



UMG 512-PRO | GridVis® software - Configuration manual

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The German version is the original version of the manual "UMG 512-PRO | GridVis® Software - Configuration Manual"

Subject to technical alterations.

The contents of our documentation have been compiled with great care and reflect the current state of the information available to us. Nonetheless, we wish to point out that updates of this document are not always possible at the same time as technical refinements are implemented in our products. Please see our website under www.janitza.de for the current version.

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1. Notes on this document

1.1 About this configuration manual

This configuration manual for the UMG 512-PRO in connection with the GridVis® software is a supplement to all of the usage information for the UMG 512-PRO.

This document is an aid for configuring your measurement device in the GridVis® software. Setting options are presented in tabular form and explained.

This document reflects the current status of our information and makes no claim to accuracy, completeness or currency. Janitza electronics GmbH assumes no liability for personal injury, property damage or financial loss resulting from errors or misinterpretations.

INFORMATION

Our usage information uses the grammatical masculine form in a gender-neutral sense! This form always refers equally to women, men and diverse. In order to make the texts more readable, distinctions are not made. We ask for your understanding for these simplifications.

1.2 Disclaimer

Compliance with the usage information included with the measurement device is a prerequisite for safe operation and attaining the stated performance characteristics and product features.

Janitza electronics GmbH assumes no liability for bodily injury, material damage or financial losses which result from disregard of the usage information.

Make sure that your usage information is readily available and legible.

1.3 Copyright notice

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All rights reserved. Any reproduction, processing, distribution or other use, in whole or in part, is prohibited.

All trademarks and the rights arising from them are the property of the respective owners of these rights.

1.4 Technical changes

- Make sure that your measurement device matches the configuration manual.
- This configuration manual is valid for the UMG 512-PRO. Separate validities and distinctions are marked.
- Install the GridVis® software on your PC and find out about the current version of our software at www.janitza.de. Update the software if necessary.
- First make sure you have read and understood the usage information accompanying the product.
- Find out about measurement device and software revisions and the associated modifications of the usage information associated with your product at www.janitza.de.

If you have questions, suggestions or ideas for improvement of the configuration manual, please let us know via email at: info@janitza.de.

INFORMATION

This configuration manual describes and explains setting options in the GridVis® power grid monitoring software.

In addition to this configuration manual, be sure to refer to the usage information included with the meter, such as:

- Installation instructions.
- User manual.
- "GridVis® software" quick guide.
- "Safety Information" supplement.

If applicable, also refer to the usage information about expansion modules.

Moreover, the GridVis® software has an online help feature and e-learning modules.

Recommended reading:

For all persons interested in electrical engineering, detailed information on the subject of "Power quality and disturbances caused by events and transients" can be found in the document "Energy Supply Quality Characteristics – Power Quality Solutions from Janitza".

2. Safety

Please be certain to observe the warnings and safety information in the usage information included with the meter and on the meter itself!

Since the configuration of the measurement device in the GridVis® software does not pose any hazards that could lead to serious or fatal injuries, the configuration instructions do not represent a complete list of all the safety measures required for operating the measurement device!

For this reason, the warning and safety information is not presented here. Nevertheless, observe the safety information in this manual, which warns of the following dangerous situation:

ATTENTION

Warns of an immediately hazardous situation which, if not avoided, can result in material or environmental damage.

In addition, important information is indicated as follows:

INFORMATION

Indicates procedures in which there is **no** hazard of personal injury or material damage.

3. GridVis® network analysis software

The GridVis® software (download at www.janitza.de) is the perfect tool for the configuration, readout and analysis of measurement data.

Performance characteristics of the GridVis® software

- Configure and read out data from your measurement device.
- Graphic display of measured values.
- Store measurement data in databases.
- Analyze measurement data that has been read out.
- Create reports.

Connections to the PC (GridVis® software)

Connections for communication between the PC and meter can be found in the usage information for your meter.

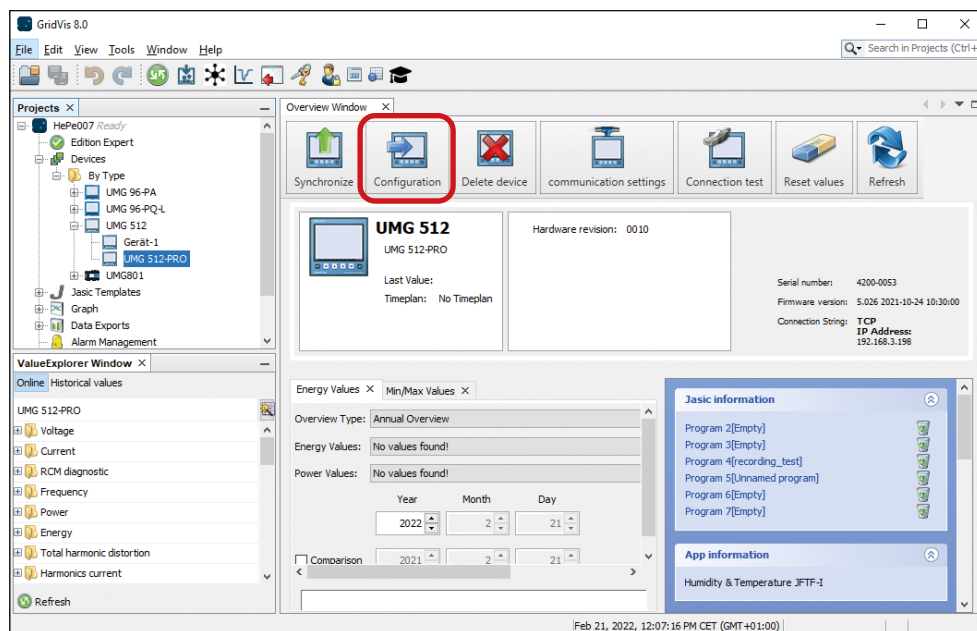
4. Configuration

In addition to operating and configuring the UMG 512-PRO via the 6 function buttons and the display, there is also the option of configuring your measurement device with the GridVis® power grid monitoring software.

The following chapters show configuration options for all the functions available in the GridVis® software.



After you have integrated your UMG 512-PRO in the GridVis® software and carried out a successful connection test, start configuring your measurement device by pressing the *Configuration* button.



Overview window of the UMG 512-PRO in the GridVis® software



The UMG 512-PRO configuration window appears with the following menu items:

Identity
Transformer
Phase mapping
Measuringvariants
Nominalvalues
Ripple control
Events
Event triggers
Event recording
Device off event
RCM configuration
Transients
Transient recording
Averaging intervals
Recording configuration
memory configuration
Time
Timezone
Inputs
value adjustment
Digital outputs
Serial ports
field bus profiles
ip configuration
Firewall
Flicker
Bacnet
peak demand
I/O naming
Online recording

Configuration menu of the UMG 512-PRO

Ideally, the following chapters will help you to configure the functions of the UMG 512-PRO, which are sorted and explained according to the menu items. They provide information on options, methods or procedures for configuration of the meter.

4.1 Identity



















Name	<input type="text" value="UMG 512-PRO"/>	
Description	<input type="text" value="Janitza electronics GmbH, UMG 512-PRO"/>	

"Identity" control elements

Control element/function	Description	Character/value range	Init.jas	ModBus address format
Input field <i>Name</i>	The name appears in the measurement device list of your project and is used to identify the measurement device.	64 characters	_DEV_NAME	6750 - string
Input field <i>Description</i>	The description is used for further information, for example, to determine the location, company or similar of the meter.	128 characters	_DEV_DESC	6782 -string

Tab. "Identity" control elements

4.2 Transformers

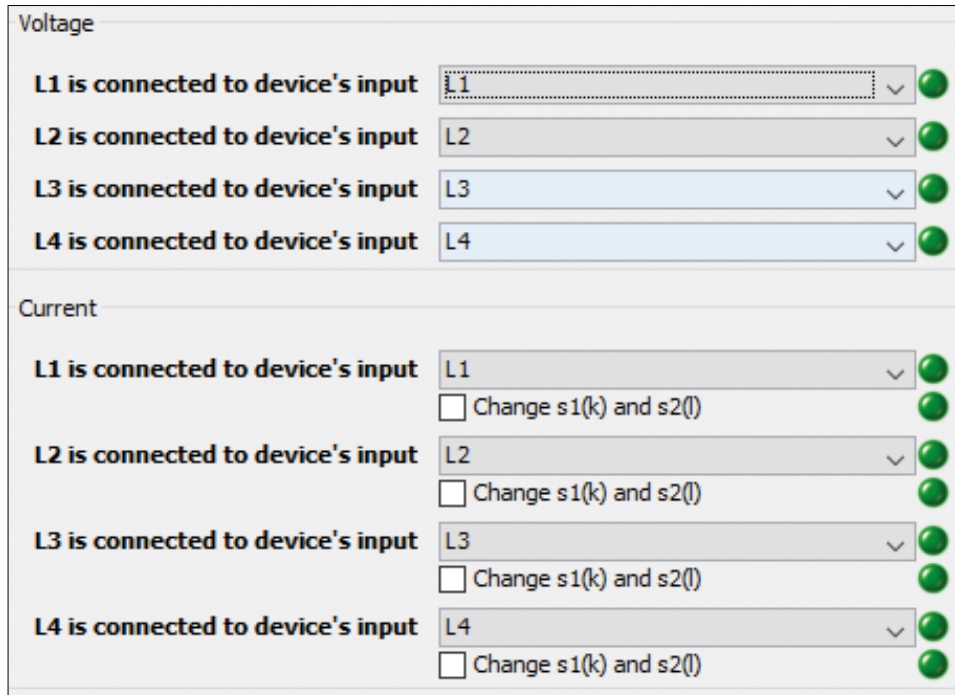
Main input	
Primary	Secondary
Voltage transformer <input type="text" value="400"/> V 	 / <input type="text" value="400"/> V 
Current transformer <input type="text" value="5"/> A 	 / <input type="text" value="5"/> A 
Auxiliary input	
Primary	Secondary
Voltage transformer <input type="text" value="400"/> V 	 / <input type="text" value="400"/> V 
Current transformer <input type="text" value="5"/> A 	 / <input type="text" value="5"/> A 
L5	
Primary	Secondary
Current transformer <input type="text" value="127"/> A 	 / <input type="text" value="1"/> A 
L6	
Primary	Secondary
Current transformer <input type="text" value="127"/> A 	 / <input type="text" value="1"/> A 

"Transformers" control elements

Measurement group	Control element/function	Description	Unit (standard)	Character/value range	Init.jas	ModBus address format
Main input	Input field <i>Voltage transformer primary</i>	Voltage ratio - For direct measurement without a transformer, select the ratio 400 V/400 V. - Use the selection list to specify the units.	V	0.0 ... 1000000.0	_VT PRIM[0]	6697 - float
	Input field <i>Voltage transformer secondary</i>		V	1.0 ... 999.0	_VT SEC[0]	6701 - float
	Input field <i>Current transformer primary</i>	Current ratio - For direct measurement without a transformer, select the ratio 5 A/5 A. - Use the selection list to specify the units.	A	0.0 ... 1000000.0	_CT PRIM[0]	6689 - float
	Input field <i>Current transformer secondary</i>		A	1.0 ... 5.0	_CT SEC[0]	6693 - float
Auxiliary input	Input field <i>Voltage transformer primary</i>	Ratio of the auxiliary input for voltage - For direct measurement without a transformer, select the ratio 400 V/400 V. - Use the selection list to specify the units.	V	0.0 ... 1000000.0	_VT PRIM[1]	6699 - float
	Input field <i>Voltage transformer secondary</i>		V	1.0 ... 999.0	_VT SEC[1]	6703 - float
	Input field <i>Current transformer primary</i>	Ratio of the auxiliary input for current - For direct measurement without a transformer, select the ratio 5 A/5 A. - Use the selection list to specify the units.	A	0.0 ... 1000000.0	_CT PRIM[1]	6691 - float
	Input field <i>Current transformer secondary</i>		A	1.0 ... 5.0	_CT SEC[1]	6695 - float
L5	Input field <i>Current transformer primary</i>	Current ratio, L5 - Use the selection list to specify the units.	A	0.0 ... 1000000.0	_IDIFF_PRIM[0]	13787 - float
	Input field <i>Current transformer secondary</i>		A	0.0 ... 1.0	_IDIFF_SEC[0]	13791 - float
L6	Input field <i>Current transformer primary</i>	Current ratio, L6 - Use the selection list to specify the units.	A	0.0 ... 1000000.0	_IDIFF_PRIM[1]	13789 - float
	Input field <i>Current transformer secondary</i>		A	0.0 ... 1.0	_IDIFF_SEC[1]	13793 - float

Tab. "Transformers" control elements

4.3 Phase mapping

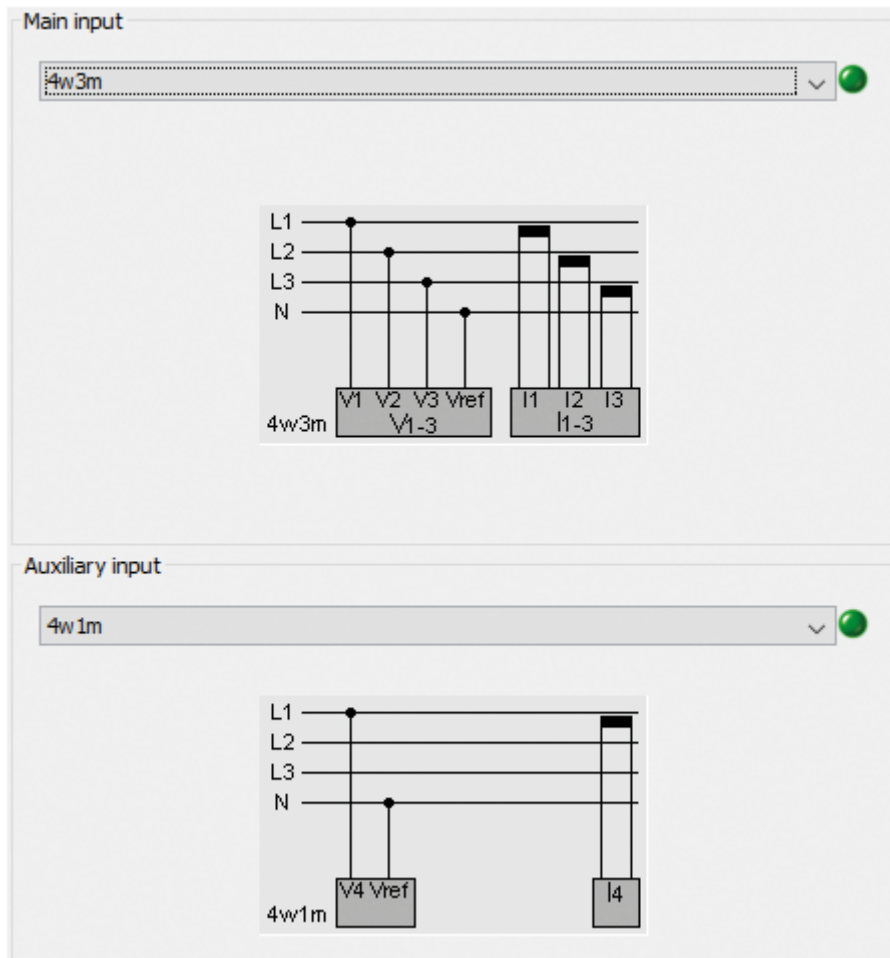


"Phase mapping" control elements

Measurement group	Control element/function	Description	Values	Character/value range	Init.jas	ModBus address format
Voltage	Selection list <i>L1 is connected to device's input</i>	The logical voltage L1 is connected to the physical device input	L1 = value 0 L2 = value 2 L3 = value 4 L4 = value 6	0, 2, 4, 6	_CH_MAP[0]	11684 - short
	Selection list <i>L2 is connected to device's input</i>	The logical voltage L2 is connected to the physical device input		0, 2, 4, 6	_CH_MAP[2]	11686 - short
	Selection list <i>L3 is connected to device's input</i>	The logical voltage L3 is connected to the physical device input		0, 2, 4, 6	_CH_MAP[4]	11688 - short
	Selection list <i>L4 is connected to device's input</i>	The logical voltage L4 is connected to the physical device input		0, 2, 4, 6	_CH_MAP[6]	11690 - short
Current	Selection list <i>L1 is connected to device's input</i>	The logical current L1 is connected to the physical device input	If the checkbox "Swap S1(k) and s2(l)" is marked, the values in parentheses apply: L1 = value 1 (-2) L2 = value 3 (-4) L3 = value 5 (-6) L4 = value 7 (-8)	-8, -6, -4, -2, 1, 3, 5, 7	_CH_MAP[1]	11685 - short
	Selection list <i>L2 is connected to device's input</i>	The logical current L2 is connected to the physical device input		-8, -6, -4, -2, 1, 3, 5, 7	_CH_MAP[3]	11687 - short
	Selection list <i>L3 is connected to device's input</i>	The logical current L3 is connected to the physical device input		-8, -6, -4, -2, 1, 3, 5, 7	_CH_MAP[5]	11689 - short
	Selection list <i>L4 is connected to device's input</i>	The logical current L4 is connected to the physical device input		-8, -6, -4, -2, 1, 3, 5, 7	_CH_MAP[7]	11691 - short

Tab. "Phase mapping" control elements

4.4 Measuring variants



"Measuring variants" control elements

Control element/function	Description	Values	Character/value range	Init.jas	ModBus address format
Selection list <i>Main input</i>	Connection variant of the main input – L1 (V1), L2 (V2), L3 (V3), N (Vref) / I1, I2, I3	4w3m = value 0 4w2m = value 1 4w2u = value 2 4w2i = value 3 3w3m = value 4 3w2m = value 5 3w2u = value 6 3w2i = value 7 2w1m = value 8 2w2m = value 9 4w3m hv = value 10 4w2uhv = value 11 3w2uhv = value 12 3w2mhv = value 13	0 ... 13	_CON_MODE	6924 - int
Selection list <i>Auxiliary input</i>	Connection variant of the auxiliary input – L4 (V4), N (Vref) / I4	2w1n = value 0 3w1m = value 1 4w1m = value 2	0 ... 2	_CON_AUX_MODE	6922 - int

Tab. "Measuring variants" control elements

4.5 Nominal values

The screenshot shows a configuration window titled "General" with the following sections:

- General:** Nominal frequency is set to 50Hz.
- Main input:**
 - Relevant voltage (This setting influences recording of transients and events as well as flicker measurement): LN (selected) or LL.
 - Nominal voltage (LN): 230 V
 - Nominal current: 5 A
 - Nominal current for K-factor: 5 A
 - Nominal Current TDD: 5 kA
- Auxiliary input:**
 - Nominal voltage: 230 V
 - Nominal current: 5 A
 - Nominal current for K-factor: 5 A
 - Nominal Current TDD: 5 kA

"Nominal values" control elements

Measurement group	Control element/function	Description	Unit	Character/value range	Init.jas	ModBus-Address format
Total	Selection list <i>Nominal frequency</i>	For Class A measurements, configure the mains frequency because the ranges for 50 Hz and 60 Hz overlap: - 50 Hz - measurement in the range 42.5 - 57.5 Hz - 60 Hz - measurement in the range 51 - 69 Hz - Auto - measurement in the range 15 - 440 Hz (the detection of events and transients is disabled!)	Hz	50 Hz = value 50.0 60 Hz = value 60.0 Automatic = value 0.0	_NOMINAL_F	6745 - float
Main input	Radio button <i>Relevant voltage</i>	LN for 4-wire systems LL for 3-wire systems	-	0 = LN 1 = LL	_PHASE_MODE	6926 - int
	Input field <i>Nominal voltage (LN)</i>	Nominal voltage - depends on the setting of <i>Relevant voltage LN</i> or <i>LL</i> . For measurements in medium-voltage or high-voltage networks, select the setting <i>Relevant voltage LL</i> beforehand!	V	25.0 ... 1000000.0	_NOMINAL_U[0]	6709 - float
	Input field <i>Nominal current</i>	Nominal current - this corresponds to the design of your power distribution (see back-up fuse). The nominal current basis for the limit values of events and transients (% value of the nominal current).	A	1.0 ... 1000000.0	_NOMINAL_I[0]	6713 - float
	Input field <i>Nominal current for K-factor</i>	I_{nom} ... Nominal current of the transformers (needed to calculate the K-factor).	A	1.0 ... 1000000.0	_IRATED[0]	6705 - float
	Input field <i>Nominal current TDD</i>	Maximum demand load current, L1..L3 (required for TDD (I) calculation).	A	1.0 ... 1000000.0	_IRATED_TDD[0]	13101 - float

Tab. "Nominal values" control elements

Measurement group	Control element/function	Description	Unit	Character/value range	Init.jas	ModBusAddress format
Auxiliary input	Input field <i>Nominal voltage</i>	See main input	V	25.0 ... 1000000.0	_NOMINAL_U[1]	6711 - float
	Input field <i>Nominal current</i>	See main input	A	1.0 ... 1000000.0	_NOMINAL_I[1]	6715 - float
	Input field <i>Nominal current for K-factor</i>	See main input	A	1.0 ... 1000000.0	_IRATED[1]	6707 - float
	Input field <i>Nominal current TDD</i>	See main input	A	1.0 ... 1000000.0	_IRATED_TDD[1]	13103 - float

Tab. "Nominal values" control elements

4.6 Ripple control signal

Frequency Hz

"Ripple control signal" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address/input
Input field <i>Frequency</i>	Each energy supply company (utility) transmits the ripple control signal on a defined frequency within their network. Enter this frequency in the "Ripple control signal" input field. You may need to contact the relevant electric utility. The ripple control signal is used, for example, to switch tariffs - HT/LT (high price tariff/low price tariff).	Hz	50 ... 3000	_RC_FREQ	10262 - float

Tab. "Ripple control signal" control elements

4.7 Events

4.7.1 Main input (LN)

i INFORMATION

Detailed information and explanations of "events" can be found in the document "Energy Supply Quality Characteristics – Power Quality Solutions from Janitza" and on www.janitza.de.

