

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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

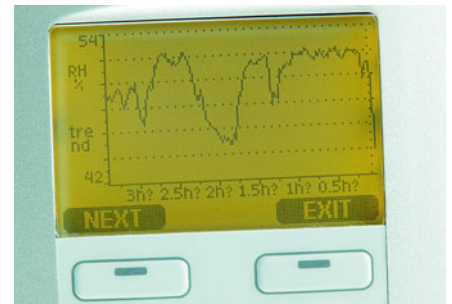
The recorded measurement data can be visualized on the display or transferred to a PC using a Windows® program.

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) % RH¹
 at -40 to -20°C, 40 to 180°C: ±(1.5 + 1.5% of measurement) % RH¹
 Uncertainty of factory calibration² (20°C)
 for 0 – 40% RH: ±0.6% RH
 for 40 – 97% RH: ±1.0% RH

Sensors

- for general applications: HUMICAP® 180
 - with heated probe: HUMICAP® 180C
 - for high chemical concentrations: HUMICAP® 180L2¹

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

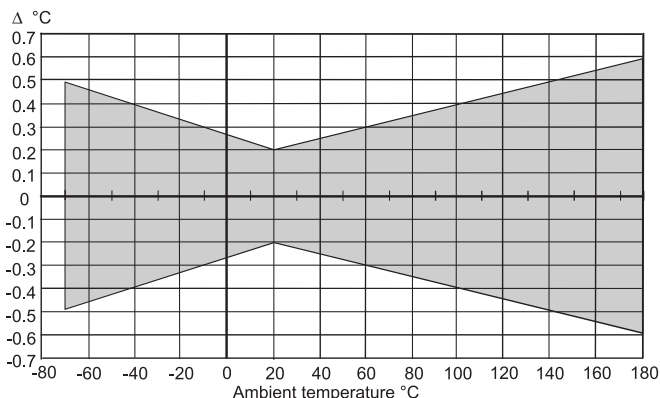
Temperature

Measuring range for type:

- 907023/331: -40 to +60°C
 - 907023/333: -40 to +80°C
 - 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, mixing ratio, absolute humidity, wet bulb temperature, enthalpy, water vapor pressure

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 – 25V 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: ±0.05% of full scale

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: 0.5mm²

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 – 11 mm dia. cable
 - conduit fitting (option): M 20x1.5 / NPT 1/2"
 - connector: M 12, 8-pole, type RKC8/9.M12
 - 5 m 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-AlSi 10 Mg (DIN 1725)

Enclosure protection:

IP65

Alteration of individual specifications is possible.

¹ For HUMICAP® 180L2 sensor at -10 to +40°C: ±(1.0 + 1% of measured value) % RH; at -40 to -10°C, 40 to 180°C: ±(1.5 + 2% of measured value) % RH.

² Defined as ±2 standard deviation limits.

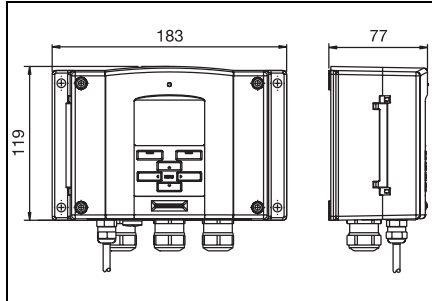
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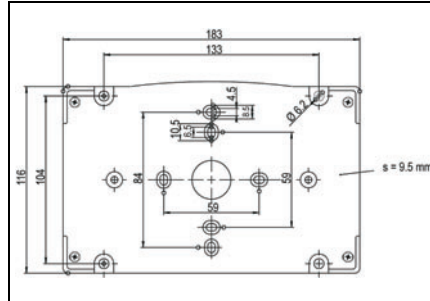
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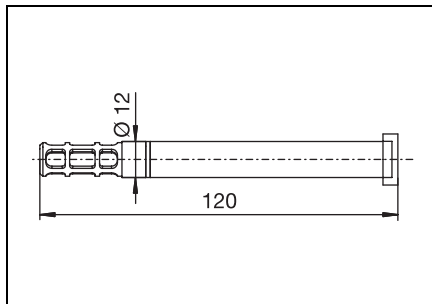
Dimensions



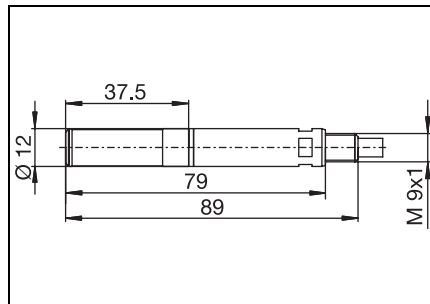
Housing, type 907023/330



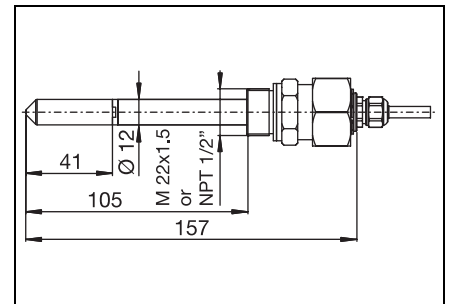
**Plastic mounting plate
or drilling template**



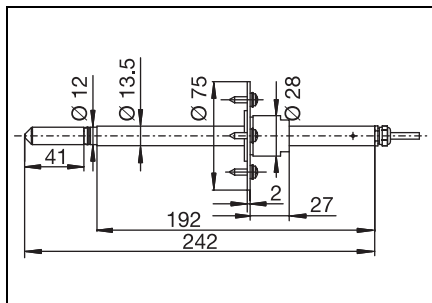
Probe, type 907023/331



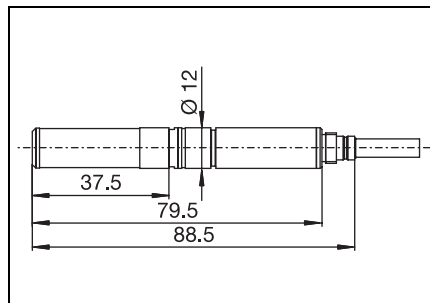
Probe, type 907023/333



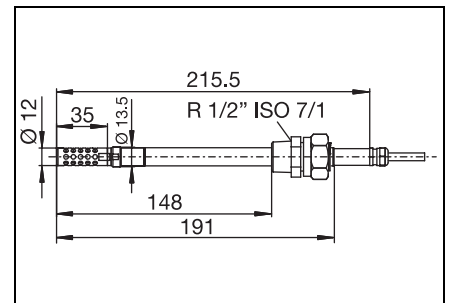
Probe, type 907023/334



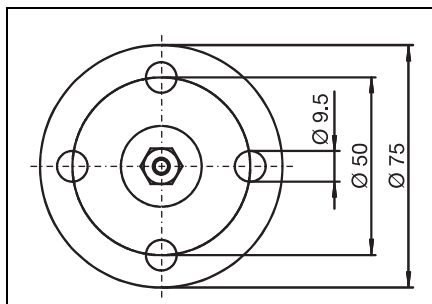
**Probe, type 907023/335
(mounting flange is optional)**



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.

