CHORUS

GEWISS

KNX P-Comfort

GWA9916

Technical Manual

Contents

1 Introduction

The device acts as a power gauge with a load control function.
The load control function allows the activation/deactivation of electric loads connected to the actuators, to prevent the tripping of the electric counter if the contracted power is exceeded. By monitoring the instantaneous power, on the basis of the power threshold values, the system generates the gradual disconnection of the loads until the set threshold value is reached.
As well as the preventive release function, there is also a function enabling the connection of a group of loads if the generation system is producing enough energy. This function can be managed with the aid of an external gauge that transmits the produced power value via the KNX BUS.
The user can enable/disable the function, alter the load priority level and modify the loads shedding rule/reclosing rule for the loads connected.
The device monitors the instantaneous power and the possible disconnection of loads if the threshold is exceeded on the basis of specific disconnection/reconnection rules.

2 Application

The main functions implemented in the application program are:

- Measurement of active/reactive power and the relative direction (imported/exported)
- Primary and differential counters for active consumed and produced energy, with the possibility to define the initial value and to reset.
- Acquisition of instantaneous power values to determine the loads to be disconnected
- Management of the “nominal” consumption values of the loads when it is impossible to acquire the real data
- Setting of a threshold for load disconnection
- Activation/deactivation of the load control function
- Minimum value beyond the defined threshold, after which the device immediately checks there are no loads with programmed disconnection (hysteresis)
- Acoustic signal indicating the active power threshold has been exceeded and activating the load disconnection procedure
- Minimum time over the threshold before loads are disconnected (with acoustic signal activation)
- Management of the load disconnection rules:
  - from low to high priority
  - from most to least power-intensive (in terms of power absorption)
  - from least to most power-intensive (in terms of power absorption)
- Management of the load reconnection rules:
  - as for the loads shedding rule
  - with the opposite logic to the loads shedding rule
  - manual reconnection only (directly from the load controlled)
- Manual forcing priority
- Message on the display confirming that the loads have been disconnected

The device has a built-in meter for measuring the following electric values and sending them on the BUS: active energy consumed and produced, active/reactive/apparent power, RMS voltage, RMS current, power frequency and factor. Some of these values are also shown directly on the display.
Up to 5 absorption limit thresholds can be set and monitored; signals can be sent when the limit thresholds are exceeded and a count can be made for the time the measured power remains above the threshold or how often it exceeds the limit.

The new device can only be configured in “system mode” via ETS.
To make this manual easier to read, all the parameters and communication objects implemented by the device are grouped in different paragraphs, each of which represents the relative configuration menu in the ETS database.

2.1 Association limits

Maximum number of group addresses: 254
Maximum number of associations: 254

This means that up to 254 group addresses can be defined, and up to 254 associations can be made (between communication objects and group addresses).

3 *“Information”* menu

The **Information** menu reminds the user, in operating terms, how to access the PROG menu in order to activate the programming mode of the physical or individual address of the device, and how to return from this menu to the RUN menu (long press on the UP and DOWN push-buttons).

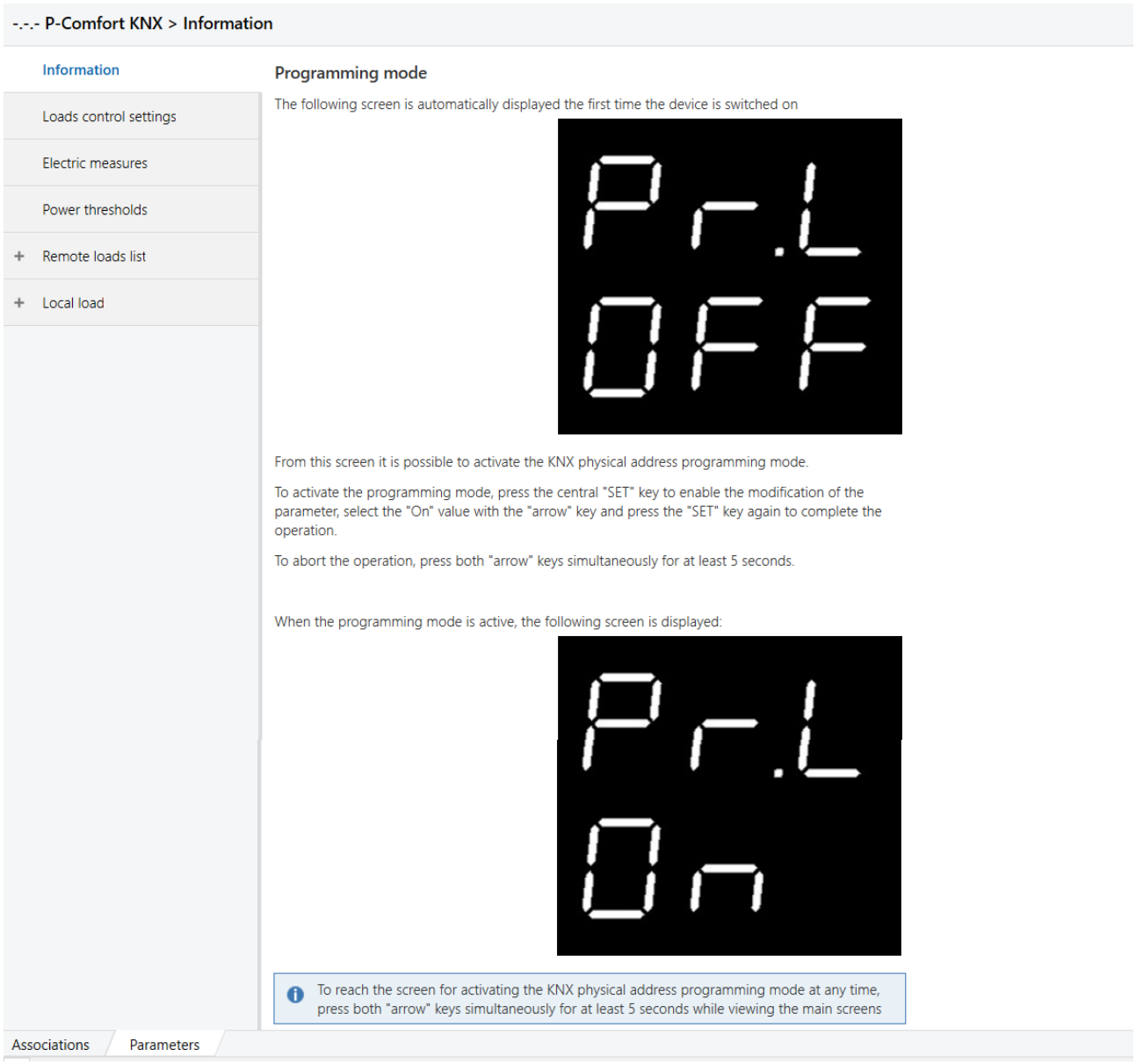


Fig. 3.1

☞ For more information, refer to paragraph 12.2 “Accessing the PROG status and firmware version” in the annex, along with the User Manual.

4 *“Loads control settings”* menu

The **Loads control settings** menu contains the parameters for configuring the load disconnection and reconnection rules, and the counters for exceeded thresholds and number of operations.
The basic structure of the menu is as follows:

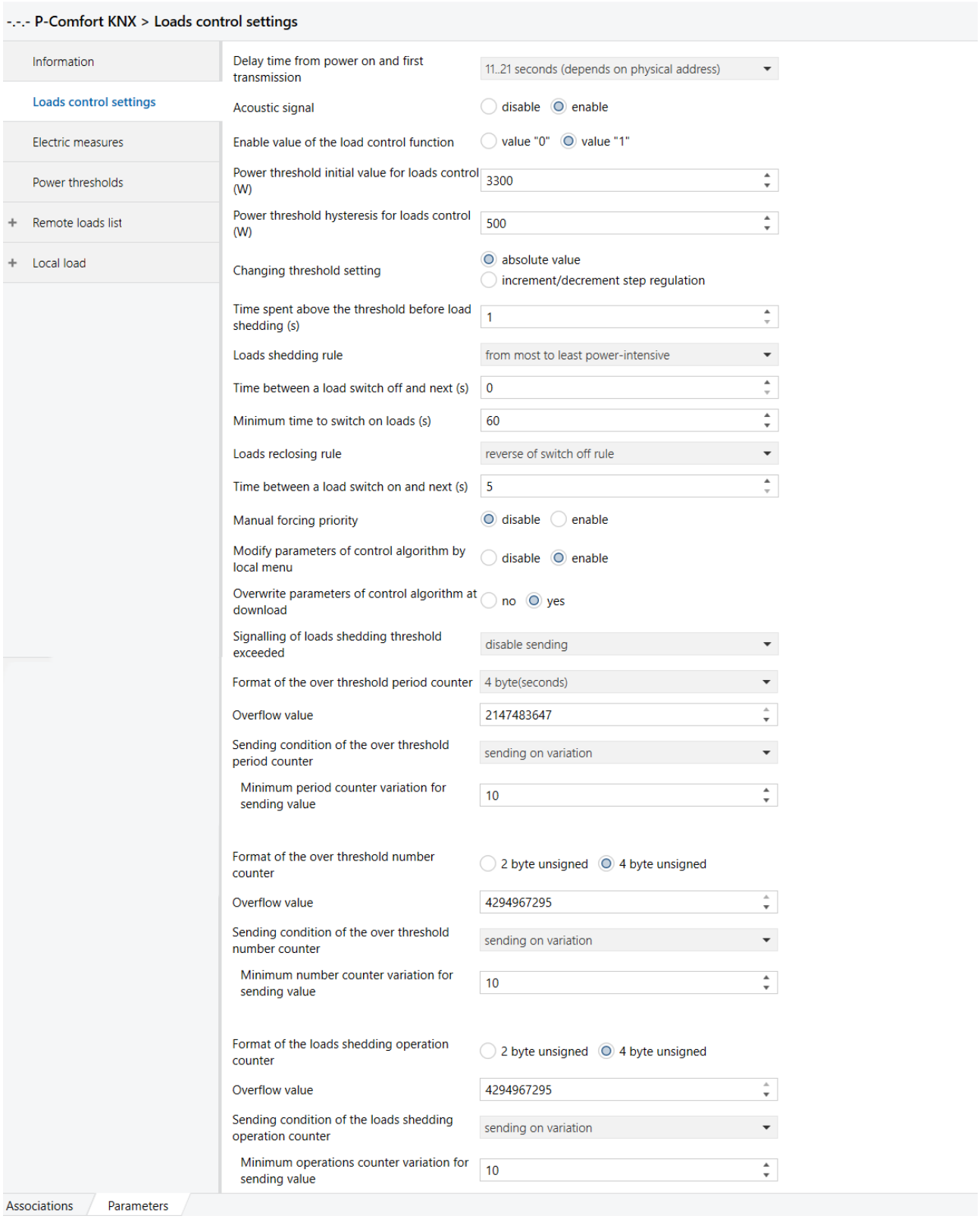


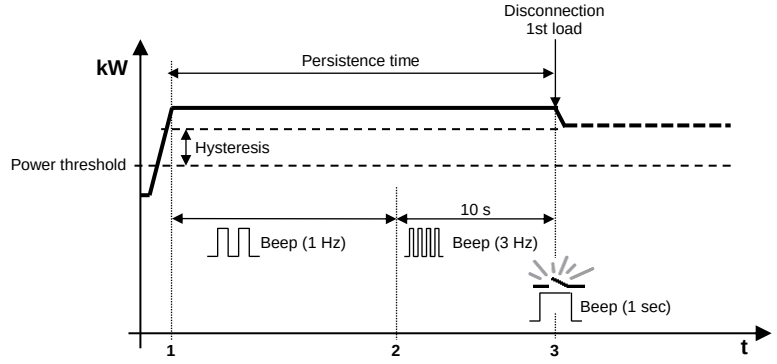
Fig. 4.1: “Loads control settings” menu

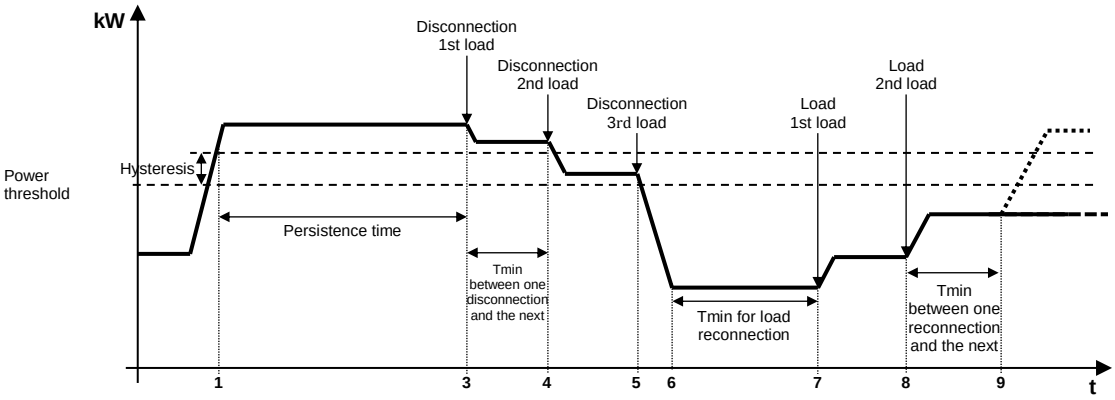
To help you to fully understand the meaning of the configuration parameters of the load control function, below you can see the algorithm used by the device to manage the function.

When the load control function is active, the device monitors the instantaneous active power measured. If the instantaneous power exceeds the "**threshold value** + **threshold hysteresis value**", the device activates the acoustic signal (if enabled) and begins the count of the **persistence time** above the threshold before starting to disconnect the loads. 10 seconds before the end of the count, the acoustic signal increases its frequency (3 Hz). If the power is still above the limit at the end of the count, the device deactivates the acoustic signal after making a long beep (1s), and then begins to disconnect the loads on the basis of the rule defined.
During the disconnection sequence, between two consecutive disconnections, the device waits at least the **Minimum time to switch on loads** to make sure the power consumption has stabilised and to check the absorbed power again; in this time, the device updates the disconnection order so it can manage any changes of status or power absorbed in relation to the loads to be disconnected.
The disconnection ends when the power value reaches the set threshold.
Once this threshold has been reached, the **Minimum time to switch on loads** must pass and then the device begins assessing the reconnection of the loads. Between two consecutive load reconnections, the device waits at least the **Time between a load switch on and next** to make sure the power consumption has stabilised and to check the absorbed power again; in this time, the device updates the reconnection order so it can manage any changes of status in relation to the loads to be reconnected.

A new disconnection cycle begins if all the loads are connected, whether manually with Manual forcing priority or otherwise. The disconnection cycle is not considered terminated (so the persistence time above the threshold is not re-evaluated) if a new disconnection cycle is needed due to a load being reconnected and the threshold being exceeded. For this reason, the intervention number counter is not increased but the "period above threshold" counter and the "exceeded threshold number" counter are increased.

The following diagrams show some situations that sum up the concepts explained so far:





1. When the instantaneous power measured by the device exceeds the value "**power threshold + threshold hysteresis**", the **persistence time** count is initialised and the acoustic signal (buzzer) is activated (if it is enabled);

2. 10 seconds before the end of the persistence time, if the **"Time spent above the threshold before load shedding [s]"** parameter is configured with a longer time, the acoustic signal increases its frequency; otherwise, the acoustic signal uses the higher frequency directly;
3. at the end of the **persistence time**, the acoustic signal is deactivated after making a long beep and then the first load is disconnected (following the disconnection logic defined);
4. after a time at least equal to the **Minimum time to switch on loads**, the instantaneous power value is evaluated; if it exceeds the power threshold, the second load is disconnected (following the disconnection logic defined);
5. after a time at least equal to the **Minimum time to switch on loads**, the instantaneous power value is evaluated; if it exceeds the power threshold, the third load is disconnected (following the disconnection logic defined);
6. if the power value falls below the power threshold, the load disconnection process is halted;
7. after a time at least equal to the **minimum time to switch on loads** (calculated from the interruption of the load disconnection process), the first load is reconnected (following the reconnection logic defined) if the instantaneous power value is still below the power threshold, but only if its nominal/real absorption will not potentially cause the disconnection threshold to be exceeded (**power threshold + threshold hysteresis**);
8. after a time at least equal to the **Time between a load switch on and next** (calculated from the reconnection of the previous load), the instantaneous power value is evaluated; if the value is still below the power threshold, the second load is reconnected (following the reconnection logic defined), but only if its nominal/real absorption will not potentially cause the disconnection threshold to be exceeded (**power threshold + threshold hysteresis**);
9. after a time at least equal to the **Time between a load switch on and next** (calculated from the reconnection of the previous load), the instantaneous power value is evaluated; if the value is still below the power threshold, the reconnection of the third load is evaluated. If its nominal/real absorption will potentially cause the disconnection threshold to be exceeded, the load is not reconnected;

There are two fundamental principles for the disconnection/reconnection rules: priority and absorption.

Regardless of the rule defined for load disconnection, a priority level is identified (1=high ÷ 11=low) for each load (max. 10), along with its absorption level (instantaneous, if the device can determine it, otherwise nominal). Although they are based on different principles, the disconnection rules (priority/absorption) are correlated because there may be cases where:

- DISCONNECTION ON THE BASIS OF PRIORITY
  If two loads have the same priority, their absorption is evaluated to decide which one should be disconnected (beginning with the one that absorbs more); if their absorption is also the same, the selection is made on the basis of their identification (beginning with the one with the lower identification).

- DISCONNECTION ON THE BASIS OF ABSORPTION
  If the loads have the same absorption level, their priority is evaluated to decide which one should be disconnected (beginning with the one that has a LOWER priority); if their priority is also the same, the selection is made on the basis of their identification (beginning with the one with the lower identification).

- RECONNECTION ON THE BASIS OF PRIORITY
  In the priority reconnection logic, the device also evaluates the absorption of the load to be reconnected, to avoid exceeding the threshold again and thereby triggering load disconnection (unless this condition has been disabled via the relative parameter associated with each load); if this condition arises, the load in question will not be reconnected and the reconnection of the next one is evaluated (the aim is to keep as many loads active as possible).

The device can manage the condition where a disconnected load is reconnected by external intervention (e.g. a command on the KNX BUS or a local command on the load itself); the **Manual forcing priority** function can be set to define the priority of the manual command in relation to the automatic disconnection of the loads by P-COMFORT. If this function is enabled, P-COMFORT ignores the fact that the load, which according to the function control logic should be deactivated, is actually manually activated from another command point, and hence avoids reconnecting it. If the function is disabled, P-COMFORT will disconnect the load again if it is manually activated.
The device only reconnects those loads that it has disconnected; any loads not disconnected by the algorithm are not reconnected.

During the disconnection phase, if the power value is not below the threshold, an active load (On) will be disconnected even if its instantaneous absorption is 0W (i.e. it is considered to have some degree of absorption).
If the instantaneous absorption value is available, the load absorption value prior to disconnection is saved and then re-used when its reconnection is being evaluated; the nominal value is used if no instantaneous absorption feedback is received (e.g. with a voltage reset), if there isn't the necessary time to request and receive the feedback, or after 5 minutes with no feedback (time-out).
During both the disconnection and reconnection of a load, if its status change feedback (on or off) is not received, P-COMFORT will repeat the disconnection/reconnection command cyclically (1 minute) until the correct feedback is received.
In the event of a supply voltage failure, the loads disconnected by the algorithm are saved in a non-volatile memory so that, on reset, P-COMFORT can retrieve the previous status and continue the disconnection/reconnection procedure.
In the event of a KNX BUS voltage failure (but with the supply voltage still available), P-COMFORT disconnects the local relay (if it is included in the function) and suspends the disconnection procedure until the BUS voltage is reset; when the voltage returns, it reads the status of the loads and continues the disconnection/reconnection procedure.

4.1 Parameters

4.1.1 Delay time from power on and first transmission

To ensure that, with several devices in the line, the telegrams sent by the various devices do not collide when the BUS voltage is reset, you can define a time limit after which the device can transmit the telegrams on the BUS following a BUS voltage failure/reset. The **"Delay time from power on and first transmission"** parameter is used to define this delay.
The values that can be set are:

- **11..21 seconds (depends on physical address)** **(default value)**
- 5..9 seconds
- 11 seconds
- 13 seconds
- 15 seconds
- 17 seconds
- 19 seconds
- 21 seconds
- no delay

If the values **11..21 seconds (depends on physical address)** and **5..9 seconds** are set, the device automatically calculates the transmission delay using an algorithm that examines the physical address of the device itself; the values indicated (11/21 or 5/9) indicate the minimum and maximum limits of the value range that can be calculated.

Note that this parameter therefore merely sets a delay for transmitting the telegrams in the first few seconds after the first switch-on. It does not in any way hamper the user's interaction with the graphic interface of the device.

The delay following the reset of the 230V supply voltage - rather than just the BUS voltage - may be different even if the same value is set, because in the first case the device must actually start up while in the second it might already be active if the 230V supply hasn't failed.

4.1.2 Acoustic signal

The **"Acoustic signal"** parameter enables the acoustic signal which indicates when the load control threshold has been exceeded, activating the automatic disconnection procedure. The values that can be set are:

- disable

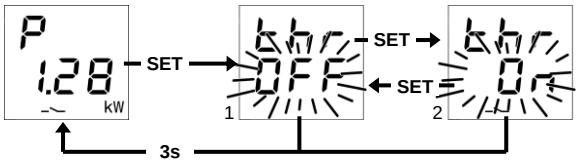
- **enable** **(default value)**

4.1.3 Enable value of the load control function

For the load control function, the maximum power threshold must be set along with all the parameters relating to the control algorithm. The ***Loads control function enabling*** (Data Point Type: 1.002 DPT_Bool) and ***Loads control function enabling status*** (Data Point Type: 1.003 DPT_Enable) communication objects are used respectively to receive the load control function activation commands and send the signals regarding the function activation status; the telegrams are sent via the object ***Loads control function enabling status*** following a BUS request, spontaneously with each function enabling status variation, and when the BUS voltage is reset.
The **"Enable value of the load control function"** parameter determines which logic value received via the ***Enable value of the load control function*** communication object will activate the load control function; the arrival of the opposite value will deactivate the threshold.
The possible values are:

- value "0"
- **value "1"** **(default value)**

☞ To activate or deactivate the load control function directly on the device, go to the "Total metering" page and press the SET/MODE push-button several times until the required option is displayed.



Load control enabled

Load control disabled

When the load control function is active, the symbol will be permanently illuminated on the "Total metering" page; the symbol flashes when load disconnection is in progress, and continues flashing until all the disconnected loads have been reconnected.

When the supply voltage is reset, the load control function activation status is the one in force prior to the failure, so it is saved in a non-volatile memory. The status following an application download from ETS is always enabled.

4.1.4 Power threshold initial value for loads control (W)

The **"Power threshold initial value for loads control (W)"** parameter sets the initial value of the power threshold associated with the load control function (that can be modified via the BUS if necessary, using the dedicated communication object). The parameter can assume the following values:

- from 0 to 8000 in steps of 1 **(default value 3300)**

4.1.5 Power threshold hysteresis for loads control [W]

The **"Power threshold hysteresis for loads control [W]"** parameter sets the hysteresis value to be added to the power threshold in order to define the "load disconnection threshold" value. This parameter can assume the following values:

- from 10 to 2500 in steps of 1 **(default value 500)**

The hysteresis is added to the threshold value, to obtain the load disconnection limit.

4.1.6 Changing threshold setting

The **"Changing threshold setting"** parameter defines the format of the communication object needed to set the power threshold of the load control function via a BUS telegram. The values that can be set are:

- **absolute value (default value)**
- increment/decrement step regolation

Selecting **absolute value** visualises the ***Limit threshold value input for loads control*** (Data Point Type 14.056 DPT_Value_Power) communication object, that can be used to set the power threshold value via the BUS.
Once the threshold value has been received via the BUS, the device checks that **8000**W **≥ Threshold value ≥ 0**; if this is not the case, it sets the closest limit value.

Selecting **increment/decrement step regulation** visualises the **"Regulation step of threshold by bus"** parameter and the ***Limit threshold regulation for loads control*** (Data Point Type: 1.007 DPT_Step object). If the value "1" is received on this object, the power threshold value will be increased by the value defined in the **"Regulation step of threshold by bus"** parameter; if the value "0" is received, the power threshold value will be decreased by the value defined in the **"Regulation step of threshold by bus"** parameter.

The current value of the power threshold for the load control function is transmitted on the BUS via the ***Limit threshold actual value for loads control*** (Data Point Type 14.056 DPT_Value_Power) object. The feedback sending conditions are: following a BUS request, spontaneously at each threshold change (whether generated locally or via a communication object), and on BUS voltage reset.

☞ The power threshold and hysteresis values can be modified directly on the device, using the relative parameter of the SET menu on the "Total metering" page (see the Programming Manual).

4.1.7 Regulation step of threshold by bus

The **"Regulation step of threshold by bus"** parameter defines the increase/decrease step of the power threshold value following the arrival of a command on the relative regulation object. The values that can be set are

- from 1 to 250 in steps of 1 **(default value 100)**

4.1.8 Time spent above the threshold before load shedding [s]"

The **"Time spent above the threshold before load shedding [s]"** parameter sets the instantaneous power persistence time above the "power threshold + hysteresis" value before the device begins the load disconnection procedure; the local buzzer is also activated during the persistence time countdown. The parameter can assume the following values:

- from 1 to 240 seconds in steps of 1 **(default value 1, complying with IEC 62962)**

NOTE re. IEC 62962: to respect standard IEC 62962, the device configuration requires that the device waits one second before beginning the disconnection procedure. This is to guarantee that the minimum disconnection time of the controlled loads (once the exceeded threshold has been detected) cannot fall below the minimum value permitted for a Class B device (0.5s).

4.1.9 Loads shedding rule

The load disconnection rule adopted by the device is defined with the parameter**"Loads shedding rule"** that can have the following values:

- from low to high priority
  The loads are disconnected in order of priority, starting from the one with the lowest priority and ending with the one with highest priority
- **from most to least power-intensive (default value)**
  The loads are disconnected in order of power absorption, starting from the one that absorbs the most and ending with the one that absorbs the least; if the load is unable to signal the power that it absorbs, the associated nominal value is used.
- from least to most power-intensive
  The loads are disconnected in order of power absorption, starting from the one that absorbs the least and ending with the one that absorbs the most; if the load is unable to signal the power that it absorbs, the associated nominal value is used.

4.1.10 Time between a load switch off and next [s]

The **"Time between a load switch off and next [s]"** parameter defines the minimum pause between the disconnection of one load and the next. The values that can be set are:

- from **0 (immediate disconnection - default value for the application of IEC 62962)** to 240 seconds, in steps of 1

NOTE re. IEC 62962: to respect standard IEC 62962, the device is configured to disconnect all the controlled loads in the shortest time possible. This guarantees that the maximum disconnection time for the eleven loads controlled (once the exceeded threshold has been detected) cannot exceed the maximum value permitted for a Class B device (10s). The local relay and the remote loads will be disconnected in sequence, following the configured disconnection rule. This means that the disconnection of all the loads is not instantaneous but depends also on the time needed to send the commands on the KNX BUS (approximately 800 msec between one disconnection and the next). If, to respect standard IEC 62962, the configuration of the **"Time spent above the threshold before load shedding [s]"** and **"Time between a load switch off and next [s]"** parameters doesn't guarantee the time needed to retrieve (from the BUS) the information about the active power of the remote loads, the nominal absorption value will be used when evaluating remote load disconnection/reconnection.

4.1.11 Minimum time to switch on loads [s]"

The **"Minimum time to switch on loads [s]"** parameter defines the delay for the activation of the load reconnection phase once the measured power has reached the threshold value or fallen below it; if the power rises above the threshold value again during this time, the count is interrupted and then reinitialised when the threshold is reached again. The values that can be set are:

- from 10 to 240 seconds in steps of 1 **(default value 60)**

4.1.12 Loads reclosing rule

The **"Loads reclosing rule"** parameter sets the load reconnection rule. The parameter can assume the following values:

- same of switch off rule
  Reconnection follows the same order used for disconnection (the first load disconnected is the first one to be reconnected)
- **reverse of switch off rule (default value)**
  Reconnection follows the opposite order used for disconnection (the last load disconnected is the first one to be reconnected)
- only manual switch on
  Reconnection is not made automatically by P-Comfort; it must be implemented directly by the user

4.1.13 Time between a load switch on and next [s]

The **"Time between a load switch on and next [s]"** parameter defines the minimum pause between the reconnection of one load and the next. The values that can be set are:

- from **5 (default value)** seconds to 240, in steps of 1

4.1.14 Manual forcing priority

The device can manage the condition where a disconnected load is reconnected by external intervention (e.g. a command on the KNX BUS or a local command on the load itself); the **"Manual forcing priority"** parameter can be set to define the priority of the manual command in relation to the automatic disconnection of the loads by P-Comfort. The values that can be set are:

- **disable** **(default value)**
- enable

If **enable** is selected, P-Comfort ignores the fact that the load, which according to the control logic should be deactivated, has actually been manually activated (e.g. from another command point), and hence avoids reconnecting it; the load will be considered for disconnection purposes again once all the loads have been reconnected (initialisation of a new disconnection phase).

If **disable** is selected, P-Comfort disconnects the load again if it has been manually activated, repeating the command again once per minute if necessary until the correct feedback is received.

4.1.15 Modify parameters of control algorithm by local menu

The **"Modify parameters of control algorithm by local menu"** parameter enables the modification of the control algorithm parameters (Power threshold value, Hysteresis threshold, Persistence time above threshold Loads shedding rule, Loads reclosing rule, Manual forcing priority) from the local menu too (see the User Manual).
The values that can be set are:

- disable
- **enable** **(default value)**

☞ If **disable** is selected, the SET menu of the "Total metering" section will be disabled and nothing will happen when the relative push-button is pressed.

4.1.16 Overwrite parameters of control algorithm at download

The **"Overwrite parameters of control algorithm at download"** parameter defines whether or not the value of the parameters listed above should be overwritten following the next download of the ETS application. The values that can be set are:

- no
- **yes** **(default value)**

By setting **no**, the parameter values are saved in a non-volatile memory and reset when the device is relaunched.

4.1.17 Signalling of loads shedding threshold exceeded

The**"Signalling of loads shedding threshold exceeded"** parameter can be used to send a signal on the KNX when the disconnection threshold has been exceeded (power threshold + hysteresis), using the ***Load control threshold exceeded*** (Data Point Type 1.002 DPT_Bool).
The parameter can assume the following values:

- **disable sending** **(default value)**
- sending on variation
- sending on variation and periodically

If any value other than **disable sending** is selected, the ***Load control threshold exceeded*** (Data Point Type 1.002 DPT_Bool) object is displayed along with the **"Upon exceeding the limit threshold"** and **"Upon return below the limit threshold"** parameters. If **sending on variation and periodically**, is selected, the **"Period of signalling sending (minutes)"** parameter is displayed.

