

Pulse Counter Module KNX-IMPZ1

Product Group 1

Application: KNX bus coupling meters with impulse outputs.

The counting starts by default with the S0 interface according to DIN EN 62053-31, but can be connected with a potential-free contact.



There are two counters for two rates can be switched with an object.

Product database: **IMPZx.vd4**

KNX readable data:

- Accumulated consumption
- Instantaneous consumption
- Current time
- Current Date
- Last reference value
- Last reference date
- Next reference date
- Consumption value
- Consumption value reset
- Consumption value date
- Consumption value time
- Serial number



KNX-IMPZ1	Article	Article - Description	Article-Nr.
EIB/KNX		Document: 5100_dx_IMPZ1.pdf	
	KNX-IMPZ1 -SK01	1 Channel S0-Counter Module with EIB / KNX terminal block SK01-plastic housing: 72 x 64 x 40 mm IP65	60201101
	KNX-IMPZ1 -REG	1 Channel S0-Counter Module with EIB / KNX terminal block REG - housing: 2TE (35 mm) IP20	60201102

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1 Application Description

Operating Principle and Areas of Application

The consumption counter by Arcus-EDS GmbH consists of a counting module with battery back-up data storage and KNX bus coupler for remote reading and monitoring of consumption data.

The counter input is specified with the S0 interface according to DIN EN 62053-31, but can be connected with a potential-free contact.

There are two scales are parameterized with separate counters.

The KNX sensors are set up using the ETS (EIB Tool Software) in conjunction with the associated application program. On delivery, the device is unprogrammed.

All functions are programmed and parameterized with ETS.

Functions

- Meter reading (Scale 1/2)
- Flow rate
- Reference value(Scale 1/2)
- Consumption value (Scale 1/2)
- Serial number
- Scale switching
- Limit alarm(Scale 1/2)
- Date and Time
- Last reference date
- Next reference date
- Consumption value reset
- Reset time
- Reset date

2 KNX Parameter

General Settings

Device: 1.1.1 IMPZ1

General Settings	Use Daylight Saving Time	Yes
Channel Settings	Reset Pin [0 without Pin]	0
	Number of Scales	2
	If Flowrate drops	Send Nothing
	Use Limit Profile	Yes

General Settings - KNX-IMPZ1

Parameter	Setting	Description
Use Daylight Saving Time	<ul style="list-style-type: none"> No Yes 	Automatic Daylight Saving Time.
Reset Pin [0 without Pin]	0 - 65535	To ensure that no unauthorized person resets the consumption value, a "PIN" can be assigned. In order to reset the consumption value, this "PIN" must be confirmed. This function is disabled when the assigned "PIN" is "zero".
Number of Scales	<ul style="list-style-type: none"> 1 2 	There are two tariffs with separate meter and consumption levels as well as limits are used. Switching is done with the <i>object 9 : Selected Scale</i> .
If Flowrate drops	<ul style="list-style-type: none"> Send Nothing Send 0 	If the current consumption goes to zero, this can be shown by sending a zero on the <i>object 2 : Flow Rate</i> to be indicated.
Use Limit Profile	<ul style="list-style-type: none"> No Yes 	Limits are (not) used.

Channel Settings

Device: 1.1.1 IMPZ1 SK01

- General Settings
- Channel Settings**

Sending Values Cyclically	Do Not Send
Counts per Unit	1
[Exponent]	* 10 ^ 3
Preset Counter Value Scale 1 [0 - no changes]	12553
Preset Counter Value Scale 2 [0 - no changes]	1
Type of Flow Rate	Volumetric Flow
Flow Measurement Period	Per Second
Use of Limit 1 Scale 1	Value Limit
Limit 1 Scale 1	0
[Exponent]	* 1
Use of Limit 2 Scale 1	Value Limit
Limit 2 Scale 1	0
[Exponent]	* 1
Use of Limit 1 Scale 2	Value Limit
Limit 1 Scale 2	0
[Exponent]	* 1
Use of Limit 2 Scale 2	Value Limit
Limit 2 Scale 2	0
[Exponent]	* 1



Channel Settings - KNX-IMPZ1

Parameter	Setting	Description
Sending Values Cyclically	Do Not Send 1 - 120 min	The measured values are sent in the preset cycle time. If no cyclical sending is adjusted, the measured values are sent only on a change of measured values. It is assigned from minimum interval 10 seconds to limit the bus load.
Counts per Unit	0 - 99	The impulse value must be set on the counter. The value is calculated from the impulse value of the counter. See 4 Notes "settings of the impulse rating".

