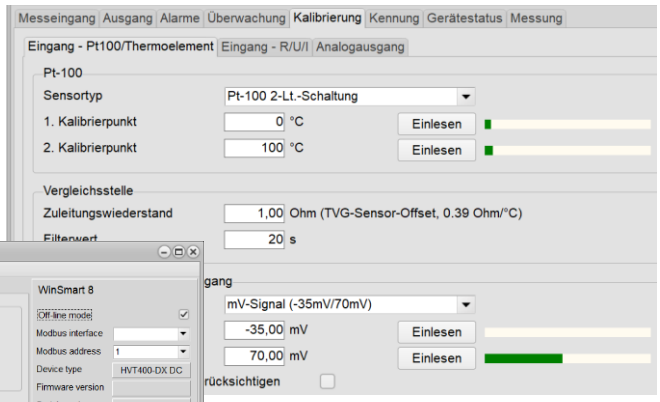
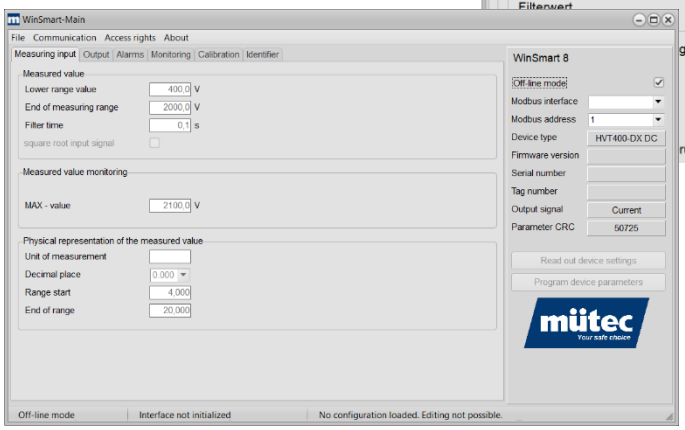
Winsmart 8

Configuration, parameterization and calibration of Mütec SIL2 transmitters





Application

The Winsmart software is a tool for configuring Mütec SIL2 transmitters for process and safety automation. In addition to flexible configuration, it is also used for simple calibration and has a fault memory function for simplified troubleshooting. One of the main strengths of this software is its versatility, which allows the user to fine-tune and customize transmitters for a variety of applications. Whether it's adapting settings to specific process requirements or integrating safety measures, Winsmart allows Mütec transmitters to be adapted to a wide range of industrial requirements.

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Properties

- Flexible configuration of inputs and outputs
- Simple configuration of limit value alarms for safety loops
- Fast export/import of parameter sets
- Detailed definition of safety measures, output behavior and tolerance limits
- Fault memory for tracking current and past faults

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Winsmart 8 manual

WINSMART support from version 8.0
MODBUS-RTU communication

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Disclaimer

We have checked the contents of the printed document for conformity with the hardware and software described. However, deviations cannot be ruled out, so we cannot guarantee complete conformity. The information in this printed document is checked regularly. Corrections and additions are made in the following version. We are grateful for any suggestions for improvement.

