DEIF

-power in control

CE

DESCRIPTION OF OPTION

KNX Interface
for Energy and Power meters
AEM and APM

- Technical reference

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Table of contents

1. About this document

This chapter includes general user information about this handbook concerning the general purpose, the intended users and the overall contents and structure.

General purpose

This document describes the usage of the KNX interface used along with a DEIF Energy meter or Power meter.

Intended users

The document is mainly intended for the person responsible for the unit parameter setup and installation. In most cases, this would be a panel builder designer. Naturally, other users might also find useful information here.

Contents/overall structure

The document is divided into chapters and in order to make the structure of the document simple and easy to use, each chapter will begin from the top of a new page. The following will outline the contents of each of the chapters.

About this document

This first chapter includes general information about this handbook as a document. It deals with the general purpose and the intended users of the document. Furthermore, it outlines the overall contents and structure of the document.

Warnings and legal information

The second chapter includes information about general legal issues and safety precautions relevant in the handling of DEIF products. Furthermore, this chapter will introduce the note and warning symbols, which will be used throughout the handbook.

First part

The first part of this document describes the usage, wiring and technical data of the KNX interface.

Second part

The second part of this document describes the KNX application and system setup.

2. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes and warnings, which will be used throughout this handbook, are presented.

Legal information and responsibility

DEIF takes no responsibility for installation. If there is any doubt about how to install or operate the product, the company responsible for the installation or the operation of the product must be contacted.

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

Safety issues

Installing the unit implies work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

Definitions

Throughout this document, a number of notes and warnings will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

Notes

The notes provide general information which will be helpful for the reader to bear in mind.

Warnings

The warnings indicate a potentially dangerous situation which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

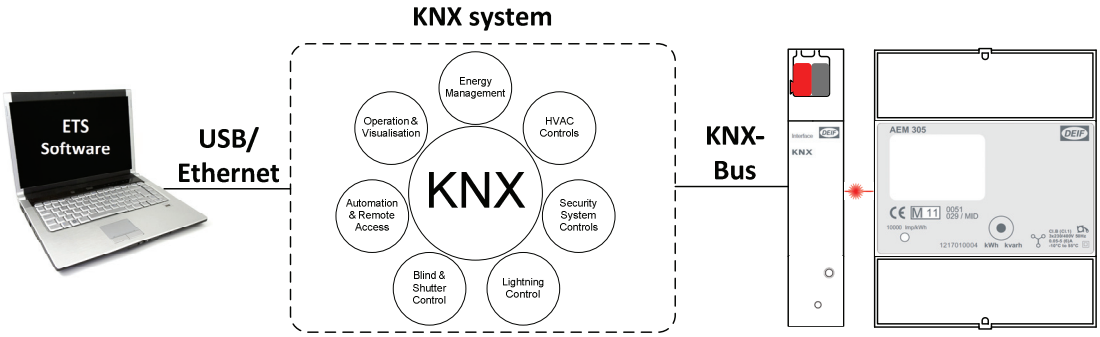
3. Preface

Overview

The KNX Interface is a DIN rail-mounted KNX interface to be used in combination with the electricity meters. It is intended to connect meters to the KNX bus, widely used for home and building control applications. Only the bus wiring is requested (black and red connection block), because the interface gets the power supply from the bus, and receives the measurement data from the meter by means of the infrared port available on the side. The interface must be installed side by side with the meter. It is suitable for both single-phase and three-phase meters.
After installation the interface requires a proper commissioning: two application programs are available, single phase and three phase. With ETS (EIB/KNX Tool Software), the proper application must be selected, and downloaded to the interface, together with its specific parameters and addresses.

System description

This document describes the usage of the KNX communication interface.
Below you have an example of connection for the interface. A minimal system configuration requires at least one counter beside the interface and a PC master station to control the communication and the configuration.



Hardware Requirements

To use this system you need at least:

- One KNX interface
- An Energy Meter (AEM xxx or APM xxx)
- A KNX-Bus
- A Windows PC
- A level converter for connecting the KNX-bus to the PC via TCP/IP or USB

The interface must be installed side by side with the counter.

Software Requirements

The minimal requirements are:

- Operating systems: MS Windows 98/ME/2000/NT 4/XP
- KNX software tool **ETS3** or **ETS4**