Channel Settings - KNX-IMPZ1 (Fortsetzung)

Parameter	Setting	Description
[Exponent]	Exponents of ten of 10 ⁻¹⁰ ... 10 ¹⁰	The value to be set can be calculated from the parameter value "Counts per Unit" and the display unit. see 4 Notes "Settings of the impulse rating"
Preset Counter Value Scale 1 [0 - no changes] Preset Counter Value Scale 2 [0 - no changes]	0 ... 4.294.967.295	If the value displayed in the cyclometer from the counter and the value of the object value "Meter reading" are different, the counter can be synchronized. Counted impulses are registered already. Example: A consumption of 12.553 cbm and 1 imp/l is equal a correction value of 12553.
Type of Flow Rate	<ul style="list-style-type: none"> • Volumetric Flow • Power Rating 	It is adjusted whether flow or power is measured.
Flow Measurement Period	<ul style="list-style-type: none"> • Per Second • Per Minute • Per Hour • Per Day 	The time base is adjusted, thus the instantaneous consumption is in output.
Use of Limit 1 Scale 1	<ul style="list-style-type: none"> • Value Limit • Flow Upper Limit • Flow Lower Limit • Consumption Limit 	The measured values are determined using the parameter sets : <i>Limit 1 Scale 1</i> <i>Exponent</i> set values apply.
Limit 1 Scale 1	0 - 99	Limit setting
Exponent	Exponents of ten of 10 ⁻¹⁰ ... 10 ¹⁰	
Use of Limit 2 Scale 1 Limit 2 Scale 1 Exponent	Settings for limit 2 Scale1	
Use of Limit 1 Scale 2 Limit 1 Scale 2 Exponent	Settings for limit 1 Scale 2	
Use of Limit 2 Scale 2 Limit 2 Scale 2 Exponent	Settings for limit 2 Scale 2	

3 KNX Objects

Objects - KNX-IMPZ1

Nr.	Name	Data point types	Function
0	Value Scale 1	DPT 14.* 4 Byte	Counter reading
1	Value Scale 2	DPT 14.* 4 Byte	Counter reading
2	Flow Rate	DPT 14.* 4 Byte	Calculated flowrate
4	Reference Value Scale 1	DPT 14.* 4 Byte	Consumption for the last reference date
5	Reference Value Scale 2	DPT 14.* 4 Byte	Consumption for the last reference date
6	Consumption Value Scale 1	DPT 14.* 4 Byte	Consumption value
7	Consumption Value Scale 2	DPT 14.* 4 Byte	Consumption value
8	Serial number	DPT 16.000 Sign (ASCII) 14 Byte	Serial number
9	Selected Scale	DPT 1.001 Switch 1 Bit	Scale
10	Limit Alarm Scale 1	DPT 1.001 Switch 1 Bit	Limit
11	Limit Alarm Scale 2	DPT 1.001 Switch 1 Bit	Limit
12	Current Time	DPT 10.001 Day time 3 Byte	Time of day
13	Current Date	DPT 11.001 Date 3 Byte	Date
14	Last Reference Date	DPT 11.001 Date 3 Byte	Reference date
15	Next Reference Date	DPT 11.001 Date 3 Byte	Reference date
16	Consumption Reset	DPT 7.001 Pulse 2 Byte	Consumption value reset
17	Consumption Reset Time	DPT 10.001 Day time 3 Byte	Reset the time of day
18	Consumption Reset Date	DPT 11.001 Date 3 Byte	Reset the date
19	Alarm Profile	DPT 1.001 Switch 1 Bit	Limit Select

Object Description - KNX-IMPZ1

Nr.	Name	Description
0 1	Value Scale 1 Value Scale 2	Corresponds to the current count (total consumption).
2	Flow Rate	Current consumption per time unit parameterized.

