Application Metering Gateway 7602/1.0

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.

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

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

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Function overview

The KNX Metering Gateway is a device which connects meters via the Modbus open standard to KNX. The Modbus open standard allows you to receive a more in-depth analysis of consumption in all areas of your building.

You can connect up to 10 of the following types of meters based on Modbus remote terminal unit (RTU):

- Schneider Electric energy meters
- Schneider Electric power meters
- Schneider Electric Smart Interface Modules (SIM10M module)
- Non-Schneider Electric Modbus RTU devices (offering you greater flexibility)

With the information which the KNX Metering Gateway provides you can visualise energy or media consumption. This can also be used to reduce consumption through the use of control strategies within the KNX network.

You can choose from 17 different pre-prepared templates for the meters and devices in order to quickly connect to a KNX network. Each template contains the 20 most frequently needed Modbus values for simple configuration.

From each connected Modbus RTU device the KNX Metering Gateway can read up to an additional 40 Modbus register values and transfer this data to the KNX network.

You can read up to 10 meters using one KNX Metering gateway. This makes the Gateway very cost-efficient.

Integrating a SIM10 module makes it possible to determine and visualise gas and water consumption.

The KNX Metering Gateway is also suitable for retrofitting or for retroactive connection of existing Modbus systems to KNX because it is fully compatible with meters from other manufacturers.

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.

Modbus settings

The gateway always works in master mode and the connected Modbus devices work in slave mode. Communication from KNX bus to the Modbus is not possible.

Baudrate setting

The Baudrate is set depending on the distance between Modbus RTU devices. For instance with a Baud rate of 9,600 bit/sec the maximum communication distance between 1 - 15 Modbus RTU devices is 1,200 metres. With the Baud rate of 19,200 bit/sec the maximum communication distance is 900 metres, as the table shows below:

Baudrate setting	**Maximum communication distance for 1 to 15 Modbus RTU devices (Typical with Belden 3105A cables)**
9,600 bit/sec	1,200 m
19,200 bit/sec	900 m

Parity refers to the technique of checking if transmission has been successful when transmitting between devices. It lets you know if some data has been lost during transmission.

Setting of parity

The Modbus supports only 11 bit frames. The ETS application sets stop bits automatically depending on the parity setting. "Parity" refers to the number of 1s in a given binary number. Odd parity means there are an odd number of 1s and even parity means that there are an even number of 1s. Parity bits are used as a means of error detection as digital data is transmitted and received. Both the Gateway and Meter must always be set to the same as one another, odd, even or none. The default parity mode of Modbus is "even" parity.

Make sure that all connected meters are always set to the same parity as one another, odd, even or one.

- Parity = None: choose between one and two stop bits
- Parity = Even: one stop bit is set
- Parity = Odd: one stop bit is set

When parity is set to „None“ it is necessary to preset meters PM2x0, PM7x0 and PM8x0 to one stop bit (all other meters require a setting of two stop bits here). This means that under „None“ parity PM2x0, Pm7x0 and PM8x0 meters cannot be combined with other meters. In their case it is necessary to work with „Odd“ or „Even“ parity.

Parameters

Modbus settings	
Parameters	**Setting**
Baudrate setting (bit/sec)	1,200
	2,400
	4,800
	9,600
	19,200
Parity	None
	Even
	Odd
Stop bit	**One stop bit**
	Two stop bits

Delay between frames

Some devices require considerable time after end of response until they are ready to receive the following request from the master. In particular Schneider Electric SEPAM power devices and legacy slave devices. As they are slow in dealing with the original request they may miss the following request.

The time between requests should be less than 3.5 characters according to the Modbus specification. However, these legacy devices need more time. The parameter „Delay between frames“ solves this problem. The time is automatically adapted to 3.5 characters of the transmission speed, but you have the choice to increase this time if you need to support such slow legacy devices.

Parameters

Modbus settings	
Parameters	**Setting**
Delay between frames 1 ms* factor (50 .. 100)	**Disabled** 50 - 100 adjustable in steps of 10

Start-up delay

The parameter „Start-up 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 when the start-up delay is complete.

