

KNX interface for the energy meter - DIN rail mounting



GW 90876

Technical Manual

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1 Introduction

This manual explains the functions of the “**KNX interface for the energy meter**” (GW90876), and how they are set and configured with the aid of the ETS configuration software.

2 Application

This document describes the application programme of the KNX interface for the single-phase energy meter GWD6801.

The GWD6801 meter makes it possible to use only some functions of this KNX interface.

2.1 Association limits

There are 10 communication objects that can be used with the GWD6801 single-phase meter, even though many more are available for future uses with different meters.

The maximum number of associations that the device can store is 254.

The maximum number of group addresses is 254.

3 “General” menu

The **General** menu contains the parameters used to configure general device behaviour. Fig. 3.1 shows the default screen of the **General** menu, with the relative settable parameters.

Device: 1.1.1 KNX Interface for energy meter

General	Timeout for "infrared disconnected" warning [sec]	10
Sending on change condition	Voltage upper limit [Volt]	276
	Voltage lower limit [Volt]	184
	Enable Energy counter reset	no
	Dual Tariff meter	no
	Energy value measured unit	Wh, VAh, VARh

Fig. 3.1

3.1 Parameters

3.1.1 Timeout for “infrared disconnected” warning [sec]

This parameter is used to set the timeout relative to object 91. By default, the alarm is transmitted if the IR communication fails for more than **10** seconds.

The values that can be set range from 7 to 255 seconds.

3.1.2 Voltage upper and lower limit [Volt]

If the voltage detected by the meter exceeds the upper limit or goes down below the lower one, the relative object 65 and the generic alarm (object 90) will be sent.

The upper limit threshold is configured by default to **276V** and the values that can be set range from 184 to 276.

3.1.3 Enable energy counter reset

This parameter enables the objects for resetting the active energy meters (object 78) and the relative energy meters (object 81), although the latter is only present for future uses with different meters.

The default value is **No** and therefore disables these communication objects.

3.1.4 Dual Tariff meter

This parameter is only provided for future uses with different meters, although it makes various communication objects available with the **No** value.

3.1.5 Energy meter measured unit

Interfaced with the GWD6801 meter, this parameter determines the measure unit used by the interface in active energy transmissions.

The default value is **Wh**, whereas the other available value is kWh.

4 “Conditions for sending on change” menu

The ***Sending on change condition*** menu contains the parameters used to configure the mode in which the consumed active energy and active power value is sent; fig. 4.1 shows the diagram with the relative parameters that can be set.

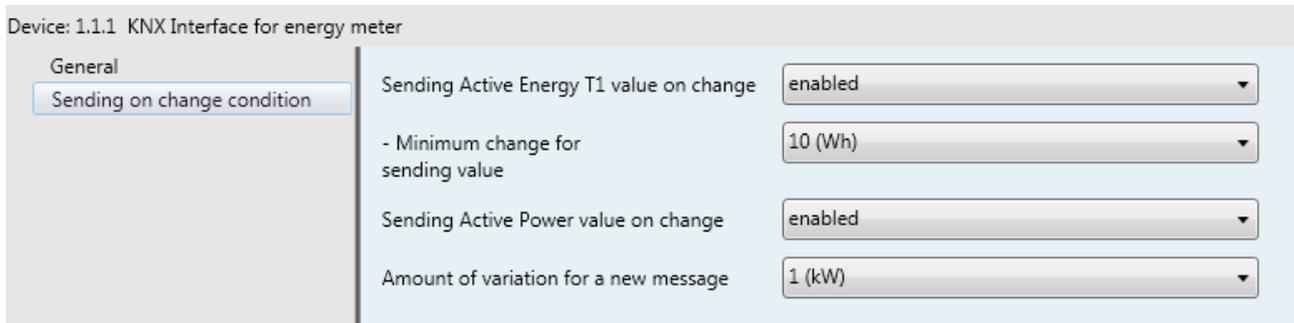


Fig. 4.1

4.1 Parameters

4.1.1 Sending Active Energy T1 value on change

By enabling this parameter, it is possible to set the minimum variation for which the consumed active energy value is transmitted on the BUS, via object 0.

The values that can be set range from 1 to 1000 based on the selected measure unit; the default setting is 10.

