type | Switch |
| - Control C01: All Off | Value | <input checked="" type="radio"/> Off <input type="radio"/> On |
| Settings | Locking function | <input checked="" type="checkbox"/> |
| | Invert value | <input type="checkbox"/> |
| | Startup value | Unlocked |
| | Confirm reception | <input checked="" type="checkbox"/> |

"Name"

Acceptable values: Any string of up to 30 characters

Symbolic name of the channel in ETS for easy configuration.

Acceptable values

"Type of incoming parameter"

Acceptable values: {"None", "Switch", "Scene", " Scale %", "Temperature, °C", " Relative Humidity, %", "1 byte unsigned", "2 bytes unsigned"}

If the value "No" is selected, the type and value of the telegram sent by the device when this command is received is determined by the "Constant type" parameter (see below). In all other cases, the outgoing object type will be selected based on the value of the parameter and. It is assumed that the template contains the parameter label #v, where the value will be calculated from the incoming message to be sent in the telegram. If there are no special characters in the template, 0 will be sent.

"Constant type"

Acceptable values: {"Switch", "Scene", "Scale %", "Temperature, °C", "Relative Humidity, %", "1 byte unsigned", "2 bytes unsigned"}

Used only if the input parameter type is missing (the value is "None"). Defines the type of object and value that the Device transmits when the command is received successfully.

"Value"

Acceptable values: Depending on the type of constant defined above:

- {Off/On} for "Switch"
- {1...64} for "Scene"
- {0...100} for "Scale %"
- {-100...100} for "Temperature, °C"
- {0...100} for "Relative humidity, %"
- {0...255} for "1 byte unsigned"
- {0...65535} for "2 bytes unsigned"

"Locking function"

Acceptable values: {Off/On}

Enabling the command execution blocking function.

"Invert value"

Acceptable values: {Off/On}

When set to "On": command execution is blocked by the value 0 of the "Locked" object.

"Initial value"

Acceptable values: {"Unlocked", "Locked", "Last value"}

The value of the "Locked" object set by the device at the time of switching on. The "Last value" is the state stored in non-volatile memory when the device is disconnected from the bus.

"Confirm reception"

Acceptable values: {Off/On}

When set to "On", if the command is successfully received and executed, a confirmation SMS is sent to the sender with the text from the [CONFIRM COMMAND] template. The text can contain one parameter, indicated by the #v label, where the Device will substitute the number of the received and executed command. For example: *Command No #v accepted.*

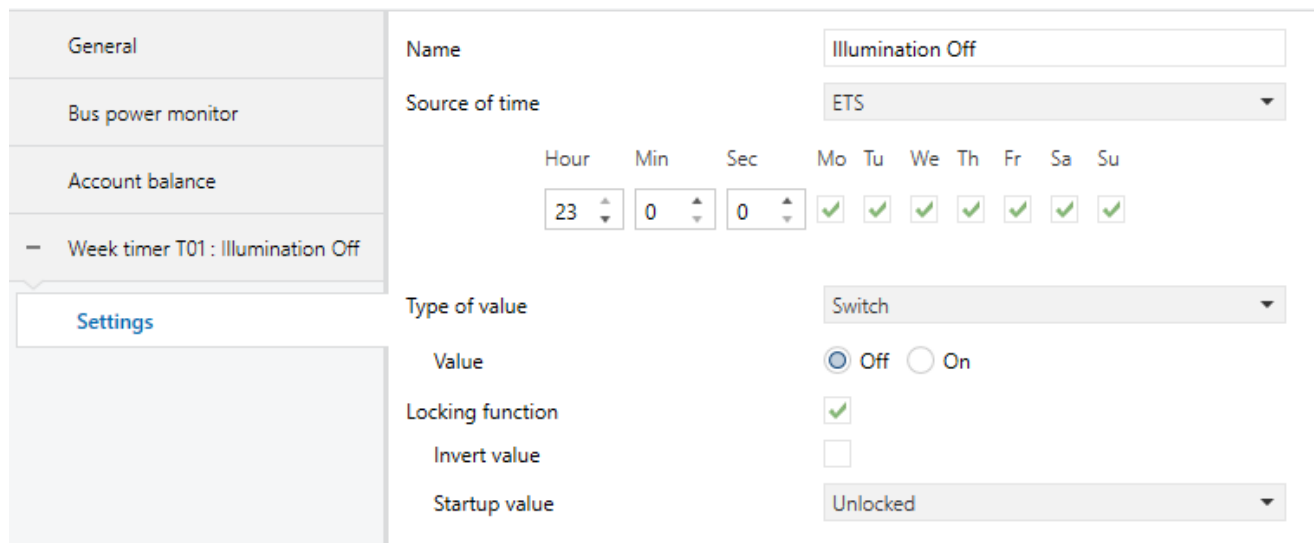
2.5. Parameters. Setting up week timers

Settings sections (T 01...T 10), describing how the device works with each of the week timers.