Parameters

Modbus Settings	
Parameters	**Setting**
Start-up delay 1 s * factor (1-250)	**5** adjustable in single steps

Metering device templates

Pre-installed ETS templates provide you with the 20 most frequently needed values which makes configuration much easier and quicker. This also means there is no need to map the Modbus register addresses to KNX.

The ETS application has special templates which you use to implement the Schneider Electric Modbus RTU based energy or power meters and SIM10M module. These devices are outlined in the table below:

Supported devices		
Type	**Name**	**Description**
Energy/power meter	PM9C	power meter for the installation distributor (cabinet) for measurement with current transformers
Energy/power meter	PM210	current, voltage, power and energy (each active/idle/apparent), frequency and power factor
Energy/power meter	PM710	slave pointer (min/max), Total Harmonic Distortion (THD) I/THD U harmonic distortion
Energy/power meter	PM750	like PM710 with alarm contact
Energy/power meter	PM810	like PM750 with 4-quadrant measurement
Energy/power meter	PM820	like PM810 with additional integrated memory for logging events and analysis of harmonics.
Energy/power meter	PM850	like PM810 with harmonic content
Energy/power meter	PM870	like PM850 with additional detection and logging of peaks of voltage and current
Energy/power meter	PM1200	like PM210 withTHD I/THD U harmonic distortion
Energy/power meter	DM6200	Ampere, volt, frequency meter
Energy/power meter	iEM3150	direct measurement to 63A, records energy
Energy/power meter	iEM3155	like iEM3150 with alarm contact, MID compliant
Energy/power meter	iEM3250	transformer measurement
Energy/power meter	iEM3255	like IEM3250 with alarm contact, MID compliant
Energy/power meter	PM3250	4-quadrant measurement, THD I/THD U harmonic distortion
Energy/power meter	PM3255	like PM3250 with alarm
Smart Interface Module	SIM10M	input module for pulse counting.

Metering device x

You can select the metering device you require from the parameter „Type of metering device“. These are the 17 devices from the previous table.

Each connected device has a unique address, between 1 and 247, as per the Modbus addressing protocol. To identify the device, you need to set its address at the parameter „Address of metering device“.

The template allows you to to monitor different kinds of values. To achieve this it has three monitoring functions which you can enable by parameter. These are:

- „Voltage and current monitor“
- „Power monitor“
- „Consumption monitor“

With the parameter „Sending behaviour“ you can specify how all values of the monitors are sent. For a cyclical sending, you can set the parameter „Time base“ to either 1 second or 1 minute. The chosen setting applies to all values of the whole template.

Parameters

Metering device x	
Parameters	**Setting**
Type of metering device	Disabled
	PM9C
	PM210
	PM710/PM750
	PM8x0
	DM1200
	DM6200
	iEM3150
	iEM3155
	iEM3250
	iEM3255
	PM3250/PM3255
	SIM10M
Address of metering device	1 ..247
Read Modbus values after start	Enabled
	Disabled
Voltage and current monitor	Enabled
	Disabled
Power monitor	Enabled
	Disabled
Consumption monitor	Enabled
	Disabled
Sending behaviour	**Cyclically (as configured time)**
	If value was changed
Time base	1 sec
	1 min

Voltage and current monitor

You can set the parameter „Voltage and current monitor“ to read Modbus values after start. Values for voltage and current are available for each phase (1-3) seperately. When you enable the voltage or current of phase x you can then set their cyclic sending with integers of 1 second or 1 minute, with a base as configured in previous parameter „Time base“.