Subject to technical changes

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1 Main menu

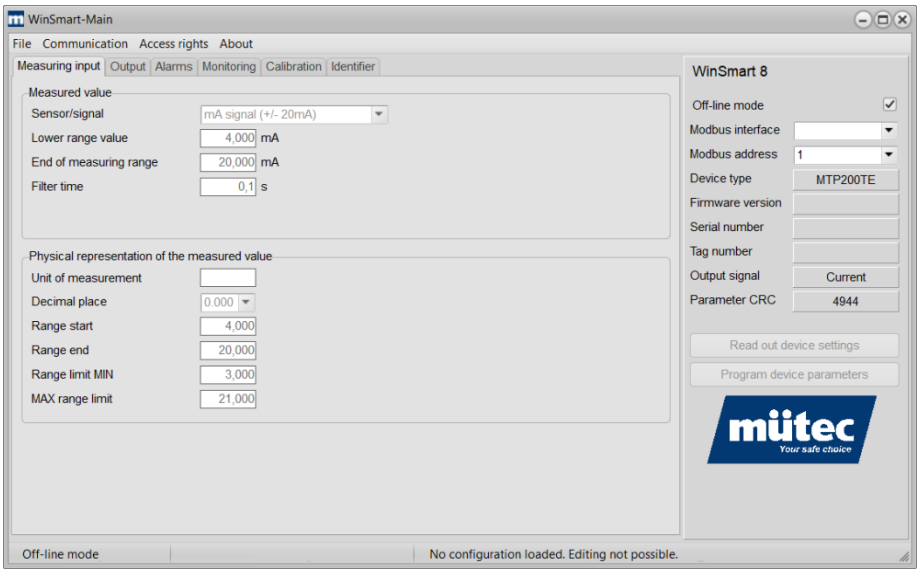

Figure 1: WinSmart mask in off-line mode

The above illustration shows the WinSmart 8 screen after starting the program in off-line mode (without connection to a device). This means that no device configuration is loaded and no editing is possible. Only the selection for establishing a connection is available:

1. Interface
2. Modbus address
3. Device type

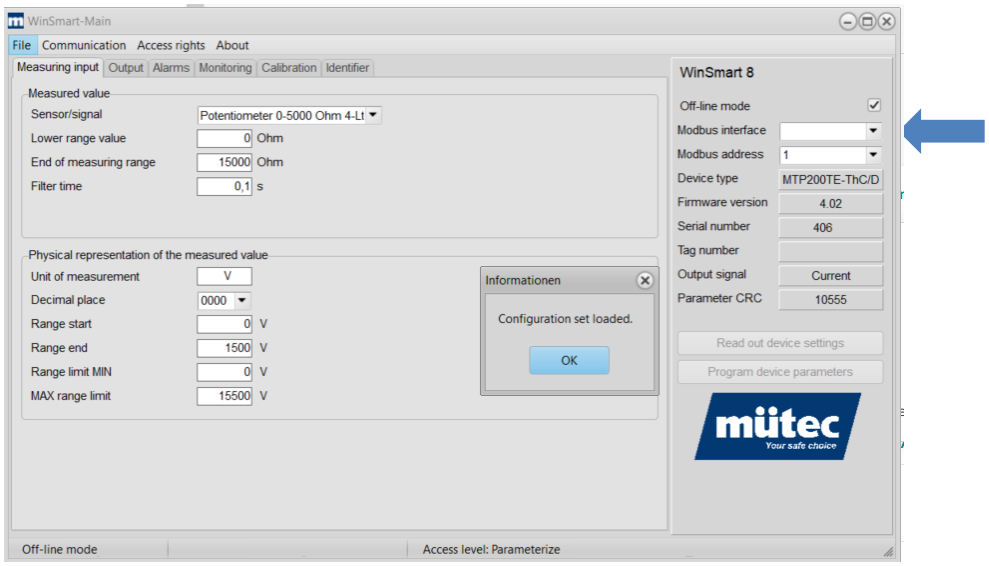

Figure 2: WinSmart mask in On-Line mode

After switching from off-line to on-line mode and reading out the device settings, all device configuration options are available if the PC/notebook and the device have previously been connected to each other and access rights have been granted.

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1.1 File / Configuration

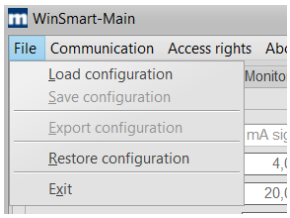

Figure 3: Porting options for the configuration

The WINSMART command "Export configuration" can be used to create a log (xxx.csv) with all device parameters for each device. The specific identifiers are the device address, the tag no., the serial no. and the version no. of the software. All parameters for input, mA output and the relay/transistor outputs are documented. The desired behavior of the analog output, the two relays and the transistor output in the event of an error is also logged

Gerätetyp	MTP200TE	
Firmwareversion	Apr 18	
Parameter CRC	7002	
Seriennummer	TEC2022-0012	
Geräte-TAG	12345678	
Modbusadresse	1	
Messeingang		
Messwert		
Sensor/Signal	mV-Signal (-35mV/70mV)	
Messbereichsanfang	-30	mV
Messbereichsende	70	mV
Filterzeit	0	s
Physikalische Darstellung des Messwertes		
Bereichsanfang	-30	mV
Bereichsende	70	mV
Bereichsgrenze MIN	-31	mV
Bereichsgrenze MAX	71	mV
Messbereichsabbildung		
Bereichsanfang	4	mA
Bereichsende	20	mA
Filterzeit	0	s
Ausgangssignal radizieren	Nein	
Begrenzung		
MIN-Begrenzung	3,6	mA
MAX-Begrenzung	21	mA
Alarmwert	22	mA
Alarm 1 (Relais 1)		
Alarmwert	50	mV
Alarmtyp	MAX-Alarm	
Funktion	Arbeitsstrom	
Hysterese	1	%
Verzögerung	0,5	s