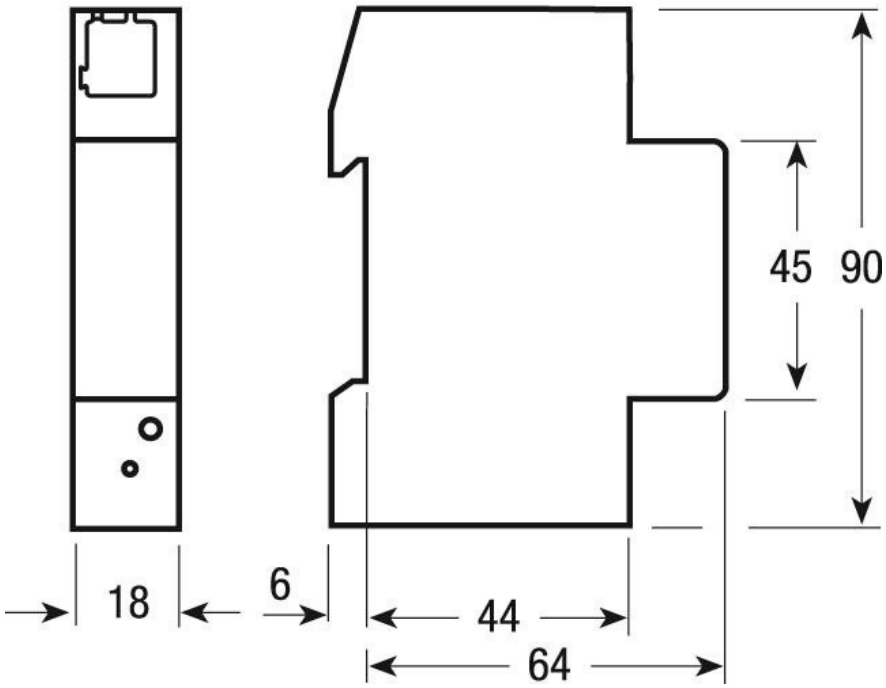
Application programs

There are two application programs downloadable into KNX Interface:

- Single phase models profile
- Three phase models profile

The ETS software is used to select the application program, to allocate specific parameters and to transfer these into the Interface.

4. Mechanical reference



5. Frontal panel – location and function of the elements

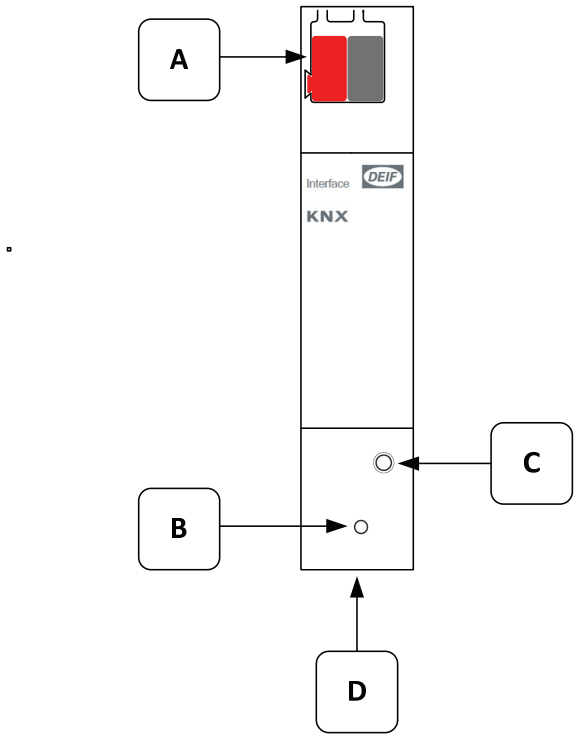


Figure 1: Location of the operating elements

A. Bus connection block. Red = +, Black = -.
B. Learning button for switching between normal operating mode and addressing mode.
C. Led for operating mode. Off = normal operating mode, On = addressing mode.
D. Slide for installing/removing the interface on DIN rail.

6. Mounting and wiring

General description

The device can be installed on any DIN rail complying with EN 60715-TH35-7,5. The connection to the bus line is established via the bus connector terminal (red-black) on the top side.

The KNX interface is powered by the KNX-bus. Polarity is very important and it is recommended to use approved KNX cables for wiring. Connecting more than one KNX interface can be done in a bus, star or tree topology. Ring or mask topology are not supported by the KNX standard.

