

**Impuls Counting Module KNX-IMPZ2**



Product Group 1

Application : Integration of consumption meters with impulse outputs into the KNX bus.  
 The IMPZ2 can be operated as two separate counters or as a counter having two scales.  
 The counter inputs run on the S0-Interface by default according to DIN EN 62053-31 but can also be connected with a potential-free contact.

Product Data Base: **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 Reset
- Consumption reset date
- Consumption reset time
- Serial number

KNX-IMPZ2	Article	Article Description	Article No.
KNX		Document: 5200_ex_IMPZ2.pdf	
	KNX-IMPZ2 -SK01	2 Channel S0-counter module SK01 plastic housing: 72 x 64 x 40 mm IP54	60201201
	KNX-IMPZ2 -REG	2 Channel S0-counter module REG-housing: 2TE (35 mm) IP20	60201202

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## 1 Application Description

### Operating Principles and Areas of Application

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

The counter inputs are specified with DIN EN 62053-31 S0-interfaces but can also be connected with a potential-free contact. The two counting values can be two different meters or one meter with 2 tariffs. Switching the tariffs is done through the second input or over KNX.

The IMPZ2 can be used as two independent counters or a counter having two scales can be operated by a switched object.

KNX sensors are set up using the ETS Tool Software in conjunction with the associated application program.

The device is delivered unprogrammed.

All functions are parameterized and programmed with ETS.

### Functions, 2 Independent Counter

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

### Functions, Counter with 2 Tariffs

- Meter reading ( Scale 1/2 )
- Flow
- 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

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## 2.1 General Settings

Device: 1.1.2 IMPZ2

General Settings	Use Daylight Saving Time	Yes
Channel 1	Reset Pin [ 0 without Pin ]	0
Channel 2	Type of Counter	2 Independent Counters
	If Flowrate drops	Send Nothing
	Use Limit Profile	Yes

## General Settings - KNX-IMPZ2

Parameter	Setting	Description
Use Daylight Saving Time	<ul style="list-style-type: none"> <li>• no</li> <li>• yes</li> </ul>	Automatic daylight saving time
Reset-PIN ( 0 without Pin )	0 .. 65535	A "PIN" can be assigned in order to prevent unauthorized persons from resetting the consumption value. In order to reset the consumption value, that "PIN" must be confirmed. This feature is deactivated if the assigned "PIN" is "zero".
Type of Counter	2 Independent Counters 1 Counter with 2 Scales	There are two types of counters available
If Flowrate drops	Send nothing Send value "zero"	If the current consumption goes to zero, this can be indicated by sending a zero value on the object No.2.
Use Limit Profile	yes no	Limits are (not) used.

2.2 Parameter - 2 Independent Counter

Device: 1.1.2 IMPZ2

General Settings

Channel 1

Channel 2

Sending Values Cyclically	<input type="text" value="Do Not Send"/>
Counts per Unit	<input type="text" value="1"/>
[ Exponent ]	<input type="text" value="* 10 ^ 3"/>
Preset Counter Value [ 0 - no changes ]	<input type="text" value="12553"/>
Type of Flow Rate Measurement	<input type="text" value="Volumetric Flow"/>
Flow Measurement Period	<input type="text" value="Per Second"/>
Use of Limit 1	<input type="text" value="Value Limit"/>
Limit 1	<input type="text" value="0"/>
[ Exponent ]	<input type="text" value="* 1"/>
Use of Limit 2	<input type="text" value="Value Limit"/>
Limit 2	<input type="text" value="0"/>
[ Exponent ]	<input type="text" value="* 1"/>



Parameter - 2 Independent Counter - KNX-IMPZ2

Parameter	Setting	Description
Sending Values Cyclically	<ul style="list-style-type: none"> <li>• send nothing</li> <li>• 1 .. 120 Minutes</li> </ul>	Measured values will be sent in the preset cycle time. If cyclical sending is disabled, measured values will only be sent if changes in measured values occur. A minimum interval of 10 seconds is maintained in order to restrict bus load.
Count per Unit	0 .. 99	Impulse value must be set to the counter. The value to be set can be calculated from the impulse value of the counter.  See 4 Notes "Settings the Pulse Rating"
Exponent	Exponent of ten of 10 <sup>-10</sup> .. 10 <sup>10</sup>	The value to be set can be calculated from the parameter value "Counts per Unit" and the display unit.  See 4 Notes "Settings the Pulse Rating"
Preset Counter Value ( 0 - no changes )	0 .. 4.294.967.295	If there is a difference between the value displayed in the cyclometer register and the object value 0/1 "Count of channel 1/ Channel 2", the counter can be synchronized. All impulses already counted will be entered.  Example: A consumption of 12.553 cbm and 1 imp/l equal a correction value of 12553.

