

**JUMO GmbH & Co. KG**

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**JUMO Instrument Co. Ltd.**

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**JUMO Process Control, Inc.**

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## Humidity and temperature transducers for industrial applications

- measurement within the entire range from 0 to 100% RH
- temperature-resistant up to 180°C (depending on probe type)
- withstands pressures up to 100bar (depending on probe type)
- rugged metal housing, IP65 protection
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- traceability to NIST
- options: calculation and output of dew point, absolute humidity, mixing ratio, wet bulb temperature, enthalpy and water vapor pressure



These transducers are the first choice for demanding industrial humidity measurements

These humidity and temperature transducers are designed to meet demanding industrial applications, where stable measurements and a large variety of adaptation options are essential.

### Humidity sensor

The instrument series is based on 30 years of experience in industrial humidity measurement. The sensor measures accurately and reliably, as well as being resistant to contaminants and many chemicals.

### Cleaning the sensor helps with impurities

In environments with a high concentration of chemicals and cleaning agents, sensor cleaning helps achieve lasting accuracy between calibrations. During the cleaning procedure, the sensor is briefly heated up to such an extent as to cause the foreign molecules deposited on it to vaporize. If measurements seem to drift, sensor cleaning can be called up manually at any time or activated automatically at freely programmable time intervals.

### Graphical trend and development display

The transducers can optionally be supplied with a large numerical/graphical display on which the process development can be monitored easily and traced back for up to a year.

### Data acquisition and transmission to a PC

The recorded measurement data can be visualized on the display or transferred to a PC using a Windows® program.

### Easy integration

Extensive mounting accessories as well as the most diverse connection options to d.c. or a.c. voltage sources ensure that the transducers can be integrated without any problems.

### Various outputs

The instrument series comes with up to three analog outputs. An electrical isolation between supply voltage and analog outputs can also be implemented. RS232/RS485 interfaces and relay outputs are available for digital communication.



The display can be used to trace measurement trends back for up to a year.

### Flexible calibration

The instruments are factory-calibrated at six humidity points. If required, fast 1-point calibration can easily be carried out on site using an optional measuring device (available on request). In addition, JUMO sensor checks are provided for a more accurate 2-point calibration. Alternatively, our customer service is at your disposal for multi-point calibration and adjustment. We recommend that this should be carried out at least once a year.

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## Technical data

### Measured variables

#### Relative humidity

Measuring range: 0 – 100 % RH

Accuracy with regard to works standards, including non-linearity, hysteresis and repeatability at 20°C:

±1 % RH (0 – 90 % RH);  
±1.7 % RH (90 – 100 % RH)

at -20 to +40°C: ±(1.0 + 0.8% of measurement) % RH

at -40 to -20°C, 40 to 180°C: ±(1.5 + 1.5% of measurement) % RH

Uncertainty of factory calibration<sup>1</sup> (20°C)

for 0 – 40 % RH: ±0.6 % RH

for 40 – 97 % RH: ±1.0 % RH

#### Sensors

- for general applications: HUMICAP® 180R
- with heated probe: HUMICAP® 180RC

Response time ( $t_{0.9}$ ) at 20°C in stationary air:

- with grid filter: 8sec
- with st. steel mesh filter: 20sec
- with sintered filter: 40sec

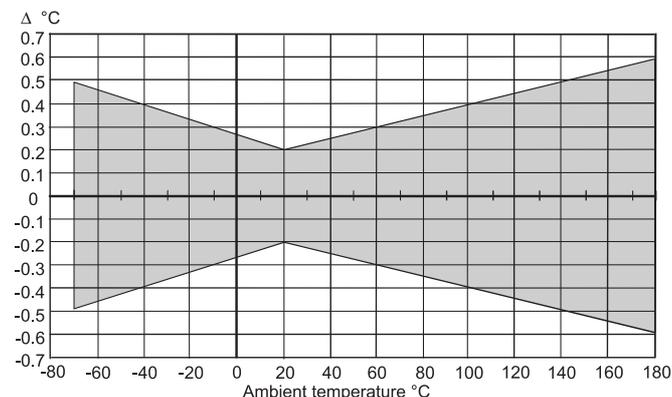
#### Temperature

Measuring range for type:

- 907023/331: -40 to +60°C
- 907023/333: -40 to +80°C/+120°C
- 907023/334, 907023/335,  
907023/337, 907023/338: -70 to +180°C

Temperature sensor: Pt100 to EN 60 751

Accuracy at 20°C: ±0.2°C



Accuracy over the entire range

#### Derived variables (option)

dew point temperature (Td), mixing ratio (x), absolute humidity (a), wet bulb temperature (Tw), enthalpy (h), water vapor pressure (pw)

#### Operating conditions

Operating temperature range at

- probes: as measuring ranges
- electronics: -40 to +60°C
- with LC display: 0 to 60°C

Operating pressure range for

- 907023/334: 0 – 10MPa (0 – 100bar)
- 907023/338: 0 – 4MPa (0 – 40bar)
- 907023/333, 907023/335,  
907023/337: vapor-tight
- EMC: as per EN 61 326-1:1997  
+ Annex 1:1998 + Annex 2:2001

