Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Application Energy metering/saving/calculating 7601/1.0

## Application Energy metering/saving/calculating 7601/1.0

Table of contents

Function overview

Using this application, you can operate the REG-K/3x230/16 A energy counter for measuring and monitoring energy. This means you can monitor up to 3 channels independently of one another. You can send the data to the KNX bus for evaluation.

You have access both to channel-dependent and channel-independent functions.

When the application is loaded, the following functions can be implemented, evaluated and controlled via the bus:
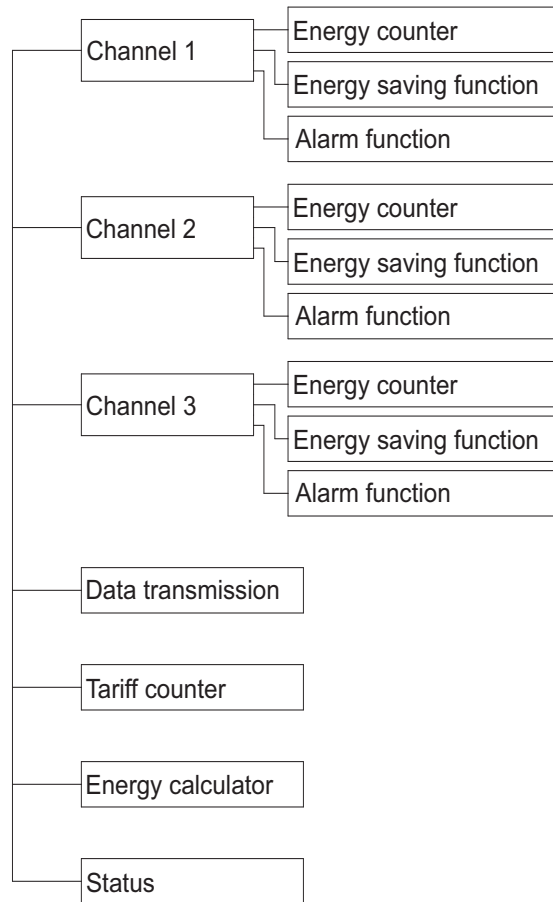
You can set a separate energy saving and alarm function with corresponding actions for each channel:

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Behaviour of the application
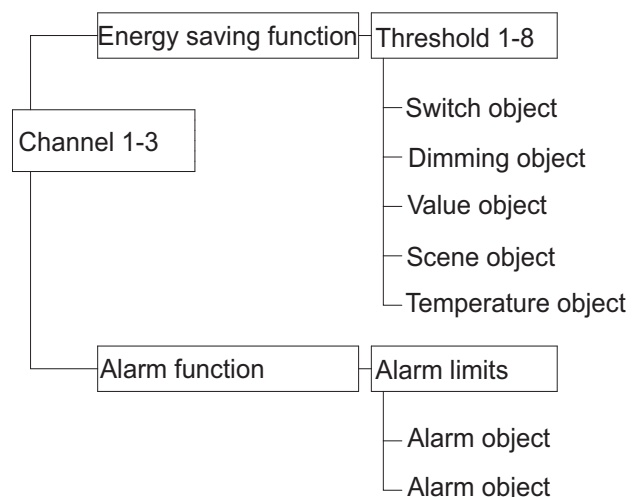
ℹ️ Many parameters and their settings are dependent on the settings you have already made for other parameters. This means that some parameters will appear or disappear and the values available for selection will change according to settings you have already made. These dependencies have not been shown in the table for reasons of clarity. All settings are always shown.

ℹ️ Configurable times are set via the base and factor parameters. The actual time is given by the multiplication of the two values. Example:
Base = 1 second, Factor = 3
Actual time = 3 seconds

ℹ️ The **bold** values in a table are the values set during factory configuration.

Behaviour of the application

The application is influenced by the following events:
• ETS download
• Bus voltage failure
• Bus voltage recovery

The behaviour differs according to function and can influence the measuring and monitoring function. Therefore, you can set the behaviour using parameters at the corresponding point. Refer to the chapter in question for a precise description.

General functions

Select channels

You can enable channels 1-3 separately. On enabled channels, you can then set additional functions (energy saving and alarm function) using parameters.

Parameters

General functions	
Parameters	**Setting**
Channel X	**Disabled**
	Enabled

Data transmission

You can send the measured current and power values per channel for evaluation and visualisation to the KNX bus.

Further settings are possible using parameters on an enabled function.

Parameters

General functions	
Parameters	**Setting**
Data transmission	**Disabled**
	Enabled

Tariff counter

You can count the energy separately for up to four tariffs. Using these values, you can then calculate your energy costs according to the applicable tariff.

Further settings are possible using parameters on an enabled function.

