

Oil humidity sensor WGM

Operating instructions
RE 51550-B/04.2021

English



The data specified serves to describe the product. If information on the use of the product is given, it is only to be regarded as application examples and recommendations. Catalog information does not constitute warranted properties. The information given does not release the user from the obligation of own judgment and verification. Our products are subject to a natural process of wear and aging.

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The cover shows an example configuration. The product supplied may therefore differ from the figure shown.

The original operating instructions were prepared in German.

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1 Introduction

1.1 Intended use

Oil humidity sensors are used for monitoring the water content in oil and for temperature measurement. Oil humidity sensors must not be used in highly inflammable or corrosive liquids.

Observe the technical data in the appendix with regard to the specific intended use, available material combinations and temperature limits.

WARNING

All device types are intended exclusively for industrial applications. They are **not safety components**. The devices must not be used if the safety and health of persons is impaired in the event of failure or malfunction. Any use in potentially explosive areas is **inadmissible**.

1.2 Functionality

The sensor determines the relative humidity of the oil via the water activity (a_w).

The relative humidity is comparable to the water activity.

This can also be called the degree of oil saturation. The sensor is equipped with a measuring chamber in which the humid air inside and the humidity in the medium are in balance. The sensor sets these values in relation to the maximum saturation. We thus obtain a measure of the oil saturation. Furthermore, the temperature is recorded to be able to correct the values. Water activity is given as a factor between 0 and 1. Multiplied by 100%, we get the relative humidity or the saturation in percent.

The critical limit of saturation depends on several plant-specific parameters.

The main advantage, however, is the permanent monitoring of humidity and temperature. This enables the machine end-user to make own statements about changes in the plant and to adjust the plant parameters, if required.

1.2.1 Humidity monitoring

The sensor element for determining the humidity is located in the medium and protected by a protective pipe. The relative humidity can be output permanently as an analog or digital signal (IO-Link) or executed as a switching signal.

The threshold value is pre-set and can be freely configured depending on the type. Depending on the version, switching outputs combined with an analog output (4 - 20 mA) are available. The display options can show the relative humidity on the display and output it on the analog output. The threshold values of the switching outputs can be freely configured. The sensor options offer the possibility of an analog output of the relative humidity. The threshold value of the switching point is pre-set and can only be configured ex works or via the digital interface.

1.2.2 Temperature monitoring

The temperature is monitored by a temperature sensor (Pt100) located in the medium and protected by a protective pipe. Depending on the version, switching outputs combined with an analog output (4 - 20 mA) or digital output (IO-Link) are available. The display options can show the temperature on the display and output it on the analog output. The sensor options offer the possibility of an analog output of the temperature.

Please observe the technical data in the appendix.

1.2.3 IO-Link

If an IO-Link interface is available at the sensor, it is possible to access identification, process and diagnosis data. Sensor parameters such as switching points or switch-back points can be set during operation. Prerequisite for this is an IO-Link master with the corresponding configuration tools.

When replacing the sensor, all parameters already set can be transferred to the new sensor.

The sensor includes an electronic device description, the so-called IODD file. The IODD file contains all the information required for system integration. The file can be downloaded from the download area at <https://ioddfinder.io-link.com>.

Further information can be found at www.io-link.com

1.3 Construction types

The WGM is available in three basic types:

Type	Description
WGM-B	Basic option - Sensor only
WGM-D	Display option - Sensor with display
WGM-R	Remote display for basic option (connection only possible to basic option WGM-B-1X/2A1S-G34-V)

Depending on the configuration, the WGM is equipped with different switching and analog outputs. The outputs are freely programmable.

The sensor options are available with a digital interface. Here, the sensor uses the standardized technology **IO-Link**, a powerful point-to-point communication. It is based on the previous and proven connection technology. Compatibility with the previous technology is guaranteed.

1.4 Type key

Oil humidity sensor type WGM

01	02	03	04	05	06
WGM	-	-	1X	/	-

Type

01	Humidity sensor	WGM
----	-----------------	------------

Option

02	Basic option - Sensor only Display option - Sensor with display Remote display for basic option (connection only possible to basic option WGM-B-1X/2A1S-G34-V)	B D R
----	---	----------------------------------

03	Component series	1X
----	------------------	-----------

Data transmission

04	Option B - sensor 4...20 mA; 2x analog output / 1x switching output Option B - digital sensor; IO-Link Option D - sensor with display 4...20 mA; 2x analog output/2x switching output Option D - sensor with digital display; IO-Link / 1x switching output	2A1S 1D0S 2A2S 1D1S
	Remote display (option R) can only be combined with basic sensor WGM-B-1X/2A1S-G34-V: Option R - remote display 4...20 mA; 2x analog output/2x switching output Option R - digital remote display; IO-Link / 1x switching output	2A2S 1D1S

Connection

05	Thread G 3/4"	G34
	Option R - Remote display without connection	0

Seal

06	FKM	V
	Option R - Remote display without seal	0

Accessories	Designation
Connecting cable for remote display M12x1, 8-pin, length 3.0 m, angle coupling and straight connector	ZWGM connecting cable for remote R928058029
Connecting cable IO-Link M12x1, 4-pin, Length 5.0 m angled coupling and braided wires	ZWGM connecting cable for IO-Link, 4-pin R928058030
Connecting cable 4...20 mA M12x1, 8-pin, Length 5.0 m angled coupling and braided wires	ZWGM connecting cable 4...20 mA, 8-pin R928058031

Order example	Sensor	Connecting cable	Connecting cable for remote
Sensor without display			
WGM-B-1X/2A1S-G34-V	R928057041	R928058031	-
WGM-B-1X/1D0S-G34-V	R928057042	R928058030	-
Sensor with display			
WGM-D-1X/2A2S-G34-V	R928057045	R928058031	-
WGM-D-1X/1D1S-G34-V	R928057046	R928058030	-
Remote display			
WGM-R-1X/2A2S-0-0	R928057043	R928058031	R928058029
WGM-R-1X/1D1S-0-0	R928057044	R928058030	R928058029

1.5 Scope of delivery

- ▶ Oil humidity sensor WGM
- ▶ Product documentation

1.6 Representation of information

Consistent safety instructions, symbols, terms and abbreviations are used in this documentation so that you can quickly and safely work with your product. For a better understanding, they are explained in the following sections.

1.6.1 Safety instructions




In this documentation, safety instructions are contained in chapter 2 "Safety instructions" and wherever a sequence of actions or instructions are explained which bear the danger of personal injury or damage to property. The measures described for hazard avoidance must be observed.

Safety instructions are set out as follows:

 SIGNAL WORD
<p>Type and source of danger! Consequences in case of non-compliance</p> <ul style="list-style-type: none"> ▶ Hazard avoidance measures ▶ <Enumeration>


- **Warning sign:** draws attention to the danger
- **Signal word:** identifies the degree of danger
- **Type and source of danger!:** specifies the type and source of danger
- **Consequences:** describes the consequences in case of non-compliance
- **Avoidance:** specifies how the danger can be prevented

Table 1: Risk classes according to ANSI Z535.6-2006

Warning sign, signal word	Meaning
 DANGER	Indicates a dangerous situation which will cause death or severe injury if not avoided.
 WARNING	Indicates a dangerous situation which may cause death or severe injury if not avoided.
 CAUTION	Indicates a dangerous situation which may cause minor or medium personal injury if not avoided.
NOTICE	Damage to property: The product or the environment could be damaged.

1.6.2 Warning signs and symbols

In these instructions, the following warning signs and symbols are used:

Symbol	Meaning
	Warning – General danger
	Warning – High voltage
	Warning – Inhalation hazard: toxic gas
	Warning – Corrosive liquids
	General information
	Disconnect mains plug
	Wear respiratory protection
	Wear face shield
	Wear gloves
	If this information is not observed, the product cannot be used and/or operated optimally.
	Individual, independent action

2 Safety instructions

2.1 Important notes

The use of the device shall only be admissible if:

- ▶ the product is used under the conditions described in the operating and installation instructions, in accordance with the name plate and for the applications for which it is intended. Hengst Filtration GmbH accepts no liability for unauthorized modifications to the device,
- ▶ the information and markings on the name plates are observed,
- ▶ the limit values specified in the data sheet and the instructions are observed,
- ▶ monitoring equipment/protective devices are correctly connected,
- ▶ the device is protected against mechanical damage and vibrations,
- ▶ the service and repair work not described in these instructions is carried out by Hengst Filtration GmbH,
- ▶ original spare parts are used.