Figure 4: Example configuration protocol for the MTP 200-TE

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1.1 Communication / parameters + calibration

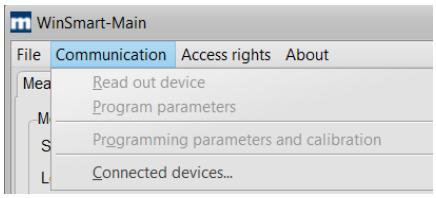

Figure 5: Communication: Data from and to the device

This menu can be used to read out the parameter set of a connected device ("Read out device") or load it onto the device ("Program parameters"). With the appropriate authorization (see 1.2), the calibration can also be overwritten in this way. A list of connected transmitters can be displayed using the "Connected devices" button.

1.2 Access rights / password

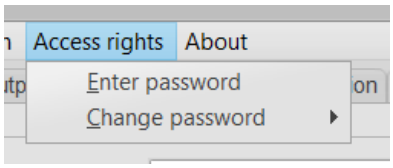

Figure 6: Password entry and password change

The WinSmart program is divided into 3 areas, 2 of which can be protected by passwords:

Access level 0: No password required
Access level 1: Parameterization with password_1, but without calibration option
Access level 2: Parameterization and calibration with password_2

The master password "5180" enables initial access to all WinSmart screens for configuration, parameterization and calibration. To protect against unauthorized device access, the master password must be replaced by passwords 1 and 2 as described above.

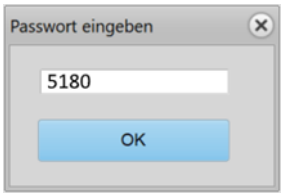

Figure 7: The master password for initial access to all screens and for all setting options is 5180

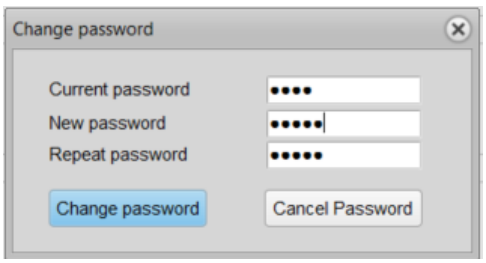

Figure 8: When the password_1 is assigned for the first time, no entry is made in the "Current password" field

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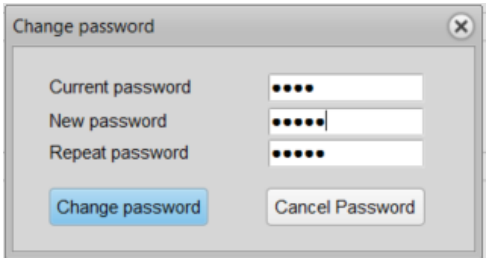

Figure 9: When the password_2 is assigned for the first time, the master password is entered in the "Current password" field

The passwords are not stored in the device, but only on the PC/notebook. This means that the device only remains protected if the same PC/notebook is always used. In the event of a forgotten password, proceed as follows :

The file "Winsmart_8.cfg" is deleted in the "Winsmart8" folder after it has been activated in Explorer under "View / Options / Folder options / View / Show hidden files, folders and drives". The file to be deleted is located in the folder:

Drive (C:) User > *User* > AppData > Roaming > Winsmart8

After deleting the "Winsmart_8.cfg" file, a new password can be assigned as described above!

2 Parameterization

2.1 Measuring input / Measured value / Physical representation

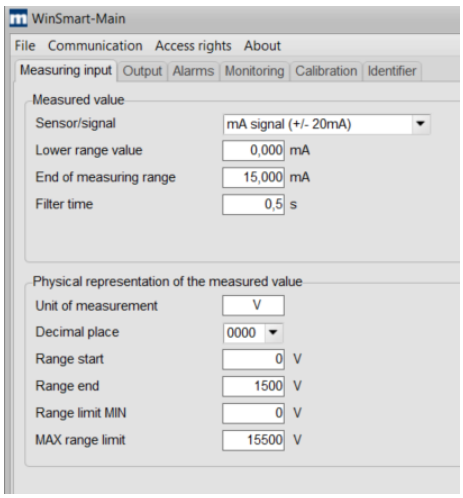

Figure 11: Measured value (sensor/signal), measuring range and filter time.