#### Inputs/outputs

- Operating voltage range: 10 – 35V DC, 24V AC
- with optional supply module: 100 – 240V AC 50/60Hz
- Current drawn (20°C,  $U_b = 24V$  DC)
- when used with RS232C: ≤25mA
- output 2x 0 – 1V / 0 – 5V / 0 – 10V: ≤25mA
- output 2x 0 – 20mA: ≤60mA
- with display and background lighting: 20mA
- during sensor cleaning: 110mA max.
- with probe heating (907023/337): 120mA
- Analog outputs (2 are standard, 3rd is optional)
- current output: 0 – 20mA, 4 – 20mA
- voltage output: 0 – 1V, 0 – 5V, 0 – 10V

Accuracy of the analog outputs at 20°C:

Temperature drift of the analog outputs: ±0.005 % of full scale

External loads

- burden for current outputs: <500Ω
- voltage output 0 – 1V: >2kΩ
- voltage output 0 – 5V / 0 – 10V: >10kΩ

Maximum core cross-section: 0.5mm<sup>2</sup>

Serial interface: RS232C, RS485 (option)

Relay outputs (option): 0.5A, 250V AC

Digital display: LCD with background lighting, graphical trend display of all variables

Menu languages: English, German, French, Spanish, Japanese, Swedish, Finnish

#### General data

Connection options

- cable gland: M 20x1.5 for 8 – 11mm dia. cable
- conduit fitting (option): M 20x1.5 / NPT 1/2"
- connector: M 12, 8-pole, type RKC8/9.M12
- 5m connecting cable: M 12, 8-pole, type RKT8-282/5M

Probe cable diameter

- 907023/333: 6.0mm
- all other probes: 5.5mm
- Housing material: G-AISI 10 Mg (DIN 1725)
- Enclosure protection: IP65
- Weight: 1 to 2 kg, depending on the version

Alteration of individual specifications is possible.

<sup>1</sup> Defined as ±2 standard deviation limits.

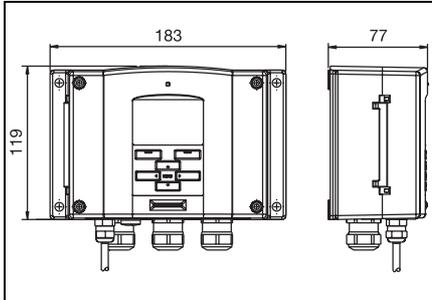
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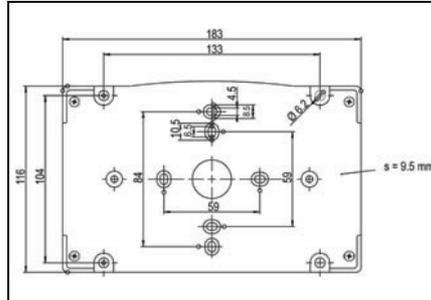
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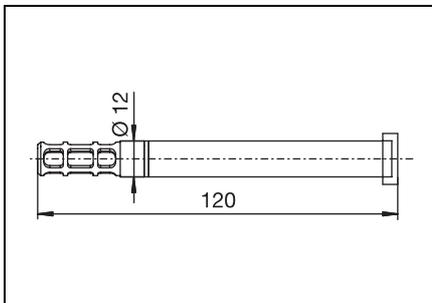
## Dimensions



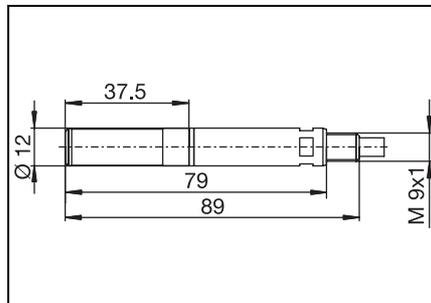
Housing, type 907023/330



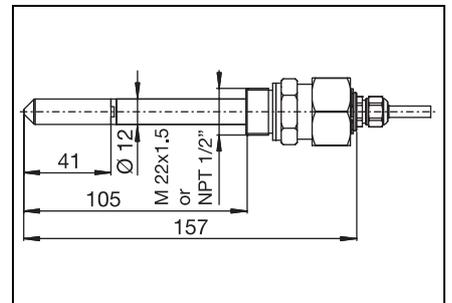
Plastic mounting plate  
or drilling template



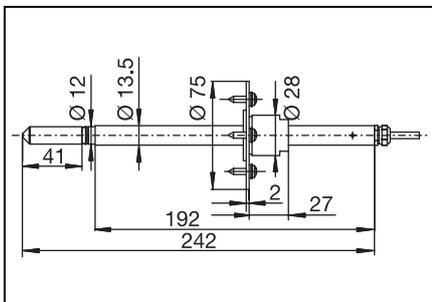
Probe, type 907023/331



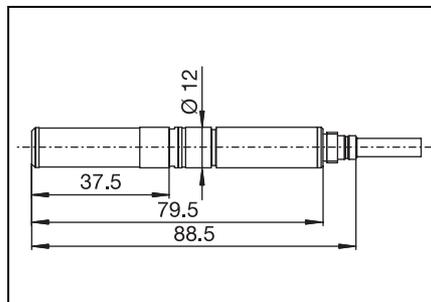
Probe, type 907023/333



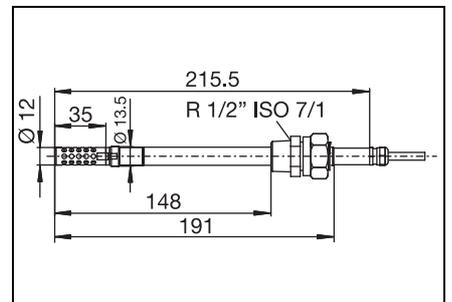
Probe, type 907023/334



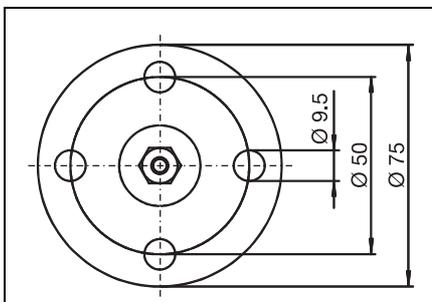
Probe, type 907023/335  
(mounting flange is optional)



Probe, type 907023/337



Probe, type 907023/338



Mounting flange  
(for probe types 907023/333, 907023/337,  
907023/335 and additional T probe)

All dimensions in mm.