For each timer for which "SD card" is selected in the "Time Value Source" parameter, the corresponding template must be defined in the SMS.INI file in the form of sections [TIMER T 01] ... [TIMER T 10]. The section should contain the following parameters:

1. "TIME=..." - timer response time
2. "DAYS=..." - a comma-separated list of days of the week (1 – Monday) when the timer is triggered.

For more information about creating and editing templates, see [1.6. Creating and loading templates](#)



The screenshot shows a configuration window for a week timer. On the left is a sidebar with a 'Settings' tab selected. The main area contains the following fields:

- Name:** Illumination Off
- Source of time:** ETS
- Time:** Hour: 23, Min: 0, Sec: 0
- Days of the week:** Mo, Tu, We, Th, Fr, Sa, Su (all checked)
- Type of value:** Switch
- Value:** Off (selected), On
- Locking function:**
- Invert value:**
- Startup value:** Unlocked

"Name"

Acceptable values: Any string of up to 30 characters

Symbolic name of the channel in ETS for easy configuration. It is displayed in the Channel settings and communication objects tabs on the left.

"Source of time"

Acceptable values: {ETS/Bus/SD Card}

Source of the time and day of the week values that the Device uses to activate the channel event.

- "ETS": Values are configured directly in ETS and cannot be changed by the user in the corresponding fields below.
- "Bus": values must be pre-programmed using appropriate telegrams initiated, for example, from the user's control panel. Values saved in non-volatile memory in case of a reboot.
- "SD card": Values are read from the corresponding section of the SMS.INI SD card. Can be changed by the end user by editing the file.

"Type of value"

Acceptable values: {"Switch", "Scene", "Scale %", "Temperature, °C", "Relative Humidity, %", "1 byte unsigned", "2 bytes unsigned"}

Defines the object type and values transmitted by the Device when the timer is activated.

"Value"

Acceptable values: Depending on the value type defined above:

- {Off/On} for "Switch"
- {1...64} for "Scene"
- {0...100} for "Scale %"
- {-100...100} for "Temperature, °C"
- {0...100} for "Relative humidity, %"
- {0...255} for "1 byte unsigned"
- {0...65535} for "2 bytes unsigned"

"Locking function"

Acceptable values: {Off/On}

Enabling the timer lock function.

"Invert value"

Acceptable values: {Off/On}

When set to "On": The timer is blocked by the value 0 of the «Locked» object.

"Initial value"

Acceptable values: {"Unlocked", "Locked", "Last value"}

The value of the "Locked" object set by the device at the time of switching on. The "Last value" is the state stored in non-volatile memory when the device is disconnected from the bus.