Main input (LN)					
Over voltage	Manual	<input type="text" value="110.00"/>	%	<input type="checkbox"/>	(253.00V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Under voltage	Manual	<input type="text" value="85.00"/>	%	<input type="checkbox"/>	(195.50V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Voltage outage	Manual	<input type="text" value="5.00"/>	%	<input type="checkbox"/>	(11.50V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Rapid voltage change	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	
Over current	Manual	<input type="text" value="110.00"/>	%	<input type="checkbox"/>	(5.50A)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(0.10A)
Over frequency	Off	<input type="text" value="0.10"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	
Under frequency	Manual	<input type="text" value="0.10"/>	%	<input type="checkbox"/>	(0.05Hz)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(1.00Hz)
Frequency change	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	

"Events/main input (LN)" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list and input field Overvoltage	To capture overvoltage events, select "Manual" in the selection list and configure a limit value for the nominal voltage with hysteresis in %. - In single-phase systems, an overvoltage event (swell) begins when the RMS value of the voltage (Urms) rises above the limit value and ends when the RMS value is less than or equal to the limit value minus the hysteresis voltage. - In multiphase systems, an overvoltage event (swell) begins when the RMS voltage (Urms) of one or more channels is above the limit value and ends when the Urms voltage on all measured channels is less than or equal to the limit value minus the hysteresis voltage.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_MAX[0]	6733 - float
Input field Hysteresis		%	Input field: -1.0 ... 1000000.0	_U_EVT_MAX_HYST[0]	13457 - float

Tab. "Main input (LN)" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list and input field <i>Undervoltage</i>	To capture undervoltage events, select "Manual" in the selection list and configure a limit value for the nominal voltage with hysteresis in %. - In single-phase systems, an undervoltage event (dip) begins when the RMS value of the voltage (Urms) falls below the limit value and ends when the RMS value is greater than or equal to the limit value plus the hysteresis voltage.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_MIN[0]	6737 - float
Input field <i>Hysteresis</i>	- In multiphase systems, an undervoltage event (dip) begins when the RMS voltage (Urms) of one or more channels falls below the limit value and ends when the Urms voltage on all measured channels is greater than or equal to the limit value plus the hysteresis voltage.	%	Input field: -1.0 ... 1000000.0	_U_EVT_MIN_HYST[0]	13461 - float
Selection list and input field <i>Voltage interruption</i>	To capture voltage interruption events, select "Manual" in the selection list and configure a limit value for the nominal voltage with hysteresis in %. - In single-phase systems, a voltage interruption begins when the RMS voltage (Urms) falls below the voltage interruption limit value and ends when the Urms voltage is greater than or equal to the limit value plus the hysteresis voltage.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_OFF[0]	6741 - float
Input field <i>Hysteresis</i>	- For multiphase systems, a voltage interruption starts when the voltage Urms on all channels falls below the limit value for the voltage interruption, and ends when the voltage Urms on any channel is greater than or equal to the voltage interruption limit value plus the hysteresis voltage.	%	Input field: -1.0 ... 1000000.0	_U_EVT_OFF_HYST[0]	13465 - float
Selection list and input field <i>Rapid Voltage Changes (RVC)</i>	To capture rapid voltage change (RVC) events, select "Manual" in the selection list and configure a limit value for the nominal voltage with hysteresis in %. A rapid voltage change is understood to be a rapid change between two stable states of the effective value of the mains voltage, Urms. By definition, the two RMS voltage values must be in a "steady state". The mains voltage Urms is in a steady state (stable condition) if all immediately preceding Urms values remain within a limit value of the arithmetic mean of this Urms value (consideration of 100 values at 50 Hz or 120 values at 60 Hz). The limit values here are in the range between 1% and 6% of the agreed mains voltage (a value derived from the agreed supply voltage using the transformer ratio). In accordance with the application, the user configures the RVC hysteresis value and it should be lower than the RVC limit value.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_QUICK[0]	19128 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_U_EVT_QUICK_HYST[0]	19132 - float
Selection list and input field <i>Overcurrent</i>	To detect overcurrent events, select "Manual" in the selection list and configure a limit value with hysteresis in % of the nominal current. - For single-phase systems, an overcurrent event starts when the current Irms rises above the overcurrent limit value, and ends when the current Irms is less than or equal to the overcurrent limit value minus the hysteresis.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 10000.0	_I_EVT_MAX[0]	6729 - float
Input field <i>Hysteresis</i>	- In multiphase systems, an overcurrent event starts when the current Irms rises above the overcurrent limit value for one or more channels and ends when the current Irms on all channels is less than or equal to the limit value for the overcurrent minus the hysteresis.	%	Input field: -1.0 ... 10000.0	_I_EVT_MAX_HYST[0]	13453 - float
Selection list and input field <i>Overfrequency</i>	To detect overfrequency events, select "Manual" in the selection list and configure a limit value with hysteresis in % of the nominal frequency. An overfrequency event starts when the measured frequency (calculated from the time of the last 20 zero crossings) rises above the limit value and ends when the frequency value is less than or equal to the limit value minus the hysteresis.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_MAX[0]	13760 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_MAX_HYST[0]	13772 - float

Tab. "Main input (LN)" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Selection list and input field <i>Underfrequency</i>	To capture underfrequency events, select "Manual" in the selection list and configure a limit value with hysteresis in % of the nominal frequency. An underfrequency event starts when the measured frequency (calculated from the time of the last 20 zero crossings) falls below the limit value and ends when the frequency value is greater than or equal to the limit value plus hysteresis.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_MIN[0]	13764 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_MIN_HYST[0]	13776 - float
Selection list and input field <i>Frequency change</i>	To capture frequency change events (fast frequency changes), select "Manual" in the selection list and configure the limit value with hysteresis in % of the nominal frequency. The meter calculates the difference between two successive measured frequency values and compares them to a static limit value in %. According to the application, the user also configures the hysteresis value in % and it should be lower than the static limit value.	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_DT[0]	13768 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_DT_HYST[0]	13780 - float

Tab. "Main input (LN)" control elements

4.7.2 Main input (LL)

Main input (LL)					
Over voltage	Manual	<input type="text" value="110.00"/>	%	<input type="checkbox"/>	(438.21V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(7.97V)
Under voltage	Manual	<input type="text" value="85.00"/>	%	<input type="checkbox"/>	(338.62V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(7.97V)
Voltage outage	Manual	<input type="text" value="5.00"/>	%	<input type="checkbox"/>	(19.92V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(7.97V)
Rapid voltage change	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	

"Events/main input (LL)" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list and input field <i>Overvoltage</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_ULL_EVT_MAX	13748 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_ULL_EVT_MAX_HYST	13754 - float
Selection list and input field <i>Undervoltage</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_ULL_EVT_MIN	13750 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_ULL_EVT_MIN_HYST	13756 - float
Selection list and input field <i>Voltage inter- ruption</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_ULL_EVT_OFF	13752 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_ULL_EVT_OFF_HYST	13758 - float
Selection list and input field <i>Rapid Voltage Changes (RVC)</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_ULL_EVT_QUICK	19136 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_ULL_EVT_QUICK_HYST	19138 - float

Tab. "Main input (LL)" control elements

4.7.3 Auxiliary input

Auxiliary input					
Over voltage	Manual	<input type="text" value="110.00"/>	%	<input type="checkbox"/>	(253.00V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Under voltage	Manual	<input type="text" value="85.00"/>	%	<input type="checkbox"/>	(195.50V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Voltage outage	Manual	<input type="text" value="5.00"/>	%	<input type="checkbox"/>	(11.50V)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(4.60V)
Rapid voltage change	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	
Over current	Manual	<input type="text" value="110.00"/>	%	<input type="checkbox"/>	(5.50A)
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	(0.10A)
Over frequency	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	
Under frequency	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	
Frequency change	Off	<input type="text" value="0.00"/>	%	<input type="checkbox"/>	
Hysteresis		<input type="text" value="2.00"/>	%	<input type="checkbox"/>	

"Events/auxiliary input" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Selection list and input field <i>Overvoltage</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) ---- Input field: -1.0 ... 1000000.0	_U_EVT_MAX[1]	6735 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_U_EVT_MAX_HYST[1]	13459 - float
Selection list and input field <i>Undervoltage</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) ---- Input field: -1.0 ... 1000000.0	_U_EVT_MIN[1]	6739 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_U_EVT_MIN_HYST[1]	13463 - float

Tab. "Auxiliary input" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list and input field <i>Voltage inter- ruption</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_OFF[1]	6743 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_U_EVT_OFF_HYST[1]	13467 - float
Selection list and input field <i>Rapid Voltage Changes (RVC)</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000000.0	_U_EVT_QUICK[1]	19130 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 1000000.0	_U_EVT_QUICK_HYST[1]	19134 - float
Selection list and input field <i>Overcurrent</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 10000.0	_I_EVT_MAX[1]	6731 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 10000.0	_I_EVT_MAX_HYST[1]	13455 - float
Selection list and input field <i>Overfrequency</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_MAX[1]	13762 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_MAX_HYST[1]	13774 - float
Selection list and input field <i>Underfrequency</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_MIN [1]	13766 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_MIN_HYST [1]	13778 - float
Selection list and input field <i>Frequency change</i>	See tab. Main input (LN) control elements	%	Selection list: - Off (value = -1) - Manual (use input field) --- Input field: -1.0 ... 1000.0	_FREQ_EVT_DT[1]	13770 - float
Input field <i>Hysteresis</i>		%	Input field: -1.0 ... 100.0	_FREQ_EVT_DT_HYST[1]	13782 - float

Tab. "Auxiliary input" control elements

4.7.4 The hysteresis for events

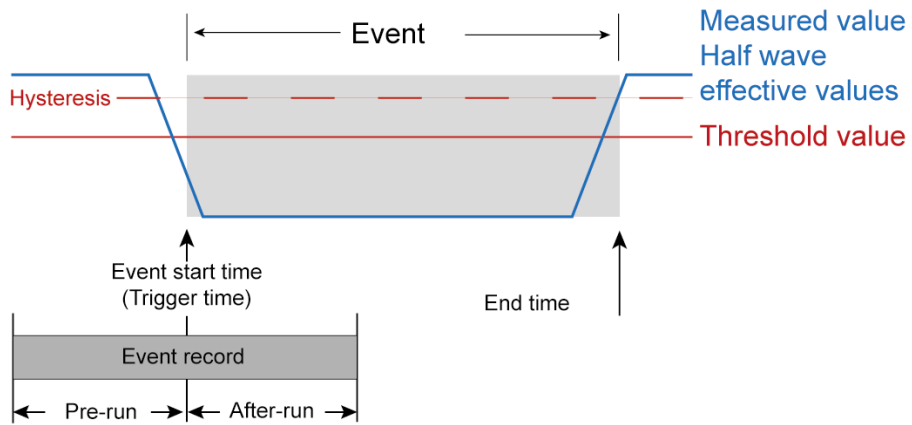


Fig. Hysteresis for events

4.8 Event trigger of the UMG 512-PRO (from firmware version 5.023)

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For more information and explanations of the "Event triggers", please refer to the document "Energy Supply Quality Characteristics – Power Quality Solutions from Janitza" and to www.janitza.de.

Event and Transient recording format

IMPORTANT: When changing the recording format existing events and transients are being deleted!

standard GridVis format
 Comtrade format

changing the recording format is available on online devices with firmware 5.023 or higher

Active Power (Sum L1-L3)

active ●

Threshold W ●

Hysteresis absolute W ●

Apparent Power (Sum L1-L3)

active ●

Threshold VA ●

Hysteresis absolute VA ●

Voltage THD

active ●

Threshold % ●

Hysteresis absolute % ●

Voltage Unbalance

active ●

Threshold % ●

Hysteresis absolute % ●

"Events/main input (LN)" control elements

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The "GridVis Standard Format" is a proprietary recording format from Janitza. More detailed information can be found in the functional description "UMG 512-PRO – File structure for device recording".

Trigger ... an impulse that triggers an operation

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Radio button <i>Recording format</i>	Configuration options: - GridVis Standard Format - Comtrade format Attention: If the recording format is changed, the meter deletes all event and transient recordings!	-	-	_INIT_CUSTOMKEY	14091 - int
Active power (sum L1..L3) checkbox <i>active</i>	To record "Active power (Sum L1..L3) events", enable the checkbox. If the checkbox is disabled, the active power threshold and the active power hysteresis are set to -1.	-	-	-	-
Active power (sum L1..L3) input field and selection list <i>Threshold</i>	Value of the active power (kW) measured over 10 cycles in a 50 Hz system or over 12 cycles in a 60 Hz system, starting at the voltage zero crossing of the fundamental oscillation and again after each half-wave. The active power (sum L1..L3) event starts when the measured active power is greater than or equal to the threshold value and ends when the measured active power falls below the hysteresis (see example <i>chap. „4.8.4 Functionality of the event triggers in the GridVis® software.“ on page 31</i>).	W	Input field: -1.0...1000000000.0 -1 = disabled Selection list <i>Unit</i>	_REAL_P_SUM_TRNS_ ACT[0]	15024 - float
Active power (sum L1..L3) input field and selection list <i>Hysteresis absolute</i>		W	Input field: -1.0...1000000000.0 -1 = disabled Selection list <i>Unit</i>	_REAL_P_SUM_TRNS_ DEACT[0]	15028 - float
Apparent power (sum L1..L3) checkbox <i>active</i>	To record "Apparent power (Sum L1..L3) events", enable the checkbox. If the checkbox is disabled, the apparent power threshold and the apparent power hysteresis are set to -1.	-	-	-	-
Apparent power (sum L1..L3) input field and selection list <i>Threshold</i>	Value of the apparent power (kVA) measured over 10 cycles in a 50 Hz system or over 12 cycles in a 60 Hz system, starting at the voltage zero crossing of the fundamental oscillation and again after each half-wave. The apparent power (sum L1..L3) event starts when the measured apparent power is greater than or equal to the threshold value and ends when the measured active power falls below the hysteresis.	VA	Input field: -1.0...1000000000.0 -1 = disabled Selection list <i>Unit</i>	_APP_P_SUM_TRNS_ ACT[0]	15032 - float
Apparent power (sum L1..L3) input field and selection list <i>Hysteresis absolute</i>		VA	Input field: -1.0...1000000000.0 -1 = disabled Selection list <i>Unit</i>	_APP_P_SUM_TRNS_ DEACT[0]	15036 - float
Voltage THD checkbox <i>active</i>	To capture events of the total harmonic distortion for the voltage ("Voltage THD" events), enable the checkbox. If the checkbox is disabled, the voltage THD threshold value and the hysteresis are set to -1.	-	-	-	-
Voltage THD input field <i>Threshold</i>	The voltage THD event starts when the calculated THD(U) value is greater than or equal to the threshold value and ends when the THD(U) value falls below the hysteresis.	%	Input field: -1.0...100.0 -1 = disabled Selection list <i>Unit</i>	_U_THD_TRNS_ACT	15016 - float
Voltage THD input field <i>Hys- teresis absolute</i>		%	Input field: -1.0...100.0 -1 = disabled Selection list <i>Unit</i>	_U_THD_TRNS_ DEACT	15018 - float
Voltage unbal- ance checkbox <i>active</i>	To capture events of voltage unbalance (voltage imbalance), enable the checkbox. If the checkbox is disabled, the voltage unbalance threshold and the hysteresis are set to -1.	-	-	-	-
Voltage unbal- ance input field <i>Threshold</i>	The voltage unbalance event (voltage imbalance) starts when the calculated voltage unbalance value is greater than or equal to the threshold value and ends when the voltage unbalance value falls below the hysteresis. The voltage unbalance event concerns multiphase systems only (e.g. 3-phase).	%	Input field: -1.0...100.0 -1 = disabled Selection list <i>Unit</i>	_U_UNBA_TRNS_ACT	15020 - float
Voltage unbal- ance input field <i>Hysteresis absolute</i>		%	Input field: -1.0...100.0 -1 = disabled Selection list <i>Unit</i>	_U_UNBA_TRNS_ DEACT	15022 - float

Tab. "Event trigger" control elements

4.8.1 General description of the "Event Trigger"

The four triggers of the measurement device each have Modbus addresses (see „Tab. “Event trigger” control elements“ on page 25). The Modbus addresses are subdivided into *[triggerName]_act* and *[triggerName]_deact*:

- *[triggerName]_act*:
Sets the limit value for activating the trigger. When this limit value is exceeded, the corresponding trigger is activated and a Comtrade file is saved accordingly.
- *[triggerName]_deact*:
Sets the lower limit value for deactivating the trigger. If a trigger is already active, a new trigger event of the same type will not activate the trigger again until the measured value falls below the lower limit.

4.8.2 Activating the "Event Trigger"

The event trigger and the Comtrade file format functionality are configured in the **Modbus address 14091** - big endian format (high byte first), in 3 ways:

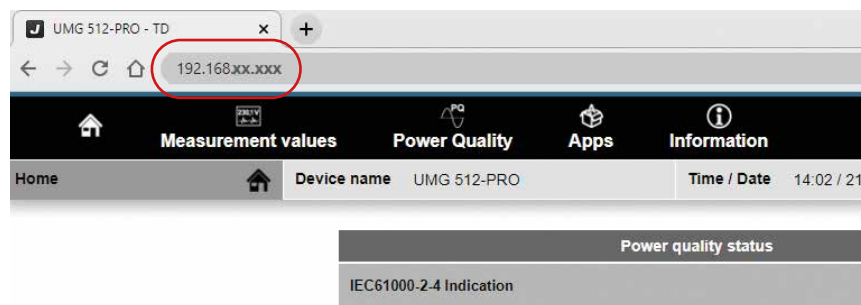
1. **Custom Key "932"**: Enables the event trigger and the Comtrade file format functionality.
2. **Custom Key "0"**: Disables the event trigger and the Comtrade file format functionality.
With this configuration, the UMG 512-PRO reflects the functionality as described in the current manual.

These 3 configuration options (assignment of "Custom Keys") can be made:

- In the Modbus address with an appropriate tool.
- Via the meter display.
- Via the device homepage.

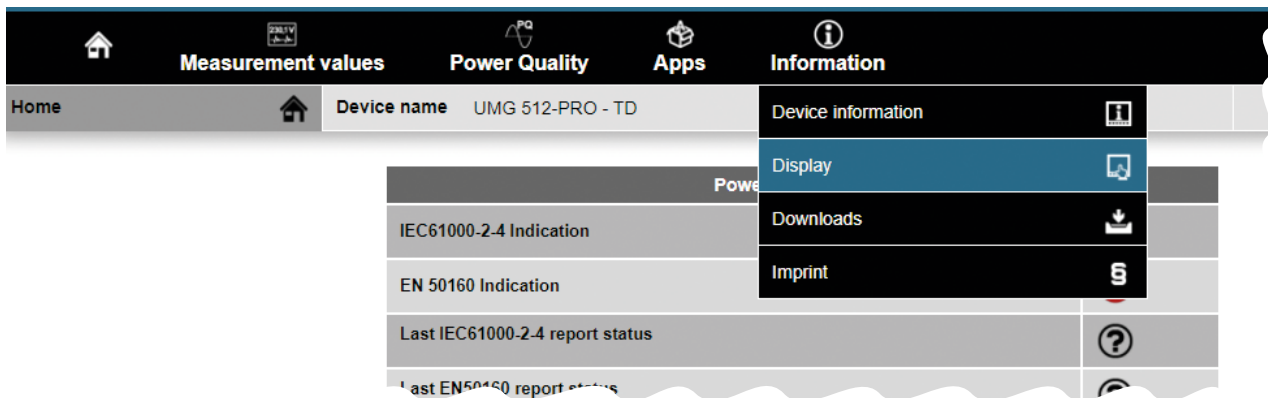
Assignment of the "Custom Key" via the device homepage:

- You can access the device homepage by entering the measurement device IP address in an Internet browser:
- The device homepage of the UMG 512-PRO appears.



Entering the measurement device IP address in an Internet browser

- In the menu bar, click on the entry Information with the mouse pointer.



- In the drop-down menu, click on the entry Display.
- The measurement device display appears in realtime in the window of your Internet browser. This realtime view enables you to control the measurement device with your PC mouse. To do so, click on the control elements of the measurement device with the mouse pointer.

Display

Power Quality Analyser
Class A

UMG 512-PRO

	Spannung	Strom	Wirkleistung	Blindleistung	PF1
L1-N	233 V	0.04 A	4.07 W	+1.12 var	0.96
L2-N	233 V	0.04 A	4.06 W	+1.11 var	0.96
L3-N	233 V	0.04 A	4.06 W	+1.11 var	0.96
L4-N	233 V	0.04 A	12.2 W	+3.35 var	0.96
L1..L3	50.0 Hz	0.12 A	12.2 W	+3.34 var	0.96
Ausgang			Eingang		
config					
1	2	3	4	5	6

Janitza
UMG 512-PRO

Live device overview

On this page you can see an image of the device display. This image matches the device display at all times

By pressing the 6 buttons with your mouse you are able to telecontrol the device.

Help English UMG 512-PRO www.janitza.de © Janitza electronics GmbH

- Use the PC mouse to click button 1 config of the measurement device.
- The Configuration window appears.



- Scroll in the Configuration window with button 3 down to the menu item Extensions and confirm by clicking button 6 enter.
- The Extensions window appears with the menu item Custom Key.



- Scroll in the Extensions window with button 3 down to the menu item Custom Key and confirm by clicking button 6 enter.
- Configure your Custom Key by clicking buttons 2, 3, 4 and 5 and confirm your entry with button 6 enter.