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## Humidity and temperature transducers for wall mounting Type 907023/331

- for temperatures ranging from  
-40 to +60°C
- outstanding accuracy and stability
- graphical trend display and  
measurement history of the past year
- corrosion-resistant housing, IP65 rating
- retraceability to NIST
- applications include:  
clean rooms, pharmaceutical  
processes, greenhouses,  
swimming baths, museums and archives



This transducer for wall mounting is highly suitable for monitoring humidity in rooms

This humidity and temperature transducer for wall mounting is especially suitable for the monitoring and control of HVAC installations. Compared with conventional wall-mounted probes for air-conditioning, this transducers offers

- better performance data,
- higher resistance to chemicals,
- state-of-the-art digital display functions,
- extensive range of supply options,
- more signal outputs,
- more humidity measurement variables,

### Graphical trend and development display

The transducers can optionally be supplied with a large numerical/graphical display on which the process development can be monitored easily and traced back for up to a year.

The measurement history is particularly important for rooms that require stable climatic conditions, such as archives.

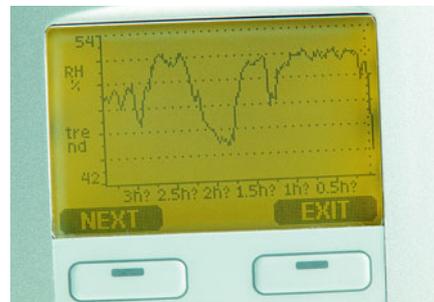
Maximum and minimum values of the past year can be graphically displayed in a simple manner.

### Outputs and supply options for all needs

The output options include up to three analog outputs, RS232 and RS485 interfaces as well as alarm relays.

The possible supply voltage ranges from 10 to 35V DC. A wide-range power supply module ensures that the transducers can be connected to all supply voltages used around the globe.

The supply/signal cable can be passed through an opening in the housing base, which enables practical mounting, particularly in clean rooms.



The display can be used to trace measurement trends back for up to a year.



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## Humidity and temperature transducers for ducts and locations where space is tight, Type 907023/333

- for temperatures ranging from -40 to +80°C/+120°C
- cable probe for remote measurement, for demanding HVAC applications
- outstanding accuracy and stability
- short response times thanks to low thermal mass
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- retraceable to NIST
- applications include: clean rooms, pharmaceutical processes, greenhouses and climatic chambers



Transducer with a small cable probe for ducts and locations where space is tight

This humidity and temperature transducer is a universal measuring device for applications that require a small, thin cable probe.

### Flexible installation

A duct installation kit (consisting of aluminium flange, screw fitting and support rod) is available for installing the probe in tubes, ducts or through walls.

The probe cable is flexible and comes in lengths of 2m, 5m and 10m.

The user can choose between two range options, for ambient temperatures up to 80°C or up to 120°C.



Duct installation kit

For outside installations, the optional radiation shield protects the probe from sun and rain. It can be mounted on a pole, a beam, or directly on a wall.

### For moderate humidity and temperature

The transducers are mainly used for the control and monitoring of HVAC systems, for example in clean rooms, pharmaceutical process and greenhouses.

However, in environments with a predominantly high humidity, we recommend type 907023/337 with a heated, vapor-tight stainless steel probe.

### Graphical trend and development display

The transducers can optionally be supplied with a large numerical/graphical display on which the process development can be monitored easily and traced back for up to a year.

The measurement history is particularly important for rooms that require stable climatic conditions, such as clean rooms. Maximum and minimum values of the past year can be graphically displayed in a simple manner.



The display can be used to trace measurement trends back for up to a year.

### Outputs and supply options for all needs

The output options include up to three analog outputs, RS232 and RS485 interfaces as well as alarm relays.

The possible supply voltage ranges from 10 to 35V DC. A wide-range power supply module ensures that the transducers can be connected to all supply voltages used around the globe.

The supply/signal cable can be passed through an opening in the housing base, which enables practical mounting, particularly in clean rooms.



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## Humidity and temperature transducers for high-pressure and vacuum applications, Type 907023/334

- for temperatures ranging from -70 to +180°C
- for measurements within the pressure range from 0 – 100bar
- with a fitting element in ISO or NPT version
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- traceable to NIST
- applications include: high-pressure lines or vacuum chambers



Transducer for high-pressure lines or vacuum chambers

This humidity and temperature transducer is designed for humidity measurements in high-pressure lines or vacuum chambers. The measurement probe is constructed in such a way as to ensure gas-tight mounting. For correct measurement results, process pressures that deviate from the normal ambient air pressure can be entered in the transducer memory via a serial interface or the operator panel.

### Humidity sensor

The instrument series is based on 30 years of experience in industrial humidity measurement. The humidity sensor enables precise and reliable measurements and is resistant to contamination and a large number of chemicals.