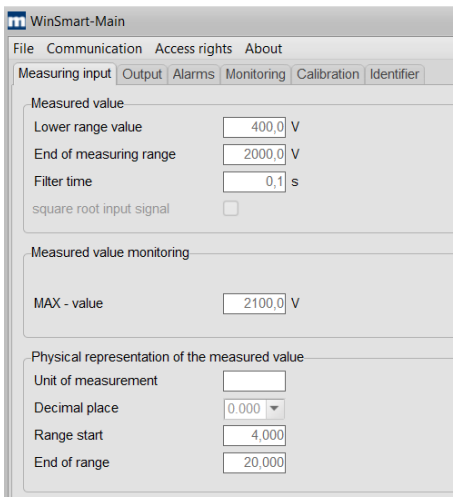

Figure 10: Voltage monitoring input area

Depending on the device type, different input types and measuring ranges are available. In addition to the start and end of the measuring range, there are other parameterization options:

Filter time (defines the window width of the input filter)

MAX value (defines the value of the SIL-relevant maximum value exceedance)

Physical representation (for indirect measurements e.g. current measurement via shunt resistor)

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2.2 Analog output

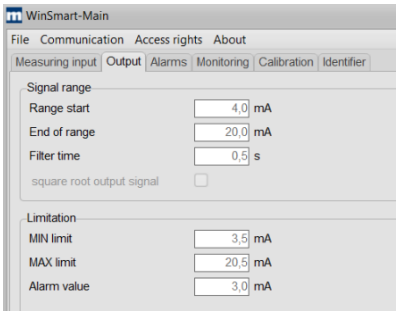

Figure 12: Parameterization of the measuring range, the filter time and the possibility of root extraction.

The analogue output can be parameterized via this menu. In addition to the upper and lower limits of the analog signal, an output filter for a moving average is also available here.

The limiting parameters here are the SIL-relevant minimum and maximum values. Violating these limits triggers a SIL error.

2.3 Alarm outputs

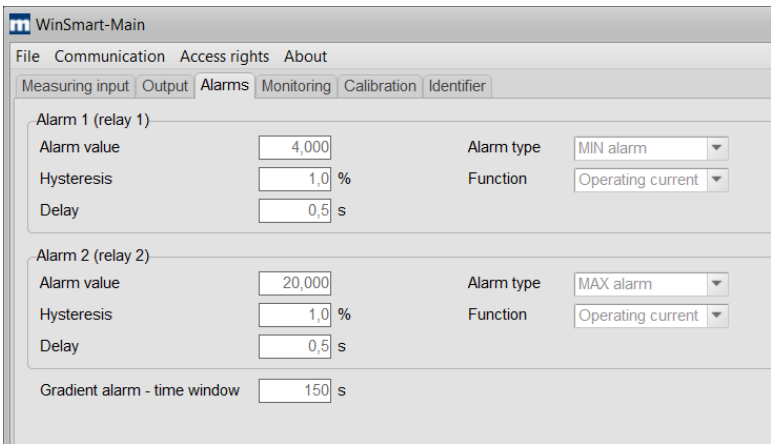

Figure 13: Alarm value settings

Alarm value settings with all associated parameters. The alarm values and the associated unit are available depending on the input range. In addition to the alarm value, hysteresis and delay, it is possible to switch between quiescent and operating current and to set whether exceeding or falling below the alarm value switches the output.

For the gradient alarm, the corresponding time window is defined (see 3.3).

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2.4 Monitoring / monitoring circuits

Tolerance specifications for measuring input and analog output. Depending on the application and interference, the tolerance can be set within the limits of 0.2% and 5%. In the event of an error, the value in the analog output and the behavior of the digital outputs can be preset if they are not involved in the error. Calibration

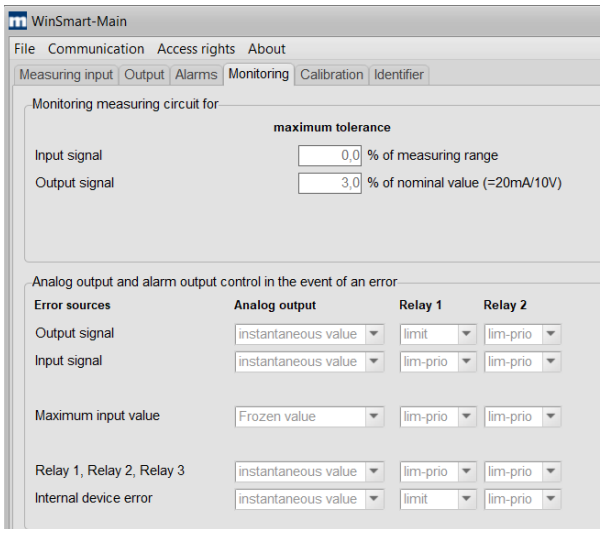

Figure 14: Monitoring / Monitoring measuring circuits / Behavior in the event of a fault