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- Proceed in the same way for the configuration of the custom key directly on the measurement device!
-

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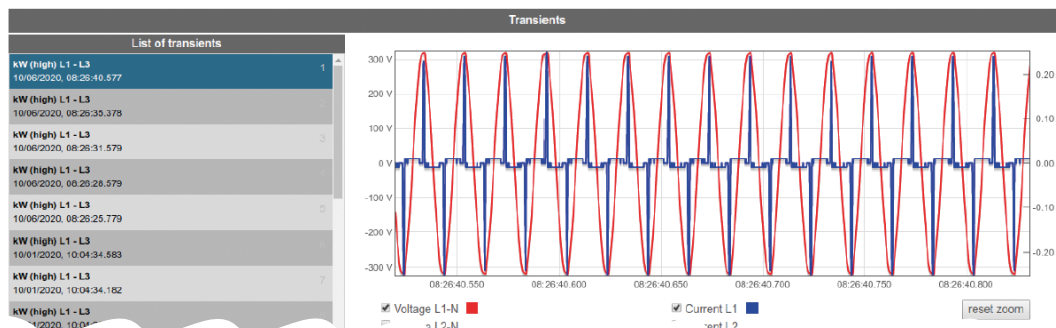
- The event trigger and Comtrade file format function (Custom Key "932") is enabled in the standard version of the meters with serial numbers 52.17.013 and 52.17.014.
- Configuration of the event triggers is only available for the UMG 512-PRO as of firmware 5.023.
- For older UMG 512 devices, please perform a firmware update via the GridVis® software (for help, see the "GridVis® software online help").
- Switching between the GridVis standard format and the Comtrade format works as of software version 8.0.4. For the actual trigger settings, you need at least the GridVis® software version 7.5.22, which you can also use to configure the event triggers (cf chap. „4.8 Event trigger of the UMG 512-PRO (from firmware version 5.023)“ on page 24).

Display of the transients triggered by the event triggers on the device homepage:

- You can access the display of transients on the device homepage of the UMG 512-PRO as described above by entering the measurement device IP address in an Internet browser.
- Then click with the PC mouse on the submenu item Transients in the Measurement values menu:

Live values		
Phase	Voltage (LN)	Current
L1	231.4 V	0.0 A
L2	231.6 V	0.0 A
L3	231.3 V	0.0 A

- The Transients window appears in your Internet browser. Clicking on the corresponding transient entry allows the transients triggered by the event triggers to be evaluated graphically and in tabular form.



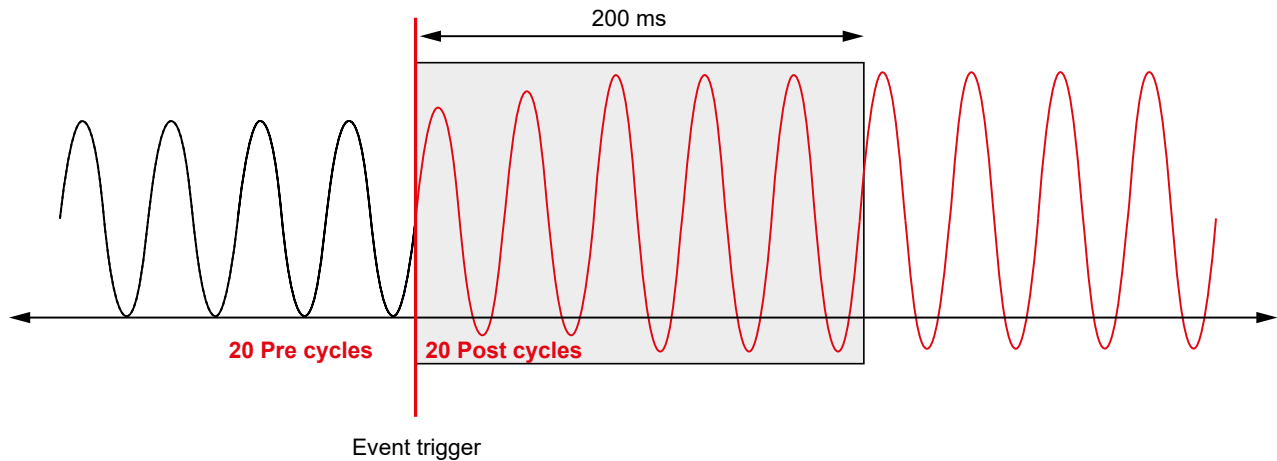
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- Up to 32 transients including the transients triggered by the event triggers can be listed in the transients list on the device homepage.
- Please note: The device homepage can display a maximum of 12,000 samples. The recorded Comtrade files can contain more than 12,000 samples depending on the device settings.

4.8.3 Technical description of the "Event Trigger"

The trigger recording in the meter takes place with a time interval of 200 ms between the measured values (refresh time). The number of cycles is the number of periods for measuring the RMS value (10 cycles at 50 Hz and 12 cycles at 60 Hz).

The refresh time of 200 ms is to be understood as follows:

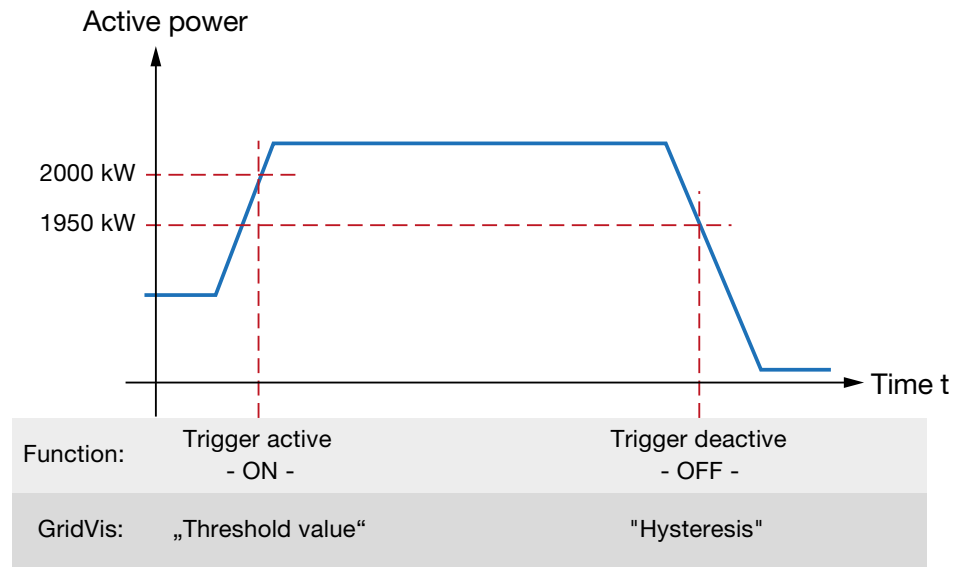


Sketch: Event trigger recording based on a "voltage unbalance"

- The meter calculates an average value within a 200 ms window (e.g. voltage unbalance - for simplicity the sketch above shows the voltage from one phase).
- This average value compares the measurement device with the limit value configured by the user (setting in the GridVis® software).
- If the measured value exceeds the limit value, the corresponding event trigger is activated.
- The measurement device positions the event trigger at the beginning of the 200 ms window (start of the event).
- Event recording is performed with 12 pre-cycles and 20 post-cycles (setting in the GridVis® software).
- This ensures reliable recording of the trigger event by the measurement device.

4.8.4 Functionality of the event triggers in the GridVis® software.

The following graphic shows how the event trigger works based on the example of "Active power":



Event trigger functionality based on the example of "active power"

4.9 Event recording

When an event occurs, the meter captures half-waves (half-cycles) or data points around the respective event trigger (pulses which trigger events). A distinction is made between pre-recordings and post-recordings. These recordings occur at the start and end of an event. The event recordings must be configured in the Grid-Vis® software.

Recording Length (Recording of half wave values triggered at event's start)

allow recording ●

Pretrigger half wave ●

This equals 5,000.0 ms

Posttrigger half wave ●

This equals 25,000.0 ms

Recording Length (Recording of half wave values triggered at event's stop)

allow recording ●

Pretrigger half wave ●

This equals 5,000.0 ms

Posttrigger half wave ●

This equals 25,000.0 ms

Recording Length (Recording of waveform triggered at event's start)

allow recording ●

Pretrigger points ●

This equals 19.5 ms

Posttrigger points ●

This equals 58.5 ms

Recording Length (Recording of waveform triggered at event's stop)

allow recording ●

Pretrigger points ●

This equals 19.5 ms

Posttrigger points ●

This equals 58.5 ms

"Event recording" control elements

Default settings for event recording times (trigger recording times - half cycles or data points):

Item	Parameters	Pre-recording (time at f = 50 Hz/60 Hz)	Post-recording (time at f = 50 Hz/60 Hz)
1.	Recording of half-wave RMS values at event start (Event recording: lead time/lag time)	500 half cycles* (5 s / 4.165 s)	2500 half cycles (25 s / 20.825 s)
2.	Recording of half-wave RMS values at event end (Event recording: lead time/lag time)	500 half cycles (5 s / 4.165 s)	2500 half cycles (25 s / 20.825 s)
3.	Recording of the waveform at event start (event recording: lead time/ lag time)	500 data points (19.5 ms)	1500 data points (58.5 ms)
4.	Recording of the waveform at the end of the event (Event recording: lead time/lag time)	500 data points (19.5 ms)	1500 data points (58.5 ms)

Table with default settings for the event recording times in the GridVis® software.

* ... Half cycles = half-waves

The maximum event recording times (trigger recording times - half cycles or data points):

Item	Parameters	Maximum Pre-recording (time at f = 50 Hz/60 Hz)	Maximum Post-recording (time at f = 50 Hz/60 Hz)
1.	Recording of half-wave RMS values at event start (Event recording: lead time/lag time)	6144 half cycles (61.44 s / 51.18 s)	61440 half cycles (614.4 s / 511.8 s)
2.	Recording of half-wave RMS values at event end (Event recording: lead time/lag time)	6144 half cycles (61.44 s / 51.18 s)	61440 half cycles (614.4 s / 511.8 s)
3.	Recording of the waveform at event start (event recording: lead time/ lag time)	65536 data points (2555 ms)	65536 data points (2555 ms)
4.	Recording of the waveform at the end of the event (Event recording: lead time/lag time)	65536 data points (2555 ms)	65536 data points (2555 ms)

Table with maximum settings for the event recording times in the GridVis® software.

At f = 50 Hz; 8,000 data points means 8,000 samples/512 samples per cycle = 15.6 half cycles

At f = 60 Hz; 8,000 data points means 8,000 samples/427 samples per cycle = 18.7 half cycles

Configuration of the recording length of half-wave RMS values at **Event start** in the GridVis® software (cf. table "Event recording" control elements):

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Allow recording Checkbox <i>active</i>	Selecting the checkbox enables recording of half-wave RMS values at the event start. If the checkbox is not selected, the values for lead time and lag time are set to "0" (disabled).	-	-	-	-
Input field <i>Pretrigger</i> half-wave	- Number of half-waves recorded by the meter before the trigger time at the event start. - Automatic display of half-waves in s.	Half-waves + s	0 = disabled 0 ... 6144	_EVT_VAL_PRE	6916 - int
Input field <i>Posttrigger</i> half-wave	- Number of half-waves recorded by the meter after the trigger time at the event start. - Automatic display of half-waves in s.	Half-waves + s	0 = disabled 0 ... 61440	_EVT_VAL_POST	6918 - int

Tab. "Event recording" control elements at event start for recording half-wave RMS values.

Configuration of the recording length of half-wave RMS values at **Event end**:

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Allow recording Checkbox <i>active</i>	Selecting the checkbox enables the recording of half-wave RMS values at the end of the event. If the checkbox is not selected, the values for pretrigger and posttrigger are set to "0" (disabled).	-	-	-	-
Input field <i>Pretrigger</i> half-wave	- Number of half-waves recorded by the meter before the trigger time at the end of the event. - Automatic display of half-waves in s.	Half-waves + s	0 = disabled 0 ... 6144	_EVT_STOP_PRE	13939 - int
Input field <i>Posttrigger</i> half-wave	- Number of half-waves recorded by the meter after the trigger time at the end of the event. - Automatic conversion and display of half-waves in s.	Half-waves + s	0 = disabled 0 ... 61440	_EVT_STOP_POST	13941 - int

Tab. "Event recording" control elements at event end for recording half-wave RMS values.

Configuration of the recording length of the waveform at **Event start**

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Allow recording Checkbox <i>active</i>	Selecting the checkbox enables the recording of the waveform at the start of the event. If the checkbox is not selected, the values for pretrigger and posttrigger are set to "0" (disabled).	-	-	-	-
Input field <i>Pretrigger</i> points	- Number of data points recorded by the meter before the trigger time at the event start. - Automatic display of data points in s.	Data points + s	0 = disabled 0 ... 65536	_WAVE_START_PRE	6910 - int
Input field <i>Posttrigger</i> points	- Number of data points recorded by the meter after the trigger time at the event start. - Automatic display of data points in s.	Data points + s	0 = disabled 0 ... 65536	_WAVE_START_POST	6912 - int

Tab. "Event recording" control elements at event start for recording the waveform.

Configuration of the recording length of the waveform at **Event end**:

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Allow recording Checkbox <i>active</i>	Selecting the checkbox enables recording of the waveform at the end of the event. If the checkbox is not selected, the values for lead time and lag time are set to "0" (disabled).	-	-	-	-
Input field <i>Pretrigger</i> points	- Number of data points recorded by the meter before the trigger time at the end of the event. - Automatic display of data points in s.	Data points + s	0 = disabled 0 ... 65536	_WAVE_STOP_PRE	14093 - int
Input field <i>Posttrigger</i> points	- Number of data points recorded by the meter after the trigger time at the end of the event. - Automatic display of data points in s.	Data points + s	0 = disabled 0 ... 65536	_WAVE_STOP_POST	14095 - int

Tab. "Event recording" control elements at event end for recording the waveform.

4.9.1 Example of event recording

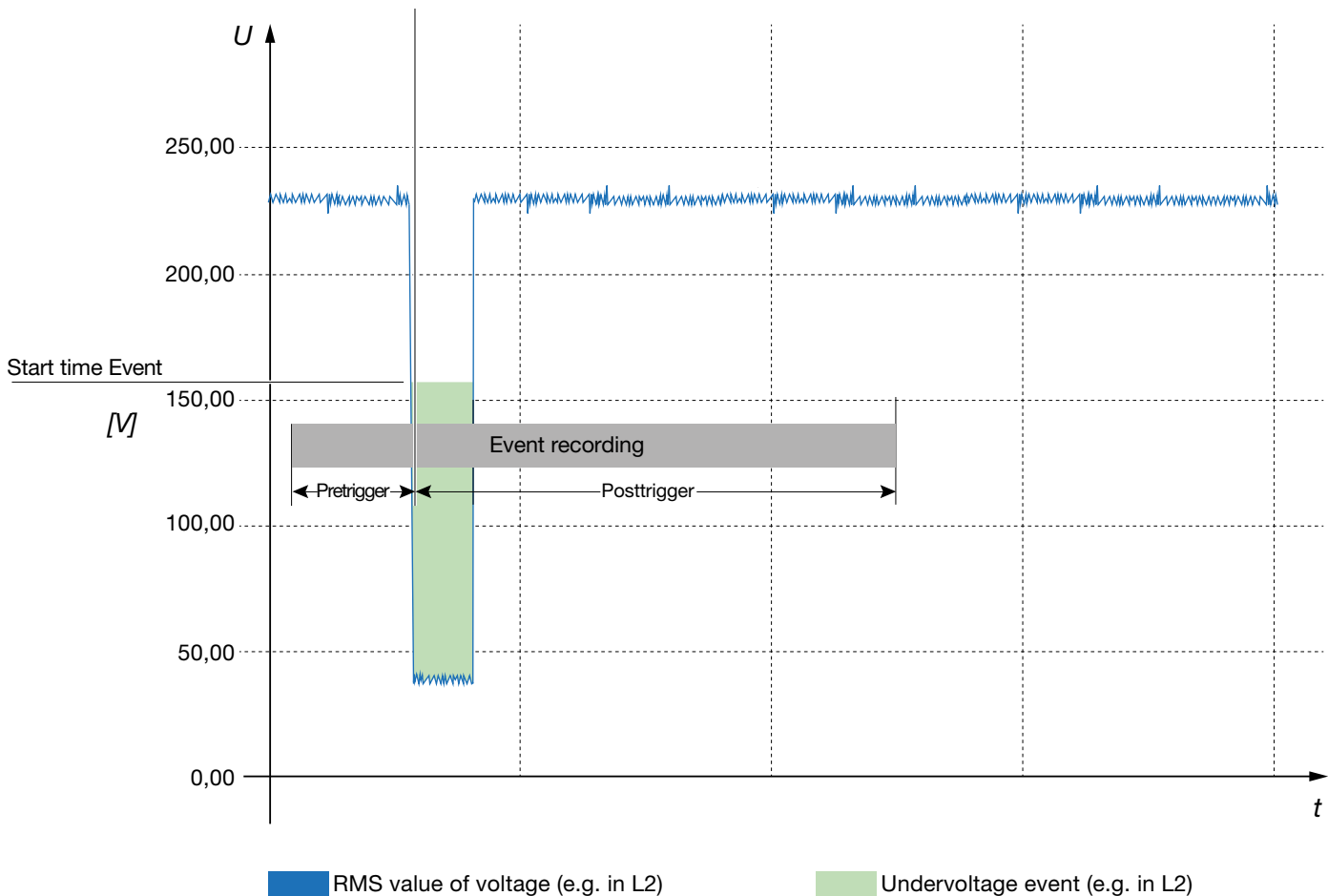


Fig. Example of event recording based on voltage L2

4.10 Device-off event

The following requirements must be met to configure a device-off event:

- Your measurement device must have at least firmware version 2.054!
- Your measurement device must be supplied with power by a UPS (uninterruptible power supply).

The measurement device records a device-off event when the voltage of a monitored phase (configurable under *Recording mode*) falls below the *Threshold*.

The device-off event starts after the *Response delay* and ends when the voltage again rises above the *Threshold*.

Only for devices with firmware at least 2.054!

For using this feature the power supply of the measuring device should be done by an uninterrupted power supply unit!
 If the voltage of the monitored line drops below the trigger level for at least the given response delay time a device-off event will be recorded!
 The event will start at time where the response delay elapsed and ends at time of power recovery!

Recording mode:

Response delay: seconds

Trigger level: V

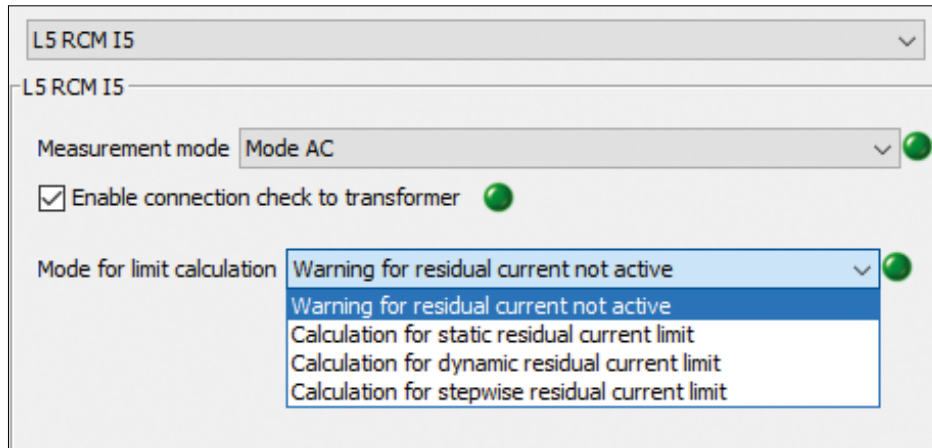
"Device-off event" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Recording mode selection list	Selection of the phase to be monitored (L1, L2, L3, L4 or Recording of device-off events disabled)	-	Selection list: - Off (value = -1) - Monitored phase L1 (value = 0) - Monitored phase L2 (value = 1) - Monitored phase L3 (value = 2) - Monitored phase L4 (value = 3)	_BLACKOUT_EVT_PHASE	13935 - short
Input field Response delay	Time for which the voltage of a given phase is allowed to fall below the threshold value. After this time (Response delay), the meter records a device-off event.	s	1 ... 3600	_BLACKOUT_EVT_DELAY	13936 - short
Input field Threshold	Threshold at which the device-off event occurs. The Threshold must be undershot for the duration of the Response delay time that is set.	V	50.0 ... 100000000.0	_BLACKOUT_EVT_LEVEL	13937 - float

Tab. "Device-off event" control elements

4.11 RCM settings

The meter's RCM settings are used to monitor the residual current in your electrical system (Residual Current Monitoring). Configure the RCM connections I5 (L5) and I6 (L6) of the meter in the GridVis® software as follows:



"RCM settings" control elements

	Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Selection list L5 RCM I5	Selection list <i>Measuring mode</i>	<i>Configure Mode AC.</i>	-	-	-	-
	Checkbox <i>Check current transformer connection</i>	When this checkbox is enabled, the meter checks the cable connection to the current transformer (cable break detection).	-	0 = disabled 1 = enabled	_IDIFF_MODE [0]	13797 - int
	Selection list <i>Mode for limit calculation</i>	Choice between 3 types of limit value calculation for L5: - Static limit value calculation. - Dynamic limit value calculation. - Stepwise limit value calculation.	-	Selection list: - Inactive (value = 0) - Static (value = 1) - Dynamic (value = 2) - Stepwise (value = 3)	_COMP_DIFF_TYPE0	13811 - short
Selection list L6 RCM I6	Selection list <i>Measuring mode</i>	<i>Configure Mode AC.</i>	-	-	-	-
	Checkbox <i>Check current transformer connection</i>	When this checkbox is enabled, the meter checks the cable connection to the current transformer (cable break detection).	-	0 = disabled 1 = enabled	_IDIFF_MODE [1]	13799 - int
	Selection list <i>Mode for limit calculation</i>	Choice between 3 types of limit value calculation for L6: - Static limit value calculation. - Dynamic limit value calculation. - Stepwise limit value calculation.	-	Selection list: - Inactive (value = 0) - Static (value = 1) - Dynamic (value = 2) - Stepwise (value = 3)	_COMP_DIFF_TYPE1	13868 - float

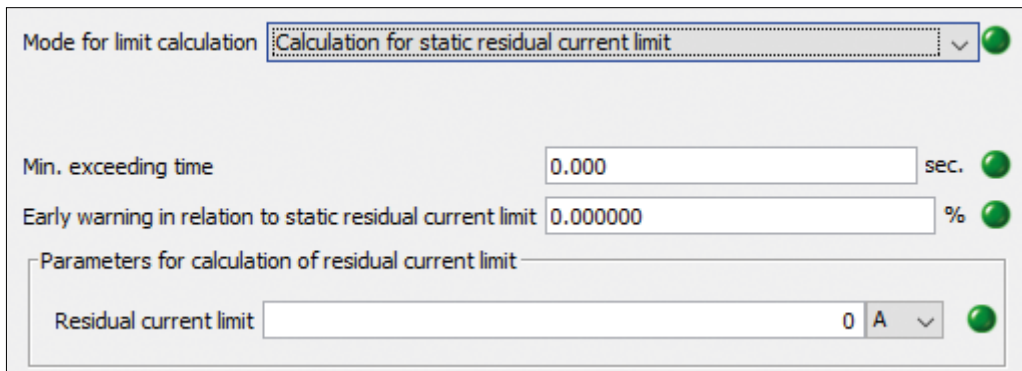
Tab. "RCM settings" control elements

i INFORMATION

Detailed information and explanations of RCM settings can be found in the meter usage information and at www.janitza.de.