These operating instructions are part of the operating equipment. The manufacturer reserves the right to change the performance, specification or design data without prior notice. Keep the instructions for future use.

2.2 General hazard notes

The device may only be installed by specialists who are familiar with the safety requirements and the risks. It is imperative that you observe the safety regulations relevant to the place of installation and the generally applicable rules of technology. Prevent faults and thereby avoid personal injury and damage to property.

The machine end-user must ensure that:

- ▶ safety instructions and operating instructions are available and observed,
- ▶ applicable national accident prevention regulations are observed,
- ▶ admissible data and application conditions are complied with,
- ▶ safeguards are used and prescribed maintenance work is carried out,
- ▶ legal regulations are observed during disposal.

Maintenance, repair

During maintenance and repair work, the following must be observed:

- ▶ Repair works on the operating equipment may only be carried out by personnel authorized by Hengst Filtration GmbH.
- ▶ Only carry out modification, maintenance or assembly works described in these operating and installation instructions.
- ▶ Only use original spare parts.



When carrying out maintenance work of any kind, applicable safety and operating regulations of the country of use must be observed.

The cleaning method for the devices must be adapted to the IP protection class of the devices. Do not use cleaning agents that can damage the materials used.



DANGER

Toxic, corrosive gases / liquids!

Protect yourself from toxic, corrosive gases/liquids during all work. Wear appropriate protective equipment.



3 Transport and storage

The products should only be transported in their original packaging or a suitable replacement.

When not in use, the operating equipment must be protected against humidity and heat. They must be kept in a covered, dry and dust-free room at room temperature.

4 Set-up and connection

DANGER



Electrical voltage!

Danger of electric shock

- ▶ De-energize the plant.
- ▶ The device may only be installed, maintained and commissioned by instructed, expert personnel.
- ▶ The applicable safety regulations of the place of use must be observed.



DANGER



Toxic, corrosive gases / liquids!

Protect yourself from toxic, corrosive gases/liquids during all work. Wear appropriate protective equipment.



CAUTION



Overpressure!

Protect the device from static and dynamic overpressures.
Provide suitable measures for prevention!

4.1 Assembly

Before installing the device, make sure that the plant is depressurized, otherwise liquid may escape. If necessary, use a collecting container. The WGM is delivered completely assembled and can be screwed into the pipeline with the thread. Make sure that the sensor part is always completely surrounded by the medium in order to display correct measured values.

DANGER



Electrical voltage!

Danger of electric shock

When connecting the devices, the maximum admissible voltages and currents (see technical data) must be observed and the required wire cross-sections and circuit breakers must be dimensioned accordingly. When selecting the connecting cables, the maximum admissible operating temperatures of the devices must also be observed.



The display units mounted on a flange can be rotated about 270° around the vertical axis for better readability of the display.

Please observe the integrated twisting stop. When the stop is reached, you will feel an increased resistance. Turning beyond this stop can damage the display unit.

4.1.1 Installation recommendations

For the humidity sensor to function properly, ensure that the sensor element is fully and permanently immersed in the medium.

The sensor is suitable for lateral tank installation if installed below the minimum filling level. In the event of return line installation ensure that the maximum flow velocity is not exceeded.

With the **WGM-R** option, the remote display is mounted onto a profile rail.

4.2 Electrical connections

Voltage supply is provided via plug-in connectors. For installation dimensions, nominal voltage and pin assignment, please refer to the attachment.

The switching outputs are designed as PNP transistors (see figure):

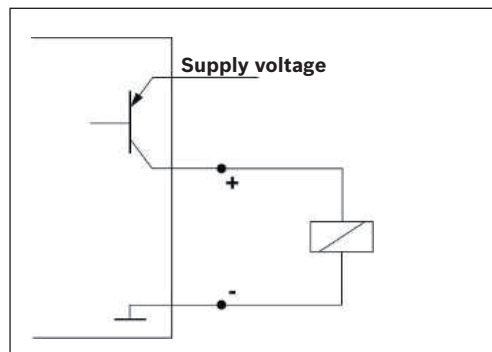


Fig. 1: Circuitry of switching outputs



Notice: When measuring the switching output with high-impedance measuring device inputs or using it as a frequency output, a 10 kΩ resistor must be connected between the output and the ground (GND) to prevent incorrect measurements.

5 Operation



NOTICE

The device may not be operated outside its specifications!

5.1 WGM-D/WGM-R

This explanation of operation refers to options equipped with a display unit.

5.1.1 Switch-on procedure

When the device is connected to the supply voltage, it switches on immediately. At the beginning, the software version appears briefly and the device checks the installed components simultaneously. The display then changes to the measured value display.

The function of the display and control unit is described below:

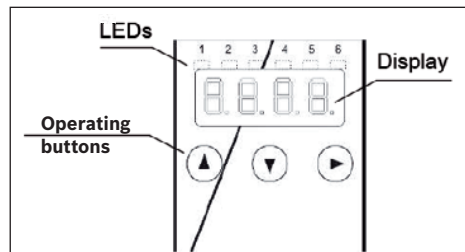


Fig. 2: Switch-on procedure




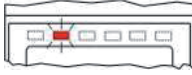
If an error message appears in the display during operation, please refer to the table **Troubleshooting** in chapter "Service and Repair".

5.1.2 LED status displays

LEDs above the measured value display indicate the status of the switching outputs. The LEDs are permanently assigned to the switching outputs.

The following table shows the factory settings for the assignment of the switching outputs to filling level and temperature:

Table 2: Description of LED status displays


Figure	Description	2 switching outputs
	LED 1 - yellow Status switching output 1	Humidity
	LED 2 - red Status switching output 2	Temperature

The switching behavior of the LEDs (illuminated with closed or open switching contact) can be changed.

5.1.3 General key functions

Operation is carried out via the keys below the display.

A detailed explanation of the menu control can be found in the following chapters.

Key	Mode	Function
▶	Measured value display:	Change of the displayed measurement.
	In the menu:	Change to a subordinate menu. Change to the superior menu.
	At the end of the menu:	 The display indicates the end of the menu.
	After input/selection:	Confirm and save an entered numerical value or a function selection. If the parameter is changed, the display flashes.
▲	Measured value display:	Display of the configuration.
	In the menu:	Scroll menu item, numerical value or function selection upwards. When holding down the key, this is done continuously.
▼	Measured value display:	Change to the main menu.
	In the menu:	Scroll menu item, numerical value or function selection downwards. When holding down the key, this is done continuously.
▼+▶	In the menu:	Exit the main menu/submenu/optional menu and return to the measured value display without saving the changed parameters.
▲+▶	In the menu:	Change to the next higher menu level.
60 s no action	In the menu:	Exit the main menu/submenu/optional menu.

Proceed as follows to select a menu item and set the values:

- ▶ Open the main menu with the ▼ key.
- ▶ Select the submenu with the ▼ and ▲ keys and open the submenu with the ▶ key.
- ▶ If necessary, select the next submenu with the ▼ and ▲ keys and open it with the ▶ key.
- ▶ Select the desired menu item with the ▼ and ▲ keys and open the value list with the ▶ key.
- ▶ Use the ▼ and ▲ keys to set the value and confirm with the ▶ key. The changed settings are saved and the device returns to the submenu.
- ▶ Exit the submenu by selecting the EXIT menu item and confirming with the ▶ key. The device returns to the superior menu or to the measured value display.

5.1.4 Active key lock

If the key lock is activated, the display  appears instead of the main menu when the menu is called up with the ▼ key. The active digit is identified by a point.

- ▶ Enter the code with the ▲ and ▼ keys and confirm with the ► key. The active digit moves one position to the right. After entry of the third digit, the main menu is opened.

If the numerical code is entered incorrectly, the device returns to the measured value display. If you have forgotten your password, you can access the menu at any time with master code 287.

You can cancel the key lock by resetting the code in the menu item *Loc* in the submenu **Basic settings Advanced functions b.EF** by entering 000.

5.1.5 Menu overview

The structure of the menu is based on the VDMA standard sheet 24574-1.

The menu has a hierarchical structure. The top menu level contains the main menu items, e.g. *HUMI*, *TEMP*, *b.EF*, *d.R*, *E*. Each main menu contains further submenu items.