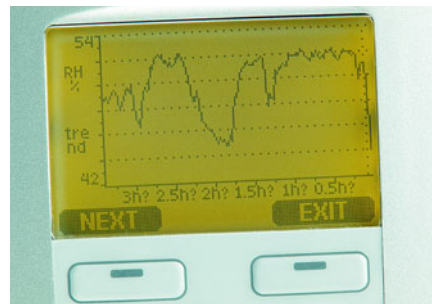
Maximum and minimum values of the past year can be graphically displayed in a simple manner.

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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Order details: Humidity and temperature transducers for wall mounting, type 907023/331

		(1) Basic version		
907023/331		Humidity and temperature transducer for wall mounting		
x		(2) Version for wall mounting	probe placed directly on housing	
x		(3) Additional temperature probe	not for type 907023/331	
x		(4) Parameters		
x	A	RH + T		
x	B	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT		
x		(5) Display		
x	0	no display		
x	1	graphics LCD with background lighting		
x		(6) Supply		
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		
x		(7) Signal output (and serial RS232 interface or (optionally) communication module)		
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		
x		(8) Analog output signals for Ch1, Ch2 and Ch3		
x	Ch1	Ch2	Ch3	
x	B	B	A	no third analog output (choose A if not required)
x	C	C	B	RH (0 – 100% RH)
x	D	D	C	T (see (9) output range temp.)
x	E	E	D	Td (-20 to +100°C) (-4 to +212°F)
x	F	F	E	Tdf (-20 to +100°C) (-4 to +212°F)
x	G	G	F	a (0 – 600g/m³) (0 – 262gr/ft³)
x	H	H	G	Tw (0 to 100°C) (+32 to +212°F)
x	J	J	H	x (0 – 500g/kg d.a.) (0 – 3500gr/lb)
x	K	K	J	h (-40 to +1500kJ/kg) (-9.5 to +652.6Btu/lb)
x	L	L	K	ppm (0 – 5000) (0 – 5000)
x	M	M	L	pw (0 – 1000hPa) (0 – 14.5psi)
x	N	N	M	pws (0 – 1000hPa) (0 – 14.5psi)
x	X	X	N	dT (-10 to +50°C) (14 to +122°F)
x			X	Define special scaling Ch1: _____ Ch2: _____ Option Ch3: _____
x		(9) Analog output range for temperature		
x	A	no temperature output (choose A if not required)		
x	B	-40 to +60°C (-40 to +140°F)		
x	F	-20 to +60°C (-4 to +140°F)		
x	K	0 to 60°C (32 to 140°F)		
x	X	Specifics: _____		
x		(10) Output unit		
x	1	metric		
x	2	non-metric		
x		(11) Option for module slot 1	Option for module slot 2	
x	0	no module		
x	1	relay output		
x	2	RS485 serial interface (electrically isolated) third analog output (required if Ch3 (8) is selected)		
x		(12) Cable bushings		
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		
x		(13) Transducer mounting		
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		
x		(14) Humidity sensor type		
x	1	general application (standard) HUMICAP® 180		
x	4	sensor with cleaning function HUMICAP® 180C		
x		(15) Sensor protection / filter		
x	A	PPS plastic grid with stainless steel mesh		
x	B	PPS plastic grid		
x	C	sintered stainless steel filter		
x		(16) Probe installation kit		
x	A	no installation kit		
x		(17) Operating instructions: language		
x	1	English		
x	2	German		
x	3	French		
x		(18) Calibration		
x	3A1	calibration to ISO 9001 standard (calibration report is available on request)		

Order code: (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)
 Order example: 907023/331 - A - 0 - A - 1 - 0 - 1 - BCA - B - 1 - 0 0 - A - 0 - 1 - A - A - 2 - 3A1

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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
- 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
- traceable 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

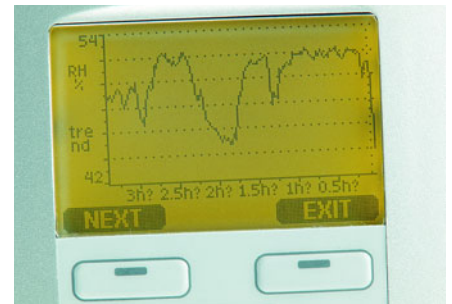
The transducers are mainly used for the control and monitoring of HVAC systems, for example in clean rooms, pharmaceutical process and greenhouses.

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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Order details: Humidity and temperature transducers for ducts and locations where space is tight, type 907023/333

