SINGLE-PHASE ENERGY METER
DIRECT CONNECTION
PM10D01KNX

User manual

Product:
PM10D01KNX

Description
SINGLE-PHASE ENERGY METER - DIRECT INSERTION

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Any corrections required will be included in updates of this manual.

Symbol for relevant information 

Safety symbol 

1. General introduction

This manual is used by installers and describes the functions and parameters of the modules:
PM10D0XKNX (single-phase energy meter)
PM30D0XKNX (three-phase energy meter)
a description is given below of how to change the settings and configurations using the ETS software tool, so that it is possible to read the electricity meter measurements via the KNX bus.
There are also other objects for:
• remotely resetting the energy registers in the meters (this feature is only available for some models of the meter).
• acquiring information on the type of load (inductive/capacitive, imported/exported energy)
• receiving alerts in the event of: overflow, violation of set voltage thresholds, loss of IR communication between meter and interface, incorrect meter connection.

2. Configuring general parameters

KNX PARAMETER	SETTINGS
Timeout for "IR not connected" alarm	7 ÷ 255 sec
Allows you to set the timeout on object 91 *IR bit alarm*. By default, the alarm is transmitted if IR communication is interrupted for more than 10 seconds	
Upper and lower voltage limit	184 ÷ 276 V
If the voltage connected to the meter exceeds the set range, the value of the relevant bit for object 65 *Set voltage threshold violation alarm* takes on the value 1 and a "Generic Alarm" is produced	
Reset energy meter allowed	Yes - No
Set "Yes" in this parameter if the KNX interface has been installed with a meter that can reset the energy measurements. Set "No" in this parameter if the meter does not have a reset function or if you do not want to view and use objects 78 and 81, *Reset all active energy meters* and *Reset all reactive energy meters*, which will thus remain hidden.	
Dual tariff meter	Yes - No
Set "Yes" in this parameter if the KNX interface is installed with a dual tariff meter, otherwise set "No" and the objects for the second tariff remain hidden.	
Unit of Measurement	Wh, VAh, VARh kWh, kVAh, kVARh
This parameter determines the unit of measurement used by the interface to transmit the electricity (active and reactive)	

3. Configuration values for sending based on the variation

KNX PARAMETER	SETTINGS
Imported active energy Tx phase send based on variation	enable - disable
Parameters associated with the various phases n=1,2,3 are used to enable sending based on the difference in the energy measurement. If the dual tariff meter is enabled in the General parameters, you can view the parameters for T2.	
Extent of variation	1.0Wh….100Wh Or 1.0kWh…1000kWh
Each energy or power delta that determines automatic transmission can be set independently. Values expressed in Wh or in kWh based on how the **unit of measurement** parameter is programmed.	

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4. Communications objects

The tool provides 70 communications objects.

The single-phase application transmits a subset of objects transmitted by the one for the three-phase application.
The following description refers to both applications; the differences, when necessary, are highlighted.

• objects 78 and 81 (reset energy meter commands are not visible when the parameter "Reset energy meters allowed" is set to "No"
• objects for T2 (tariff 2) are not visible when the parameter "Dual tariff meter" is set to "No"

4.1. Objects 0…61 measurement values

T1 (T2) identifies the energy measurement accumulated while tariff 1 (2) is enabled in the meter.
Phases 1, 2, 3 and Σ identify respectively the measurements for phase 1, 2, 3, and the sum of the 3 phases.

SETPOINT OBJECTS		
Name **(Number Objects)**	**Flags**	**Data type**
Imported active energy T1 (phases 1, 2, 3 and Σ) (0…3)	CRT	DPT 13.001 4 bytes
Imported active energy T2 (phases 1, 2, 3 and Σ) (4…7)	CRT	DPT 13.001 4 bytes
Active power (phases 1, 2, 3 and Σ) (8..11)	CRT	DPT 14.056 4 bytes
16..9 exported active energy T1 (phases 1, 2, 3 and Σ) (16..19)	CRT	DPT 13.001 4 bytes
Exported active energy T2 (phases 1, 2, 3 and Σ) (20..23)	CRT	DPT 13.001 4 bytes
Imported reactive energy T1 (phases 1, 2, 3 and Σ) (24..27)	CRT	DPT 13.001 4 bytes
Imported reactive energy T2 (phases 1, 2, 3 and Σ) (28..31)	CRT	DPT 13.001 4 bytes
Exported reactive energy T1 (phases 1, 2, 3 and Σ) (32..35)	CRT	DPT 13.001 4 bytes
Exported reactive energy T2 (phases 1, 2, 3 and Σ) (36..39)	CRT	DPT 13.001 4 bytes
Reactive power (phases 1, 2, 3 and Σ) (8..11) (40..43)	CRT	DPT 14.056 4 bytes
(44..49) Voltage (phase 1, 2, 3, phase 1-2, 2-3 and 3-1) (44..49)	CRT	DPT 14.028 4 bytes
Current (phase 1, 2, 3) (50..52)	CRT	DPT 14.019 4 bytes
Apparent power (phases 1, 2, 3 and Σ) (53..56)	CRT	DPT 14.056 4 bytes
Power factors cosφ (phases 1, 2, 3 and Σ) (57..60)	CRT	DPT 14.056 4 bytes
Frequency (61)	CRT	DPT 14.033 4 bytes

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4.2. Objects 65 and 67…70 Status Byte

SETPOINT OBJECTS		
Name **(Number Objects)**	**Flags**	**Data type**
Alarms for violation of voltage setting thresholds (65)	CRT	DPT 5.*** 1 Byte unsigned

Every bit of this byte takes on the value:

0 for meter voltage within the threshold

1 for meter voltage outside the set threshold.