Parameters

Voltage and current monitor	
Parameters	**Setting**
Voltage unit	**Millivolt (DPT 9.020)**
	Volt (DPT 9.*)
Voltage of phase x	Enabled
	Disabled
Cyclic voltage sending Time base * factor (1-250)	**2,** 1 .. 250
Current unit	**Milliampere (DPT 9.021)**
	Ampere (DPT 9.*)
Current of phase x	Enabled
	Disabled
Cyclic current sending Time base * factor (1-250)	**2,** 1 .. 250
Frequency	Enabled
	Disabled
Cyclic frequency sending Time base * factor (1-250)	**2,** 1 .. 250

Power monitor

The power monitor allows you to enable parameters as follows:

- Power factor (power factor in cosΦ)
- Active power x, for each phase 1-3
- Reactive power x, for each phase 1-3
- Total active power (total power in kW), sum of phases 1-3
- Total reactive power (total power in kVAr), sum of phases 1-3
- Total apparent power (total power in kVA), sum of phases 1-3

With each of these you can then set their cyclic sending with integers of 1 second or 1 minute, with a base as configured in previous parameter „Time base“.

Parameters

Power monitor	
Parameters	**Setting**
Power factor (cos phi)	Enabled
	Disabled
Cyclic power factor sending Time base * factor (1-250)	**2,** 1 .. 250
Active power x	Enabled
	Disabled
Cyclic active power factor sending Time base * factor (1-250)	**2,** 1 .. 250
Power datapoint	**Power kW (DPT 9.024), 2 Byte**
	Value power W (DTP 14.056), 4 Byte
Reactive power x	Enabled
	Disabled
Cyclic reactive power factor sending Time base * factor (1-250)	**2,** 1 .. 250
Power datapoint	**Power kW (DTP 9.024), 2 Byte**
	Value power W (DTP 14.056), 4 Byte
Total active power Total reactive power Total apparent power	Enabled
	Disabled
Cyclic total active / reactive / apparent power factor sending Time base * factor (1-250)	**2,** 1 .. 250
Power datapoint	**Power kW (DTP 9.024), 2 Byte**
	Value power W (DTP 14.056), 4 Byte

Consumption monitor

With the consumption monitor you can enable the following:

- Active energy counter (total energy - active in kWh)
- Reactive energy counter (total energy - reactive - in kVArh)
- Apparent energy counter (total energy - apparent - in kVAh)

These monitor energy consumption within the period.

You can then set their cyclic sending with integers of 1 second or 1 minute, with a base as configured in the previous parameter „Time base“.

The energy counters each have 3 possible consumption object types which you can set to Active energy, Active energy kWh or Active energy V64.

Parameters

Consumption monitor	
Parameters	**Setting**
Active energy counter	Enabled
	Disabled
Cyclic active consumption sending Time base * factor (1-250)	**2,** 1 .. 250
Consumption object type	Active energy (DPT 13.010)
	Active energy kWh (DPT 13.013)
	Active energy V64 (DPT 29.010)
Reactive energy counter	Enabled
	Disabled
Cyclic reactive consumption sending Time base * factor (1-250)	**2,** 1 .. 250
Consumption object type	Reactive energy (DPT 13.012)
	Reactive energy kVArh (DPT 13.015)
	Reactive energy V64 (DPT 29.012)
Apparent energy counter	Enabled
	Disabled
Cyclic apparent consumption sending Time base * factor (1-250)	**2,** 1 .. 250
Consumption object type	Apparent energy (DPT 13.011)
	Apparent energy kVAh (DPT 13.014)
	Apparent energy V64 (DPT 29.011)

Application Example

Requirements

- measure and visualise how much energy is used lighting an office building
- measure the gas and water consumption in the building
- monitor the quality of the network to ensure the operational safety of IT equipment

Solution

- install an iEM3150 meter to record the energy consumed by the lighting
- install an iEM3255 meter to determine the network quality
- install a SIM10M module to measure gas and water consumption via impulse
- connect the devices to each other via Modbus

By connecting the KNX Metering Gateway to the Modbus line, the data can be configured easily using the templates supplied and then transmitted to the KNX bus. The consumption data is then conveniently displayed for facility management in their offices on a touch panel. Incoming alarms triggered by fluctuations in the network quality are also displayed.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Metering device x	Voltage of phase x	2 Byte	Low	CTR	Send/read
Metering device x	Current phase x	2 Byte	Low	CTR	Send/read
Metering device x	Frequency	4 Byte	Low	CTR	Send/read
Metering device x	Power factor	4 Byte	Low	CTR	Send/read
Metering device x	Active power kW x	2/4 Byte	Low	CTR	Send/read
Metering device x	Reactive power kVAr x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total active power kW x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total reactive power kVAr x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total apparent power kVA x	2/4 Byte	Low	CTR	Send/read
Metering device x	Active energy counter kWh	4/8 Byte	Low	CTR	Send/read
Metering device x	Reactive energy counter kVArh	4/8 Byte	Low	CTR	Send/read
Metering device x	Apparent energy counter kVAh	4/8 Byte	Low	CTR	Send/read