## Parameter - 2 Independent Counter - KNX-IMPZ2 ( continue )

Parameter	Setting	Description
Type of Flow Rate Measurement	Volumetric Flow Power Rating	It will be set whether flow or power is measured.
Flow Measurement Period	Per Second Per Minute Per Hour Per Day	Adjustment of the time base taken for the output of the amount of energy or the volumetric flow.
Use of Limit 1	Value limit Upper limit flow Lower limit flow Consumption value limit	The values are determined using the parameter sets "Limit 1" and the corresponding "Exponent".
Limit 1	0 .. 99	Limit setting
[Exponent]	Exponent of ten of $10^{-10} .. 10^{10}$	
Use of limit 2 limit 2 [Exponent]	Settings for limit value 2	

2.3 Parameter - 1 Counter with 2 Scales

Device: 1.1.2 IMPZ2

General Settings  
Channel 1

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	Flow Upper Limit
Limit 2 Scale 1	0
[ Exponent ]	* 1
Use of Limit 1 Scale 2	Flow Lower Limit
Limit 1 Scale 2	0
[ Exponent ]	* 1
Use of Limit 2 Scale 2	Consumption Limit
Limit 2 Scale 2	0
[ Exponent ]	* 1

Parameter - 1 Counter with 2 Scales - KNX-IMPZ2

Parameter	Setting	Description
Sending Values Cyclically	<ul style="list-style-type: none"> <li>Do Not Send</li> <li>1 .. 120 minutes</li> </ul>	Measured values will be sent in the preset cycle time. If cyclical sending is disabled, measured values will only be sent if changes in measured values occur. A minimum interval of 10 seconds is maintained in order to restrict bus load.
Impulse value	0 - 99	Impulse value must be set to the counter. The value to be set can be calculated from the impulse value of the counter.  See 4 Notes "Settings the Pulse Rating"

## Parameter - 1 Counter with 2 Scales - KNX-IMPZ2 ( continue )

Parameter	Setting	Description
[ Exponent ]	Exponent of ten of 10 <sup>-10</sup> .. 10 <sup>10</sup>	The value to be set can be calculated from the parameter value "Counts per unit" and the display unit.  See 4 Notes "Settings the Pulse Rating"
Preset Counter Value Scale 1/2 ( 0 - no change )	0 .. 4.294.967.295	If there is a difference between the value displayed in the cyclometer register and the object value 0/1 " Count Scale x", the counter can be synchronized. All impulses already counted will be entered.  Example: A consumption of 12.553 cbm and 1 imp/l equal a correction value of 12553.
Type of Flow Rate Measurement	Volumetric Flow Power Rating	it is set whether flow or power is measured.
Flow Measurement Period	Per Second Per Minute Per Hour Per Day	Adjustment of the time base taken for the output of the amount of energy or the volumetric flow.
Use of Limit 1 Scale 1	Value limit Upper limit flow Lower limit flow Consumption value limit	The values are determined using the parameter sets "Limit 1 Scale 1" and the corresponding "Exponent".
Limit 1 Scale 1	0 .. 99	Limit setting
[ Exponent ]	Exponent of ten of 10 <sup>-10</sup> .. 10 <sup>10</sup>	
Exp.Limit 2 scale 1 Limit 2 Scale 1 [Exponent]	Settings for limit value 2 scale 1	Settings for limit 2 scale 1
Exp.Limit 1 scale 2 Limit 1 Scale 2 [ Exponent ]	Settings for limit value 1 scale 2	Settings for limit 1 scale 2
Exp.Limit 2 scale 2 Limit 2 Scale 2 [ Exponent ]	Settings for limit value 2 scale 2	Settings for limit 2 scale 2