For some devices and applications, it may be useful to calibrate the devices manually. This is generally possible for all devices via a two-point calibration. The factory calibration is saved on Mütec's internal servers during the production process and can be restored by reading in configurations. In Figure 15 shows the calibration options for PT100 and thermocouples.

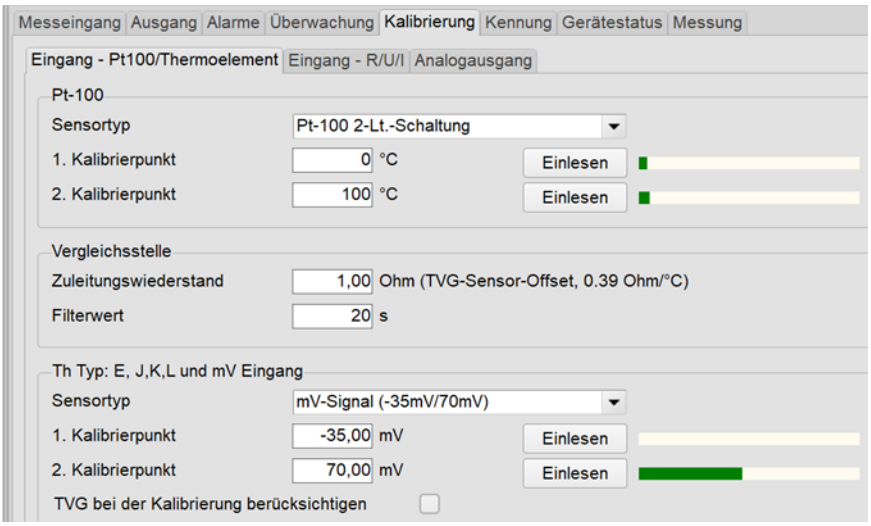

Figure 15 : Mask for calibrating the Pt100 and thermocouple sensor. The temperature reference junction (TVG) can be taken into account during the calibration process

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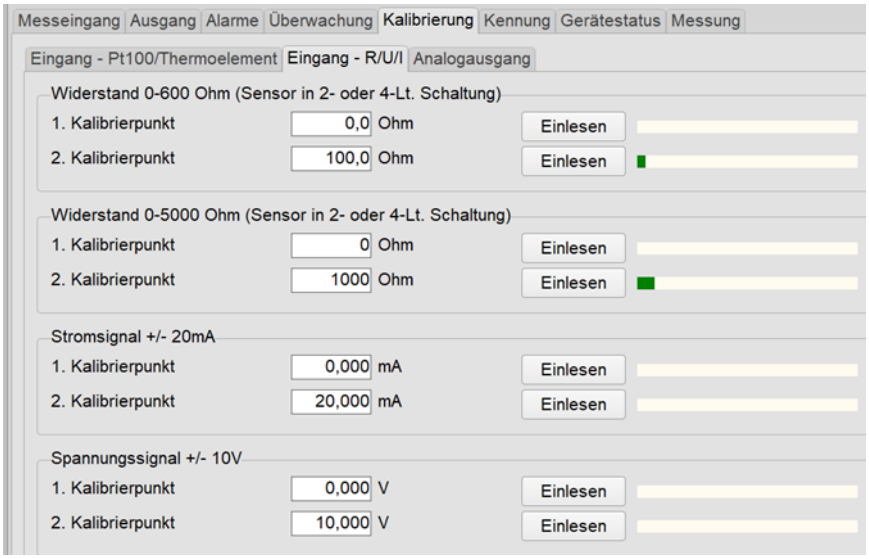

Figure 16: Mask for calibrating the input signals resistance, current and voltage

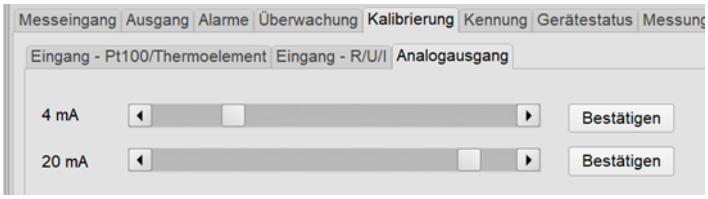

Figure 17: Mask for calibrating the mA output.