4.11.1 Calculation of the static residual current limit ($_comp_diff_type0/1 = 1$)

The static limit value calculation sets a constant limit value. If this limit value is exceeded, a limit violation occurs.



"RCM settings – Calculation of the static residual current limit value" control elements

	Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
	Selection list <i>Mode for limit calculation</i>	The <i>Calculation of the static residual current limit</i> (constant value) is active.	-	Static (value = 1)	$_COMP_DIFF_TYPE0$ $_COMP_DIFF_TYPE1$	13811 - short 13868 - short
Selection list L5 RCM I5	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time (timer), the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s		$_COMP_DIFF_MIN_TIME0$	13866 - float
	Input field <i>Early warning in relation to static residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit), the meter displays a warning.	%		$_COMP_DIFF_WARNLEV-EL0$	13822 - float
	Input field and selection list <i>Residual current limit value</i>	If a measured residual current exceeds the residual current limit value, the meter indicates an overcurrent violation.	A		$_COMP_DIFF_CUR_THRESHOLD0$	13864 - float
Selection list L6 RCM I6	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time, the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s		$_COMP_DIFF_MIN_TIME1$	13923 - float
	Input field <i>Early warning in relation to static residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit), the meter displays a warning.	%		$_COMP_DIFF_WARNLEV-EL1$	13879 - float
	Input field and selection list <i>Residual current limit value</i>	If a measured residual current exceeds the residual current limit value, the meter indicates an overcurrent violation.	A		$_COMP_DIFF_CUR_THRESHOLD1$	13921 - float

Tab. "RCM settings – Calculation of the static residual current threshold value" control elements

Example graph

The following example graph explains the residual current measurement with a static limit value calculation:
Residual current limit value = 300 mA - warning level (in %).

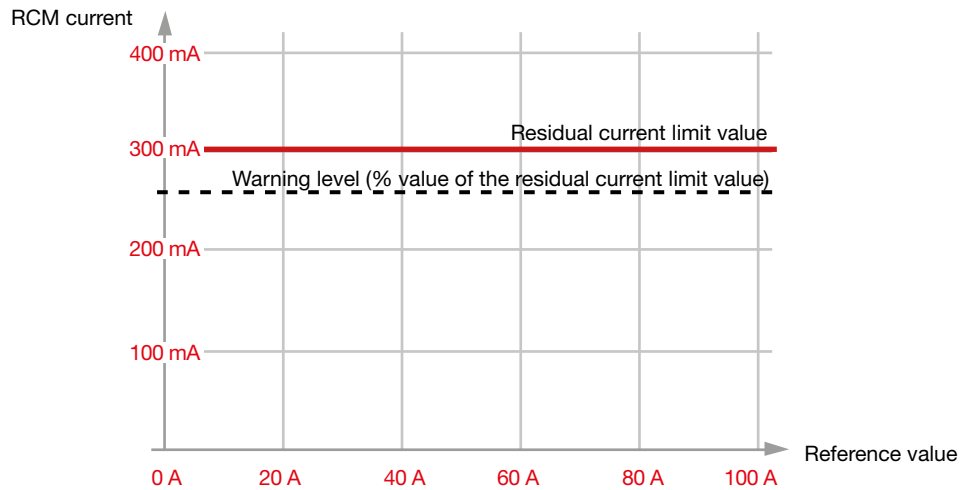
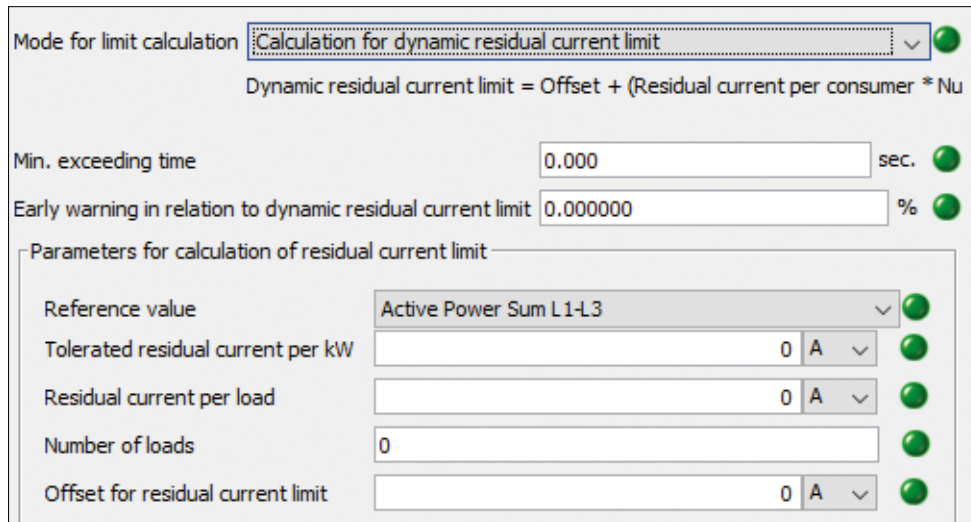


Fig. Example graph, "Calculation of the static residual current limit value".

4.11.2 Calculation of the dynamic residual current limit value ($_comp_diff_type0/1 = 2$)

In dependence on a reference value, the dynamic residual current limit value for violations changes continuously and with it the respective warning. The respective limit value is calculated from the reference value, multiplied by a scaling factor, plus a static offset.



"RCM settings – Calculation of the dynamic residual current limit" control elements

Dynamic residual current limit value =
 $RefValue * _comp_diff_cur_per0 + (_comp_diff_dev_cnt0 * _comp_diff_per_dev0) + _comp_diff_cur_offset0$

(Dynamic) warning level =
 $[RefValue * _comp_diff_cur_per0 + (_comp_diff_dev_cnt0 * _comp_diff_per_dev0) + _comp_diff_cur_offset0] * _comp_diff_warnlevel0$

Example graph

The example graph for the dynamic limit value shows the relationship between the residual current limit value and the reference value (e.g. "Active power") with the following settings:
 Reference value: Active power in kW - scaling: 10 mA / kW - Offset for residual current measurement: 20 mA

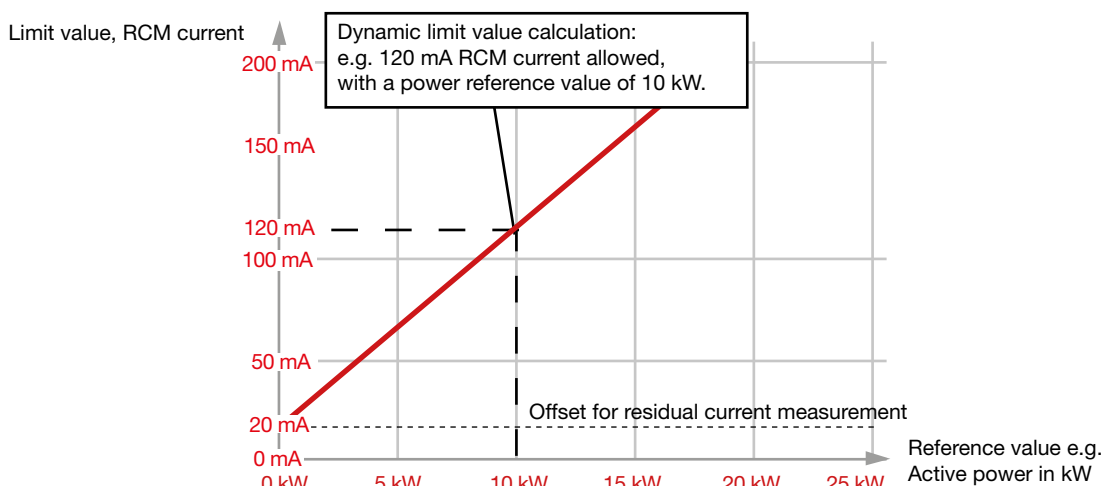


Fig. Example graph, "Calculation of the dynamic residual current limit".

	Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
	Selection list <i>Mode for limit calculation</i>	<i>Calculation of the dynamic residual current limit.</i>	-	Dynamic (value = 2)	_COMP_DIFF_TYPE0 _COMP_DIFF_TYPE1	13811 - short 13868 - short
Selection list L5 RCM/5	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time, the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s	0.0 ... 32000.0	_COMP_DIFF_MIN_TIME0	13866 - float
	Input field <i>Early warning in relation to dynamic residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit value), the meter displays a warning.	%	0.0 ... 32000.0	_COMP_DIFF_WARN-LEVEL0	13822 - float
	Selection list <i>Reference value</i>	Type of value used by the meter to calculate the dynamic part of the residual current limit.	-	- Active power sum L1 .. L3 (value = 0) - Active power sum L1 .. L4 (value = 1) - Apparent power sum L1 .. L3 (value = 2) - Apparent power sum L1 .. L4 (value = 3)	_COMP_DIFF_REF_ADDR0	13812 - ushort
	Input field and selection list <i>Tolerated residual current per kW/kVA</i>	Residual current per kW/kVA of the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_CUR_PER0	13816 - float
	Input field and selection list <i>Residual current per load</i>	The meter adds this value to the residual current limit value for each load.	A	0.0 ... 32000.0	_COMP_DIFF_PER_DEV0	13813 - float
	Selection list <i>Number of loads</i>	Number of dynamic residual current limit values added per consumer/load.	-	0.0 ... 32000.0	_COMP_DIFF_DEV_CNT0	13815 - short
	Input field and selection list <i>Offset for residual current limit</i>	Offset (static component) of the residual current limit value.	A	0.0 ... 32000.0	_COMP_DIFF_CUR_OFFSET0	13818 - float
Selection list L6 RCM/6	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time, the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s	0.0 ... 32000.0	_COMP_DIFF_MIN_TIME1	13923 - float
	Input field <i>Early warning in relation to dynamic residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit value), the meter displays a warning.	%	0.0 ... 32000.0	_COMP_DIFF_WARN-LEVEL1	13879 - float
	Selection list <i>Reference value</i>	Type of value used by the meter to calculate the dynamic part of the residual current limit.	-	- Active power sum L1..L3 (value = 0) - Active power sum L1..L4 (value = 1) - Apparent power sum L1..L3 (value = 2) - Apparent power sum L1..L4 (value = 3)	_COMP_DIFF_REF_ADDR1	13869 - ushort
	Input field and selection list <i>Tolerated residual current per kW/kVA</i>	Residual current per kW/kVA of the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_CUR_PER1	13873 - float
	Input field and selection list <i>Residual current per load</i>	The meter adds this value to the residual current limit value for each load.	A	0.0 ... 32000.0	_COMP_DIFF_PER_DEV1	13870 - float
	Selection list <i>Number of loads</i>	Number of dynamic residual current limit values added per consumer/load.	-	0.0 ... 32000.0	_COMP_DIFF_DEV_CNT1	13872 - short
Input field and selection list <i>Offset for residual current limit</i>	Offset (static component) of the residual current limit value.	A	0.0 ... 32000.0	_COMP_DIFF_CUR_OFFSET1	13875 - float	

Tab. "RCM settings – Calculation of the static residual current threshold value" control elements

4.11.3 Calculation of the stepwise residual current limit value ($_comp_diff_type0/1 = 3$)

In dependence on a reference value, the limit value for violations changes stepwise and with it the respective warning. Individual limit values can be defined for up to 10 ascending thresholds of the reference value (power levels). The respective limit values are calculated from the static offset plus the threshold offset of the highest threshold value exceeded by the reference value.

Mode for limit calculation: Calculation for stepwise residual current limit

Min. exceeding time: 0.000000 sec.

Early warning in relation to step wise residual current limit: 0.000000 %

Parameters for calculation of residual current limit

Reference value: Active Power Sum L1-L3

Step no.	Power stage	Threshold for power stage
0	0.000000 kW	0 A
1	0.000000 kW	0 A
2	0.000000 kW	0 A
3	0.000000 kW	0 A
4	0.000000 kW	0 A
5	0.000000 kW	0 A
6	0.000000 kW	0 A
7	0.000000 kW	0 A
8	0.000000 kW	0 A
9	0.000000 kW	0 A

"RCM settings – Calculation of the stepwise residual current limit" control elements

Example graph

The example graph shows the stepwise increase of the residual current limit values as a function of the reference value "Active power" (of the system) with the following power levels (steps):

- Reference value: Active power in kW.
- Variable residual current limit value per power level.

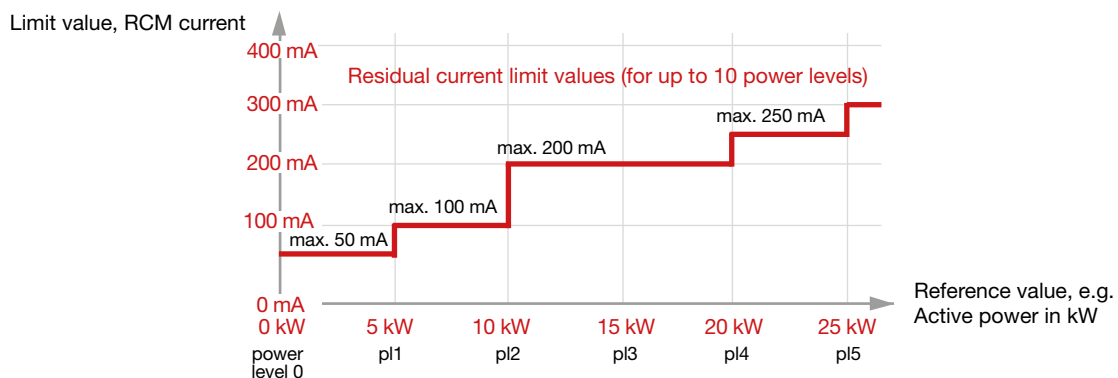


Fig. Example graph, "Calculation of the stepwise residual current limit value".

	Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
	Selection list <i>Mode for limit calculation</i>	<i>Calculation of the stepwise residual current limit.</i>	-	Stepwise (value = 3)	_COMP_DIFF_TYPE0 _COMP_DIFF_TYPE1	13811 - short 13868 - short
	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time, the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s	0.0 ... 32000.0	_COMP_DIFF_MIN_TIME0	13866 - float
	Input field <i>Early warning in relation to stepwise residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit value), the meter displays a warning.	%	0.0 ... 32000.0	_COMP_DIFF_WARN-LEVEL0	13822 - float
	Selection list <i>Reference value</i>	Type of value used by the meter to calculate the stepwise residual current limit value.	-	- Active power sum L1 .. L3 (value = 0) - Active power sum L1 .. L4 (value = 1) - Apparent power sum L1 .. L3 (value = 2) - Apparent power sum L1 .. L4 (value = 3)	_COMP_DIFF_REF_ADDR0	13812 - ushort
	Step number 0 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[0]	13844 - float
	Input field <i>Residual current limit value for power level "0" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[0]	13824 - float
	Step number 1 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[1]	13846 - float
	Input field <i>Residual current limit value for power level "1" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[1]	13826 - float
	Step number 2 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[2]	13848 - float
	Input field <i>Residual current limit value for power level "2" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[2]	13828 - float
	Step number 3 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[3]	13850 - float
	Input field <i>Residual current limit value for power level "3" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[3]	13830 - float
	Step number 4 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[4]	13852 - float
	Input field <i>Residual current limit value for power level "4" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[4]	13832 - float
	Step number 5 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[5]	13854 - float
	Input field <i>Residual current limit value for power level "5" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[5]	13834 - float

Tab. "RCM settings – Calculation of the stepwise residual current limit" control elements for **L5 RCM I5**

	Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list L5 RCM I5	Step number 6 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[6]	13856 - float
	Input field <i>Residual current limit value for power level "6"</i> and <i>Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[6]	13836 - float
	Step number 7 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[7]	13858 - float
	Input field <i>Residual current limit value for power level "7"</i> and <i>Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[7]	13838 - float
	Step number 8 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[8]	13860 - float
	Input field <i>Residual current limit value for power level "8"</i> and <i>Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[8]	13840 - float
	Step number 9 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS0[9]	13862 - float
	Input field <i>Residual current limit value for power level "9"</i> and <i>Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD0[9]	13842 - float

Tab. "RCM settings – Calculation of the stepwise residual current limit" control elements for **L5 RCM I5**

	Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
	Selection list <i>Mode for limit calculation</i>	<i>Calculation of the stepwise residual current limit.</i>	-	Stepwise (value = 3)	_COMP_DIFF_TYPE0 _COMP_DIFF_TYPE1	13811 - short 13868 - short
	Input field <i>Minimum exceedance time</i>	If the measured residual current exceeds the residual current limit value for longer than the minimum exceedance time, the meter triggers an alarm. If the residual current falls below the residual current limit value, the timer of the set minimum exceedance time is considered to be reset (does not apply to the warning level).	s	0.0 ... 32000.0	_COMP_DIFF_MIN_TIME1	13923 - float
	Input field <i>Early warning in relation to stepwise residual current limit</i>	If a measured residual current exceeds the warning level (% value of the residual current limit value), the meter displays a warning.	%	0.0 ... 32000.0	_COMP_DIFF_WARN-LEVEL1	13879 - float
	Selection list <i>Reference value</i>	Type of value used by the meter to calculate the stepwise residual current limit value.	-	- Active power sum L1 .. L3 (value = 0) - Active power sum L1 .. L4 (value = 1) - Apparent power sum L1 .. L3 (value = 2) - Apparent power sum L1 .. L4 (value = 3)	_COMP_DIFF_REF_ADDR1	13869 - ushort
	Step number 0 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[0]	13901 - float
	Input field <i>Residual current limit value for power level "0" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[0]	13881 - float
	Step number 1 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[1]	13903 - float
	Input field <i>Residual current limit value for power level "1" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[1]	13883 - float
	Step number 2 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[2]	13905 - float
	Input field <i>Residual current limit value for power level "2" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[2]	13885 - float
	Step number 3 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[3]	13907 - float
	Input field <i>Residual current limit value for power level "3" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[3]	13887 - float
	Step number 4 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[4]	13909 - float
	Input field <i>Residual current limit value for power level "4" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[4]	13889 - float
	Step number 5 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[5]	13911 - float
	Input field <i>Residual current limit value for power level "5" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[5]	13891 - float

Tab. "RCM settings - Calculation of stepwise residual current limit" control elements for **L6 RCM I6**

	Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list L6 RCM I6	Step number 6 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[6]	13913 - float
	Input field <i>Residual current limit value for power level "6" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[6]	13893 - float
	Step number 7 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[7]	13915 - float
	Input field <i>Residual current limit value for power level "7" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[7]	13895 - float
	Step number 8 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[8]	13917 - float
	Input field <i>Residual current limit value for power level "8" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[8]	13897 - float
	Step number 9 and input field <i>Power level</i>	The meter searches for the highest power level set for the reference value.	kW	0.0 ... 32000.0	_COMP_DIFF_STEPS1[9]	13919 - float
	Input field <i>Residual current limit value for power level "9" and Unit selection list</i>	The entered residual current limit value for the power level is used for alarming in dependence on the reference value.	A	0.0 ... 32000.0	_COMP_DIFF_STEP_THRESHOLD1[9]	13899 - float

Tab. "RCM settings - Calculation of stepwise residual current limit" control elements for **L6 RCM I6**

4.12 Transients

If the meter detects a transient, the limit value is automatically increased by 20 V in both automatic and manual mode. This automatic limit value increase subsides within 10 minutes.

When the meter detects a transient, it saves the waveform to a transient file. If another transient is detected within the next 60 seconds, the meter records this transient with 512 data points.

Transient detection in the meter works by taking the difference between the analog-to-digital converter sample of the current period and AD converter sample of the previous period. The result is compared with the static, configured limit value. The "envelope" (sliding window) calculates the limits from the previous period.

The "Automatic" setting for the transient presets is based on empirical values and experimental findings.

The setting of the main input – LN or LL – which serves as a reference for the detection of transients, is configured under Nominal values > Main input (see *chap. „4.5 Nominal values“ on page 14*).

The screenshot displays the configuration interface for transients, organized into four main sections:

- Main input (LN) - Voltage:**
 - Absolute: Manual (dropdown), 150 (input), % (indicator), (487.90V)
 - Slope: Automatic (dropdown), 0 (input), % (indicator)
 - Envelope: Automatic (dropdown), 0 (input), % (indicator)
- Main input (LN) - Current:**
 - Absolute: Off (dropdown), 0 (input), % (indicator)
- Auxiliary input - Voltage:**
 - Absolute: Automatic (dropdown), 0 (input), % (indicator)
 - Slope: Automatic (dropdown), 0 (input), % (indicator)
 - Envelope: Automatic (dropdown), 0 (input), % (indicator)
- Auxiliary input - Current:**
 - Absolute: Off (dropdown), 0 (input), % (indicator)

"Transients" - Main input (LN) / (LL) and auxiliary input control elements

i INFORMATION

Detailed information and explanations on "Transients" can be found in the document "Energy Supply Quality Characteristics" and at www.janitza.de.