		(1) Basic version		907023/333 Humidity and temperature transducer for ducts and locations where space is tight	
		(2) Sensor cable / cable length			
x		E	2m cable, 80°C		
x		F	5m cable, 80°C		
x		G	10m cable, 80°C		
x		4	2m cable, 120°C		
x		5	5m cable, 120°C		
x		6	10m cable, 120°C		
		(3) Additional temperature probe			
x		0	not for type 907023/333		
		(4) Parameters			
x		A	RH + T		
x		B	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT		
		(5) Display			
x		0	no display		
x		1	graphics LCD with background lighting		
		(6) Supply			
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) Signal output (and serial RS232 interface or (optionally) communication module)			
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) Analog output signals for Ch1, Ch2 and Ch3			
		no third analog output (choose A if not required)			
x		A	RH	(0 – 100% RH)	
x		B	T	(see (9) output range temp.)	
x		C	Td (-20 to +100°C)	(-4 to +212°F)	
x		D	Tdf (-20 to +100°C)	(-4 to +212°F)	
x		E	a (0 – 600g/m³)	(0 – 262gr/ft³)	
x		F	Tw (0 to 100°C)	(+32 to +212°F)	
x		G	x (0 – 500g/kg d.a.)	(0 – 3500gr/lb)	
x		H	h (-40 to +1500kJ/kg)	(-9.5 to +652.6Btu/lb)	
x		J	ppm (0 – 5000)	(0 – 5000)	
x		K	pw (0 – 1000hPa)	(0 – 14.5psi)	
x		L	pws (0 – 1000hPa)	(0 – 14.5psi)	
x		M	dT (-10 to +50°C)	(14 to +122°F)	
x		N			
x		X	Define special scaling	Ch1: _____	Ch2: _____ Option Ch3: _____
		(9) Analog output range for temperature			
x		no temperature output (choose A if not required)			
x		A	-40 to +60°C	(-40 to +140°F)	
x		B	-40 to +80°C	(-40 to +176°F)	
x		C	-40 to +120°C	(-40 to +248°F)	
x		D	-20 to +60°C	(-4 to +140°F)	
x		F	-20 to +80°C	(-4 to +176°F)	
x		G	-20 to +120°C	(-4 to +248°F)	
x		H	0 to 60°C	(32 to 140°F)	
x		K	0 to 120°C	(32 to 248°F)	
x		M	Specifics: _____		
		(10) Output unit			
x		1	metric		
x		2	non-metric		
		(11) Option for module slot 1		Option for module slot 2	
x		0	no module	no module	
x		1	relay output	relay output	
x		2	RS485 serial interface (electrically isolated)	third analog output (required if Ch3 (8) is selected)	
		(12) Cable bushings			
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) Transducer mounting			
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) Humidity sensor type			
x		1	general application (standard)	HUMICAP® 180	
x		4	sensor with cleaning function	HUMICAP® 180C	
		(15) Sensor protection / filter			
x		A	PPS plastic grid with stainless steel mesh		
x		B	PPS plastic grid		
x		C	sintered stainless steel filter		
		(16) Probe installation kit			
x		A	no installation kit		
x		C	duct installation kit		
x		D	cable gland AGRO		
		(17) Operating instructions: language			
x		1	English		
x		2	German		
x		3	French		
		(18) Calibration			
x		3A1	calibration to ISO 9001 standard (calibration report is available on request)		

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)						
Order code																								
Order example	907023/333	- E	- 0	- A	- 1	- 0	- 1	- B	- C	- A	- G	- 1	- 0	- 0	- 0	- A	- 0	- 1	- A	- A	- 2	- 3	- A	- 1

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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.

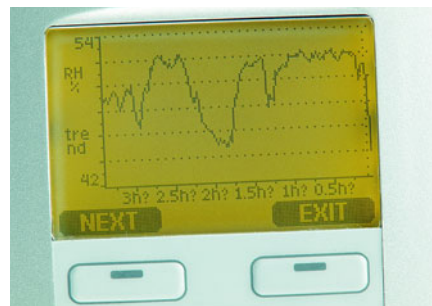
The measurement data can be transferred to a PC for further processing, and for copying to other programs.

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.



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

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



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

		(1) Basic version		
		907023/334	Humidity and temperature transducer for high-pressure and vacuum applications	
		(2) Sensor cable / cable length		
x		H	2m cable	
x		J	5m cable	
x		K	10m cable	
		(3) Additional temperature probe		
x		0	not for type 907023/334	
		(4) Parameters		
x		A	RH + T	
x		B	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT	
		(5) Display		
x		0	no display	
x		1	graphics LCD with background lighting	
		(6) Supply		
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) Signal output (and serial RS232 interface or (optionally) communication module)		
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) Analog output signals for Ch1, Ch2 and Ch3		
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/m ³) (0 – 262gr/ft ³)	
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) Analog output range for temperature		
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) Output unit		
x		1	metric	
x		2	non-metric	
		(11) Option for module slot 1	Option for module slot 2	
x		0	no module	
x		1	relay output	
x		2	RS485 serial interface (electrically isolated)	
		(12) Cable bushings		
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) Transducer mounting		
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) Humidity sensor type		
x		1	general application (standard) HUMICAP® 180	
x		4	sensor with cleaning function HUMICAP® 180C	
		(15) Sensor protection / filter		
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) Probe installation kit		
x		E	fitting element M 22x1.5	
x		F	fitting element NPT 1/2"	
		(17) Operating instructions: language		
x		1	English	
x		2	German	
x		3	French	
		(18) Calibration		
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 - 1 - A - E - 2 - 3 A 1

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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.

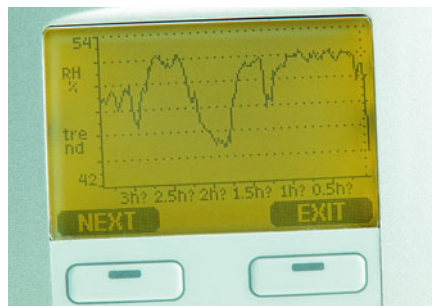


Thanks to the mounting flange in stainless steel, probes can be mounted at various depths.

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.

JUMO GmbH & Co. KG

Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.

JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.

8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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.

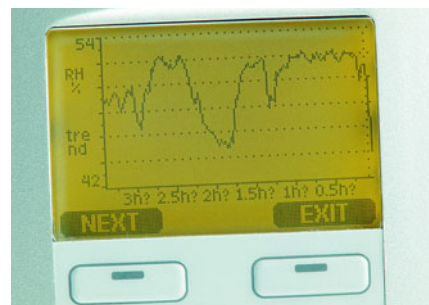


Duct installation kit

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.

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



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

		(1) Basic version		
		907023/337B	Humidity and temperature transducer with a heated probe for high-humidity applications	
		(2) Dew point probe / cable length		
x		S	2 m cable	
x		T	5 m cable	
x		U	10 m cable	
		(3) Additional temperature probe		
x		0	no additional temperature probe	
x		1	2 m cable	
x		2	5 m cable	
x		3	10 m cable	
		(4) Parameters		
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) Display		
x		0	no display	
x		1	graphics LCD with background lighting	
		(6) Supply		
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) Signal output (and serial RS232 interface or (optionally) communication module)		
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) Analog output signals for Ch1, Ch2 and Ch3		
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/m ³) (0 – 262gr/ft ³)	
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) Analog output range for temperature		
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) Output unit		
x		1	metric	
x		2	non-metric	
		(11) Option for module slot 1	Option for module slot 2	
x		0 0	no module	
x		1 1	relay output	
x		2 3	RS485 serial interface (electrically isolated) third analog output (required if Ch3 (8) is selected)	
		(12) Cable bushings		
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) Transducer mounting		
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) Humidity sensor type		
x		5	combined sensor HUMICAP® 180C	
x		6	combined sensor with cleaning function HUMICAP® 180C	
		(15) Sensor protection / filter		
x		A	PPS plastic grid with stainless steel mesh	
x		C	sintered stainless steel filter	
x		D	stainless steel grid	
		(16) Probe installation kit		
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) Operating instructions: language		
x		1	English	
x		2	German	
x		3	French	
		(18) Calibration		
x		3A1	calibration to ISO 9001 standard (calibration report is available on request)	