2.5 Device identification / device description

The serial number is assigned at the factory and cannot be edited. A maximum of 2000 characters are available for the device description. The description is saved on the configuring computer and not in the device memory.

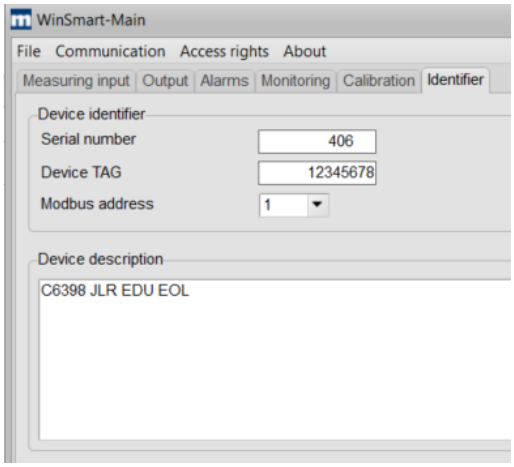

Figure 18: Serial number, TAG and device description

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2.6 Device status / error memory

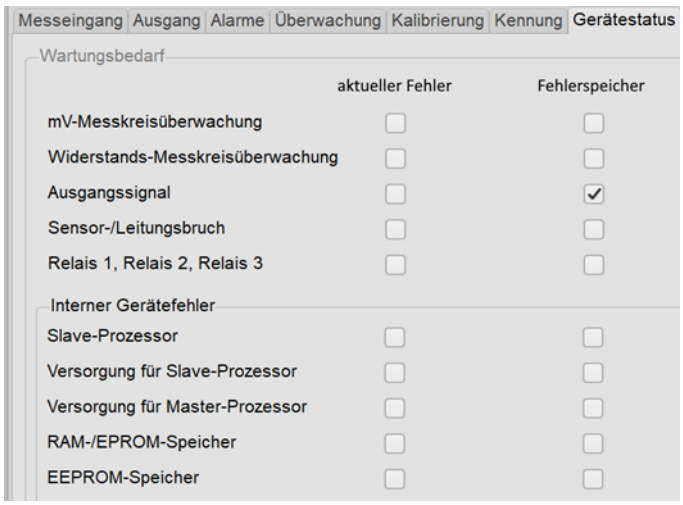

Figure 19: A current error is displayed in both boxes. An error that no longer exists only appears in the error memory.

2.7 Measurement / online display

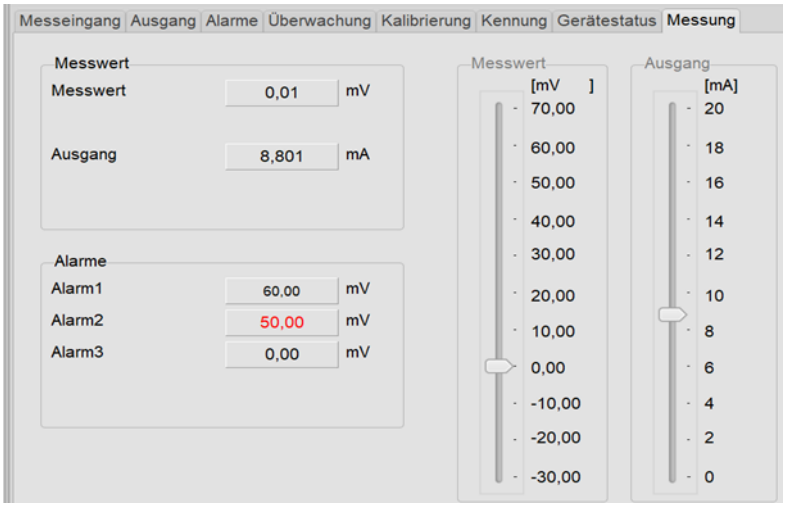

Figure 20: The online mask displays the analog and digital signals for the input and output. The alarms and their limit values are also displayed.

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3 Self-monitoring / SIL2

For self-monitoring of the input and output signal, the parameterizable permissible error tolerance may be +/- 0.2 % to +/- 5.0 %.