	Control element/ function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Main input (LN) or Main input (LL)	Voltage - Selection list <i>Ab- solute</i> and input field <i>Percentage value</i>	If a sampled value exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - the meter calculates the limit value automatically. It is 150% of the current 200 ms RMS value. - Manual - For transient recording, the meter calculates the limit value (in %) from the configured nominal voltage. See document "Energy Supply Quality Characteristics" - chap. "Rapid overvoltage - Absolute mode"	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_U_ABS[0]	6725 - float
	Voltage - Selection list <i>Rapid increase</i> and input field <i>Percentage value</i>	If the difference between two consecutive samples exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - the meter calculates the limit value automatically. It is 12% of the current 200 ms RMS value. - Manual - Transient recording uses the configured limit value (in %). See document "Energy Supply Quality Characteristics" - chap. "Rapid slope dv/dt - Slope mode "	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_DELTA[0]	6717 - float
	Voltage - Selection list <i>En- velope</i> and input field <i>Percentage value</i>	If a sample value exceeds the limit value of the envelope curve, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - The meter calculates the envelope curve automatically. It is ±15% of the nominal voltage. - Manual - Transient recording uses the configured limit value (± in %). See document "Energy Supply Quality Characteristics" - chap. "Sliding window - Envelope curve"	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_ENVELOPE[0]	13097 - float
	Current - Selection list <i>Ab- solute</i> and input field <i>Percentage value</i>	If a sampled value exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Manual - For transient recording, the meter calculates the limit value (in %) from the configured nominal current. See document "Energy Supply Quality Characteristics" - chap. "Rapid overcurrent - Absolute current"	%	Selection list: - Off (value = -1) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_I_ABS[0]	6721 - float

Tab. "Transients" control elements - Main input (LN) / (LL).


	Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Auxiliary input	Voltage - Selection list <i>Absolute</i> and input field <i>Percentage value</i>	If a sampled value exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - the meter calculates the limit value automatically. It is 150% of the current 200 ms RMS value. - Manual - Transient recording uses the configured limit value (in %). See document "Energy Supply Quality Characteristics" - chap. "Rapid overvoltage - Absolute mode"	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_U_ABS[1]	6727 - float
	Voltage - Selection list <i>Rapid increase</i> and input field <i>Percentage value</i>	If the difference between two consecutive samples exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - the meter calculates the limit value automatically. It is 12% of the current 200 ms RMS value. - Manual - Transient recording uses the configured limit value (in %). See document "Energy Supply Quality Characteristics" - chap. "Rapid slope dv/dt - Slope mode"	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_DELTA[1]	6719 - float
	Voltage - Selection list <i>Envelope</i> and input field <i>Percentage value</i>	If a sample value exceeds the limit value of the envelope curve, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Automatic (default setting) - The meter calculates the envelope curve automatically. It is ±15% of the nominal voltage. - Manual - Transient recording uses the configured limit value (± in %). See document "Energy Supply Quality Characteristics" - chap. "Sliding window - Envelope curve"	%	Selection list: - Off (value = -1) - Automatic (value = 0) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_ENVELOPE[1]	13099 - float
	Current - Selection list <i>Absolute</i> and input field <i>Percentage value</i>	If a sampled value exceeds the configured limit value, the meter detects a transient. Configure the following for this case: - Off - transient recording disabled. - Manual - Transient recording uses the configured limit value (in %). See document "Energy Supply Quality Characteristics" - chap. "Rapid overcurrent - Absolute current"	%	Selection list: - Off (value = -1) - Manual (select value > 0) --- Input field: -1.0 ... 1000.0-	_TRNS_I_ABS[1]	6723 - float

Tab. "Transients" control elements - Auxiliary input

4.13 Transient recording

When transients occur, the meter captures data points around the respective transient trigger (pulses which trigger events). A distinction is made between pre-recordings and post-recordings. These recordings are made at the start and end of a transient similar to the event triggers (cf. also *chap. „4.9 Event recording“* on page 32).

Recording length

Pretrigger Points 

This equals 312.000 ms

Posttrigger Points 

This equals 58.500 ms

"Transient recording" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Input field <i>Pretrigger</i> points	- Number of data points recorded by the meter before the trigger time at the start of the transient. - Automatic display of data points in s.	Data points + s	360 ... 8192	_TRNS_PRE	14097 - int
Input field <i>Posttrigger</i> points	- Number of data points recorded by the meter after the trigger time at the start of the transient. - Automatic display of data points in s.	Data points + s	720 ... 320000	_TRNS_POST	14099 - int

Tab. "Transient recording" control elements – Transient trigger

4.14 Averaging time

Configuration of the averaging interval for voltage, current, frequency, power, THD U, THD I and temperature values (period over which the average is measured):

Avg. interval voltage	10 min.	▼	●
Avg. interval current	10 min.	▼	●
Avg. interval frequency	10 min.	▼	●
Avg. interval power	10 min.	▼	●
Avg. interval THD U	10 min.	▼	●
Avg. interval THD I	10 min.	▼	●
Avg. interval temperature	10 min.	▼	●

"Transient recording" control elements

Control element/function	Description	Values	Character/ value range	avg.jas	ModBus address format
Selection list <i>Voltage averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Voltage averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_ULN_AVG_T[0]	5069 - short
				_ULN_AVG_T[1]	5070 - short
				_ULN_AVG_T[2]	5071 - short
				_ULN_AVG_T[3]	5072 - short
				_ULL_AVG_T[0]	5073 - short
				_ULL_AVG_T[1]	5074 - short
				_ULL_AVG_T[2]	5075 - short
				_ULN_CF_AVG_T[0]	5076 - short
				_ULN_CF_AVG_T[1]	5077 - short
				_ULN_CF_AVG_T[2]	5078 - short
				_ULN_CF_AVG_T[3]	5079 - short
				_ULL_CF_AVG_T[0]	5080 - short
				_ULL_CF_AVG_T[1]	5081 - short
				_ULL_CF_AVG_T[2]	5082 - short
				_UN_AVG_T	5083 - short
				_UM_AVG_T	5084 - short
				_UG_AVG_T	5085 - short
_URC_AVG_T[0]	5086 - short				
_URC_AVG_T[1]	5087 - short				
_URC_AVG_T[2]	5088 - short				
_URC_AVG_T[3]	5089 - short				
_ULN_OVER_AVG_T[0]	5098 - short				
_ULN_OVER_AVG_T[1]	5099 - short				

Tab. Control element - "Voltage averaging interval" selection list

Control element/function	Description	Values	Character/ value range	avg.jas	ModBus address format
Selection list <i>Voltage averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Voltage averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_ULN_OVER_AVG_T[2]	5100 - short
				_ULN_OVER_AVG_T[3]	5101 - short
				_ULN_UNDER_AVG_T[0]	5102 - short
				_ULN_UNDER_AVG_T[1]	5103 - short
				_ULN_UNDER_AVG_T[2]	5104 - short
				_ULN_UNDER_AVG_T[3]	5105 - short
				_ULN_NEG_PEAK_AVG_T[0]	5106 - short
				_ULN_NEG_PEAK_AVG_T[1]	5107 - short
				_ULN_NEG_PEAK_AVG_T[2]	5108 - short
				_ULN_NEG_PEAK_AVG_T[3]	5109 - short
				_ULN_POS_PEAK_AVG_T[0]	5110 - short
				_ULN_POS_PEAK_AVG_T[1]	5111 - short
				_ULN_POS_PEAK_AVG_T[2]	5112 - short
				_ULN_POS_PEAK_AVG_T[3]	5113 - short
				_ULN_PEAK_PEAK_AVG_T[0]	5114 - short
				_ULN_PEAK_PEAK_AVG_T[1]	5115 - short
				_ULN_PEAK_PEAK_AVG_T[2]	5116 - short
				_ULN_PEAK_PEAK_AVG_T[3]	5117 - short
				_ULL_OVER_AVG_T[0]	5124 - short
				_ULL_OVER_AVG_T[1]	5125 - short
				_ULL_OVER_AVG_T[2]	5126 - short
				_ULL_UNDER_AVG_T[0]	5127 - short
				_ULL_UNDER_AVG_T[1]	5128 - short
				_ULL_UNDER_AVG_T[2]	5129 - short
				_ULL_NEG_PEAK_AVG_T[0]	5130 - short
				_ULL_NEG_PEAK_AVG_T[1]	5131 - short
				_ULL_NEG_PEAK_AVG_T[2]	5132 - short
				_ULL_POS_PEAK_AVG_T[0]	5133 - short
				_ULL_POS_PEAK_AVG_T[1]	5134 - short
				_ULL_POS_PEAK_AVG_T[2]	5135 - short
				_ULL_PEAK_PEAK_AVG_T[0]	5136 - short
				_ULL_PEAK_PEAK_AVG_T[1]	5137 - short
_ULL_PEAK_PEAK_AVG_T[2]	5138 - short				
_U_STERN_AVG_T	5139 - short				
_U_SYM_AVG_T	5140 - short				
_ULL_RC_AVG_T[0]	5219 - short				
_ULL_RC_AVG_T[1]	5220 - short				
_ULL_RC_AVG_T[2]	5221 - short				
_U_SYM_AVG_T_U0	13121 - short				

Tab. Control element - "Voltage averaging interval" selection list

Control element/function	Description	Values	Character/ value range	avg.jas	ModBus address format
Selection list <i>Current averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Current averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_ILN_AVG_T[0]	5155 - short
				_ILN_AVG_T[1]	5156 - short
				_ILN_AVG_T[2]	5157 - short
				_ILN_AVG_T[3]	5158 - short
				_I_SUM3_AVG_T	5163 - short
				_I_SUM_AVG_T	5164 - short
				_KFACT_AVG_T[0]	5235 - short
				_KFACT_AVG_T[1]	5236 - short
				_KFACT_AVG_T[2]	5237 - short
				_KFACT_AVG_T[3]	5238 - short
				_IN_AVG_T	5179 - short
				_IM_AVG_T	5180 - short
				_IG_AVG_T	5181 - short
				_I_SYM_AVG_T	5182 - short
				_ILN_RC_AVG_T[0]	5215 - short
				_ILN_RC_AVG_T[1]	5216 - short
				_ILN_RC_AVG_T[2]	5217 - short
				_ILN_RC_AVG_T[3]	5218 - short
				_ILN_CF_AVG_T[0]	5175 - short
				_ILN_CF_AVG_T[1]	5176 - short
				_ILN_CF_AVG_T[2]	5177 - short
				_ILN_CF_AVG_T[3]	5178 - short
				_ILN_OVER_AVG_T[0]	5183 - short
				_ILN_OVER_AVG_T[1]	5184 - short
				_ILN_OVER_AVG_T[2]	5185 - short
				_ILN_OVER_AVG_T[3]	5186 - short
				_ILN_UNDER_AVG_T[0]	5187 - short
				_ILN_UNDER_AVG_T[1]	5188 - short
				_ILN_UNDER_AVG_T[2]	5189 - short
				_ILN_UNDER_AVG_T[3]	5190 - short
				_ILN_NEG_PEAK_AVG_T[0]	5191 - short
				_ILN_NEG_PEAK_AVG_T[1]	5192 - short
_ILN_NEG_PEAK_AVG_T[2]	5193 - short				
_ILN_NEG_PEAK_AVG_T[3]	5194 - short				
_ILN_POS_PEAK_AVG_T[0]	5195 - short				
_ILN_POS_PEAK_AVG_T[1]	5196 - short				
_ILN_POS_PEAK_AVG_T[2]	5197 - short				
_ILN_POS_PEAK_AVG_T[3]	5198 - short				
_ILN_PEAK_PEAK_AVG_T[0]	5199 - short				

Tab. Control element - "Current averaging interval" selection list

Control element/function	Description	Values	Character/value range	avg.jas	ModBus address format
Selection list <i>Current averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Current averaging interval</i>	0 = 5 s	0 ... 8	_ILN_PEAK_PEAK_AVG_T[1]	5200 - short
		1 = 10 s		_ILN_PEAK_PEAK_AVG_T[2]	5201 - short
		2 = 15 s		_ILN_PEAK_PEAK_AVG_T[3]	5202 - short
		3 = 30 s			
		4 = 60 s			
		5 = 5 min			
6 = 8 min					
7 = 10 min					
8 = 15 min					

Tab. Control element - "Current averaging interval" selection list

Control element/function	Description	Values	Character/value range	avg.jas	ModBus address format
Selection list <i>Frequency averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Frequency averaging interval</i>	0 = 5 s	0 ... 8	_FREQ_AVG_T	5141 - short
		1 = 10 s		_NORM_FREQ_AVG_T	5142 - short
		2 = 15 s			
		3 = 30 s			
		4 = 60 s			
		5 = 5 min			
		6 = 8 min			
		7 = 10 min			
8 = 15 min					

Tab. Control element - "Frequency averaging interval" selection list

Control element/function	Description	Values	Character/ value range	avg.jas	ModBus address format
Selection list <i>Power averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Power averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_PLN_AVG_T[0]	5143 - short
				_PLN_AVG_T[1]	5144 - short
				_PLN_AVG_T[2]	5145 - short
				_PLN_AVG_T[3]	5146 - short
				_P_SUM3_AVG_T	5153 - short
				_P_SUM_AVG_T	5147 - short
				_QLN_AVG_T[0]	5149 - short
				_QLN_AVG_T[1]	5150 - short
				_QLN_AVG_T[2]	5151 - short
				_QLN_AVG_T[3]	5152 - short
				_Q_SUM3_AVG_T	5154 - short
				_Q_SUM_AVG_T	5148 - short
				_SLN_AVG_T[0]	5159 - short
				_SLN_AVG_T[1]	5160 - short
				_SLN_AVG_T[2]	5161 - short
				_SLN_AVG_T[3]	5162 - short
				_S_SUM3_AVG_T	5165 - short
				_S_SUM_AVG_T	5166 - short
				_PFLN_AVG_T[0]	5227 - short
				_PFLN_AVG_T[1]	5228 - short
_PFLN_AVG_T[2]	5229 - short				
_PFLN_AVG_T[3]	5230 - short				
_DLN_AVG_T[0]	5231 - short				
_DLN_AVG_T[1]	5232 - short				
_DLN_AVG_T[2]	5233 - short				
_DLN_AVG_T[3]	5234 - short				
_S0_POWER_AVG_T[0]	5239 - short				
_S0_POWER_AVG_T[1]	5240 - short				

Tab. Control element - "Power averaging interval" selection list

Control element/function	Description	Values	Character/value range	avg.jas	ModBus address format
Selection list <i>THD U averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>THD U averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_THD_ULN_AVG_T[0]	5090 - short
				_THD_ULN_AVG_T[1]	5091 - short
				_THD_ULN_AVG_T[2]	5092 - short
				_THD_ULN_AVG_T[3]	5093 - short
				_THD_ZLN_AVG_T[0]	5094 - short
				_THD_ZLN_AVG_T[1]	5095 - short
				_THD_ZLN_AVG_T[2]	5096 - short
				_THD_ZLN_AVG_T[3]	5097 - short
				_THD_ULL_AVG_T[0]	5118 - short
				_THD_ULL_AVG_T[1]	5119 - short
				_THD_ULL_AVG_T[2]	5120 - short
				_THD_ZLL_AVG_T[0]	5121 - short
				_THD_ZLL_AVG_T[1]	5122 - short
_THD_ZLL_AVG_T[2]	5123 - short				

Tab. Control element - "THD U averaging interval" selection list

Control element/function	Description	Values	Character/value range	avg.jas	ModBus address format
Selection list <i>THD I averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>THD I averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_THD_IL_AVG_T[0]	5167 - short
				_THD_IL_AVG_T[1]	5168 - short
				_THD_IL_AVG_T[2]	5169 - short
				_THD_IL_AVG_T[3]	5170 - short
				_ZHD_IL_AVG_T[0]	5171 - short
				_ZHD_IL_AVG_T[1]	5172 - short
				_ZHD_IL_AVG_T[2]	5173 - short
				_ZHD_IL_AVG_T[3]	5174 - short

Tab. Control element - "THD I averaging interval" selection list

Control element/function	Description	Values	Character/value range	avg.jas	ModBus address format
Selection list <i>Temperature averaging interval</i>	Configuration of the averaging intervals for the measured values divided into groups - Group <i>Temperature averaging interval</i>	0 = 5 s 1 = 10 s 2 = 15 s 3 = 30 s 4 = 60 s 5 = 5 min 6 = 8 min 7 = 10 min 8 = 15 min	0 ... 8	_TEMPERATUR_AVG_T	5241 - short

Tab. Control element - "Temperature averaging interval" selection list

4.15 Recording configuration

The following applies to the recording configuration of your measurement device in the GridVis® software:

- Use the recording configuration to configure up to 16 recordings or pre-configured profiles, e.g. following
 - EN50160
 - EN50160-2016
 - EN61000-2-4
 - The enhanced quality report
 - The power quality analysis
- A recording can contain a maximum of 1000 values.
- A record contains one measured value or the average value of the measured value.
- Average, minimum and maximum values are formed from the measured values in the measurement period.
- The time configured in the "Time base" determines the measurement period for mean values.
- Measured values are saved after the time set under "Time base" has elapsed.

Recording type	ValuesOverTime	Voltage effective L2 Norm Frequency			
Timebase	10s				
Number recorded values	2				
Recording type	ValuesOverTime	Short term flicker L1 Short term flicker L2 Short term flicker L3 Short term flicker L4			
Timebase	10m				
Number recorded values	4				
Recording type	ValuesOverTime	Long term flicker L1 Long term flicker L2 Long term flicker L3 Long term flicker L4			
Timebase	2h				
Number recorded values	4				
Recording type	ValuesOverTime	Voltage effective L1	Voltage effective L2-L1	THD U L2	THD U L3-L2
Timebase	1m	Voltage effective L2	Voltage effective L3-L2	THD U L3	THD U L1-L3
Number recorded values	190	Voltage effective L3	Voltage effective L1-L3	THD U L4	1.Harmonic Vo
		Voltage effective L4	THD U L1	THD U L2-L1	1.Harmonic Vo
Recording type	ValuesOverTime	Consumed Active Energy L1	Consumed Active Energy Sum L1-L3	Apparent Energy L3	
Timebase	10m	Consumed Active Energy L2	Consumed Active Energy Sum L1-L4	Apparent Energy L4	
Number recorded values	24	Consumed Active Energy L3	Apparent Energy L1	Apparent Energy Su	
		Consumed Active Energy L4	Apparent Energy L2	Apparent Energy Su	
Recording type	ValuesOverTime	Current effective L1	Current effective Sum L1-L3	Active Power L3	
Timebase	10m	Current effective L2	Current effective Sum L1-L4	Active Power L4	
Number recorded values	30	Current effective L3	Active Power L1	Active Power Su	
		Current effective L4	Active Power L2	Active Power Su	
Recording type	ValuesOverTime	Voltage effective L1	Voltage Over (rel.) L1	Voltage Under (rel.) L1	
Timebase	10h	Voltage effective L2	Voltage Over (rel.) L2	Voltage Under (rel.) L2	
Number recorded values	12	Voltage effective L3	Voltage Over (rel.) L3	Voltage Under (rel.) L3	
		Voltage effective L4	Voltage Over (rel.) L4	Voltage Under (rel.) L4	

New

Edit

Delete

Preset recordings

Similar to:

- EN50160-2016
- EN50160
- EN50160-2016
- EN61000-2-4
- Enhanced Power Quality Report
- Power Quality Analysis