The ***Load control threshold exceeded*** object is sent upon request, spontaneously on variation, periodically (if cyclical repetition is enabled) and when the BUS voltage is reset, but only if the power value is not within the hysteresis band (between Disconnection threshold and Disconnection threshold - hysteresis). When the load control function is disabled, the sending of the "disconnection threshold exceeded" signals is inhibited, but any change or feedback of the power threshold value is still permitted/transmitted.

4.1.18 Upon exceeding the limit threshold

The **"Upon exceeding the limit threshold"** parameter is used to set the value to be sent when the defined limit is exceeded. The values that can be set are

- no action
- send "0"
- **send "1"** **(default value)**

4.1.19 Upon return below the limit threshold

The **"Upon return below the limit threshold"** parameter is used to set the value to be sent when the value returns below the disconnection threshold (considering the hysteresis, the value coincides with the power threshold). The values that can be set are

- no action
- **send "0"** **(default value)**
- send "1"

4.1.20 Period of signalling sending (minutes)

The **"Period of signalling sending (minutes)"** parameter is used to set the repetition frequency for the telegrams signalling when the load disconnection threshold has been exceeded. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

4.1.21 Format of the over threshold period counter

The device can signal the count of the total time above the load disconnection threshold; the count is based on the absorbed power measurement. It is only made if the supply voltage is present; otherwise, the counter is not increased. The count can still be made even if there is no BUS voltage. The counter used for the count can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Format of the over threshold period counter"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- **4 byte (seconds)** **(default value)**
- 2 byte (minutes)
- 2 byte (hours)

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Period counter over consumption limit threshold*** communication object. The initial value is always 0, regardless of the format selected.

4.1.22 Overflow value

The **"Valore di overflow"** parameter is used to set the maximum value of the "period above load disconnection threshold" counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition.
Depending on the value set for the **"Format of the over threshold period counter"** parameter, the values that can be set for this item will be different:

- If the counter format is **4 byte (seconds)**, the ***Period counter over consumption limit threshold*** (Data Point Type: 13.100 DPT_LongDeltaTimeSec) communication object is visible and the values that can be set for the above parameter are:
  - from 0 to **2147483647 (default value ≈ 68 years)**, in steps of 1
- If the counter format is **2 byte (minutes)**, the ***Period counter over consumption limit threshold*** (Data Point Type: 7.006 DPT_TimePeriodMin) communication object is visible and the values that can be set for the above parameter are:
  - from 0 to **65535 (default value ≈ 45.5 days)**, in steps of 1
- If the counter format is **2 byte (hours)**, the ***Period counter over consumption limit threshold*** (Data Point Type: 7.007 DPT_TimePeriodHrs) communication object is visible and the values that can be set for the above parameter are:
  - from 0 to **65535 (default value ≈ 7.4 years)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Overflow period counter over consumption limit threshold*** (Data Point Type: 1.002 DPT_Bool) object to signal the overflow of the "period above load disconnection threshold" counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Reset period counter over consumption limit threshold*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of "0" is ignored, whereas when the value "1" is received, the counter is reset at the initial value and the ***Overflow period counter over consumption limit threshold*** object is set at "0".

4.1.23 Sending condition of the over threshold period counter

The **"Sending condition of the over threshold period counter"** parameter defines the conditions for sending the current value of the "period above load disconnection threshold" counter. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Minimum period counter variation for sending value"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Counter sending period [minutes]"** parameter.
If **sending on request** is selected, no new parameter is enabled because the counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.

If the sending condition of the counter is different from **sending on request**, it's a good idea to send the value of the counter after a BUS voltage reset in order to update any connected devices.

4.1.24 Minimum period counter variation for sending value

The **"Minimum period counter variation for sending value"** parameter is visible if the value of the "period above load disconnection threshold" counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

4.1.25 Counter sending period (minutes)

The **"Counter sending period (minutes)"** parameter is visible if the "period above load disconnection threshold" counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the "period above load disconnection threshold" counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

4.1.26 Format of the over threshold number counter

The device can signal the number of times that the load disconnection threshold is exceeded.
The counter used to calculate how often the threshold is exceeded can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Format of over power threshold number counter"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- 2 byte unsigned
- **4 byte unsigned (default value)**

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Number counter over power threshold*** communication object. The initial value is always 0, regardless of the format selected.

4.1.27 Overflow value

The **"Overflow value"** parameter is used to set the maximum value of the "threshold exceeded" counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition.
Depending on the value set for the **"Over power threshold number counter format"** parameter, the values that can be set for this item will be different:

- If the counter format is **2 byte unsigned**, the ***Number counter over power threshold*** (Data Point Type: 7.001 DPT_Value_2_Ucount) communication object is displayed and the values that can be set for the above parameter are:

  - from 0 to **65535 (default value)**, in steps of 1

- If the counter format is **4 byte unsigned**, the ***Number counter over power threshold*** (Data Point Type: 12.001 DPT_Value_4_Ucount) communication object is displayed and the values that can be set for the above parameter are:

- from 0 to **4294967295 (default value)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Overflow period counter over power threshold*** (Data Point Type: 1.002 DPT_Bool) object to signal the overflow of the "number of times above load disconnection threshold" counter. When an overflow occurs, a value of “1” is sent; a value of “0” is sent when the counter is reinitialised.

The device can use the ***Reset period counter over power threshold*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of “0” is ignored, whereas when the value “1” is received, the counter is reset at the initial value and the ***Overflow period counter over power threshold*** object is set at “0”.

4.1.28 Number counter sending condition

The **“Number counter sending condition”** parameter defines the conditions for sending the current value of the "number of times above load disconnection threshold" counter. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **“Number counter variation for sending”** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **“Counter sending period (minutes)”** parameter.
If **sending on request** is selected, no new parameter is enabled because the counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.
If the sending condition of the counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

4.1.29 Period counter variation for sending

The **“Period counter variation for sending”** parameter is visible if the value of the "number of times above load disconnection threshold" counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

4.1.30 Counter sending period (minutes)

The **“Counter sending period (minutes)”** parameter is visible if the "number of times above load disconnection threshold" counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the "number of times above load disconnection threshold" counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

4.1.31 Format of the "number of interventions" counter

The device can signal the number of times that it intervenes in order to disconnect loads. Every time the algorithm activates the load disconnection procedure, the counter is increased.
The counter used to calculate the number of interventions can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Over power threshold number counter format"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- 2 byte unsigned
- **4 byte unsigned (default value)**

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Number counter over power threshold*** communication object. The initial value is always 0, regardless of the format selected.

4.1.32 Overflow value

The **"Overflow value"** parameter is used to set the maximum value of the interventions counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition. Depending on the value set for the **"Over power threshold number counter format"** parameter, the values that can be set for this item will be different:

- If the counter format is **2 byte unsigned**, the ***Number counter over power threshold*** (Data Point Type: 7.001 DPT_Value_2_Ucount) communication object is displayed and the values that can be set for the above parameter are:

  - from 0 to **65535 (default value)**, in steps of 1

- If the counter format is **4 byte unsigned**, the ***Number counter over power threshold*** (Data Point Type: 12.001 DPT_Value_4_Ucount) communication object is displayed and the values that can be set for the above parameter are:

  - from 0 to **4294967295 (default value)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Overflow period counter over power threshold*** (Data Point Type: 1.002 DPT_Bool) object, the device signals the overflow of the interventions counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Reset period counter over power threshold*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of "0" is ignored, whereas when the value "1" is received, the counter is reset at the initial value and the ***Overflow period counter over power threshold*** object is set at "0".

4.1.33 Sending conditions for Number counter over power threshold

The **"Period counter sending condition"** parameter defines the conditions for sending the current interventions counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Period counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Counter sending period (minutes)"** parameter.

If **sending on request** is selected, no new parameter is enabled because the counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.
If the sending condition of the counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

4.1.34 Period counter variation for sending

The **"Period counter variation for sending"** parameter is visible if the interventions counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

4.1.35 Counter sending period (minutes)

The **"Counter sending period (minutes)"** parameter is visible if the interventions counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the interventions counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

5 *"Electric measures"* menu

The **Electric measures** menu contains the parameters for enabling and setting the conditions for sending the detected for the Electric measures load connected to the device. This menu is always visible. The structure of the menu is as follows:

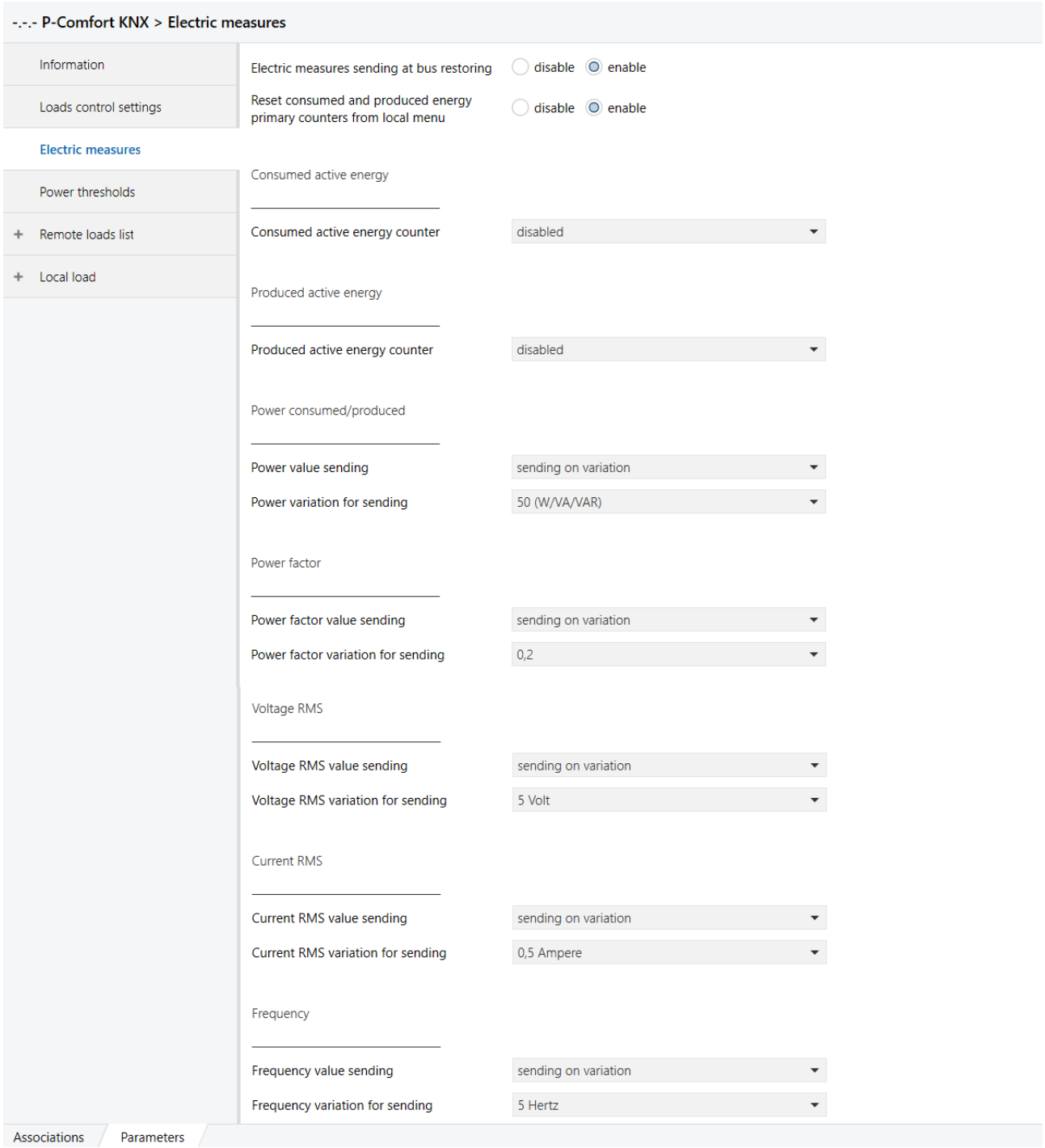


Fig. 5.1: "Electric measures" menu

The device has a built-in meter for measuring the following electric values: Consumed active energy, Active/reactive/apparent power, RMS voltage, RMS current and Power factor.
NB: the energy count is made even without the BUS voltage, as long as the device is powered.

- ☞ The energy counters (energy produced and consumed) can be reset using the push-buttons on the device, by going to the energy counter display page and pressing the SET push-button for at least 5

seconds until the required page appears. Press SET again to reset the counter, or press the arrow push-buttons (or wait for the inactivity time-out) to annul the reset.

The following parameters are used to configure the ways of measuring and sending the various values.

5.1 Parameters

5.1.1 Electric measures sending at bus restoring

The **"Electric measures sending at bus restoring"** parameter determines whether the communication objects for signalling the electric measurements (configured to be transmitted on variation) must be transmitted on BUS voltage reset as well. The parameter can have the following values:

- disable
- **enable** **(default value)**

5.1.2 Reset consumed and produced energy primary counters from local menu

There are two different counters for the consumed and produced energy values:

Primary counter
- The energy count is always active
- The initial value can be defined (a value that might be different from 0)
- Overflow value = maximum permitted by the counter
- It can be reset (reinitialised)

Differential counter
- The energy count can be activated/stopped via a communication object (e.g. the consumption is measured within a defined time band managed by a KNX clock)
- The initial value is always 0
- Overflow value The can be set (a value that might be different from the maximum permitted by the counter)
- It can be reset (reinitialised)

The **"Reset consumed and produced energy primary counters from local menu"** parameter enables the reset of the primary counters for active consumed and produced energy via the local menu too (see the Programming Manual).

The values that can be set are:

- disable
- **enable** **(default value)**

PARAMETERS RELATING TO "CONSUMED ACTIVE ENERGY"

5.1.3 Consumed active energy counter

The **"Consumed active energy counter"** parameter can be used to activate the count of the active energy consumed and define the format of the communication object used to send the counter value.
The values that can be set are:

- **disabled** **(default value)**
- enable primary counter
- enable primary and differential counters

If **enable primary counter** is selected, the **"Consumed energy counter format"**, **"Consumed energy primary counter init value"**, **"Reinitialize consumed energy counters"**, and **"Consumed energy primary counter sending condition"** parameters are displayed, along with the ***Consumed active energy primary counter*** communication object.

If **enable primary and differential counters** is selected, not only the parameters/communication objects listed previously (in relation to the primary counter) are displayed but also the **"Consumed energy differential counter overflow value"**, **"Start/stop consumed energy differential counter from bus"**, and **"Consumed energy differential counter sending condition"** parameters and the ***Consumed active energy differential counter*** communication object.

5.1.4 Consumed energy counter format

The range of the primary and differential counters used for the energy count must be sufficient to measure the energy in KNX coding in kWh (maximum value = 2147483647 kWh). The **"Consumed energy counter format"** parameter defines the dimension and coding of the communication object used to transmit the value of the primary and differential counters (if enabled). The values that can be set are:

- **watthour (Wh)** **(default value)**
- kilowatthour (kWh)

The value set for this item will define the format of the ***Consumed active energy primary counter*** and ***Consumed active energy differential counter*** objects, and the values that can be set for the **"Consumed energy primary counter init value"** and **"Consumed energy differential counter overflow value"** parameters.

5.1.5 Consumed energy primary counter init value

The **"Consumed energy primary counter init value"** parameter is used to set the initial value of the primary energy counter; when the primary counter is in overflow (i.e. it reaches its maximum value), the count is stopped but can be reinitialised using the relative BUS command on the object.
Depending on the value set for the **"Consumed energy counter format"** parameter, the values that can be set for this item will be different:

- If the format is **watthour (Wh)**, the format (Data Point Type) of the ***Consumed active energy primary counter*** communication object is 13.010 DPT_ActiveEnergy, and the values that can be set for the parameter are:
  - from **0 (default value)** to 2147483647 watthour, in steps of 1
- If the format is **kilowatthour (kWh)**, the format (Data Point Type) of the ***Consumed active energy primary counter*** communication object is 13.013 DPT_ActiveEnergy_kWh, and the values that can be set for the parameter are:
  - from **0 (default value)** to 2147483647 kilowatthour, in steps of 1

The device can use the ***Reset consumed active energy primary counter*** (Data Point Type: 1.015 DPT_Reset) communication object, the device can receive the primary counter reinitialisation commands that bring the counter back to the value set for the **"Consumed energy primary counter init value"** item; a value of "0" is ignored, whereas when the value "1" is received, the primary counter is reset at the initial value and the ***Overflow consumed active energy primary counter*** object is set at "0".

Via the ***Overflow consumed active energy primary counter*** (Data Point Type: 1.002 DPT_Bool) object, the device indicates the overflow of the primary counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

5.1.6 Consumed energy primary counter sending condition

The **"Consumed energy primary counter sending condition"** parameter defines the conditions for sending the current primary counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Consumed energy primary counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Consumed energy primary counter sending period (minutes))"** parameter.
If **sending on request** is selected, no new parameter is enabled because the primary counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the primary counter.
If the sending condition of the primary counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

5.1.7 Consumed energy primary counter variation for sending

The **"Consumed energy primary counter variation for sending"** parameter is visible if the primary counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- 10 Wh
- 20 Wh
- **50 Wh** **(default value if the counter format is "Wh")**
- 100 Wh
- 200 Wh
- 500 Wh
- **1000 Wh** **(default and ONLY value that can be set from the database if the counter format is "kWh")**

5.1.8 Consumed energy primary counter sending period (minutes)

The **"Consumed energy primary counter sending period (minutes)"** parameter is visible if the primary counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current primary counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the primary counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

5.1.9 Reinitialize consumed energy counters

If the device configuration needs to be updated, and the ETS application downloaded again, you can indicate whether the energy counter value (primary and differential) must be reinitialised or not via the **"Reinitialize consumed energy counters"** parameter.

The values that can be set are:

- **no** **(default value)**
- yes

By setting **no**, the counter values are saved in a non-volatile memory and reset when the device is relaunched.

5.1.10 Consumed energy differential counter overflow value

The **"Consumed energy differential counter overflow value"** parameter is used to set the maximum value of the differential active energy counter; in fact, unlike the primary counter, it is possible to set the maximum count value - i.e. the value beyond which the differential counter is in an overflow condition.
Depending on the value set for the **"Consumed energy counter format"** parameter, the values that can be set for this item will be different:

- If the format is **watthour (Wh)**, the format (Data Point Type) of the ***Consumed active energy differential counter*** communication object is 13.010 DPT_ActiveEnergy, and the values that can be set for the parameter are:

  - from 0 to **2147483647 (default value)** watthour, in steps of 1

- If the format is **kilowatthour (kWh)**, the format (Data Point Type) of the ***Consumed active energy differential counter*** communication object is 13.013 DPT_ActiveEnergy_kWh, and the values that can be set for the parameter are:

  - from 0 to **2147483647 (default value)** kilowatthour, in steps of 1

5.1.11 Consumed energy differential counter sending condition

The **"Consumed energy differential counter sending condition"** parameter defines the conditions for sending the current differential counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Consumed energy differential counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Consumed energy differential counter sending period (minutes)"** parameter.
If **sending on request** is selected, no new parameter is enabled because the differential counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the differential counter.
If the sending condition of the differential counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

5.1.12 Consumed energy differential counter variation for sending

The **"Consumed energy differential counter variation for sending"** parameter is visible if the differential counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent.
The values that can be set are:

- 10 Wh
- 20 Wh
- **50 Wh** **(default value if the counter format is "Wh")**
- 100 Wh
- 200 Wh
- 500 Wh
- **1000 Wh** **(default and ONLY value that can be set from the database if the counter format is "kWh")**

5.1.13 Consumed energy differential counter sending period (minutes)

The **"Consumed energy differential counter sending period (minutes)"** parameter is visible if the differential counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current differential counter value.
The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a supply voltage failure, the differential counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

5.1.14 Start/stop consumed energy differential counter from bus

Unlike the primary counter, the differential counter can be started/stopped via a BUS command; this makes it possible, for example, to measure the consumption within a specific time band managed by another KNX device. The **"Start/stop consumed energy differential counter from bus"** parameter enables this function, making the dedicated communication object visible. The values that can be set are:

- **disable** **(default value)**
- enable

Selecting **enable** visualises the ***Trigger consumed active energy differential counter*** (Data Point Type: 1.010 DPT_Start) communication object, for receiving the count start ("1") / stop ("0") commands.
Following an ETS download, the count is started by default, regardless of whether or not its start/stop has been enabled via the BUS.

Via the ***Overflow consumed active energy differential counter*** (Data Point Type: 1.002 DPT_Bool) object, the device signals the overflow of the differential counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Reset consumed active energy differential counter*** (Data Point Type: 1.015 DPT_Reset) communication object, the device can receive the differential counter reinitialisation commands that bring the counter back to 0 (initial value). A value of "0" is ignored, whereas when the value "1" is received, the differential counter is reset at "0" and the ***Overflow consumed active energy differential counter*** object is set at "0".

PARAMETERS RELATING TO "PRODUCED ACTIVE ENERGY"

5.1.15 Produced active energy counter

The **"Produced active energy counter"** parameter can be used to activate the count of the active energy produced and define the format of the communication object used to send the counter value.
The values that can be set are:

- **disabled** **(valore di default)**
- enable primary counter
- enable primary and differential counters

If **enable primary counter** is selected, the **"Produced energy counter format"**, **"Produced energy primary counter init value"**, **"Reinitialize produced energy counters"**, and **"Produced energy primary counter sending condition"** parameters are displayed, along with the ***Produced active energy primary counter*** communication object.

If **enable primary and differential counters** is selected, not only the parameters/communication objects listed previously (in relation to the primary counter) are displayed but also the **"Produced energy differential counter overflow value"**, **"Start/stop produced energy differential counter from bus"**, and **"Produced energy differential counter sending condition"** parameters and the ***Produced differential active energy differential counter*** communication object.

5.1.16 Produced energy counter format

The capacity of the primary and differential counters used for the energy count must be sufficient to measure the energy in KNX coding in kWh (maximum value = 2147483647 kWh). The **"Produced energy counter format"** parameter defines the dimension and coding of the communication object used to transmit the value of the primary and differential counters (if enabled). The values that can be set are:

- **watthour (Wh)** **(default value)**
- kilowatthour (kWh)

The value set for this item will define the format of the ***Produced active energy primary counter*** and ***Produced differential active energy differential counter*** objects, and the values that can be set for the **"Produced energy primary counter init value"** and **"Produced energy differential counter overflow value"** parameters.

5.1.17 Produced energy primary counter init value

The **"Produced energy primary counter init value"** parameter is used to set the initial value of the primary energy counter; when the primary counter is in overflow (i.e. it reaches its maximum value), the count is stopped but can be reinitialised using the relative BUS command on the object.
Depending on the value set for the **"Produced energy counter format"** parameter, the values that can be set for this item will be different:

- If the format is **watthour (Wh)**, the format (Data Point Type) of the ***Produced active energy primary counter*** communication object is 13.010 DPT_ActiveEnergy, and the values that can be set for the parameter are:
  - from **0 (default value)** to 2147483647 watthour, in steps of 1
- If the format is **kilowatthour (kWh)**, the format (Data Point Type) of the ***Produced active energy primary counter*** communication object is 13.013 DPT_ActiveEnergy_kWh, and the values that can be set for the parameter are:
  - from **0 (default value)** to 2147483647 kilowatthour, in steps of 1

The device can use the ***Reset produced active energy primary counter*** (Data Point Type: 1.015 DPT_Reset) communication object, the device can receive the primary counter reinitialisation commands that bring the counter back to the value set for the **"Produced energy primary counter init value"** item; a value of "0" is ignored, whereas when the value "1" is received, the primary counter is reset at the initial value and the ***Overflow produced active energy primary counter*** object is set at "0".

Via the ***Overflow produced active energy primary counter*** (Data Point Type: 1.002 DPT_Bool) object, the device indicates the overflow of the primary counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

5.1.18 Produced energy primary counter sending condition

The **"Produced energy primary counter sending condition"** parameter defines the conditions for sending the current primary counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Produced energy primary counter sending condition"** parameter, whereas selecting **sending periodically** or **sending on**

variation and periodically visualises the **"Produced energy primary counter sending period (minutes)"** parameter.
If **sending on request** is selected, no new parameter is enabled because the primary counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the primary counter.
If the sending condition of the primary counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

5.1.19 Produced energy primary counter sending condition

The **"Produced energy primary counter sending condition"** parameter is visible if the primary counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- 10 Wh
- 20 Wh
- **50 Wh** **(default value if the counter format is "Wh")**
- 100 Wh
- 200 Wh
- 500 Wh
- **1000 Wh** **(default and ONLY value that can be set from the database if the counter format is "kWh")**

5.1.20 Produced energy primary counter sending period (minutes)

The **"Produced energy primary counter sending period (minutes)"** parameter is visible if the primary counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current primary counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the primary counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

5.1.21 Reinitialize produced energy counters

If the device configuration needs to be updated, and the ETS application downloaded again, you can indicate whether the energy counter value (primary and differential) must be reinitialised or not via the **"Reinitialize produced energy counters"** parameter.
The values that can be set are:

- **no** **(default value)**
- yes

By setting **no**, the counter values are saved in a non-volatile memory and reset when the device is relaunched.

5.1.22 Produced energy differential counter overflow value

The **"Produced energy differential counter overflow value"** parameter is used to set the maximum value of the differential active energy counter; in fact, unlike the primary counter, it is possible to set the maximum count value - i.e. the value beyond which the differential counter is in an overflow condition.
Depending on the value set for the **"Produced energy counter format"** parameter, the values that can be set for this item will be different:

- If the format is **watthour (Wh)**, the format (Data Point Type) of the ***Produced differential active energy differential counter*** communication object is 13.010 DPT_ActiveEnergy, and the values that can be set for the parameter are:

  - from 0 to **2147483647 (default value)** watthour, in steps of 1

- If the format is **kilowatthour (kWh)**, the format (Data Point Type) of the ***Produced differential active energy differential counter*** communication object is 13.013 DPT_ActiveEnergy_kWh, and the values that can be set for the parameter are:

  - from 0 to **2147483647 (default value)** kilowatthour, in steps of 1

5.1.23 Produced energy differential counter sending condition

The **"Produced energy differential counter sending condition"** parameter defines the conditions for sending the current differential counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Produced energy differential counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Produced energy differential counter sending period (minutes)"** parameter.
If **sending on request** is selected, no new parameter is enabled because the differential counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the differential counter.
If the sending condition of the differential counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

5.1.24 Produced energy differential counter variation for sending

The **"Produced energy differential counter variation for sending"** parameter is visible if the differential counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- 10 Wh
- 20 Wh
- **50 Wh** **(default value if the counter format is "Wh")**
- 100 Wh
- 200 Wh
- 500 Wh
- **1000 Wh** **(default and ONLY value that can be set from the database if the counter format is "kWh")**

5.1.25 Produced energy differential counter sending period (minutes)

The **"Produced energy differential counter sending period (minutes)"** parameter is visible if the differential counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current differential counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a supply voltage failure, the differential counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

5.1.26 Start/stop produced energy differential counter from bus

Unlike the primary counter, the differential counter can be started/stopped via a BUS command; this makes it possible, for example, to measure the energy produced within a specific time band managed by another KNX device. The **"Start/stop produced energy differential counter from bus"** parameter enables this function, making the dedicated communication object visible. The values that can be set are:

- **disable** **(default value)**
- enable

Selecting **enable** visualises the ***Trigger produced active energy differential counter*** (Data Point Type: 1.010 DPT_Start) communication object, for receiving the count start ("1") / stop ("0") commands.
Following an ETS download, the count is started by default, regardless of whether or not its start/stop has been enabled via the BUS.

Via the ***Overflow produced active energy differential counter*** (Data Point Type: 1.002 DPT_Bool) object, the device signals the overflow of the differential counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Reset produced active energy differential counter*** (Data Point Type: 1.015 DPT_Reset) communication object, the device can receive the differential counter reinitialisation commands that bring the counter back to 0 (initial value). A value of "0" is ignored, whereas when the value "1" is received, the differential counter is reset at "0" and the ***Overflow produced active energy differential counter*** object is set at "0".

PARAMETERS RELATING TO "POWER CONSUMED/PRODUCED"

5.1.27 Transmission of the power values

The device can calculate the instantaneous power consumed by the load connected to the channel contacts or produced in all its components (active, reactive and apparent), and signal the values via the ***Active power measured*** (Data Point Type 14.056 DPT_Value_Power), ***Reactive power measured*** (Data Point Type 14.xxx 4-byte float value) and ***Apparent power measured*** (Data Point Type 14.xxx 4-byte float value) communication objects.
The conditions that determine the sending of the communication objects that signal the instantaneous consumed or produced power value can be set via the **"Power value sending"** parameter, which can have the following values:

- disabled
- sending on request
- **sending on variation** **(default value)**

If any value other than **disabled** is selected, the ***Active power measured***, ***Reactive power measured*** and ***Apparent power measured*** communication objects are displayed.

5.1.28 Power variation for sending

The **"Power variation for sending"** parameter is used to set the minimum variation needed to trigger the transmission of the communication objects that signal the instantaneous absorbed or produced power value. The setting is valid for all three power values. The parameter can have the following values:

- 5 (W/VA/VAR)
- 10 (W/VA/VAR)
- 20 (W/VA/VAR)
- **50 (W/VA/VAR)** **(default value)**
- 100 (W/VA/VAR)

PARAMETERS RELATING TO "POWER FACTOR"

5.1.29 Transmission of the power values

The device can signal the current value of the power factor of the input signal detected on the contacts, using the ***Power factor measured*** (Data Point Type 14.057 DPT_Value_Power_Factor) communication object. The conditions that determine the sending of the communication object can be set via the "**Power factor value sending"** parameter, which can have the following values:

- disabled
- sending on request
- **sending on variation** (default value)

If any value other than disabled is selected, the ***Power factor measured*** communication object is displayed.

5.1.30 Power factor variation for sending

The **"Power factor variation for sending"** parameter is used to set the minimum variation needed to trigger the transmission of the communication object that signals the power factor. The parameter can have the following values:

- 0.1
- **0.2** **(default value)**
- 0.3
- 0.4

PARAMETERS RELATING TO "RMS VOLTAGE"

5.1.31 Voltage RMS value sending

The device can signal the current value of the RMS voltage detected on the channel contacts, using the ***Voltage RMS measured*** (Data Point Type 9.020 DPT_Value_Volt) communication object. The conditions that determine the sending of the communication object can be set via the **"Voltage RMS value sending"** parameter, which can have the following values:

- disabled
- sending on request
- **sending on variation** **(default value)**

If any value other than **disabled** is selected, the ***Voltage RMS measured*** communication object is displayed.