Order example, see page 13/32

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
e-mail: mail@jumo.net
Internet: www.jumo.net

JUMO Instrument Co. Ltd.
JUMO House
Temple Bank, Riverway
Harlow, Essex CM 20 2TT, UK
Phone: +44 1279 635533
Fax: +44 1279 635262
e-mail: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
8 Technology Boulevard
Canastota, NY 13031, USA
Phone: 315-697-JUMO
1-800-554-JUMO
Fax: 315-697-5867
e-mail: info@jumo.us
Internet: www.jumo.us



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.

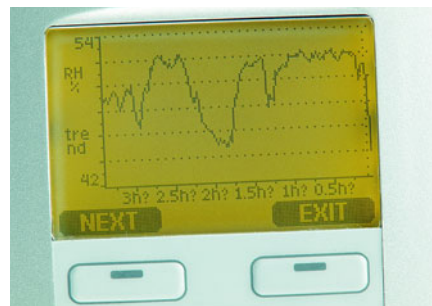
The probe can be installed during operation under process pressures up to 10bar.

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) Basic version		
		907023/338	Humidity and temperature transducer for pressure lines and chambers	
		(2) Sensor cable / cable length		
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	
		(3) Additional temperature probe		
x		0	not for type 907023/338	
		(4) Parameters		
x		A	RH + T	
x		B	RH+T+Td+Tdf+a+x+Tw+ppm+pw+pws+h+dT	
		(5) Display		
x		0	no display	
x		1	graphics LCD with background lighting	
		(6) Supply		
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) Signal output (and serial RS232 interface or (optionally) communication module)		
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) Analog output signals for Ch1, Ch2 and Ch3		
x		A	no third analog output (choose A if not required)	
x	Ch1	B	RH	(0 – 100% RH)
x	Ch2	C	T	(see (9) output range temp.)
x	Ch3	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 ³)	(0 – 262gr/ft ³)
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) Analog output range for temperature		
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) Output unit		
x		1	metric	
x		2	non-metric	
		(11) Option for module slot 1		
x		0	no module	
x		1	relay output	
x		2	RS485 serial interface (electrically isolated)	
		(12) Cable bushings		
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) Transducer mounting		
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) Humidity sensor type		
x		1	general application (standard)	
x		4	combined sensor with cleaning function	
				HUMICAP® 180
				HUMICAP® 180C
		(15) Sensor protection / filter		
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) Probe installation kit		
x		M	ball valve installation kit (ISO 1/2")	
x		N	pressure connection NPT 1/2"	
x		V	pressure connection ISO 1/2"	
		(17) Operating instructions: language		
x		1	English	
x		2	German	
x		3	French	
		(18) Calibration		
x		3A1	calibration to ISO 9001 standard (calibration report is available on request)	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)																			
Order code	907023	-	V	-	0	-	A	-	1	-	0	-	1	-	BCA	-	B	-	1	-	0	0	-	A	-	0	-	1	-	A	-	V	-	2	-	3A1
Order example	907023/338	-	V	-	0	-	A	-	1	-	0	-	1	-	BCA	-	B	-	1	-	0	0	-	A	-	0	-	1	-	A	-	V	-	2	-	3A1

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
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 8 Technology Boulevard
 Canastota, NY 13031, USA
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Order details: Accessories for humidity and temperature transducers for industrial applications

(1) Basic version	
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
(2) Software package	
893	PC software and cable
(2) Installation kits	
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)
(2) Screw fittings	
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
(2) Filter/sensor protection (12mm dia.)	
890	sintered stainless steel filter
891	PPS plastic grid filter with stainless steel mesh
892	PPS plastic grid filter
(2) Replacement humidity sensor	
814	HUMICAP® 180
(2) Replacement temperature sensor	
005	Pt 100 1/3 DIN Class B to DIN EN 60 751
(2) Humidity sensor checks	
820	33% RH magnesium chloride
821	55% RH magnesium nitrate
822	76% RH sodium chloride

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

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Stock versions:

**Accessories for humidity and temperature transducers
 for industrial applications**

(1)	-	(2)	Sales No.
	-		
907023/90	-	890	90/00465143
907023/90	-	891	90/00465144
907023/90	-	892	90/00465145
907023/92	-	005	90/00389454
907023/93	-	820	90/00332758
907023/93	-	821	90/00332759
907023/93	-	822	90/00332760

JUMO GmbH & Co. KG

Delivery address: Mackenrodtstraße 14,
36039 Fulda, Germany
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Intrinsically safe industrial transducers for humidity, temperature and derived variables

- **hygrothermal transducers measure relative humidity in air, and temperature**
- **option: calculation of dew point, absolute humidity, mixing ratio and wet bulb temperature**
- **new user-friendly, modular transducer concept**
- **intelligent interchangeable probes with storage of all calibration coefficients**
- **safe operation of the instrument as a whole in Category 1G / Zone 0 and 1D / Zone 20 areas, with protective cover**
- **retraceable to NIST (including certificate)**



These intrinsically safe industrial transducers are the first choice for measuring humidity, temperature and derived variables

These new, intrinsically-safe industrial transducers have been developed in response to the need of accurately monitoring humidity in hazardous areas, and without risk. The series sets entirely new standards with regard to ease of installation and user friendliness.

The modular design consists of four parts (wall bracket, housing base, electronics unit and probe) that can be detached from each other, a feature which makes installation, operation and maintenance considerably easier.

In combination with five interchangeable probes, the transducers lend themselves to the most diverse applications for almost any measurement task.

They no longer need to be recalibrated when the probes are swapped, because all the calibration coefficients are already stored within the probe itself and transferred to the central unit after connection.

Apart from this, the probe design does not differ from that of the field-proven industrial series models which are available with 2m, 5m or 10m long sensor cables. The special sensor heads are available in various styles, which permit application in vacuum or the 0 – 100bar overpressure range, and with high process temperatures up to 180°C.

