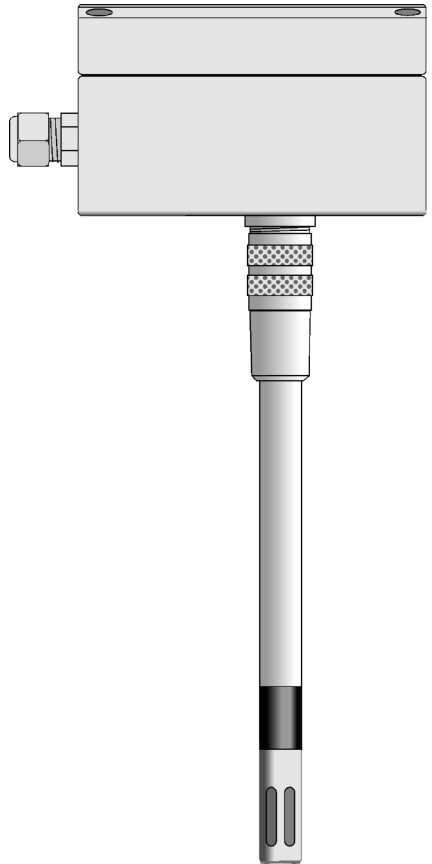


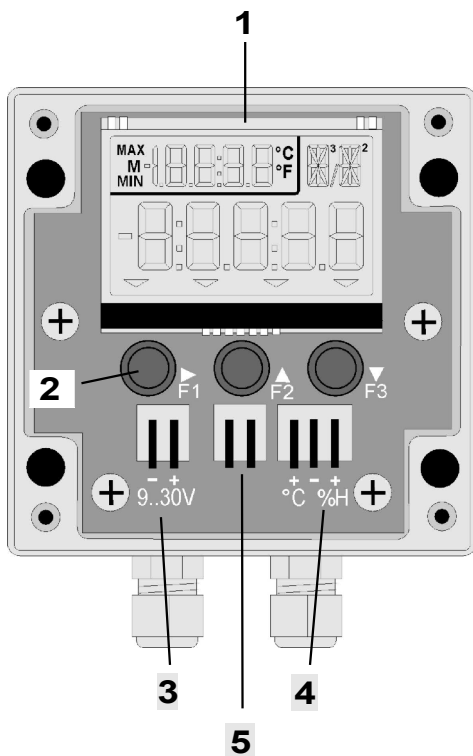
Operating instructions



Humidity transmitter **THERM MH8D461Kx**

V1.1
15.04.2010

1. OPERATING CONTROLS



(1) LCD

Function field1 Measuring point
Function field2 Units,
Main field Function
 Functions value

(2) Operating keys

▲, ▼ To select a function
▶ To change the function
▲, ▼ To change a value
▶ Next digit,
Input

(3) Power supply connections

9..30V Power supply terminals

(4) Connections for analog output

°C + - Temperature 0..10V/0..20mA

%H + - Humidity variable

0..10V/0..20mA

(5) Alarm relay (optional)

Semiconductor relay 1Ω, 0.5A, 50V

Rear of device:

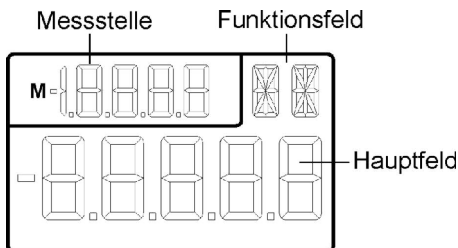
(6) Measuring input M

Digital temperature /

humidity sensor

M0 Temperature

M1 Humidity variable



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3. GENERAL

Congratulations on your purchase of this new and innovative transmitter. You are strongly advised to read these operating instructions very carefully and thus properly familiarize yourself with the device's numerous possibilities and with the functions of the various sensors you can use with it. This is the best way to avoid operating and measuring errors and prevent damage to the device. To help you find answers to your questions as quickly and easily as possible a comprehensive index is provided at the end of these instructions and at the end of the Manual.