If the tolerance is exceeded, the alarm for maintenance requirements is triggered by the REL3 and REL4 and the alarm LED on the front of the device lights up continuously.

A total of five error sources are distinguished. Depending on the error source, different functions can be assigned to the analog output and the alarm outputs. They then determine the behavior of these outputs in the event of an error. If there is no error, the settings in the Analogue output screen apply to the analogue output and the parameter settings in the Alarm outputs screen apply to the alarm outputs.

Only in the event of an error are the functions selected in the Monitoring measures screen superimposed on the outputs. If a second error occurs, the ranking of the functions involved determines the behavior of the output.

Alarm outputs can be switched off in the Alarm outputs screen with "No function". They are therefore no longer available in the Monitoring measures screen for maintenance alarms and are hidden!

The analog output and alarm outputs are only controlled by the master controller. The mutual monitoring of the two controllers (DuoTec system) of the device in conjunction with other safety measures ensures that the alarm for maintenance requirements is triggered even if the master controller behaves incorrectly.

3.1 Behavior in the event of an error

Analog output value in the event of an error:

Function	Ranking	Behavior in the event of an error
Alarm value	★★★	The output signal jumps to the alarm value defined in the Analog output screen!
frozen	★★	The output signal remains at the value before the error occurred and therefore in offline mode!
current Value	★	The output signal is still updated, but may be distorted and is still in online mode!

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relay outputs and the transistor output in the event of a fault:

Function	Ranking	Behavior in the event of an error
on	★★★★	The digital alarm output is switched on and thus signals the need for maintenance to the outside!
off	★★★	The alarm output is switched off!
lim-prio	★★	The alarm output is only switched off if no limit value alarm was reported before the fault occurred!
limit	★	The alarm output does not participate in the error message and the limit value alarm is retained!

3.2 Truth table for limit value and maintenance alarm:

Function	Limit value alarm	Maintenance alarm	Alarm output	Remarks
on	**X**	**On**	**On**	A maintenance alarm is always displayed and overwrites any limit alarm
off	**X**	**On**	**Off**	
Lim-prio	**X**	**On**	**Off**	A maintenance alarm switches off the limit value alarm, a pending limit value alarm is still displayed
	On (alarm)	**On**	**On**	
limit	**On**	**X**	**On**	The limit value is always displayed
	Off	**X**	**Off**	

X = any (on or off)

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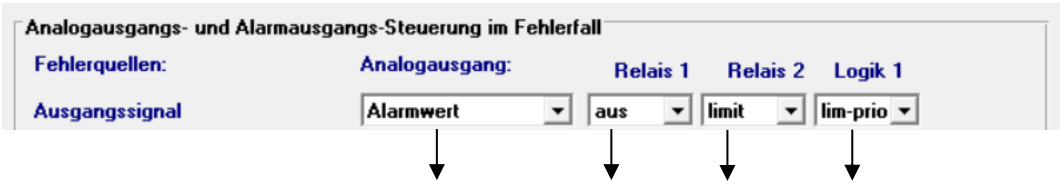
When the 1st error occurs, the behaviour of the analogue output and the alarm outputs corresponds to the parameterization in the **Monitoring measures** screen without taking the ranking into account.

Only in the event of a 2nd error would the ranking of the functions involved determine the control of the analog output and the alarm outputs involved!