5.1.32 Voltage RMS variation for sending

The **"Voltage RMS variation for sending"** parameter is used to set the minimum variation needed to trigger the transmission of the communication object that signals the voltage value. The parameter can have the following values:

- 1 Volt
- 2 Volt
- **5 Volt** **(default value)**
- 10 Volt
- 15 Volt
- 25 Volt

PARAMETERS RELATING TO "RMS CURRENT"

5.1.33 Current RMS value sending

The device can signal the current value of the current absorbed by the load connected to the channel contacts, using the ***Current RMS measured*** (Data Point Type 9.021 DPT_Value_Curr) communication object. The conditions that determine the sending of the communication object that signals the absorbed current can be set via the **"Current RMS value sending"** parameter, which can have the following values:

- disabled
- sending on request
- **sending on variation** **(default value)**

If any value other than **disabled** is selected, the ***Current RMS measured*** communication object is displayed.

5.1.34 Current RMS variation for sending

The **"Current RMS variation for sending"** parameter is used to set the minimum variation needed to trigger the transmission of the communication object that signals the input voltage value. The parameter can have the following values:

- 0.1 Ampere
- 0.2 Ampere
- **0.5 Ampere** **(default value)**
- 1 Ampere
- 1.5 Ampere
- 2.5 Ampere

PARAMETERS RELATING TO "FREQUENCY"

5.1.35 Transmission of the frequency value

The device can signal the current value of the frequency of the input signal detected on the contacts, using the ***Frequency measured*** (Data Point Type 14.033 DPT_Value_Frequency) communication object. The conditions that determine the sending of the communication object can be set via the **"Frequency value sending"** parameter, which can have the following values:

- disabled
- sending on request
- **sending on variation** **(default value)**

If any value other than **disabled** is selected, the ***Frequency measured*** communication object is displayed.

5.1.36 Frequency variation for sending

The **"Frequency variation for sending"** parameter is used to set the minimum variation needed to trigger the transmission of the communication object that signals the frequency. The parameter can have the following values:

- 1 Hertz
- 2 Hertz
- **5** Hertz **(default value)**
- 10 Hertz

6 *"Power thresholds"* menu

Up to 5 absorption limit thresholds can be set and monitored; when one of the thresholds is exceeded, the device calculates how long the limit power remained above the threshold or how often it exceeded the limit.
The sub-menus for each of the 5 thresholds are made visible according to how the **"Power thresholds number to activate"** parameter in the **Power thresholds** menu is set.
The structure of the menu is as follows:

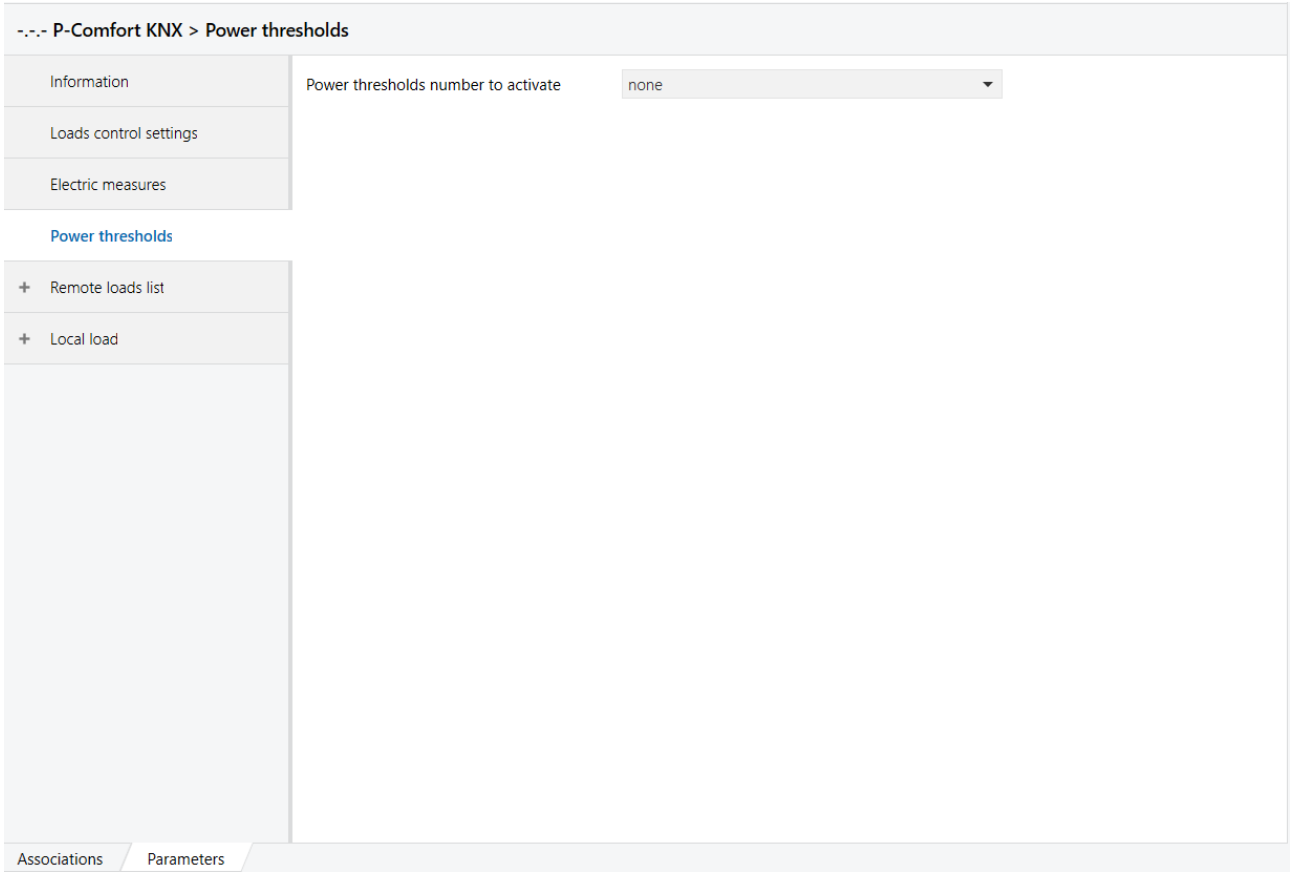


Fig. 6.1: "Power thresholds" menu

6.1 "Power thresholds menu parameters

6.1.1 Power thresholds number to activate

These parameters enable the power thresholds you want to activate, from 1 to 5. The possible values are therefore:

- **none** **(default value)**
- 1
- 2
- 3
- 4
- 5

For all the thresholds selected, the configuration menus of the parameters (and the corresponding objects) relating to each one will appear.
The ***Power threshold x enable*** (Data Point Type:1.002 DPT_Bool) and ***Power threshold x enable status*** (Data Point Type:1.003 DPT_Enable) communication objects are used respectively to receive the threshold

activation commands and send the signals regarding the threshold activation status; the telegrams are sent via the ***Power threshold x enable status*** object following a BUS request, spontaneously with each threshold enabling status variation, and when the BUS voltage is reset.

6.2 "Power thresholds X menu parameters

For each threshold enabled, the following "Power thresholds X" menu appears with the following parameters:

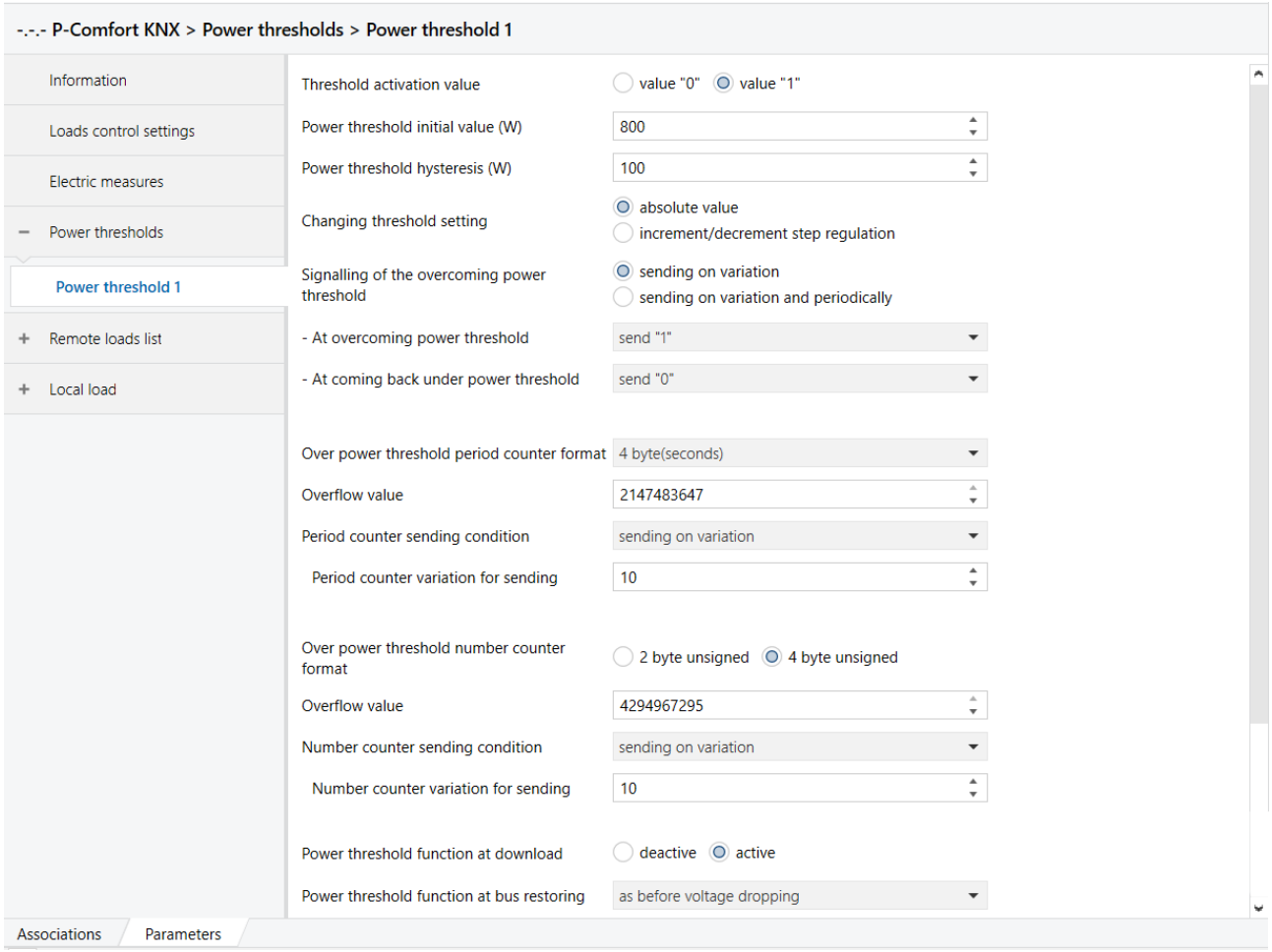


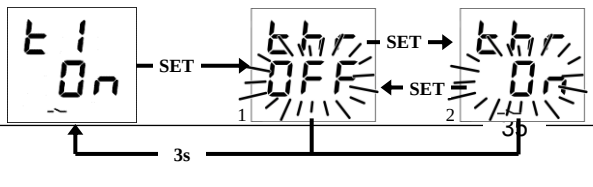
Fig. 6.2: "Power thresholds X" menu

6.2.1 Threshold activation value

The **"Threshold activation value"** parameter determines which logic value received via the ***Power threshold x enable*** communication object will activate the power threshold; the arrival of the opposite value will deactivate the threshold. The possible values are:

- value "0"
- **value "1"** **(default value)**

☞ To activate or deactivate the power threshold directly on the device (from the page showing the status of the corresponding threshold), press the SET/MODE push-button several times until the required option is displayed.

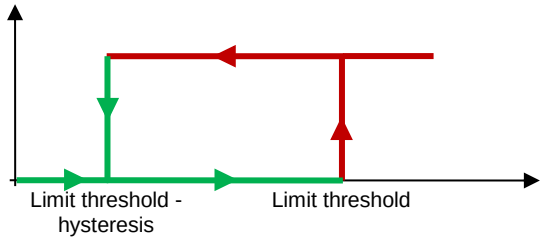


Power threshold N enabled

Power threshold N disabled

When the power threshold is exceeded, the symbol is permanently visualised on the display page for the corresponding threshold; the symbol turns off when the power value drops below the threshold value minus the set hysteresis.

The power threshold is managed using a hysteresis cycle, which means there are two values indicating when the threshold is exceeded, rather than one:



The limit is considered “exceeded” when the measured power value is higher than the “Limit threshold” value; when the power value falls below the “Limit threshold - hysteresis” value, the limit is considered “not exceeded”.

6.2.2 Power threshold initial value (W)

The **“Power threshold initial value (W)”** parameter sets the initial value of the power threshold in Watt (that can be modified via the BUS if necessary, using the dedicated communication object). The parameter can assume the following values:

- from -8000 to 8000 in steps of 1 **(default value 800)**

6.2.3 Power threshold hysteresis (W)

The **“Power threshold hysteresis (W)”** parameter sets the hysteresis value to be subtracted from the limit threshold to define the “limit not exceeded” value. This parameter can assume the following values:

- from 1 to 8000 in steps of 1 **(default value 100)**

Of course, the values that are set must be coherent - i.e. they must respect the rules:

- **+ 8000** W ≥ **Threshold value** > **Hysteresis** for threshold values > **0**
- **- 8000** W ≤ **Threshold value < Hysteresis** for threshold values < **0**

Note that, in the case of a negative threshold value, the limit is considered “exceeded” when the measured power value is lower than the “Limit threshold” value; when the power value rises below the “Limit threshold - hysteresis” value, the limit is considered “not exceeded”.

If this rule is not respected after ETS download, the default values are used.

6.2.4 Changing threshold setting

The **"Changing threshold setting"** parameter defines the format of the communication object needed to set the limit threshold via a BUS telegram. The values that can be set are:

- **absolute value** **(default value)**
- increment/decrement step regulation

Selecting **absolute value** visualises the ***Power threshold x value input*** (Data Point Type 14.056 DPT_Value_Power) communication object, that can be used to set the limit threshold value via the BUS. Once the threshold value has been received via the BUS, make sure it is valid (and therefore respects the two rules above); if it isn't, the telegram is ignored.

Selecting **increment/decrement step regulation** visualises the **"Regulation step of threshold by bus"** parameter and the ***Power threshold x regulation*** (Data Point Type: 1.007 DPT_Step object). If the value "1" is received on this object, the limit threshold value will be increased by the value defined in the **"Regulation step of threshold by bus"** parameter; if the value "0" is received, the limit threshold value will be decreased by the value defined in the **"Regulation step of threshold by bus"** parameter.

Before implementing the modification, the device checks that the new threshold value (in the increase/decrease command received via the BUS) is valid (and therefore respects the two rules above); if it isn't, the increase/decrease step is limited to the maximum/minimum permitted.

6.2.5 Regulation step of threshold by bus

The **"Regulation step of threshold by bus"** parameter defines the increase/decrease step of the limit threshold value following the arrival of a command on the relative regulation object. The values that can be set are

- from 1 to 250 in steps of 1 **(default value 100)**

The current value of the power limit threshold is transmitted on the BUS via the ***Power threshold x actual value*** (Data Point Type 14.056 DPT_Value_Power) object. The feedback sending conditions are: following a BUS request, spontaneously at each threshold change, and on BUS voltage reset.

6.2.6 Signalling of the overcoming power threshold

The **"Signalling of the overcoming power threshold"** parameter is used to configure the way of signalling the exceeded limit threshold via the ***Over power threshold x*** communication object. The parameter can assume the following values:

- **sending on variation** **(default value)**
- sending on variation and periodically

The exceeded threshold signal is sent via the ***Over power threshold x*** (Data Point Type 1.002 DPT_Bool) communication object and the **"At overcoming power threshold"** and **"At coming back under power threshold"** parameters. If **sending on variation and periodically**, is selected, the **"Period of signalling sending (minutes)"** parameter is displayed.

6.2.7 At overcoming power threshold

The **"At overcoming power threshold"** parameter is used to set the value to be sent when the defined limit is exceeded. The values that can be set are

- no action
- send "0"
- **send "1"** **(default value)**

6.2.8 At coming back under power threshold

The **"At coming back under power threshold"** parameter is used to set the value to be sent when the power returns below the limit threshold (taking the hysteresis into account as well). The values that can be set are

- no action
- **send "0"** **(default value)**
- send "1"

The ***Over power threshold x*** object is sent upon request, spontaneously on variation, periodically (if cyclical repetition is enabled) and when the BUS voltage is reset, but only if the power value is not within the hysteresis band (between *Limit threshold* and *Limit threshold - hysteresis*). When the threshold is disabled, the sending of the "limit threshold exceeded" signals is inhibited, but any change or feedback of the threshold value is still transmitted.

6.2.9 Period of signalling sending (minutes)

The **"Period of signalling sending (minutes)"** parameter is used to set the repetition frequency for the telegrams signalling when the absorption threshold has been exceeded. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

6.2.10 Over power threshold period counter format

The device can signal the count of the total time above the power threshold; this count is based on the consumed/produced power measurement. It is only made if the supply voltage is present; otherwise, the counter is not increased.
The count can still be made even if there is no BUS voltage. The counter used for the count can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Over power threshold period counter format"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- **4 byte (seconds)** **(default value)**
- 2 byte (minutes)
- 2 byte (hours)

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Period counter over power threshold x (Unit of measurement: [s/min/h])*** communication object. The initial value is always 0, regardless of the format selected.

6.2.11 Overflow value

The **"Overflow value"** parameter is used to set the maximum value of the "period above limit threshold" counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition.
Depending on the value set for the **"Over power threshold period counter format"** parameter, the values that can be set for this item will be different:

- If the counter format is **4 byte (seconds)**, the ***Period counter over power threshold period x counter format (s)*** (Data Point Type: 13.100 DPT_LongDeltaTimeSec) communication object is visible and the values that can be set for the above parameter are:
  - from 0 to **2147483647 (default value ≈ 68 years)**, in steps of 1
- If the counter format is **2 byte (minutes)**, the ***Period counter over power threshold x (min)*** (Data Point Type: 7.006 DPT_TimePeriodMin) communication object is visible and the values that can be set for the above parameter are:

- from 0 to **65535 (default value ≈ 45.5 days)**, in steps of 1

- If the counter format is **2 byte (hours)**, the ***Period counter over power threshold x (h)*** (Data Point Type: 7.007 DPT_TimePeriodHrs) communication object is visible and the values that can be set for the above parameter are:

  - from 0 to **65535 (default value ≈ 7.4 years)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Overflow period counter over power threshold x*** (Data Point Type: 1.002 DPT_Bool) object, the device signals the overflow of the "period above power threshold" counter. When an overflow occurs, a value of “1” is sent; a value of “0” is sent when the counter is reinitialised.

The device can use the ***Reset period counter over power threshold x*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of “0” is ignored, whereas when the value “1” is received, the counter is reset at the initial value and the ***Overflow period counter over power threshold x*** object is set at “0”.

6.2.12 Period counter sending condition

The **“Period counter sending condition”** parameter defines the conditions for sending the current value of the "period above absorption threshold" counter. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **“Period counter variation for sending”** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **“Counter sending period (minutes)”** parameter.

If **sending on request** is selected, no new parameter is enabled because the counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.

If the sending condition of the counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

6.2.13 Period counter variation for sending

The **“Period counter variation for sending”** parameter is visible if the "period above threshold" counter value is sent on variation. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

6.2.14 Counter sending period (minutes)

The **"Counter sending period (minutes)"** parameter is visible if the "period above threshold" counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the "period above threshold" counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

6.2.15 Format of the "exceeded power threshold number" counter

The device can signal the number of times that the threshold is exceeded.
The counter used to calculate how often the threshold is exceeded can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Over power threshold number counter format"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- 2 byte unsigned
- **4 byte unsigned (default value)**

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Number counter over power threshold x*** communication object. The initial value is always 0, regardless of the format selected.

6.2.16 Overflow value

The **"Overflow value"** parameter is used to set the maximum value of the "threshold exceeded" counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition.
Depending on the value set for the **"Over power threshold number counter format"** parameter, the values that can be set for this item will be different:

- If the counter format is **2 byte unsigned**, the ***Number counter over power threshold x (2 byte)*** (Data Point Type: 7.001 DPT_Value_2_Ucount) communication object is displayed and the values that can be set for the above parameter are:
  - from 0 to **65535 (default value)**, in steps of 1
- If the counter format is **4 byte unsigned**, the ***Number counter over power threshold x (4 byte)*** (Data Point Type: 12.001 DPT_Value_4_Ucount) communication object is displayed and the values that can be set for the above parameter are:
  - from 0 to **4294967295 (default value)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Overflow number counter power limit threshold x*** (Data Point Type: 1.002 DPT_Bool) object to indicate the overflow of the "exceeded absorption limit threshold number" counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Reset number counter power limit threshold x*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of "0" is ignored, whereas when the value "1" is received, the counter is reset at the initial value and the ***Overflow number counter power limit threshold x*** object is set at "0".

6.2.17 Number counter sending condition

The **"Number counter sending condition"** parameter defines the conditions for sending the current value of the "exceeded threshold number" counter. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Number counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Counter sending period (minutes)"** parameter.
If **sending on request** is selected, no new parameter is enabled because the counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.
If the sending condition of the counter is different from **sending on request**, the value of the counter is sent after a BUS voltage reset in order to update any connected devices.

6.2.18 Number counter variation for sending

The **"Number counter variation for sending"** parameter is visible if the "exceeded absorption limit threshold number" counter value is sent on variation. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

6.2.19 Counter sending period (minutes)

The **"Counter sending period (minutes)"** parameter is visible if the "exceeded threshold number" counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the "exceeded threshold number" counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

6.2.20 Power threshold function at download

The **"Power threshold function at download"** parameter enables the power threshold following the application download from ETS. The possible values are:

- Deactive
- **Active** **(default value)**

6.2.21 Power threshold function at bus restoring

The **"Power threshold function at bus restoring"** parameter enables the power threshold function following a BUS voltage reset. The possible values are:

- deactive
- active
- **as before voltage dropping** **(default value)**

With **deactive**, the power threshold function is not activated when the BUS voltage is reset.

With **active**, the power threshold function is enabled with the current value.

With **as before voltage dropping**, the threshold activation status in force prior to the failure is maintained when the BUS voltage is reset.

7 *“Remote loads list”* menu

The device can control up to 10 remote loads.
After defining the number of remote loads to control, for each one you can define the parameters needed for the load disconnection/reconnection control algorithm.
The structure of the menu is as follows:

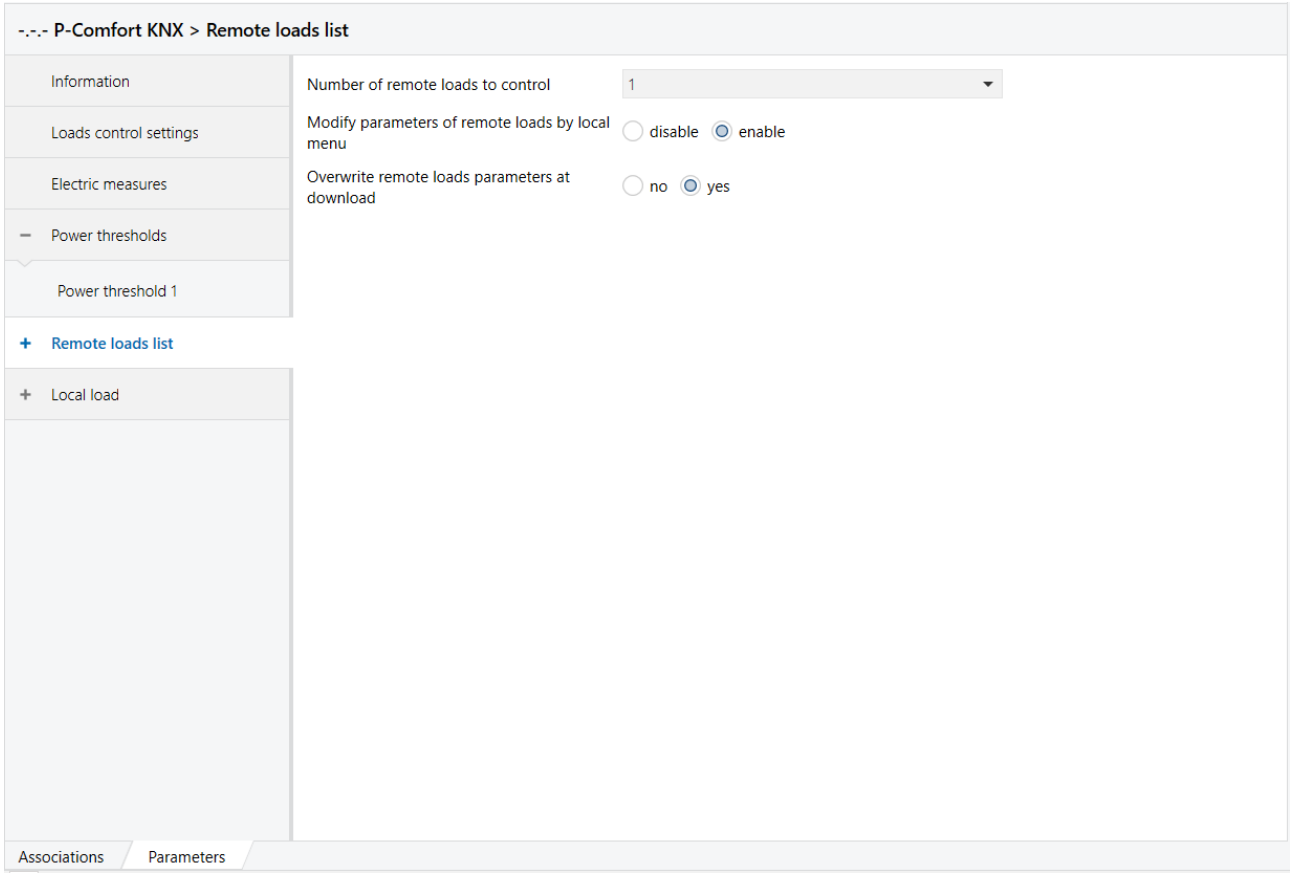


Fig. 7.1: “Remote loads list” menu

7.1 “Remote loads list menu parameters

7.1.1 Number of remote loads to control

The **“Number of remote loads to control”** parameter is used to select the number of remote loads involved in the control algorithm. Depending on the value set, the relative communication objects and parameters will be displayed for each remote load. The values that can be set are:

- from **1 (default value)** to 10, in steps of 1

Depending on the value set, the **“Load X nominal power”**, **“Load X priority”** and **“Load X consider consumption before reclosing the load”** parameters will be displayed for each load (grouped together in the **Load x** sub-set, where "x" is the load indicator - a number between **1** and **10**), along with the ***Load x - Slave switching***, ***Load x - Notify slave status***, ***Load x - Notify power consumption slave***, ***Load x - Include/exclude slave in algorithm*** and ***Load x - Include/exclude slave in algorithm status*** communication objects.

7.1.2 Modify parameters of remote loads by local menu

The **"Modify parameters of remote loads by local menu"** parameter is used to modify the parameters of the remote loads enabled (Nominal power, Priority, Consider absorption before reconnecting) via the local menu as well (see the Programming Manual)
The values that can be set are:

- disable
- **enable** **(default value)**

☞ If **disable** is selected, the SET menu of each remote load enabled will be disabled and nothing will happen when the relative push-button is pressed.

7.1.3 Overwrite remote loads parameters at download

The **"Overwrite remote loads parameters at download"** parameter defines whether or not the value of the parameters listed above should be overwritten following the next download of the ETS application. The values that can be set are:

- no
- **yes** **(default value)**

By setting **no**, the parameter values are saved in a non-volatile memory and reset when the device is relaunched.

7.2 "Load x menu parameters

When a remote load x is enabled, a **Load x** sub-menu appears so the following parameters can be set.

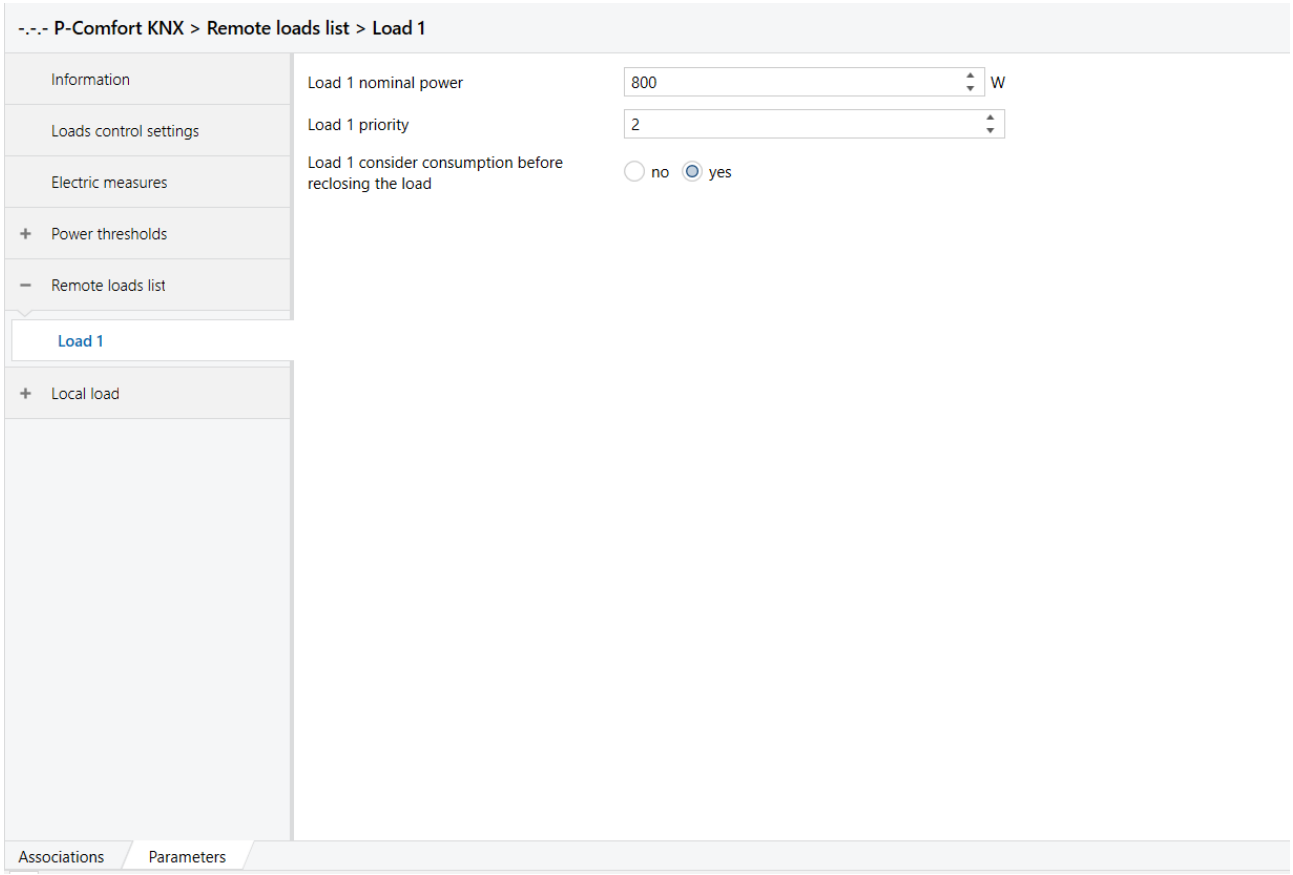


Fig. 7.2: "Load x" menu

7.2.1 Load x nominal power

The nominal absorption of each load can be altered using the **"Load x nominal power"** parameter. The parameter can assume the following values:

- from 10W to 6000W in steps of 1W **(default value 800W)**

Make sure the nominal power value set is always coherent with the load connected, even when using the notification that allows the retrieval of the instantaneous power absorbed by the load. If, to respect standard IEC 62962, the configuration of the **"Time spent above the threshold before load shedding [s]"** and **"Time between a load switch off and next [s]"** parameters doesn't guarantee the time needed to retrieve (from the BUS) the information about the active power of the remote loads, the nominal absorption value will be used when evaluating remote load disconnection/reconnection.