3. Communication objects

3.1. General

| ID | Name | I/O | Type | Flags |
|---|---|-----|---------------|---------|
| Condition | | | | |
| Description | | | | |
| 1 | Alive | O | DPT_Trigger | CT |
| When activating the "Enable Availability alerts" option Sending "1" with the period specified during configuration | | | | |
| 2 | Current time and weekday | IO | DPT_TimeOfDay | CRT/CWU |
| Always Time and day of the week of the device's internal clock, setting or transmitting | | | | |
| 3 | Current date | IO | DPT_Date | CRT/CWU |
| Always Date of the device's internal clock, installation, or transmission | | | | |
| 4 | Balance, 2 bytes, whole part only | O | DPT 8.000 | CT |
| When enabled "Check account balance", «Method for sending the account balance» = «2 bytes, whole part only» Sending an entire part of the personal account balance if it is successfully received from the operator. | | | | |
| 5 | Balance, 4 bytes, value multiplied by 100 | O | DPT 13.000 | CT |
| When enabled "Check account balance", «Method for sending the account balance» = «4 bytes multiplied by 100» Sending the personal account balance multiplied by 100 if it is successfully received from the operator. | | | | |
| 6 | Request balance | I | DPT_Trigger | CW |
| When enabled "Check account balance" The "1" entry initiates the device's request for balance from the operator and, after its response, a response to it. (ID=4,5,7,8) | | | | |
| 7 | Low balance alert | O | DPT_Alarm | CRT |
| When enabled "Check account balance" Sending "1" if the personal account balance value is lower than in the setting "Minimum account balance" | | | | |
| 8 | Balance request error | O | DPT_Alarm | RCT |
| When enabled "Check account balance" Sending "1" if the operator does not receive a response about the personal account balance in the format defined by the balance response templates. | | | | |
| 9 | GSM signal level, % | O | DPT_Scaling | CRT |
| When enabled "Check GSM signal level" Sending the current level value GSM of the signal in %. Allows you to position the antenna correctly. | | | | |
| 10 | GSM malfunction | O | DPT_Alarm | CRT |
| Always Sending "1" if you can't connect to the GSM networks | | | | |
| 11 | SIM card error | O | DPT_Alarm | CRT |
| Всегда Sending "1" in case of absence SIM cards in the slot, "0" during subsequent installation. | | | | |
| 12 | Error of one of the message SMS templates | O | DPT_Alarm | CRT |
| When enabled Sending "1" if one of the message templates is missing M01-M50 or an empty list of recipient numbers SMS in one of them. It may occur when starting or loading templates from MicroSD maps, as well as at the time of initiating any message. It is accompanied by a special type of indication (see Appendix 3). Sending "0" - after loading the corresponding settings in ETS data source c MicroSD maps. | | | | |
| 13 | Error of one of the system SMS templates | O | DPT_Alarm | CRT |
| Always Sending "1" if one of the system templates is missing SMS messages or an empty list of recipient numbers SMS in one of them. It may occur when starting or loading templates from MicroSD maps, as well as at the time of initiating any message. It is accompanied by a special type of indication (see Appendix 3). Sending "0" - after loading the corresponding settings in ETS data source c MicroSD maps. | | | | |
| 14 | Request GSM signal level | I | DPT_Trigger | CW |
| When enabled "Check GSM signal level" The "1" entry initiates a level transfer by the device GSM Add a signal to the "GSM signal strength, %" object | | | | |
| 15 | Request date and time | I | DPT_Trigger | CW |
| Always The "1" entry initiates the device to transmit the time and date level to the "Current Time and Day of the Week", "Current Date", and "Current Date and Time" objects | | | | |
| 16 | Reset radio module | I | DPT_Reset | CW |
| Always Forced restart of the radio module. Power off and on. It is intended for special emergencies. | | | | |
| 728 | Current date and time | IO | DPT_DateTime | CRT/CWU |
| Always Time and date of the device's internal clock, installation, or transmission | | | | |

3.2. Messages

(For message number N)

| ID | Name | I/O | Type | Flags |
|---|------------------------------|-----|--------------------|-------|
| Condition | | | | |
| Description | | | | |
| 9*N+17 | Message N. Switch | I | DPT_Switch | CW |
| Depending on the parameter value "Value type". When: "Switch" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+18 | Message N. Scene | I | DPT_Scenenumber | CW |
| Depending on the parameter value "Value type". When: "Scene" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+19 | Message N. Scale, % | I | DPT_Scaling | CW |
| Depending on the parameter value "Value type". When: "Scale, %" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+20 | Message N. Temperature, °C | I | DPT_Value_Temp | CW |
| Depending on the parameter value "Value type". When: "Temperature, °C" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+21 | Message N. Humidity, % | I | DPT_Value_Humidity | CW |
| Depending on the parameter value "Value type". When: "Humidity, %" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+22 | Message N. 1 byte unsigned | I | DPT_Value_1_Ucount | CW |
| Depending on the parameter value "Value type". When: "1 unsigned byte" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+23 | Message N. 2 bytes unsigned | I | DPT_Value_2_Ucount | CW |
| Depending on the parameter value "Value type". When: "2 unsigned bytes" | | | | |
| Initiating a submission SMS messages with the telegram value inserted in the appropriate place in the template (when defining this place with symbols). #v) | | | | |
| 9*N+24 | Message N. Lock | I | DPT_Enable | CWU |
| Always | | | | |
| Blocking the initiation of sending messages by telegrams coming from the bus. With the value "1" in the case of the parameter value "Invert value" is equal to "Off", with the value "0" otherwise | | | | |
| 9*N+25 | Message N. Accepted | O | DPT_Ack | CRT |
| Always | | | | |
| Sending "1" if all the specified conditions are met, if there is no lock, and if the template for this message is present in the device memory. Sending "0" otherwise. | | | | |
| 9*N+26 | Message N. Error sending SMS | O | DPT_Alarm | CRT |
| Always | | | | |
| Sending a "1" for each sending error SMS. Possible reasons: lack of communication at the time of initiation, SIM card, insufficient personal account balance. One-time sending "0" - resets after successful sending. | | | | |