Template for SIM10M

Within the KNX Metering Gateway you can also connect to a SIM10M module allowing you to:

- read energy consumption
- read the buildings' pulse meters that measure gas and water consumption
- visualise these values

The SIM10M module offers you two different functions:

1. six logic counters with pulse acquisition and on/off detection by internal 3.6 V DC power and pull-up resistors.

2. two analogue inputs with a range of 0-10 V DC externally powered.

The SIM10M module is able to control and count the pulses of up to six simple meters with pulse or relay output.

The binary counters each have a scale, multiple and divide factor implemented. This is because the ETS application does not support decimal points, so in each case there needs to be a multiple and divide factor to achieve the required value, e.g. when scale factor = 18.32, multiple factor is 1832 and divide factor is 100.

Typical use case of SIM10M module and setting of ETS application

When connecting the SIM10M module and the power and pulse meters, you must set the amount of pulses which are defined for 1kWh (or m^3 for gas and water). Those constants are set in the ETS application (preset to 3,200 pulses and 1,000 imp/kWh). The result is sent to the KNX bus via the communication object.

Reset of binary counter

The reset datapoint reacts only to a „true" telegram. A "false" telegram is ignored.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
SIM10M module x	Binary counter x	4 Byte	Low	CTR	Send/read
SIM10M module x	Analogue input x	2 Byte	Low	CTR	Send/read
SIM10M module x	Reset of binary counter x	1 bit	Low	CW	Send

Parameters

SIM10M module 1	
Parameter	**Setting**
Address of SIM10M	1 .. 247
Read input values after start	Enabled
	Disabled
Binary counter 0 .. 5	Enabled
	Disabled
Cyclic object sending Time base * factor (1 .. 250)	**2**, 1 .. 250
Multiplication factor	**1,** 1 .. 10,000
Division factor (Data*multi / div factor)	**1**, 1 .. 10,000
Voltage unit	Millivolt (DPT 9.020)
	Volt (DPT 9.0*)
Analogue input 0, 1	Enabled
	Disabled
Cyclic object sending Time base * factor (1 .. 250)	**2,** 1 .. 250
Sending behaviour	**Cyclically (as configured time)**
	If value was changed
Time base	1 sec
	1 min

Direct access to Modbus register

The KNX Metering Gateway is only able to read basic Modbus register values. For access to other Modbus registers you must use an additional functionality, „Access to Register x“. Within this parameter you can select which registers you wish to access. The registers are grouped in five groups with eight registers each.

Direct access to Modbus register	
Parameters	**Setting**
Access to Modbus register 1 - 8	**Disabled**
	Enabled
Access to Modbus register 9- 16	**Disabled**
	Enabled
Access to Modbus register 17 - 24	**Disabled**
	Enabled
Access to Modbus register 25 - 32	**Disabled**
	Enabled
Access to Modbus register 33- 40	**Disabled**
	Enabled

Access to Modbus register x

By enabling or disabling groups of registers, you can then disable or enable access to individual registers.

Access to Modbus register x	
Parameters	**Setting**
Access to Modbus register x	**Disabled**
	Enabled

Modbus register x

You can set parameter „Register type“ to either „Read holding register“ (set as default) or „Read input register“.

With the Read input register you can read from 1 to 125 contiguous input registers in a remote device. The Request protocol date unit (PDU) specifies the starting register address and the number of registers. In the PDU addresses start from zero, therefore registers numbered 1 - 16 are addressed as 0 - 15.

You can set parameter „Modbus data is“ to Unsigned, to Float or to Float (words are swapped).