### Graphical trend and development display

The instrument series can optionally be supplied with a large numerical/graphical display on which the process development can easily be monitored and traced back for up to a year. The measurement data can be transferred to a PC for further processing, and for copying to other programs.



With the help of the display, the user is able to trace measurement trends back for up to a year.

### Outputs and supply options for all needs

The output options include up to three analog outputs, RS232 and RS485 interfaces as well as alarm relays.

The possible supply voltage ranges from 10 to 35V DC. A wide-range power supply module ensures that the transducers can be connected to all supply voltages used around the globe.

The supply/signal cable can also be passed through an opening in the housing base.

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**Order details:** Humidity and temperature transducers for high-pressure and vacuum applications, type 907023/334

		(1) <b>Basic type</b>	907023/334 Humidity and temperature transducer for high-pressure and vacuum applications	
		(2) <b>Sensor cable / cable length</b>		
x		H	2m cable	
x		J	5m cable	
x		K	10m cable	
		(3) <b>Additional temperature probe</b>	not for type 907023/334	
		(4) <b>Parameters</b>		
x		A	RH + T	
x		B	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT	
		(5) <b>Display</b>		
x		0	no display	
x		1	graphics LCD with background lighting	
		(6) <b>Supply</b>		
x		0	10 – 35V DC, 24V AC	
x		1	electrical isolation for outputs 10 – 35V DC, 24V AC	
x		2	universal AC supply (100 – 240V AC)	
x		3	universal AC supply (100 – 240V AC) and US connecting cable	
x		4	universal AC supply (100 – 240V AC) and EUR connecting cable	
x		5	universal AC supply (100 – 240V AC) and UK connecting cable	
x		6	universal AC supply (100 – 240V AC) and AUS connecting cable	
		(7) <b>Signal output (and serial RS232 interface or (optionally) communication module)</b>		
x		1	analog output channel (Ch1+Ch2+Ch3) 4 – 20mA	
x		2	analog output channel (Ch1+Ch2+Ch3) 0 – 20mA	
x		3	analog output channel (Ch1+Ch2+Ch3) 0 – 1V	
x		4	analog output channel (Ch1+Ch2+Ch3) 0 – 5V	
x		5	analog output channel (Ch1+Ch2+Ch3) 0 – 10V	
		(8) <b>Analog output signals for Ch1, Ch2 and Ch3</b>		
x		A	no third analog output (choose A if not required)	
x		B	RH (0 – 100% RH)	
x		C	T (see (9) output range temp.)	
x		D	Td (-20 to +100°C) (-4 to +212°F)	
x		E	Tdf (-20 to +100°C) (-4 to +212°F)	
x		F	a (0 – 600g/m³) (0 – 262gr/ft³)	
x		G	Tw (0 to 100°C) (+32 to +212°F)	
x		H	x (0 – 500g/kg d.a.) (0 – 3500gr/lb)	
x		J	h (-40 to +1500kJ/kg) (-9.5 to +652.6Btu/lb)	
x		K	ppm (0 – 5000)	
x		L	pw (0 – 1000hPa) (0 – 14.5psi)	
x		M	pws (0 – 1000hPa) (0 – 14.5psi)	
x		N	dT (-10 to +50°C) (14 to +122°F)	
x		X	Define special scaling Ch1: _____ Ch2: _____ Option Ch3: _____	
		(9) <b>Analog output range for temperature</b>		
x		A	no temperature output (choose A if not required)	
x		B	-40 to +60°C (-40 to +140°F)	
x		C	-40 to +80°C (-40 to +176°F)	
x		D	-40 to +120°C (-40 to +248°F)	
x		E	-40 to +180°C (-40 to +356°F)	
x		F	-20 to +60°C (-4 to +140°F)	
x		G	-20 to +80°C (-4 to +176°F)	
x		H	-20 to +120°C (-4 to +248°F)	
x		J	-20 to +180°C (-4 to +356°F)	
x		K	0 to 60°C (32 to 140°F)	
x		L	0 to 100°C (32 to 212°F)	
x		M	0 to 120°C (32 to 248°F)	
x		N	0 to 180°C (32 to 356°F)	
x		P	-60 to +60°C (-76 to +140°F)	
x		X	Specifics: _____	
		(10) <b>Output unit</b>		
x		1	metric	
x		2	non-metric	
		(11) <b>Option for module slot 1</b>	<b>Option for module slot 2</b>	
x		0	no module	
x		1	relay output	
x		2	RS485 serial interface (electrically isolated)	
		(12) <b>Cable bushings</b>		
x		A	cable gland M 20x1.5	
x		B	conduit fitting NPT 1/2"	
x		C	8-pole connector with 5m cable	
x		D	8-pole mating connector equipped with screw terminals	
		(13) <b>Transducer mounting</b>		
x		0	standard mounting	
x		1	wall-mounting plate	
x		2	pole installation kit	
x		3	pole installation kit with rain shield	
x		4	DIN rail kit	
		(14) <b>Humidity sensor type</b>		
x		A	general application (standard) HUMICAP® 180R	
x		C	sensor with cleaning function HUMICAP® 180RC	
		(15) <b>Sensor protection / filter</b>		
x		A	PPS plastic grid with stainless steel mesh	
x		B	PPS plastic grid	
x		C	sintered stainless steel filter	
x		D	stainless steel grid	
		(16) <b>Probe installation kit</b>		
x		E	fitting element M 22x1.5	
x		F	fitting element NPT 1/2"	
		(17) <b>Operating instructions: language</b>		
x		1	English	
x		2	German	
x		3	French	
		(18) <b>Calibration</b>		
x		3A1	calibration to ISO 9001 standard (calibration report is available on request)	

Order code: 907023/334 - H - 0 - A - 1 - 0 - 1 - BCA - B - 1 - 0 0 - A - 0 - A - A - E - 2 - 3 A 1

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# Humidity and temperature transducers for high temperatures, Type 907023/335

- for temperatures ranging from -70 to +180°C
- long stainless steel probe
- mounting flange in stainless steel (option)
- variable mounting depth
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- traceable to NIST
- applications include:
  - hot-air drying processes



Transducer with a rugged stainless steel probe – ideal for high flow velocities in drying processes

This humidity and temperature transducer is equipped with a long stainless steel probe that is especially designed for high-temperature applications.