3.3. Commands

(For the command number N)

| ID | Name | I/O | Type | Flags |
|--|-----------------------------|-----|--------------------|-------|
| Condition | | | | |
| Description | | | | |
| 8*N+518 | Control N. Switch | I | DPT_Switch | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "Switch" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+519 | Control N. Scene | I | DPT_Scenenumber | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "Scene" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+520 | Control N. Scale, % | I | DPT_Scaling | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "Scale, %" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+521 | Control N. Temperature, °C | I | DPT_Value_Temp | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "Temperature, °C" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+522 | Control N. Humidity, % | I | DPT_Value_Humidity | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "Humidity, %" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+523 | Control N. 1 unsigned byte | I | DPT_Value_1_Ucount | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "1 byte unsigned" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+524 | Control N. 2 unsigned bytes | I | DPT_Value_2_Ucount | CRT |
| Depending on the parameter value "Type of incoming parameter" or a parameter "Constant type" . Value: "2 bytes unsigned" | | | | |
| Sending a telegram with the value received in SMS message or value in the parameter "Value" | | | | |
| 8*N+525 | Control N. Locking | I | DPT_Enable | CWU |
| Always | | | | |
| Blocking command reception and execution SMS with a message. With the value "1" in the case of the parameter value "Invert value" ="Off", set to "0" otherwise | | | | |

3.4. Weekly timers

(For timer number N)

| ID | Name | I/O | Type | Flags |
|--|--|-----|--------------------|-------|
| Condition | | | | |
| Description | | | | |
| 10*N+678 | Week Timer N. Switch | I | DPT_Switch | CRT |
| Depending on the parameter value "Type of value". Value: "Switch" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+679 | Week Timer N. Scene | I | DPT_SceneNumber | CRT |
| Depending on the parameter value "Type of value". Value: "Scene" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+680 | Week Timer N. Scale, % | I | DPT_Scaling | CRT |
| Depending on the parameter value "Type of value". Value: "Scale, %" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+681 | Week Timer N. Temperature, °C | I | DPT_Value_Temp | CRT |
| Depending on the parameter value "Type of value". Value: "Temperature, °C" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+682 | Week Timer N. Humidity, % | I | DPT_Value_Humidity | CRT |
| Depending on the parameter value "Type of value". Value "Relative humidity, %" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+683 | Week Timer N. 1 unsigned byte | I | DPT_Value_1_Ucount | CRT |
| Depending on the parameter value "Type of value". Value: "1 byte unsigned" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+684 | Week Timer N. 2 unsigned bytes | I | DPT_Value_2_Ucount | CRT |
| Depending on the parameter value "Type of value". Value: "2 bytes unsigned" | | | | |
| Sending a telegram with the value defined in the parameter "Value" | | | | |
| 10*N+685 | Week Timer N. Time | I | DPT_Time | CWU |
| When the parameter value is "Source of time" is "BUS" | | | | |
| Time when the timer is triggered. You also need the "Days of the Week" value (see below). | | | | |
| 10*N+626 | Week Timer N. Weekdays (0 bit - Mo ... 6 bit - Su) | I | DPT 5.000 | CWU |
| When the parameter value is "Source of time" is "BUS" | | | | |
| Bits indicating the days of the week when the timer is triggered. The Time value is also required (see above). | | | | |
| 10*N+627 | Week Timer N. Lock | I | DPT_Enable | WCU |
| Always | | | | |
| Lock timer execution. With the value "1" in the case of the parameter value "Invert value"="Off", set to "0" otherwise | | | | |