Parameters

General functions	
Parameters	**Setting**
Tariff counter	**Disabled**
	Enabled

Energy calculator

You can add together the measured current and power values of several channels and send them for evaluation and visualisation to the KNX bus.

Further settings are possible using parameters on an enabled function.

Parameters

General functions	
Parameters	**Setting**
Energy calculator	**Disabled**
	Enabled

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Functions per channel

Status

You can receive status indications on bus voltage failure and on exceeding thresholds of the energy meters and tariff counters.

Further settings are possible using parameters on an enabled function.

Parameters

General functions	
Parameters	Setting
Status	**Disabled**
	Enabled

Nominal voltage level

The energy counter measures energy pulses on the connected channels, but not the voltage. Using the nominal voltage level parameter, you can adapt the device to your local nominal voltage level. The set value forms the basis for calculating current magnitude and power. The more accurately the set value corresponds to your actual voltage level, the more accurate the calculated values will be.

Parameters

General functions	
Parameters	Setting
Nominal voltage level 1 V* factor (210-240)	**230** adjustable in single steps

Start delay

The start delay specifies from what point measured values are counted in the application. After an ETS download or bus voltage recovery, the device starts measuring the connected channels directly. You can delay the start of counting to allow the application to receive external values from the bus, e.g. system time or external energy values.

Parameters

General functions	
Parameters	Setting
Start delay 1 s * factor (1-240)	**5** adjustable in single steps

Functions per channel

Energy counter

The application sends the energy values measured by the device via the 4-byte objects "Energy" and "Total energy" to the KNX bus. Two energy counters are available for each connected channel:

• Energy counter: This counter can be reset to 0 as required using the "Reset" object. This means you can perform measurements over defined periods. In addition, you can specify a start value (offset) for the counter using the "Energy" object.

• Total energy counter: This counter continuously counts the energy since the device was first commissioned. The counter can only be reset if its counter threshold is exceeded. This threshold and the behaviour on exceeding it can be set in the "Status" tab.

You can select between the energy units Wh and kWh. This setting applies to both counters jointly.

The energy values can be transmitted actively or passively. In the "Passive (read only)" setting, the values are requested via the bus. The values can also be sent actively, either at cyclical intervals or when the energy value changes. The cyclic interval and the energy increase can be set using parameters. In the "Cyclically and if energy was changed" setting, the values are also sent cyclically. However, the cycle starts again when the energy increases by the set value.

The energy counter also displays the instantaneous current using the "Instantaneous current" 2-byte object.

Communication objects

The following communication objects can be selected: *(Per channel)*

Function	Object name	Type	Prio	Flags	Behaviour
Channel X energy	Reset	1 bit	Low	CW	Receive
Channel X energy	Total energy	4 byte	Low	CRT	Send
Channel X energy	Energy	4 byte	Low	CRW T	Send/receive
Channel X energy	Instantaneous current	2 byte	Low	CR	Send after read request

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Functions per channel

Schneider Electric

Parameters

Channel X

Parameters	Setting
Energy unit	Wh
	kWh

Channel X

Parameters	Setting
Sending of energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Channel X

Parameters	Setting
Send total energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-255)	**10** adjustable in single steps

Channel X

Parameters	Setting
Behaviour of the energy counter after ETS download	**No reaction**
	Reset energy
	Set energy
Starting value after download (as units specified above)	1-65000, **1000**

Channel X

| Parameters	Setting
Energy saving function	Disabled
	Enabled
Alarm function	Disabled
	Enabled

Energy saving function

You can use the energy counter for monitoring and controlling your energy consumption.

Using parameters, it is possible to set eight current thresholds, and activate them using the "Threshold" object, e.g. by time switch with object values 1-8. No threshold is activated if the object value is 0.

You can set a percentage tolerance for all thresholds jointly. This tolerance is added to the threshold, e.g. 12000 mA + 5%.

Example for a daily profile of energy consumption in the household

The current thresholds are selected so that they are not exceeded at any time during normal consumption.
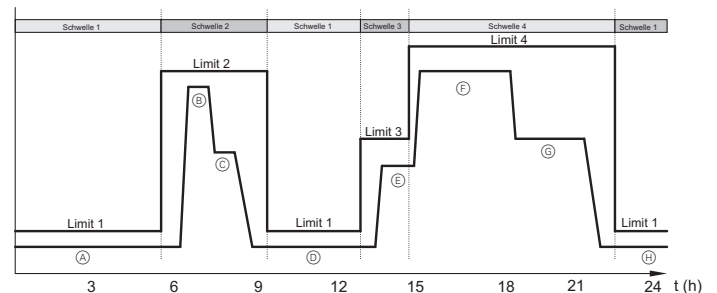
Ⓐ The people in the house are asleep, base-load consumption by refrigerators and appliances on standby.