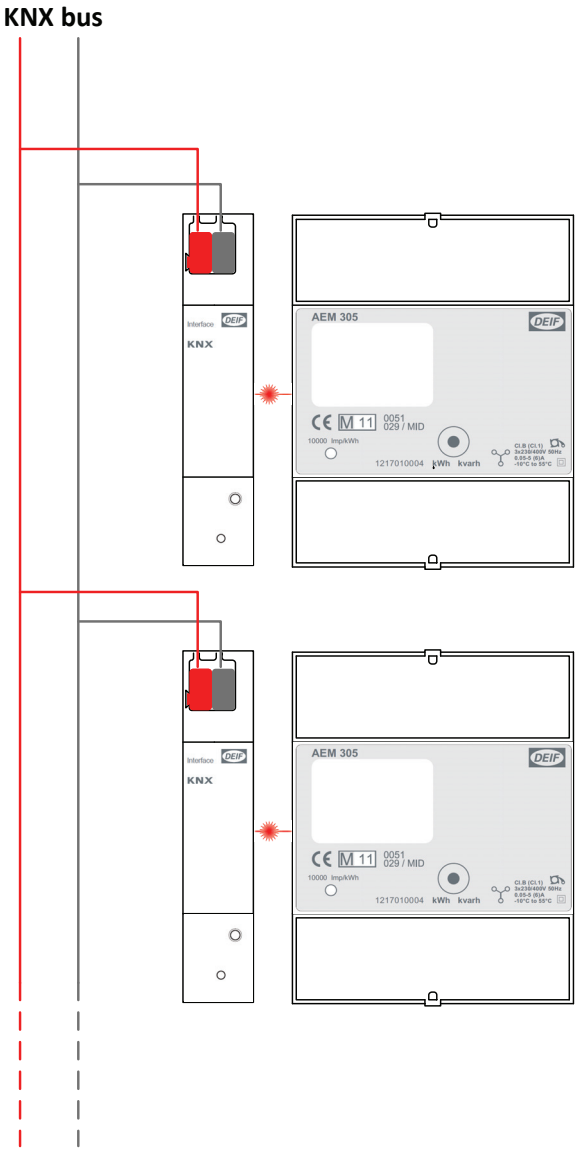


Figure 2: Wiring of the KNX bus

Mounting and connections

Mounting DIN-rail

Slide the device (Figure 3, B1) onto the DIN-rail (Figure 3, B2) and swivel back the device until the slide clicks into place audibly.

Dismounting DIN-rail

Press down the slide (Figure 3, C3) with a screw-driver and swivel the device (Figure 3, C1) from the DIN-rail (Figure 3, C2).

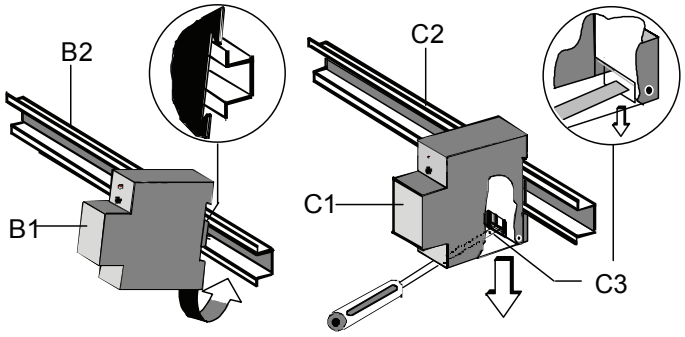


Figure 3: Mounting and dismounting a DIN-rail device

Slipping off bus connection blocks

- The bus connection block (Figure 4, D2) is situated on the top of the device (Figure 4, D1).
- The bus connection block (Figure 4, D2) consists of two components (Figure 4, D2.1 and D2.2) with four terminal contacts each. Take care not to damage the two test sockets (Figure 4, D2.3) by accidentally connecting them to the bus cable or with the screw-driver (e.g. when attempting to unplug the bus connection block).
- Carefully put the screw-driver to the wire-inserting slit of the bus connection block's grey component and pull the bus connection block (Figure 4, D2) from the device (Figure 4, D1).

Slipping on bus connection blocks

- Slip the bus connection block onto the guide slot and press the bus connection block (Figure 4, D2) down to the stop.

Connecting bus cables

- The bus connection block (Figure 4, D2) can be used with single core conductors Ø 0,6 ... 0,8 mm.
- Remove approx. 5 mm of insulation from the conductor (Figure 4, D2.4) and plug it into the bus connection block (Figure 4, D2) (red = +, black = -).

Disconnecting bus cables

- Unplug the bus connection block (Figure 4, D2) and remove the bus cable conductor (Figure 4, D2.4) while simultaneously wiggling it.

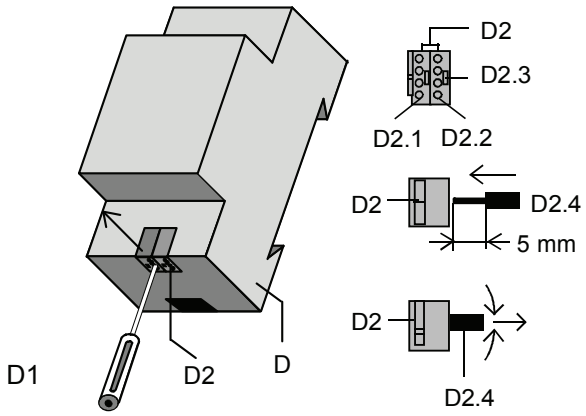


Figure 4: Connecting and disconnecting KNX bus wires

7. Technical data

Data in compliance with EN 60664-1, EN 50090-2-2, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

General characteristics • Housing • Mounting • Depth	 DIN 43880 EN 60715	 DIN 35 mm mm	 1 interface DIN rail 70
Power supply • Power supply			Through bus connection
Operating features • Models available: • Communication in compliance with KNX-EIB standard for home and building control. • Energy registers transmitted as float values (DPT13.xxx) • Power registers transmitted as float values (DPT14.xxx) • Status bytes available • Energy account remote reset available (not active for some energy meters models) • Suitable for both single-phase and three-phase energy meters • Configuration via ETS3/ETS4	for energy and power measurements		yes
KNX bus connection • Connection block • Cable			Black/red screwless connection block for connection to Twisted Pair, single core 0.6…0.8mm Recommended cable: KNX/EIB certified or recognised cable 1x2x0,8 mm or 2x2x0,8 mm
Interface to measuring instrument - HW Interface - SW Protocol	 Optical IR	 No.	 2 (Tx, Rx) Proprietary
Safety according to EN 60664 • Degree pollution • Overvoltage category • Working voltage • Clearance • Creepage distance • Test voltage	 in equipment on printed wiring boards (not coated)	 VDC(max.) mm mm mm kV	 2 II 30 ≥ 1.5 ≥ 2.1 ≥ 1.5 2.5