"Recording configuration" control elements

4.15.1 Configuration in rec1.jas

```

record rec1 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec1 = (system,_NORM_FREQ)

rec1.name$="rec178ee59ce6a"
rec1.maxtime=10
rec1.flags=1553
call init_rec rec1
record rec2 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec2 = (system,_FLI_SHORT_TERM[0..3])

rec2.name$="rec178ee59ce6b"
rec2.maxtime=600
rec2.flags=1169
call init_rec rec2
record rec3 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec3 = (system,_FLI_LONG_TERM[0..3])

rec3.name$="rec178ee59ce6c"
rec3.maxtime=7200
rec3.flags=1297
call init_rec rec3
record rec4 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec4 = (system,_U_SYM) (system,_ULN[0..3]) (system,_THD_ULN[0..3]) (system,_FFT_UL1[0..24])
                (system,_FFT_UL2[0..24]) (system,_FFT_UL3[0..24]) (system,_FFT_UL4[0..24]) (system,_ULL[0..2])
addrecord rec4 = (system,_THD_ULL[0..2]) (system,_FFT_ULL1[0..24]) (system,_FFT_ULL2[0..24]) (system,_FFT_ULL3[0..24])

rec4.name$="rec178ee59ce6d"
rec4.maxtime=600
rec4.flags=3086
call init_rec rec4
record rec5 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec5 = (system,_WH_V[0..5]) (system,_WH_S[0..5]) (system,_QH[0..5]) (system,_IQH[0..5])

rec5.name$="rec178ee59ce6e"
rec5.maxtime=3600
rec5.flags=17
call init_rec rec5
record rec6 = (int,error) (string,name$) (int,maxtime) (int,flags)
addrecord rec6 = (system,_I_SUM3) (system,_P_SUM3) (system,_S_SUM3) (system,_Q_SUM3) (system,_COS_SUM3) (system,_I_SUM)
                (system,_P_SUM) (system,_S_SUM) (system,_Q_SUM) (system,_COS_SUM)
addrecord rec6 = (system,_ILN[0..3]) (system,_PLN[0..3]) (system,_SLN[0..3]) (system,_QLN[0..3]) (system,_COS_PHI[0..3])

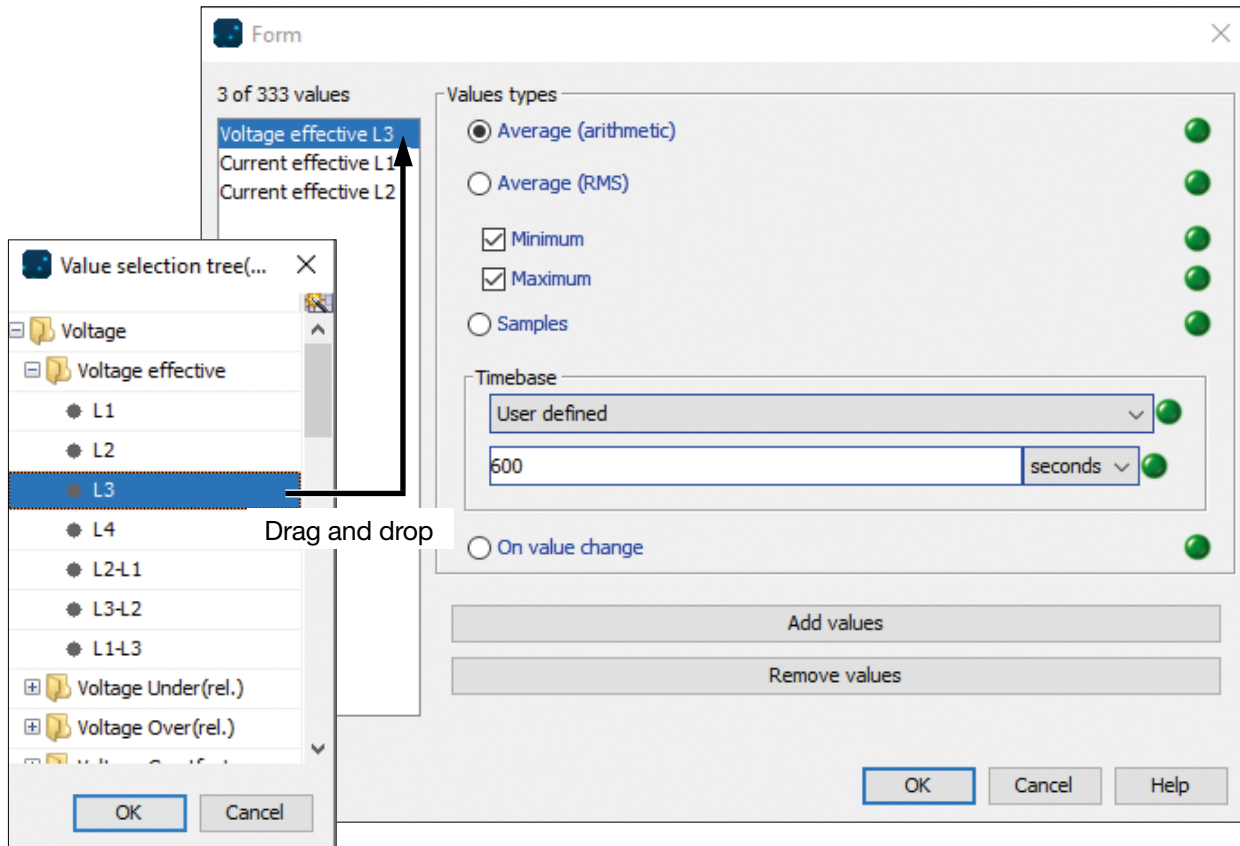
rec6.name$="rec178ee59ce6f"
rec6.maxtime=600
rec6.flags=14
call init_rec rec6
lb_do_rec:
wait(msync)
call do_rec rec1
call do_rec rec2
call do_rec rec3
call do_rec rec4
call do_rec rec5
call do_rec rec6
goto lb_do_rec

```

Code block of the configuration in rec1.jas

4.15.2 Create/edit a recording configuration

- In the Recording configuration window, you can configure an individual recording using the New or Edit buttons (you can also select an already configured recording using the Default settings according to button to select an already configured recording, see *chap. „4.15 Recording configuration“ on page 58*).
- The Form window appears.



- Use the Add values button in the Form window to open the Value selection tree (recording) window.
- In the Value selection tree window, drag and drop your measured value(s) (measured value group) into the value field of the Form window.
- Exit the value selection and close the Value selection tree window with the OK button.
- The recording configuration in the Form window takes over and displays the measured values.
- The further configuration of your selected measured values is done via the control elements Average (arithmetic), Average (RMS), Minimum, Maximum, Sample, Time base and On value change. These mean:
 - Average (arithmetic),
The arithmetic average value is the quotient of the sum and the number of all 200-ms measured values:
 $x \text{ (arithm.)} = (x_1+x_2+x_3...) / n$






- Average (RMS - root mean square).
This value describes a root mean square value where:
 $x \text{ (RMS)} = \text{root} ((x_1^2+x_2^2+x_3^2+..) / n)$
- Minimum / Maximum,
Use these checkboxes to enable recording of the average values of minimum and/or maximum values.
- Sample (Sample value),
Use these checkboxes to enable the recording of the measured value within the set time base.
- Time base,
Use the Time base selection lists and input fields to configure the time intervals at which the recordings are made.
- On value change,
If there is a change in the measured value, the 200-ms measured value is recorded. This setting is useful for monitoring the digital inputs and outputs (not for high-frequency signals) or the thermistor input, for example.
 - In contrast to the arithmetic mean, the quadratic mean has greater significance when measured values change more greatly over a given period. "Measured value outliers" have a higher significance in this case. For a measured variable like voltage, this greater weighting makes more sense than for a power value.

- Use the Remove values button to remove measured values from the recording configuration.

4.16 Memory configuration

The measurement device has a data memory of 256 MByte, which is subdivided ex works as follows:

- User-defined recordings = 40%.
- Transient recordings = 22.5%.
- Full wave effective values recordings = 22.5%.
- Event recordings = 10%.
- Flag recordings (flagging) = 5%.

partition of memory for recordings		
user defined recordings	<input type="text" value="40.0"/>	% 
transient recordings	<input type="text" value="22.5"/>	% 
full wave effective values recordings	<input type="text" value="22.5"/>	% 
event recordings	<input type="text" value="10.0"/>	% 
flag recordings	<input type="text" value="5.0"/>	% 

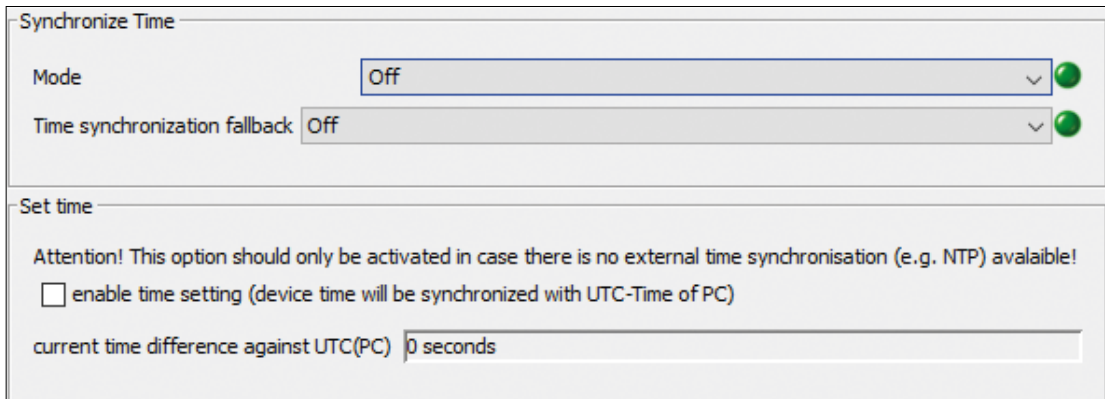
"Memory configuration" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Input field <i>User defined recordings in percent</i>	Percentage of total measurement device memory	%	0.0 ... 100.0	_MAXSIZE_REC	8428 - float
Input field <i>Transient recordings in percent</i>	Percentage of total measurement device memory	%	0.0 ... 100.0	_MAXSIZE_TRNS	8430 - float
Input field <i>Full wave effective values recordings in percent</i>	Percentage of total measurement device memory	%	0.0 ... 100.0	_MAXSIZE_VWWW	8432 - float
Input field <i>Event recordings in percent</i>	Percentage of total measurement device memory	%	0.0 ... 100.0	_MAXSIZE_EVT	8434 - float
Input field <i>Flag recordings in percent</i>	Percentage of total measurement device memory	%	0.0 ... 100.0	_MAXSIZE_FLAGS	8436 - float

Tab. "Memory configuration" control elements

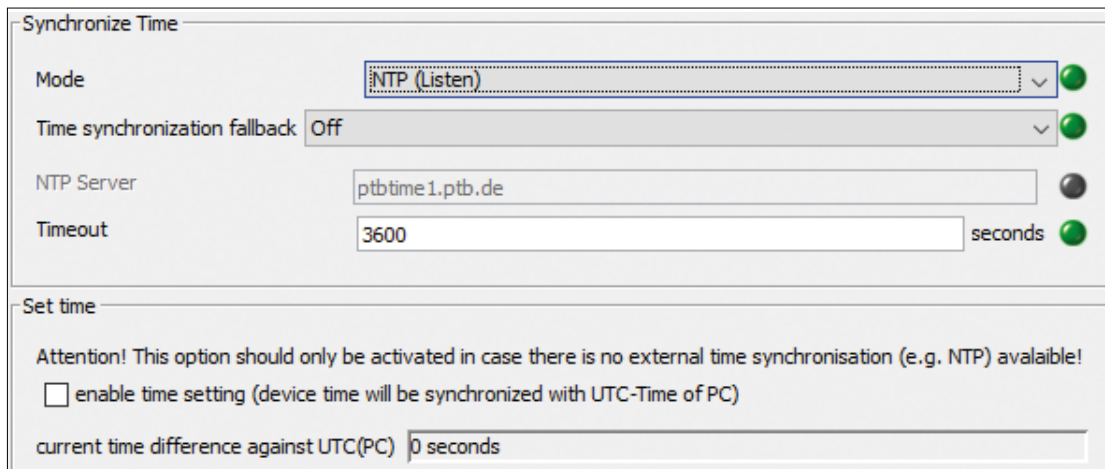
4.17 Time

The meter has a battery-backed clock whose crystal can have a deviation of ± 1 minute per month. To be able to compare event and transient recordings with the recordings of other measurement points, it is recommended to compare the time of the measurement device with the time of a time server via an Ethernet connection and to readjust it if necessary. Configure the mode of time synchronization, NTP, PTP or signal from GPS clock at digital input 1; in the GridVis® software, configure as follows:



The screenshot shows the 'Synchronize Time' configuration panel. The 'Mode' dropdown menu is set to 'Off'. The 'Time synchronization fallback' dropdown menu is also set to 'Off'. Below these, there is a section titled 'Set time' with a warning message: 'Attention! This option should only be activated in case there is no external time synchronisation (e.g. NTP) available!'. There is an unchecked checkbox labeled 'enable time setting (device time will be synchronized with UTC-Time of PC)'. Below this, a text field shows 'current time difference against UTC(PC) 0 seconds'.


"Time" control elements - Mode: Off





The screenshot shows the 'Synchronize Time' configuration panel. The 'Mode' dropdown menu is set to 'NTP (Listen)'. The 'Time synchronization fallback' dropdown menu is set to 'Off'. Below these, there is a section titled 'Set time' with a warning message: 'Attention! This option should only be activated in case there is no external time synchronisation (e.g. NTP) available!'. There is an unchecked checkbox labeled 'enable time setting (device time will be synchronized with UTC-Time of PC)'. Below this, a text field shows 'current time difference against UTC(PC) 0 seconds'. Additionally, there are fields for 'NTP Server' (ptbtime1.ptb.de) and 'Timeout' (3600 seconds).


"Time" control elements - Mode: NTP (Listen)

Synchronize Time

Mode: 

Time synchronization fallback: 

NTP Server: 

Timeout: seconds 

Set time


Attention! This option should only be activated in case there is no external time synchronisation (e.g. NTP) available!


enable time setting (device time will be synchronized with UTC-Time of PC)


current time difference against UTC(PC) seconds


"Time" control elements - Mode: NTP (Active)


Synchronize Time

Mode: 

Time synchronization fallback: 

Management Interface: 

Domain: 

Announce Receipt Timeout: 

Set time


Attention! This option should only be activated in case there is no external time synchronisation (e.g. NTP) available!


enable time setting (device time will be synchronized with UTC-Time of PC)

current time difference against UTC(PC) seconds

"Time" control elements - Mode: PTP

Synchronize Time

Mode: 

Time synchronization fallback: 

Set time

Attention! This option should only be activated in case there is no external time synchronisation (e.g. NTP) available!

enable time setting (device time will be synchronized with UTC-Time of PC)

current time difference against UTC(PC) seconds

"Time" control elements - Mode: Signal from GPS clock to digital input 1

Control element/function	Description	Character/value range	Init.jas	ModBus address format
Selection list <i>Mode</i> and selection list <i>Fallback for time synchronization</i>	Configuration of the mode for time synchronization.	Selection list: - NTP off (value = 0) - NTP (Listen) (value = 1) (_CLOCK_SYNC_PRIO=1) - NTP (Active) (value = 2) (_CLOCK_SYNC_PRIO=1) - PTP (Listen) (value = 3) (_CLOCK_SYNC_PRIO=1) Signal from GPS clock to digital input 1 (_CLOCK_SYNC_PRIO=0, _DIGIO_CLOCK=1, _MODE_NTP is set by fallback for time synchronization)	_MODE_NTP	10461 - int
		- NTP has priority = 1 - GPS has priority = 0	_CLOCK_SYNC_PRIO	14161 - int
		- GPS clock disabled = 0 - GPS clock enabled = 1	_DIGIO_CLOCK	14157 - int
NTP only				
Input field <i>NTP server</i>	Applies only for NTP (Active)	128 characters	_NTPSRV_IP	10331 - string
Input field <i>Timeout</i>			_CLOCK_SYNC_TIMEOUT	14159 - int
PTP only				
Checkbox <i>Management interface</i>	Configuration of the PTP management.	- Disabled = 0 (default) - Device supports PTP configuration via Modbus. - Enabled = 1 - Alternative configuration method (allows detailed configuration via the interface port (Ethernet)).	_PTP_MANAGEMENT_INTERFACE	14265 - short
Input field <i>Domain</i>	A PTP domain is a range of PTP clocks (devices) which synchronize themselves with each other using the PTP protocol.	0 ... 127 (default = 0)	_PTP_DOMAIN	14250 - byte
Input field <i>Announce receipt timeout (Timeout for receipt confirmation)</i>	This parameter specifies the number of intervals that are allowed to elapse without receipt of an announce message.	2 ... 10 (default = 3)	_PTP_ANNOUNCE_RECEIPT_TIMEOUT	14262 - byte

Tab. "Time" control elements

INFORMATION

- A Modbus address list including all the PTP parameters of your device can be found in the download area at www.janitza.de.
- Specifications for PTP (Precision Time Protocol) can be found in IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems (IEEE Std. 1588-2008).
- The measurement device supports PTP according to the default PTP profile Annex J IEEE 1588-2008 with the profile ID 00-1B-19-00-01-00.
- For detailed information on PTP configuration, refer to the user manual for the meter.

4.18 Time zone

All time information on measured values, events and transients refers to the GMT time zone (Greenwich Mean Time - a time zone oriented acc. to UTC - Coordinated Universal Time). The "Time zone" function in the Grid-Vis® software is used to transform the display of the measurement results from the GMT time zone to Central European Time (CET). Central European Time (CET) is the time zone valid for Central Europe and thus for Germany as well.

Time offset relative to GMT

Winter time hours

Summer time hours

Month: Earliest day of month: Day of week: Hour: Minute:

End day light saving: Earliest day of month: Day of week: Hour: Minute:

"Time zone" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Input field <i>Winter time in hours</i>	- Configuration of the time difference of Central European Winter Time to the GMT time zone. - The GridVis software converts the hours into seconds before transferring the time difference (see Fig. "Time zone" control elements 1 h = 3600 s)!	s	-86400 ... +86400 s (-24 h ... +24 h)	_TIME_ZONE	6896 - int
Input field <i>Daylight saving time in hours</i>	- Configuration of the time difference of Central European daylight saving time to winter time. - The GridVis software converts the hours into seconds before transferring the time difference (see Fig. "Time zone" control elements 2 h = 7200 s)!	s	-7200 ... +7200 s (-2 h ... +2 h)	_STIME	6898 - int
Start daylight saving time					
Selection list <i>Month</i>			Selection list: - 1 = January - 2 = February - 3 = March - 4 = April - 5 = May - 6 = June - 7 = July - 8 = August - 9 = September - 10 = October - 11 = November - 12 = December	_SMON	6902 - short
Input field <i>Earliest day of the month</i>			1 ... 31	_SDAY	6900 - short
Selection list <i>Day of week</i>			Selection list: - 0 = Sunday - 1 = Monday - 2 = Tuesday - 3 = Wednesday - 4 = Thursday - 5 = Friday - 6 = Saturday	_SDOW	6904 - short
Input field <i>Hour</i>		h	0 ... 24	_SHOUR	6901 - short
Input field <i>Minute</i>		min.	0 ... 59	_SMIN	6903 - short

Tab. "Time zone" control elements

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
End daylight saving time					
Selection list <i>Month</i>			Selection list: - 1 = January - 2 = February - 3 = March - 4 = April - 5 = May - 6 = June - 7 = July - 8 = August - 9 = September - 10 = October - 11 = November - 12 = December	_EMON	6907 - short
Input field <i>Earliest day of the month</i>			1 ... 31	_EDAY	6905 - short
Selection list <i>Day of week</i>			Selection list: - 0 = Sunday - 1 = Monday - 2 = Tuesday - 3 = Wednesday - 4 = Thursday - 5 = Friday - 6 = Saturday	_EDOW	6909 - short
Input field <i>Hour</i>		h	0 ... 24	_Ehour	6906 - short
Input field <i>Minute</i>		min.	0 ... 59	_EMIN	6908 - short

Tab. "Time zone" control elements

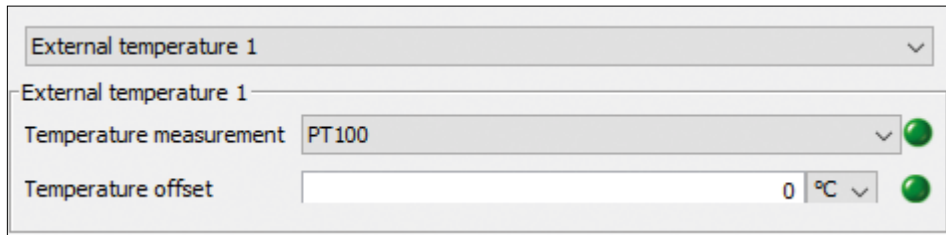
4.19 Inputs

Use the *Inputs* menu item in the GridVis software to configure the following for the measurement device:

- Temperature measurement input.
- Digital measuring inputs 1 and 2.

i INFORMATION

Further information on the temperature measurement input and the digital inputs (S0 inputs) can be found in the user manual of the measurement device.



"Inputs" control elements

4.19.1 External temperature 1

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list External temperature 1					
Selection list <i>Temperature measurement</i>	Selection of the temperature sensor used on the meter.	-	Selection list: - 0 = PT100 - 1 = PT1000 - 2 = KTY83 - 3 = KTY84	_THERMOELEMENT	13801 - int
Input field <i>Temperature offset</i> and selection list <i>Unit</i>	Configuration of the temperature offset with which you can make an error correction (temperature correction) for the existing environmental conditions. The temperature compensation is specified in Kelvin.	K	-10.0 ... 10.0	_TEMPERATUR_OFFSET	13795 - float

Tab. "Inputs - External temperature 1" control elements

4.19.2 Digital input 1 - Settings for S0 input

Digital Input 1

Digital Input 1

Settings for S0 input

Value type: User defined value

User defined value's name: [Empty]

User defined value's unit: [Empty]

* : Only for devices with firmware at least 2.000!