You can set the Modbus value to convert to 2, 4 or 8 Byte. Within this datapoint the object type can be set to „unsigned“, „signed“ or „float“. You must be careful when setting the Modbus value as each datapoint has a set range. If the value falls out of this range the sending of the value will be blocked and will not reach the KNX bus.

Datapoint	**Range**
2 Byte unsigned	0 .. 65 535
2 Byte signed	-32 768 .. 32 767
2 Byte float	-670 760.. 670 760
4 Byte unsigned	0 .. 4 294 967 295
4 Byte signed	-2 147 483 648.. 2 147 483 647
4 Byte float	Object_x Byte
8 Byte unsigned	0 .. 18 446 744 073 709 551 615

Parameters

Modbus register x - Modbus side	
Parameters	**Setting**
Address of modbus device	1 .. 247
Register address	1,000 .. 50,000
Register type	**Read holding register**
	Read input register
Modbus data is	**Unsigned**
	Float
	Float (words are swapped)
Multiplication factor	**1**, 1 .. 10,000
Division factor (data*multi/div factor)	**1**, 1 .. 10,000

Modbus register x - KNX side	
Parameters	**Setting**
Quantity of coils	1
(Modbus datapoint)	**2**
	4
Modbus value convert to	2 Byte
	4 Byte
	8 Byte
Type of object	**2/4 Byte unsigned**
	2/4 Byte signed
	2/4 Byte float
Time base	1 sec
	1 min
Cyclic sending Time base * factor (1 .. 250)	**2**, 1 .. 10,000
Sending behaviour	**Cyclically (as configured time)**
	If value was changed

Communication objects

The following communication objects can be selected:

Function	**Object name**	**Type**	**Prio**	**Flags**	**Behaviour**
Access to register x	Object_x Byte	2/4/8 Byte	Low	CTR	Send/read

Diagnostic block

The Metering Gateway supports two different communication objects for the diagnostics of modbus devices. These are „Active Modbus status“ and „Passive Modbus status“.

The „Active Modbus status“ object sends an error code to the KNX bus after recognising that a problem exists on the Modbus. The sending of this status is controlled by the parameter „Sending behaviour“. The status will either be sent every time after reading of register (minimum 20 times per device template) or it will only be sent if Modbus exception code is changed. The range of exception codes is 0 - 6. All information about errors is stored in external FRAM memory.

The last reported status of a slave can be forced to be sent by the "Active Modbus status" object by sending the slave ID to the "Passive Modbus status object.

When you enable the parameter „Reset“, a reset telegram is sent and the gateway will stop reading all Modbus registers and make a restart. If the parameter "Reset" is enabled it is possible to restart the gateway with a "1"-telegram on object "Reset of gateway".

The table of error codes is listed below:

Exception code	Name	Description
0 hex	No error (slave is ok)	
01 hex	Illegal function	The function code received in the query is not an allowable action for the slave. This may be because the function code is only applicable to newer devices, and was not implemented in the unit selected. It could also indicate that the slave is in the wrong state to process a request of this type, for example because it is unconfigured and is being asked to return register values, If a Poll Program Complete command was issued, this code indicates that no program function proceeds
02 hex	Illegal data address	The data address received in the query is not an allowable address for the slave. The combination of reference number and transfer length is invalid.
03 hex	Illegal data value	A value contained in the query data field is not an allowable value for the slave. This indicates a fault in the structure of remainder of a complex request, e.g. that the implied length is incorrect. It specifically does NOT mean that a data item submitted for storage in a register has a value outside the expectation of the application program since the Modbus protocol is unaware of the significance of any particular value of any particular register.
04 hex	Slave device failure	An unrecoverable error occurred while the slave was attempting to perform the requested action.
05 hex	Acknowledge	Specialized use in conjunction with programming commands. The slave has accepted the request and is processing it, but a long duration of time will be needed for it to do so. This response is returned to prevent a timeout error from occurring in the master. The master can issue a Poll Program Complete message to determine if programming is complete.
06 hex	Slave device busy	Specialized use in conjunction with programming commands. The slave is engaged in processing a long-duration program command. The master should re-transmit the message later when the slave is free.