### 3 KNX Objects

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#### 3.1 Objects - 2 Independent Counter

##### Objects - 2 Independent Counter - KNX-IMPZ2

No.	Name	Data Point Type	Function
0	Meter reading channel 1	DPT 14.* 4 Byte	Meter reading
1	Meter reading channel 2	DPT 14.* 4 Byte	Meter reading
2	Capacity / Volumetric flow channel 1	DPT 14.* 4 Byte	Calculated flow
3	Capacity / Volumetric flow channel 2	DPT 14.* 4 Byte	Calculated flow
4	Reference value channel 1	DPT 14.* 4 Byte	Consumption for the last reference date
5	Reference value channel 2	DPT 14.* 4 Byte	Consumption for the last reference date
6	Consumption value channel 1	DPT 14.* 4 Byte	consumption value
7	Consumption value channel 2	DPT 14.* 4 Byte	consumption value
8	Serial number channel 1	DPT 16.000 String(ASCII) 14 Byte	Serial number
9	Serial number channel 2	DPT 16.000 String(ASCII) 14 Byte	Serial number
10	Limit alarm channel 1	DPT 1.001 Switch 1 Bit	Limit
11	Limit alarm channel 2	DPT 1.001 Switch 1 Bit	Limit
12	Current time	DPT 10.001 time 3 Byte	time
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 time 3 Byte	Reset time
18	Consumption reset date	DPT 11.001 date 3 Byte	Reset date
19	Alarm Profile	DPT 1.001 Switch 1 Bit	Select time



## Object Description - 2 Independent Counter - KNX-IMPZ2

No.	Name	Description
0 1	Meter reading channel 1 Meter reading channel 2	Corresponds to the current meter reading ( total consumption )
2 3	Volumetric flow channel 1 Volumetric flow channel 2	Current capacity in kWh per time unit or Volumetric flow in cbm per time unit. The time unit can be set using the parameter "Flow measurement period".
4 5	Reference value channel 1 Reference value channel 2	Meter reading on the last reference date at 0:00 am.
6 7	Consumption value channel 1 Consumption value channel 2	The amount consumed since the last consumption value reset
8 9	Serial number channel 1 Serial number channel 2	The unique serial number ( e.g. serial number of the counter ).
10 11	Limit alarm channel 1 Limit alarm channel 2	It will be set if limit is reached. ( see "General settings", "Use limits" and object 19 "Alarm profile" )
12	Current time	Corresponds with internal time
13	Current date	Corresponds with internal 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 will be saved at 0:00 am.
16	Consumption reset	Consumption value will be set to "zero", the objects "Consumption reset time" and "Consumption reset date" will be refreshed and saved. If "Reset-PIN" in "General Settings" is other than "zero", this "PIN" must be used in order to actuate a reset. If "Reset-PIN" is set to "zero", a different "PIN" other than "zero" must be used in order to actuate a reset.
17	Consumption reset time	The time when the last consumption reset was carried out.
18	Consumption reset date	The date when the last consumption reset was carried out.
19	Alarm Profile	This object is only used if the parameter "Use Limit Profile" 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".

## 3.2 Objects - 1 Counter with 2 Scales

## Objects - 1 Counter with 2 Scales - KNX-IMPZ2

No.	Name	Data Point Type	Function
0	Scale value 1	DPT 14.* 4 Byte	Meter reading
1	Scale value 2	DPT 14.* 4 Byte	Meter reading
2	Capacity / Volumetric flow	DPT 14.* 4 Byte	Calculated flow
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 16.001 String(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 Time 3 Byte	Time
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 Bit	Consumption value reset
17	Consumption reset time	DPT 10.001 Time 3 Byte	Time reset
18	Consumption reset date	DPT 11.001 Date 3 Byte	Date reset
19	Alarm Profile	DPT 1.001 Switch 1 Bit	Select limit

## Objects description - 1 Counter with 2 Scales - KNX-IMPZ2

No.	Name	Description
0 1	Scale value 1 Scale value 2	Corresponds to the current meter reading ( total consumption ).
2	Volumetric flow	Current consumption per unit time parameterized.
4 5	Reference value scale 1 Reference value scale 2	Meter reading on the last reference date at 0:00 am.