Ⓑ Breakfast time: Coffee machine, kettle, hob and lights are on.

Ⓒ Children and those at work leave the house, radio, iron and a few lights are on.

Ⓓ The house is empty, base-load consumption by refrigerators and appliances on stand-by.

Ⓔ Children come back from school: TV, PCs and the radio are on.

Ⓕ The whole family is at home: TV, PC, washing machine, dishwasher and lights are on.

Ⓖ TV and lights are on.

Ⓗ The people in the house are asleep, base-load consumption by refrigerators and appliances on standby.

An ON alarm telegram (value "1") is sent if the current threshold including tolerance is exceeded, or a lower threshold is activated and the current is above this threshold. In addition, the application offers additional objects with which you can control loads via the KNX bus:

• Switch object: Switching loads on/off

• Value object: Absolute dimming of loads (e.g. dimming to 50 % of the maximum value)

• Dimming object: Relative dimming of loads (dimming current value by 50 %)

• Scene object: Calling up scenes

• Temperature object: Sending a setpoint (either in °C or °F)

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Functions per channel

If the current value drops below the threshold then an OFF alarm telegram (value "0") is sent.

The telegrams are only sent once when the threshold is exceeded. The telegrams are only sent again if the electricity consumption has dropped below the threshold again and subsequently exceeds it again. This means a telegram from another location can overwrite the telegram from the application, and revoke the undertaken action.

You can set a sending delay for each of the ON alarm and OFF alarm telegrams, in order to ignore intermittent threshold overshoots and undershoots.

Example for exceeding a current threshold
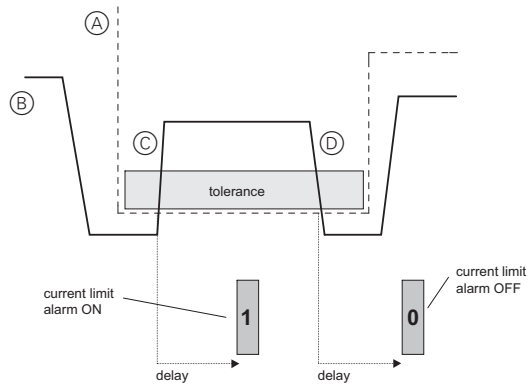
Ⓐ Instantaneous current threshold

Ⓑ Energy consumption curve over the course of a day

Ⓒ The freezer door is left open during the night when people are asleep in the house. After a short time, the energy consumption increases significantly and exceeds the current threshold including the tolerance.

After the set delay, an ON alarm telegram is sent.

Ⓓ The freezer door is closed again, the energy consumption returns to its normal level after a short time.

After the set delay, an OFF alarm telegram is sent.

Using the "Behaviour of threshold after bus voltage recovery" parameter, you can set which threshold is activated after the bus voltage recovery. You can activate the same threshold as before bus voltage failure, or a specific threshold (1-8).

Communication objects

The following communication objects can be selected:
(Per channel)

Function	Object name	Type	Prio	Flags	Behaviour
Channel X alarm	Threshold	1 byte	Low	CRW	Receive
Channel X alarm	Alarm	1 bit	Low	CT	Send
Channel X alarm	Value object	1 byte	Low	CT	Send
Channel X alarm	Dimming object	4 bit	Low	CT	Send
Channel X alarm	Temperature	2 byte	Low	CT	Send
Channel X alarm	Switch object	1 bit	Low	CT	Send
Channel X alarm	Scene object	1 byte	Low	CT	Send

Parameters

Energy saving function	
Parameters	**Setting**
Switch object	Disabled
	Enabled
Send telegram	Switch off
	Switch on
Value object	Disabled
	Enabled
Send telegram	**OFF**
	10 % - 90 %, adjustable in 10 % steps
	MAX
Dimming object	Disabled
	Enabled
Send telegram	Up 100 % - up 1 %,
	Stop
	Down 1 % - down 100 %
Scene object	Disabled
	Enabled
Send telegram	1-63, **1** adjustable in single steps
Temperature	Disabled
	Enabled
Temperature unit	**Celsius (DPT 9.001)**
	Fahrenheit (DPT 9.027)
Send telegram	7 °C - 40 °C, **20 °C** adjustable in single steps
	44 °F - 110 °F, **68 °F** adjustable in single steps

Energy saving function	
Parameters	**Setting**
Current threshold X 1 mA * factor (500-16000)	**16000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %	5 % - 25 %, **10 %**

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Functions per channel

Energy saving function	
Parameters	**Setting**
Delay of ON alarm	**1 s**
Time base	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm	**1 s**
Time base	1 min
Time factor (1-250)	**30** adjustable in single steps

Energy saving function	
Parameters	**Setting**
Behaviour of threshold after bus voltage recovery	**As before bus voltage failure**
	Threshold 1
	Threshold 2
	Threshold 3
	Threshold 4
	Threshold 5
	Threshold 6
	Threshold 7
	Threshold 8

Alarm function

The alarm function is used for current monitoring with two separate alarm thresholds.