The menu items can vary depending on the configuration of the device. Not all menu items described in the following may apply to your device.

You can call up the configuration by pressing the ▲ key in the display mode. A 4-digit code is displayed, e.g.



Here the 4 digits mean tsav:

t: Type

s: Number of switching outputs

a: Number of analog outputs

v: Assembly type of the device

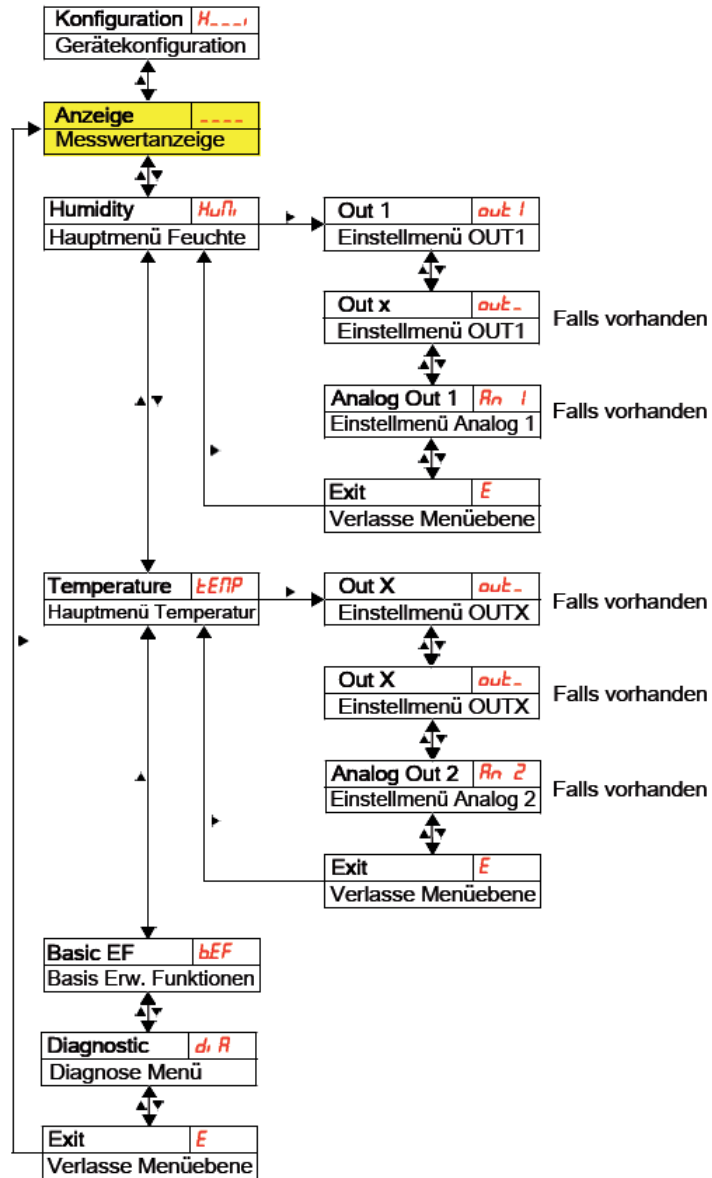
h= humidity and temperature measurement

2 or 4

0 or 2

i = standard assembly (tank installation)

r = remote installation



The individual menu items do not appear if the option is not available. Example: If a=0, the menu items for setting the analog output are not available. You can then skip the description of these items.

The structure of the main menus **Humidity (HwH)** and **Temperature (tENP)** is identical. The settings for the switching outputs or the analog outputs (if available) are made here.

The basic settings of the device can be changed. General settings are made in the menu **Basic settings Advanced functions (b.EF)**.

These settings should be made first, as they affect the displays and adjustment options in the individual menus. Such settings are e.g. the units used and the assignment of the switching outputs to filling level and temperature measurement. The assignment of the analog outputs cannot be changed.

In addition, the menu **Diagnostic (d.R)** contains options for diagnosis.

A detailed representation of the entire menu structure can be found in the original operating instructions at the end of this chapter.

5.1.6 Changing the basic settings

The generally valid basic settings are made in the menu **Basic settings advanced functions (b.EF)**. These settings affect the representation in the measured value display as well as the adjustment options in the various main menus. The assignment of the switching outputs can also be changed here.

- ▶ Press the ▼ key to enter the main menu.
- ▶ Select the menu item (b.EF) with the ▼ and ▲ keys and open the menu with the ▶ key.



NOTICE

Switching off the normal troubleshooting!

Switching off the normal troubleshooting and error assessment is the factory setting and, under certain circumstances, it can lead to dangerous operating states, hazards for operators or machines. Before using this option, check the hazard potential within your process. Hengst Filtration GmbH is not liable for any health or material damage that may occur as a result of this setting.

5.1.6.1 Restore factory settings (reset)

The Reset (rES) function can be used to restore the factory settings. All changes will be lost. Since the limit values are also reset, it is essential to check the settings for filling level and temperature.



The following options are available:

rES

no

YES

Condition as supplied:
No, the current settings
are retained

Condition as supplied:
Yes, the settings are reset
to the default settings made
at the factory.

The factory settings are as follows:

Definitions:

- SPX / rPX* Switching point / switch-back point x
- dSX / drX* Switch-on delay / switch-back delay for switching output x
- AXHi / AXLo* maximum and minimum measured value for the output
- A.ouX* Signal form of the analog output
- ouX* Switching characteristic of the switching output x
- H.uni / t.uni* Unit for humidity / temperature
- r.ouX* Assignment of the switching output x to filling level or temperature monitoring
- d.S* Update rate of the display
- Loc* Key lock
- SJ.ou* logged switching output
- dH.nn* Delay for recording the minimum / maximum humidity
- dt.nn* Delay for recording the minimum / maximum temperature



Notice: In the case of customer-specific requirements, the default settings made at the factory may deviate from the values listed here.

Version with 2 switching outputs:

Switching outputs		Basic settings	
<i>SP1 / rP1</i>	<i>80 % / 75 %</i>	<i>Err.h</i>	<i>no</i>
<i>dS1 / dr1 / ou1</i>	<i>0 / 0 / Hno</i>	<i>H.uni</i>	<i>-1- (%)</i>
<i>SP2 / rP2</i>	<i>60 / 55 C</i>	<i>t.uni</i>	<i>C</i>
<i>dS2 / dr2 / ou2</i>	<i>0 / 0 / Hno</i>	<i>r.ou1</i>	<i>HuM1</i>
		<i>r.ou2</i>	<i>tERP</i>
		<i>d.S</i>	<i>FAST</i>
		<i>Loc</i>	<i>000</i>

Version with analog outputs:

Analog outputs	
<i>A1.Hi / A1.Lo / A.ou1</i>	<i>0 / 100 / 1</i>
<i>A2.Hi / A2.Lo / A.ou2</i>	<i>0 / 100 / 1</i>

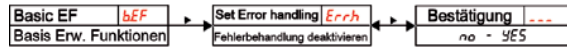
Diagnostic settings:

Diagnosis	
<i>SJ.ou</i>	<i>ou1</i>
<i>dH.nn</i>	<i>0.0</i>
<i>dt.nn</i>	<i>0.0</i>

5.1.6.2 Switching off the normal troubleshooting

Here you can activate/deactivate the normal troubleshooting and error assessment. The function Switching off troubleshooting (*Err.h*) deactivates normal troubleshooting and error assessment. Under certain circumstances this can lead to dangers for operators and machines.

Normal troubleshooting is deactivated in the factory setting of the WGM.



The following options are available:



Deactivates the normal troubleshooting.
(standard setting)

Activates the normal troubleshooting

Important notice: If the measuring range is exceeded or sensor errors occur, the measured value is frozen and all six LEDs in the status bar flash. When the measured value is within the valid range again, the LEDs stop flashing and the display is updated normally.

5.1.6.3 Defining the unit for humidity

Here the displayed unit symbol for the humidity is defined:



The following options are available:



Percent

5.1.6.4 Defining the unit for temperature

Here the displayed unit symbol for the temperature is defined:



The following options are available:



Degrees Celsius

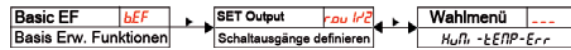
Degrees Fahrenheit

Notice: The measured value conversion and the adjustment of the measurement range take place automatically. Nevertheless, the corresponding switching and switch-back points must be checked.