7.2.2 Load x priority

The disconnection/reconnection priority associated with the load can be altered via the **"Load X priority"** parameter. The parameter can assume the following values:

- from "1" = max to "11" = min, in steps of 1 **"2" (default for load 1, increasing for subsequent loads)**

7.2.3 Load x consider consumption before reclosing the load

To minimise the risk of triggering the disconnection procedure when the loads are being reconnected, the device reconnects a load if the power that it absorbed prior to disconnection, added to the instantaneous power measured, doesn't exceed the disconnection threshold value (power threshold + hysteresis).
This rule is valid for the loads that are immediately activated and begin to consume energy as soon as they are repowered. There are some loads however, that are not activated straight away; they go into standby. For this type of load, it is counter-productive to use the check during reconnection because their reactivation doesn't generate an absorption surplus.
The **"Load x consider consumption before reclosing the load"** parameter defines whether the remote load x is activated and begins consuming energy immediately when it is reconnected, thereby enabling P-COMFORT to behave differently when reconnecting it.
The values that can be set are:

- no
- **yes** **(default value)**

By setting **yes**, a load is reconnected after checking its absorption prior to disconnection.

By setting **no**, the load is reconnected without any further evaluation.

The device can use the ***Load x - Slave switching*** (Data Point Type: 1.001 DPT_Switch) communication object to send the remote load disconnection/reconnection commands (slave).

☞ When a load has been disconnected by P-COMFORT, the icon flashes on the page of that load. The remote load disconnection/reconnection commands can be sent directly via the device, using the relative parameter of the SET menu of load "N" (see the Programming Manual).

The device only reconnects those loads that it has disconnected; any loads not disconnected by the algorithm are NOT reconnected.
During the disconnection phase, if the power value is not below the threshold, an active load (On) will be disconnected even if its instantaneous absorption is 0W.

The current status of the load x is received via the ***Load x - Notify slave status*** (Data Point Type: 1.001 DPT_Switch). When the BUS voltage is reset, the device sends a status read request to update the current status of the remote load x.

During both the disconnection and reconnection of a load, if its status change feedback (on or off) is not received, P-COMFORT will repeat the command cyclically (for 1 minute). The status read request is repeated

every 5 minutes, even following the arrival of status feedback coherent with the command sent. If the status feedback of the remote load is not received, the load will be excluded from the load control algorithm after 3 status read request attempts with no response. Given that each attempt has a 5-minute time-out, the load will be excluded after 15 minutes.

Via the ***Load x - Notify power consumption slave*** (Data Point Type 14.056 DPT_Value_Power) communication object, the device can receive the instantaneous power absorbed by the load; if the communication object is NOT connected, for the purposes of the algorithm the nominal absorption set via the relative parameter will always be used when the load is ON. In the same way, to respect standard IEC 62962, if the configuration of the **"Time spent above the threshold before load shedding [s]"** and **"Time between a load switch off and next [s]"** parameters doesn't guarantee the time needed to retrieve (from the BUS) the information about the active power of the remote loads, the nominal absorption value will be used. Make sure therefore that the nominal power value set is always coherent with the load connected, even when using the relative feedback.

When the BUS voltage is reset (and cyclically, every 5 minutes), the device sends a status read request to update the value of the power absorbed by the remote load.

If instantaneous absorption is available, the device saves the absorption value of a load before disconnecting it so that the value can be used if necessary to evaluate the reconnection of that load (depending on the setting of the **"Consider consumption before reclosing the load"** parameter); the nominal value is used if no instantaneous absorption feedback has been received (e.g. when the voltage is reset), or after 5 minutes with no feedback (time-out).

☞ The load status and its absorption value (if available) are shown directly on the device, on the page relating to that load:

Load OFF

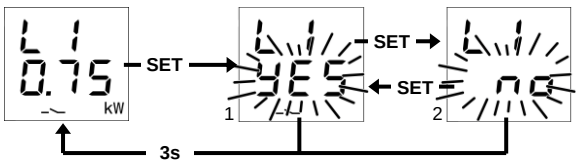
Instantaneous absorption of load 1 available, load ON and absorption 0W

Instantaneous absorption of load 1 available, load ON and absorption 750W

Instantaneous absorption of load 1 not available, load ON

Each load can be temporarily excluded from/included in the control algorithm following the arrival of commands "1=On" (include) or "0=Off" (exclude) on the ***Load x - Include/exclude slave in algorithm*** (Data Point Type: 1.001 DPT_Switch) communication object associated with that load; when the value "1" is received, the load is included in the algorithm, whereas with the value "0" it is excluded.

☞ The load can be temporarily excluded from/included in the control algorithm from the load page on the device, by pressing the SET/MODE push-button several times until the required option is displayed.



When the selection is being made, the three digits underneath the word "YES" or "no" will flash, whereas the icon will have a fixed light if the current setting is "YES.

Load "1" included

Load "1" excluded

At the end of the time-out (3 seconds), the selection is confirmed and the lower three digits will again show the load status/consumption.

If a load is included in the control function, this is indicated by the illuminated icon on the page of that load (see the Programming Manual). The device indicates the inclusion status of the load via the ***Load x - Include/exclude slave in algorithm status*** (Data Point Type: 1.001 DPT_Switch): “1” when the load is included, or “0” if it is excluded. This feedback is sent following a BUS request, spontaneously with every threshold enabling status variation, and on BUS voltage reset.

Following an ETS download, the remote load is only included by default in the load control management if the mandatory communication objects are connected (***Load x - Slave switching*** and ***Load x - Notify slave status***). Following a 230V power supply failure, the inclusion/exclusion status of the remote loads (possibly modified via the BUS or directly from the device) is saved and reset when the device is relaunched.

8 *“Local load”* menu

The **Local load** menu has three sub-menus for configuring and enabling certain specific functions associated with the local device relay.

8.1 “Local Load - Settings menu parameters

The **Local load - Settings** sub-menu has the following structure:

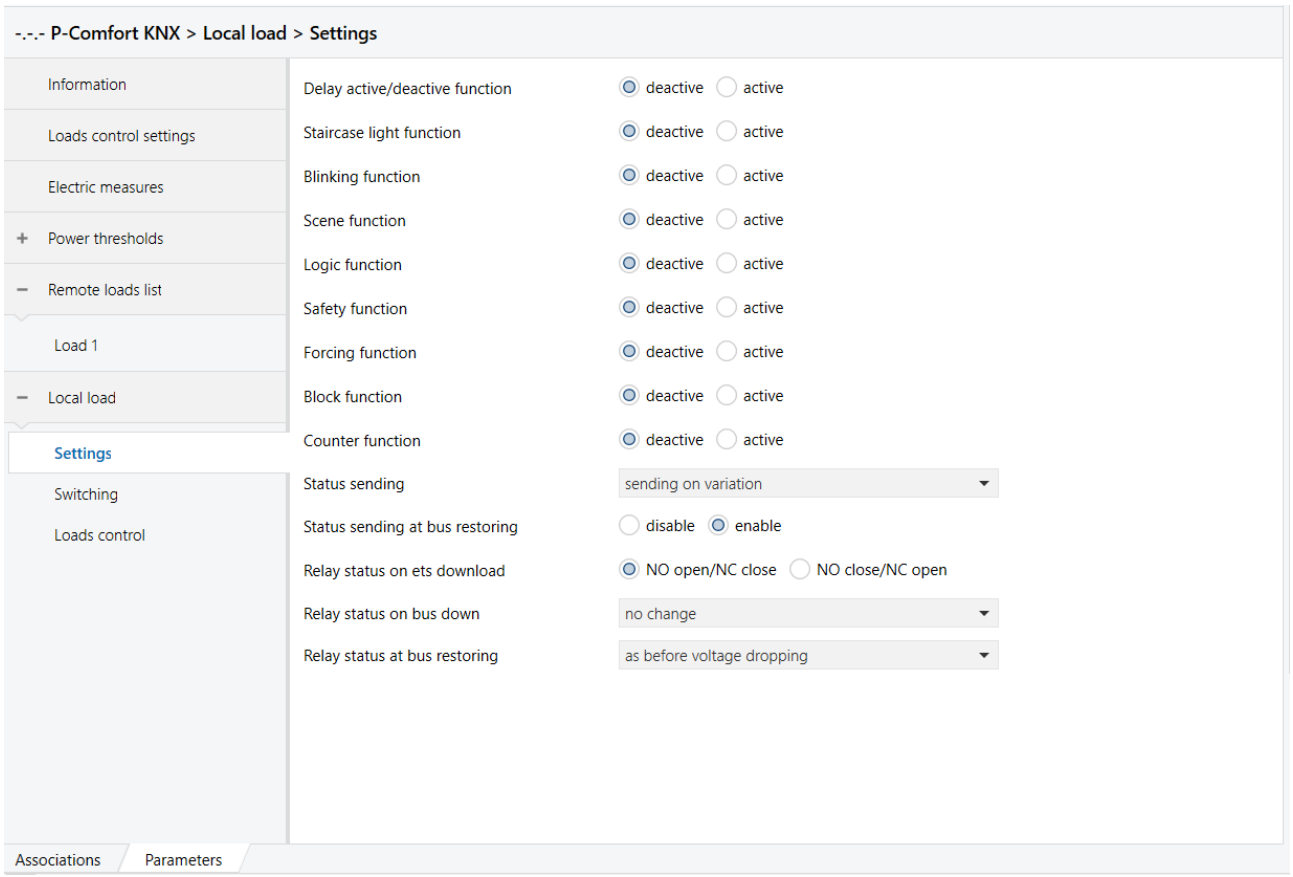


Fig. 8.1: “Local Load - Settings” menu

The device has various operating modes and different functions with different priorities; the **“Delay active/deactive function”**, **“Staircase light function”**, **“Blinking function”**, **“Scene function”**, **“Logic function”**, **“Safety function”**, **“Forcing function”**, **“Block function”** and **“Counter function”** parameters activate the functions and make their operating parameters visible and configurable by displaying the **Delayed switching**, **Staircase light**, **Blinking**, **Scenes**, **Logic**, **Safety**, **Forcing**, **Block** and **Counters** configuration menus.
The values that can be set for the parameters listed above are:

- **deactive** **(default value)**
- active

If **active** is selected, the relative configuration menu will be displayed.

8.1.1 Delayed switching

One of the local relay operating modes is load on/off switching with an activation/deactivation delay, which switches the relay status on the basis of the commands received, creating a delay between the moment when the command is received and the moment when the relay is effectively switched over. From the BUS, this operating mode can be controlled via the ***Local relay - Delayed switching*** (Data Point Type: 1.001 DPT_Switch). This function has the same priority as the on/off switching, stair raiser light and flashing functions; this means that if one of the functions is activated while another is already active, the new one is executed and the previous one is terminated.
This menu is visible if the **"Delay active/deactive function"** parameter of the **Settings** menu is set on **active**.

The structure of the menu is as follows:

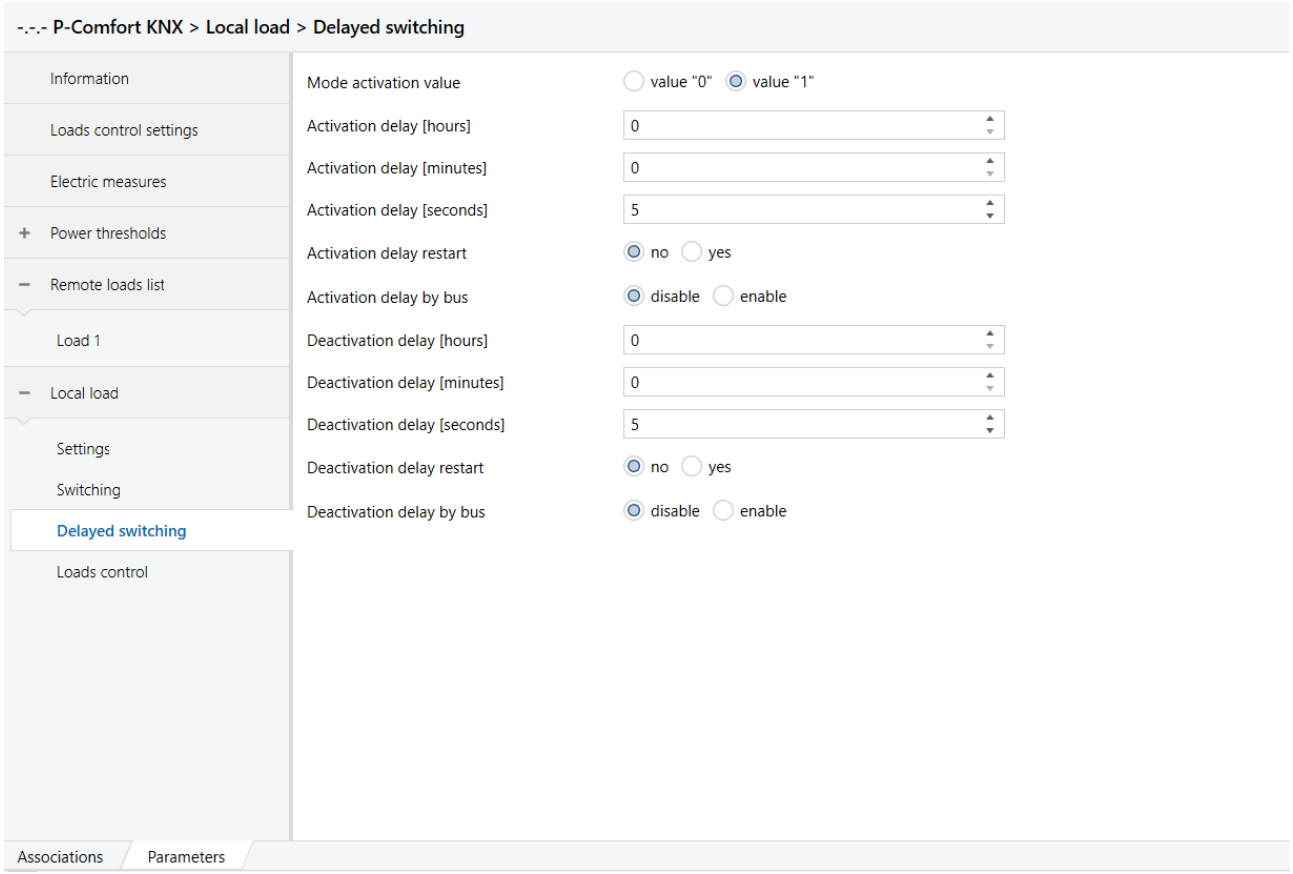
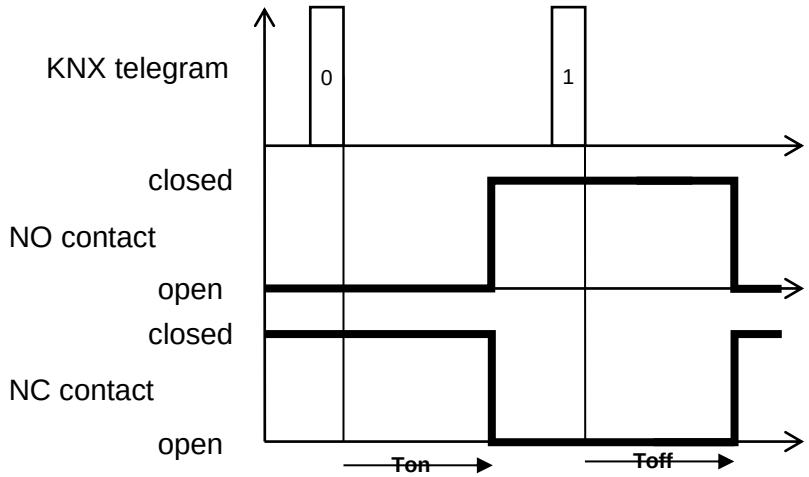


Fig. 8.1.1: "Local load - Delayed switching" menu

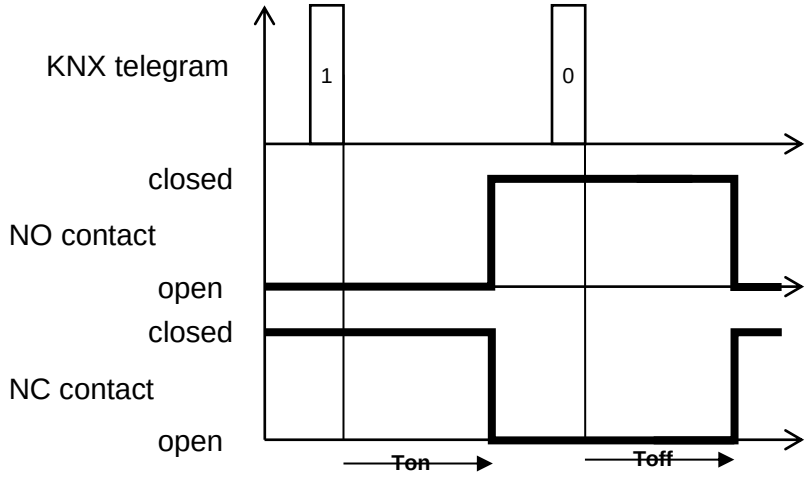
The **"Mode activation value"** parameter determines which logic value received via the ***Local relay - Delayed switching*** communication object will switch the relay to the ON status (NO contact closed/NC open). The possible values are:

- value "0"
- **value "1"** **(default value)**

If **value "0"** is selected, when the device receives a telegram from the BUS with a logic value equal to "0", it switches the relay to the status → NO contact closed/NC contact open once the set activation delay time (Ton) has elapsed. Vice versa, when the logic value "1" is received, the device waits for the deactivation delay time (Toff) before switching the contact to → NO contact open/NC contact closed. See the figure below.



If **value "1"** is selected, when the device receives a telegram from the BUS with a logic value equal to "1", it switches the relay to the status → NO contact closed/NC contact open once the set activation delay time (Ton) has elapsed. Vice versa, when the logic value "0" is received, the device waits for the deactivation delay time (Toff) before switching the contact to → NO contact open/NC contact closed. See the figure below.



The **"Activation delay [hours]"** parameter sets the first of the three values (hours) that make up the activation delay time (hours, minutes, seconds). The values that can be set are:

- from **0 (default value)** to 24, in steps of 1

The **"Activation delay [minutes]"** parameter sets the second of the three values (minutes) that make up the activation delay time (hours, minutes, seconds). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

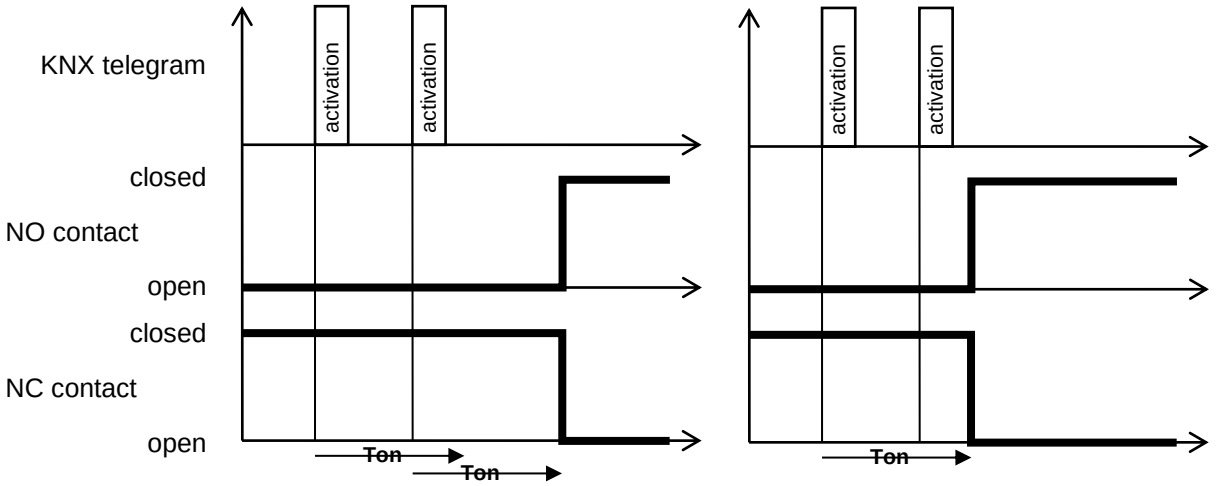
The **"Activation delay [seconds]"** parameter sets the last of the three values (seconds) that make up the activation delay time (hours, minutes, seconds). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 5)**

The **"Activation delay restart"** parameter enables the reset of the activation delay time whenever a delayed activation BUS telegram is received while the delay count is already active. The values that can be set are:

- **no** **(default value)**
- yes

By selecting **yes**, the counter is reinitialised if a new delayed activation telegram is received during the activation delay count; otherwise, the count continues without changes. See the figure below (with reset enabled on the left, without reset on the right).



The **"Activation delay by bus"** parameter enables the communication object used to receive the new activation delay value, which overwrites the one configured in ETS. The values that can be set are:

- **disable** **(default value)**
- enable

Selecting **enable** visualises the ***Local relay - Activation delay*** (Data Point Type: 7.005 DPT_TimePeriodSec) communication object, which is used to receive the activation delay value from the BUS.
If the new value is received while an activation delay time count is already in progress, it will become operative when the next activation command is received.

The **"Deactivation delay [hours]"** parameter sets the first of the three values (hours) that make up the deactivation delay time (hours, minutes, seconds). The values that can be set are:

- from **0 (default value)** to 24, in steps of 1

The **"Deactivation delay [minutes]"** parameter sets the second of the three values (minutes) that make up the deactivation delay time (hours, minutes, seconds). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

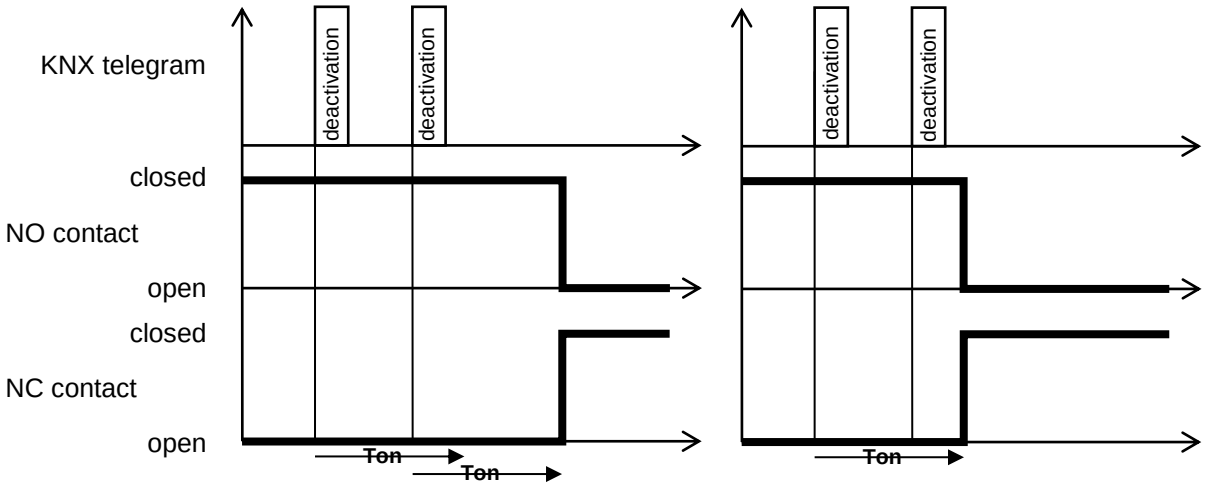
The **"Deactivation delay [seconds]"** parameter sets the last of the three values (seconds) that make up the deactivation delay time (hours, minutes, seconds). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 5)**

The **"Deactivation delay restarte"** parameter enables the reset of the deactivation delay time whenever a delayed deactivation BUS telegram is received while the delay count is already active. The values that can be set are:

- **no** **(default value)**
- yes

By selecting **yes**, the counter is reinitialised if a new delayed deactivation telegram is received during the deactivation delay count; otherwise, the count continues without changes. See the figure below (with reset enabled on the left, without reset on the right).



The **"Deactivation delay by bus"** parameter enables the communication object used to receive the new deactivation delay value, which overwrites the one configured in ETS. The values that can be set are:

- **disable** **(default value)**
- enable

Selecting **enable** visualises the ***Local relay - Deactivation delay*** (Data Point Type: 7.005 DPT_TimePeriodSec) communication object, which is used to receive the deactivation delay value from the BUS.
If the new value is received while a deactivation delay time count is already in progress, it will become operative when the next deactivation command is received.

8.1.2 Staircase light

One of the local relay operating modes is timed activation, or the stair raiser light function, which involves activating the load for a certain period of time and then deactivating it automatically without receiving any command. It is also possible to enter a certain delay between the moment when the timed start command is received and the moment when the relay is effectively switched. From the BUS, this operating mode can be controlled via the ***Local relay - Staircase light timed switching*** (Data Point Type: 1.010 DPT_Start communication object).
This function has the same priority as the on/off switching, delayed activation/deactivation, and flashing functions; this means that if one of the functions is activated while another is already active, the new one is executed and the previous one is terminated.

This menu is visible if the **"Staircase light function"** parameter of the **Settings** menu is set on **Active**.

The structure of the menu is as follows:

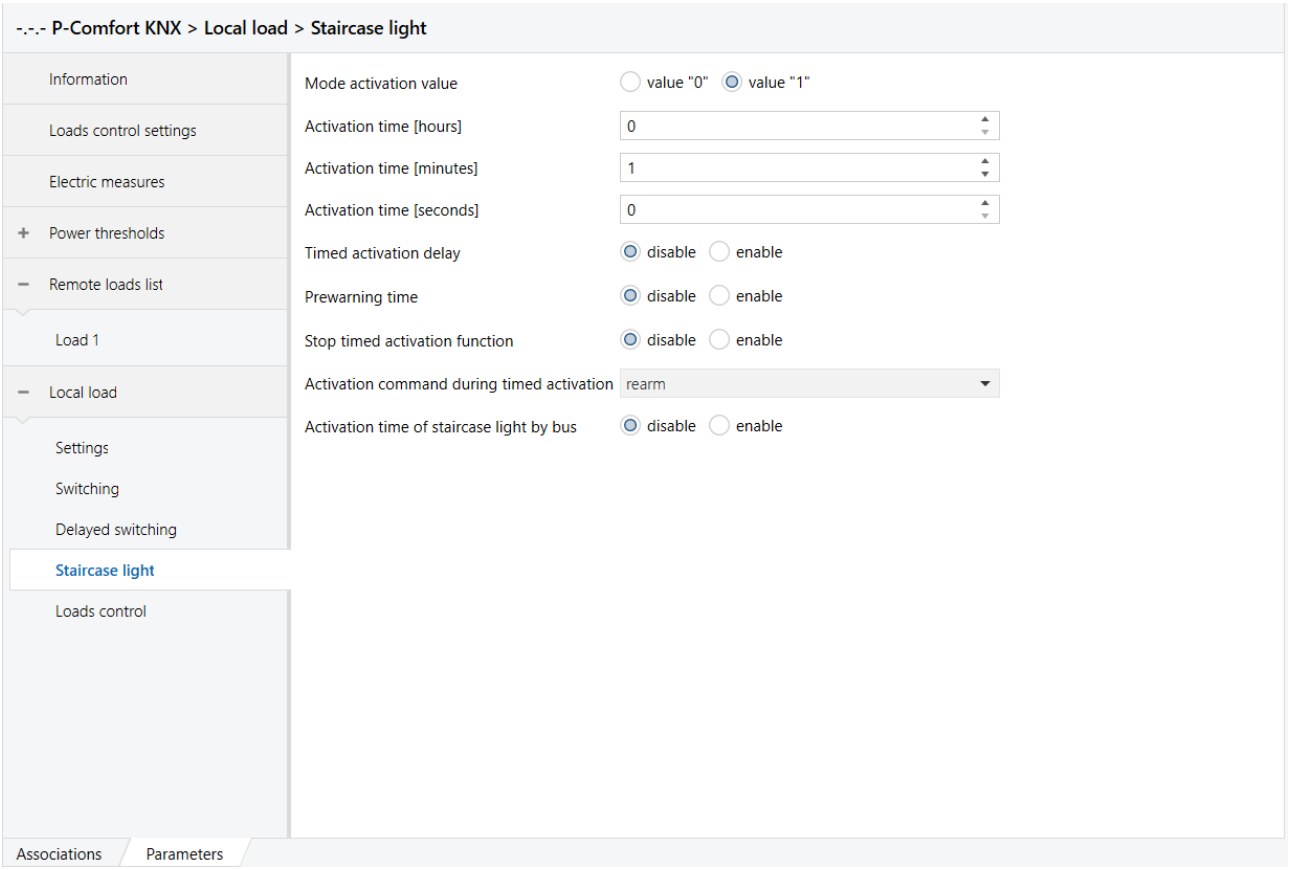
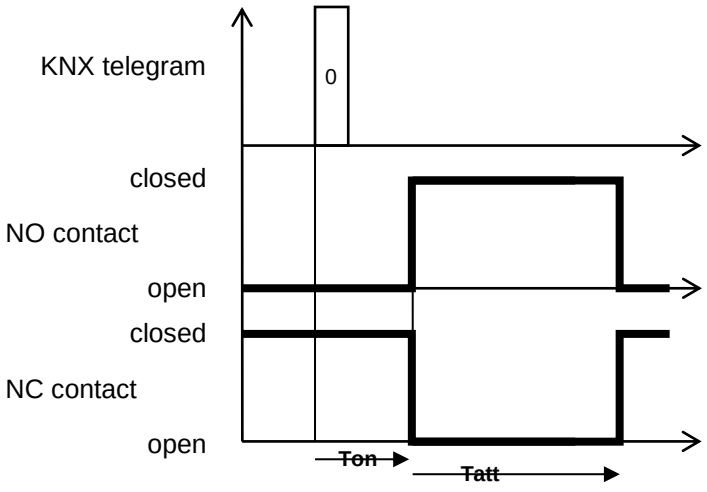


Fig. 8.1.2: “Local load - Staircase light” menu

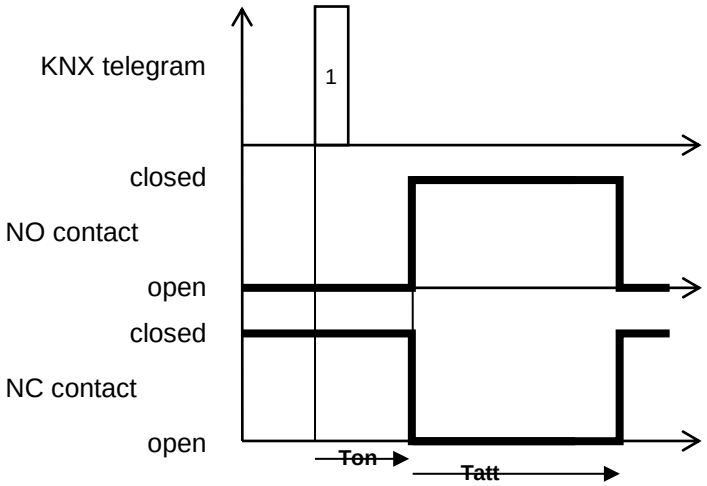
The **“Mode activation value”** parameter determines which logic value received via the ***Local relay - Staircase light timed switching*** communication object will switch the relay to the ON status (NO contact closed/NC open) and activate timing. The possible values are:

- value “0”
- **value “1”** **(default value)**

If **value “0”** is selected, when the device receives a telegram from the BUS with a logic value equal to “0”, it switches the relay to the status → NO contact closed/NC contact open and begins the activation time count once the set activation delay time (Ton) has elapsed. When the activation time (Tatt) has elapsed, the contact returns to the open status (if NO) or closed (if NC). See the figure below.