Communication objects

The following communication objects can be selected:

Function	Object name	Type	Prio	Flags	Behaviour
Diagnostic block	Active Modbus status	2 Byte	Low	CRT	Send/read
Diagnostic block	Passive Modbus status	1 Byte	Low	CRT W	Receive/ read
Diagnostic block	Reset of gateway	1 bit	Low	CW	Receive

Parameters

Diagnostic block	
Parameters	**Setting**
Diagnostic block	**Disabled**
	Enabled
Active status	**Disabled**
	Enabled
Sending behaviour	Evey time
	If value was changed
Passive status	**Disabled**
	Enabled
Reset	**Disabled**
	Enabled

Overview of parameters

Modbus settings	
Parameters	**Setting**
Baudrate setting (bit/sec)	1,200
	2,400
	4,800
	9,600
	19,200
Parity	None
	Even
	Odd
Stop bits	**One stop bit**
Delay between frames 1 msec * factor (50..100)	**Disabled**
	50
	60
	70
	80
	90
	100
Start-up delay 1s * factor (1 .. 250)	**5**, 1 .. 250

Metering device templates	
Parameters	**Setting**
Metering device x	Enabled
	Disabled

Metering device x	
Parameters	**Setting**
Type of metering device	Disabled
	PM9C
	PM210
	PM710/PM750
	PM8x0
	PM1200
	DM6200
	iEM3150
	iEM3155
	iEM3250
	iEM3255
	PM3250/PM3255
	SIM10M
Address of metering device/ SIM10 module	1 .. 247
Read Modbus values after start	Enabled
	Disabled
Voltage and current monitor	Enabled
	Disabled
Power monitor	Enabled
	Disabled
Consumption monitor	Enabled
	Disabled

Metering device x	
Parameters	**Setting**
Sending behaviour	**Cyclically (as configured time)**
	If value was changed
Time base	1 sec
	1 min

Voltage and current monitor	
Parameters	**Setting**
Voltage unit	**Millivolt (DPT 9.020)**
	Volt (DPT 9.*)
Voltage of phase 1, 2, 3	Enabled
	Disabled
Cyclic voltage sending Time base * factor (1 . 250)	**2,** 1 .. 250
Current unit	**Milliampere (DPT 9.021)**
	Ampere (DPT 9.*)
Current of phase x	Enabled
	Disabled
Cyclic current sending Time base * factor(1 . 250)	**2,** 1 .. 250
Frequency	Enabled
	Disabled
Cyclic frequency sending Time base * factor(1 . 250)	**2,** 1 .. 250

Power monitor	
Parameters	**Setting**
Power factor (cos phi)	Enabled
	Disabled
Cyclic power factor sending Time base * factor (1 .. 250)	**2,** 1 .. 250
Active power x	Enabled
	Disabled
Cyclic active power sending Time base * factor (1 .. 2500	**2**, 1 .. 250
Power datapoint	**Power kW (DTP 9.024), 2 Byte**
	Value power W (DTP14.056), 4 Byte
Reactive power x	Enabled
	Disabled
Cyclic reactive power sending Time base * factor (1 .. 250)	**2**, 1 .. 250
Power datapoint	**Power kW (DTP 9.024), 2 Byte**
	Value power W (DTP 14.056), 4 Byte
Total active power Total reactive power Total apparent power	Enabled
	Disabled
Cyclic total x power sending Time base * factor (1 .. 2500	**2**, 1 .. 250
Power datapoint	**Power kW (DTP 9.024), 2 Byte**
	Value power W (DTP 14.056), 4 Byte

Consumption monitor	
Parameters	**Setting**
Active energy counter	Enabled
	Disabled
Cyclic active consumption sending Time base * factor (1 .. 2500	**2**, 1 .. 250
Consumption object type	Active energy (DPT 13.010)
	Active energy kWh(DPT 13.013)
	Active energy V64 (DPT 29.010)
Reactive energy counter	Enabled
	Disabled
Cyclic reactive consumption sending Time base * factor (1 .. 2500	**2**, 1 .. 250
Consumption object type	Reactive energy (DPT 13.012)
	Reactive energy kVArh (DPT 13.015)
	Reactive energy V64 (DPT 29.012)
Apparent energy counter	Enabled
	Disabled
Cyclic apparent consumption sending Time base * factor (1 .. 2500	**2**, 1 .. 250
Consumption object type	Apparent energy (DPT 13.011)
	Apparent energy kVAh (DPT 13.014)
	Apparent energy V64 (DPT 29.011)