The transducers are extremely rugged and incorporate the very latest sensor technology.

They can be operated safely and reliably inside areas where a Category 1 (Zone 0) explosion hazard is permanently present.

The transducers are extremely versatile, thanks to the microprocessor-based electronics and the large variety of options. The user is able to specify the transducer configuration directly when ordering. It can also be subsequently altered on site.

Using the optional software expansion, the integral microprocessor calculates humidity variables such as dew point T_d (°C), absolute humidity a (g / m³), mixing ratio x (g / kg) and wet bulb temperature T_w (°C).

The intrinsically safe transducers are equipped with an analog output (4 – 20mA) as standard. They can optionally be upgraded with a second analog output and an integrated LC display /operator panel.

When connecting up the supply voltage (12 – 28V DC) the use of safety barriers or intrinsically safe power supply units (available from outside suppliers) is mandatory for operation in locations with an explosion hazard (see Technical data).

All transducers are equipped with sensors that feature state-of-the-art thin-film technology. More than 20 years of experience have gone into their development and continuous improvement.

The sensors are distinguished by their supreme accuracy, reliability and stability.

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Technical data

Styles

Type 907023/61

Intrinsically safe humidity and temperature transducer for wall mounting,
 operating temperature -40 to +60 °C

Type 907023/63

Intrinsically safe humidity and temperature transducer with a small sensor head
 on a 2m sensor cable, operating temperature -40 to +120 °C

Type 907023/64

Intrinsically safe humidity and temperature transducer with a pressure-proof stainless steel sensor
 head on a 2m sensor cable for process pressures from 0 – 10MPa (0 – 100bar),
 operating temperature -40 to +180 °C

Type 907023/65

Intrinsically safe humidity and temperature transducer with a stainless steel sensor head
 on a 2m sensor cable,
 operating temperature -40 to +180 °C

Type 907023/68 and 907023/68L (long version, shaft length 400mm)

Intrinsically safe humidity and temperature transducer with a pressure-proof stainless steel sensor
 head on a 2m sensor cable for process pressures from 0 – 4MPa (0 – 40bar),
 sensor head with sliding clamping thread;
 operating temperature -40 to +180 °C

Note:

For operation in potentially hazardous surroundings, it is mandatory to connect up the supply
 voltage (12 – 28V DC) via safety barriers (available from outside suppliers) or intrinsically safe
 power supply units. For the operation in Category 1 (Zone 0), an intrinsically safe power supply
 unit (e. g. type STAHL 9160/13-11-11) must be used for each channel. When operating in
 Categories 2 + 3 (Zone 1 + 2), it is sufficient to use safety barriers (e. g. STAHL 9001/51-280-091-
 141).

These devices are not supplied by JUMO!

For more details, see the operating instructions or visit
<http://www.stahl.de/de/ex/sicherheitsbarrieren.htm>

Measured variables

Relative humidity

Range 0 – 100 % RH

Accuracy (taking into account non-linearity and reproducibility)
 after calibration against highly accurate,
 certified humidity standards

±1 % RH (0 – 90 % RH)
 ±2 % RH (90 – 100 % RH)
 ±2 % RH (0 – 90 % RH)
 ±3 % RH (90 – 100 % RH)

Salt solutions (ASTM E104-85)

Response time $t_{0,9}$ at 20 °C in stationary air (with sintered filter) 15sec

Humidity sensors:
 HUMICAP®180 for standard applications
 HUMICAP®180L2 with substantial chemical contamination

Temperature ranges

-40 to +180 °C (depending on the probe selected)

Accuracy of the electronics at 20 °C, typically ±0.1 °C

Temperature drift of electronics 0.005 °C/°C

Temperature sensor Pt1000 1/3 DIN Class B to EN 60 751

Derived variables (option)

	with probe	with probes
Typical ranges	907023/S61	907023/S63, .../S64, .../S65, .../S68
Dew point T_d	-40 to +60	-40 to +100 [°C]
Mixing ratio x	0 to 160	0 to 500 [g/kg dry air]
Absolute humidity a	0 to 160	0 to 600 [g/m ³]
Wet bulb temperature T_w	0 to 60	0 to 100 [°C]

(The accuracy of the derived variable depends on the accuracy of the humidity/temperature
 measurement and the corresponding working point.)

Ex classifications as per CENELEC (PTB) (analog outputs)

(94/9/EC, ATEX100a)	II 1 G EEx ia IIC T4 PTB 00 ATEX 2112 X
Limit values	$U_i = 28V$, $I_i = 100mA$, $P_i = 700mW$, $C_i = 1 nF$, $L_i = 0 H$
Ambient conditions	$T_{amb} = -20$ to $+60$ °C $P_{amb} = 800$ to $1100hPa$
Dust protection (with protective cover)	II 1D (IP 65 T = 70 °C) VTT04 ATEX 023X

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Outputs	2 analog outputs (one comes as standard, one is optional) Accuracy of the analog outputs at 20°C Temperature drift	4 – 20mA (2-wire technique) 0.05 % of full scale 0.005 % / °C of full scale
General data	Supply voltage when using the service interface Operating temperature range Electronics with LC display Storage temperature range Connections Cable gland Conduit fitting Housing material Housing dimensions Housing weight EMC	12 – 28V DC 15 – 28V DC -20 to +60°C -40 to +70°C screw terminals 0.33 – 2.0mm ² Pg 11 for sensor cable with 5 – 12mm dia. Pg 11/NPT 1/2"-14 G-AlSi10 Mg (DIN 1725) L 164mm x W 115mm x H 62mm 950g as per EN 61 326-1: 1997 + Annex 1: 1998 (EN 61 000-4-5 only when using external surge voltage protectors)
Probes	907023/S61 907023/S63 907023/S64 907023/S65 907023/S68 und 907023/S68L Probe cable diameter (all types) Probe cable length	probe for wall mounting for the temperature range -40 to +60°C probe, small style for the temperature range -40 to +120°C probe for high pressures for the temperature range -40 to +180°C for the pressure range 0 – 10MPa (0 – 100bar) probe for high temperatures for the temperature range -40 to +180°C probe for pressure lines for the temperature range -40 to +180°C for the pressure range 0 – 4MPa (0 – 4bar) 5.5mm 2m (standard) 5m or 10m (option)
Options	Second analog output Housing with display/operator panel Character size (1st line/2nd line) Extension for derived variables Sensor protection	4 – 20mA (2-wire technique) 2-line LC display 12mm/10mm dew point temperature T _d , mixing ratio x, absolute humidity a, wet bulb temperature T _w sintered filter 38µm from acid-resistant, non-rusting stainless steel AISi 316L (Mat. Ref. 1.4404), stainless steel grid AISi 316L (Mat. Ref. 1.4404), PPS grid with non-rusting stainless steel mesh AISi 316 (Mat. Ref. 1.4436), PPS grid