If **value "1"** is selected, when the device receives a telegram from the BUS with a logic value equal to "1", it switches the relay to the status → NO contact closed/NC contact open once the set activation delay time (Ton) has elapsed. When the activation time (Tatt) has elapsed, the contact returns to the open status (if NO) or closed (if NC). See the figure below.



The **"Activation time [hours]"** parameter sets the first of the three values (hours) that make up the load activation time (Tatt). The values that can be set are:

- from **0 (default value)** to 24, in steps of 1

The **"Activation time [minutes]"** parameter sets the second of the three values (minutes) that make up the load activation time (Tatt). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 1)**

The **"Activation time [seconds]"** parameter sets the last of the three values (seconds) that make up the load activation time (Tatt). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

The **"Timed activation delay"** parameter is used to enter a delay between the moment when the ***Local relay - Staircase light timed switching*** communication object is received and the moment when the command is effectively implemented (closure of NO contact/opening of NC contact). The possible values are:

- **disabled** **(default value)**
- disabled

If the delay is **disabled**, the **"Timed activation delay duration"** parameter is visualised to set the delay value in seconds. The parameter can have the following values:

- **1 s (default value)**, 2 s, 3 s, 5 s, 10 s, 15 s, 20 s, 30 s, 45 s, 1 min, 1 min 15 s, 1 min 30 s, 2 min, 2 min 30 s, 3 min, 5 min, 15 min, 20 min, 30 min, 1 h, 2 h, 3 h, 5 h, 12 h, 24 h.

The activation delay cannot be reset.

The **"Prewarning time"** parameter can be used to enable a signal when the load is about to be automatically switched off. This is done by deactivating the load for a moment and then reactivating it (blink). The prewarning time is applied before the end of the activation time. The parameter can assume the following values:

- **disabled** **(default value)**
- disabled

If **disabled** is selected, the **"Prewarning time duration"** and **"Load deactivation duration [x100 ms]"** parameters are displayed.

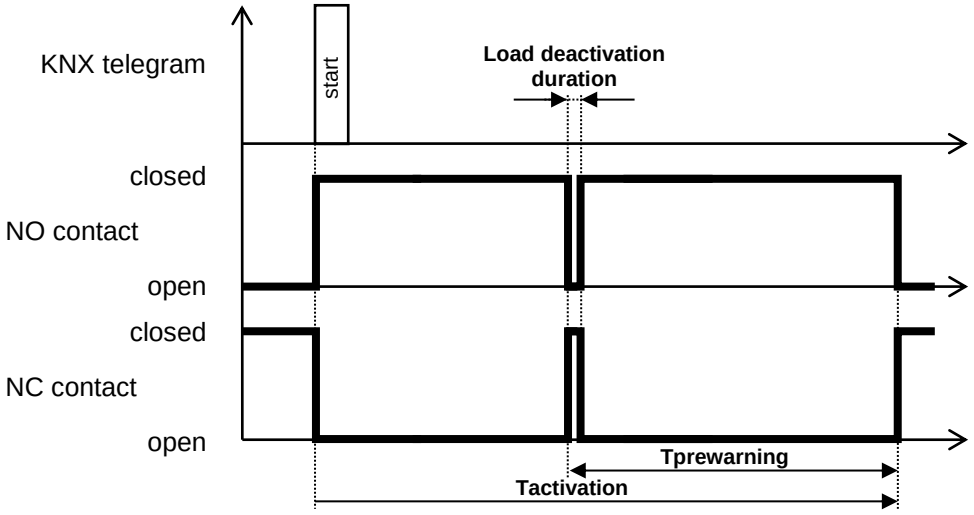
The **"Prewarning time duration"** parameter is used to set the time between the signalling of impending deactivation and the effective deactivation of the load. The possible values are:

- **15 s (default value)**, 30 s, 1 min.

The **"Load deactivation duration [x100 ms]"** parameter is used to set the load deactivation time for the pre-warning function. The values that can be set are:

- from **5 (default value)** to 15, in steps of 1

The figure below shows the operating principle of the pre-warning function.



The **"Stop timed activation function"** parameter enables the possibility to end timed activation via a BUS command on the ***Local relay - Staircase light timed switching*** communication object, with the value opposite to the one set in the **"Mode activation value"** item explained above. The possible values are:

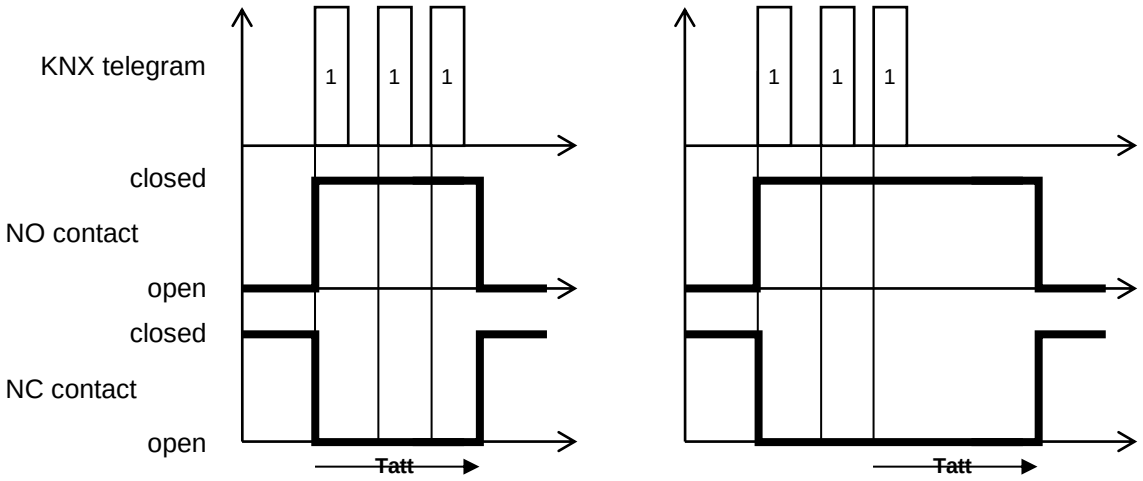
- **disable** **(default value)**
- enable

If the function is enabled, when the value opposite to the mode activation value is received, the device ends the timing and deactivates the load.

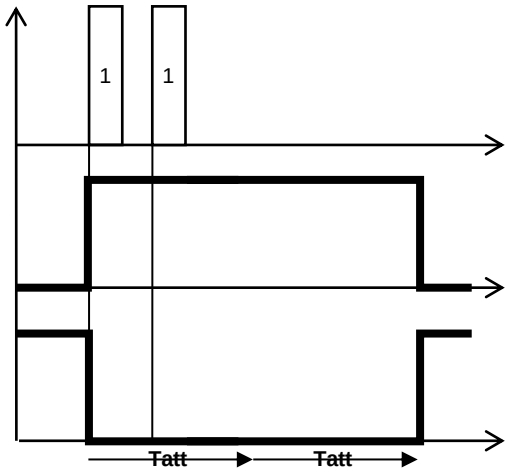
The **"Activation command during timed activation"** parameter defines the behaviour of the device if a timed activation command is received while timing is already in progress. The possible values are:

- no effect
- **rearm** **(default value)**
- extend

Selecting **no effect**, the next commands are ignored. Selecting **rearm**, every timed activation command received during the activation time count causes the count to be reinitialised. Selecting **extend**, every command received causes an extension equal to the count activation time. The figure below shows an example of each of the three configurations.



no effect *rearm*



extend

If **extend** is selected, the user can set a maximum number of consecutive extensions to the activation time thanks to the new **"Multiplicative factor max value"** parameter. The parameter can have the following values;

- from 2 to **5 (default value)**, in steps of 1

The **"Activation time of staircase light by bus"** parameter visualises the ***Local relay - Staircase light timeout*** (Data Point Type: 7.005 DPT_TimePeriodSec) input communication object, which can be used to receive the activation time of the stairs light function via the BUS communication object. The possible values are:

- **disable** **(default value)**
- enable

The activation time is between 0h:0min:1sec and 24h:59min:59sec so, when the BUS receives a value that lies outside this range, the value set for the deactivation delay time is the range limit value closest to the received value.

If a new activation time value is received, this becomes the new stair raiser light time, overwriting the old value (which will be deleted); if the new value is received while the timing is already active, it will become operative with the next timing activation.

8.1.3 Blinking

One of the relay output operating modes is blinking mode, which activates the load for a specific period of time then deactivates it, repeating this process until the deactivation command is received. From the BUS, this operating mode can be controlled via the ***Local relay - Blinking*** (Data Point Type: 1.001 DPT_Switch).
This function has the same priority as the on/off switching, delayed activation/deactivation, and timed activation functions; this means that if one of the functions is activated while another is already active, the new one is executed and the previous one is terminated.
This menu is visible if the **"Blinking function"** parameter of the **Settings** menu is set on **active**.
The structure of the menu is as follows:

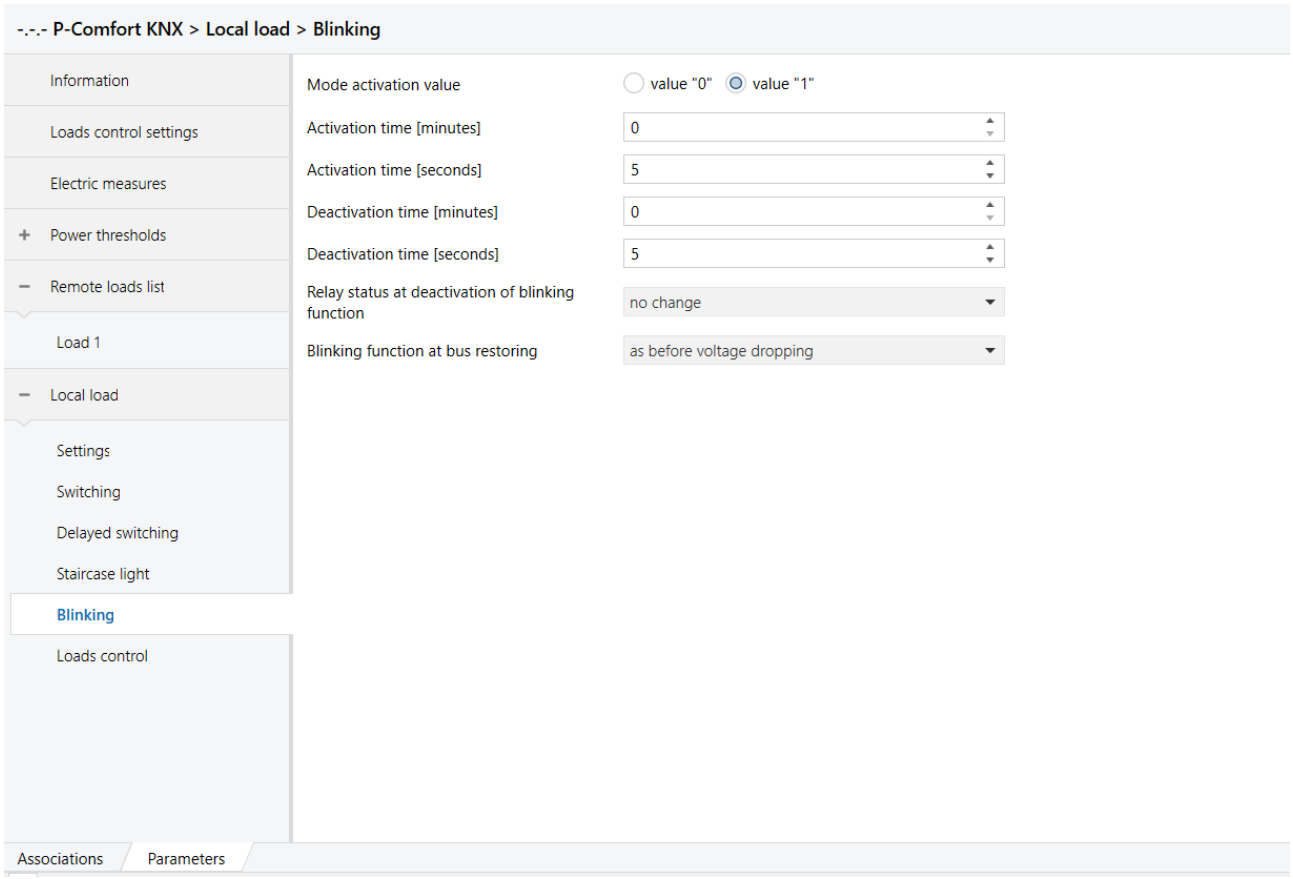
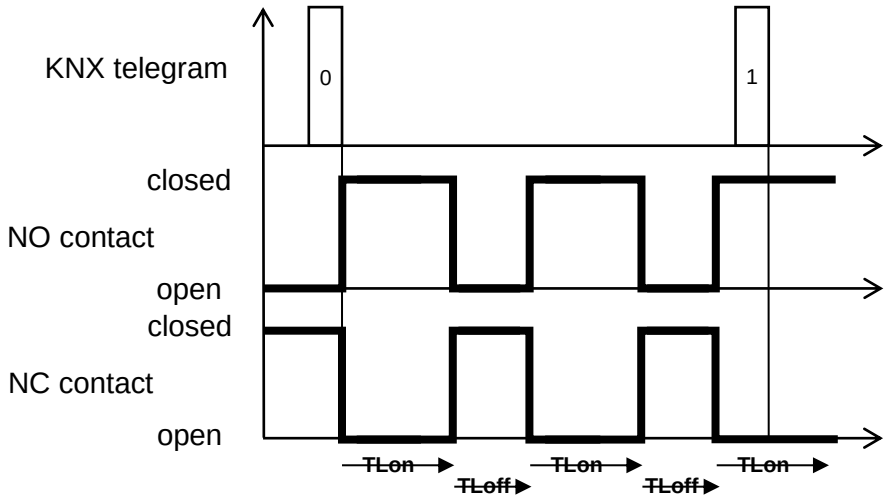


Fig. 8.1.3: "Local load - Blinking" menu

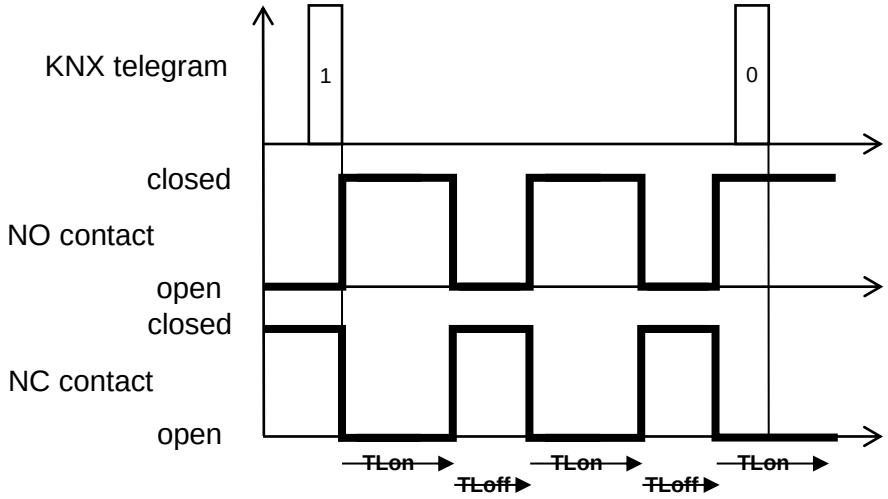
The **"Mode activation value"** parameter determines which logic value received via the ***Local relay - Blinking*** communication object will activate the load activation/deactivation process. The possible values are:

- value "0"
- **value "1"** **(default value)**

Selecting **value "0"**, when the device receives a telegram from the BUS with a logic value equal to "0", it switches the relay to the status → NO contact closed/NC contact open, and begins the activation time count. At the end of the activation time, the device deactivates the load (NO contact open/NC contact closed) for a period of time equal to the deactivation time, and then reactivates the load and restarts the process. See the figure below.



Selecting **value "1"**, when the device receives a telegram from the BUS with a logic value equal to "1", it switches the relay to the status → NO contact closed/NC contact open, and begins the activation time count. At the end of the activation time, the device deactivates the load (NO contact open/NC contact closed) for a period of time equal to the deactivation time, and then reactivates the load and restarts the process. See the figure below.



The **"Activation time [minutes]"** parameter sets the first of the two values (minutes) that make up the load activation time (TLon). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

The **"Activation time [seconds]"** parameter sets the second of the two values (seconds) that make up the load activation time (TLon). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 5)**

The **"Deactivation time [minutes]"** parameter sets the first of the two values (minutes) that make up the load deactivation time (TLoff). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

The **"Deactivation time [seconds]"** parameter sets the second of the two values (seconds) that make up the load deactivation time (TLoff). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 5)**

The status of the relay contact when blink mode deactivation command is received can be defined via the **"Relay status at deactivation of blinking function"** parameter, which can have the following values:

- NO open/NC close
- NO close/NC open
- **no change** **(default value)**

By selecting **no change**, the contact status remains the one that is active when the mode deactivation command is received.

The **"Blinking function at bus restoring"** parameter defines the status of blink mode when the BUS voltage is reset. The values that can be set are:

- deactive
- active
- **as before voltage dropping** **(default value)**

By selecting **active**, if no other function with a higher priority than blink mode is active, the device begins the blinking phase and ignores the value set for the **"Relay status at bus restoring"** item of the **Local load - Settings** menu.

8.1.4 Scenes

The scenes function is used to replicate a certain pre-set or previously memorised status upon receipt of the scene execution command. From the BUS, this function can be controlled via the ***Local relay - Scene*** (Data Point Type 18.001 DPT_SceneControl) communication object. The device can memorise and execute 8 scenes associated with the status of the local relay.
This menu is visible if the **"Scene function"** parameter of the **Settings** menu is set on **active**.

The structure of the menu is as follows:

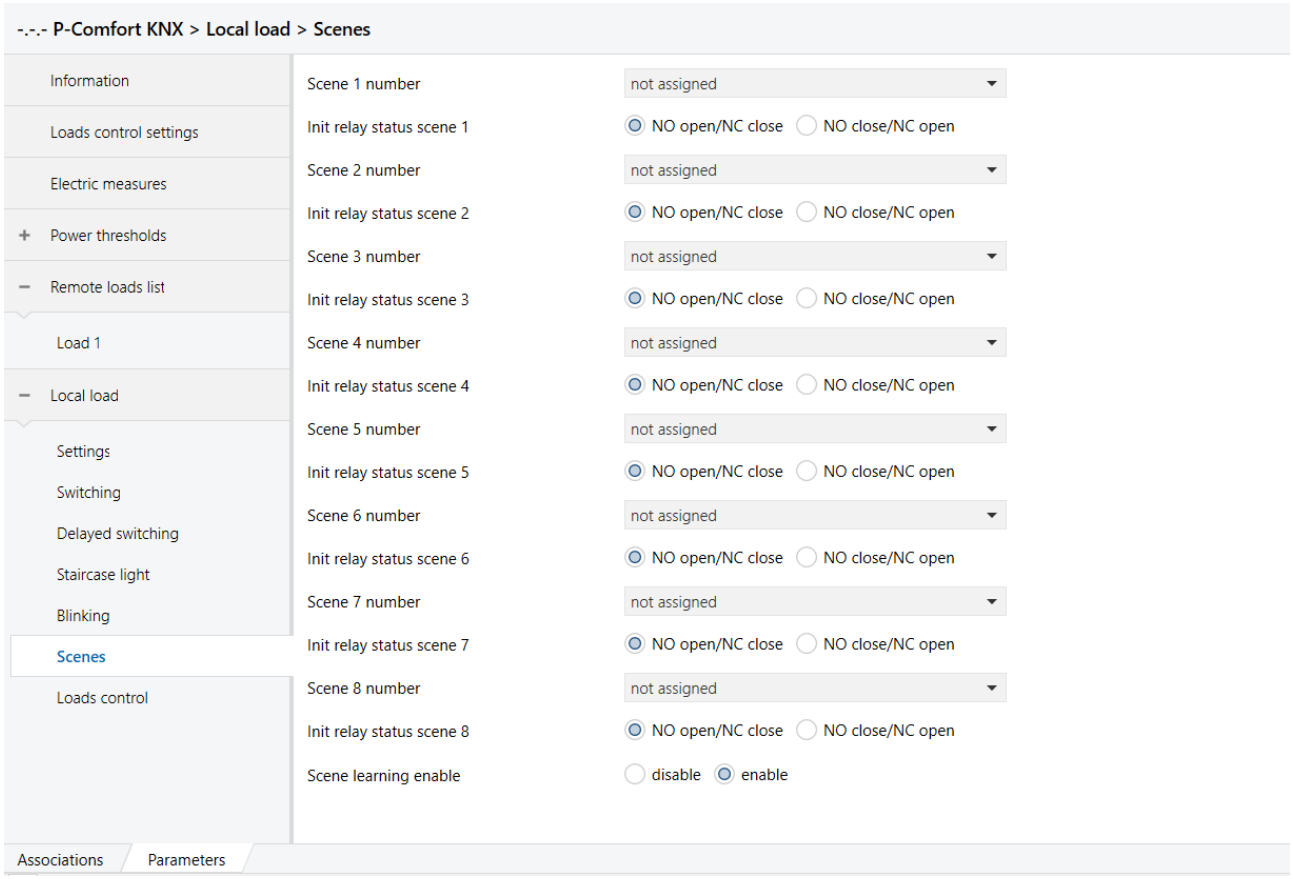


Fig. 8.1.4: “Local load - Scenes” menu

The **“Scene i number”** (1 ≤ n ≤ 8) parameters set the numerical value to identify (and therefore execute/store) the n-th scene. The possible values are:

- **not assigned** **(default value)**
- 0, 1.. 63

The **“Init relay status scene i”** (1 ≤ n ≤ 8) parameters are used to pre-set the contact status that the device must replicate after receiving a telegram for the execution of the n-th scene. The possible values are:

- **NO open/NC close** **(default value)**
- NO close/NC open

The **“Scene learning enable”** parameter enables/disables the possibility of scene learning via the ***Local relay - Scene*** communication object. The parameter can assume the following values:

- disable
- **enable** **(default value)**

Selecting **enable** visualises the ***Local relay - Scene learning enable*** (Data Point Type: 1.003 DPT_Enable) communication object, for enabling/disabling the possibility to learn scenes via the ***Local relay - Scene*** communication object.

8.1.5 Local relay logic

Local relay activation/deactivation can be subordinated on the basis of the results of logic operations whose inputs are their dedicated communication objects. This menu is visible if the **“Logic function”** parameter of the **Settings** menu is set on **active**. The structure of the menu is as follows:

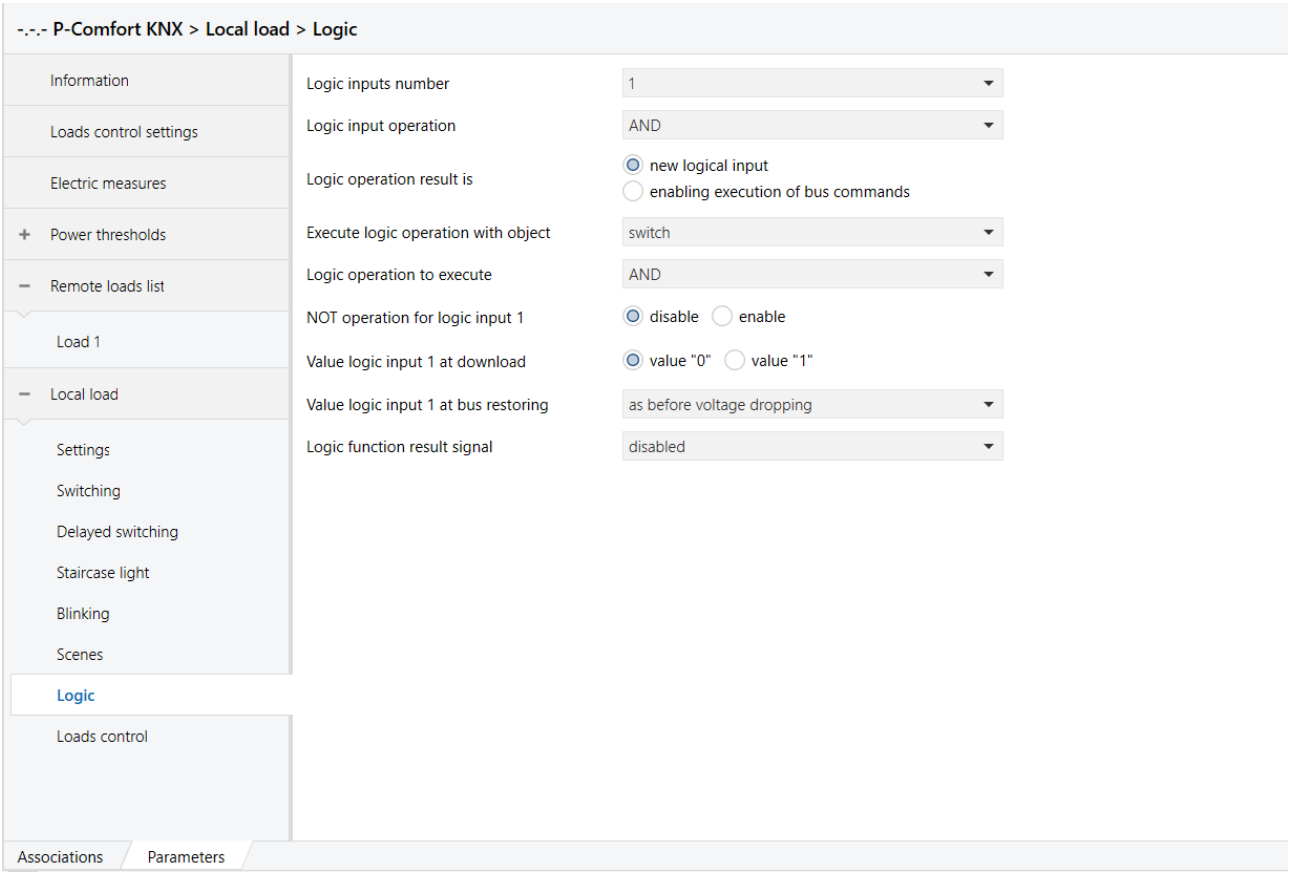


Fig. 8.1.5.1: “Local load - Logic” menu

The number of logic inputs can be set via the **“Logic inputs number”** parameter, which can have the following values:

- **1** (default value), 2, 3, 4, 5, 6, 7, 8

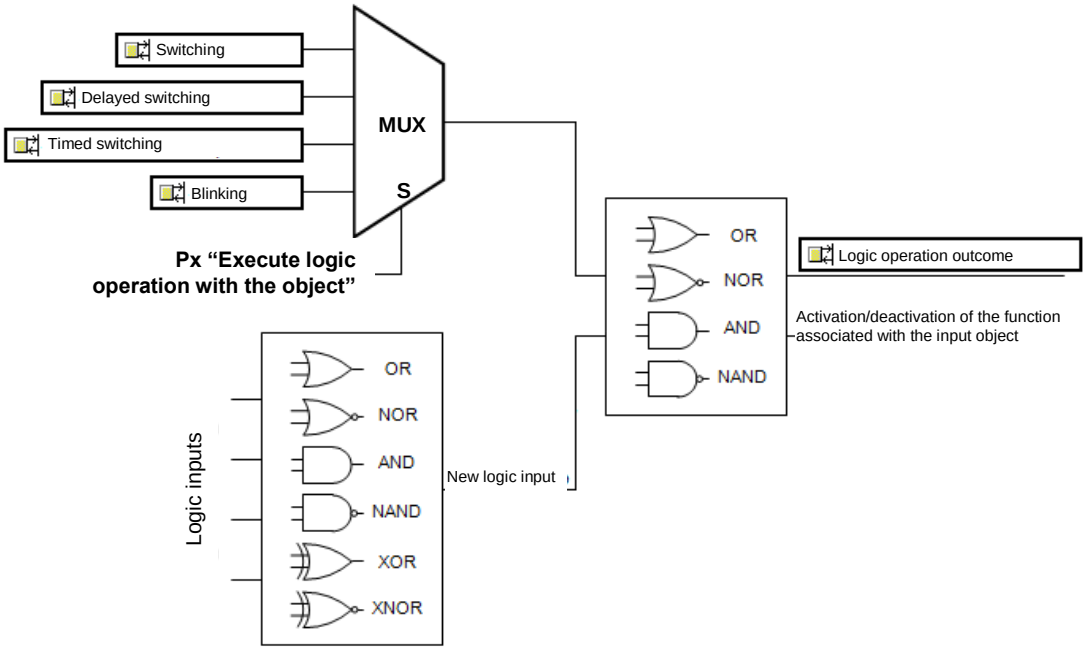
Depending on the value selected, the ***Local relay - Logic input 1***, ***Local relay - Logic input 2***, ***Local relay - Logic input 3***, ***Local relay - Logic input 4***, ***Local relay - Logic input 5***, ***Local relay - Logic input 6***, ***Local relay - Logic input 7*** and ***Local relay - Logic input 8*** communication objects will be made available.