## Objects description - 1 Counter with 2 Scales - KNX-IMPZ2 ( continue )

No.	Name	Description
6 7	Consumption value scale 1 Consumption value scale 2	The consumed amount since the last consumption value reset.
8	Serial number	The unique serial number (e.g. serial number of the counter). <b>NOTE: Can be written only once.</b>
9	Selected scale	Counter switch (scale 1 / scale 2)
10 11	Limit alarm scale 1 Limit alarm scale 2	It will be set if limit is reached. The "object 19 : Alarm profile"determines which limit would be applied.
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 will be saved at 0:00 am.
16	Consumption reset	Consumption value will be set to "zero", the objects "Consumption reset time" and "Consumption reset date" will be refreshed and saved.  If "Reset-PIN" in "General Settings" is other than "zero", this "PIN" must be used in order to actuate a reset. If "Reset-PIN" is set to "zero", a different "PIN" other than "zero" must be used in order to actuate a 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.
19	Alarm Profile	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".  At both settings, please pay also attention to the value of the object 9 : "Selected scale". When setting "Selected scale" = "ZERO", limit 1/2, scale 1 is in use. When setting "Selected scale" = "ONE", limit 1/2, scale 2 is in use.

## Following Objects can be Sent to

## 4 Notes

### Settings the Pulse Rating

For example, Water

Impulse Value Counter	Impulse / Unit in ETS	Exponent in ETS Display in m <sup>3</sup>
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

For example, Current

Impulse Value Counter	Impulse / Unit in ETS	Exponent in ETS 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

For example, Gas

Impulse Value Counter	Impulse / Unit in ETS	Exponent in ETS Display in m <sup>3</sup>
1 Imp. / 0,001m <sup>3</sup>	1	3
1 Imp. / 0,01m <sup>3</sup>	1	2
1 Imp. / 0,025 m <sup>3</sup>	4	1

## 5 Product Page

The Counter-Module **KNX-IMPZ2** is used for remote reading and monitoring of metering data

The module is suitable to detect measured values of heat-, water-, current- and gas meters with S0-Interface.

The IMPZ2 can be used as two independent counters or be used as one counter with scales switching.

The device has an integrated bus coupling unit and needs no auxiliary power.

The Counter-Module **KNX-IMPZ2-SK01** is delivered in an impact-resistant glass-ball reinforced plastic housing with seal and meet the protection class IP54.

The Counter-Modul **KNX-IMPZ2-REG** is suitable for DIN rail mounting and meet the IP20 degree of protection



## Areas of Application

- General monitoring of consumption values

<p>The counter inputs run on the S0 interface by default. ( according to the DIN 43864) but can also 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>Protection Class:</p> <p>KNX-IMPZ2-SK01: IP54                  KNX-IMPZ2-REG: IP20</p>	
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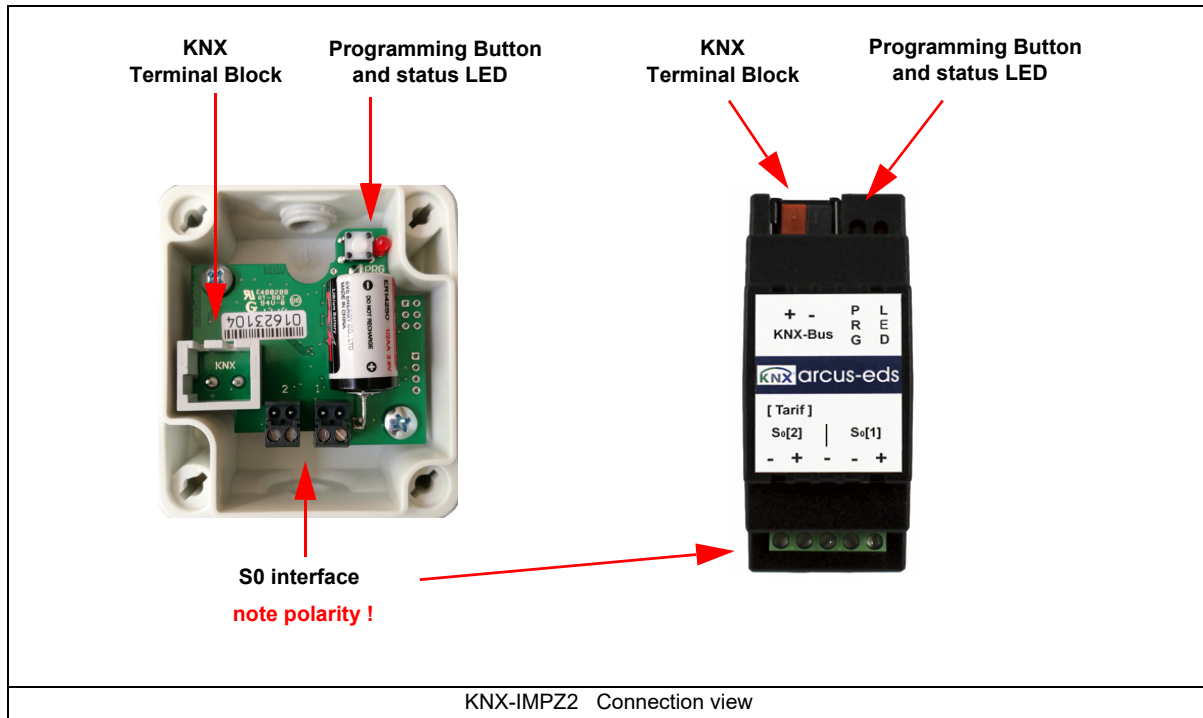
## 6 Technical Data