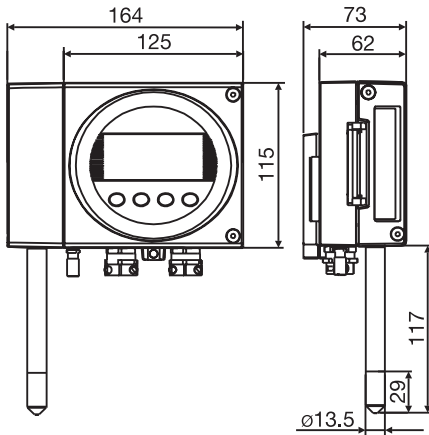
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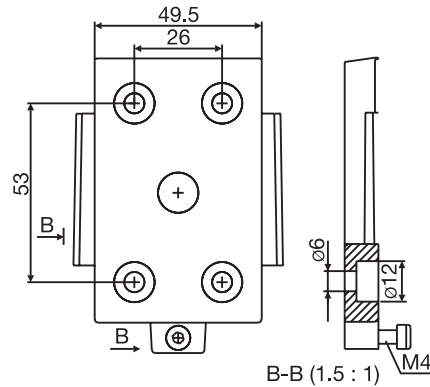
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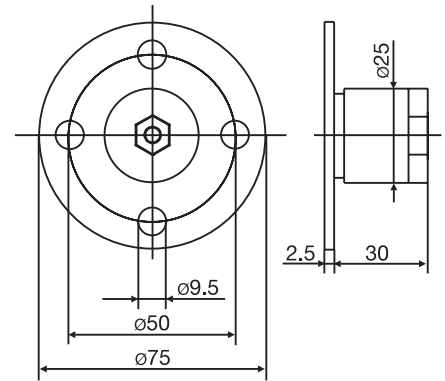
Dimensions



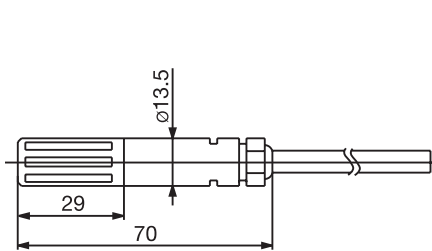
Central unit with probe 907023/S61
 Type 907023/61



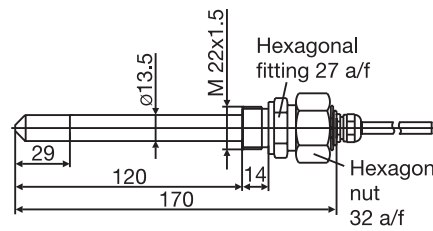
Mounting bracket



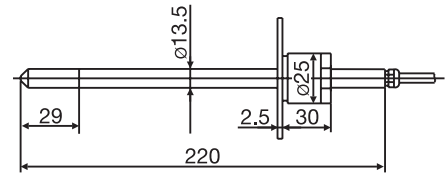
Installation kit and mounting flange



Probe 907023/S63

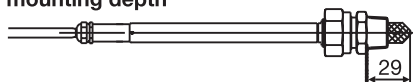


Probe 907023/S64

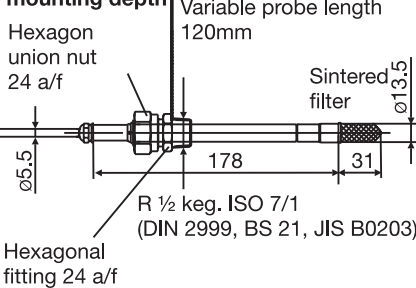


Probe 907023/S65 including mounting flange (option)

Minimum mounting depth



Maximum mounting depth



Probe 907023/S68 and .../S68L

All dimensions in mm.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: **Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1) Basic version

907023/61 Intrinsically safe humidity and temperature transducer for wall mounting,
 operating temperature -40 to +60 °C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

x .0 If normally only one channel is used, then choose 0 for channel 2!
 x 1 1 RH 0 – 100% RH
 x 2 2 T (see Temperature ranges)
 x 3 3 Td² -40 to +60 °C
 x 4 4 a² 0 – 160g/m³
 x 5 5 Tw² 0 to 60 °C
 x 6 6 x² 0 – 160g/kg dry air
 x 9 9 special scaling (details in plain text)

(4) Temperature ranges

x 472 -40 to +60 °C
 x 632 -20 to +60 °C
 x 807 0 to 60 °C
 x 999 special range (details in plain text)

(5) Probe shaft/filter

x 2 120mm probe shaft length (60 °C), PPS plastic grid filter with stainless steel mesh

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 789 integrated LC display/operator panel
 x 801 PPS plastic grid filter with PTFE membrane
 x 803 sintered stainless steel filter
 x 805 PPS plastic grid filter without stainless steel mesh
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

	(1)	(2)	(3)	(4)	(5)	(6)	
Order code							, ... ¹
Order example	907023/61	-	11	-	12	-	472
					-	2	/
						000	

¹ List extra codes in sequence, separated by commas.

² The operands Td, a, Tw and x are only available if Option 15 has been selected under Output variables.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: **Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1) Basic version

907023/63 Intrinsically safe humidity and temperature transducer
 with a small sensor head on a 2m sensor cable,
 operating temperature -40 to +120°C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

.10 If normally only one channel is used, then choose 0 for channel 2!
 x 1 RH 0 – 100% RH
 x 2 T (see Temperature ranges)
 x 3 Td² -40 to +100°C
 x 4 a² 0 – 500g/m³
 x 5 Tw² 0 to 100°C
 x 6 x² 0 – 500g/kg dry air
 x 9 special scaling (details in plain text)

(4) Temperature ranges

x 474 -40 to +80°C
 x 478 -40 to +120°C
 x 635 -20 to +80°C
 x 643 -20 to +120°C
 x 814 0 to 100°C
 x 999 special range (details in plain text)

(5) Sensor cable lengths (probe shaft/filter)

x 2 2m shaft length 60mm (120°C), PPS plastic grid filter with stainless steel mesh
 x 5 5m shaft length 60mm (120°C), PPS plastic grid filter with stainless steel mesh
 x 10 10m shaft length 60mm (120°C), PPS plastic grid filter with stainless steel mesh

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 783 duct installation kit
 x 789 integrated LC display/operator panel
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

Order code (1) (2) (3) (4) (5) (6)
Order example 907023/63 - 11 - 12 - 474 - 2 / 000¹, ...