5.1.6.5 Defining the switching outputs

Here you can define the switching outputs.

Using the function "Define switching outputs", you can define the switching outputs (*r.ou1* and *r.ou2*). It is possible to define the switching outputs as *Err*, *HuMi* or *TEMP*.



The following options are available:



Err

TEMP

HuMi



Notice:

- ▶ The switching outputs 1 and 2 can alternatively be connected as error indicators. In this case, the output is connected as a normally closed contact which opens when the range is exceeded or another error state. However, the LED assigned to the output is generally not activated, as all 6 LEDs in the status bar flash when an error occurs.
- ▶ If a switching output is defined as an error indicator, it is no longer available in the normal switching output settings.

5.1.6.6 Setting the update rate of the display

The update rate of the display can be set depending on the application.

The display can also be switched off completely. The function of the LED remains unchanged.



The following options are available:



quick

medium

slow

display off

Notice:

Error messages are displayed even if the display is switched off.

5.1.6.7 Activate / deactivate key lock

To prevent unauthorized changes to the settings in the device, a key lock can be set.



The key lock is activated when at least one digit >0 is entered. During input, the active digit is marked with a dot.

The following options are available:

Setting range: 000 to 999



- ▶ Open the value list with the ▶ key:
- ▶ Set the digit with the ▼ and ▲ keys (0 to 9) and confirm with the ▶ key. The active digit moves one position to the right.
- ▶ At the end, confirm the code with the ▶ key. The device returns to the submenu.

Notice:

Release the keyboard lock by entering: 000.

5.1.7 Switching outputs

All switching outputs are set in the same way. The number of the switching output is therefore represented by x. Call up the switching output to be set via the menu of the corresponding measurement.

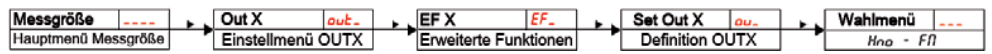


The assignment of the switching outputs as well as further basic settings, which refer to all switching outputs, can be changed in the menu **Basic settings advanced functions**.

In the submenu **Advanced functions**, further settings can be made for each individual switching output that e.g. influence the switching behavior of the output. Testing the output is also possible here.

5.1.7.1 Switching output x: Definition of the switching characteristic

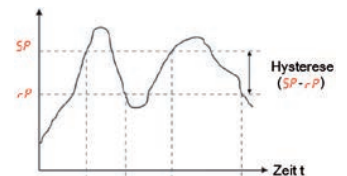
The switching characteristic for the output is defined in the following menu:



ou_ The following options are available:

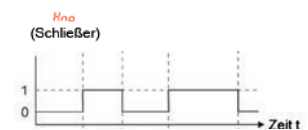
Hysteresis function

Normally open or normally closed contact function in which the output signal is set when the set switching point is exceeded. If the value falls below the set switch-back point, the output signal is deleted.



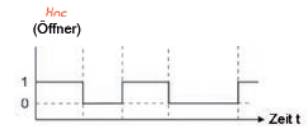
Hno Hysteresis function as normally open contact

Normally open contact (*Hno*) here means that the PNP switching output is closed above the switching point SPx and opens again when the value falls below the switch-back point rPx.



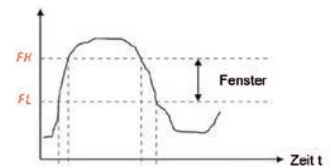
Hnc Hysteresis function as normally closed contact

Normally closed contact (*Hnc*) here means that the PNP switching output is open above the switching point SPx and closes again when the value falls below the switch-back point rPx. See also the explanations in the drawing below.



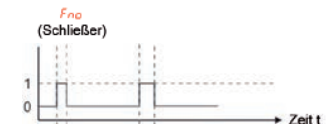
Window function

Normally open or normally closed contact function that defines a signal window. When the measuring window is reached, the output signal is set, when leaving the measuring window it is deleted again.



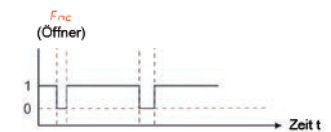
Fno Window function as normally open contact

Here, normally open contact (*Fno*) means that the PNP switching output is closed if the value is within the window. Otherwise the switching output is open.



Fnc Window function as normally closed contact

Here, normally closed contact (*Fnc*) means that the PNP switching output is open if the value is within the window. Otherwise the switching output is closed.



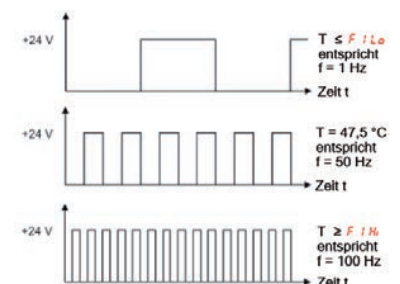
Ffl Frequency output

If the output is defined as a frequency output, a rectangular signal with a frequency between 1 Hz and 100 Hz is output proportional to the measured value.

Notice: To increase the edge steepness of the rectangular signal, it is recommended to fit the switching output with a 10 kΩ resistor.

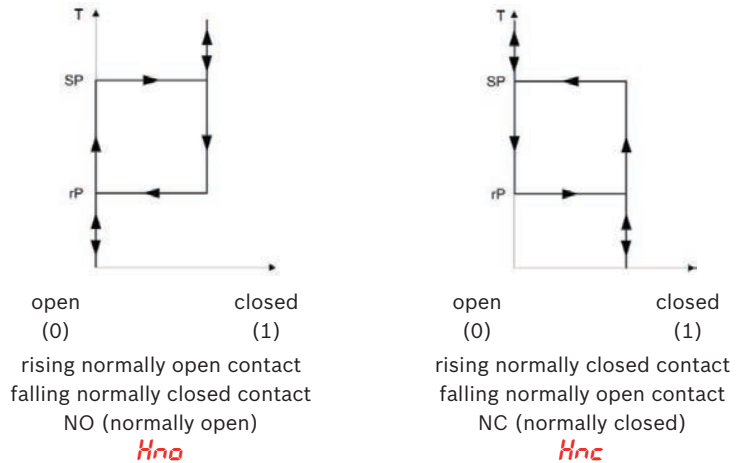
Example:

$F_{ILO} = 15\text{ °C}$, $F_{IHl} = 80\text{ °C}$
with temperature T and frequency f:



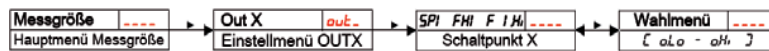
Notice: The switching function can be designated in different ways:

Measurement



5.1.7.2 Switching output x: Upper switching limit (switching point)

The upper switching limit for the switching output Out x is set in the following submenu:



Switching point for OUT x

Setting range: [a.Lo]...[a.Hi]

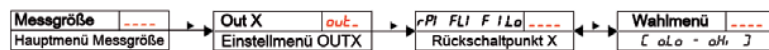


Notice:

- ▶ The switching point must be selected within the range limits (see menu **Basic settings advanced functions**).
- ▶ If the switching output OUT x has been assigned the **window** function, **FHI** is displayed. The set value corresponds to the upper window limit.
- ▶ If the switching output OUT x has been assigned the **frequency output** function, **F!Hi** is displayed. The set value corresponds to the frequency 100 Hz.

5.1.7.3 Switching output x: Lower switching limit (switch-back point)

The lower switching limit for the switching output Out x is set in the following submenu:



Switch-back point for OUT x

Setting range: [a.Lo]...[a.Hi]



Notice:

- ▶ The switch-back point must be selected within the range limits.
- ▶ If the switching output OUT x has been assigned the **window** function, **FLI** is displayed. The set value corresponds to the lower window limit.
- ▶ If the switching output OUT x has been assigned the **frequency output** function, **F!Lo** is displayed. The set value corresponds to the frequency 1 Hz.

5.1.7.4 Switching output x: Switch-on delay

In the menu **Advanced functions EFX** further settings can be made for the switching output x. The submenu can be found on the second submenu level.

The switching and switch-back delay prevents the alarm from responding too frequently in unstable conditions. The switching delay is set in the following menu:



The following options are available:



Setting range: 0...100 seconds

Time period in seconds in which the signal must be permanently present for the switching output to respond.

Notice:

- ▶ If the switching output OUT x has been assigned the **window** function, the set value corresponds to the switch-on delay which detects a valid reaching of the measuring window.
- ▶ If the switching output OUT x has been assigned the **frequency output** function, this value has no effect.