Direct access to Modbus register	
Parameters	**Setting**
Access to Modbus register 1 - 8	Enabled
	Disabled
Access to Modbus register 9 - 16	Enabled
	Disabled
Access to Modbus register 17 - 24	Enabled
	Disabled
Access to Modbus register 25 - 32	Enabled
	Disabled
Access to Modbus register 33 - 40	Enabled
	Disabled

Access to Modbus register x	
Parameters	**Setting**
Access to Modbus register x	Enabled
	Disabled

Modbus register x - Modbus side	
Parameters	**Setting**
Address of Modbus device	1 .. 247
Register address	1 .. 50,000
Register type	**Read holding register**
	Read input register
Modbus data is	**Unsigned**
	Float
	Float (words are swapped)
Multiplication factor	**1,** 1 .. 10,000
Division factor (Data*multi/div factor)	**1**, 1 .. 10,000

Modbus register x - KNX side	
Parameters	**Setting**
Quantity of coils (Modbus datapoint)	1
	2
	4
Modbus value convert to	2 Byte
	4 Byte
	8 Byte
Type of object	**2/4 Byte Unsigned**
	2/4 Byte signed
	2/4 Byte Float
Time base	1 sec
	1 min
Cyclic sending Time base * factor (1 .. 250)	**2**, 1 .. 250
Sending behaviour	**Cyclically (as configured time)**
	If value was changed

Diagnostic block	
Parameters	**Setting**
Diagnostic block	**Disabled**
	Enabled
Active status	**Disabled**
	Enabled
Sending behaviour	Every time
	If value was changed
Passive status	**Disabled**
	Enabled
Reset	**Disabled**
	Enabled

Overview of communication objects

Metering Device x

Function	Object name	Type	Prio	Flags	Behaviour
Metering device x	Voltage phase x	2 Byte	Low	CTR	Send/read
Metering device x	Current phase x	2 Byte	Low	CTR	Send/read
Metering device x	Frequency	4 Byte	Low	CTR	Send/read
Metering device x	Power factor	4 Byte	Low	CTR	Send/read
Metering device x	Active power kW x	2/4 Byte	Low	CTR	Send/read
Metering device x	Reactive power kVAr x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total active power kW x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total reactive power kVAr x	2/4 Byte	Low	CTR	Send/read
Metering device x	Total apparent power kVA x	2/4 Byte	Low	CTR	Send/read
Metering device x	Active energy counter kWh	4/8 Byte	Low	CTR	Send/read
Metering device x	Reactive energy counter kVArh	4/8 Byte	Low	CTR	Send/read
Metering device x	Apparent energy counter kVAh	4/8 Byte	Low	CTR	Send/read

SIM10M module x

Function	Object name	Type	Prio	Flags	Behaviour
SIM10M module x	Binary counter x	4 Byte	Low	CTR	Send/read
SIM10M module x	Analogue input x	2 Byte	Low	CTR	Send/read
SIM10M module x	Reset of binary counter x	1 bit	Low	CW	Send

Access to Register x

Function	Object name	Type	Prio	Flags	Behaviour
Access to register x	Object_2 Byte	2 Byte	Low	CTR	Send/read
Access to register x	Object_4 Byte	4 Byte	Low	CTR	Send/read
Access to register x	Object_8 Byte	8 Byte	Low	CTR	Send/read

Diagnostic block

Function	Object name	Type	Prio	Flags	Behaviour
Diagnostic block	Active Modbus status	2 Byte	Low	CRT	Send/read
Diagnostic block	Passive Modbus status	1 Byte	Low	CRT W	Receive/ read
Diagnostic block	Reset of gateway	1 bit	Low	CW	Receive

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