If the set value is other than **1**, it is possible to set the logic operation to be executed between the logic inputs. The operation is selected using the **“Logic input operation”** parameter, which can have the following values:

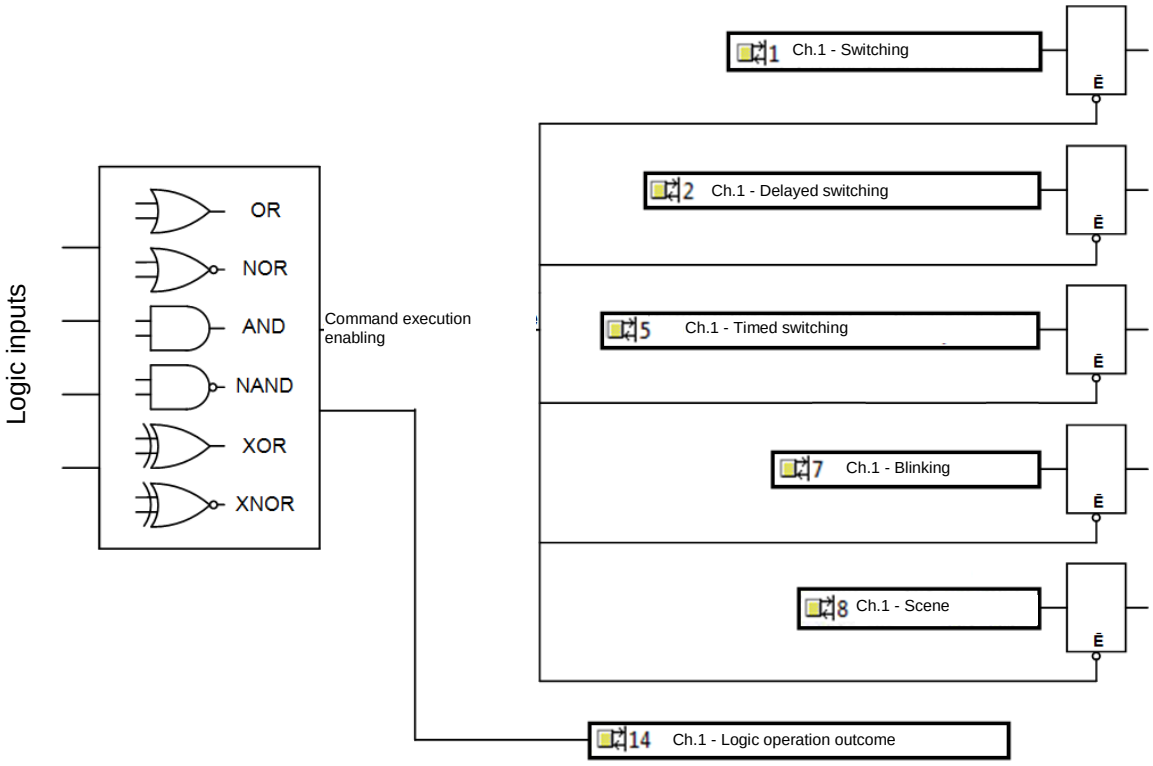
- **AND (default value)**
- OR
- NAND
- NOR
- XOR
- XNOR

The outcome of the operations between logic inputs (or the value of the individual logic input, if only one logic input was set) can be used as follows:

1 As an input for another logic operation executed with one of the following objects: ***Local relay - Switching***, ***Local relay - Staircase light timed switching***, ***Local relay - Delayed switching*** or ***Local relay - Blinking***



2 To enable the execution of the commands received from the BUS on the ***Local relay - Switching***, ***Local relay - Staircase light timed switching***, ***Local relay - Delayed switching***, ***Local relay - Blinking*** and ***Local relay - Scene*** objects.



The parameter used to choose the function of the outcome of the operation between logic inputs is **"Logic operation result is"**. This parameter can have the following values:

- **new logical input** **(default value)**
- enabling execution of bus commands

If **new logical input** is selected (case 1), you can define the object for executing the new logic operation via the **"Execute logic operation with object"** parameter, and the logic operation to be executed with the selected object via the **"Logic operation to execute"** parameter.

The **"Execute logic operation with object"** parameter can have the following values:

- **switch** **(default value)**
- delayed switch
- staircase light timed switch
- blinking

The function associated with the selected object will be activated/deactivated according to the result of the logic. EXAMPLE: by selecting the object "blinking" and with the function enabled in ETS, the blinking function will be activated when the logic is true and deactivated when the logic is false.
If the function is not activated, the logic will not have any effect on the load connected to the output.

The **"Logic operation to execute"** parameter can have the following values:

- **AND (default value)**
- OR
- NAND
- NOR

Selecting **enabling execution of bus commands** (case 2 - see fig. 8.1.5.2 below) displays a series of parameters for defining which commands received from the BUS require enabling in order to be executed. The parameters in question are **"Switch commands (on/off)"**, **"Delayed switch commands"**, **"Staircase light timed commands"**, **"Blinking active/deactive commands"** and **"Scene commands"**, and they can have the following values:

- **independent of the logic function** **(default value)**
- enabled by logic function

The commands enabled by the logic function are only executed if the outcome of the logic operation is true. If the outcome of the logic operation changes from false to true, the commands received after the status change will be executed. The commands received when the outcome of the logic function is false are ignored.

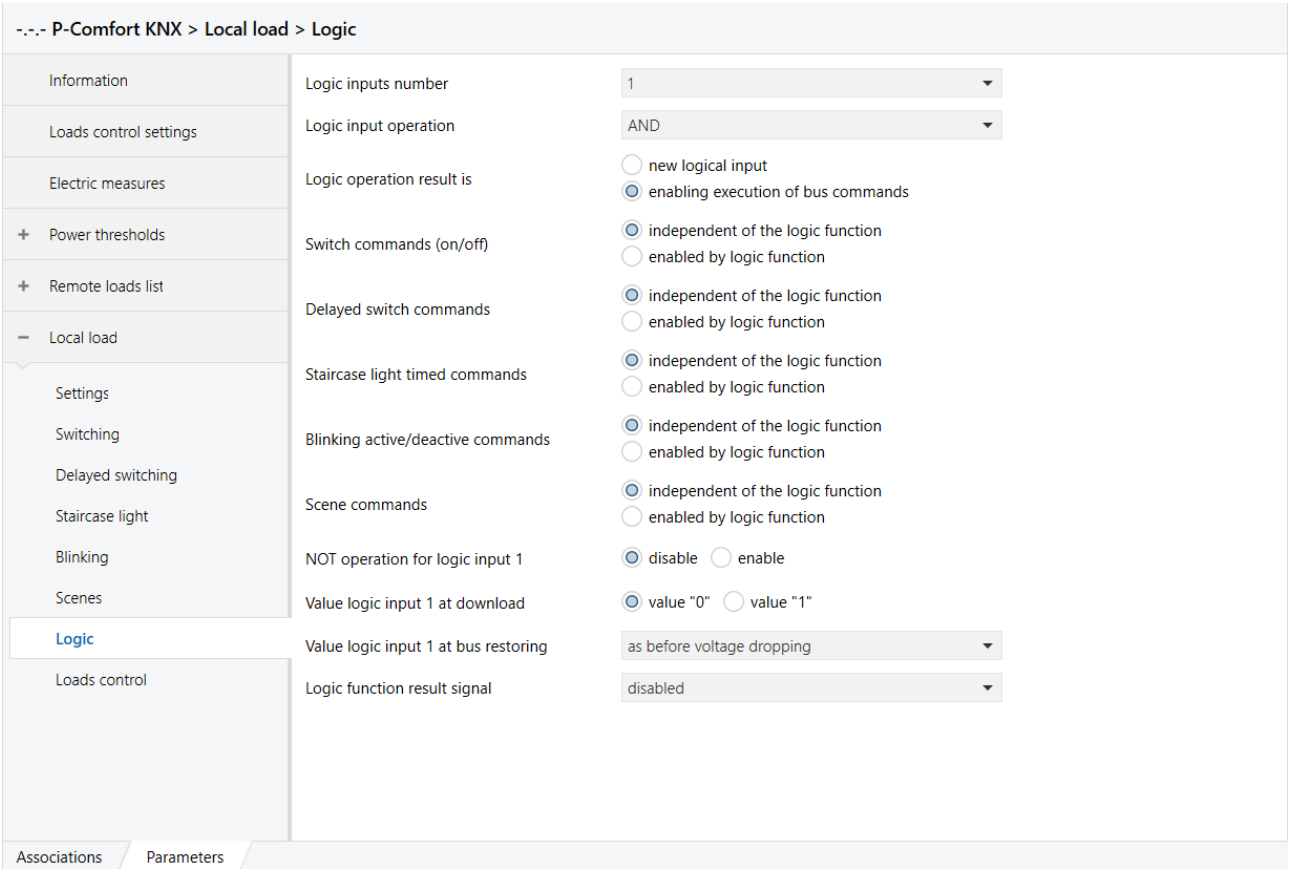


Fig. 8.1.5.2: “Local load - Logic menu – Enabling execution of bus commands”

The value received from the BUS on the communication objects associated with the logic inputs can be rejected using the **“NOT operation for logic input 1”**, **“NOT operation for logic input 2”**, **“NOT operation for logic input 3”**, **“NOT operation for logic input 4”**, **“NOT operation for logic input 5”**, **“NOT operation for logic input 6”**, **“NOT operation for logic input 7”** and **“NOT operation for logic input 8”** parameters (whose visibility depends on the number of logic inputs enabled). These parameters can have the following values:

- **deactive** **(default value)**
- active

The value of the logic inputs at the time of ETS download can be defined using the **“Value logic input 1 at download”**, **“Value logic input 2 at download”**, **“Value logic input 3 at download”**, **“Value logic input 4 at download”**, **“Value logic input 5 at download”**, **“Value logic input 6 at download”**, **“Value logic input 7 at download”** and **“Value logic input 8 at download”** parameters (whose visibility depends on the number of logic inputs enabled). These parameters can have the following values:

- **value “0”** **(default value)**
- value “1”

The value of the logic inputs at the time of BUS voltage reset can be defined using the **“Value logic input 1 at bus restoring”**, **“Value logic input 2 at bus restoring”**, **“Value logic input 3 at bus restoring”**, **“Value logic input 4 at bus restoring”**, **“Value logic input 5 at bus restoring”**, **“Value logic input 6 at bus restoring”**, **“Value logic input 7 at bus restoring”** and **“Value logic input 8 at bus restoring”** parameters (whose visibility depends on the number of logic inputs enabled). These parameters can have the following values:

- value “0”
- value “1”
- **as before voltage dropping** **(default value)**

If **as before voltage dropping** is selected, the device resets the values used prior to the voltage failure and sends the status read requests on the ***Local relay - Logic input 1***, ***Local relay - Logic input 2***, ***Local relay - Logic input 3***, ***Local relay - Logic input 4***, ***Local relay - Logic input 5***, ***Local relay - Logic input 6***, ***Local relay - Logic input 7*** and ***Local relay - Logic input 8*** objects for updating with the field.

NB: the values at BUS voltage reset and at download are assigned to the objects regardless of the value of the **"NOT operation for logic input i"** ($1 \leq n \leq 8$) parameters.

Finally, it is possible to enable the sending of the outcome of the logic function on the BUS, using the **"Logic function result signal"** parameter to specify whether this information should always be sent when an input changes or only if the outcome of the logic function changes. This parameter can have the following values:

- **disabled** **(default value)**
- only if the results change
- also if the results not change

If a value other than **disabled** is set, the ***Local Relay - Logic operation result*** (Data Point Type: 1.002 DPT_Bool output communication object is made visible.

The value transmitted on the BUS is:

a) the result of the operation between the logic input logic operation outcome and the object selected in the **"Execute logic operation with object"** parameter if the **"Logic operation result is"** parameter value is **new logical input**
b) the result of the operation between logic inputs if the parameter value is **enabling execution of bus commands**.

8.1.6 Safety

The safety function allows the output to work under normal conditions until certain set conditions arise (no periodic reception, reception of particular data from the BUS), after which the device forces the status of the relay to a specific condition. To deactivate the safety function, normal operating conditions must be reset. Any command (excluding a block activation or forcing activation command) received while safety is activated will not be executed as safety takes priority over any other BUS command, with the exception of the block and forcing functions.
The communication object used to monitor the operating conditions is ***Local relay - Safety*** (Data Point Type: 1.002 DPT_Bool output communication object is made visible).

The device signals the activation status of the safety function (1 = active, 0 = deactive) via the ***Local relay - Safety status*** (Data Point Type: 1.003 DPT_Enable) communication object, regardless of whether or not any functions with a higher priority are active. The communication object is sent on request, when the BUS voltage is reset, and spontaneously on change of the function activation status.
This menu is visible if the **"Safety function"** parameter of the **Settings** menu is set on **active**.

The structure of the menu is as follows:

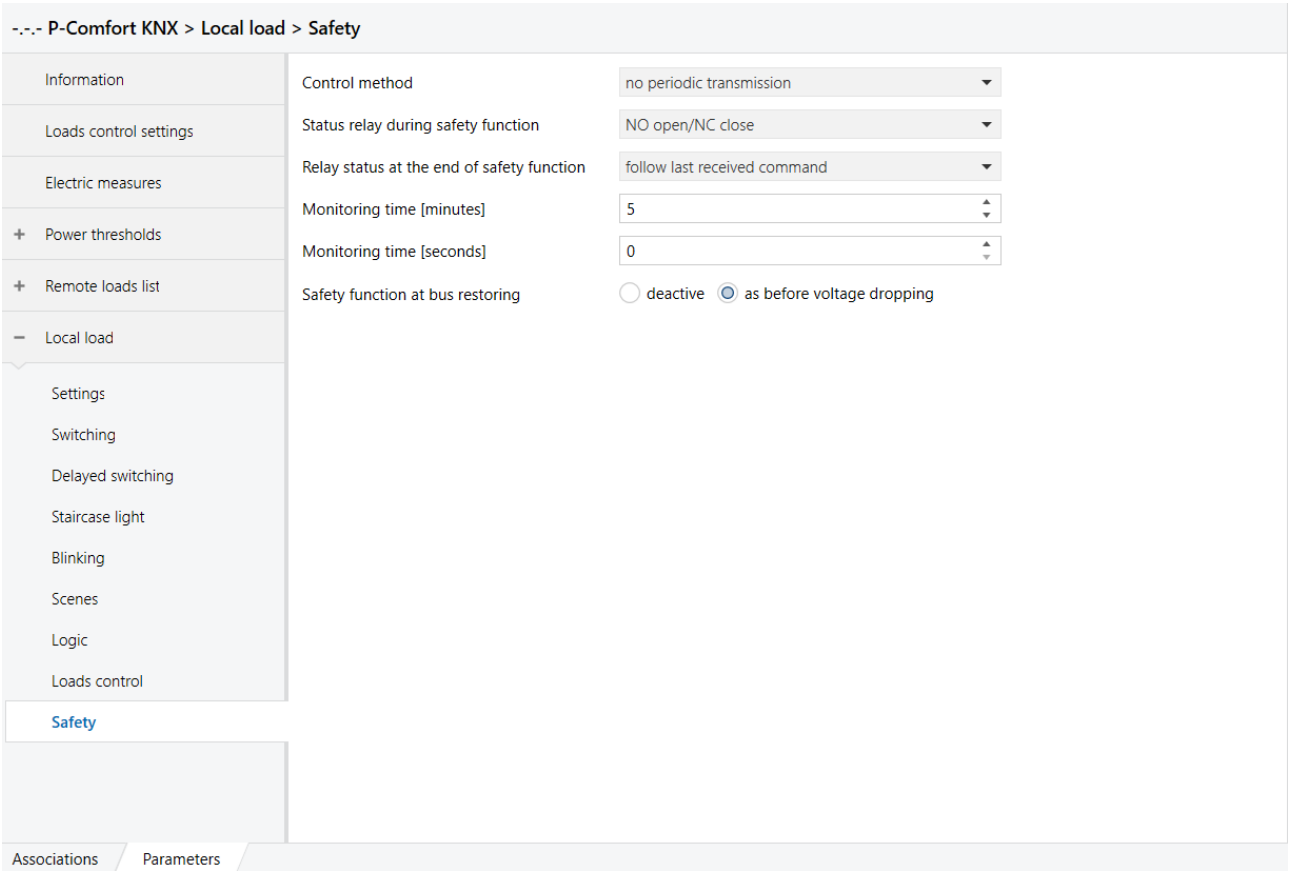


Fig. 8.1.6: “Local load - Safety” menu

The **“Control method”** parameter defines the conditions for which the device activates the safety function; unlike the process for the ***Block*** and ***Forcing*** functions, which can be activated via a BUS command, the safety function is enabled by the device when the conditions set in the reference parameter arise.
The values that can be set are:

- value 1 or no periodic transmission
- value 0 or no periodic transmission
- **no periodic transmission** **(default value)**

Selecting **value 1 or no periodic transmission**, the safety function is activated following two events:

- the ***Local relay - Safety*** communication object doesn't receive the telegram with the logic value “0” (no periodic transmission) for a time equal to the time formed by the values set in the **“Monitoring time [minutes]”** and **“Monitoring time [seconds]”** parameters
- the ***Local relay - Safety*** communication object receives a telegram with the logic value “1” (arrival of value “1”).

In both cases, the safety function is deactivated when the ***Local relay - Safety*** communication object receives a telegram with the logic value “0”; once safety has been deactivated, the monitoring time is restarted.

Selecting **value 0 or no periodic transmission**, the safety function is activated following two events:

- the ***Local relay - Safety*** communication object doesn't receive the telegram with the logic value “1” (no periodic transmission) for a time equal to the time formed by the values set in the **“Monitoring time [minutes]”** and **“Monitoring time [seconds]”** parameters
- the ***Local relay - Safety*** communication object receives a telegram with the logic value “0” (arrival of value “0”).

In both cases, the safety function is deactivated when the ***Local relay - Safety*** communication object receives a telegram with the logic value “1”; once safety has been deactivated, the monitoring time is restarted.

Selecting **no periodic transmission**, the safety function is activated when the ***Local relay - Safety*** communication object doesn't receive any telegrams for a time equal to the time formed by the values set in the **"Monitoring time [minutes]"** and **"Monitoring time [seconds]"** parameters, regardless of the value of the telegram.
The safety function is deactivated when the ***Local relay - Safety*** communication object receives a telegram with the logic value "0" or "1"; once safety has been deactivated, the monitoring time is restarted.

The **"Status relay during safety function"** parameter sets the contact status when the safety function is active. The values that can be set are:

- **NO open/NC close (default value)**
- NO close/NC open
- no change

When normal operating conditions are restored (safety deactivation), the actuator switches the relay to the status defined in the **"Relay status at the end of safety function"** parameter. The possible values are:

- NO open/NC close
- NO close/NC open
- no change
- **follow last received command (default value)**
- as before the load shedding

By selecting **follow last received command**, the output follows the dynamics determined by the last command, as if command execution were begun in the moment when the command was effectively received. Basically, the command is executed in the background and is applied to the output in the moment when safety ends. This behaviour applies, for example, to timed actuation commands whose timing lasts beyond the moment of safety deactivation or commands with delayed activation/deactivation.

The **"Monitoring time [minutes]"** parameter sets the first of the two values (minutes) that make up the time that must pass before the device activates the safety function if it has not received the expected telegram (no periodic transmission). The values that can be set are:

- from 0 to 59 in steps of 1 **(default value 5)**

The **"Monitoring time [seconds]"** parameter sets the second of the two values (seconds) that make up the time that must pass before the device activates the safety function if it has not received the expected telegram (no periodic transmission). The values that can be set are:

- from **0 (default value)** to 59, in steps of 1

NB: setting a monitoring time equal to **0 minutes** and **0 seconds**, the ***Safety*** object is not monitored and the lack of periodic transmission on the object does not trigger the activation of the function.

The **"Safety function at bus restoring"** parameter determines the status of the safety function when the BUS voltage is reset. This parameter is useful if the function is active at the time of the BUS failure and you don't want the output behaviour to change after the reset. The parameter can assume the following values:

- deactive
- **as before voltage dropping (default value)**

If **deactive** is selected (and safety was already active prior to the BUS failure), the safety function will be deactivated when the BUS voltage is reset and the relay will assume the value defined by the **"Relay status at bus restoring"** parameter ("Local load menu - Settings"). If the value set for the latter parameter is **follow last received command**, the output will execute the last command received before the voltage failure (which must therefore be stored in the non-volatile memory). If the last command received before the voltage failure was a timed activation or activation delay command, the command will not be executed when the voltage is reset and the relay will switch to the open (with NO)/closed (with NC) status.

If **as before voltage dropping** is selected (and safety was already active prior to the voltage failure), the safety function will be reactivated when the BUS voltage is reset and the relay will assume the conditions defined by the **"Status relay during safety function"** parameter.

8.1.7 Forcing

The relay status can be forced to a certain condition (settable) after receiving the ***Local relay - Forcing*** (Data Point Type: 2.001 DPT_Switch_Control) communication object, which activates the forcing function; until this is deactivated, no command received on any other input communication object will be executed (apart from commands received on the ***Local relay - Block*** object). The forced positioning function has the highest priority over all others with the exception of the Block function.
The device signals the activation status of the forcing function via the ***Local relay - Forcing status*** (Data Point Type: 2.001 DPT_Switch_Control) communication object, regardless of whether or not any functions with a higher priority are active. The communication object is sent on request, when the BUS voltage is reset, and spontaneously. It is sent spontaneously when the status passes from "activate forcing ON" to "activate forcing OFF" or "deactivate forcing", and vice versa.
This menu is visible if the **"Forcing function"** parameter of the **Settings** menu is set on **Active**.

The structure of the menu is as follows:

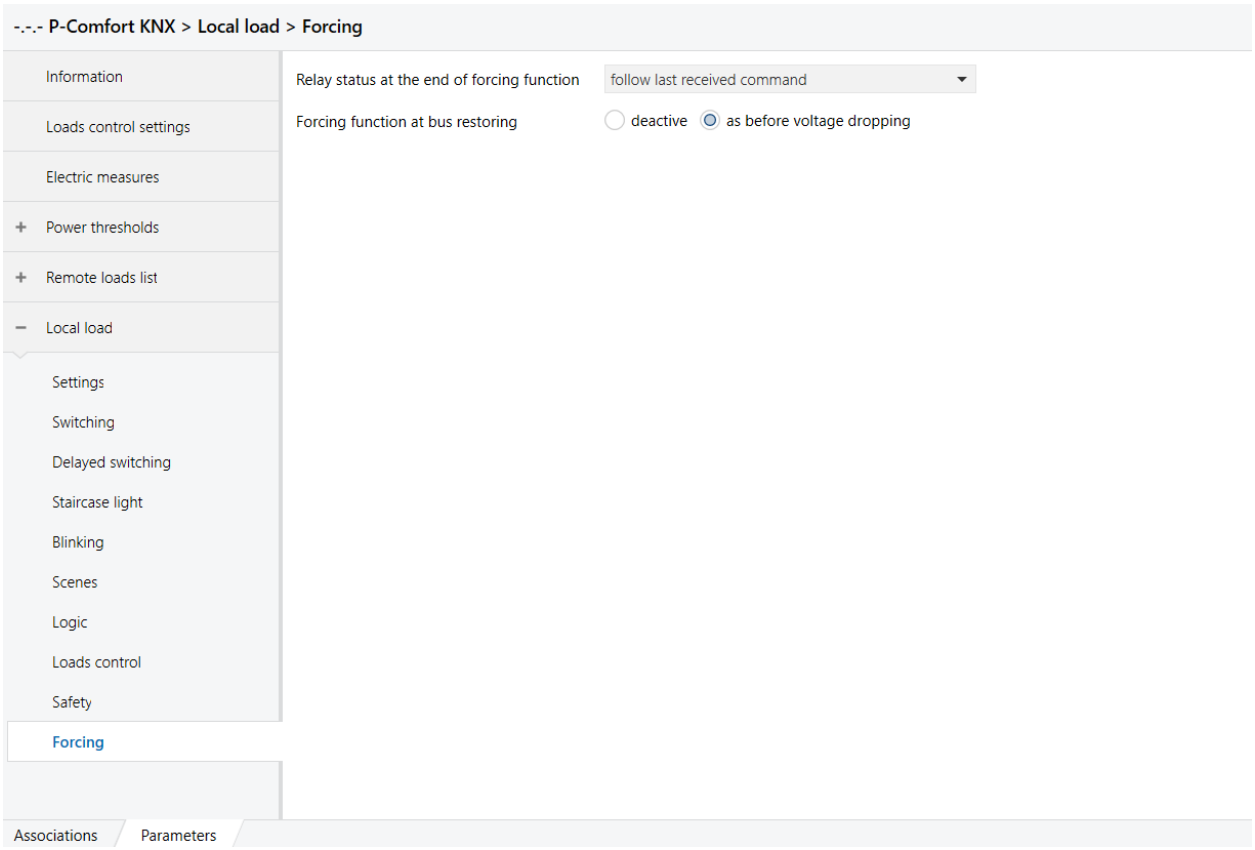


Fig. 8.1.7: "Local load - Forcing" menu

The semantics of the command received from the BUS follow what is shown in the table below:

bit 1	bit 0	
0	0	Forcing deactivation
0	1	Forcing deactivation
1	0	Forcing OFF
1	1	Forcing ON

When a priority command is received with the forcing activation ON value, the actuator switches the relay, closing the NO contact or opening the NC contact. Vice versa, when a priority command is received with the forcing activation OFF value, the actuator switches the relay, opening the NO contact or closing the NC contact. When the forcing deactivation command is received, the output switches the relay to the status defined by the **"Relay status at the end of forcing function"** parameter. The possible values are:

- NO open/NC close
- NO close/NC open
- no change
- **follow last received command** **(default value)**
- as before forcing activation

If the parameter value is **follow last received command**, the output follows the dynamics determined by the last command, as if command execution were begun in the moment when the command was effectively received. Basically, the command is executed in the background and is applied to the output in the moment when forcing ends. This behaviour applies, for example, to timed actuation commands whose timing lasts beyond the moment of forcing deactivation or commands with delayed activation/deactivation.

The **"Forcing function at bus restoring"** parameter determines the status of the forcing function when the BUS voltage is reset. This parameter is useful if the function is active at the time of the voltage failure and you don't want the output behaviour to change after the failure. The parameter can assume the following values:

- deactive
- **as before voltage dropping** **(default value)**

If **deactive** is selected (and forcing was already active prior to the BUS failure), the forcing function will be deactivated when the voltage is reset and the relay will assume the value defined by the **"Relay status at bus restoring"** parameter ("Channel x settings" menu). If the value set for the latter parameter is **follow last received command**, the actuator will execute the last command received before the voltage failure (which must therefore be stored in the non-volatile memory). If the last command received before the voltage failure was a timed activation or activation delay command, the command will not be executed when the voltage is reset and the relay will switch to the open (with NO)/closed (with NC) status.
If **as before voltage dropping** is selected (and forcing was already active prior to the voltage failure), the forcing function will be reactivated when the voltage is reset and the relay will assume the status it had prior to the failure.

If a forcing deactivation command is received and the **"Relay status at the end of forcing function"** parameter value is **follow last received command**, the actuator executes the last command received before the BUS voltage failure (which must therefore be stored in the non-volatile memory). If the last command received before the voltage failure was a timed activation or activation delay command, the command will not be executed when the voltage is reset and the relay will switch to the open (with NO)/closed (with NC) status.

8.1.8 Block

The device can be blocked in a certain condition (settable) after receiving the ***Local relay - Block*** (Data Point Type: 1.002 DPT_Bool) communication object, which activates the block function; until it is deactivated, any command received on all other input communication objects will not be executed. The block function is the function with the highest priority.
The device signals the activation status of the block function (1 = active, 0 = deactive) via the ***Local relay - Block status*** (Data Point Type: 1.003 DPT_Enable). The communication object is sent on request, when the BUS voltage is reset, and spontaneously on change of the function activation status.
This menu is visible if the **"Block function"** parameter of the **Settings** menu is set on **active**.
The structure of the menu is as follows:

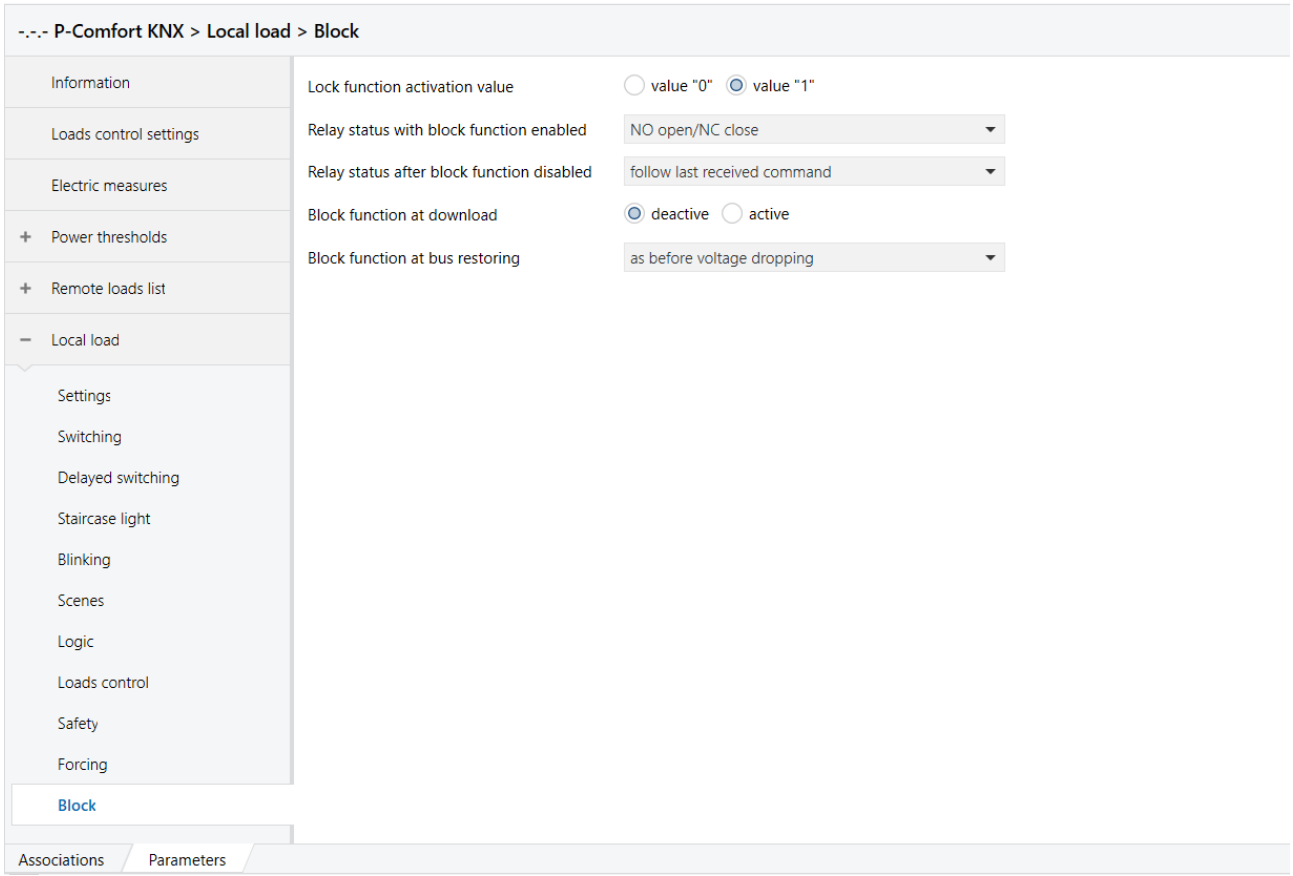


Fig. 8.1.8: “Local load - Block” menu

The **“Lock function activation value”** parameter determines which logic value activates the actuator block function. The possible values are:

- value “0”
- **value “1”** **(default value)**

The **“Relay status with block function enabled”** parameter sets the status that the contact must assume if the block function is activated. The possible values are:

- **NO open/NC close** **(default value)**
- NO close/NC open
- no change

The **“Relay status after block function disabled”** parameter sets the status that the contact must assume when the block function is deactivated. The possible values are:

- NO open/NC close
- NO close/NC open
- no change
- **follow last received command** **(default value)**
- as before the load shedding

If the parameter value is **follow last received command**, the output follows the dynamics determined by the last command, as if command execution were begun in the moment when the command was effectively received. Basically, the command is executed in the background and is applied to the output in the moment when the block is deactivated. This behaviour applies, for example, to timed actuation commands whose timing lasts beyond the moment of block deactivation or commands with delayed activation/deactivation.