Scaling: 1.0000 1/Impulse

"Inputs - Digital input 1" control elements

Digital Input 1

Digital Input 1

Settings for S0 input

Value type: User defined value

User defined value's name: User defined value

User defined value's unit: Electric energy [kWh]

* : Only for devices with firm

Scaling: [Empty]

"Inputs - Digital input 1 - with expanded Value type selection list" control elements

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Selection list Digital input 1					
Selection list <i>Value type</i>	Configuration of the value type (medium)		See „Table Value type options“ on page 70		-
Input field <i>User-defined value's name</i>	Configuration of a name for a <i>User-defined value</i> in the selection list <i>Value type</i>	-	32 characters	_DIGIN_NAME[0]	13556 - string
Input field <i>User-defined value's unit</i>	Configuration of a unit for a <i>User-defined value</i> in the selection list <i>Value type</i>		32 characters	_DIGIN_UNIT[0]	13572 - string
Input field <i>Scaling factor in Units/pulse</i>	Configuration of a scaling factor of the selected <i>Value type</i> e.g. for the value type <i>Water consumption</i> liters/pulses (n).	Unit/n	0.0 ... 1000000.0	_PULSWERT[0]	8424 - float

Tab. "Inputs - Digital input 1" control elements

Table Value type options

Value type option	_DIGIN_NAME0	_DIGIN_UNIT0
User-defined value	Use value from field	Use value from field
Electrical energy [Wh]	_Electricity_Wh_	Wh
Electrical energy [kWh]	_Electricity_kWh_	kWh
Gas consumption [liters]	_Gas_Liter_	Liters
Gas consumption [cubic meters]	_Gas_m^3_	Cubic meters
Water consumption [liters]	_Water_Liter_	Liters
Water consumption [cubic meters]	_Water_m^3_	Cubic meters
Compressed air consumption [liters]	_CompressedAir_Liter_	Liters
Compressed air consumption [cubic meters]	_CompressedAir_m^3_	Cubic meters
Heat quantity [Wh]	_Heatquantity_Wh_	Wh
Heat quantity [kWh]	_Heatquantity_kWh_	kWh
Oil consumption [liters]	_Oil_Liter_	Liters
CO2 [grams]	_CO2_Gramm_	Grams
Radioactive waste [grams]	_RadioActiveWaste_Gramm_	Grams
Standard consumption of compressed air [standard cubic meters]	_CompressedAir_Nm^3_	Normal cubic meter
Cooling water consumption [cubic meters]	_CoolWater_m^3_	Cubic meters
Cooling lubricant cooling quantity [cubic meters]	_CoolWater_CQ_kWh_	kWh
Hot water consumption [cubic meters]	_HotWater_m^3_	Cubic meters
Hot water heat quantity [kWh]	_HotWater_HQ_kWh_	kWh
Cooling lubricant consumption [cubic meters]	_CoolLubricant_m^3_	Cubic meters
Cooling lubricant cooling volume [kWh]	_CoolLubricant_CQ_kWh_	kWh
Municipal water consumption [cubic meters]	_MunicipalWater_m^3_	Cubic meters
Miscellaneous fluids consumption [cubic meters]	_DivFluids_m^3_	Cubic meters
Miscellaneous gases normal consumption [normal cubic meters]	_DivGases_Nm^3_	Normal cubic meters

Tab. Options for the "Value type" selection field

4.19.3 Digital input 2

Control element/function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Selection list Digital input 2					
Selection list <i>Value type</i>	Configuration of the value type (medium)		See „Table Value type options“ on page 70		-
Input field <i>User-defined value's name</i>	Configuration of a name for a <i>User-defined value</i> in the selection list <i>Value type</i>	-	32 characters	_DIGIN_NAME[1]	13652 - string
Input field <i>User-defined value's unit</i>	Configuration of a unit for a <i>User-defined value</i> in the selection list <i>Value type</i>		32 characters	_DIGIN_UNIT[1]	13668 - string
Input field <i>Scaling factor in Units/pulse</i>	Configuration of a scaling factor of the selected <i>Value type</i> e.g. for the value type <i>Water consumption</i> liters/pulses (n).	Unit/n	0.0 ... 1000000.0	_PULSWERT[1]	8426 - float

Tab. "Inputs - Digital input 2" control elements

4.20 Configure values (setting values)

Use the *Set values* menu item to manually configure meter readings of the corresponding measured values of the measurement device. This function can be used, for example, when replacing a measurement device or transferring measured values from an external meter.

The measured values are immediately adapted by the GridVis software using a Jasic script (`/ram/direct.jas` file). The measurement device writes these values into the binary file `"/sys/sysvar.dat"`. Alternatively, the values can be configured via Modbus.

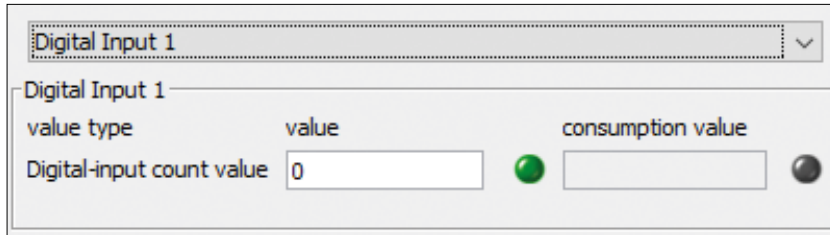
L1

value type	value		
Active Energy	<input style="width: 150px;" type="text" value="-0,002"/>	Wh	●
Consumed Active Energy	<input style="width: 150px;" type="text" value="0,000"/>	Wh	●
Consumed Active Energy Tariff 1	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Consumed Active Energy Tariff 2	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Consumed Active Energy Tariff 3	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Consumed Active Energy Tariff 4	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Supplied Active Energy	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Supplied Active Energy Tariff 1	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Supplied Active Energy Tariff 2	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Supplied Active Energy Tariff 3	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Supplied Active Energy Tariff 4	<input style="width: 150px;" type="text" value="0.000"/>	Wh	●
Reactive Energy	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Inductive Reactive Energy	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Inductive Reactive Energy Tariff 1	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Inductive Reactive Energy Tariff 2	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Inductive Reactive Energy Tariff 3	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Inductive Reactive Energy Tariff 4	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Capacitive Reactive Energy	<input style="width: 150px;" type="text" value="36,035.027"/>	varh	●
Apparent Energy	<input style="width: 150px;" type="text" value="248,889.016"/>	VAh	●
Consumed Inductive Reactive Energy	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Consumed Capacitive Reactive Energy	<input style="width: 150px;" type="text" value="36,035.027"/>	varh	●
Supplied Inductive Reactive Energy	<input style="width: 150px;" type="text" value="0.000"/>	varh	●
Supplied Capacitive Reactive Energy	<input style="width: 150px;" type="text" value="0.000"/>	varh	●

"Set values" control elements - Part 1

Description Selection list Description Input field	/ram/direct.jas i = 0 - L1 i = 1 - L2 i = 2 - L3 i = 3 - L4 i = 4 - Sum L1..L3 i = 5 - Sum L1..L4	Unit	ModBus L1	ModBus L2	ModBus L3	ModBus L4	ModBus Sum L1..L3	ModBus Sum L1..L4
Active energy	_WH[i]	Wh	6476 - float	6478 - float	6480 - float	6482 - float	6484 - float	6486 - float
Consumed active energy	_WH_V[i]	Wh	6500 - float	6502 - float	6504 - float	6506 - float	6508 - float	6510 - float
Consumed active energy tariff 1	_WH_V_HT[i]	Wh	6524 - float	6526 - float	6528 - float	6530 - float	6532 - float	6534 - float
Consumed active energy tariff 2	_WH_V_NT[i]	Wh	6536 - float	6538 - float	6540 - float	6542 - float	6544 - float	6546 - float
Consumed active energy tariff 3	_WH_V_T3[i]	Wh	11760 - float	11762 - float	11764 - float	11766 - float	11768 - float	11770 - float
Consumed active energy tariff 4	_WH_V_T4[i]	Wh	11772 - float	11774 - float	11776 - float	11778 - float	11780 - float	11782 - float
Supplied active energy	_WH_Z[i]	Wh	6512 - float	6514 - float	6516 - float	6518 - float	6520 - float	6522 - float
Supplied active energy tariff 1	_WH_Z_HT[i]	Wh	6548 - float	6550 - float	6552 - float	6554 - float	6556 - float	6558 - float
Supplied active energy tariff 2	_WH_Z_NT[i]	Wh	6560 - float	6562 - float	6564 - float	6566 - float	6568 - float	6570 - float
Supplied active energy tariff 3	_WH_Z_T3[i]	Wh	11784 - float	11786 - float	11788 - float	11790 - float	11792 - float	11794 - float
Supplied active energy tariff 4	_WH_Z_T4[i]	Wh	11796 - float	11798 - float	11800 - float	11802 - float	11804 - float	11806 - float
Reactive energy	_QH[i]	VArh	6488 - float	6490 - float	6492 - float	6494 - float	6496 - float	6498 - float
Inductive reactive energy	_IQH[i]	VArh	6572 - float	6574 - float	6576 - float	6578 - float	6580 - float	6582 - float
Inductive reactive energy tariff 1	_IQH_HT[i]	VArh	6596 - float	6598 - float	6600 - float	6602 - float	6604 - float	6606 - float
Inductive reactive energy tariff 2	_IQH_NT[i]	VArh	6608 - float	6610 - float	6612 - float	6614 - float	6616 - float	6618 - float
Inductive reactive energy tariff 3	_IQH_T3[i]	VArh	11808 - float	11810 - float	11812 - float	11814 - float	11816 - float	11818 - float
Inductive reactive energy tariff 4	_IQH_T4[i]	VArh	11820 - float	11822 - float	11824 - float	11826 - float	11828 - float	11830 - float
Capacitive reactive energy	_CQH[i]	VArh	6584 - float	6586 - float	6588 - float	6590 - float	6592 - float	6594 - float
Apparent energy	_WH_S[i]	VArh	6464 - float	6466 - float	6468 - float	6470 - float	6472 - float	6474 - float
Consumed inductive reactive energy	_IVQH[i]	VArh	13943 - float	13945 - float	13947 - float	13949 - float	13951 - float	13953 - float
Consumed capacitive reactive energy	_CVQH[i]	VArh	13967 - float	13969 - float	13971 - float	13973 - float	13975 - float	13977 - float
Supplied inductive reactive energy	_IZQH[i]	VArh	13955 - float	13957 - float	13959 - float	13961 - float	13963 - float	13965 - float
Supplied capacitive reactive energy	_CZQH[i]	VArh	13979 - float	13981 - float	13983 - float	13985 - float	13987 - float	13989 - float

Tab. "Set values" control elements - Part 1



"Set values" control elements - Part 2

Control element/function	Description	Unit	/ram/direct.jas	Modbus
Selection list Digital input 1 - Meter value of the digital input	Input of the value of the meter reading and consumption value indication (depending on the configuration of the inputs)	-	_S0_CNT[0]	6620 - float
Selection list Digital input 2 - Meter value of the digital input	Input of the value of the meter reading and consumption value indication (depending on the configuration of the inputs)	-	_S0_CNT[1]	6622 - float

Tab. "Set values" control elements - Part 2

4.21 Digital outputs

- The meter has 2 digital outputs for configuration as pulse outputs (S0 output) or for configuration for event messages.
- The two digital outputs must be configured in the GridVis® software as normally closed or normally open.
- When configured as a pulse output (S0 output), the digital output provides pulses for counting energy consumption, for example.
- There are one or more events available for selection for configuration as an "event message". In this case, the digital output becomes "active" when a selected event occurs.

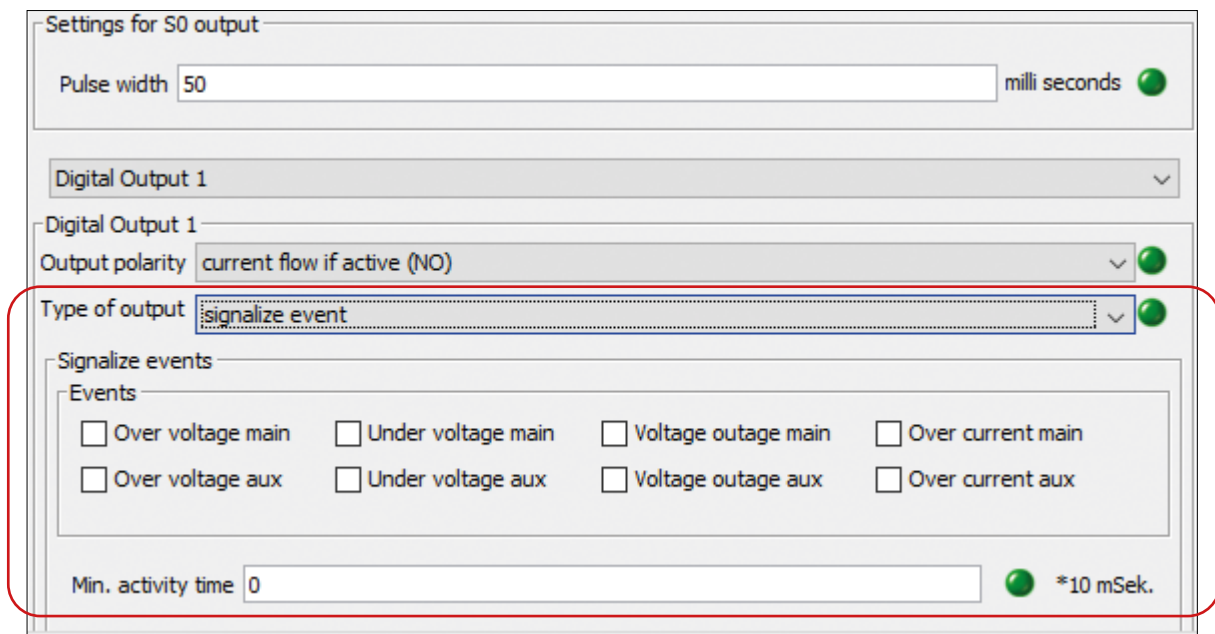
4.21.1 Configuration of the "Unused" output type

"Digital outputs" control elements - Configuration of the "Unused" output type

Control element/ function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Input field <i>Pulse width</i>	Configuration of the pulse width that the measurement device emits at the digital output.	ms	1 ... 32000	_PULS_WIDTH	12920 - short
Selection list <i>Digital output 1 or 2</i>	Selection of the digital output	-	-	-	-
Digital output 1 selection list <i>Output polarity</i>	Functions of the selection list: - 0 = Current flow if active (NO) - 1 = Current flow if not active (NC)	bool.	0, 1	_INVERT_DIGOUT[0]	8454 - short
Digital output 1 selection list <i>Output type</i>	- Unused: _DIGOUTEVT[0] = 0 Set_S0(0, 0, 0.000000) - Event message: _DIGOUTEVT[0] = event (value event see tab. on p. 76) Set_S0(0, 0, 0.000000) - S0 output: _DIGOUTEVT[0] = 0 Set_S0(0, value, scale) (values value and scale see tab. on p. 77)	-	-	_DIGOUTEVT[0] Set_S0(0, ...)	-
Digital output 2 selection list <i>Output polarity</i>	Functions of the selection list: - 0 = Current flow if active (NO) - 1 = Current flow if not active (NC)	bool.	0, 1	_INVERT_DIGOUT[1]	8455 - short
Digital output 2 selection list <i>Output type</i>	- Unused: _DIGOUTEVT[1] = 0 Set_S0(1, 0, 0.000000) - Event message: _DIGOUTEVT[1] = event (value event see tab. on p. 76) Set_S0(1, 0, 0.000000) S0 output: _DIGOUTEVT[1] = 0 Set_S0(1, value, scale) (values value and scale see tab. on p. 77)	-	-	_DIGOUTEVT[1] Set_S0(1, ...)	-

Tab. "Digital outputs" control elements

4.21.2 Configuration of the "Event message" output type



"Digital outputs" control elements - Configuration of the "Event message" output type

Control element/function	Description	Unit	Character/value range	Init.jas	ModBus address format
Digital output 1 - selection list Output type and Events checkboxes	Output type: Event message The value of the checkboxes is linked with OR and is saved: 0x0000 0001 0000 0000 = Main input, overvoltage 0x0000 0002 0000 0000 = Main input, undervoltage 0x0000 0004 0000 0000 = Main input, voltage interruption 0x0000 0008 0000 0000 = Main input, overcurrent 0x0000 0000 0000 0008 = Auxiliary input overvoltage 0x0000 0000 0000 0080 = Auxiliary input undervoltage 0x0000 0000 0000 0800 = Auxiliary input voltage interruption 0x0000 0000 0000 8000 = Auxiliary input overcurrent	-	-	_DIGOUTEVT[0]	8442 - long64
Digital output 1 - Input field Minimum activity time	Minimum time of an event until the digital output of the measurement device switches to "active".	10 ms	- 0.0 ... 10000000.0	_DIGOUTEVT_TIME[0]	8450 - int
Digital output 2 - Selection list Output type and Events checkboxes	Output type: Event message The value of the checkboxes is linked with OR and is saved: 0x0000 0001 0000 0000 = Main input, overvoltage 0x0000 0002 0000 0000 = Main input, undervoltage 0x0000 0004 0000 0000 = Main input, voltage interruption 0x0000 0008 0000 0000 = Main input, overcurrent 0x0000 0000 0000 0008 = Auxiliary input overvoltage 0x0000 0000 0000 0080 = Auxiliary input undervoltage 0x0000 0000 0000 0800 = Auxiliary input voltage interruption 0x0000 0000 0000 8000 = Auxiliary input overcurrent	-	-	_DIGOUTEVT[1]	8446 - long64
Digital output 2 - Input field Minimum activity time	Minimum time of an event until the digital output of the measurement device switches to "active".	10 ms	- 0.0 ... 10000000.0	_DIGOUTEVT_TIME[1]	8452 - int

Tab. "Digital outputs" control elements - Configuration of the output type as "Event message"

4.21.3 Configuration of the output type "S0 output"

Settings for S0 output

Pulse width milli seconds

Digital Output 1

Digital Output 1

Output polarity

Type of output

S0-Settings

Value

pulse weight wh/Imp

"Digital outputs" control elements - Configuration of the "S0 output" output type

Control element/ function	Description	
Digital output 1/2 - Selection list Output type and S0 settings Measured value and Pulse valency	Configuration of the digital output as an output type: S0 output Init.jas: Structure: Set_S0(output, value, scale) Example: Set_S0(0, _PLN[0], 3600.000000) Output: 0 = Digital output 1 1 = Digital output 2	
S0 setting "Measured value"	value	scale
Consumed active energy L1	_PLN[0]	3600.0 * Pulse valency
Consumed active energy L2	_PLN[1]	3600.0 * Pulse valency
Consumed active energy L3	_PLN[2]	3600.0 * Pulse valency
Consumed active energy L4	_PLN[3]	3600.0 * Pulse valency
Consumed active energy sum L1... L3	_P_SUM3	3600.0 * Pulse valency
Consumed active energy sum L1... L4	_P_SUM	3600.0 * Pulse valency
Supplied active energy L1	_PLN[0]	3600.0 * -1.0 * Pulse valency
Supplied active energy L2	_PLN[1]	3600.0 * -1.0 * Pulse valency
Supplied active energy L3	_PLN[2]	3600.0 * -1.0 * Pulse valency
Supplied active energy L4	_PLN[3]	3600.0 * -1.0 * Pulse valency
Supplied active energy sum L1... L3	_P_SUM3	3600.0 * -1.0 * Pulse valency
Supplied active energy sum L1... L4	_P_SUM	3600.0 * -1.0 * Pulse valency
Apparent energy L1	_SLN[0]	3600.0 * Pulse valency
Apparent energy L2	_SLN[1]	3600.0 * Pulse valency
Apparent energy L3	_SLN[2]	3600.0 * Pulse valency

Tab. "Digital outputs" control elements - Configuration of the output type as "S0 output"

S0 setting "Measured value"	value	scale
Apparent energy L4	_SLN[3]	3600.0 * Pulse valency
Apparent energy sum L1... L3	_S_SUM3	3600.0 * Pulse valency
Apparent energy sum L1... L4	_S_SUM	3600.0 * Pulse valency
Capacitive reactive energy L1	_QLN[0]	3600.0 * -1.0 * Pulse valency
Capacitive reactive energy L2	_QLN[1]	3600.0 * -1.0 * Pulse valency
Capacitive reactive energy L3	_QLN[2]	3600.0 * -1.0 * Pulse valency
Capacitive reactive energy L4	_QLN[3]	3600.0 * -1.0 * Pulse valency
Capacitive reactive energy, sum L1... L3	_Q_SUM3	3600.0 * -1.0 * Pulse valency
Capacitive reactive energy, sum L1... L4	_Q_SUM	3600.0 * -1.0 * Pulse valency
Inductive reactive energy L1	_QLN[0]	3600.0 * Pulse valency
Inductive reactive energy L2	_QLN[1]	3600.0 * Pulse valency
Inductive reactive energy L3	_QLN[2]	3600.0 * Pulse valency
Inductive reactive energy L4	_QLN[3]	3600.0 * Pulse valency
Inductive reactive energy, sum L1... L3	_Q_SUM3	3600.0 * Pulse valency
Inductive reactive energy, sum L1... L4	_Q_SUM	3600.0 * Pulse valency

Tab. "Digital outputs" control elements - Configuration of the output type as "S0 output"

4.22 Serial interfaces

INFORMATION

Changes to the serial port configuration may disconnect your meter. If necessary, reconfigure the connection settings!

Device ID

Device ID ● Used for RS232(Modbus), RS485(Modbus) and Profibus

RS485

Mode ●

Baudrate ●

Modbusmaster time out ● millsec. (Only for devices with firmware at least 3.012!)

Changing this settings you may loose connection to device.
In this case you need to reconfigure your connection parameters.