Object Description - KNX-IMPZ1 (Fortsetzung)

Nr.	Name	Description
4 5	Reference Value Scale 1 Reference Value Scale 2	Meter reading on the last reference date at 0:00 am
6 7	Consumption Value Scale 1 Consumption Value Scale 2	The consumed value since the last reset consumption value.
8	Serial number	The unique serial number (eg serial number of the counter). NOTE: Can be written only once.
9	Selected Scale	Counter switch (Scale 1/ Scale 2)
10 11	Limit Alarm Scale 1 Limit Alarm Scale 2	when limit is reached,it will be set. When limit applies, <i>Object 19: Alarm Profile</i> is set.
12	Current Time	Current time
13	Current Date	Current date
14	Last Reference Date	The date when the last reference value was saved at 0:00 am
15	Next Reference Date	The date when the next reference value was saved at 0:00 am.
16	Consumption value Reset	The consumption value is set to "zero" and the "consumption value reset time" and "consumption value reset date" is updated and stored. If "Reset-PIN" in "General Settings" is other than "zero", this "PIN" must be used in order to actuate the reset. If "Reset-PIN" is set to "zero", a different "PIN" other than "zero" must be used in order to actuate the reset.
17	Consumption Reset Time	The time when the last consumption value reset was carried out.
18	Consumption Reset Date	The date when the last consumption value reset was carried out.

Object Description - KNX-IMPZ1 (Fortsetzung)

Nr.	Name	Description
19	Alarm Profile	<p>This object is only used if the parameter "Use Limits" in the "General Settings" is set to "Yes". If the setting is "ZERO", the parameterized "Limit 1" will actuate the setting of the object "Limit alarm". If the setting is "ONE", the parameterized "Limit 2" will actuate the setting of the object "Limit alarm"</p> <p>At both settings, please pay also attention to the value of the object 9 "Selected scale".</p> <p>If set to "Selected Scale" = "ZERO", the limit is 1/2 Tariff 1 is applied.</p> <p>If set to "Selected Scale" = "ONE", the limit is 1/2 Tariff 2 is applied.</p>



4 Notes

Settings of the Impulse rating

Examples of Water

Impulse value Counter	Impulse / unit in ETS	Exponent in ETS for display in m ³
1 Imp. / 1 Liter	1	3
1 Imp. / 10 Liter	1	2
1 Imp. / 25 Liter	4	1
1 Imp. / 50 Liter	2	1
1 Imp. / 100 Liter	1	1

Examples of Current

Impulse value Counter	Impulse / unit in ETS	Exponent in ETS for display in kWh
500 Imp. / kWh	5	2
1000 Imp. / kWh	1	3
2000 Imp. / kWh	2	3
5000 Imp. / kWh	5	3
10.000 Imp. / kWh	10	3

Examples of Gas

Impulse value counter	Impulse / unit in ETS	Exponent in ETS for display in m ³
1 Imp. / 0,001m ³	1	3
1 Imp. / 0,01m ³	1	2
1 Imp. / 0,025 m ³	4	1

5 Product Page

The KNX Impulse Counter **KNX-IMPZ1** is used for remote reading and remote monitoring of consumption data. This module is suitable to detect measured values of heat, water, electricity and gas with S0-interface.

The device has an integrated KNX bus coupler and does not require any additional voltage.

The KNX Impulse Counter **KNX-IMPZ1-SK01** is delivered in an impact-resistant, glass-ball reinforced plastic housing with seal and meets the IP65 degree of protection.

The KNX Impulse Counter **KNX-IMPZ1-REG** is suitable for DIN rail mounting and meets the IP20 degree of protection.