• Housing material flame resistance	impulse (1,2/50 µs) peak value 50 Hz 1 min UL 94	kV class	1.35 V0
Environmental conditions - Operating temperature - Limit temperature of storage - Relative humidity - Vibrations - Protection class - Degree of protection	Sinusoidal vibration amplitude at 50 according to EN 60664-1 housing when mounted	˚C °C % mm	0 … +55 -25 ... +70 ≤ 80 ± 0.25 II IP20

8. System setup description

Application programme

Two application programs can be used with the KNX interface:
-"*Single phase models profile*" is the application program to be downloaded to the interface when it is used in combination with single phase meters
-"*Three phase models profile*" is the application program to be downloaded to the interface when it is used in combination with three phase meters

Both applications share the general features. The main differences are in the number of communication objects supported: the application for single phase supports only a subset of the objects supported by the three phase counterpart.
The description applies to both applications; the differences are highlighted when necessary.

The file containing the two application programs can be downloaded at www.DEIF.com.

Readouts and functions

Using these application programs it is possible to read via KNX bus the measurements of energy meters.
Additional communication objects are also available, for:
• Remote reset of the energy registers of the energy meter (this feature is available only for non MID energy meters).
• Information on the type of the load (inductive/capacitive, energy import/export)
• Warnings in case of range overflow, trespassing of voltage limits adjustable via parameters, loss of infrared communication between interface and meter and wrong connection of the meter.
In order to use successfully the present application, we assume that you are working with a system like the one introduced in the chapter 3 Preface. Be sure that:

- All the physical links are operating
- The KNX bus, the communication interface and the counter are powered-on

9. Communication objects – 3-phase

The device provides 70 communication objects.
The following picture shows the appearance of the objects in ETS4 for three phase application program.

• objects 78 and 81 (commands for resetting energy registers) are hidden when the parameter “Reset of energy registers allowed” is set to “No”
• objects related to T2 (tariff 2) are hidden when the parameter “Dual Tariff meter” is set to “No”

Number	Name	Object Function	Description	Group Addresses	Length	C	R	W	T	U	Data Type	Priority
0	Active Energy 1st phase T1, imp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
1	Active Energy 2nd phase T1, imp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
2	Active Energy 3rd phase T1, imp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
3	Active Energy Sum T1, imp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
8	Active Power 1st phase (kW)	output, value			4 Byte	C	R	-	T	-		Low
9	Active Power 2nd phase (kW)	output, value			4 Byte	C	R	-	T	-		Low
10	Active Power 3rd phase (kW)	output, value			4 Byte	C	R	-	T	-		Low
11	Active Power Sum (kW)	output, value			4 Byte	C	R	-	T	-		Low
16	Active Energy 1st phase T1, exp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
17	Active Energy 2nd phase T1, exp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
18	Active Energy 3rd phase T1, exp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
19	Active Energy Sum T1, exp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
24	Reactive Energy 1st phase T1, imp (varh)	output, value			4 Byte	C	R	-	T	-		Low
25	Reactive Energy 2nd phase T1, imp (varh)	output, value			4 Byte	C	R	-	T	-		Low
26	Reactive Energy 3rd phase T1, imp (varh)	output, value			4 Byte	C	R	-	T	-		Low
27	Reactive Energy Sum T1, imp (varh)	output, value			4 Byte	C	R	-	T	-		Low
32	Reactive Energy 1st phase T1, exp (varh)	output, value			4 Byte	C	R	-	T	-		Low
33	Reactive Energy 2nd phase T1, exp (varh)	output, value			4 Byte	C	R	-	T	-		Low
34	Reactive Energy 3rd phase T1, exp (varh)	output, value			4 Byte	C	R	-	T	-		Low
35	Reactive Energy Sum T1, exp (varh)	output, value			4 Byte	C	R	-	T	-		Low
40	Reactive Power 1st phase (kvar)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
41	Reactive Power 2nd phase (kvar)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
42	Reactive Power 3rd phase (kvar)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
43	Reactive Power Sum (kvar)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
44	L1-N Voltage (V)	output, value			4 Byte	C	R	-	T	-	electric poter	Low
45	L2-N Voltage (V)	output, value			4 Byte	C	R	-	T	-	4-byte float v	Low
46	L3-N Voltage (V)	output, value			4 Byte	C	R	-	T	-	4-byte float v	Low
47	L1-L2 Voltage (V)	output, value			4 Byte	C	R	-	T	-	electric poter	Low
48	L2-L3 Voltage (V)	output, value			4 Byte	C	R	-	T	-	electric poter	Low
49	L3-L1 Voltage (V)	output, value			4 Byte	C	R	-	T	-	electric poter	Low
50	Current 1st phase (A)	output, value			4 Byte	C	R	-	T	-	electric curre	Low
51	Current 2nd phase (A)	output, value			4 Byte	C	R	-	T	-	electric curre	Low
52	Current 3rd phase (A)	output, value			4 Byte	C	R	-	T	-	4-byte float v	Low
53	Apparent Power 1st phase (VA)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
54	Apparent Power 2nd phase (VA)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
55	Apparent Power 3rd phase (VA)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
56	Apparent Power Sum (VA)	output, value			4 Byte	C	R	-	T	-	power (W)	Low
57	Power Factor cos phi 1st phase	output, value			4 Byte	C	R	-	T	-	power factor	Low
58	Power Factor cos phi 2nd phase	output, value			4 Byte	C	R	-	T	-	power factor	Low
59	Power Factor cos phi 3rd phase	output, value			4 Byte	C	R	-	T	-	4-byte float v	Low
60	Power Factor cos phi Sum	output, value			4 Byte	C	R	-	T	-	power factor	Low
61	Frequency (Hz)	output, value			4 Byte	C	R	-	T	-	frequency (H:	Low
65	Status Byte2, adjustable V limits alarms	output, status byte			1 Byte	C	R	-	T	-		Low
66	Status bit3, connection error alarms	output, status bit			1 bit	C	R	-	T	-		Low
67	Status Byte4, range overflow alarms	output, status byte			1 Byte	C	R	-	T	-		Low
68	Status Byte5, load info, 1st phase	output, status byte			1 Byte	C	R	-	T	-		Low
69	Status Byte6, load info, 2nd phase	output, status byte			1 Byte	C	R	-	T	-		Low
70	Status Byte7, load info, 3rd phase	output, status byte			1 Byte	C	R	-	T	-		Low
90	GENERIC WARNING bit	output, status bit			1 bit	C	R	-	T	-		Low
91	IR PORT WARNING bit	output, status bit			1 bit	C	R	-	T	-		Low
126	Product ID	output, string			14 Byte	C	R	-	T	-	Character Str	Low