You can set two different alarms:
• Alarm above limit: Current exceeds the alarm limit with the tolerance
• Alarm below limit: Current undershoots the alarm limit with the tolerance

You can set a tolerance percentage separately for both thresholds. The tolerance is added to the upper threshold, e.g. 12000 mA + 5%. The tolerance is subtracted from the lower threshold, e.g. 8000 mA -5%.

You can set a sending delay for both alarm telegrams, in order to ignore intermittent threshold overshoots and undershoots.

Example of undershooting and overshooting the alarm thresholds
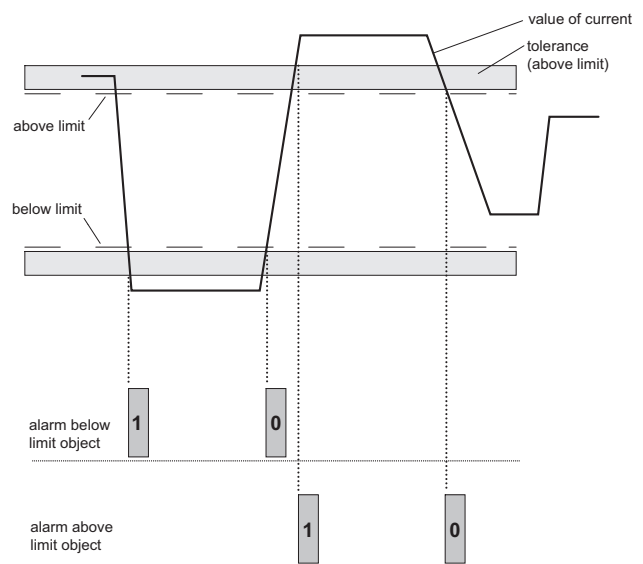
Using the alarm function, this means you can also visualise an undershoot of a defined current threshold. The reasons for this could be the failure of cooling installations, for example. You will then be alerted to this by an alarm telegram.

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Data transmission

Communication objects

The following communication objects can be selected:
(Per channel)

Function	Object name	Type	Prio	Flags	Behaviour
Channel X alarm	Alarm above limit	1 bit	Low	CT	Send
Channel X alarm	Alarm below limit	1 bit	Low	CT	Send

Parameters

Alarm function	
Parameters	**Setting**
Send alarm when value is above limit	Disabled
	Enabled
Current alarm limit 1 mA * factor (500-16000)	**10000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %)	5 % - 25 %, **10 %**
Delay of ON alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps

Alarm function	
Parameters	**Setting**
Send alarm when value is below limit	Disabled
	Enabled
Current alarm limit 1 mA * factor (500-16000)	**10000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %)	5 % - 25 %, **10 %**
Delay of ON alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps

Data transmission

The data transmission function sends the currently measured values for current and power to the KNX bus. You can disable or enable the data transmission per channel, and set the transmission interval. However, the transmission interval applies to all channels together.

The data transmission with time stamp is only possible if information about time and date is available. As the format for the time stamp, you can select between the DTP "10.001 Time of Day" and "19.001 Date time".

This information is called up using the "System time" global object. The time is calculated in an internal clock using the software and synchronised in an adjustable interval using the "System time" object.

As soon as the system time has been received, the data transmission starts with a time stamp telegram followed by the data telegrams (max. 6 telegrams).

If you do not have any time information available, you must set the "Disabled" value in the "Time stamp" parameter. In this case, the measured values are sent without time stamp. Otherwise, the values are only sent after a time telegram has been received.

Communication objects

The following communication objects can be selected:
(per channel in some cases)

Function	Object name	Type	Prio	Flags	Behaviour
Data transmission	Transmission of power X	2 byte	Low	CRT	Send
Data transmission	Transfer current X	2 byte	Low	CRT	Send
Data transmission	System time (DPT 10.001)	3 byte	Low	CWT	Receive
Data transmission	System time (DPT 19.001)	8 byte	Low	CWT	Receive
Data transmission	Time stamp (DPT 10.001)	3 byte	Low	CRT	Send
Data transmission	Time stamp (DPT 19.001)	8 byte	Low	CRT	Send