¹ List extra codes in sequence, separated by commas.

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JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)

(1) Basic version

907023/64 Intrinsically safe humidity and temperature transducer
 with pressure-proof stainless steel sensor head
 on a 2m sensor cable, for process pressures from 0 – 10MPa (0 – 100bar)
 operating temperature -40 to +180°C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

.0 If normally only one channel is used, then choose 0 for channel 2!
 x 1 1 RH 0 – 100% RH
 x 2 2 T (see Temperature ranges)
 x 3 3 Td² -40 to +100°C
 x 4 4 a² 0 – 500g/m³
 x 5 5 Tw² 0 to 100°C
 x 6 6 x² 0 – 500g/kg dry air
 x 9 9 special scaling (details in plain text)

(4) Temperature ranges

x 474 -40 to +80°C
 x 478 -40 to +120°C
 x 485 -40 to +180°C
 x 635 -20 to +80°C
 x 643 -20 to +120°C
 x 648 -20 to +180°C
 x 814 0 to 100°C
 x 830 0 to 180°C
 x 999 special range (details in plain text)

(5) Sensor cable lengths (probe shaft/filter)

x 2 2m shaft length 150mm (180°C), sintered stainless steel filter
 x 5 5m shaft length 150mm (180°C), sintered stainless steel filter
 x 10 10m shaft length 150mm (180°C), sintered stainless steel filter

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 789 integrated LC display/operator panel
 x 804 PPS plastic grid filter with stainless steel mesh
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

	(1)	(2)	(3)	(4)	(5)	(6)	
Order code							, ... ¹
Order example	907023/64	- 11	- 12	- 474	- 2	/ 000	

¹ List extra codes in sequence, separated by commas.

² The operands Td, a, Tw and x are only available if Option 15 has been selected under Output variables.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
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Order details: **Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1) Basic version

907023/65 Intrinsically safe humidity and temperature transducer
 with stainless steel sensor head on a 2m sensor cable,
 operating temperature -40 to +180°C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

.10 If normally only one channel is used, then choose 0 for channel 2!
 x 1 1 RH 0 – 100% RH
 x 2 2 T (see Temperature ranges)
 x 3 3 Td² -40 to +100°C
 x 4 4 a² 0 – 500g/m³
 x 5 5 Tw² 0 to 100°C
 x 6 6 x² 0 – 500g/kg dry air
 x 9 9 special scaling (details in plain text)

(4) Temperature ranges

x 474 -40 to +80°C
 x 478 -40 to +120°C
 x 485 -40 to +180°C
 x 635 -20 to +80°C
 x 643 -20 to +120°C
 x 648 -20 to +180°C
 x 814 0 to 100°C
 x 830 0 to 180°C
 x 999 special range (details in plain text)

(5) Sensor cable lengths (probe shaft/filter)

x 2 2m shaft length 150mm (180°C), sintered stainless steel filter
 x 5 5m shaft length 150mm (180°C), sintered stainless steel filter
 x 10 10m shaft length 150mm (180°C), sintered stainless steel filter

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 785 mounting flange, aluminium
 x 786 mounting flange, stainless steel
 x 789 integrated LC display/operator panel
 x 804 PPS plastic grid filter with stainless steel mesh
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

	(1)	(2)	(3)	(4)	(5)	(6)						
Order code							, ... ¹					
Order example	907023/65	-	11	-	12	-	474	-	2	/	000	

¹ List extra codes in sequence, separated by commas.

² The operands Td, a, Tw and x are only available if Option 15 has been selected under Output variables.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: **Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1) Basic version

907023/68 Intrinsically safe humidity and temperature transducer
 with pressure-proof stainless steel sensor head on a 2m sensor cable,
 for process pressures from 0 – 4MPa (0 – 40bar),
 sensor head with sliding clamping thread;
 operating temperature -40 to +180°C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

x .10 If normally only one channel is used, then choose 0 for channel 2!
 x 1 1 RH 0 – 100% RH
 x 2 2 (see Temperature ranges)
 x 3 3 Td² -40 to +100°C
 x 4 4 a² 0 – 500g/m³
 x 5 5 Tw² 0 to 100°C
 x 6 6 x² 0 – 500g/kg dry air
 x 9 9 special scaling (details in plain text)

(4) Temperature ranges

x 474 -40 to +80°C
 x 478 -40 to +120°C
 x 485 -40 to +180°C
 x 635 -20 to +80°C
 x 643 -20 to +120°C
 x 648 -20 to +180°C
 x 814 0 to 100°C
 x 830 0 to 180°C
 x 999 special range (details in plain text)

(5) Sensor cable lengths (probe shaft/filter)

x 2 2m shaft length 178mm (180°C), sintered stainless steel filter
 x 5 5m shaft length 178mm (180°C), sintered stainless steel filter
 x 10 10m shaft length 178mm (180°C), sintered stainless steel filter

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 787 ball valve installation kit
 x 789 integrated LC display/operator panel
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

	(1)	(2)	(3)	(4)	(5)	(6)	
Order code							, ... ¹
Order example	907023/68	-	11	-	12	-	474
					-	2	/
						000	

¹ List extra codes in sequence, separated by commas.