For example: the value for the field V1H is 1 if the voltage in phase 1 is higher than the upper threshold set. The value for V1L is 1, if the voltage in phase 1 is lower than the lower threshold set. Both values, V1H and V1L, are 0 if the voltage in phase 1 is within the set thresholds. The thresholds can be set through the parameters by the installer

Bit7	Bit6	Bit5	Bit4
N.U.	N.U.	V3H	V3L

Bit3	Bit2	Bit1	Bit0
V2H	V2L	V1H	V1L

Alarm for range violation (67)	CRT	DPT 5.*** 1 Byte unsigned

Voltage and current overflow (in accordance with the maximum range of the device).

Every bit of this byte takes on the value:

0 if the voltage and current are normal

1 if the voltage or current are out of the meter range.

Bit7	Bit6	Bit5	Bit4
N.U.	N.U.	OFV3	OFI3

Bit3	Bit2	Bit1	Bit0
OFV2	OFI2	OFV1	OFI1

Information on the phase 1 load (68)	CRT	DPT 5.*** 1 Byte unsigned
Information on the phase 2 load (69)	CRT	DPT 5.*** 1 Byte unsigned
Information on the phase 3 load (70)	CRT	DPT 5.*** 1 Byte unsigned

Type of energy currently accumulated.

Every bit of this byte contains information on the type of active and reactive energy component of the load connected to the meter: capacitive, inductive, exported or imported.

Bit7	Bit6	Bit5	Bit4
N.U.	N.U.	N.U.	N.U.

Bit3	Bit2	Bit1	Bit0
Act IMP	OFI2 EXP	OFV1 IND	OFI1 CAP

Example:

00001001

means that the system is currently IMPorting active energy and the load is CAPacitive.

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4.3. Objects 78, 81 Reset energy commands

Commands for resetting the energy meters. These objects are write-enabled; the device periodically reads these objects. If one of them is set to 1 via the KNX bus, the device resets the relevant meter and sets the command to 0. By default, these objects are not visible. They can be enabled by the installer by setting a parameter via ETS.

SETPOINT OBJECTS		
Name **(Number Objects)**	**Flags**	**Data type**
Reset all active energy (78)	CRWT	DPT 1.*** 1 bit
This is a bit object. Its value can be read and written via the bus. It must be set to 1 via the bus to reset all active energy measurements. After a few seconds, the meter reacts to the command by resetting energy measurements and setting the bit value to 0, confirming that the operation has been completed.		
Reset all reactive energy (81)	CRWT	DPT 1.*** 1 bit
It works in a similar way to object 78, but it resets the reactive energy measurements.		

4.4. Objects 66, 90, 91, 92 Alarm and information bits

SETPOINT OBJECTS		
Name **(Number Objects)**	**Flags**	**Data type**
Error connection alarm (66)	CRT	
In the event of an incorrect sequence in the connection of the meter phases, this object takes on the value 1.		
Generic bit alarm (90)	CRT	DPT 5.*** 1 Byte unsigned
When there are one or more alarms in objects 65, 66 and 67, this object takes on the value 1 and is automatically transmitted on the bus. This byte can be controlled to find the cause of the alarm. When the alarm ceases, the value of this object is set to zero and is automatically transmitted on the bus. This object can also be read at any time.		
IR bit alarm (91)	CRT	DPT 5.*** 1 Byte unsigned
This alarm is related to the IR port timeout. When a timeout expires, the serial port IR supervisor sets this object to 1 and transmits it on the bus; when the transmission is restored, it resets the object and transmits it on the bus. This object takes on value 1 and is automatically transmitted on the bus if the KNX interface does not receive any data from the meter via the IR port. This situation occurs, for example, if the meter has been turned off, or if the meter's infra-red signal fails to reach the interface. When the alarm ceases, the value of this object is set to zero and is automatically transmitted on the bus. This object can also be read at any time.		
Tariff in use (92)	CRT	DPT 5.*** 1 Byte unsigned
This object and other objects for tariff 2 are hidden by default. They can be enabled by the installer, by enabling the relevant parameter via ETS. The other related objects are 4, 5, 6, 7, 20, 21, 22, 23, 28, 29, 30, 31, 36, 37, 38, and 39. 0 : tariff 1 is enabled 1 : tariff 2 is enabled		

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4.5. Object 126 Product ID

Fourteen bytes are used to identify the product.
Example: “13157H7F0012”
2 bytes are used for the character (");
4 bytes (1315) are used for the HW and SW version (1.3 HW and 1.5 SW);
8 bytes (7H7F0012) are used for the serial number of the device.

5. Transmission method

• All measurements and status bytes can be read via the "read request” function.
• In addition to the "read request” function, the interface can be set for the main measurements (objects 0..11), to automatically send the measurement value when the latter increases by a default set by the user. This function is enabled via parameters (for more details, please refer to the paragraph entitled "Parameters")
• Alarm bits and information bits are automatically transmitted when their status changes and can also be read via the "read request” function.
• The energy reset objects can be read/write.