### Probe design for high flow velocity

The probe is designed to withstand high mechanical stress and high flow velocity. This transducer is therefore highly suitable for measurements in pipes, for which smaller probes are not rugged enough. Application example: hot-air drying processes.

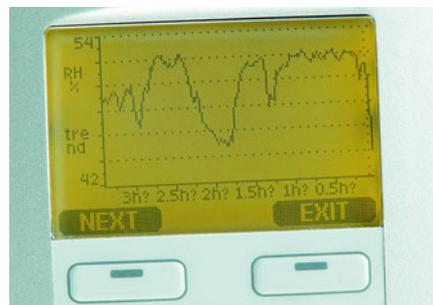


Thanks to the mounting flange in stainless steel, probes can be mounted at various depths.

### Graphical trend and development display

The instrument series can optionally be supplied with a large numerical/graphical display on which the process development can easily be monitored and traced back for up to a year.

The measurement data can be transferred to a PC for further processing, and for copying to other programs.



With the help of the display, the user is able to trace measurement trends back for up to a year.

### Outputs and supply options for all needs

The output options include up to three analog outputs, RS232 and RS485 interfaces as well as alarm relays.

The possible supply voltage ranges from 10 to 35V DC. A wide-range power supply module ensures that the transducers can be connected to all supply voltages used around the globe.

### Humidity sensor

The humidity sensor enables precise and reliable measurements as well as being resistant to contaminants and many chemicals.



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## Humidity and temperature transducers with a vapor-tight probe, Type 907023/337A

- for temperatures ranging from -70 to +180°C
- for industrial and meteorological applications with moderate humidity
- small, vapor-tight stainless steel probe for remote measurement
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- traceable to NIST



Transducer for the most demanding process conditions, and for meteorological applications

This humidity and temperature transducer is designed for the most demanding applications.

The stainless steel probe is small and slim, which means that it can be easily installed in locations where space is tight.

Compared with type 907023/333, the probe for this transducer is vapor-tight and covers a much wider temperature range.

### For moderate humidities

The transducer has been conceived for demanding measurement tasks, but with the atmospheric humidity still within the moderate range.

For high-humidity applications, however, we recommend type 907023/337B with a heated probe.

### Numerous mounting options

Vapor-tight mounting in a duct or pipe can be implemented using Swagelok screw fittings. A duct installation kit and, in addition, a mounting kit for meteorological outdoor measurements are available as an option.

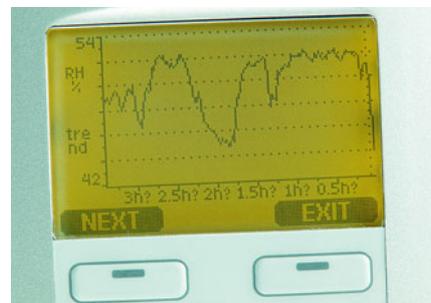


Duct installation kit

### Graphical trend and development display

The instrument series can optionally be supplied with a large numerical/graphical display on which the process development can easily be monitored and traced back for up to a year.

The measurement data can be transferred to a PC for further processing, and for copying to other programs.



With the help of the display, the user is able to trace measurement trends back for up to a year.



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## Humidity and temperature transducers with a heated probe for high-humidity applications, Type 907023/337B

- for temperatures ranging from -70 to +180°C
- for industrial and meteorological applications with a high level of humidity
- excellent performance data in condensing atmospheres, thanks to the heated probe
- small, vapor-tight stainless steel probe for remote measurement
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- retraceable to NIST



Transducer for the most demanding process conditions, and for meteorological applications  
(Picture: optionally with an additional temperature sensor)

This humidity and temperature transducer is available in two versions:

- with a heated probe:  
for dew point measurements in almost condensing atmospheres
- with a heated probe and an additional temperature sensor:  
for measuring relative humidity in almost condensing atmospheres

### Correct humidity measurements with condensation

This unique, heated probe enables fast and reliable dew point measurements in environments in which humidity is near the saturation point. The heated sensor quickly returns to producing correct measurements, even with short-term condensation.

Since the probe temperature lies above the ambient temperature, the humidity level stays within the ambient humidity.

With accurate temperature measurement, the dew point of the environment can, however, be precisely calculated.

An additional temperature sensor is necessary for determining relative humidity. The ambient temperature measured in this way serves to calculate relative humidity and derived humidity variables.

### Numerous mounting options

Vapor-tight mounting in a duct or pipe can be implemented using Swagelok screw fittings. A duct installation kit and, in addition, a mounting kit for meteorological outdoor measurements are available as an option.