Parameters

Data transmission	
Parameters	**Setting**
Power transmission channel X	**Disabled**
	Enabled
Transmission of current channel X	**Disabled**
	Enabled
Time base for transmission interval	1 s
	1 min
Time factor for transmission interval (1-255)	**60** adjustable in single steps

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Tariff counter

Schneider Electric

Time setting	
Parameters	**Setting**
Time stamp	Disabled
	Time of day (DPT 10.001)
	Date time (DPT 19.001)
Behaviour of data transmission after ETS download	**No reaction**
	Request time
Time request, factor x 1 h (1-24)	**1** adjustable in single steps

Tariff counter

The tariff counter function is used for calculating electricity costs. You can use the "Tariff info" object to select four tariffs which then apply to all three channels. The electricity consumption of all channels is added together. The object value "0" means there is no tariff. This deactivates the function.

You can accept the particular valid tariff automatically, e.g. using a programmed time switch, or select it manually using a touch display.

You can select between the energy units Wh and kWh.

The values for energy consumption per tariff are sent either cyclically or passively (read only) to the bus via a 4-byte object.

Each tariff counter can be reset using its own object.

The behaviour of the tariff counter after ETS download and bus voltage recovery can be set using parameters.

The tariff counter can display no reaction or is reset after an ETS download.

After bus voltage recovery, the same tariff can be adopted as before bus voltage failure, or a particular tariff (tariff 1-4) can be activated.

Communication objects

The following communication objects can be selected:
(per tariff in some cases)

Function	Object name	Type	Prio	Flags	Behaviour
Tariff counter	Tariff info	1 byte	Low	CW	Receive
Tariff counter	Reset tariff X	1 bit	Low	CW	Receive
Tariff counter	Energy tariff X	4 byte	Low	CRT	Send

Parameters

Tariff counter	
Parameters	**Setting**
Energy unit	Wh
	kWh
Sending of data tariff X	Read only
	Cyclically
Cyclic interval 1 min x factor (1-250)	**60** adjustable in single steps
Time factor for transmission interval (1-255)	**60** adjustable in single steps

Tariff counter	
Parameters	**Setting**
Behaviour of the tariff counter after ETS download	**No reaction**
	Reset
Behaviour of the tariff counter after bus voltage recovery	**As before bus voltage failure**
	Tariff 1
	Tariff 2
	Tariff 3
	Tariff 4

Schneider Electric

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Energy calculator

Energy calculator

The energy calculator function allows the energy counters and the total energy counter of several channels to be added together. The transmission to the bus is performed using the 4-byte objects "Sum of energy" and "Sum of total energy", and can be set by parameters.

- Passive
- If energy was changed
- Cyclically (1-255 s, 1-255 min)
- Cyclically and if energy was changed: If the selected energy increase is exceeded, the transmission cycle starts again.

You can select between the energy units Wh and kWh.

You can reset the energy calculator by resetting the individual energy counters for each channel. The energy calculator then starts again adding the values together.

The energy calculator (sum of energy) can also process up to three externally measured energy values. These values can be sent to the KNX bus, e.g. by another energy counter or by a switch actuator with current detection. Each of them is read in via its own object. External values are then added to the internally calculated energy value.

It is not possible to combine an internal value and external energy on the total energy calculator (sum of total energy).

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Energy calculator	Sum of total energy	4 byte	Low	CRT	Send
Energy calculator	Sum of energy	4 byte	Low	CRT	Send
Energy calculator	External energy X	4 byte	Low	CRWT	Receive

Parameters

Energy calculator	
Parameters	**Setting**
Energy unit	Wh
	kWh
Sum of channels	**Channel 1 + Channel 2 + Channel 3**
	Channel 1 + Channel 2
	Channel 1 + Channel 3
	Channel 2 + Channel 3
External energy	**Disabled**
	External 1+ External 2+ External 3
	External 1 + External 2
	External 1

Energy calculator	
Parameters	**Setting**
Sending of energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Energy calculator	
Parameters	**Setting**
Send total energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Status

Status

The application offers status indications for all important functions. This means you are informed about bus voltage failures and overruns of the various counters. In addition, you can set certain counter thresholds and the behaviour on exceeding the thresholds.

Bus voltage failure counter

The application counts the number of bus voltage failures, i.e. failure of bus voltage or disconnection of the device from the bus.

The value is sent to the bus either cyclically or passively (read only).

The counter can be reset using its own object.

ETS downloads are not counted as a bus voltage failure. The energy counters continue to work in this case.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset bus voltage failure counter	1 bit	Low	CRW	Receive
Status	Bus voltage failure counter	1 byte	Low	CRT	Send

Parameters

Status	
Parameters	**Setting**
Bus voltage failure counter	Disabled
	Enabled
Send counter bus voltage failure	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Energy counter and total energy counter

You can set certain counter thresholds for the energy counters and the total energy counter, and the behaviour on exceeding the thresholds.