### Technical Data - KNX-IMPZ2

Operating Voltage	KNX bus voltage 21 .. 32 VDC
Power Consumption	ca. 240 mW ( at 24VDC )
Auxiliary Supply	not required
Bus Coupler	integrated
Behaviour on bus voltage failure	Modified auxiliary storage size is configurable
Ambient temperature	Storage: -20 .. +85 °C Operation: -20 .. +55 °C
Start-up with ETS	<b>IMPZx.vd4</b>
Connections	KNX 2-pole clamps ( red / black )
Protection Class SK01	IP54
Assembly Type SK01	Assembly with 2 screws finery
Casing Type SK01	Plastic housing grey
Casing Dimensions SK01	72 x 64 x 40 mm ( B x H x T )
Article Number SK01	60201201
Protection Class REG	IP20
Assembly Type REG	DIN rail mounting
Casing Dimensions REG	2 TE ( 35 mm )
Article Number REG	60201202

## 7 Startup

The KNX Sensor is set up using the ETS Tool Software and the applicable application program.  
The sensor is delivered unprogrammed.  
All functions are programmed and parameterized with ETS.  
Please read the ETS instructions.



## 8 Mounting

The counter module **KNX IMPZ2-SK01** is designed for outdoor installation and for (damp) area.  
It conforms to the protection class IP54.  
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 ).

Detach the bus clamp from the device, attach the cable and replace the clamp onto the board.  
After programming the device successfully, the housing cover must be closed.

Be careful not to damage the electronic parts with tools and cable ends.

The Counter Module **KNX-IMPZ2-REG** is intended for DIN rail mounting.  
It conforms to protection class IP20.

### Behaviour on bus voltage recovery

The controller's outputs start with their current values and the ETS parameter settings are retained.

### Delete Program and Reset Sensor

In order to delete the programming ( configuration ) or to reset the module back to delivery status, it must be switched to zero potential ( disconnect the KNX bus terminal ).

Press and hold the programming button while reconnecting the KNX bus coupler and wait until the programming LED lights up ( approx. 5-10 seconds ).

Now you can release the programming button.

The module is ready for new configuration now.

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





## Imprint

Editor: Arcus-EDS GmbH, Rigaer Str. 88, 10247 Berlin

Responsible for the contents: Hjalmar Hevers, Reinhard Pegelow

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The buyer/operator of the facility has to make sure that all relevant safety regulations, issued by VDE, TÜV and the responsible energy suppliers are respected. There is no warranty for defects and damages caused by improper use of the devices or by non-compliance with the operating manuals.

## Warranty

We take over guarantees as required by law.

Please contact us if malfunctions occur. In this case, please send the device including a description of the error to the company's address named below.

## Manufacturer



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