5.1.7.5 Switching output x: Switch-back delay

The switch-back delay is set in the following menu:



The following options are available:



Setting range: 0...100 seconds

Delay of the switch-back signal for OUT x.

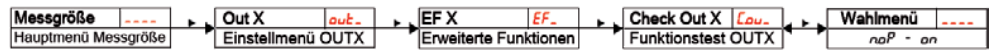
Time period in seconds in which the signal must be permanently present for the switching output to respond.

Notice:

- ▶ If the switching output OUT x has been assigned the **window** function, the set value corresponds to the switch-on delay which detects a valid leaving of the measuring window.
- ▶ If the switching output OUT x has been assigned the **frequency output** function, this value has no effect.

5.1.7.6 Switching output x: Testing the switching output

A test of the switching output can be started in the following menu:



The following options are available:



Test possibility for the switching output

Options for setting *ou1* to *Hno* / *Hnc* / *Fno* / *Fnc*:



Normal operation of the switching output



Permanently switch off the switching output



Permanently switch on the switching output

Options for setting *ou1* to *Fn*:



Normal operation as frequency output



Output Frequency 1 Hz



Output Frequency 100 Hz

Important notice:

When the test is complete, set the function to normal operation *noP*.

5.1.7.7 Change display function of the status LED

The switching status of the output is indicated by the LEDs in the display.

The assignment of the LEDs to the switching output is shown in the following table:

Numbering LED	Switching output x	Assignment with 2 switching outputs
1	1	Reserved for IO-Link
2	2	LED 2 - red
3	3	Reserved
4	4	Reserved
5	5	Reserved
6	6	Reserved

In the factory setting, the LED indicates the physical state of the PNP switching output (switching output closed - LED illuminated).

It is possible that the logic function of the display shall be different from the physical signal on the switching output. You can therefore also reverse this display in this menu item (switching output open - LED illuminated).

Here, you can reverse the status function of the LED for a contact: the LED is illuminated when the contact is open, i.e. below the minimum temperature, and the status "Error" is displayed again when the LED is illuminated.



The following options are available:



LED = output; the LED is illuminated, when the PNP switching output is closed.

LED = output; the LED is illuminated, when the PNP switching output is open.

NOTICE



The display function of the status LED affects the recording of events! Please refer to the chapter "Diagnosis options".

5.1.8 Analog outputs

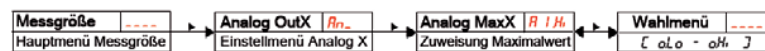
5.1.8.1 Models with analog output

In the factory setting, the analog output signal increases with increasing humidity. Range adjustment and signal type are adjustable via the menu.

5.1.8.2 Analog output x: Assignment of the upper limit

Humidity

Assignment of the humidity level where the maximum analog signal will be output. The setting is made in the menu:



The following options are available:



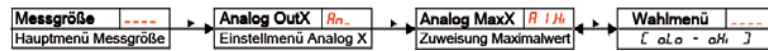
Setting range: 0% to 100%

Notice:

- ▶ The set output range must not be smaller than 10% of the measurement range: $RI.Hi - RI.Lo > 10\% * (D - 100)$
- ▶ If the selected range is too small, the analog value output may have increments.

Temperature

Assignment of the temperature level where the maximum analog signal will be output. The setting is made in the menu:



The following options are available:

Setting range: -20 °C to 120 °C [-4 °F to 248 °F]



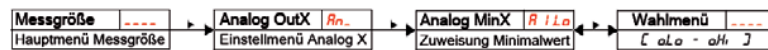
Notice:

- ▶ The set output range must not be smaller than 10% of the measurement range: $Ri.Hi - Ri.Lo > = 10\%$
- ▶ If the selected range is too small, the analog value output may have increments.

5.1.8.3 Analog output x: Assignment of the lower limit

Humidity

Assignment of the humidity level where the minimum analog signal will be output. The setting is made in the menu:



The following options are available:

Setting range: 0% to 100%

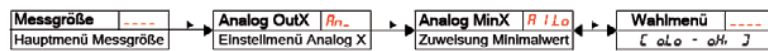


Notice:

- ▶ The set output range must not be smaller than 10% of the measurement range: $Ri.Hi - Ri.Lo > = 10\% * (0 - 100)$
- ▶ If the selected range is too small, the analog value output may have increments.

Temperature

Assignment of the temperature level where the minimum analog signal will be output here. The setting is made in the menu:



The following options are available:

Setting range: -20 °C to 120 °C [-4 °F to 248 °F]

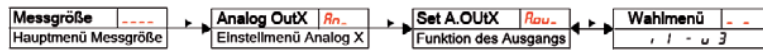


Notice:

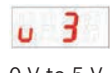
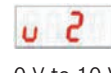
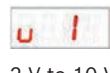
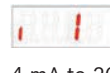
- ▶ The set output range must not be smaller than 10% of the measurement range: $Ri.Hi - Ri.Lo > = 10\%$
- ▶ If the selected range is too small, the analog value output may have increments.

5.1.8.4 Analog output x: Determining the signal type

The analog output can be defined as a voltage or current output with different value ranges. The setting is made in the menu:



The following options are available:



4 mA to 20 mA

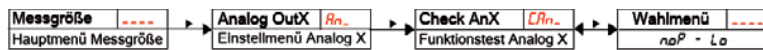
2 V to 10 V

0 V to 10 V

0 V to 5 V

5.1.8.5 Analog output x: Testing the analog output

The analog output can be tested. The largest, medium and smallest analog values can be output one after the other. The setting is made in the menu:



The following options are available:



Normal operation

Output largest analog value



Output medium analog value

Output smallest analog value

Important notice:

When the test is complete, set the function to normal operation *noP*.

5.1.9 Diagnosis options

The device is able to log the events for a switching output. Whenever the LED is illuminated, this is considered an event. Thus the recording of the switching processes depends on the setting of the switching function of the LED. The settings and the evaluation can be made here.



- ▶ Press the ▼ key to enter the main menu.
- ▶ Select the menu item *d.R* with the ▼ and ▲ keys.

From here you can access various diagnosis values and logs for monitoring the measured values.

- ▶ Open the menu with the ► key. Now you can change or call up the diagnosis settings.

Important notice:

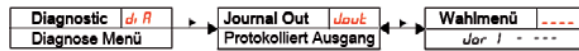
Only one switching output can be logged.

The switching output to be logged is selected in the menu item

Set Journal Out (*SJ.ou*).

5.1.9.1 Calling the log book

The last 6 events of the logged switching output can be called up here and all entries can be deleted:



The log entries are displayed in the following manner:

- ▶ Recent event *Jor1* took place x hours (h) / days (d) ago
- ▶ Events 2 to 5 took place x hours / days ago
- ...
- ...
- ...
- ▶ Oldest event *Jor6* took place x hours / days ago
- ▶ Delete function (----)

Example:


Jor1 ⇔ 1.3h, key ▼
Jor2 ⇔ 2.4h, key ▼, ▲
Jor3 ⇔ 6.1h, key ▼, ▲
Jor4 ⇔ 8.2h, key ▼, ▲
Jor5 ⇔ non*, key ▼, ▲
Jor6 ⇔ non*, key ▼, ▲
 ----, key ▲; ▶ = delete

* not yet assigned,
 there have been only 4
 events



The index of the entry x is displayed alternating with the time, e.g. *Jor1* ⇔ 1.4h for the most recent event 1.4 hours ago.

Press the ▶ key to return to the submenu or use ▼, ▲ to select the next log entry.

Pressing the ▶ key to confirm the display  clears the event list and returns to the submenu.

Notice:

If no events have been recorded, the display changes between *JorX* and *non*.

5.1.9.2 Calling the error log book

Error messages can be called up and deleted here:



The error messages are deleted in the following manner:

- ▶ Display of the error number
- ▶ Delete function

Example:

0, key ▼
 ----, key ▲; ▶ = delete



If an error occurs, the error number is displayed here (see table in chapter **Troubleshooting and remedy** [> page 35]).

Press the ▶ key to return to the submenu or use ▼ to select the display



Confirm the display  with the ▶ key to reset the error messages.