These values apply jointly for the counters of all three channels. However, each counter has its own status object per channel. This allows the status of each counter to be evaluated separately.

You can select between the energy units Wh and kWh. This setting applies to all counters in the "Status" tab.

You can set the following options for the behaviour of the counter if the threshold is exceeded:

• Stop counting: The counter is stopped. After a counter reset, it starts again.

• Reset counter: The counter is reset.

• Continue counting: The counter continues counting beyond the set counter threshold. The counter is reset to 0 as soon as the maximum counting capacity of the device is reached (at approx. 2.1 million kWh).

The energy counters and the total energy counter can each be reset using their own object. At the same time, a check is performed as to which counter has exceeded the counter threshold. Only this counter is then reset.

With this function, for example, you could implement weekly monitoring of your energy consumption. If you would like a particular value not to be exceeded, you can set the counter threshold for it to 80% of your target value, for example. The counter should continue counting after an overshoot, however. If, on a Friday, you then receive an alarm telegram that the counter has exceeded the threshold, you know that you still have 20% of your target value available for the two remaining days of the week, and you can adjust your behaviour accordingly. At the end of the week, you can then reset the energy counter, e.g. by time switch.

You can only reset the total energy counter using the status function by specifying a counter threshold which will then be exceeded and the counter reset.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset energy counter	1 bit	Low	CRW	Receive
Status	Energy counter X exceeded	1 bit	Low	CRT	Send
Status	Reset total energy counter	1 bit	Low	CRW	Receive
Status	Total energy counter X exceeded	1 bit	Low	CRT	Send

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Status

Parameters

Status	
Parameters	**Setting**
Energy unit	Wh
	kWh

Status	
Parameters	**Setting**
Energy counter exceeded	Disabled
	Enabled
Threshold of energy consumption (in energy unit kWh)	1-2100000, **100000** adjustable in single steps
Threshold of energy consumption (in energy unit Wh)	1-2100000000, **1000000000** adjustable in single steps
Behaviour after reaching the threshold	**Stop counting**
	Reset energy register
	Continue counting (set to 0 on overrun)
Send energy counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Status	
Parameters	**Setting**
Total energy counter exceeded	Disabled
	Enabled
Threshold of energy consumption (in energy unit kWh)	1-2100000, **100000** adjustable in single steps
Threshold of energy consumption (in energy unit Wh)	1-2100000000, **1000000000** adjustable in single steps
Behaviour after reaching the threshold	**Stop counting**
	Reset total energy register
	Continue counting (set to 0 on overrun)
Send total energy counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Tariff counter

Similarly to the energy counter and total energy counter, you can also set a counter threshold for the tariff counter, and what its behaviour should be if the threshold is exceeded.

This value applies jointly to the counters of all four tariffs. However, each counter per tariff has its own status object. This allows the status of each counter to be evaluated separately.

You can set the following options for the behaviour of the counter if the threshold is exceeded:
- Stop counting: The counter is stopped. After a counter reset, it starts again.
- Reset counter: The counter is reset.
- Continue counting: The counter continues counting beyond the set counter threshold. The counter is reset to 0 as soon as the maximum counting capacity of the device is reached (at approx. 2.1 million kWh).

The tariff counters can be reset using their own object. At the same time, a check is performed as to which counter has exceeded the counter threshold. Only this counter is then reset.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset tariff counter	1 bit	Low	CRW	Receive
Status	Tariff counter X exceeded	1 bit	Low	CRT	Send

Parameters

Status	
Parameters	**Setting**
Tariff counter exceeded	Disabled
	Enabled
Threshold tariff counter (in energy unit kWh)	1-2100000, **100000**
Threshold tariff counter (in energy unit Wh)	1-2100000000, **1000000000**
Behaviour after reaching the threshold	**Stop counting**
	Reset tariff register
	Continue counting (set to 0 on overrun)
Send tariff counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Overview of parameters

Overview of parameters

General functions

General functions	
Parameters	**Setting**
Channel X	**Disabled**
	Enabled

General functions	
Parameters	**Setting**
Data transmission	**Disabled**
	Enabled

General functions	
Parameters	**Setting**
Tariff calculator	**Disabled**
	Enabled

General functions	
Parameters	**Setting**
Energy calculator	**Disabled**
	Enabled

General functions	
Parameters	**Setting**
Status	**Disabled**
	Enabled

General functions	
Parameters	**Setting**
Nominal voltage level	**230**
1 V* factor (210-240)	adjustable in single steps

General functions	
Parameters	**Setting**
Start delay	**5**
1 s * factor (1-240)	adjustable in single steps