Objects 0..43

Measurements, Type: 4octet float or integer values, Flags: C,R,T

The name of the objects 0..43 is self-explaining, taking in account that:
•0..3 -> Active energy imported tariff1 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•4..7 -> Active energy imported tariff2 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•8..11 -> Active power (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•16..19 -> Active energy exported tariff1 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•20..23 -> Active energy exported tariff2 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•24..27 -> Reactive energy imported tariff1 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•28..31 -> Reactive energy imported tariff2 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•32..35 -> Reactive energy exported tariff1 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•36..39 -> Reactive energy exported tariff2 (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•40..43 -> Reactive power (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•44..49 -> Voltage (1^{st}, 2^{nd}, 3^{rd} phase, 1^{st}- 2^{nd} phase, 2^{nd}- 3^{rd} phase and 3^{rd}- 1^{st} phase)
•50..52 -> Current (1^{st}, 2^{nd}, 3^{rd} phase)
•53..56 -> Apparent power (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•57..60 -> Power factor cosφ (1^{st}, 2^{nd}, 3^{rd} phase and Σ)
•61 -> Frequency

• T1 (T2) identifies the energy registers that account the energy consumption when tariff 1 (tariff2) is active in the meter.
• imp (exp) identifies the energy registers that account the energy imported (exported) by the installation.
• 1st, 2nd, 3rd phase and Sum identifies respectively the measurements related to phase 1, 2, 3, and Sum of the three phases.

Objects 65 and 67..70

Status bytes, Type: 8 bit unsigned values, Flags: C,R,T

Obj n° 65, adjustable voltage limit alarms

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	V3H	V3L	V2H	V2L	V1H	V1L

The value of each bit field of this byte is:
0 in case of normal voltage connected to the meter
1 in case the voltage is out of the adjustable limits.
Example: value of field V1H is 1 if voltage on phase 1 is higher than the upper limit. Value of V1L is 1 if voltage is lower than the lower limit. Value of both V1H and V1L are 0 if voltage is included in the limits. The limits can be adjusted via parameters by the installer.

Obj n° 67, range overflow alarms

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	OFV3	OFI3	OFV2	OFI2	OFV1	OFI1

Voltage and Current Range overflow (in respect of instrument's max. range)
The value of each bit field of this byte is:
0 in case of normal voltage or current
1 in case the voltage or current related to the bitfield exceeds the range of the meter

Obj n° 68, load info 1st phase

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	N.U.	N.U.	Act IMP	Act EXP	React IND	React CAP

Type of energy currently stored
The bitfields contain information concerning the type of the active and reactive component of the load connected to the meter: capacitive, inductive, exported or imported. Example:
00001001
means that the installation is importing active energy, and the type of the load is CAPacitive

Obj n° 69, Info 2nd phase
Similar to 68, but 2nd phase

Obj n° 70, Info 3rd phase
Similar to 68, but 3rd phase

Objects 78, 81

Energy reset commands

Type: 1 bit, Flags: C,R,W,T)
Commands for resetting Energy. These communication objects are write enabled; the instrument polls their value. If one of them has been set to 1 via KNX bus, the instrument resets the proper energy registers, then resets the command object to 0. These objects are hidden by default. They can be enabled by the installer setting a parameter via ETS

Obj n° 78, command: Active energy reset all
It is a bit object. Its value can be written and read via bus.
It must be set to 1 via bus in order to reset all the active energy registers. After a few seconds the meter reacts to the command resetting the energy, and restores to 0 the value of the bit, as a confirmation that the command has been executed.