The **"Block function at download"** parameter sets the block function status following the download of the ETS application. The possible values are:

- **deactive** **(default value)**
- active

The **"Block function at bus restoring"** parameter sets the block function status following a BUS voltage reset. The possible values are:

- deactive
- active
- **as before voltage dropping** **(default value)**

If **deactive** is selected (and the block function was already active prior to the BUS failure), the block function will be deactivated when the voltage is reset and the relay will assume the value defined by the **"Relay status at bus restoring"** parameter ("Local relay settings" menu). If the value set for the latter parameter is **follow last received command**, the output will execute the last command received before the voltage failure (which must therefore be stored in the non-volatile memory). If the last command received before the voltage failure was a timed activation or activation delay command, the command will not be executed when the voltage is reset and the relay will switch to the open (with NO)/closed (with NC) status.
If **as before voltage dropping** is selected (and the block function was already active prior to the voltage failure), the block function will be reactivated when the BUS voltage is reset and the relay will assume the conditions defined by the **"Relay status with block function enabled"** parameter.

8.1.9 Counters

This function is used to enable the count of the operating time (closing or opening), and the number of operations of the local relay, by setting the count parameters.
This menu is visible if the **"Counter function"** parameter of the **Settings** menu is set on **active**.

The structure of the menu is as follows:

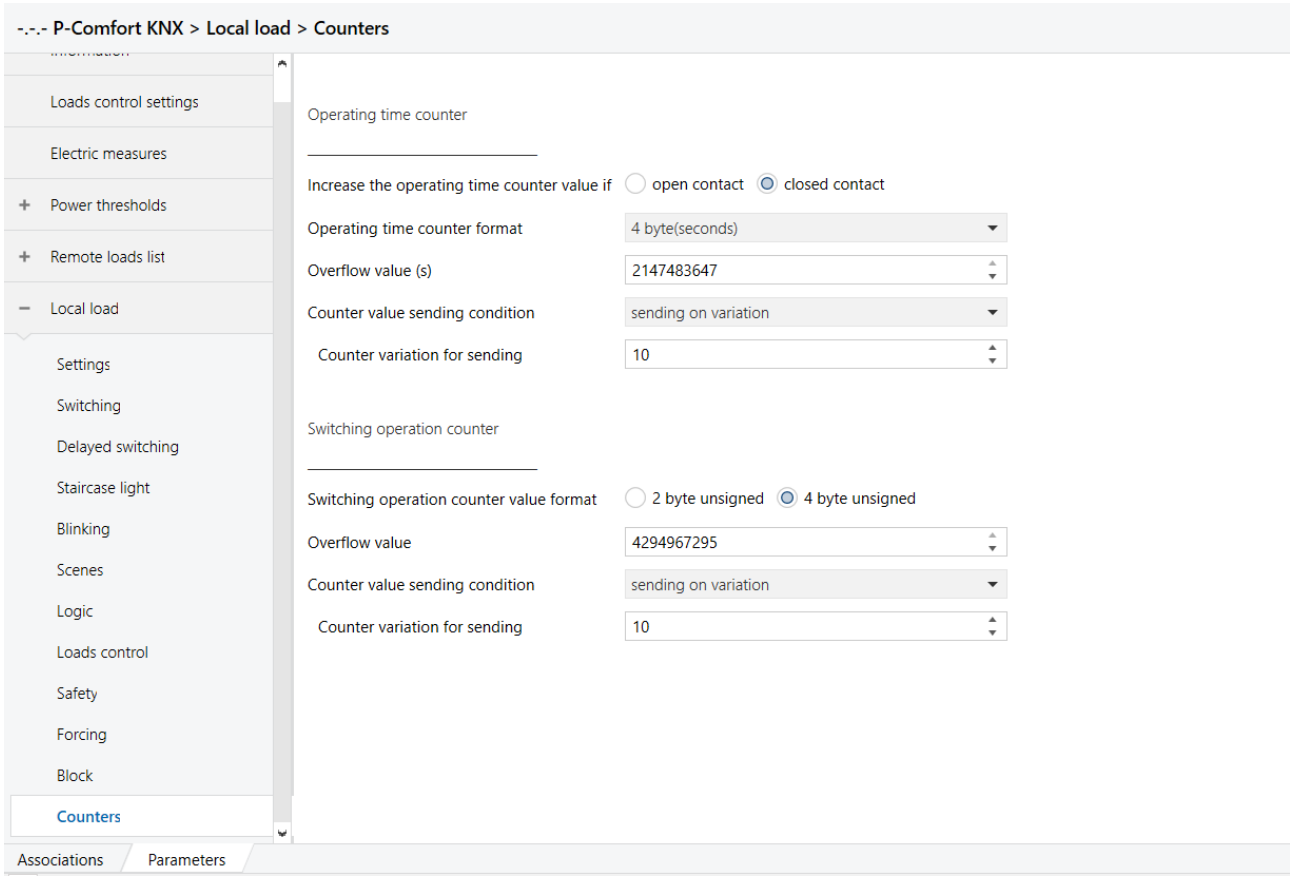


Fig. 4.15: “Local load - Counters” menu

The device is able to signal the count of the total operating time (closing or opening) of the relay; the count is based on the detection of the status of the relay associated with the output. Two statuses can be detected: closed contact and open contact. The **“Increase the operating time counter value if”** parameter sets the status of the contact considered for a counter increase. The values that can be set are:

- Open contact
- **Closed contact** **(default value)**

It is only made if the supply voltage is present; otherwise, the counter is not increased. The count can still be made even if there is no BUS voltage.

The counter used for the count can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **“Operating time counter format”** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- **4 byte (seconds)** **(default value)**
- 2 byte (minutes)
- 2 byte (hours)

The value set for this item will define the values that can be set for the **“Overflow value”** parameter and the format of the ***Local relay - Operating time counter*** communication object. The initial value is always 0, regardless of the format selected.

The **“Overflow value”** parameter sets the maximum value of the operating time counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition.
Depending on the value set for the **“Operating time counter format”** parameter, the values that can be set for this item will be different:

- If the counter format is **4 byte (seconds)**, the ***Local relay - Operating time counter (s)*** (Data Point Type: 13.100 DPT_LongDeltaTimeSec) communication object is visible and the values that can be set for the above parameter are:

  - from 0 to **2147483647 (default value ≈ 68 years)**, in steps of 1

- If the counter format is **2 byte (minutes)**, the ***Local relay - Operating time counter (min)*** (Data Point Type: 7.006 DPT_TimePeriodMin) communication object is visible and the values that can be set for the above parameter are:

  - from 0 to **65535 (default value ≈ 45.5 days)**, in steps of 1

- If the counter format is **2 byte (hours)**, the ***Local relay - Operating time counter (h)*** (Data Point Type: 7.007 DPT_TimePeriodHrs) communication object is visible and the values that can be set for the above parameter are:

  - from 0 to **65535 (default value ≈ 7.4 years)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Local relay - Operating time counter overflow*** (Data Point Type: 1.002 DPT_Bool) object, the device indicates the overflow of the operating time counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Local relay - Operating time counter reset*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of "0" is ignored, whereas when the value "1" is received, the counter is reset at the initial value and the ***Local relay - Operating time counter overflow*** object is set at "0".

The **"Counter value sending condition"** parameter defines the conditions for sending the current operating time counter value. The values that can be set are:

- sending on request
- **sending on variation** **(default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Counter sending period"** parameter.
If **sending on request** is selected, no new parameter is enabled because the operating time counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.
After a BUS voltage reset, the value of the counter is sent in order to update any connected devices.

The **"Counter variation for sending"** parameter is visible if the operating time counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

The **"Counter sending period (seconds)"** parameter is visible if the operating time counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the operating time counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

The device can signal the count of the number of operations performed by the relay; the count is based on the detection of the change in status of the relay associated with the output.
The counter used to calculate the number of operations can have different units of measurement depending on the format selected for transmitting the value on the KNX BUS; the **"Switching operation counter value format"** parameter defines the dimension and coding of the communication object used to transmit the value of the counter, and therefore its measurement unit. The values that can be set are:

- 2 byte unsigned
- **4 byte unsigned (default value)**

The value set for this item will define the values that can be set for the **"Overflow value"** parameter and the format of the ***Local relay - Switching operation counter*** communication object. The initial value is always 0, regardless of the format selected.

The **"Overflow value"** parameter sets the maximum value of the operations number counter; in fact, it is possible to set the maximum counter value - i.e. the value beyond which the counter is in an overflow condition. Depending on the value set for the **"Switching operation counter value format"** parameter, the values that can be set for this item will be different:

- If the counter format is **2 byte unsigned**, the ***Local relay - Switching operation counter (2 byte)*** (Data Point Type: 7.001 DPT_Value_2_Ucount) communication object is displayed and the values that can be set for the above parameter are:
  - from 0 to **65535 (default value)**, in steps of 1
- If the counter format is **4 byte unsigned**, the ***Local relay - Switching operation counter (4 byte)*** (Data Point Type: 12.001 DPT_Value_4_Ucount) communication object is displayed and the values that can be set for the above parameter are:
  - from 0 to **4294967295 (default value)**, in steps of 1

When the maximum value is reached, the count stops until a reset command is implemented.

Via the ***Local relay - Switching operation counter overflow*** (Data Point Type: 1.002 DPT_Bool) object, the device indicates the overflow of the operations number counter. When an overflow occurs, a value of "1" is sent; a value of "0" is sent when the counter is reinitialised.

The device can use the ***Local relay - Switching operation counter reset*** (Data Point Type: 1.015 DPT_Reset) communication object to receive the counter reinitialisation command that brings the count back to its initial value of 0. A value of "0" is ignored, whereas when the value "1" is received, the counter is reset at the initial value and the ***Local relay - Switching operation counter overflow*** object is set at "0".
The **"Counter sending condition"** parameter defines the conditions for sending the current operations number counter value. The values that can be set are:

- sending on request
- **sending on variation (default value)**
- sending periodically
- sending on variation and periodically

Selecting **sending on variation** or **sending on variation and periodically** visualises the **"Counter variation for sending"** parameter, whereas selecting **sending periodically** or **sending on variation and periodically** visualises the **"Counter sending period"** parameter.
If **sending on request** is selected, no new parameter is enabled because the operations number counter value is not sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send the user a telegram in response to the command received, giving information about the current value of the counter.

After a BUS voltage reset, the value of the counter is sent in order to update any connected devices.

The **"Period counter variation for sending"** parameter is visible if the operations number counter value is sent with a change. It defines the minimum count variation (in relation to the last value sent) that causes the new value to be spontaneously sent. The values that can be set are:

- from 1 to 100 in steps of 1 **(default value 10)**

The unit of measurement of the minimum variation is the same as that set for the counter format.

The **"Counter sending period (seconds)"** parameter is visible if the operations number counter value is sent periodically. It defines the frequency for spontaneously sending telegrams indicating the current counter value. The values that can be set are:

- from 1 to 255 in steps of 1 **(default value 15)**

In the event of a voltage failure, the operations number counter value is saved in a non-volatile memory so it can be reset when the power supply returns.

8.1.10 Status sending

The status of the relay - and therefore of the connected load - can be transmitted on the BUS via a specific communication object. The parameter that enables the transmission of this information is **"Status sending"**, and it can have the following values:

- disable sending
- sending on request
- **sending on variation** **(default value)**

Selecting any value other than **disable sending** displays the ***Local relay - Status*** (Data Point Type 1.001 DPT_Switch) communication object for transmitting - on the BUS - the information about the status of the load connected to the device.
If status signalling is activated with **sending on variation**, the communication object is sent spontaneously when the status switches from ON to OFF or vice versa. If the set value is **sending on request**, the status will never be sent spontaneously by the device; only in the case of a status read request (e.g. from a supervisor) will it send a reply telegram with the current load status.
The communication object assumes a value of 1 (ON) if the NO (normally open) contact closes and the NC (normally closed) contact opens; in the same way, the communication object assumes a value of 0 (OFF) if the NO (normally open) contact opens and the NC (normally closed) contact closes.
Selecting **sending on variation** also visualises the **"Status sending at bus restoring"** parameter for enabling the transmission of the load status information when the BUS voltage is reset.
The parameter can have the following values:

- disable
- **enable** **(default value)**

8.1.11 Relay status on ets download

The status that the relay contact must assume once the application parameters have been downloaded from the ETS software can be set via the **"Relay status on ets download"** parameter, which can have the following values:

- **NO open/NC close** **(default value)**
- NO close/NC open

8.1.12 Relay status at BUS voltage failure and reset

The status of the relay contact following a BUS voltage failure (with the 230V power supply still present) can be defined via the **"Relay status on bus down"** parameter, which can have the following values:

- NO open/NC close
- NO close/NC open
- **no change** **(default value)**

NB: when there is a 230V AC voltage failure, the relay opens.

The status of the relay contact when the BUS voltage is reset (with the 230V power supply still present) can be defined via the **"Relay status at bus restoring"** parameter, which can have the following values:

- NO open/NC close
- NO close/NC open
- **as before voltage dropping** **(default value)**

NB: following a BUS voltage failure/reset, the device does not carry out any action unless there is a 230V AC voltage on at least one of the channels.

9 *"Switching"* menu

One of the local relay operating modes is on/off switching, which involves switching the relay status according to the commands received. From the BUS, this operating mode can be controlled via the ***Local relay - Switching*** (Data Point Type: 1.001 DPT_Switch). This function has the same priority as the activation/deactivation delay, stair raiser light and flashing functions; this means that if one of the functions is activated while another is already active, the new one is executed and the previous one is terminated.

The structure of the menu is as follows:

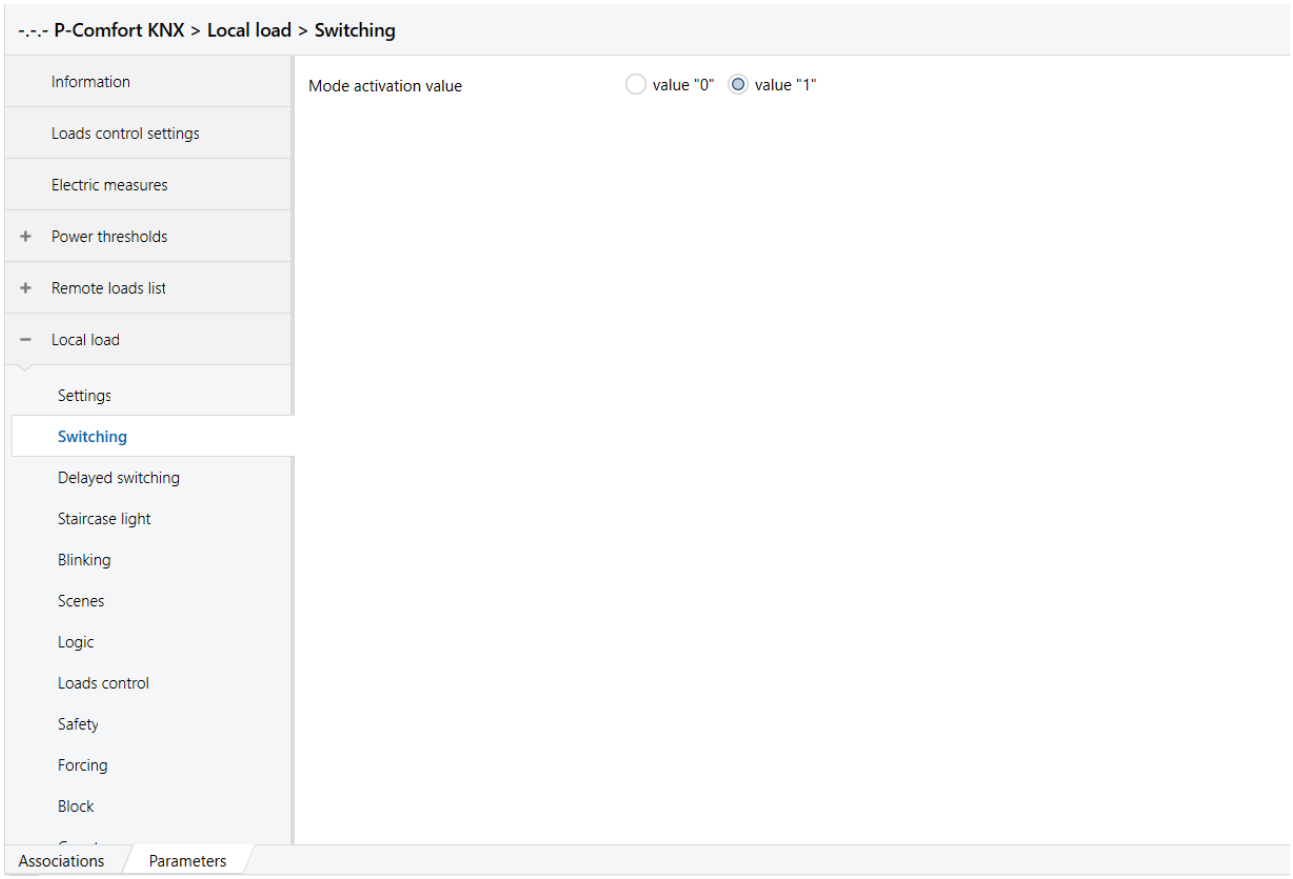


Fig. 9.1: "Local load - Switch" menu

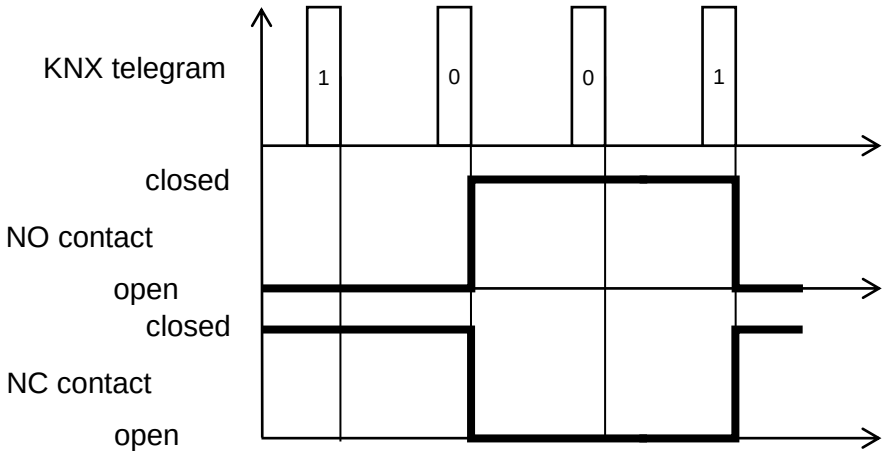
9.1 Parameters

9.1.1 Mode activation value

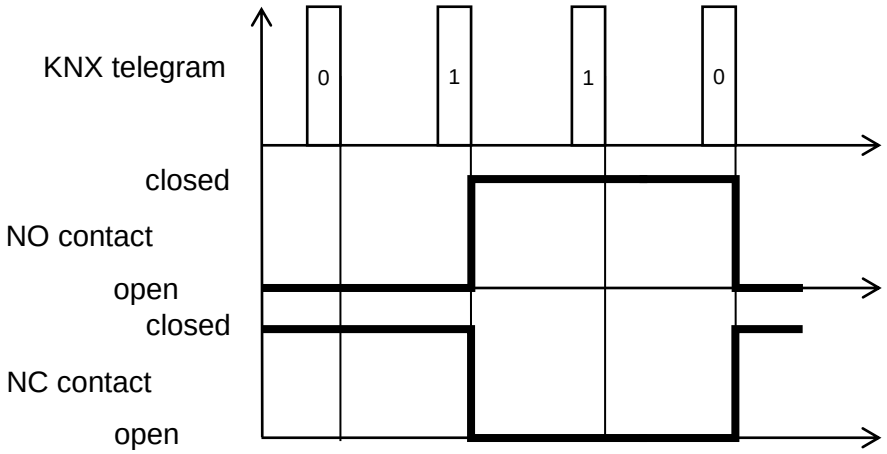
The **"Mode activation value"** parameter determines which logic value received via the ***Local relay - Switching*** communication object will switch the relay to the ON status (NO contact closed/NC open). The possible values are:

- value "0"
- **value "1"** **(default value)**

If **value "0"** is selected, the device switches the relay to the status → NO contact closed/NC contact open when it receives (from the BUS) a telegram with a logic value equal to "0". Vice versa, when the logic value "1" is received, the device switches the contact to → NO contact open/NC contact closed. Refer to the figure below.



If **value "1"** is selected, the device switches the relay to the status → NO contact closed/NC contact open when it receives (from the BUS) a telegram with a logic value equal to "1". Vice versa, when the logic value "0" is received, the device switches the contact to → NO contact open/NC contact closed. Refer to the figure below.



10 “Loads control” menu

The loads control “slave”, function can be activated for the local relay too, so the relay can be controlled by the loads control P-COMFORT algorithm. This function has a higher priority than all the others apart from the Safety, Forcing and Block functions.
This menu is always visible. The structure of the menu is as follows:

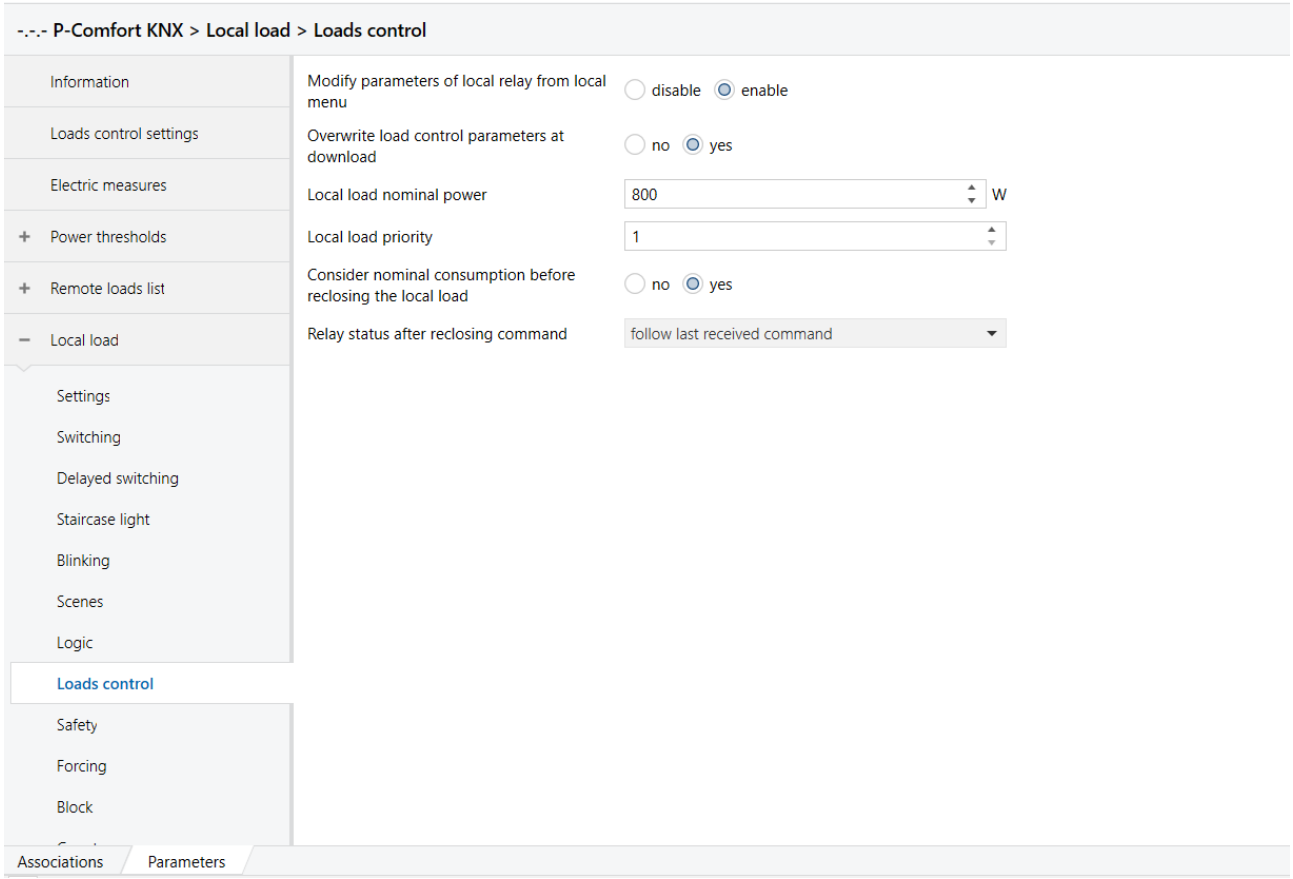


Fig. 10.1: “Local load - Loads control” menu

10.1 Parameters

10.1.1 Modify parameters of local relay from local menu

The **“Modify parameters of local relay from local menu”** parameter enables the modification of the parameters of the local relay (Nominal power, Priority, Consider absorption before reconnection) via the local menu as well (see the Programming Manual).
The values that can be set are:

- disable
- **enable** **(default value)**

☞ If **disable** is selected, the SET menu of the local relay will be disabled and nothing will happen when the relative push-button is pressed.

10.1.2 Overwrite load control parameters at download

The **"Overwrite load control parameters at download"** parameter defines whether or not the value of the parameters listed above should be overwritten following the next download of the ETS application. The values that can be set are:

- no
- **yes** **(default value)**

By setting **no**, the parameter values are saved in a non-volatile memory and reset when the device is relaunched.

10.1.3 Local load nominal power

The nominal absorption of each load connected to the local relay can be altered using the **"Local load nominal power"** parameter. The parameter can assume the following values:

- from 10W to 6000W in steps of 1W **(default value 800W)**

NB: the consumption of the local relay CANNOT be determined in real time so, when the status is ON, the algorithm considers the nominal absorption of the load.

10.1.4 Local load priority

The disconnection/reconnection priority associated with the local relay can be altered via the **"Local load priority"** parameter. The parameter can assume the following values:

- from **"1" =max (default value)** to "11" =min, in steps of 1

10.1.5 Consider nominal consumption before reclosing the local load

To minimise the risk of triggering the disconnection procedure when the loads are being reconnected, the device reconnects a load if the power that it absorbed prior to disconnection, added to the instantaneous power measured, doesn't exceed the disconnection threshold value (power threshold + hysteresis).
This rule is valid for the loads that are immediately activated and begin to consume energy as soon as they are repowered. There are some loads however, that are not activated straight away; they go into standby. For this type of load, it is counter-productive to use the check during reconnection because their reactivation doesn't generate an absorption surplus.
The **"Consider nominal consumption before reclosing the local load"** parameter defines whether or not the load connected to the local relay will be activated and begin consuming energy immediately when it is reconnected, thereby enabling P-COMFORT to behave differently when reconnecting it. The values that can be set are:

- no
- **yes** **(default value)**

By setting **yes**, the load connected to the local relay is reconnected after a nominal absorption check.

By setting **no**, the load is reconnected without any further evaluation.

10.1.6 Relay status after reclosing command

The **"Relay status after reclosing command"** parameter sets the status that the contact must assume when the reconnection command is received from the control algorithm. The parameter can assume the following values:

- NO open/NC close
- NO close/NC open
- **follow last received command** **(default value)**
- as before the load shedding

If the parameter value is **follow last received command**, the output follows the dynamics determined by the last command, as if command execution were begun in the moment when the command was effectively received. Basically, the command is executed in the background and applied to the output in the moment when the load is released. This behaviour applies, for example, to timed actuation commands or commands with delayed activation/deactivation, whose timing lasts beyond the moment of local relay deactivation (disconnection) because of the load control function.

The status of the local relay (disconnected/connected) for the load control function is transmitted on the BUS via the ***Local relay - Local relay switch status for load control*** (Data Point Type:1.001 DPT_Switch) communication object. When the local relay is "disconnected", the "0" value is transmitted; when the load is connected, a value of "1" is sent. The telegrams are sent via the ***Local relay - Local relay switch status for load control*** object following a BUS request, spontaneously with each function enabling status variation, and when the BUS voltage is reset.

As for the remote loads, also the local relay can be temporarily excluded from/included in the control algorithm following the arrival of commands "1=On" (include) or "0=Off" (exclude) on the ***Local relay - Include/exclude Local relay in algorithm*** (Data Point Type: 1.001 DPT_Switch); when the value "1" is received, the local relay is included in the algorithm, whereas with the value "0" it is excluded.

☞ The local relay can be temporarily excluded from/included in the control algorithm from the local relay page on the device, by pressing the SET/MODE push-button several times until the required option is displayed. When the selection is being made, the three digits underneath the word "YES" or "no" will flash, whereas the icon will have a fixed light if the current setting is "YES.

Local relay included

Local relay excluded

At the end of the time-out (3 seconds), the selection is confirmed and the lower three digits will again show the load status/consumption.

When the local relay is included in the control function, the will have a fixed light on the local relay page (see the Programming Manual). The device signals the inclusion of the local relay in the control algorithm via the ***Local relay - Include/exclude Local relay in algorithm status*** (Data Point Type: 1.001 DPT_Switch): "1" when the local relay is included, or "0" if it is excluded. This feedback is sent following a BUS request, spontaneously with every load inclusion status variation, and on BUS voltage reset.

Following an ETS download and a power supply reset, the inclusion status in force beforehand will be restored.

The default value for the first configuration is: load included.