Areas of Application

- General monitoring of consumption data

<p>The Counting unit starts with the S0 interface by default according to DIN EN 62053-31, but can be connected with a potential-free contact.</p> <p>Operating Temperature : -20 .. +55 °C Storage temperature : -20 .. +85 °C</p> <p>Operating Voltage: 21 .. 32VDC Power consumption: ca. 240mW (at 24VDC)</p> <p>Housing Protection class:</p> <p>KNX-IMPZ1-SK01: IP65 KNX-IMPZ1-REG: IP20</p>	
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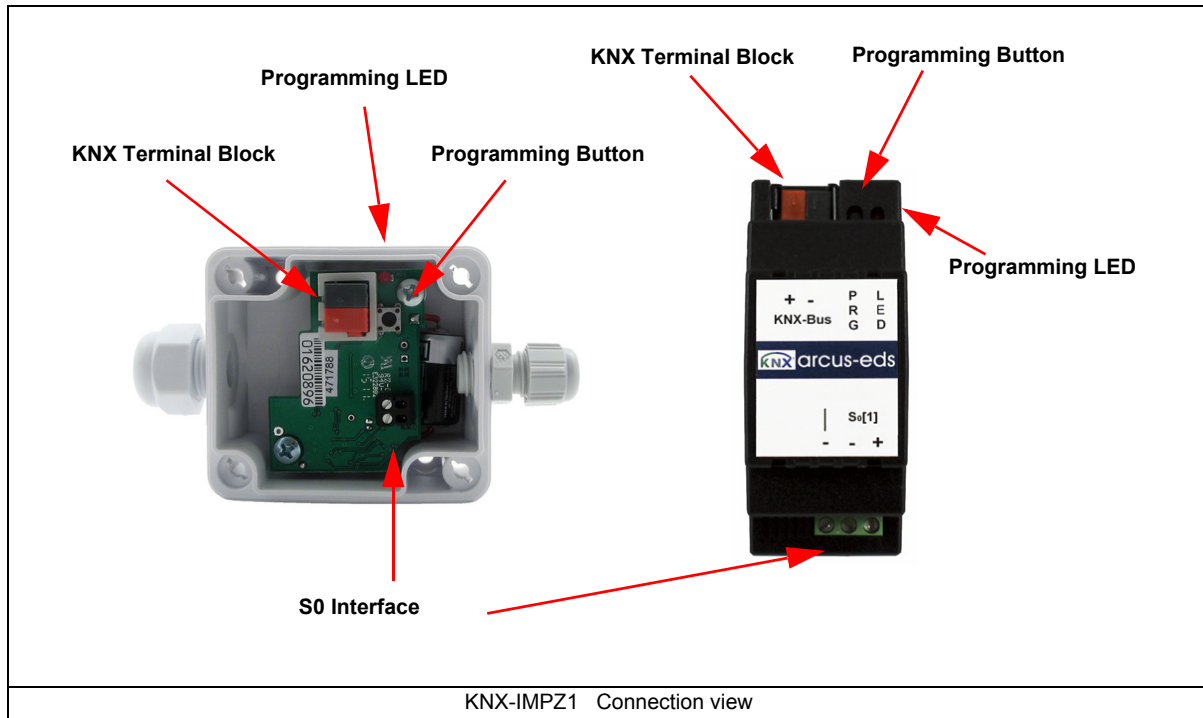
6 Technical Data

Technical Data - KNX-IMPZ1

Operating voltage	EIB/KNX Bus voltage 21 .. 32VDC
Power Consumption	ca. 240 mW (at 24VDC)
Auxiliary voltage	not required
Bus coupler	integrated
Ambient temperature	storage -20 .. +85 °C operation -20 .. +55 °C
Commissioning with the ETS	IMPZx.vd4
Connections	EIB-2-pol terminal (red / black)
Protection Class SK01	IP65
Mounting Type SK01	Mounting with 2 screws on surface
Casing Type SK01	Grey plastic housing
Housing Dimensions SK01	72 x 64 x 40 mm (B x H x T)
Article Number SK01	60201101
Protection Class REG	IP20
Mounting Type REG	DIN rail mounting
Housing Dimensions REG	REG-Housing 2 TE (35 mm) black
Article number REG	60201102

7 Commissioning

The KNX Sensor is set using the ETS (EIB Tool Software) in conjunction with the associated application program. On delivery, The module is unprogrammed. All functions are programmed and parameterized with ETS. Please read the ETS instructions.



8 Mounting

The counter module KNX IMPZ1-SK01 is designed for outdoor installation and for (damp) area. It conforms with the protection class IP65. It is mounted with two screws on the wall.

The cover of the device can be removed by loosening the screws on the top.

First attach the sensor to the wall or ceiling, then insert the KNX Bus cable into the slot on the side of the casing (PG Connection).

Unplug the bus clamp from the device, attach the cable and replace the clamp onto the board. After successfully programming the device, screw the cover back on.

when mounting the device, make sure that electronic parts are not damaged by tools and cable ends.

The counter module KNX IMPZ1-REG is intended for DIN rail mounting. It conforms with the protection class IP20.

Behaviour on Bus Voltage Recovery

The ETS parameter settings are retained.
The controller starts with the current values.

Delete program and reset sensor

To clear the programming (configuration) or reset the module back to factory settings, it must be switched to voltage-free state, (disconnect the EIB bus terminal).

Now hold down the programming button while reconnecting the EIB bus clamp and wait until the programming LED lights up (about 5-10 seconds).

Now you can release the programming button again and the module is ready for a new configuration.

If you release the programming button too early, repeat the procedure.



Imprint

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