Obj n° 81, command: Reactive energy reset all
It works similarly to object 78, but it is for resetting Reactive energy.

Objects 66, 90, 91, 92

Warning and information bits

Type: 1 bit, Flags: C,R,T
Obj n° 66, connection error alarm
the value of this object is set to 1 in case of reversed phase sequence in the three phase system connected to the meter.

Obj n° 90, generic warning bit:
the value of this object is set to 1, and automatically sent over the bus, when one (or more than one) warning is active in object 65, 66 and 67. Such bytes can be checked in order to find out more about the reason of the warning. The object value is reset to 0 and automatically sent over the bus when the warning ceases. Moreover the object can be read at any time.

Obj n° 91, IR warning bit:
This warning bit is connected to the serial port timeout supervision. The serial IR supervision sets this object to 1 when timeout occurs (and send it on the bus) and clear to 0 (and send it on the bus) when IR communication resumes.
the value of this object is set to 1, and automatically sent over the bus, in case the KNX interface doesn't receive data from the meter via InfraRed port. This situation can occur for instance if the meter has been switched off, or the InfraRed beam of the meter for any reason cannot reach the interface.
The object value is reset to 0 and automatically sent over the bus when the warning ceases. Moreover the object can be read at any time.

Obj n° 92, Running Tariff bit:

This object and the other objects pertaining to optional "dual tariff" feature are hidden by default. They can be enabled by the installer setting a parameter via ETS. The other objects connected to the same parameter are 4,5,6,7,20,21,22,23,28,29,30,31,36,37,38,39.

0 : tariff1 is active
1 : tariff2 is active

Object 126

Product ID

14 bytes used for the product identification of the meter.
For example: “13157H7F0012”
2 bytes used for char (“);
4 bytes (1315) are used for HW and SW version (HW 1.3 and SW 1.5);
8 bytes (7H7F0012) are used for serial number of the instrument

10. Communication objects – single-phase

The device provides 19 communication objects
The following picture shows the appearance of the objects in ETS4 for single phase application program.

• objects 78 and 81 (commands for resetting energy registers) are hidden when the parameter “Reset of energy registers allowed” is set to “No”
• objects related to T2 (tariff 2) are hidden when the parameter “Dual Tariff meter” is set to “No”

Number	Name	Object Function	Description	Group Addresses	Length	C	R	W	T	U	Data Type	Priority
0	Active Energy T1, imp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
8	Active Power (kW)	output, value			4 Byte	C	R	-	T	-		Low
16	Active Energy T1, exp (Wh)	output, value			4 Byte	C	R	-	T	-		Low
24	Reactive Energy T1, imp (varh)	output, value			4 Byte	C	R	-	T	-		Low
32	Reactive Energy T1, exp (varh)	output, value			4 Byte	C	R	-	T	-		Low
40	Reactive Power (kvar)	output, value			4 Byte	C	R	-	T	-		Low
44	Voltage (V)	output, value			4 Byte	C	R	-	T	-		Low
50	Current (A)	output, value			4 Byte	C	R	-	T	-		Low
53	Apparent Power (VA)	output, value			4 Byte	C	R	-	T	-		Low
57	power factor cos phi	output, value			4 Byte	C	R	-	T	-		Low
61	frequency (Hz)	output, value			4 Byte	C	R	-	T	-		Low
65	Status Byte2, adjustable V limits alarms	output, status byte			1 Byte	C	R	-	T	-		Low
67	Status Byte4, range overflow alarms	output, status byte			1 Byte	C	R	-	T	-		Low
68	Status Byte5, load info	output, status byte			1 Byte	C	R	-	T	-		Low
90	GENERIC WARNING bit	output, status bit			1 bit	C	R	-	T	-		Low
91	IR PORT WARNING bit	output, status bit			1 bit	C	R	-	T	-		Low
126	Product ID	output, string			14 Byte	C	R	-	T	-		Low

Objects 0..61

Measurements

Type: 4octet float or integer values, Flags: C,R,T
The name of the objects 0..40 is self-explaining, taking in account that:
•0 -> Active energy imported tariff1
•4 -> Active energy imported tariff2
•8 -> Active power
•16 -> Active energy exported tariff1
•20 -> Active energy exported tariff2
•24 -> Reactive energy imported tariff1
•28 -> Reactive energy imported tariff2
•32 -> Reactive energy exported tariff1
•36 -> Reactive energy exported tariff2
•40 -> Reactive power
•44 -> Voltage
•50 -> Current
•53 -> Apparent power
•57 -> Power factor cos phi
•61 -> Frequency

• T1 (T2) identifies the energy registers that account the energy consumption when tariff 1 (tariff2) is active in the meter.
• imp (exp) identifies the energy registers that account the energy imported (exported) by the installation.