3.1 Warranty

Each and every device, before leaving our factory, undergoes numerous quality tests. We provide a guarantee, lasting two years from delivery date, that your device will function trouble-free. Before returning your device to us, please observe the advisory notes in Chapter XREF, "Trouble shooting". In the unlikely

event that the device proves defective and you need to return it please wherever possible use the original packaging materials for dispatch and enclose a clear and informative description of the fault and of the conditions in which it occurs.

This guarantee will not apply in the following circumstances:

- Any form of unauthorized tampering or alteration inside the device
- Use of the device in environments or conditions for which it is not suited
- Use of the device with an unsuitable power supply and / or in conjunction with unsuitable peripheral equipment
- Use of the device for any purpose other than that for which it is intended
- Damage caused by electrostatic discharge or lightning
- Failure to properly observe these operating instructions

The manufacturer reserves the right to change the product's characteristics in the light of technical progress or to benefit from the introduction of new components.

3.2 Standard delivery

When you unpack the device check carefully for any signs of transport damage and ensure that delivery is complete.

- Transmitter MH8D46 with digital humidity sensor
- These operating instructions

In the event of transport damage please retain the packaging material and inform your supplier immediately.

3.3 Waste disposal



The pictogram showing a waste bin crossed through means that the product is subject to European Union regulations on segregated waste disposal. This applies to the product itself, to the packaging, and to any accessories marked with the same symbol. Disposal of any such item as unsorted domestic waste is strictly forbidden.

- Please dispose of cardboard boxes, protective plastic packaging materials, and all preservative substances separately and in the proper manner, as laid down in the applicable national waste management regulations.
- The disposal of the device itself (also of device parts, accessories, and consumables) is subject to the applicable national and local waste management regulations and to the environmental protection legislation in force in the country of use.

3.4 Special notes on use

- Do not run wires in the vicinity of high-voltage power cables.
- Before you touch any lines, ensure that all static electricity has been discharged.

4. INTRODUCTION

Transmitter THERM 8D461 is fitted with an all-digital, fully exchangeable temperature / humidity sensor, which in the event of defect or contamination can be replaced quickly and easily without affecting accuracy. Both analog outputs can be set to 0 to 10 V or 0 / 4 to 20 mA (to within 0.1%) and be scaled to the desired measuring range. Scaling values, temperature unit, humidity variable, and limit values can all be freely configured using the 3 keys and LCD provided. An alarm contact is also available as an option.

4.1 Functions

Measuring ranges: Temperature, relative humidity, dew point, mixture ratio

Units: The temperature can be output in either °C (Celsius) or °F (Fahrenheit).

5. PUTTING INTO SERVICE

1. Connect the **sensor** to socket **M** (6). see 7.
2. The cable for the **analog outputs** should be at least 3-pin; pull this out through the cable bushing and connect to the terminals (4) °C, %H, and the common negative.
3. Connect the **power supply** (9 to 30 V) to the appropriate terminal (3); (please make sure that the polarity is correct). see 6.
4. Select the appropriate **type of analog output** and as and when necessary scale to the desired range. see 9.

6. POWER SUPPLY

The device should normally be powered via a 12 or 24 V*?DC mains unit. The voltage can in fact be anything between 9 and 30 VDC. To facilitate connection the 9 to 30 V terminal can be detached. A 2-pin cable must be pulled through the cable bushing and connected to the terminal. Terminal locking / unlocking needs no special tools. The terminal is then placed back in position and the cable bushing is tightened.