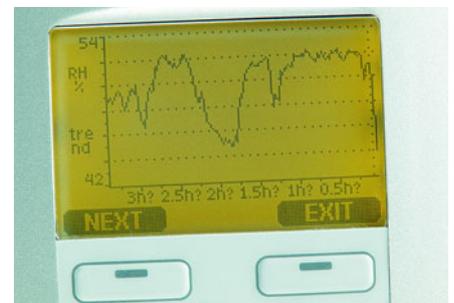


Duct installation kit

### Graphical trend and development display

The instrument series can optionally be supplied with a large numerical/graphical display on which the process development can easily be monitored and traced back for up to a year.

The measurement data can be transferred to a PC for further processing, and for copying to other programs.



With the help of the display, the user is able to trace measurement trends back for up to a year.

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**Order details:** Humidity and temperature transducers with a heated probe for high-humidity applications, type 907023/337B

		(1) <b>Basic type</b>	907023/337B Humidity and temperature transducer with a heated probe for high-humidity applications	
		(2) <b>Dew point probe / cable length</b>		
x		S	2 m cable	
x		T	5 m cable	
x		U	10 m cable	
		(3) <b>Additional temperature probe</b>		
x		0	no additional temperature probe	
x		1	2 m cable	
x		2	5 m cable	
x		3	10 m cable	
		(4) <b>Parameters</b>		
x		C	Td+Tdf+x+pw (dew point probe only)	
x		D	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT (with additional T probe)	
		(5) <b>Display</b>		
x		0	no display	
x		1	graphics LCD with background lighting	
		(6) <b>Supply</b>		
x		0	10 – 35V DC, 24V AC	
x		1	electrical isolation for outputs 10 – 35V DC, 24V AC	
x		2	universal AC supply (100 – 240V AC)	
x		3	universal AC supply (100 – 240V AC) and US connecting cable	
x		4	universal AC supply (100 – 240V AC) and EUR connecting cable	
x		5	universal AC supply (100 – 240V AC) and UK connecting cable	
x		6	universal AC supply (100 – 240V AC) and AUS connecting cable	
		(7) <b>Signal output (and serial RS232 interface or (optionally) communication module)</b>		
x		1	analog output channel (Ch1+Ch2+Ch3) 4 – 20mA	
x		2	analog output channel (Ch1+Ch2+Ch3) 0 – 20mA	
x		3	analog output channel (Ch1+Ch2+Ch3) 0 – 1V	
x		4	analog output channel (Ch1+Ch2+Ch3) 0 – 5V	
x		5	analog output channel (Ch1+Ch2+Ch3) 0 – 10V	
		(8) <b>Analog output signals for Ch1, Ch2 and Ch3</b>		
x		A	no third analog output (choose A if not required)	
x		B	RH (0 – 100% RH)	
x		T	(see (9) output range temp.)	
x		D	Td (-20 to +100°C) (-4 to +212°F)	
x		E	Tdf (-20 to +100°C) (-4 to +212°F)	
x		F	a (0 – 600g/m <sup>3</sup> ) (0 – 262gr/ft <sup>3</sup> )	
x		G	Tw (0 to 100°C) (+32 to +212°F)	
x		H	x (0 – 500g/kg d.a.) (0 – 3500gr/lb)	
x		J	h (-40 to +1500kJ/kg) (-9.5 to +652.6Btu/lb)	
x		K	ppm (0 – 5000) (0 – 5000)	
x		L	pw (0 – 1000hPa) (0 – 14.5psi)	
x		M	pws (0 – 1000hPa) (0 – 14.5psi)	
x		N	dT (-10 to +50°C) (14 to +122°F)	
x		X	Define special scaling Ch1: _____ Ch2: _____ Option Ch3: _____	
		(9) <b>Analog output range for temperature</b>		
x		A	no temperature output (choose A if not required)	
x		B	-40 to +60°C (-40 to +140°F)	
x		C	-40 to +80°C (-40 to +176°F)	
x		D	-40 to +120°C (-40 to +248°F)	
x		E	-40 to +180°C (-40 to +356°F)	
x		F	-20 to +60°C (-4 to +140°F)	
x		G	-20 to +80°C (-4 to +176°F)	
x		H	-20 to +120°C (-4 to +248°F)	
x		J	-20 to +180°C (-4 to +356°F)	
x		K	0 to 60°C (32 to 140°F)	
x		L	0 to 100°C (32 to 212°F)	
x		M	0 to 120°C (32 to 248°F)	
x		N	0 to 180°C (32 to 356°F)	
x		P	-60 to +60°C (-76 to +140°F)	
x		X	Specifics: _____	
		(10) <b>Output unit</b>		
x		1	metric	
x		2	non-metric	
		(11) <b>Option for module slot 1</b>		
x		0	no module	
x		1	relay output	
x		2	RS485 serial interface (electrically isolated)	
		(12) <b>Cable bushings</b>		
x		A	cable gland M 20x1.5	
x		B	conduit fitting NPT 1/2"	
x		C	8-pole connector with 5m cable	
x		D	8-pole mating connector equipped with screw terminals	
		(13) <b>Transducer mounting</b>		
x		0	standard mounting	
x		1	wall-mounting plate	
x		2	pole installation kit	
x		3	pole installation kit with rain shield	
x		4	DIN rail kit	
		(14) <b>Humidity sensor type</b>		
x		D	combined sensor HUMICAP® 180RC	
x		E	combined sensor with cleaning function HUMICAP® 180RC	
		(15) <b>Sensor protection / filter</b>		
x		A	PPS plastic grid with stainless steel mesh	
x		C	sintered stainless steel filter	
x		D	stainless steel grid	
		(16) <b>Probe installation kit</b>		
x		A	no installation kit	
x		C	duct installation kit	
x		K	Swagelok NPT 1/2"	
x		L	Swagelok ISO 3/8"	
x		P	duct installation kit (RH +T probes)	
x		Q	Swagelok NPT 1/2" and Swagelok NPT 1/8" (RH +T)	
x		R	Swagelok ISO 3/8" and Swagelok ISO 1/8" (RH+T)	
		(17) <b>Operating instructions: language</b>		
x		1	English	
x		2	German	
x		3	French	
		(18) <b>Calibration</b>		
x		3A1	calibration to ISO 9001 standard (calibration report is available on request)	