Objects 65, 67, 68

Status bytes

Type: 8 bit unsigned values, Flags: C, R, T

Obj n° 65, adjustable voltage limit alarms

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	N.U.	N.U.	N.U.	N.U.	VH	VL

The value of each bit field of this byte is:
0 in case of normal voltage connected to the meter
1 in case the voltage is out of the adjustable limits.
Example: value of field VH is 1 if voltage is higher than the upper limit. Value of VL is 1 if voltage is lower than the lower limit. Value of both VH and VL are 0 if voltage is included in the limits. The limits can be adjusted via parameters by the installer.

Obj n° 67, range overflow alarms

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	N.U.	N.U.	N.U.	N.U.	OFV	OFI

Voltage and Current Range overflow (in respect of instrument's max. range)
The value of each bit field of this byte is:
0 in case of normal voltage or current
1 in case the voltage or current related to the bitfield exceeds the range of the meter

Obj n° 68, Info phase

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
N.U.	N.U.	N.U.	N.U.	Act IMP	Act EXP	React IND	React CAP

Type of energy currently stored
The bitfields contain information concerning the type of the active and reactive component of the load connected to the meter: capacitive, inductive, exported or imported. Example:
00001001
means that the installation is IMPorting active energy, and the type of the load is CAPacitive

Objects 78, 81

Energy reset commands

Type: 1 bit, Flags: C,R,W,T)
Commands for resetting Energy. These communication objects are write enabled; the instrument polls their value. If one of them has been set to 1 via KNX bus, the instrument resets the proper energy registers, then resets the command object to 0. These objects are hidden by default. They can be enabled by the installer setting a parameter via ETS

Obj n° 78, command: Active energy reset all
It is a bit object. Its value can be written and read via bus.
It must be set to 1 via bus in order to reset all the active energy registers. After a few seconds the meter reacts to the command resetting the energy, and restores to 0 the value of the bit, as a confirmation that the command has been executed.

Obj n° 81, command: Reactive energy reset all
It works similarly to object 78, but it is for resetting Reactive energy.

Objects 90, 91, 92

Warning and information bits

Type: 1 bit, Flags: C,R,T
Obj n° 90, generic warning bit:
the value of this object is set to 1, and automatically sent over the bus, when one (or more than one) warning is active in object 65 and 67. Such bytes can be checked in order to find out more about the reason of the warning. The object value is reset to 0 and automatically sent over the bus when the warning ceases. Moreover the object can be read at any time.

Obj n° 91, IR warning bit:
This warning bit is connected to the serial port timeout supervision. The serial IR supervision sets this object to 1 when timeout occurs (and send it on the bus) and clear to 0 (and send it on the bus) when IR communication resumes.
the value of this object is set to 1, and automatically sent over the bus, in case the KNX interface doesn't receive data from the meter via InfraRed port. This situation can occur for instance if the meter has been switched off, or the InfraRed beam of the meter for any reason cannot reach the interface.
The object value is reset to 0 and automatically sent over the bus when the warning ceases. Moreover the object can be read at any time.

Obj n° 92, Running Tariff bit:
This object and the other objects pertaining to optional "dual tariff" feature are hidden by default. They can be enabled by the installer setting a parameter via ETS. The other objects connected to the same parameter are 4,20,28,36.

0 : tariff1 is active
1 : tariff2 is active

Object 126

Product ID

14 bytes used for the product identification of the meter.
For example: "13157H7F0012"
2 bytes used for char (");
4 bytes (1315) are used for HW and SW version (HW 1.3 and SW 1.5);
8 bytes (7H7F0012) are used for serial number of the instrument