5.1.9.3 Maximum and minimum humidity

Here, the stored maximum and minimum humidity values are displayed or deleted:



The log entries are displayed in the following manner:

- ▶ Maximum value of humidity (max. value)
- ▶ reached x hours / days ago (time)
- ▶ Minimum value of humidity (min. value)
- ▶ reached x hours / days ago (time)
- ▶ Delete function (delete)

Example:

150, key ▼
 8.4h, key ▼, ▲
 60, key ▼, ▲
 2.1h, key ▼, ▲
 ---, key ▲; ▶ = delete



Press the ▶ key to return to the submenu or use ▼, ▲ to select the next log entry.

Pressing the ▶ key to confirm the display  clears the event list and returns to the submenu.

5.1.9.4 Maximum and minimum temperature

Here the stored maximum and minimum temperature is displayed or deleted:



The log entries are displayed in the following manner:

- ▶ Maximum value of the temperature (max. value)
- ▶ reached x hours / days ago (time)
- ▶ Minimum value of the temperature (min. value)
- ▶ reached x hours / days ago (time)
- ▶ Delete function (delete (Reset))

Example:

72 C, key ▼
 8.4h, key ▼, ▲
 22 C, key ▼, ▲
 2.1h, key ▼, ▲
 ---, key ▲; ▶ = delete

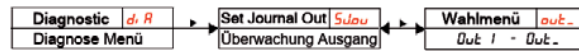


Press the ▶ key to return to the submenu or use ▼, ▲ to select the next log entry.

Pressing the ▶ key to confirm the display  clears the event list and returns to the submenu.

5.1.9.5 Defining the switching output to be logged

Here, the switching output to be logged is selected. Only one switching output can be logged.



The following options are available:



Selection: **out1** to **outX**
Logging of the switching output.

Important notice:

The values are saved from the volatile to the non-volatile memory approx. every three hours.

5.1.9.6 Delay to min / max storage of humidity

In order to record reliable values with fluctuating input variables, a delay can be set for storing the minimum and maximum humidity. The time period in seconds in which the signal must be permanently present before the humidity is logged is specified here.



The following options are available:

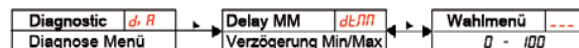


Setting range: 0...100 seconds

- ▶ Open the value list with the ► key.
- ▶ Set the value with the ▼ and ▲ keys and confirm with the ► key (e.g. 5 seconds). The device returns to the submenu.

5.1.9.7 Delay to min / max storage of the temperature

In order to record reliable values with temperature variations, a delay can be set for storing the minimum and maximum temperature variation. The time period in seconds in which the signal must be permanently present before the temperature is logged is specified here.



The following options are available:



Setting range: 0...100 seconds

- ▶ Open the value list with the ► key.
- ▶ Set the value with the ▼ and ▲ keys and confirm with the ► key (e.g. 5 seconds). The device returns to the submenu.

5.2 WGM-B

This operation explanation refers to sensor options without display units

5.2.1 Switch-on procedure

When the device is connected to the supply voltage, it switches on immediately. With IO-Link, the sensor is in SIO mode if the master is not present. In SIO mode, the sensor operates like a normal PNP switching output.

5.2.2 Parameter settings

The parameters can be set as switching point, switch-back point or temperature unit via the IO-Link interface.

5.2.3 Factory setting

(can only be restored via IO-Link)

Switching outputs		Basic settings	
Switching point switch-back point	80% / 75%	Error message	Inactive
Delay switching point/ switch-back point	0 / 0	Temperature unit	°C
Characteristic	Hysteresis as normally closed contact (Hnc)	Assignment switching output	Humidity

5.2.4 Switching outputs

The sensor is equipped with a switching output which is assigned to the humidity. The threshold value is pre-set to 80%. The switching function is designed as a normally open contact. This switching output can be configured ex works or via the digital interface.

For information on the functionality, please refer to chapter **Switching outputs** [> page 22].

5.2.5 Analog outputs

The sensor version is equipped with up to two 4-20 mA analog outputs. The analog outputs are available for relative humidity and temperature. The scaling is pre-set and can be configured ex works or via the digital interface. By default, the relative humidity is represented at the analog output from 0% to 100%. The temperature is represented at the analog output from -20 °C to 120 °C.

6 Maintenance and cleaning

Sealing fittings must be checked regularly for leak-tightness, especially if vibrations can occur. Apart from that, the device is maintenance-free.

The cleaning method for the devices must be adapted to the IP protection class of the devices. Do not use cleaning agents that can damage the materials used.

Isopropanol is recommended for cleaning the sensor element. The part of the sensor in contact with the media should be immersed in a container with the specified cleaning agent and then dried in ambient air. Never clean the sensor with a compressed air or liquid jet, otherwise the sensor elements may be damaged.

7 Service and repair



In case an error occurs during operation, this chapter contains information on troubleshooting and remedy. Repair works on the operating equipment may only be carried out by personnel authorized by Hengst Filtration GmbH.

If you have any questions, please contact our service department:

Phone: +49 (0) 62 02 / 6 03-0 or your responsible representation



If the device does not function correctly after remedy of any faults and after switching on the mains voltage, it must be checked by the manufacturer. Please send the device in suitable packaging for this purpose to:

Hengst Filtration GmbH

Hardtwaldstr. 43

68775 Ketsch

Germany

7.1 Information on disassembly



The housing temperature depends on the process temperature, therefore the following must be observed when working on the device:











- ▶ Allow the device to cool down before starting any maintenance or repair work.
- ▶ Before removing the device, make sure that the plant is depressurized, otherwise liquid may escape. If necessary, use a collecting container.
- ▶ Observe the safety instructions in chapter **Set-up and connection** [[> Page 12](#)].

7.2 Troubleshooting and remedy

Problem / fault	Possible cause	Remedy
No indication	No supply voltage	Check cables and replace, if necessary

Error messages in the display:

Change between Err and Exxx: e.g.  ↔ 

	Error 001	Ambient temperature too low	Comply with limit values
	Error 002	Ambient temperature too high	Comply with limit values
	Error 004	Pt100 defective (short-circuit)	Send in device for repair
	Error 008	Pt100 defective (cable break)	Send in device for repair
	Error 032	Sensor defective (supply line open)	Send in device for repair
	Error 064	Transmitter (humidity)	Input signal too low
	Error 128	Transmitter (humidity)	Input signal too high
	Error 256	Transmitter (temperature)	Input signal too low
	Error 512	Transmitter (temperature)	Input signal too high
	Error 1024	Internal error	Please contact customer service

Possible errors

Problem / fault	Possible cause	Remedy
Switching output does not switch when limit values are exceeded	Incorrect configuration of the switching output	In the submenu LowX : "Testing the switching output", ensure normal operation
	Defect on the switching output	In the submenu LowX : "Testing the switching output", test the desired switching status
Switching output permanently switches through	Incorrect configuration of the switching output	In the submenu LowX : "Testing the switching output", ensure normal operation
	Defect on the switching output	In the submenu LowX : "Testing the switching output", test the desired switching status
Analog output does not reach full/correct output current	Incorrect setting of the signal form	In the submenu FlowX : Check and if necessary set signal form (current/voltage output) correctly
	Load too high (current output)	Reduce load to admissible value
Analog output does not change the output signal with changed input signal	Incorrect configuration of the analog output	In the submenu FlowX : "Testing the analog output", ensure normal operation

8 Disposal



Dispose of the parts in such a way that there is no hazard to health or the environment. When disposing of electronic components and devices, observe the legal regulations in the country of use.