4.1.2 Sending Active Power value on change

By enabling this parameter, it is possible to set the minimum variation for which the active power value is transmitted on the BUS, via object 8.

The values that can be set range from 1 W to 100 kW; the default setting is **1 kW**.

5 Communication objects

Below, fig.5.1 shows all the available communication objects, but only some can be used with the GWD6801 meter, which are indicated in the following table.

Number	Name	Object Function	Group Address...	Length	C	R	W	T	U	Data Type
0	Active Energy consumed T1 (Wh)	output, value		4 Byte	C	R	-	T	-	active energy (Wh)
4	Active Energy consumed T2 (Wh)	output, value		4 Byte	C	R	-	T	-	
8	Active Power (W)	output, value		4 Byte	C	R	-	T	-	power (W)
16	Active Energy produced T1 (Wh)	output, value		4 Byte	C	R	-	T	-	active energy (Wh)
20	Active Energy produced T2 (Wh)	output, value		4 Byte	C	R	-	T	-	
24	Reactive Energy consumed T1 (VARh)	output, value		4 Byte	C	R	-	T	-	
28	Reactive Energy consumed T2 (VARh)	output, value		4 Byte	C	R	-	T	-	
32	Reactive Energy produced T1 (VARh)	output, value		4 Byte	C	R	-	T	-	
36	Reactive Energy produced T2 (VARh)	output, value		4 Byte	C	R	-	T	-	
40	Reactive Power (VAR)	output, value		4 Byte	C	R	-	T	-	
44	Voltage (V)	output, value		4 Byte	C	R	-	T	-	
50	Current (A)	output, value		4 Byte	C	R	-	T	-	
53	Apparent Power (VA)	output, value		4 Byte	C	R	-	T	-	
57	Power factor cos phi	output, value		4 Byte	C	R	-	T	-	
61	Frequency (Hz)	output, value		4 Byte	C	R	-	T	-	
65	Alarms voltage limits set exceeded	output, status byte		1 Byte	C	R	-	T	-	8-bit unsigned value
67	Alarms functioning range exceeded	output, status byte		1 Byte	C	R	-	T	-	8-bit unsigned value
68	Active power and load info	output, status byte		1 Byte	C	R	-	T	-	8-bit unsigned value
78	Active energy counter reset	input, command		1 bit	C	R	W	T	-	enable
81	Reactive energy counter reset	input, command		1 bit	C	R	W	T	-	
90	GENERIC WARNING bit	output, status bit		1 bit	C	R	-	T	-	alarm
91	IR PORT WARNING bit	output, status bit		1 bit	C	R	-	T	-	alarm
92	Running Tariff bit	output, status bit		1 bit	C	R	-	T	-	
126	Product ID	output, string		14 Byte	C	R	-	T	-	Character String (ASCII)

Fig. 5.1

5.1 Table of the communication objects that can be used with the GWD6801 meter

#	Object name	Object function	Description	Datapoint type
0	Active Energy consumed (Wh/Kwh)	Sending value	Send on change based on the set parameters or a consumed active energy read request.	13.010 DPT_Active Energy
8	Active Power (W)	Sending value (W)	Send on change based on the set parameters or a active power read request .	14.056 DPT_Power
16	Active Energy produced (Wh/Kwh)	Sending value	Sending only on produced and exported active energy reading request.	13.010 DPT_Active Energy
65	Alarms voltage limits set exceeded	Sending of alarms	Sending of alarms with 8 bit coding.	8-bit unsigned value
67	Alarms functioning range exceeded	Sending of alarms	Sending of alarms with 8 bit coding.	8-bit unsigned value
68	Active power and load info	Sending of feedback	Sending of the type of power and load used, with 8 bit coding.	8-bit unsigned value
78	Active energy counter reset	Enable meter reset	Resets the value of the active energy meters.	1.003 DPT_Enable
90	Generic warning bit	Sending of alarm	Sending of the generic alarm.	1.005 DPT_Alarm
91	IR port warning bit	Sending of alarm	Sending of the failed communication with meter alarm.	1.001 DPT_Alarm
126	Product ID	Sending of device ID	Sending of the product code	16.000 DPT_Character String (ASCII)

The individual communication objects are described below:

5.1.1 Active energy consumed (Wh/Kwh)

This communication object transmits on the BUS the consumed active energy on change based on the set parameters or in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *13.010 DPT_Active Energy*, the size of the object is equal to 4 bytes.