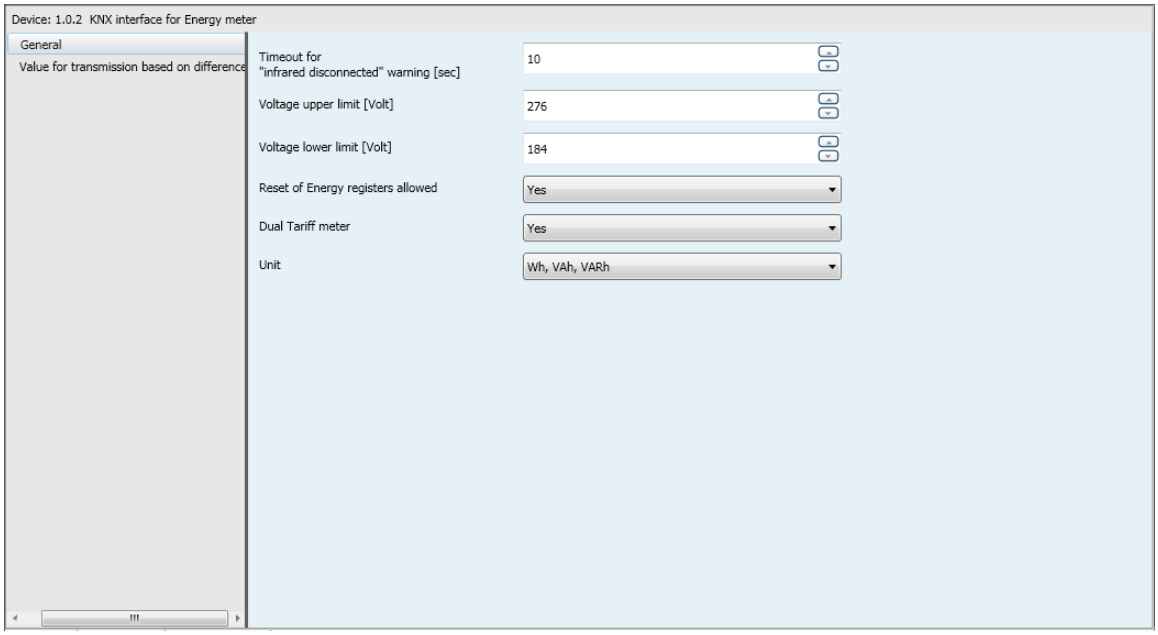
11. Send mode

• All the measurements and the status bytes can be read via “read request”.
• Automatic send triggered by the differential in the measurement is available, in addition to read request, for the most important measurements (objects 0 ...11); it can be enabled via parameters (refer to paragraph “Parameters” for more details)
• Warning and information bits are automatically sent “on change”. In addition they can be read via “read request” .
• Energy reset commands can be read and written

12. Parameters

General

Settings



• Timeout for “infrared disconnect” warning: it allows to adjust the timeout connected to object 91. By default the warning occurs in case of loss of infrared communication for more than 10 seconds

• Voltage upper limit and Voltage lower limit: if the voltage connected to the meter trespasses these adjustable limits, the value of the relevant bitfields in “status byte2, adjustable V limits alarms” is set to 1, and a GENERIC WARNING occurs

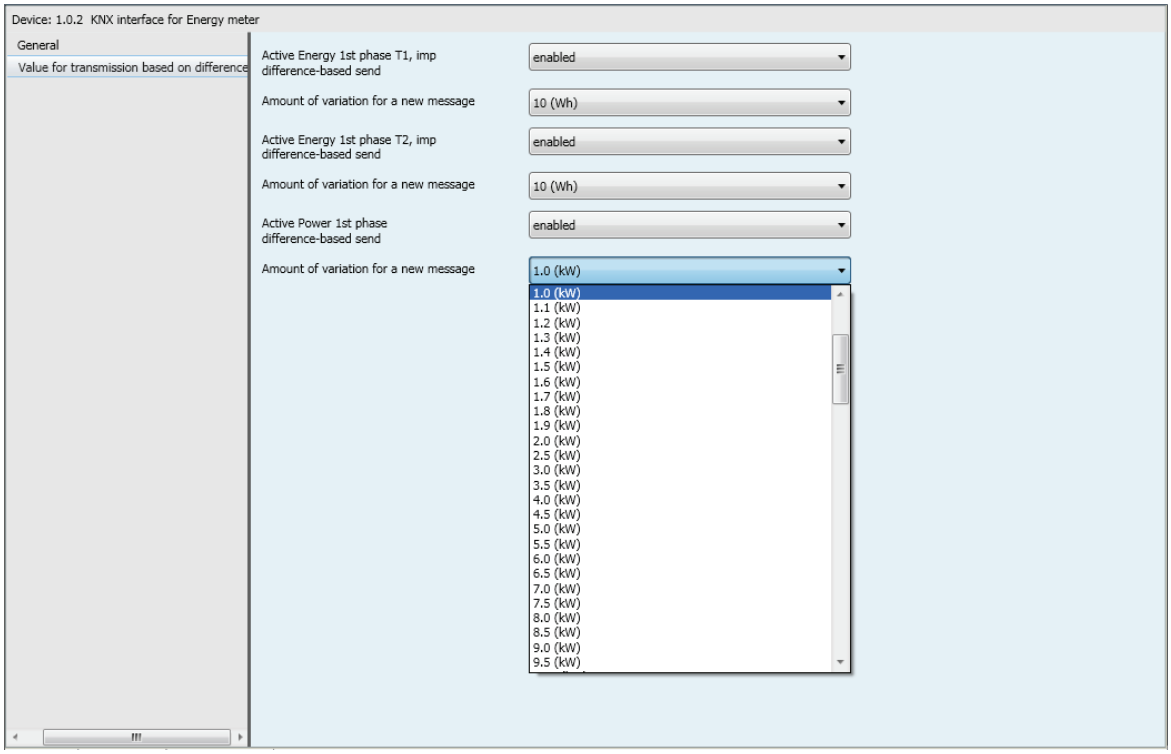
• Reset of energy reset allowed: set this parameter to “yes” if the KNX interface is used in combination with a meter enabled to energy reset feature. Set it to “no” (default) if the meter hasn’t this feature or you don’t want to display and use the objects 78 and 81, that will be hidden.

• Dual tariff meter: set this parameter to “yes” if the KNX interface is used in combination with a Dual tariff meter, otherwise set it to “no”, and the objects related to tariff2 will be hidden.

• Value Range: This parameter selects the unit of measure used in transmission of energy from the interface (Active and Reactive).

Value for transmission based on difference

Settings



The parameters above allow to enable the transmission based on the differential in the energy measurements. Each object 0..11 can be enabled or disabled, and the value of the energy increment or power increment/decrement that triggers the automatic transmission can be adjusted independently.

DEIF A/S reserves the right to change any of the above.