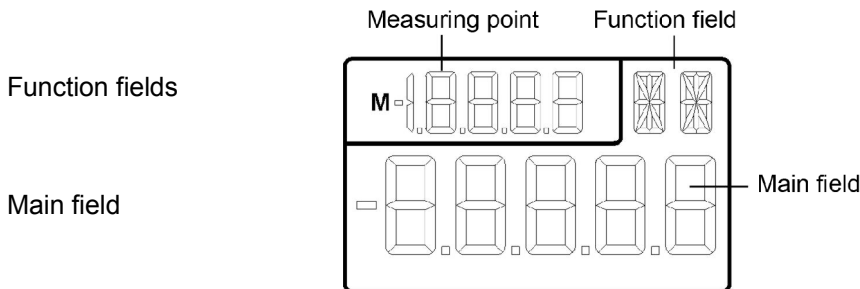
7. CONNECTING SENSORS / TRANSDUCERS

The humidity sensor provided is screwed into the socket located underneath the device. The sensor can also, if necessary, be used at a certain distance from the device via an extension cable (ZH 9D46VKxx). To mount the device on a wall a special angle bracket (ZB 8D00W) is available.

8. DISPLAY AND KEYPAD

8.1 Display

The transmitter can be configured using its integrated 2-line LCD and the keypad. The display (1) comprises two fields with 7-segment digits and two 16-segment digits for the measuring point, function, and function value.



Display of measuring point (measuring point field):

Measuring point:

m 0

Display of functions (function field):

Units:

°C

Analog output - start:

AS

Analog output - end:

AE

Analog output type - V or mA:

V

or

mA

Limit value, maximum / minimum:

GH

or

GL

Special operating states and faults (main field):

Parameter disabled:

Sensor breakage:

d rH

Abbreviation flashes

Measuring range overshoot

Maximum value flashes



Measuring range undershot

Minimum value flashes

All parameters can be configured using the keypad with its 3 keys (2):



Key

 or 

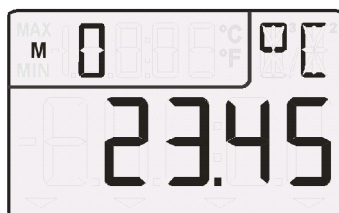
(parameter flashes)

☐ ☐ or ☐



 and and

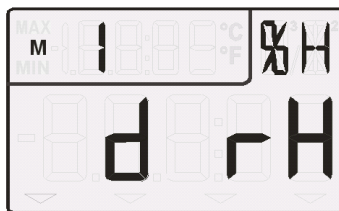
To perform configuration the cover must first be unscrewed and removed. First of all the display lists the measured value with measuring point and units. The following parameters can now be programmed via the keypad :



▶, ▲, ▶

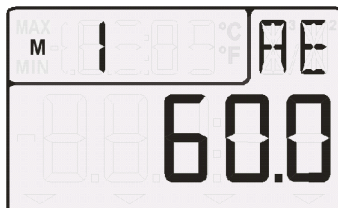
 or

Mixture ratio	Units 'g/k'	Abbreviation 'd AH'
---------------	-------------	---------------------



▶, ▲ / ▲, ▶, ▲ / ▲, ▶,

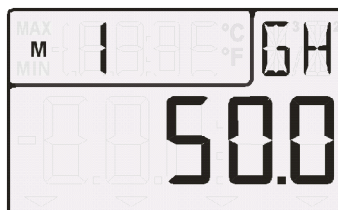
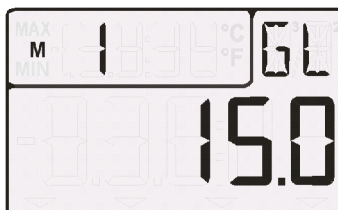
A digital display with two rows. The top row shows 'M' on the left, followed by '18.8' and '°C' in the center, and 'A5' on the right. The bottom row shows '-00.0' on the left and '10.0' on the right. Below the numbers are several small, faint icons.

Analog output - end:

The type of analog output (0 to 10 V, 0 to 20 mA or 4 to 20 mA) is selected in the next function V or mA.

**Limit value monitoring**

If you have installed the limit value contact as option, you can program the limit values maximum and minimum for both channels and thus monitor the measured value. If a limit value is exceeded, the contact will be activated.