4. Appendixes

4.1. Appendix 1. SMS.INI sample

```
; Configuration file for Atrrel SMS-K2050-1
;
; List of phone numbers to send or receive messages to. (Number - Number ID value from 1 to 255)

; Owner
[TEL 1]
NUMBER=+70000000000

; Spouse
[TEL 2]
NUMBER=+70000000001

; Engineer
[TEL 3]
NUMBER=+70000000002

; Templates for requesting and parsing the balance response.
; Requests starting with * or # are treated as USSD and do not require a phone number.
; USSD requests do not require a phone number (NUMBER=)
[BALANCE]
SEND=#100#
ANSWER=Balance:#vr
DEBTANSWER=Minus:#vr

; Template for notification of insufficient personal account balance
[LOW BALANCE]
PATTERN=Insufficient funds on the account: #
TELIDS=1

; Notification template for starting a device and connecting to a cellular network.
[POWERUP]
PATTERN=SMS interface active
TELIDS=1

; KNX Bus failure alert template
[POWERDOWN]
PATTERN=Power to the SMS interface is lost
TELIDS=1

; Message templates, up to 50 pieces (M01-M50)
[MESSAGE M01]
PATTERN=The gate's been open too long
TELIDS=1,2

[MESSAGE M02]
PATTERN=Supply unit failure
TELIDS=1

[MESSAGE M03]
PATTERN=Underfloor heating supply temperature dropped below normal #v°C
TELIDS=1
```

*[MESSAGE M04]
PATTERN=Leak
TELIDS=1*

*[MESSAGE M05]
PATTERN=Leak fixed
TELIDS=1*

*[MESSAGE M06]
PATTERN=The boiler supply voltage has disappeared
TELIDS=1,2*

*[MESSAGE M07]
PATTERN=Boiler supply voltage restored
TELIDS=1*

; Command templates, up to 20 pieces (C01-C20)

*[UNKNOWN COMMAND]
PATTERN=The command was not recognized or accepted by the phone number*

*[CONFIRM COMMAND]
PATTERN=Command N #v accepted*

*[COMMAND C01]
PATTERN=Close gate
TELIDS=1*

*; Weekly timers, up to 10 pieces (W01-W10)
; 1-Mon, 2-Tue, 3-Wed, 4-Thu, 5-Fri, 6-Sat, 7-Sun
; Turning off garlands.*

*[WEEKTIMER T01]
TIME=23:00
DAYS=1234567*

4.2. Appendix 2. Terms

| Term | Description |
|-----------------|---|
| Parameter label | String of two characters #v. Used for insertion to the body SMS values received from the telegram KNX or to indicate the place in the command text where the numeric value for transmission in the telegram will be taken from. |
| Telegram | Message in the KNX bus. |
| SMS | Short messages between the device and a mobile operator or other device, such as a phone |

4.3. Appendix 3. Indication

| Indicator | Display | Meaning |
|----------------|---|--|
| GSM power | Flashing with a period of 1 time per second | Preparing for work (Maximum 20 minutes) |
| | Permanent glow | The device is ready for use |
| MicroSD card | No glow | SD the card is not inserted and there is no data in the device's memory |
| | 1 short flash | The data is loaded, but one or more system templates are missing or incorrect. The device works without missing templates. |
| | 2 short flashes | The data is loaded, but one or more templates are available SMS for messages M01...M50 are missing or incorrect. Device works without missing templates. |
| | 3 short flashes | A common problem with templates as well SMS for messages and system templates SMS (see above). |
| | Flashing with a period of 1 time per second | <ul style="list-style-type: none"> microSD card is unreadable. On microSD card missing file SMS.INI No data in the Device memory |
| | Flashing with a period of 2 time per second | The process of shutting down the Device when the power is turned off. Attempt to send the remaining data SMS from the internal queue, saving the remainder to non-volatile memory. |
| | Permanent glow | Templates are loaded from the microSD card to the Device's memory. |
| GSM connection | No glow | Waiting for the Device to be ready for operation (see indicator GSM power). |
| | 1 short flash | SIM card is missing |
| | 2 short flashes | SIM card is faulty |
| | 3 short flashes | SIM card is protected PIN or PUK by code |
| | Flashing with a period of 1 time per second | The process of connecting to a cellular network |
| | Permanent glow | The device is connected to the cellular network and ready to work. |
| | 1 short flash | The device is connected to the cellular network and ready to work, but account balance is below the set threshold. |