Functions per channel

Channel X	
Parameters	**Setting**
Energy unit	Wh
	kWh

Channel X	
Parameters	**Setting**
Sending of energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Channel X	
Parameters	**Setting**
Send total energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-255)	**10** adjustable in single steps

Channel X	
Parameters	**Setting**
Behaviour of the energy counter after ETS download	**No reaction**
	Reset energy
	Set energy
Starting value after download (as units specified above)	1-65000, **1000**

Channel X	
Parameters	**Setting**
Energy saving function	Disabled
	Enabled
Alarm function	Disabled
	Enabled

Energy saving function	
Parameters	**Setting**
Switch object	Disabled
	Enabled
Send telegram	Switch off
	Switch on
Value object	Disabled
	Enabled
Send telegram	**OFF**
	10 % - 90 %, adjustable in 10 % steps
	MAX
Dimming object	Disabled
	Enabled
Send telegram	Up 100 % - up 1 %,
	Stop
	Down 1 % - down 100 %
Scene object	Disabled
	Enabled
Send telegram	1-63, **1** adjustable in single steps
Temperature	Disabled
	Enabled
Temperature unit	**Celsius (DPT 9.001)**
	Fahrenheit (DPT 9.027)
Send telegram	7 °C - 40 °C, **20 °C** adjustable in single steps
	44 °F - 110 °F, **68 °F** adjustable in single steps

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Overview of parameters

Energy saving function	
Parameters	**Setting**
Current threshold X 1 mA * factor (500-16000)	**16000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %	5 % - 25 %, **10 %**

Energy saving function	
Parameters	**Setting**
Delay of ON alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps

Energy saving function	
Parameters	**Setting**
Behaviour of the energy counter after bus voltage recovery	**As before bus voltage failure**
	Threshold 1
	Threshold 2
	Threshold 3
	Threshold 4
	Threshold 5
	Threshold 6
	Threshold 7
	Threshold 8

Alarm function	
Parameters	**Setting**
Send alarm when value is above limit	Disabled
	Enabled
Current alarm limit 1 mA * factor (500-16000)	**10000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %)	5 % - 25 %, **10 %**
Delay of ON alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps

Alarm function	
Parameters	**Setting**
Send alarm when value is below limit	Disabled
	Enabled
Current alarm limit 1 mA * factor (500-16000)	**10000** adjustable in single steps
Tolerance (e.g. 10000 + 10 %)	5 % - 25 %, **10 %**
Delay of ON alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps
Delay of OFF alarm Time base	**1 s**
	1 min
Time factor (1-250)	**30** adjustable in single steps

Functions for all channels

Data transmission	
Parameters	**Setting**
Power transmission channel X	**Disabled**
	Enabled
Transmission of current channel X	**Disabled**
	Enabled
Time base for transmission interval	1 s
	1 min
Time factor for transmission interval (1-255)	**60** adjustable in single steps

Data transmission	
Parameters	**Setting**
Time stamp	Disabled
	Time of day (DPT 10.001)
	Date time (DPT 19.001)
Behaviour of data transmission after ETS download	**No reaction**
	Request time
Time request, factor x 1 h (1-24)	**1** adjustable in single steps

Tariff counter	
Parameters	**Setting**
Energy unit	Wh
	kWh
Sending of data tariff X	Read only
	Cyclically
Cyclic interval 1 min x factor (1-250)	**60** adjustable in single steps
Time factor for transmission interval (1-255)	**60** adjustable in single steps

Tariff counter	
Parameters	**Setting**
Behaviour of the tariff counter after ETS download	**No reaction**
	Reset
Behaviour of the tariff counter after bus voltage recovery	**As before bus voltage failure**
	Tariff 1
	Tariff 2
	Tariff 3
	Tariff 4

Energy calculator	
Parameters	**Setting**
Energy unit	Wh
	kWh
Sum of channels	**Channel 1 + Channel 2 + Channel 3**
	Channel 1 + Channel 2
	Channel 1 + Channel 3
	Channel 2 + Channel 3

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Overview of parameters

Schneider Electric

Energy calculator	
Parameters	**Setting**
External energy	**Disabled**
	External 1+ External 2+ External 3
	External 1 + External 2
	External 1

Energy calculator	
Parameters	**Setting**
Sending of energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Energy calculator	
Parameters	**Setting**
Send total energy object	Passive (read only)
	If energy was changed
	Cyclically
	Cyclically and if energy was changed
Energy increase (as units specified above)	1-10000, **10**
Time base	1 s
	1 min
Time factor (1-250)	**10** adjustable in single steps

Status	
Parameters	**Setting**
Bus voltage failure counter	Disabled
	Enabled
Send counter bus voltage failure	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Status	
Parameters	**Setting**
Energy unit	Wh
	kWh