Limit value, maximum (Hi):**Limit value, minimum (Lo):**

10. TROUBLE-SHOOTING

The MH8D46 transmitter can be configured and programmed in various ways. Given these numerous possibilities the device may in certain circumstances not always behave quite as expected. The cause of such unexpected behavior is only very rarely a device defect; usually the cause is incorrect operation by the user, an invalid setting, or unsuitable cabling. In such event try to pinpoint and clear the problem with the aid of the following tests.

Error: No display, display malfunction, keys do not react.

Remedy: Check the power supply; disconnect and then reconnect.

Error: The analog signal is not as expected.

Remedy: Check the analog type that is set (10 V or 20 mA)
and the scaling values (analog output start and end).

If, after performing the above-listed checks and remedial steps, the device still fails to behave as described in the operating instructions, it must be returned to our factory in Holzkirchen, accompanied by an explanatory note and error description (see 12.4).

11. DECLARATION OF CONFORMITY

Ahlborn Mess- und Regelungstechnik GmbH declares herewith that the transmitter MH8D46 carries the CE label and complies in full with the requirements of EU directives relating to low voltage and to electromagnetic compatibility (EMC) (89/336/EWG).

The following standards have been applied in evaluating the product :

Safety / security: EN 61010-1: 2001

EMC: EN 61326: 2006



If a product is modified in any manner not agreed with us in advance, this declaration becomes void.

When using the sensor with an extension care must be taken to ensure that wiring is not laid alongside or close to high-voltage power cables and that it is, if necessary, properly shielded so as to prevent spurious interference being induced in the system.

The following advisory notes must be observed when operating the device :

Using the device in strong electromagnetic fields may aggravate measuring errors (<50 µV at 3 V/m and 1.5 meters thermocouple sensor). After exposure to such irradiation ceases, the device will again operate within its technical specifications.

12. APPENDIX

12.1 Technical data

(see Manual. 2.3)

Measuring inputs	1 socket for digital temperature / humidity sensor
Measuring channels	2 channels - for temperature and one humidity variable
Measuring ranges	Temperature 'd °C' -20.00 to +80.00 °C
	Accuracy ±0.3 K at +25 °C, otherwise maximum ±1.2 K
	Reproducibility ±0.1 K
Humidity variables	Relative humidity 'd rH' 5.0 to 98.0 % RH
	Accuracy ±1.8 % RH at +25°C
	and within range 20 to 80 % RH
	Hysteresis ±1.0 % RH
	Dew point 'd dt' -25.0 to +100.0 °C
	Mixture ratio 'd AH' 0.0 to 500.0 g/kg
Analog outputs	Digital-to-analog converter (DAC) electrically isolated
	0.0 to 10.0 V Load >100 kohm
	0.0 to 20.0 mA Load <500 ohm
	Resolution 15 bits
	Accuracy 0.1% of final value
	Temperature drift 10 ppm / K
	Time constant 100 µs

Standard equipment:

LC display	5 x 7-segment, 15 mm; 2 x 16-segment, 9 mm
Operation	4½ x 7-segment 9 mm, 2 symbols
	3 keys

Power supply:

Power supply	External 9 to 30 VDC
Current consumption	approx. 37 mA + 1.5 x I _{OUT}

Housing:

Sensor	Aluminum (LxWxH) 100 x 100 x 60 mm; IP65
	Length 140 / 280 / 540 mm, Tube diameter 12 mm

Suitable conditions:

Operating temperature	-10 to +50 °C (Storage temperature -20 to +60 °C)
Ambient atmospheric humidity	10 to 90 % RH (non-condensing)

12.2 Product overview

Digital temperature / humidity transmitter

Order no.

For configuration, 2-row LCD, 3 keys, double analog output 0 to 10 V or 0/4 to 20 mA, channel variant with plug-in sensor, sensor length 140 mm	MH 8D461K1
Same as above Sensor length = 280 mm	MH 8D461K2
Same as above Sensor length = 540 mm	MH 8D461K3
Limit value relays (option available on request)	
Spare sensor element	FH 0D461
Angle bracket for wall mounting	ZB 8D00W
Extension cable between sensor and transmitter xx = length	ZH 9D46VKxx

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13.1 Your contact partner(s)