11 Priority of local relay functions

The priority of the functions implemented by the local relay is shown in the following table:

Function	Priority	
Switch on/off	1	low
Staircase light timed switch	1	
Delayed switch	1	
Blinking	1	
Scene	1	
Logic function (if used for enabling of commands)	2	
Relay status after reclosing command	3	
Relay status at the end of safety function	4	
Relay status at the end of forcing function	5	
Relay status after block function disabled	6	
Relay status at bus restoring	7	
Blinking function at bus restoring	8	
Loads control	9	
Relay deactivation due to absorption limit threshold exceeded	10	
Safety	11	
Forcing	12	
Block	13	
Local push-button (for “test on/off” function)	14	
Load control function on power supply reset	15	
Safety function status at bus restoring	16	
Forcing function status at bus restoring	17	
Block function at ETS download/bus restoring (if value = active)	18	
Relay status on bus down (open)	19	high

To sum up, during normal operation the local relay behaves in this way:

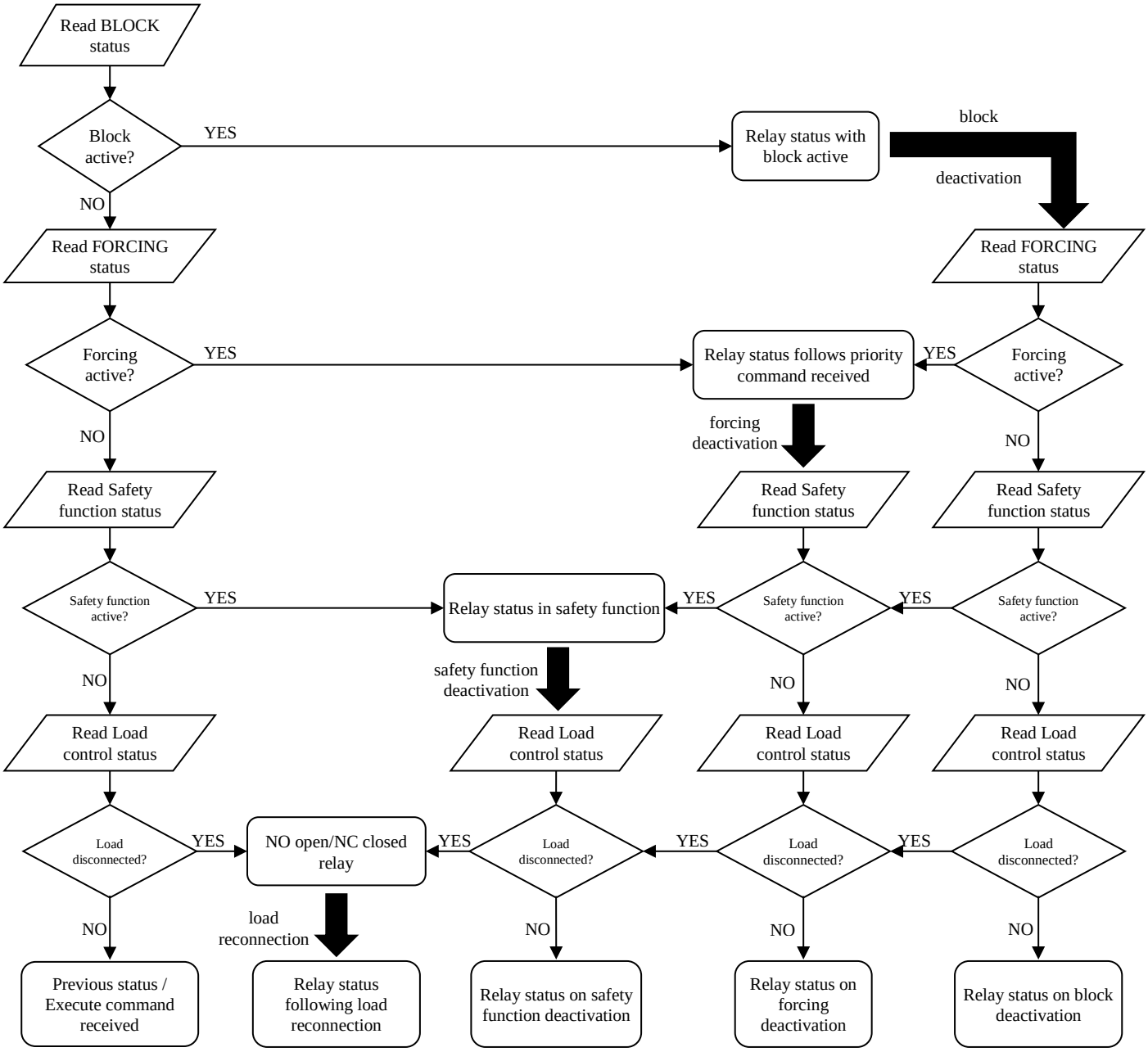


Fig. 11.1: Flow chart for normal operation

When the BUS voltage is reset, the device behaves as shown in the following flow diagram:

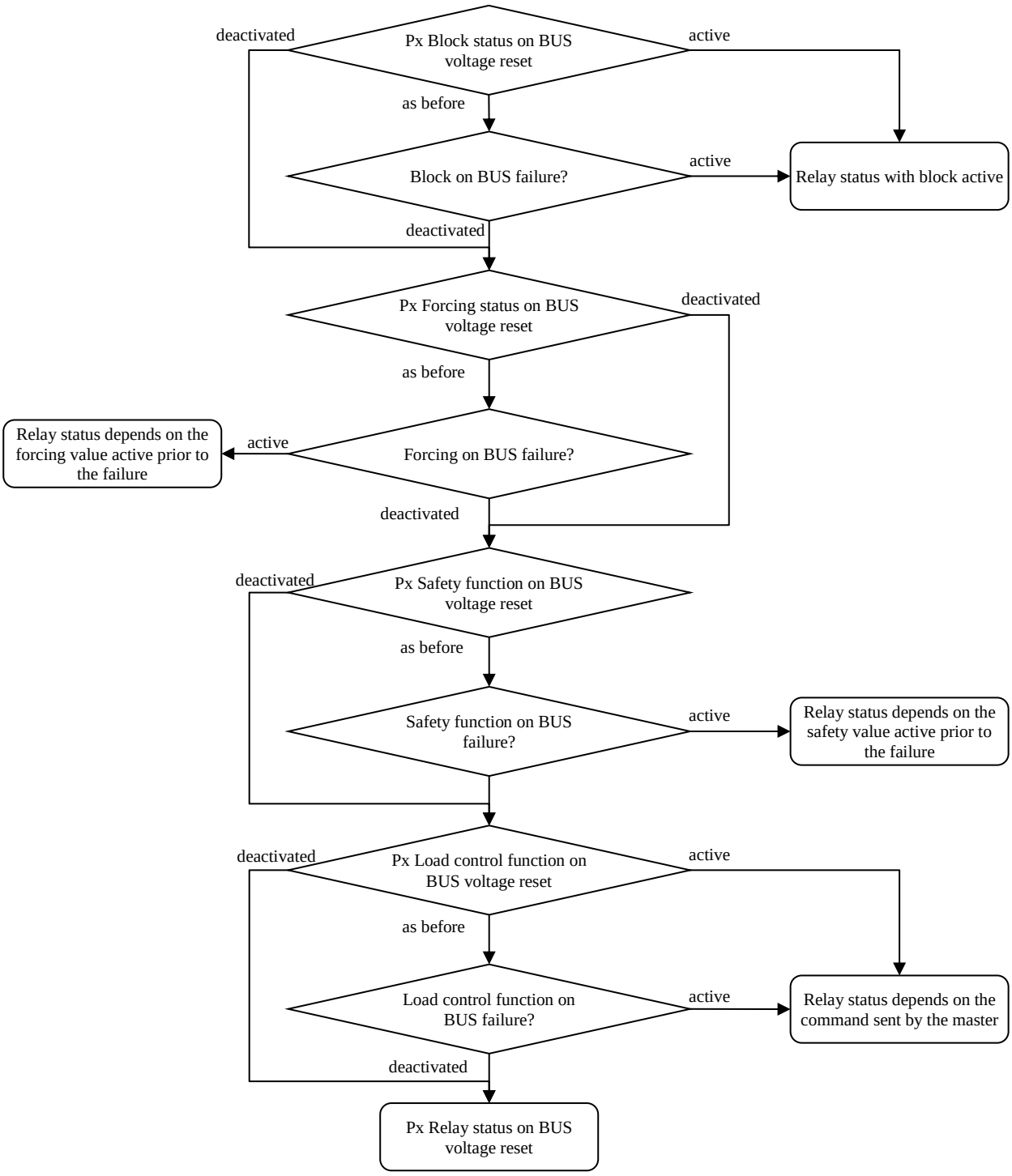
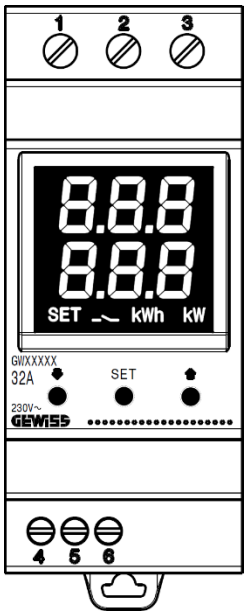


Fig. 11.2: Flow chart for BUS voltage reset

12 Annex

The following notes may be useful for understanding how to access certain configuration menus of the GWA9916 device, using the push-buttons on the device itself and the relative information on the display.

12.1 Local menu and push-buttons on the GWA9916



The device has the 3 multi-function push-buttons shown below:

SET	MODE/SET push-button	• to activate the SET function for modifying the operating parameters • to activate/deactivate the load control function • to include/exclude loads • to confirm the parameter to be modified • to confirm the parameter value modification
⇧	UP push-button	• to see the next information item • to see the next parameter to be modified • to see the next parameter value
⇩	DOWN push-button	• to see the previous information item • to see the previous parameter to be modified • to see the previous parameter value

There are 3 possible device statuses:

1. normal operating mode (RUN)
2. parameter setting mode (SET)
3. programming mode (PROG).

☞ A long press on the SET/MODE push-button will take you from RUN status to SET status or vice versa.
☞ A long press on the UP and DOWN push-buttons simultaneously will take you from RUN status to PROG status or vice versa.

The operations explained below can be carried out in each of the 3 statuses.

The following paragraph explains how to access PROG status in order to program the physical (or individual) KNX address.

☞ ***To use the device push-buttons to access the menus for the RUN and SET statuses, and the relative info on the display, refer to the Programming Manual and the Installation Manual.***

12.2 Accessing the PROG status menu and the Firmware Version

The physical KNX address can only be programmed by accessing the relative “PROG status” menu via the device push-buttons, as indicated below.
With this procedure, you can also see the firmware version of the device.

☞ Programming status (PROG) is enabled with a long (>5 seconds) simultaneous press on the UP and DOWN push-buttons; from there, you can access the activation/deactivation functions for the physical address programming mode and see the firmware version.
☞ Once the PROG function has been enabled, the name of the function is shown in the 3 digits at the top and its current value in the three digits at the bottom. Use the DOWN and UP push-buttons to switch from one page to the next one or the previous one, and press SET/MODE to access the modification of the value for the selected function.
☞ In particular, when SET/MODE is pressed, the 3 digits showing the current function setting will flash on the display and the UP and DOWN push-buttons can be used to scroll through the various values.
☞ Once the value has been modified, it will flash and SET/MODE must be pressed to save the new setting; if the time-out (30 seconds) elapses with no action on the push-buttons, the value modification is annulled and the previous value is displayed again.

☞ From PROG status, a long press (>5 seconds) on the UP/DOWN push-buttons or the end of the time-out (1 minute) with no action on the push-buttons will trigger the return to RUN status.

The functions are listed below:

	▪ ***Physical address programming mode*** Used to activate/deactivate the programming mode for the physical address of the KNX device. The mode is active when the parameter setting is "On". VALUES: On, **Off (default value)** Once programming mode has been activated, press SET/MODE to see the message “Pr.L On” on the display. Physical address programming mode can only be quit by a direct action on the device (press SET/MODE to reset the OFF value, press the UP/DOWN push-buttons (>5 seconds) to quit PROG status) or by means of a device reset made by ETS (reset or relaunch command following the programming of the physical address or configuration parameters). Following a manual attempt to activate programming mode, with no BUS connection (or no voltage with the BUS connected), the specific “Err BUS” error screen will appear instead of “Pr.L On” to indicate that it is impossible to access programming mode; the previous screen - “Pr.L OFF” - will then return, to activate the mode. The error message is displayed for 3 seconds, then it disappears automatically. If a BUS failure is detected while programming mode is active, the device behaves in the same way as for the previous case: the error screen will appear and then programming mode will be automatically quit.
	▪ ***Firmware version*** The firmware version currently loaded is shown; there are no values to be set. Note that a long press on the SET/MODE push-button while the firmware versions are being displayed (via access to PROG status) does NOT activate the “Factory reset” procedure which, for safety reasons, can only be enabled when viewing the firmware version after device start-up. For the details, see paragraph 12.3 “*Device start-up procedure*”.

Note that the same message - “Pr.L On” - that indicates the activation of the physical address programming mode also appears on the display when the mode is activated via the BUS with a specific telegram sent by the ETS application (device LED - ON). In the same way (and in keeping with normal manual management), the deactivation of the mode via the BUS (device LED - OFF) will take you back to the previous message - “Pr.L OFF” - indicating that activation status has been abandoned. These two messages will be displayed cyclically if a telegram is sent via ETS to execute the alternated activation of this mode (device LED - FLASHING). With programming mode deactivated, the device returns to RUN status and visualises the main measured power page (quitting PROG status) with a long press (>5 seconds) on the UP/DOWN push-buttons or as a result of inactivity (time-out).

12.3 Device start-up procedure

The currently loaded firmware version is shown on the display when the device is started. This page will disappear after 5 seconds and the device will assume its normal (idle) operating mode.

To see the version again when the device is powered and working normally, go to PROG status (see the previous paragraph) and refer to the dedicated item.

12.3.1 Factory reset

When the firmware version is being displayed (only during the device start-up phase), a long press on SET/MODE will run a “factory reset” if the has been confirmed by the user.

When the pressure on SET/MODE is detected, the time-out (that automatically causes the version display page to disappear) is paused. If SET/MODE is not pressed before reaching the time needed to enable the factory reset procedure, the device continues its normal time-out count to disable the firmware version page.

A long press on SET/MODE (> 10 seconds) activates the “factory reset” procedure; the message “Fct rES” will appear on the display.

The pressing of the SET/MODE push-button confirms the reset operation and the display shows the message “donE” for 2 seconds before the device is reactivated. The pressing of the UP/DOWN push-buttons annuls the operation and returns the device to the firmware version screen while it is being reactivated.

☞ **After a factory reset, all the factory parameters are reset along with the physical factory address, and the FDSK (Factory Default Set-up Key) is reactivated.**

Attention! If an application is downloaded from ETS with KNX Secure enabled, it will not be possible to download another one from a different ETS project without first making a factory reset via the local menu. The FDSK reset procedure is indispensable; it isn't enough just to delete the application from the device via ETS.

If the time-out (30 seconds) elapses without the user pressing the push-buttons while the confirmation page is being displayed, the visualisation of the factory reset procedure is deactivated and the device returns to the firmware version screen while it is being reactivated.

12.3.2 Procedure for activating the physical address programming mode

If the device has no physical address configured, the physical address programming launch screen will be displayed after the visualisation of the firmware version. This page is used to activate/deactivate the programming mode for the physical address of the KNX device.

It can only be removed by pressing the UP or DOWN push-button.

- ☞ The physical address programming activation page can be called up by accessing PROG status.
- ☞ For more details, see paragraph 12.2 above.

12.4 Device malfunctioning error feedback – No BUS connection

During normal operation, the device can detect certain malfunctions not resulting directly from its configuration, but which may prevent it from working properly. These malfunctions are signalled on the display as operating errors, via the central digits:

Malfunction detected	**Information on the display**
Warning of lack of KNX BUS connection. This malfunction blocks all communication on the BUS, and therefore all BUS signalling or command functions. The KNX BUS connection must be checked to reset correct operation.	Err bUS 

Once the error has been detected and signalled on the display, the information remains on the display and the device functions are blocked because this type of error is critical for device operation. The user can quit the error screen by pressing the UP or DOWN push-buttons and thus return to the normal device screens. When the inactivity time-out has elapsed (1 minute), the error screen is displayed again.

The error will only stop being displayed when the condition linked to it is no longer detected. To ensure that this condition cannot arise again, it may be necessary to call in the installation technician.

12.5 Feedback of ETS download in progress

During the ETS download, the message “EtS dL” is shown on the device display.

- ☞ In this phase, no operations can be carried out on the device using the push-buttons.

At the end of the download, the device is restarted with the normal procedure explained in paragraph 12.3 "Device start-up procedure".

12.6 Feedback of application deletion by ETS

During the deletion of the application program (or application) by ETS, the message “EtS dL” will appear on the screen and will remain if the device is not relaunched at the end of the procedure.

In this status, the normal download of the application from ETS can be resumed without relaunching the device as long as the physical address has not been deleted as well.

If the physical address has been deleted, the device must be relaunched.

☞ In both deletion situations (the device is relaunched by ETS without the physical address having been deleted, or it is switched off and then back on again), the message “P ---“ will appear on the device to show that the application has been deleted and a new download must be made. In any case, access the PROG menu and activate programming mode to reprogram the device via ETS or make a factory reset.

For more details about programming mode (PROG status) or factory reset, refer to the relative paragraphs.

13 Communication objects

The communication objects are listed in the following table:

Output objects:

#	OBJECT NAME	FUNCTION	DESCRIPTION	DATAPOINT TYPE
2	***Loads control function enabling status***	active/deactive status	Sends the load control function status	1.003 DPT_Enable
4	***Limit threshold actual value for loads control***	Value in Watt [W]	Signals the current value of the power threshold for the load control function	14.056 DPT_Value_Power
5	***Load control threshold exceeded***	Value 1/0 (true/false)	Signals an exceeded disconnection threshold (power threshold + hysteresis)	1.002 DPT_Bool output communication object is made visible)
6	***Period counter over consumption limit threshold (s))***	Value 0 .. 2147483647 [s]	Signals the count, in seconds, of the total time above the load disconnection threshold	13.100 DPT_LongDeltaTimeSec
6	***Period counter over consumption limit threshold (min)***	Value 0 .. 65535 [min]	Signals the count, in minutes, of the total time above the load disconnection threshold	7.006 DPT_TimePeriodMin
6	***Period counter over consumption limit threshold (h)***	Value 0 .. 65535 [h]	Signals the count, in hours, of the total time above the load disconnection threshold	7.007 DPT_TimePeriodHrs
7	***Overflow period counter over consumption limit threshold***	Value 1/0 (true/false)	Signals the overflow of the "period above load disconnection threshold" counter	1.002 DPT_Bool output communication object is made visible)
9	***Number counter over consumption limit threshold (2 byte)***	Value 0 .. 65535	Signals the number of times the load disconnection threshold has been exceeded	7.001 DPT_Value_2_Ucount
9	***Number counter over consumption limit threshold(4 byte)***	Value 0 .. 4294967295	Signals the number of times the load disconnection threshold has been exceeded	12.001 DPT_Value_4_Ucount
10	***Overflow number counter over consumption limit threshold***	Value 1/0 (true/false)	Signals the overflow of the "exceeded load disconnection threshold number" counter	1.002 DPT_Bool output communication object is made visible)
12	***Load shedding operation counter (2 byte)***	Value 0 .. 65535	Signals the number of times the device has intervened to disconnect the loads	7.001 DPT_Value_2_Ucount
12	***Load shedding operation counter (4 byte)***	Value 0 .. 4294967295	Signals the number of times the device has intervened to disconnect the loads	12.001 DPT_Value_4_Ucount
13	***Load shedding operation counter overflow – Overflow statement***	Value 1/0 (true/false)	Signals the overflow of the interventions number counter	1.002 DPT_Bool output communication object is made visible)
15 20 25 30 35 40 45 50 55 60	***Load x - Slave switching***	On/Off status	Sends disconnection/reconnection commands to the remote load X (slave)	1.001 DPT_Switch
19 24 29 34 39 44 49 54 59 64	***Load x - Include/exclude slave in algorithm status***	1=Included/0=Excluded	Signals the inclusion status of the load X in the control algorithm of the load disconnection procedure	1.001 DPT_Switch
65	***Local relay - Status***	On/Off status	Sends the status of the load connected to the output	1.001 DPT_Switch
83	***Local relay - Logic operation result***	Logic	Logic function output	1.002 DPT_Bool output communication object is made visible)

85	***Local relay - Include/exclude Local relay in algorithm status***	1=Included/0=Excluded	Indicates the activation status of the load control slave function	1.001 DPT_Switch
86	***Local relay - Local relay switch status for load control***	1=Connected/0=Disconnected	Indicates the load status set by the load control slave function	1.001 DPT_Switch
88	***Local relay - Safety status***	Active/Deactive	Indicates the activation status of the safety function	1.003 DPT_Enable
90	***Local relay - Forcing status***	Forcing status on/off	Forces the load to an on/off value	2.001 DPT_Switch_Control
92	***Local relay - Block status***	On/off	Indicates the activation status of the block function	1.003 DPT_Enable
93	***Local relay - Operating time counter (s)***	Value 0 .. 2147483647 [s]	Sends the counter value (expressed in seconds)	13.100 DPT_LongDeltaTimeSec
93	***Local relay - Operating time counter (min)***	Value 0 .. 65535 [min]	Sends the counter value (expressed in minutes)	7.006 DPT_TimePeriodMin
93	***Local relay - Operating time counter (h)***	Value 0 .. 65535 [h]	Sends the counter value (expressed in hours)	7.007 DPT_TimePeriodHrs
94	***Local relay - Operating time counter overflow***	Overflow status	Sends the counter overflow signal	1.002 DPT_Bool output communication object is made visible)
96	***Local relay - Switching operation counter (2 byte)***	Value 0 .. 65535	Sends the counter value	7.001 DPT_Value_2_Ucount
96	***Local relay - Switching operation counter (4 byte)***	Value 0 .. 4294967295	Sends the counter value	12.001 DPT_Value_4_Ucount
97	***Local relay - Switching operation counter overflow***	Overflow status	Sends the counter overflow signal	1.002 DPT_Bool output communication object is made visible)
99	***Consumed active energy primary counter***	Value in watthour [Wh]	Indicates the current value of the primary counter for active consumed energy	13.010 DPT_ActiveEnergy
99	***Consumed active energy primary counter***	Value in kilowatthour [kWh]	Indicates the current value of the primary counter for active consumed energy	13.013 DPT_ActiveEnergy_kWh
100	***Overflow consumed active energy primary counter***	Overflow status	Sends the primary counter overflow signal	1.002 DPT_Bool output communication object is made visible)
102	***Consumed active energy differential counter***	Value in watthour [Wh]	Indicates the current value of the differential counter for active consumed energy	13.010 DPT_ActiveEnergy
102	***Consumed active energy differential counter***	Value in kilowatthour [kWh]	Indicates the current value of the differential counter for active consumed energy	13.013 DPT_ActiveEnergy_kWh
104	***Overflow consumed active energy differential counter***	Overflow status	Sends the differential counter overflow signal	1.002 DPT_Bool output communication object is made visible)
106	***Produced active energy primary counter***	Value in watthour [Wh]	Indicates the current value of the primary counter for active produced energy	13.010 DPT_ActiveEnergy
106	***Produced active energy primary counter***	Value in kilowatthour [kWh]	Indicates the current value of the primary counter for active produced energy	13.013 DPT_ActiveEnergy_kWh
107	***Overflow produced active energy primary counter***	Overflow status	Sends the primary counter overflow signal	1.002 DPT_Bool output communication object is made visible)

109					***Produced differential active energy differential counter***	Value in watthour [Wh]	Indicates the current value of the differential counter for active consumed energy	13.010 DPT_ActiveEnergy
109					***Produced differential active energy differential counter***	Value in kilowatthour [kWh]	Indicates the current value of the differential counter for active consumed energy	13.013 DPT_ActiveEnergy_kWh
111					***Overflow produced active energy differential counter***	Overflow status	Sends the differential counter overflow signal	1.002 DPT_Bool output communication object is made visible)
113					***Active power measured***	Value in Watt [W]	Indicates the current value of active consumed or produced power	14.056 DPT_Value_Power
114					***Reactive power measured***	Value in reactive volt-ampere [var]	Indicates the current value of reactive consumed or produced power	14.xxx 4-byte float value
115					***Apparent power measured***	Value in volt-ampere [va]	Indicates the current value of apparent consumed or produced power	14.xxx 4-byte float value
116					***Power factor measured***	Value -1 .. +1	Indicates the current value of the power factor	14.057 DPT_Value_Power_Factor
117					***Voltage RMS measured***	Value in Volt [V]	Indicates the current value of the mains voltage	9.020 DPT_Value_Volt
118					***Current RMS measured***	Value in Ampere [A]	Indicates the current value of the current	9.021 DPT_Value_Curr
119					***Frequency measured***	Value in Hertz [Hz]	Indicates the current value of the mains frequency	14.033 DPT_Value_Frequency
121	132	143	154	165	***Power threshold x enable status***	Active/Deactive	Indicates the activation status of the load absorption limit threshold	1.003 DPT_Enable
123	134	145	156	167	***Power threshold X actual value***	Value in Watt [W]	Indicates the current value of the load absorption limit threshold	14.056 DPT_Value_Power
124	135	146	157	168	***Over power threshold x***	1/0 value	Sends the signal associated with the exceeded limit threshold	1.002 DPT_Bool output communication object is made visible)
125	136	147	158	169	***Period counter over power threshold x (s)***	Value 0 .. 2147483647 [s]	Sends the counter value (expressed in seconds)	13.100 DPT_LongDeltaTimeSec
125	136	147	158	169	***Period counter over power threshold x (min)***	Value 0 .. 65535 [min]	Sends the counter value (expressed in minutes)	7.006 DPT_TimePeriodMin
126	137	148	159	170	***Overflow period counter over power threshold x***	Overflow status	Sends the counter overflow signal	1.002 DPT_Bool output communication object is made visible)
128	139	150	161	172	***Number counter over power threshold X (2 byte)***	Value 0 .. 65535	Sends the counter value	7.001 DPT_Value_2_Ucount
128	139	150	161	172	***Number counter over power threshold X (4 byte)***	Value 0 .. 4294967295	Sends the counter value	12.001 DPT_Value_4_Ucount
129	140	151	162	173	***Overflow Number counter over power limit threshold x***	Overflow status	Sends the counter overflow signal	1.002 DPT_Bool output communication object is made visible)

Input objects:

#	OBJECT NAME	FUNCTION	DESCRIPTION	DATAPOINT TYPE
1	***Loads control function enabling***	Enable/Disable	Receives the load control function activation/deactivation commands	1.002 DPT_Bool output communication object is made visible)
3	***Limit threshold value input for loads control***	Value in Watt [W]	Receives the value of the power threshold used by the load control function	14.056 DPT_Value_Power
3	***Limit threshold regulation for loads control***	1=Increase / 0=Decrease	Receives the increase/decrease commands for the absorption limit threshold value	1.007 DPT_Step object
8	***Reset period counter over consumption limit threshold***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
11	***Reset number counter over consumption limit threshold***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
14	***Loads shedding operation counter reset***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
16 21 26 31 36 41 46 51 56 61	***Load x - Notify slave status***	Feedback status on/off	Receives feedback about the current load status	1.001 DPT_Switch
17 22 27 32 37 42 47 52 57 62	***Load x - Notify power consumption slave***	Value in Watt [W]	Receives the instantaneous power absorbed by the load	14.056 DPT_Value_Power
18 23 28 33 38 43 48 53 58 63	***Load x - Include/exclude slave in algorithm status***	1=Included/0=Excluded	Receives the temporary exclusion/inclusion status of the load in the control algorithm	1.001 DPT_Switch
66	***Local relay - Switching***	On/Off	Receives the local relay activation/deactivation commands	1.001 DPT_Switch
67	***Local relay - Delayed switching***	On/Off	Receives the local relay delayed activation/deactivation commands	1.001 DPT_Switch
68	***Local relay - Activation delay***	Set value	Activation delay value	7.005 DPT_TimePeriodSec
69	***Local relay - Deactivation delay***	Set value	Deactivation delay value	7.005 DPT_TimePeriodSec
70	***Local relay - Staircase light timed switching***	Start/Stop	Receives the timed activation start/stop commands	1.010 DPT_Start communication object
71	***Local relay - Staircase light timeout***	Set value	Stair raiser light timing value	7.005 DPT_TimePeriodSec
72	***Local relay - Blinking***	Active/Deactive	Receives the activation/deactivation commands for load blinking mode	1.001 DPT_Switch
73	***Local relay - Scene***	Execute/Store	Used to store/execute scenes	18.001 DPT_SceneControl
74	***Local relay - Scene learning enable***	Active/Deactive	Enable/disable scene learning	1.003 DPT_Enable
75	***Local relay - Logic input 1***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
76	***Local relay - Logic input 2***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
77	***Local relay - Logic input 3***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
78	***Local relay - Logic input 4***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
79	***Local relay - Logic input 5***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
80	***Local relay - Logic input 6***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
81	***Local relay - Logic input 7***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
82	***Local relay - Logic input 8***	Logic function input	Logic function input	1.002 DPT_Bool output communication object is made visible)
84	***Local relay - Include/exclude Local relay in algorithm***	1=Included / 0=Excluded	Receives the temporary exclusion/inclusion status of the local relay in the control algorithm	1.002 DPT_Switch

87					***Local relay - Safety***	Monitoring	Used to monitor a sensor for the safety function	1.002 DPT_Bool output communication object is made visible)
89					***Local relay - Forcing***	Forcing on/off	Forces the local relay to an on/off value	2.001 DPT_Switch_Control
91					***Local relay - Block***	Active/Deactive	Blocks the status of the local relay in a condition that can be parameterised	1.002 DPT_Bool output communication object is made visible)
95					***Local relay - Operating time counter reset***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
98					***Local relay - Switching operation counter reset***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
101					***Reset consumed active energy primary counter***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
103					***Trigger consumed active energy differential counter***	1=Start count / 0=Stop count	Receives the start/stop count commands for the differential counter	1.010 DPT_Start communication object
105					***Reset consumed active energy differential counter***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
108					***Reset produced active energy primary counter***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
110					***Trigger produced active energy differential counter***	1=Start count / 0=Stop count	Receives the start/stop count commands for the differential counter	1.010 DPT_Start communication object
112					***Reset produced active energy differential counter***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
120	131	142	153	164	***Power threshold X enable***	Enable/Disable	Receives the power limit threshold activation/deactivation commands	1.002 DPT_Bool output communication object is made visible)
122	133	144	155	166	***Power threshold 1 regulation***	Value in Watt [W]	Receives the absorption limit threshold values	14.056 DPT_Value_Power
122	133	144	155	166	***Power threshold X regulation***	1=Increase / 0=Decrease	Receives the increase/decrease commands for the power limit threshold value	1.007 DPT_Step object
127	138	149	160	171	***Reset period counter over power threshold x***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset
130	141	152	163	174	***Reset number counter over power threshold X***	1=Reset / 0=No action	Receives the counter value reset command	1.015 DPT_Reset

code 70198635

LAST REVISION 12/2020

Punto di contatto indicato in adempimento ai fini delle direttive e regolamenti UE applicabili:
Contact details according to the relevant European Directives and Regulations:
GEWISS S.p.A. Via A.Volta, 1 IT-24069 Cenate Sotto (BG) Italy tel: +39 035 946 111 E-mail: qualitymarks@gewiss.com

SAT

+39 035 946 111
8.30 - 12.30 / 14.00 - 18.00
lunedì ÷ venerdì - monday ÷ friday

24h **+39 035 946 260**

sat@gewiss.com
www.gewiss.com