5.1.2 Active Power (W)

This communication object transmits on the BUS the active power on change based on the set parameters or in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *14.056 DPT_Power*, the size of the object is equal to 4 bytes.

5.1.3 Active energy produced (Wh/Kwh)

This communication object transmits the produced and exported active energy value on the BUS only in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *13.010 DPT_Active Energy*, the size of the object is equal to 4 bytes.

5.1.4 Alarms voltage limits set exceeded

This communication object transmits the set voltage limits on the BUS on change or in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

As there is not a standardised format, the object is to be considered 8 bit unsigned and the following table identifies its states.

Decimal value	Binary value	Alarm description
0	00000000	<i>No alarm</i>
1	00000001	<i>Minimum threshold alarm</i>
2	00000010	<i>Maximum threshold alarm</i>

5.1.5 Alarms functioning range exceeded

This communication object transmits the voltage and current overflow alarm on the BUS in compliance with the maximum ranges of the instrument (i.e. the meter, type GWD6801), on change or in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

As there is not a standardised format, the object is to be considered 8 bit unsigned and the following table identifies its states.

Decimal value	Binary value	Alarm description
0	00000000	<i>No alarm</i>
1	00000001	<i>Current overflow</i>
2	00000010	<i>Voltage overflow</i>
3	00000011	<i>Voltage and current overflow</i>

5.1.6 Active power and load info

This communication object transmits on the BUS the feedback about the type of energy currently accumulated and the load connected to the meter.

The information is available in the case of a read request.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

As there is not a standardised format, the object is to be considered 8 bit signed and the coding is as follows.

Bit-7	Bit-6	Bit-5	Bit-4	Bit-3	Bit-2	Bit -1	Bit -0
<i>n.u.</i>	<i>n.u.</i>	<i>n.u.</i>	<i>n.u.</i>	<i>With bit at 1: Consumed active energy</i>	<i>With bit at 1: Produced and exported active energy</i>	<i>With bit at 1: Inductive load type</i>	<i>With bit at 1: Capacitive load type</i>

A few examples to explain the coding:

- Decimal value 9, in binary 00001001: means that the system is consuming active energy and the load is a capacitive type.
- Decimal value 10, in binary 00001010: means that the system is consuming active energy and the load is an inductive type.

5.1.7 Active energy counter reset

This communication object is used to reset the active energy meters via value 1.

The KNX interface performs a command a few minutes after receiving, this is because the GWD6801 periodically checks the status of this command.

During the period that passes between receiving the command and resetting, the object responds with a 1 in the case of a read request, which is then returned to 0 after resetting is complete.

The enabled flags are C (communication), R (reading from BUS), W (writing from BUS) and T (transmission). The standard format of the object is *1.003 DPT_Enable*, the size of the object is equal to 1 *bit*.

5.1.8 Generic warning bit

This communication object transmits an alarm on the BUS with value 1 if there is one or more alarms in objects 65, 66 and 67; when the alarm stops, the value of this object is reset and is sent automatically on the BUS.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *1.005 DPT_Alarm*, the size of the object is equal to 1 *bit*.

5.1.9 IR port warning bit

This communication object transmits an alarm on the BUS with the value of 1 of no communication via the IR port with the GWD6801 meter, when the timeout set in the interface parameters expires; when the alarm stops, the value of this object is reset and is automatically transmitted on the BUS.

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *1.005 DPT_Alarm*, the size of the object is equal to 1 *bit*.

5.1.10 Product ID

This communication object transmits the product ID on the BUS in the case of a read request in a character string of 14 Bytes composed as follows:

- 2 Bytes used for the character “ ”
- 4 Bytes used for the hardware and software version
- 8 Bytes used for the instrument serial number, i.e. the GWD6801 meter

An example for explaining the coding:

- Value received from the 14 Byte object: “13157H7F0012”
 - 2 Bytes for characters “ ”
 - 4 Bytes for characters 1315 (HW version 1.3 and SW version 1.5)
 - 8 Bytes for the characters 7H7F0012 (serial number of the connected instrument)

The enabled flags are C (communication), R (reading from BUS), T (transmission).

The standard format of the object is *16.000 DPT_Character String (ASCII)*, the size of the object is equal to 14 Bytes.

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