Status	
Parameters	**Setting**
Energy counter exceeded	Disabled
	Enabled
Threshold of energy consumption (in energy unit kWh)	1-2100000, **100000** adjustable in single steps
Threshold of energy consumption (in energy unit Wh)	1-2100000000, **1000000000** adjustable in single steps

Status	
Parameters	**Setting**
Behaviour after reaching the threshold	**Stop counting**
	Reset energy register
	Continue counting (set to 0 on overrun)
Send energy counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Status	
Parameters	**Setting**
Total energy counter exceeded	Disabled
	Enabled
Threshold of energy consumption (in energy unit kWh)	1-2100000, **100000** adjustable in single steps
Threshold of energy consumption (in energy unit Wh)	1-2100000000, **1000000000** adjustable in single steps
Behaviour after reaching the threshold	**Stop counting**
	Reset total energy register
	Continue counting (set to 0 on overrun)
Send total energy counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Status	
Parameters	**Setting**
Tariff counter exceeded	Disabled
	Enabled
Threshold tariff counter (in energy unit kWh)	1-2100000, **100000**
Threshold tariff counter (in energy unit Wh)	1-2100000000, **1000000000**
Behaviour after reaching the threshold	**Stop counting**
	Reset tariff register
	Continue counting (set to 0 on overrun)
Send tariff counter	Passive (read only)
	Cyclically
Cyclic interval (1-250), factor x 1 min	**2** adjustable in single steps

Energy Meter REG-K/3x230/16 A
Art no. MTN6600-0603

Overview of communication objects

Overview of communication objects

Functions per channel

Function	Object name	Type	Prio	Flags	Behaviour
Channel X energy	Reset	1 bit	Low	CW	Receive
Channel X energy	Total energy	4 byte	Low	CRT	Send
Channel X energy	Energy	4 byte	Low	CRWT	Send/re-ceive
Channel X energy	Instantaneous current	2 byte	Low	CR	Send after read re-quest

Function	Object name	Type	Prio	Flags	Behaviour
Channel X alarm	Threshold	1 byte	Low	CRW	Receive
Channel X alarm	Alarm	1 bit	Low	CT	Send
Channel X alarm	Value object	1 byte	Low	CT	Send
Channel X alarm	Dimming object	4 bit	Low	CT	Send
Channel X alarm	Temperature	2 byte	Low	CT	Send
Channel X alarm	Switch object	1 bit	Low	CT	Send
Channel X alarm	Scene object	1 byte	Low	CT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Channel X alarm	Alarm above limit	1 bit	Low	CT	Send
Channel X alarm	Alarm below limit	1 bit	Low	CT	Send

Functions for all channels

Function	Object name	Type	Prio	Flags	Behaviour
Data trans-mission	Transmission of power X	2 byte	Low	CRT	Send
Data trans-mission	Transfer current X	2 byte	Low	CRT	Send
Data trans-mission	System time (DPT 10.001)	3 byte	Low	CWT	Receive
Data trans-mission	System time (DPT 19.001)	8 byte	Low	CWT	Receive
Data trans-mission	Time stamp (DPT 10.001)	3 byte	Low	CRT	Send
Data trans-mission	Time stamp (DPT 19.001)	8 byte	Low	CRT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Tariff counter	Tariff info	1 byte	Low	CW	Receive
Tariff counter	Reset tariff X	1 bit	Low	CW	Receive
Tariff counter	Energy tariff X	4 byte	Low	CRT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Energy cal-culator	Sum of total en-ergy	4 byte	Low	CRT	Send
Energy cal-culator	Sum of energy	4 byte	Low	CRT	Send
Energy cal-culator	External energy X	4 byte	Low	CRWT	Receive

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset bus volt-age failure coun-ter	1 bit	Low	CRW	Receive
Status	Bus voltage fail-ure counter	1 byte	Low	CRT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset energy counter	1 bit	Low	CRW	Receive
Status	Energy counter X exceeded	1 bit	Low	CRT	Send
Status	Reset total ener-gy counter	1 bit	Low	CRW	Receive
Status	Total energy counter X ex-ceeded	1 bit	Low	CRT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Status	Reset tariff coun-ter	1 bit	Low	CRW	Receive
Status	Tariff counter X exceeded	1 bit	Low	CRT	Send

Function	Object name	Type	Prio	Flags	Behaviour
Channel X energy	Reset	1 bit	Low	CW	Receive
Channel X energy	Total energy	4 byte	Low	CRT	Send
Channel X energy	Energy	4 byte	Low	CRWT	Send/re-ceive
Channel X energy	Instantaneous current	2 byte	Low	CR	Send