Order example, see page 13/18

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## Humidity and temperature transducers for pressure lines and chambers, Type 907023/338

- for temperatures ranging from -70 to +180°C
- installation using a ball valve, for installation and removal under pressure
- variable probe installation depth through a sliding gland
- for measurements in the pressure range from 0 – 40bar
- outstanding accuracy and stability
- graphical trend display and measurement history of the past year
- corrosion-resistant housing, IP65 rating
- two probe shaft lengths are available
- traceable to NIST



Transducer for mounting in pressure lines and chambers, from which the probe can be removed without interrupting the operation

This humidity and temperature transducer is designed for processes subjected to pressures.

### Installation and removal under pressure

The probe can be directly inserted into the process without interrupting the operation, and without having to vent or reduce the process pressure beforehand.

The probe head is inserted by means of a ball valve which is mounted in the pressure line or on the chamber wall.

The sliding cap nut is tightened by hand, so that the probe is initially in the minimum installation position. The ball valve is subsequently opened, which exposes the probe to the process pressure. Using a press tool, the probe is then pressed to the required installation depth and fixed with the cap nut.

The probe can be installed during operation under process pressures up to 10bar.

For correct measurement results, the prevailing process pressures can be entered in the transducer memory via a serial interface or the operator panel.

### Graphical trend and development display

The transducers can optionally be supplied with a large numerical/graphical display on which the process development can be monitored easily and traced back for up to a year.

Maximum and minimum values of the past year can be graphically displayed in a simple manner.



The display can be used to trace measurement trends back for up to a year.

### Outputs and supply options for all needs

The output options include up to three analog outputs, RS232 and RS485 interfaces as well as alarm relays.

The possible supply voltage ranges from 10 to 35V DC. A wide-range power supply module ensures that the transducers can be connected to all supply voltages used around the globe.

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**Order details:** Humidity and temperature transducers for pressure lines and chambers, type 907023/338