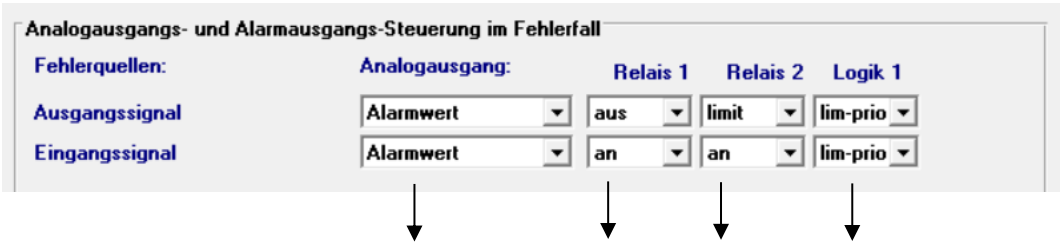
Example 1

Error 1 in the analog output



Control of the outputs: **Alarm value from limit lim-prio**

Error 2 occurring later in the mV input



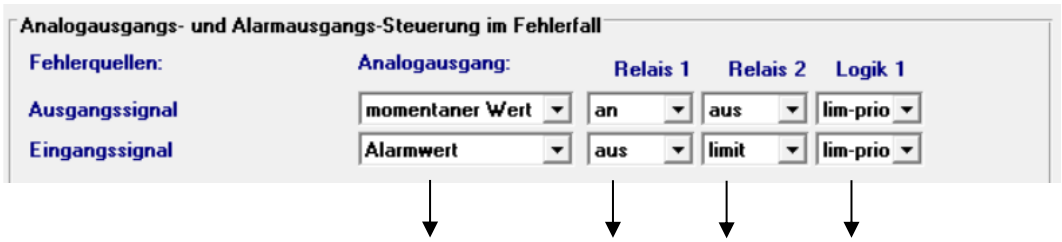
Control of the outputs: **Alarm value on on lim-prio**

The behavior of the outputs determined by the ranking:

Analog output remains at the alarm value Relay
1 changes from off to on Relay
2 changes from limit to on
Logic 1* remains at lim-prio * Transistor output

Example 2

Two errors occurring simultaneously



Control of the outputs: **Alarm value on off lim-prio**

The behavior of the outputs determined by the ranking:

Analog output jumps to the alarm value
Relay 1 is switched on
Relay 2 is switched off
Logic 1 * Remains at lim-prio * Transistor output

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3.3 Differential gradient alarm

Example 1

Alarm value variable =40 °C
Alarm type variable= Gradient MAX
Time interval variable = 60 s
Hysteresis variable = 0
Sampling interval = 60 s / 20 = 3

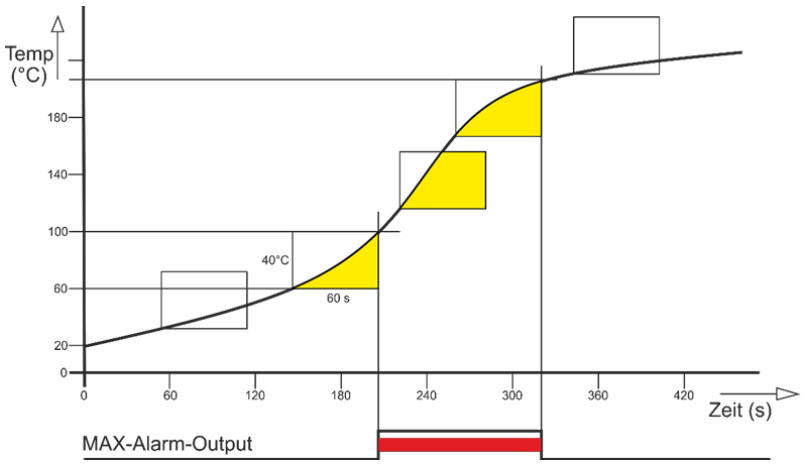

Figure 21: Gradient max alarm

Example 2

Alarm value variable =40 °C
Alarm type variable= Gradient-MIN
Time interval variable = 60 s
Hysteresis variable = 0
Sampling interval = 60 s / 20 = 3 s

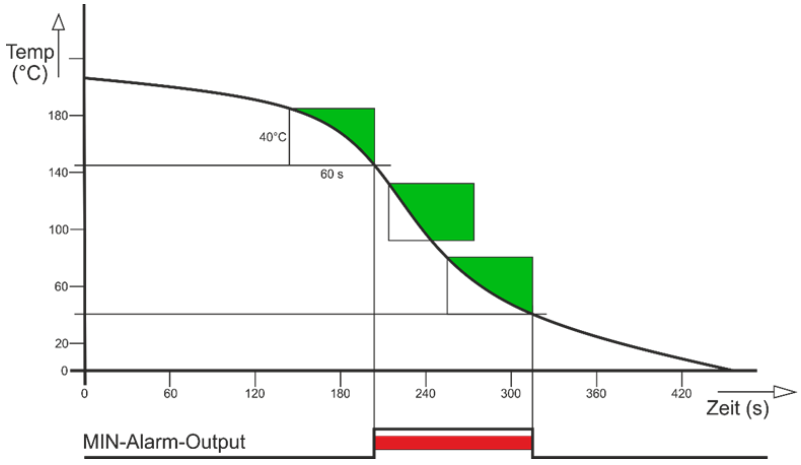

Figure 22: Gradient MIN alarm

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