² The operands Td, a, Tw and x are only available if Option 15 has been selected under Output variables.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: **Intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1) Basic version

907023/68L Intrinsically safe humidity and temperature transducer
 with pressure-proof stainless steel sensor head (long version)
 on a 2m sensor cable for process pressures from 0 – 4MPa (0 – 40bar),
 sensor head with sliding clamping thread;
 operating temperature -40 to +180°C

(2) Output variables

x 11 RH + T
 x 15 RH + T + Td + a + Tw + x

(3) Analog output variables, channel 1 (and channel 2, optional)

x .10 If normally only one channel is used, then choose 0 for channel 2!
 x 1 1 RH 0 – 100% RH
 x 2 2 T (see Temperature ranges)
 x 3 3 Td² -40 to +100°C
 x 4 4 a² 0 – 500g/m³
 x 5 5 Tw² 0 – 100°C
 x 6 6 x² 0 – 500g/kg dry air
 x 9 9 special range (details in plain text)

(4) Temperature ranges

x 474 -40 to +80°C
 x 478 -40 to +120°C
 x 485 -40 to +180°C
 x 635 -20 to +80°C
 x 643 -20 to +120°C
 x 648 -20 to +180°C
 x 814 0 to 100°C
 x 830 0 to 180°C
 x 999 special range (details in plain text)

(5) Sensor cable lengths (probe shaft/filter)

x 2 2m shaft length 400mm (180°C), sintered stainless steel filter
 x 5 5m shaft length 400mm (180°C), sintered stainless steel filter
 x 10 10m shaft length 400mm (180°C), sintered stainless steel filter

(6) Extra codes

x 000 no extra code
 x 427 conduit fitting NPT 1/2" (for installation tube)
 x 777 non-metric unit (°F)
 x 787 ball valve installation kit
 x 789 integrated LC display/operator panel
 x 823 special sensor for high chemical concentrations
 x 826 2 analog output channels (channel 1 and channel 2), 4 – 20mA
 x 828 operating instructions in English

Order code **(1)** **(2)** **(3)** **(4)** **(5)** **(6)**
Order example 907023/68L - 11 - 12 - 474 - 2 / 000 , ...¹

¹ List extra codes in sequence, separated by commas.

² The operands Td, a, Tw and x are only available if Option 15 has been selected under Output variables.

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: Replacement probes for intrinsically safe industrial transducers for humidity, temperature and derived variables with Ex approval as per ATEX 100a 94/9/EC (PTB)

(1) Basic versions

907023/S61	Probe for intrinsically safe central unit for wall mounting, operating temperature -40 to +60°C
907023/S63	Probe with a flexible sensor cable and small sensor head, operating temperature -40 to +120°C
907023/S64	Probe for process pressures from 0 – 10MPa (0 – 100bar), operating temperature -40 to +180°C
907023/S65	Probe for high process temperatures, operating temperature -40 to +180°C
907023/S68	Probe for the variable installation in pressure lines from 0 – 4MPa (0 – 40bar), operating temperature -40 to +180°C
907023/S68L	Probe for the variable installation in pressure lines from 0 – 4MPa (0 – 40bar), long version with 400mm shaft length, operating temperature -40 to +180°C

(2) Sensor cable length (probe shaft)

	2	120mm	probe shaft
X	2	2m	shaft length 60mm (120°C)
X	5	5m	shaft length 60mm (120°C)
X	10	10m	shaft length 60mm (120°C)
	2	2m	shaft length 150mm (180°C)
X	5	5m	shaft length 150mm (180°C)
X	10	10m	shaft length 150mm (180°C)
	2	2m	shaft length 150mm (180°C)
X	5	5m	shaft length 150mm (180°C)
X	10	10m	shaft length 150mm (180°C)
	2	2m	shaft length 178mm (180°C)
X	5	5m	shaft length 178mm (180°C)
X	10	10m	shaft length 178mm (180°C)
	2	2m	shaft length 400mm (180°C)
X	5	5m	shaft length 400mm (180°C)
X	10	10m	shaft length 400mm (180°C)

(3) Humidity sensor

X	000	humidity sensor (standard)
X	823	special sensor for high chemical concentrations

(4) Sensor protection / filter

X	801	PPS plastic grid filter with PTFE membrane
X	803	sintered stainless steel filter
X	804	PPS plastic grid filter with stainless steel mesh
X	805	PPS plastic grid filter without stainless steel mesh

(5) Installation kits

X	000	no installation kit
X	783	duct installation kit
	785	mounting flange, aluminium
	786	mounting flange, stainless steel
X	787	ball valve installation kit

Order code	(1)	(2)	(3)	(4)	(5)
Order example	907023/S61	2	000	805	000

Note: The replacement probes can be universally combined with the central unit of the intrinsically safe industrial transducers!

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Order details: Accessories for intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)

(1) Basic versions	
907023/90	Filter (13.5mm dia.)
907023/91	Replacement humidity sensor
907023/92	Replacement temperature sensor
907023/93	Humidity sensor checks
907023/94	Duct installation kit
907023/95	Mounting flange
907023/96	Ball valve installation kit
907023/88	Interface cable (service interface) ¹
	(2) Filter (13.5mm dia.)
x	801 PPS plastic grid filter with PTFE membrane
x	803 sintered stainless steel filter
x	804 PPS plastic grid filter with stainless steel mesh
x	805 PPS plastic grid filter without stainless steel mesh
	(2) Replacement humidity sensor
x	814 HUMICAP® 180
	(2) Replacement temperature sensor
x	816 Pt 1000 1/3 DIN Class B to EN 60 751
	(2) Humidity sensor checks
x	820 33% RH magnesium chloride
x	821 53% RH magnesium nitrate
x	822 76% RH sodium chloride
	(2) Duct installation kit
x	783 duct installation kit (for type 907023/63)
	(2) Mounting flange
x	785 aluminium (for type 907023/65)
x	786 stainless steel (for type 907023/65)
	(2) Ball valve installation kit
x	787 ball valve installation kit (for type 907023/68 and .../68L)
	(2) Interface cable
x	817 interface cable for service interface

Order code
Order example

(1)	-	(2)
907023/90	-	804

¹ Generally, the interface cable may only be used outside the hazardous area, and only temporarily for instrument operation! Its use for data transmission from a hazardous location is not permissible, because of the increased safety requirements of EN 50 284 for Category 1 devices!

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
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 e-mail: mail@jumo.net
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JUMO Instrument Co. Ltd.
 JUMO House
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 Harlow, Essex CM 20 2TT, UK
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JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



Stock versions:

**Accessories for intrinsically safe industrial transducers
 for humidity, temperature and derived variables
 with Ex approval as per ATEX 100a 94/9/EC (PTB)**

(1)		(2)	Sales No.
907023/90	-	801	90/00378136
907023/90	-	803	90/00342673
907023/90	-	804	90/00343462
907023/90	-	805	90/00342672
907023/92	-	816	90/00387458
907023/93	-	820	90/00332758
907023/93	-	821	90/00332759
907023/93	-	822	90/00332760
907023/94	-	783	90/90590560
907023/95	-	785	90/90590561
907023/95	-	786	90/90590562