		(1) <b>Basic type</b>	Humidity and temperature transducer for pressure lines and chambers																	
907023/338		(2) <b>Sensor cable / cable length</b>																		
x	V	2m cable for 232mm probe																		
x	W	5m cable for 232mm probe																		
x	X	10m cable for 232mm probe																		
x	1	2m cable for 454mm probe																		
x	2	5m cable for 454mm probe																		
x	3	10m cable for 454mm probe																		
x	0	(3) <b>Additional temperature probe</b>	not for type 907023/338																	
x	A	(4) <b>Parameters</b>	RH + T																	
x	B		RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT																	
x	0	(5) <b>Display</b>	no display																	
x	1		graphics LCD with background lighting																	
x	0	(6) <b>Supply</b>	10 - 35V DC, 24V AC																	
x	1		electrical isolation for outputs 10 - 35V DC, 24V AC																	
x	2		universal AC supply (100 - 240V AC)																	
x	3		universal AC supply (100 - 240V AC) and US connecting cable																	
x	4		universal AC supply (100 - 240V AC) and EUR connecting cable																	
x	5		universal AC supply (100 - 240V AC) and UK connecting cable																	
x	6		universal AC supply (100 - 240V AC) and AUS connecting cable																	
x	1	(7) <b>Signal output (and serial RS232 interface or (optionally) communication module)</b>	analog output channel (Ch1+Ch2+Ch3) 4 - 20mA																	
x	2		analog output channel (Ch1+Ch2+Ch3) 0 - 20mA																	
x	3		analog output channel (Ch1+Ch2+Ch3) 0 - 1V																	
x	4		analog output channel (Ch1+Ch2+Ch3) 0 - 5V																	
x	5		analog output channel (Ch1+Ch2+Ch3) 0 - 10V																	
x	Ch1	Ch2	Ch3	(8) <b>Analog output signals for Ch1, Ch2 and Ch3</b>																
x				no third analog output (choose A if not required)																
x	B	B	A	RH (0 - 100% RH)																
x	C	C	T	(see (9) output range temp.)																
x	D	D	Td	(-20 to +100°C) (-4 to +212°F)																
x	E	E	Tdf	(-20 to +100°C) (-4 to +212°F)																
x	F	F	a	(0 - 600g/m³) (0 - 262gr/ft³)																
x	G	G	Tw	(0 to 100°C) (+32 to +212°F)																
x	H	H	x	(0 - 500g/kg d.a.) (0 - 3500gr/lb)																
x	J	J	h	(-40 to +1500kJ/kg) (-9.5 to +652.6Btu/lb)																
x	K	K	ppm	(0 - 5000) (0 - 5000)																
x	L	L	pw	(0 - 1000hPa) (0 - 14.5psi)																
x	M	M	pws	(0 - 1000hPa) (0 - 14.5psi)																
x	N	N	dT	(-10 to +50°C) (14 to +122°F)																
x	X	X	X	Define special scaling Ch1: _____ Ch2: _____ Option Ch3: _____																
x	A			(9) <b>Analog output range for temperature</b>																
x	B			no temperature output (choose A if not required)																
x	C			-40 to +60°C (-40 to +140°F)																
x	D			-40 to +80°C (-40 to +176°F)																
x	E			-40 to +120°C (-40 to +248°F)																
x	F			-40 to +180°C (-40 to +356°F)																
x	G			-20 to +60°C (-4 to +140°F)																
x	H			-20 to +80°C (-4 to +176°F)																
x	J			-20 to +120°C (-4 to +248°F)																
x	K			-20 to +180°C (-4 to +356°F)																
x	L			0 to 60°C (32 to 140°F)																
x	M			0 to 100°C (32 to 212°F)																
x	N			0 to 120°C (32 to 248°F)																
x	P			0 to 180°C (32 to 356°F)																
x	X			-60 to +60°C (-76 to +140°F)																
x				Specifics: _____																
x	1	(10) <b>Output unit</b>	metric																	
x	2		non-metric																	
x	0	(11) <b>Option for module slot 1</b>	no module																	
x	1		relay output																	
x	2		RS485 serial interface (electrically isolated)																	
x			<b>Option for module slot 2</b>																	
x			no module																	
x			relay output																	
x			third analog output (required if Ch3 (8) is selected)																	
x	A	(12) <b>Cable bushings</b>	cable gland M 20x1.5																	
x	B		conduit fitting NPT 1/2"																	
x	C		8-pole connector with 5m cable																	
x	D		8-pole mating connector equipped with screw terminals																	
x	0	(13) <b>Transducer mounting</b>	standard mounting																	
x	1		wall-mounting plate																	
x	2		pole installation kit																	
x	3		pole installation kit with rain shield																	
x	4		DIN rail kit																	
x	A	(14) <b>Humidity sensor type</b>	general application (standard)																	
x	C		combined sensor with cleaning function																	
x			HUMICAP® 180R																	
x			HUMICAP® 180RC																	
x	A	(15) <b>Sensor protection / filter</b>	PPS plastic grid with stainless steel mesh																	
x	B		PPS plastic grid																	
x	C		sintered stainless steel filter																	
x	D		stainless steel grid																	
x	M	(16) <b>Probe installation kit</b>	ball valve installation kit (ISO 1/2")																	
x	N		pressure connection NPT 1/2"																	
x	V		pressure connection ISO 1/2"																	
x	1	(17) <b>Operating instructions: language</b>	English																	
x	2		German																	
x	3		French																	
x	3A1	(18) <b>Calibration</b>	calibration to ISO 9001 standard (calibration report is available on request)																	
<b>Order code</b>		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
<b>Order example</b>		907023/338	- V	- 0	- A	- 1	- 0	- 1	- BCA	- B	- 1	- 0	- 0	- A	- 0	- A	- A	- V	- 2	- 3A1

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**Order details: Accessories for humidity and temperature transducers for industrial applications**

<b>(1) Basic type</b>	
907023/80	Software package
907023/81	Installation kits
907023/82	Screw fittings
907023/90	Filter/sensor protection ( 12mm dia.)
907023/91	Replacement humidity sensor
907023/92	Replacement temperature sensor
907023/93	Humidity sensor checks
	<b>(2) Software package</b>
893	PC software and cable
	<b>(2) Installation kits</b>
247	wall mounting kit (plastic mounting plate)
894	DIN rail mounting kit (including plastic mounting plate)
895	pole installation kit (for pipes from 30 to 100mm)
896	rain protection installation kit
897	duct installation kit for type 907023/333
898	duct installation kit (RH probe) for type 907023/337
899	duct installation kit (T probe) for type 907023/337
900	mounting flange for type 907023/335
901	meteorological installation kit for type 907023/337
902	ball valve installation kit for type 907023/338 (0 – 40bar)
	<b>(2) Screw fittings</b>
903	cable glands for types 907023/333 and 907023/337
904	pressure-tight Swagelok screw fitting (RH probe) ISO 3/8" for type 907023/337
905	pressure-tight Swagelok screw fitting (T probe) ISO 1/8" for type 907023/337
906	pressure-tight Swagelok screw fitting (RH probe) NPT 1/2" for type 907023/337
907	pressure-tight Swagelok screw fitting (T probe) NPT 1/8" for type 907023/337
	<b>(2) Filter/sensor protection ( 12mm dia.)</b>
890	sintered stainless steel filter
891	PPS plastic grid filter with stainless steel mesh
892	PPS plastic grid filter
	<b>(2) Replacement humidity sensor</b>
814	HUMICAP® 180R
	<b>(2) Replacement temperature sensor</b>
856	Pt 100 1/3 DIN Class B to DIN EN 60 751
	<b>(2) Humidity sensor checks</b>
820	33% RH magnesium chloride
821	55% RH magnesium nitrate
822	76% RH sodium chloride

Order code (1) - (2)  
 Order example 907023/80 - 893

**Stock versions: Accessories for humidity and temperature transducers for industrial applications**

<b>(1)</b>		<b>(2)</b>	<b>Sales No.</b>
	-		
907023/90	-	890	90/00465143
907023/90	-	891	90/00465144
907023/90	-	892	90/00465145
907023/92	-	856	90/00412342
907023/93	-	820	90/00332758
907023/93	-	821	90/00332759
907023/93	-	822	90/00332760