9 Appendix

9.1 General technical data

Technical data	
Operating pressure max.	50 bar
Medium	-20 °C to + 80 °C
Threaded connection	G 3/4" pipe thread, Eolastic seal
Max. tightening torque	20 Nm
Sensor length from sealing surface	36 mm
Max. flow velocity at sensor	5 m/s
Media resistance	Fluids based on mineral oil (other fluids on request)

9.2 Technical data WGM-B

Sensor option WGM-B		Dimensions
Ambient temperature	-20 °C to + 70 °C	
Supply voltage (U _B)	18 – 30 V (nominal voltage 24 V DC)	

Material / version	
Housing	Stainless steel/aluminum
Material in contact with media	1.4301, 1.4571, 2.4478, FR4, glass
Weight	approx. 205 kg
Protection class	IP67*

* with fitted plug-in connector

IO-Link	
IO-Link	Revision 1.1
Baud rate	COM2 (38.4 k)
SIO mode	Yes
Min. cycle time	20 ms

Humidity measurement	
Measurement range	0 - 100% rel. humidity
Accuracy	± 3 % FS
Analog output	4 - 20 mA (0 - 100% relative humidity)
Tolerance	± 0.5% FS
Load Ω	= (U _B - 8 V) / 0.02 A

Switching output for humidity	
PNP switching output ¹⁾	Permanently set to 80% relative humidity
Switching current	max. 0.2 A

¹⁾ Others on request

Temperature measurement	
Measurement range	-20 °C to +120 °C
Accuracy	± 1.5 % FS
Analog output	4 - 20 mA (-20 to +120 °C)
Tolerance	± 0.5% FS
Load Ω	= (U _B - 8 V) / 0.02 A

9.3 Technical data WGM-R / WGM-D

Remote display / sensor with display

Evaluation and indication electronics

Display	4-digit, 7-segment LED
Indicator unit	0 - 100% relative humidity
Operation	using 3 keys
Memory	Storage of min./max. values
Current consumption upon switch-on	approx. 100 mA for 100 ms
Current consumption in operation	approx. 50 mA (no current nor switching outputs)
Supply voltage (U _B)	18 - 30 V DC (nominal voltage 24 V DC)
Ambient temperature	-20 °C to +70 °C
Display resolution	0.5%, 0.5 °C, °F

Version	WGM-R Remote display for sensor	Dimensions
Fastening	35 mm profile rail mounting	
Weight	approx. 130 g without sensor	
Display housing	PA	
Protection class	IP65* (display)	
		* with fitted plug-in connector

Version	WGM-D with built-on sensor	Dimensions
Fastening	G 3/4	
Weight	approx. 270 kg	
Display housing	PA	
Protection class	IP65* (display)	
		* with fitted plug-in connector

IO-Link

IO-Link	Revision 1.1
Baud rate	COM3 (230.4 k)
SIO mode	Yes
Min. cycle time	10 ms

Humidity measurement

Measurement range	0 - 100% rel. humidity
Accuracy	± 3 % FS

Analog output	Selectable current or voltage output (4 - 20 mA, 2 - 10 V, 0 - 10 V or 0 - 5 V)
Tolerance	± 0.5% FS
Load Ω	= $(U_B - 8 \text{ V}) / 0.02 \text{ A}$

Switching output

PNP switching output	Selectable switching function and switching output
Switching current	max. 0.2 A per output

Temperature measurement

Measurement range	-20 °C to +120 °C
Accuracy	± 1.5 % FS
Analog output	Selectable current or voltage output (4 - 20 mA, 2 - 10 V, 0 - 10 V or 0 - 5 V)
Tolerance	± 0.5% FS
Load Ω	= $(U_B - 8 \text{ V}) / 0.02 \text{ A}$


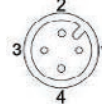
9.4 Outputs WGM-B

Version	2A1S	1D0S
Connector (base)	1 x M12 – 8-pin	1 x M12 – 4-pin
Switching output (fixedly set)	X	
IO-Link		X
Analog output for humidity	X	
Analog output for temperature	X	


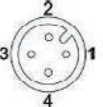

9.5 Outputs WGM-R / WGM-D

Version	2A2S	1D1S
Connector (base)	1 x M12 – 8-pin	1 x M12 – 4-pin
Display & remote		
Sensor connection socket (bottom) remote	1 x M12 – 8-pin	1 x M12 – 8-pin
Switching outputs	2 x	1 x
IO-Link		X
Analog output for humidity	X	
Analog output for temperature	X	

9.6 Pin assignment WGM-B

	2A1S	1D0S
		
Male/female connector	8-pin Standard	4-pin IO-Link
Pin		
1	L+	L+
2	L-	
3	S1 humidity	L-
4		C/Q
5		
6	I1 humidity	
7	I2 temp.	
8		

9.7 Pin assignment WGM-R / WGM-D

	Connector A		Sensor connection socket
	WGM-D/ WGM-R 2A2S	WGM-D/ WGM-R 1D1S	WGM-R
			
Male/female connector	8-pin Standard	4-pin IO-Link	8-pin
Pin			
1	L+	L+	L+
2	L-	DO/S2	L-
3	S1 humidity	L-	
4		C/Q	
5	I2 temp.		
6	I1 humidity		I1 humidity
7	I2 temp.		I2 temp.
8			