"Serial interface" control elements

Control element/ function	Description	Unit	Character/ value range	Init.jas	ModBus address format
Input field <i>Device ID</i>	<ul style="list-style-type: none"> - The measurement device requires the device ID for communication via the RS-232, RS-485 and Profibus interfaces. - The device ID is used to address the measurement device in the bus structure and each device ID exists only once in a bus structure. 	-	1 ... 255	_MBUSADDR	6860 - int
RS-485 selection list <i>Mode</i>	Configuration of the mode <ul style="list-style-type: none"> - 0 = Modbus slave - 1 = Modbus master (gateway) 	-	0 ... 7	_MODE485	6862 - int
RS-485 selection list <i>Baud rate</i>	All measurement devices in a bus topology require a uniform baud rate (transmission speed/transmission rate)! Setting ranges: <ul style="list-style-type: none"> - 0 = 9600 baud - 1 = 19200 baud - 2 = 38400 baud - 3 = 57600 baud - 4 = 115200 baud - 5 = 921600 baud 	-	0 ... 5	_BAUD485	6864 - int
RS-485 selection list <i>Modbus master timeout</i>	Timeout in x milliseconds for the Modbus master communication.	ms		_MASTER_TIMEOUT	11533 - uint

Tab. "Serial interface" control elements

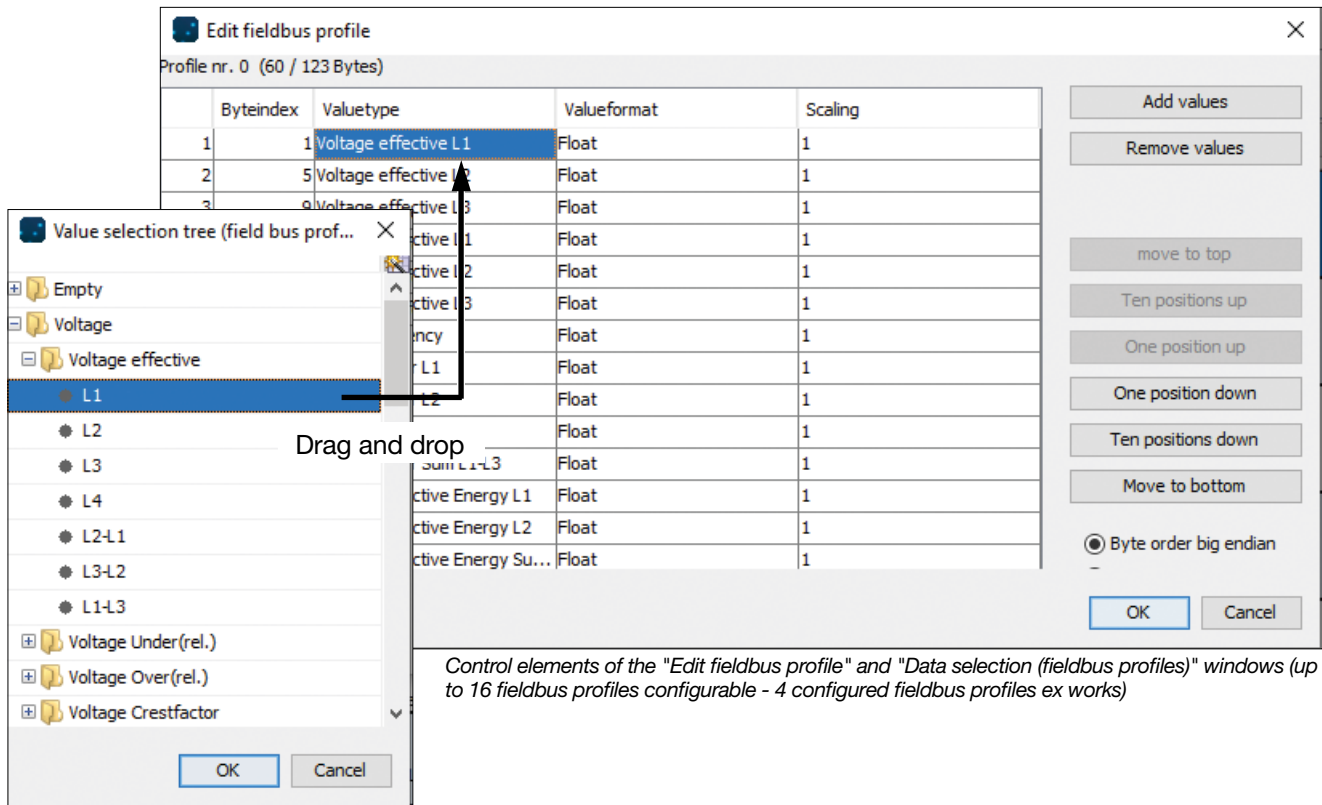
4.23 Fieldbus profiles

To satisfy the standard for fieldbus communication in automation technology, the measurement device provides the option to configure up to 16 profiles for Profibus access (Profibus DP/V0 - according to EN 50170). The measurement device already has 4 configured fieldbus profiles ex works, which can be read or written by a PLC.

Profiles for Profibus-access				
Profile nr.	0	Voltage effective L1 Voltage effective L2 Voltage effective L3 Voltage effective L4	Voltage effective L2-L1 Voltage effective L3-L2 Voltage effective L1-L3 Current effective L1	Current effective L2 Current effective L3 Current effective L4 Active Power L1
Comment	120 / 123 Bytes			
Byte order	big endian			
Profile nr.	1	Voltage effective L1 Voltage effective L2 Voltage effective L3 Voltage effective L2-L1	Voltage effective L3-L2 Voltage effective L1-L3 Current effective L1 Current effective L2	Current effective L3 Active Power L1 Active Power L2 Active Power L3
Comment	116 / 123 Bytes			
Byte order	big endian			
Profile nr.	2	Active Energy Sum L1-L3 Consumed Active Energy Sum L1-L3 Supplied Active Energy Sum L1-L3 Reactive Energy Sum L1-L3	Inductive Reactive Energy Sum L1-L3 Capacitive Reactive Energy Sum L1-L3 Apparent Energy Sum L1-L3 Active Energy L1	Active Energy L2 Active Energy L3 Inductive Reactive Energy L1 Inductive Reactive Energy L2
Comment	52 / 123 Bytes			
Byte order	big endian			
Profile nr.	3	Active Power L1 Active Power L2 Active Power L3 Active Power Sum L1-L3	Current effective L1 Current effective L2 Current effective L3 Current effective Sum L1-L3	Active Energy Sum L1-L3 cos phi(math.) L1 cos phi(math.) L2 cos phi(math.) L3
Comment	84 / 123 Bytes			
Byte order	big endian			
Profile nr.	4			
Comment	0 / 123 Bytes			
Byte order	big endian			
Profile nr.	5			
Comment	0 / 123 Bytes			
Byte order	big endian			
Profile nr.	6			
Comment	0 / 123 Bytes			
Byte order	big endian			
Profile nr.	7			
Comment	0 / 123 Bytes			
Byte order	big endian			

"Fieldbus profiles" control elements

- In the window Fieldbus profiles - Profibus access profiles you configure or change the previously selected Profibus profile using the Edit button (marked dark blue - also valid for fieldbus profiles configured ex works).
- The Edit fieldbus profile window appears.
- Use the Add values button in the Edit fieldbus profile window to open the Data selection (fieldbus profiles) window. Use the Remove values button to delete selected measured values from your fieldbus profile.
- In the Data selection (fieldbus profiles) window, drag and drop your measured value(s) (measured value group) into the value field of the Edit fieldbus profile window.
- Finish the value selection and close the Edit fieldbus profile window with the OK button.



The configuration of the fieldbus profiles in `init.jas` uses the following format:

`set_profil(<profile no.>, <Byteindex>, <Valuetype>, <Scaling>, <Value>)`

- `<profile no.>` : Fieldbus profile 0 - 15.
- `<Byteindex>` : Calculated by the GridVis software from the byte index of the previous entry plus the number of bytes of the previous entry.

• `<Valuetype>` :

Type	Format	Size in bytes
Byte	BYTE	1
Char	CHAR	1
Short	HSHORT	2
Unsigned short	HWORD	2
Integer	HINT	4
Unsigned integer	HUINT	4
Float	HFLOAT	4
Double	HDOUBLE	8

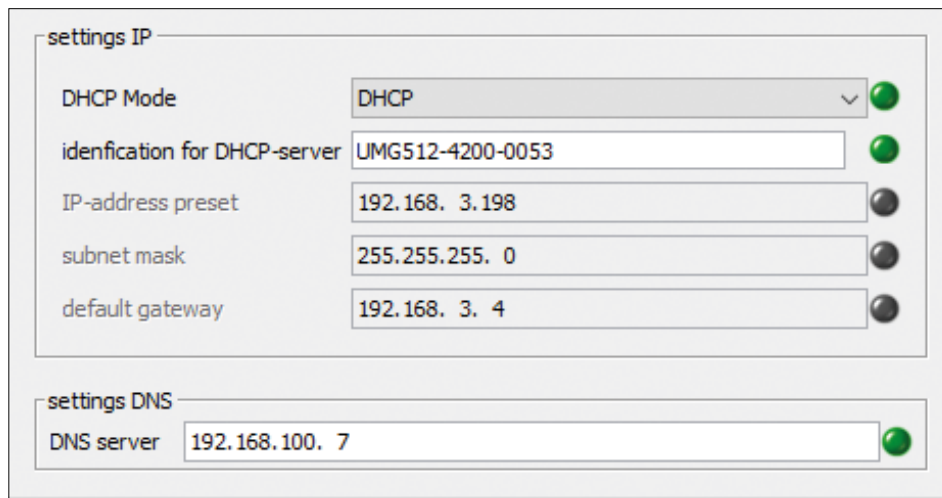
- `<Scaling>` : Floating-point value of the scaling factor.
- `<Value>` : Variable name from Modbus list.
- Example : `set_profil(3,1,HFLOAT,1.000000,_PLN[0])`
Profile no. 3 - Byte index 1 - Float - Scaling *1.0 - Active power L1
(Profile no. 3 - Byte index 1 - Float - Scaling *1.0 - Active Power L1)

4.24 IP configuration

***i* INFORMATION**

Incorrect network settings can cause faults in the IT network! Check with your network administrator for the correct Ethernet network settings for your measurement device prior to IP configuration.

The measurement device needs the IP configuration to communicate via the Ethernet connection (TCP/IP).



"IP Configuration" control elements

Control element/ function	Description	Charac- ter/ value range	Init.jas	ModBus address format
Selection list <i>DHCP mode</i>	Configuration of the type of address assignment: - 0 = fixed IP address - 1 = BootP - 2 = DHCP	0, 1, 2	_DHCPMODE	6872 - int
Input field <i>Identification for the DHCP server</i>	Name of the measurement device for identification for the DHCP server	64 characters	_HOSTNAME	10395 - string
Input field <i>Default IP address</i>	Only "active" in the DHCP mode "Fixed IP address"	max uint	_IP_ADDR	6866 - uint
Input field <i>Subnet mask</i>	Only "active" in DHCP mode "Fixed IP address" and "BootP"	max uint	_IP_MASK	6868 - uint
Input field <i>Standard gateway</i>	Only "active" in DHCP mode "Fixed IP address" and "BootP"	max uint	_IP_GATE	6870 - uint
DNS settings Input field <i>DNS server</i>		32 characters	_NAMESRV_IP	10315 - string

Tab. "IP configuration" control elements

4.25 Firewall

Choice of the open or closed ports. Ports are considered closed if the corresponding checkbox is disabled. Please note that ports that have been disabled by mistake will block your access to the measurement device!

"IP Configuration" control elements

Control element/function	Description	Character/value range	firewall.jas	ModBus address format
Checkbox <i>Enable firewall</i>	Status of the firewall: - 0 = Off - 1 = On	0, 1	_FIREWALL	13539 - int
Checkbox <i>Closed (disabled) UDP ports</i>	- You can use the entries to block up to 32 UDP (User Datagram Protocol) ports. - In the GridVis software, you only block ports on which the measurement device receives data.	0 ... 65535	_FW_UDP_PORT[N] (N=0..31) - _FW_UDP_PORT[0]=161 (Checkbox "SNMP") - _FW_UDP_PORT[1]=1239 (Checkbox "Debug") - _FW_UDP_PORT[2]=502 (Checkbox "Modbus TCP/IP") - _FW_UDP_PORT[3]=47808 (Checkbox "BACnet") - _FW_UDP_PORT[4]=68 (Checkbox "DHCP") - _FW_UDP_PORT[5]=123 (Checkbox "NTP") - _FW_UDP_PORT[6]=1200 (Checkbox "Name Server")	13469-13500 - short

Tab. "Firewall" control elements

Control element/ function	Description	Charac- ter/ value range	firewall.jas	ModBus address format
Checkbox <i>Closed (disabled)</i> TCP ports	TCP ports (Transmission Control Protocol), via which the GridVis software configures the way in which data is exchanged.	0 ... 65535	_FW_TCP_PORT[N] (N=0..31) - _FW_TCP_PORT[0]=1024 (Checkbox „FTP“) - _FW_TCP_PORT[1]=1025 (Checkbox „FTP“) - _FW_TCP_PORT[2]=1026 (Checkbox „FTP“) - _FW_TCP_PORT[3]=1027 (Checkbox „FTP“) - _FW_TCP_PORT[4]=21 (Checkbox „FTP“) - _FW_TCP_PORT[5]=80 (Checkbox „HTTP“) - _FW_TCP_PORT[6]=8000 (Checkbox "Modbus RTU (Ethernet encapsulated) - _FW_TCP_PORT[7]=1239 (Checkbox "Debug" - former Telnet interface, has been removed in the meantime) - _FW_TCP_PORT[8]=502 (Checkbox „Modbus TCP/IP“)	13501-13532 - short
Checkbox <i>Disabled ICMP</i> types	ICMP ports (Internet Control Message Protocol) via which the GridVis software exchanges information and error messages with the measurement device.	0 ... 65535	_FW_ICMP_TYPE[N] (N=0..3) - _FW_ICMP_TYPE[0]=8 (Checkbox „Ping“) - _FW_ICMP_TYPE[1]=0 - _FW_ICMP_TYPE[2]=0 - _FW_ICMP_TYPE[3]=0	13533-13536 - short

Tab. "Firewall" control elements

4.26 Passwords

The *Passwords* menu only exists for secure device connections (TCP secure, HTTP secure)!

Admin	<input type="text" value="Janitza"/>	
User password for the configuration menu of the device	<input type="text" value="0"/>	
HTML	<input type="text" value="0"/>	
Homepage mode	<input type="text" value="Do not lock homepage"/>	
Activation code for BACNet	<input type="text" value="0"/>	
Activation code for EMax	<input type="text" value="0"/>	

"Passwords" control elements

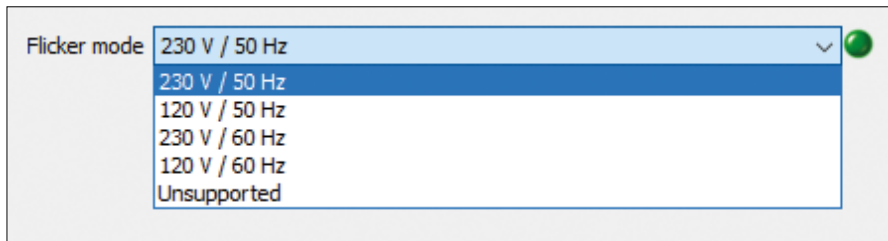
Control element/ function	Description	Charac- ter/ value range	firewall.jas	ModBus address format
Input field <i>Admin</i>	Configuration of an administrator password for secured measurement device connections.	64 characters	_ADMIN_PASSWD	8392 - string
Input field <i>User password for programming mode on the device</i>	Configuration of a password (PIN - 5 digits) to protect the meter from unauthorized access or accidental changes.	max int	_ED_PASSWD	11535 - int
Input field <i>HTML</i>	Configuration of an HTML password (8 digits).	max int	_HTML_PASSWD	11537 - int
Selection list <i>Homepage mode</i>	- 0 = Do not lock homepage - 2 = Lock homepage - 128 = Lock configuration separately - 130 = Lock homepage and configuration separately	max int	_PASSWORD_MODE	11539 - int
Input field <i>Activation code for BACNet</i>	Configuration of a BACNet activation code (8 digits).	max uint	_BACNET_PASSWORD	11545 - uint
Input field <i>Activation code for EMax</i>	Configuration of an EMax activation code (8 digits).	max uint	_EMAX_PASSWORD	11543 - uint

Tab. "Passwords" control elements

4.27 Flicker

For the voltage and frequency-dependent measurement and calculation of the flicker values (flicker measurement according to DIN EN61000-4-15:2011), the measurement device requires the fundamental network values as a reference. The user configures these fundamental network values in the selection list *Flicker mode* in the *Flicker* configuration window.

Note that the voltage settings for flicker measurements in the GridVis software are based on the above-mentioned standard. Flicker measurements in high-voltage systems, for example, are not defined in the standard; flicker measurements only permit voltage values as a reference to which transformations are performed.



"Flicker" control elements

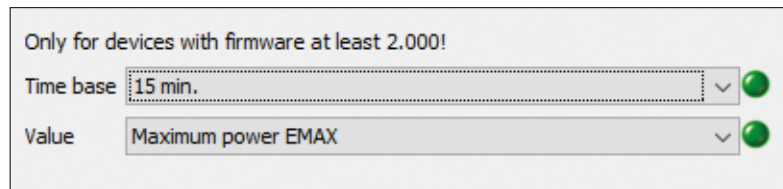
Control element/function	Description	Character/value range	firewall.jas	ModBus address format
Selection list <i>Flicker mode</i>	Network system referenced by the meter's flicker measurement: - 0 = 230 V / 50 Hz - 1 = 120 V / 50 Hz - 2 = 230 V / 60 Hz - 3 = 120 V / 60 Hz	0 ... 3	_FLICKER_SYSTEM	6747 - short

Tab. "Flicker" control elements

4.28 Peak demand

Configuration of the acquisition of peak demands for the active power sum L1 .. L3, apparent power sum L1 .. L3 and the maximum value for active power E_{MAX} based on time intervals.

The peak demands recorded by the meter provide information about the load distribution in your power system. When determining electricity costs, energy supply companies (utilities) charge for the highest peak demand measured over a quarter of an hour in the month. These peak values form the basis for the grid provision charges and the monthly demand charge (demand rate). In times of constantly rising electrical energy costs, it is imperative to ensure optimal adaptation of load distribution profiles to reflect the supply conditions of energy suppliers.



"Maximum power" control elements

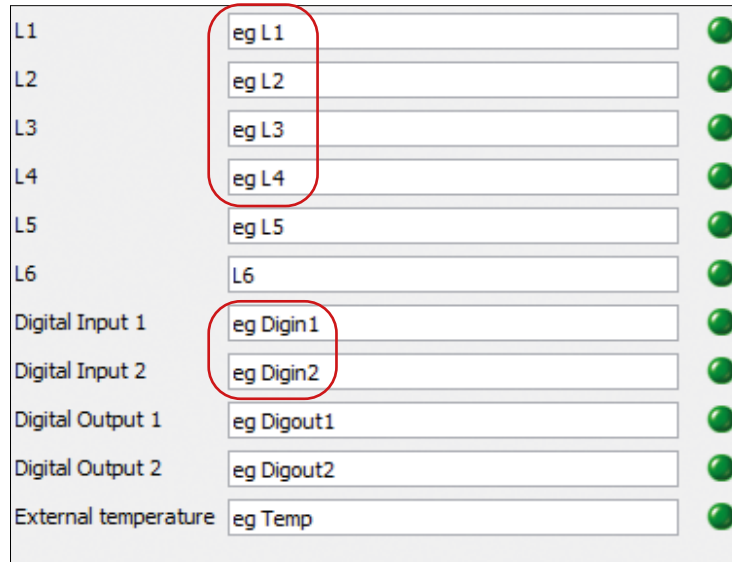
Control element/ function	Description	Unit	Charac- ter/ value range	firewall.jas	ModBus address format
Selection list <i>Time base</i>	Configuration of the time base - 60 sec. (60) - 5 min. (300) - 10 min. (600) - 15 min. (900) - default setting - 30 min. (1800) - 60 min. (3600)	s		_CONFIG_P15_TIME	13549 - int
Selection list <i>Value type</i>	Configuration of the recording of the peak values of: 0 = Active power sum L1 .. L3 1 = Apparent power sum L1 .. L3 2 = Maximum value active power E_{MAX} Please note that the EMax activation code, as de- scribed in the chap. „4.26 Passwords“ on page 85 , must be activated.		0, 1, 2	_CONFIG_P15_VAL	13547 - int

Tab. "Maximum power" control elements

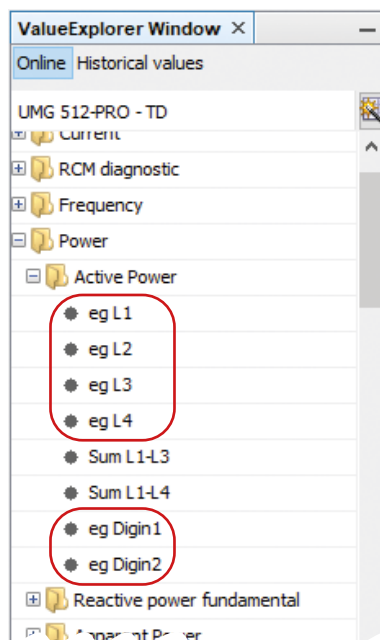
4.29 I/O naming

Configuration of names for the inputs and outputs of the meter. The designations

- simplify the identification of the inputs and outputs of the measurement device and are used exclusively by the GridVis® software ("value tree window");
- are not stored in the meter.



"I/O naming" control elements



Section of the value tree window of the GridVis® software
"I/O naming"

4.30 Online recording

The online recording function is used to display and evaluate measured values in the measurement list of the GridVis Service (GridVis web application). Please note that this configuration is not stored in the meter.

Configuration of the measured values for online recording:

- Open Online recording in the configuration window of your measurement device in the GridVis® software (desktop application).








GridVis® software (desktop application):

The screenshot displays two windows from the GridVis® software desktop application. The top window is the 'Online recording' configuration window, which has a sidebar on the left with options like 'Identity', 'Transformer', 'Phase mapping', 'Measuring variants', 'Nominal values', 'peak demand', 'I/O naming', and 'Online recording' (highlighted with a red circle). The main area of this window contains a table with two columns: 'Measuring value' and 'Averaging time(Seconds)'. The 'Measuring value' column contains 'Voltage effective L1' and the 'Averaging time' column contains '900'. To the right of the table are two buttons: 'Remove values' and 'Change Averaging time'. The bottom window is the 'Value Explorer Window', which shows a tree view of the measurement data. The tree view includes 'Online', 'Historical values', 'UMG 512-PRO - TD', 'Voltage', 'Voltage effective', and several sub-items like 'Voltage effective L1', 'Voltage effective L2', 'Voltage effective L3', 'Voltage effective L4', 'L2-L1', 'L3-L2', 'L1-L3', 'Voltage Under(rel.)', and 'Voltage Over(rel.)'. A 'Refresh' button is at the bottom. A black arrow labeled 'Drag and drop' points from the 'Voltage effective L1' item in the Value Explorer window to the 'Voltage effective L1' cell in the table of the Online recording configuration window.

"Online recording" and "Value tree window" configuration windows of the GridVis® software desktop application.

- From the Value tree window of the GridVis® software, drag and drop your measured value(s), (measured value group) into the Online recording configuration window.
- Your measured value then appears in the web application of the GridVis® software (GridVis Service) in the measurement list for online recordings.
- To remove measured values from the measurement list of GridVis Service (GridVis web application), select the Remove values button in the Online recording configuration window of the desktop application.

GridVis Service (GridVis web application):

Measurement list							Action
	Device	Measurement	Mode	Time Base	Last Value	Error Count	
▶	UMG512 ChTh	1				1	  
	UMG512 ChTh	Voltage effective L1	Measuring value	60 sec	243,70 V	1	  
							

"Measurement list" of the "GridVis Service" web application.

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