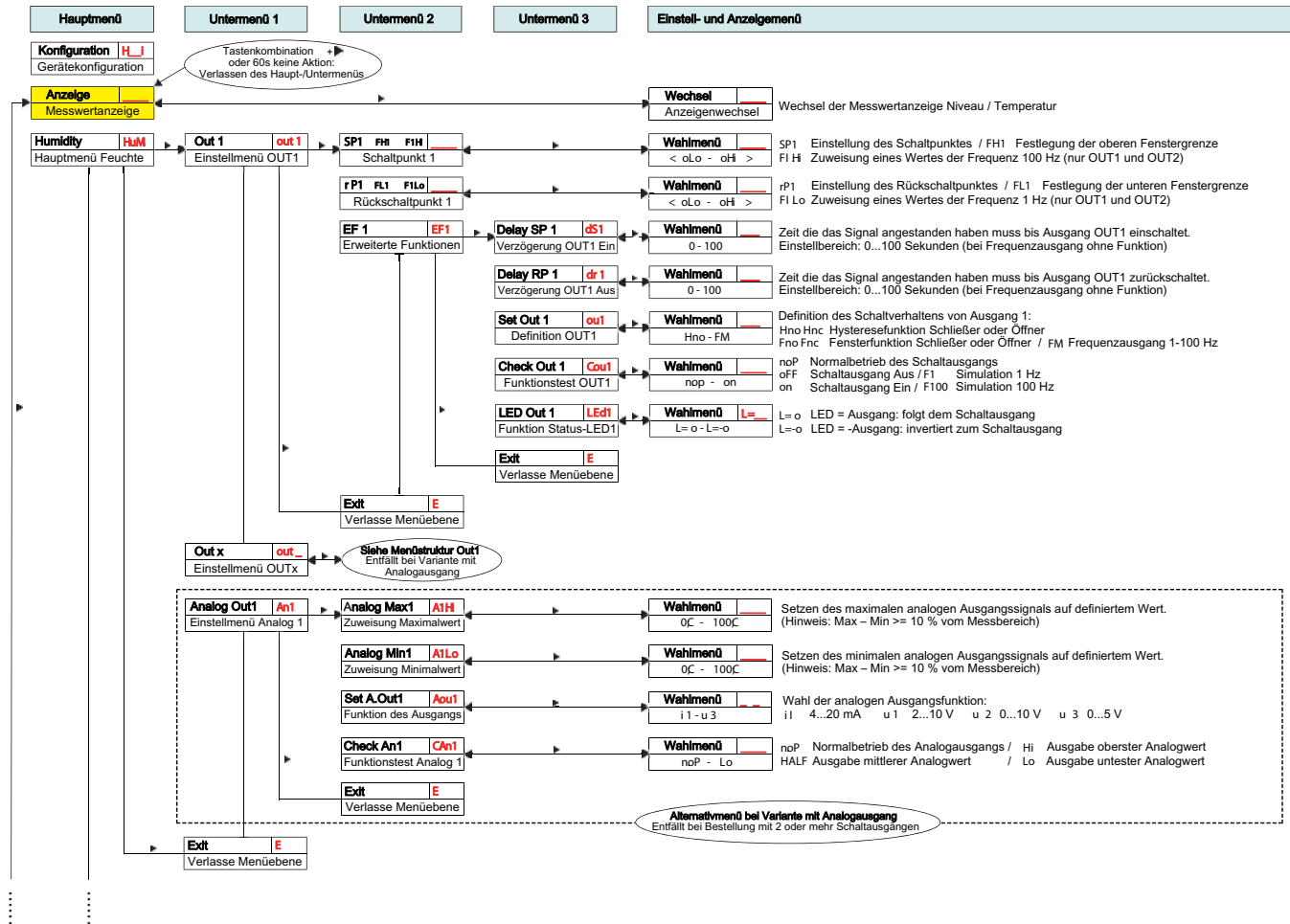
9.8 indication ranges

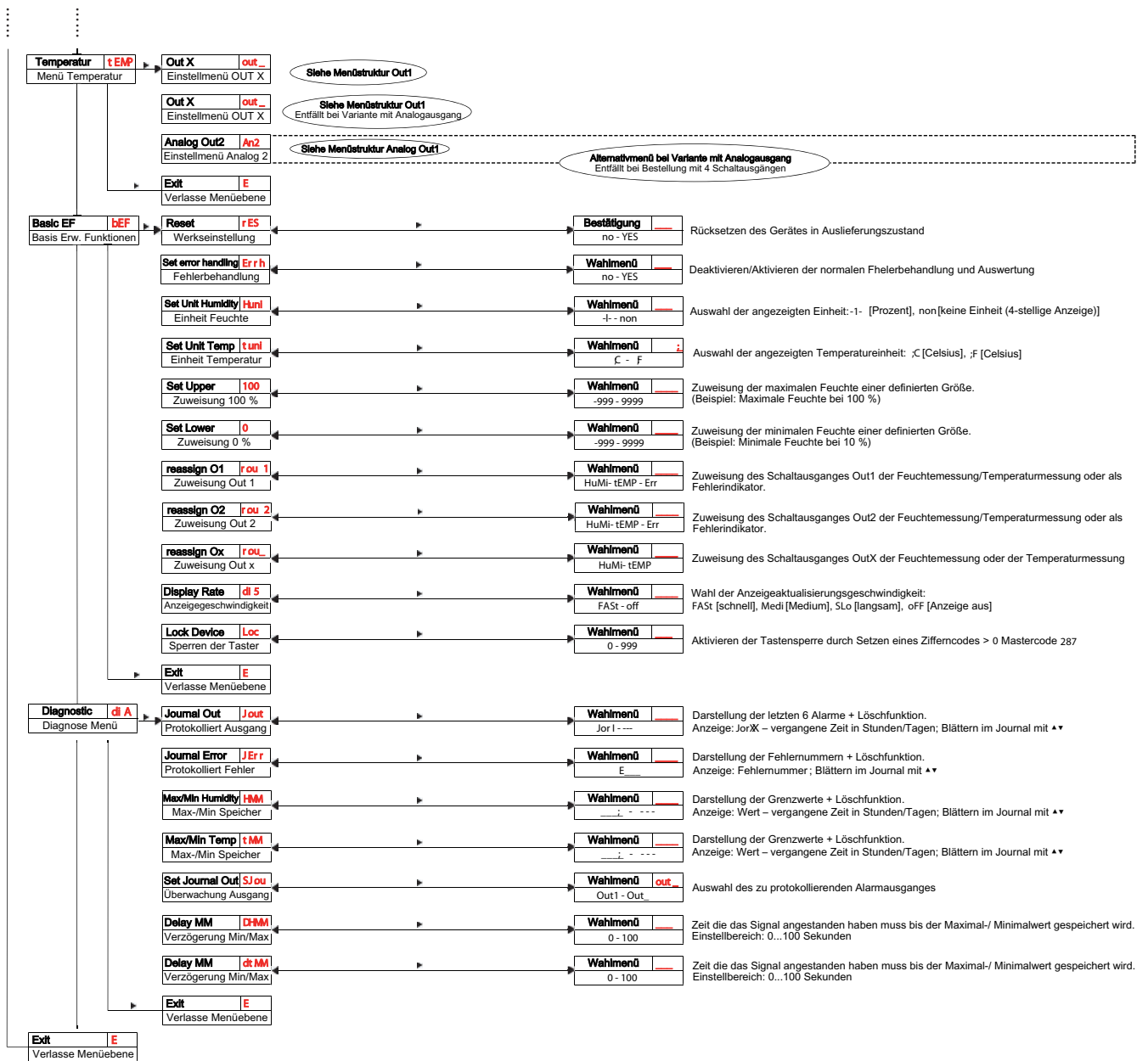
Name	Menu / unit	Display	Range from / with unit	Range to / with unit
Humidity				
Percent	<i>-/-</i>	-	-100%	999%
Temperature				
°C	<i>C</i>	<i>C</i>	-100 °C	999 °C
°F	<i>F</i>	<i>F</i>	-100 °F	999 °F

9.9 Current settings

Switching outputs	Basic settings	Diagnosis
<i>SP1 / rP1</i>	<i>Err.h</i>	<i>SJ.ou</i>
<i>dS1 / dF1 / ou1</i>	<i>H.uni</i>	<i>dH.nn</i>
<i>SP2 / rP2</i>	<i>t.uni</i>	<i>dt.nn</i>
<i>dS2 / dF2 / ou2</i>	<i>r.ou1</i>	
<i>SP3 / rP3</i>	<i>r.ou2</i>	
<i>dS3 / dF3 / ou3</i>	<i>r.ou3</i>	
<i>SP4 / rP4</i>	<i>r.ou4</i>	
<i>dS4 / dF4 / ou4</i>	<i>d.S</i>	
Analog outputs		<i>Loc</i>
<i>R1.Hi / R1.Lo / R.ou1</i>		
<i>R2.Hi / R2.Lo / R.ou2</i>		

9.10 Overview menu sequence





EU-Konformitätserklärung - Original

EC declaration of conformity

Dok.-Nr. / Doc. No.: DCTC18500-002

Datum / Date: 20.08.2019

- nach Maschinenrichtlinie 2006/42/EG / in accordance with Machinery Directive 2006/42/EC
- nach Niederspannungsrichtlinie 2014/35/EU / in accordance with Low Voltage Directive 2014/35/EU
- nach EMV-Richtlinie 2014/30/EU / in accordance with EMC Directive 2014/30/EU
- nach Druckgeräte-Richtlinie 2014/68/EU / in accordance with Pressure Equipment Directive 2014/68/EU
- nach ATEX-Richtlinie 2014/34/EU / in accordance with ATEX Directive 2014/34/EU
- nach RoHS-Richtlinie 2011/65/EU / in accordance with RoHS Directive 2011/65/EU
-

Hiermit erklärt der Hersteller, / The manufacturer

Hengst Filtration GmbH

dass das nachstehende Produkt / hereby declares that the product below

Bezeichnung / Name: Ölfeuchtesensor WGM / Oil moisture sensor WGM
 Funktion / Function: Feuchte-/ Temperaturmessung / Moisture-/Temperaturemeasurement
 Modell / Model: WGM
 Typ / Type: WGM-B; WGM-D; WGM-R
 Seriennummer / Serial number: R928057041 R928057042 R928057043 R928057044 R928057045 R928057046
 Handelsbezeichnung / Trade name: WGM
 Baujahr / Year of construction: ab 01.01.2019

in Übereinstimmung mit oben genannte(n) Richtlinie(n) entwickelt, konstruiert und gefertigt wurde. / was developed, designed and manufactured in compliance with the above-mentioned directive(s).

Die alleinige Verantwortung für die Ausstellung dieser EU-Konformitätserklärung trägt der Hersteller. / This EC declaration of conformity is issued under the sole responsibility of the manufacturer.

Angewandte Normen / Standards applied:

Norm / Standard	Titel / Name	Ausgabe / Issue
EN 61326-1	Elektrische Mess-, Steuer-, Regel- und Laborgeräte – EMV-Anforderungen / Electrical equipment for measurement, control and laboratory use – EMC requirements	2013-01
EN ISO 12100	Sicherheit von Maschinen – Allgemeine Gestaltungsleitsätze – Risikobeurteilung und Risikominderung / Safety of machinery – General principles for design – Risk assessment and risk reduction	2010-11

Nachfolgende Person ist bevollmächtigt, die relevanten technischen Unterlagen zusammenstellen: / The individual below is authorized to compile the relevant technical files:

Name: / Name: DCMO/SFS2 Produktmanagement Werk Ketsch
 Anschrift: / Address: Hardwaldstraße43, D-68775 Ketsch

Weitere Erläuterungen / Further explanations:

Die Montage- und Installationshinweise gemäß Produktdokumentation sind zu beachten. / The assembling and installation instructions according to the manual have to be followed.

RD51550-B/ RE51550-B

D-68775 Ketsch

Ort / Place

20.08.2019

Datum / Date

i.V.

Boecher Cornelius (DC-MO/SFS DC-MO/SFS1)

i.V.

Esgen Mathias (DC/PUE-PSG DC/PUE-P DC/PUE84)

Änderungen im Inhalt der EU-Konformitätserklärung sind vorbehalten. Derzeit gültige Ausgabe auf Anfrage.
 We reserve the right to make changes to the content of the EC Declaration of Conformity. Current issue on request.

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