Humidity / Temperature Probes
HumiProbe Series with Analog and Digital Output

**HumiProbe
Series
DKRF500**

HumiProbe - Precision Made to Measure!
Our new HumiProbe DKRF5xx Series offers high accuracy (up to 1.5% RH and 0.1°C) and excellent longevity at the same time. Its exchangeable and calibratable sensor element helps minimize maintenance related downtimes and conserves your budget.

Different Models for Various Applications
We offer different models each with individual features, e. g. a model for high-pressure qapplications, a miniaturized model for confined spaces and applications up to 120°C.

Analog and Digital Signals
All models come with a RS485 interface in addition to linear analogue outputs. Through this interface the analog outpus can be configured and readings can be fetched. Digital interfaces RS232 and USB are optionally available.
A variety of calculated variables is provided by default, and can also be assigned to the analog outputs ex works.

Emphasizing Flexibility
Retrieve live data through, configure output signals, adjust scaling and calibrate the sensor - all through the digital interface. The default digital protocol is Modbus-RTU which can be changed to ASCII by the user or delivered with ASCII ex works on request.

Relative Humidity Sensor Accuracy

Temperature Sensor Accuracy
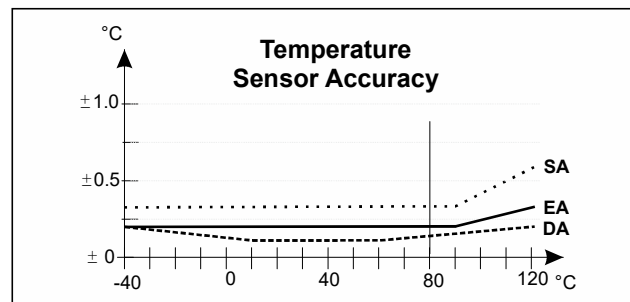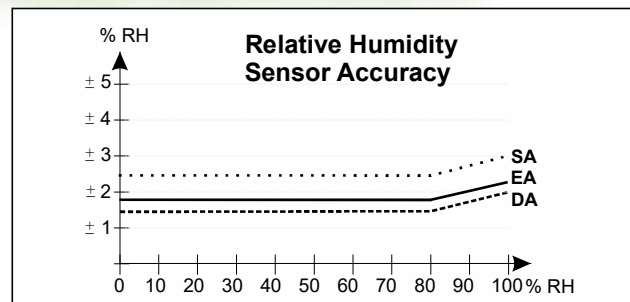
SA = Standard Accuracy, EA = Enhanced Accuracy, with ISO9001 Calibration, DA = Highest Accuracy, with DAkkS Certificate

Features

Features
Cost-efficient sensor for relative humidity and temperature as well as calculated variables
Exchangeable high-precision sensor
6 models for a broad range of applications
2 analog outputs (0...1 V, 0...2.5 V, 0...5 V, 0...10 V)
RS485-Modbus / ASCII, RS232, USB interface
Wide temperature range (-40...+120°C)
Calibration options: ISO9001 and ISO17025 (DAkkS)
Calculated variables: dew point, wet-bulb temperature, absolute humidity, mixing ratio, water vapour partial pressure
Configurable, scaleable and calibratable by the user
Low power consumption → ideal for data loggers!

Applications:

· HVAC
· Weather stations
· Data loggers
· Automation processes / SPS
· Environmental chambers
· Instruments
· Test benches

Models
DKRF500 Series

DKRF500
► Standard model in tube design
► Suitable for a wide range of applications
► Robust stainless steel housing
► Both sensor and filter are exhcangeable

DKRF505
► Detached probe head for enhanced temperature range
► Measurements in very tight spaces
► Both sensor and filter are exchangeable

DKRF505/XXS
► Detached and miniaturized probe head
► For the most confined spaces or smallest of openings

DKRF510
► Rod type probe for measurements in bulk goods or concrete/screed
► Handle for comfortable use with hand-held instruments or data loggers

DKRF515
► Pressure-resistant model, suitable for use outdoors
► Sensor and sintered filter exchangeable
► Overpressure protection up to 2 bar

DKRF517
► High-pressure model with screw-in thread for direct process integration
► G1/2" or M8 threads - other sizes on request
► Pressure-resistant up to 30 bar

Models	DKRF500	DKRF505	DKRF505/XXS	DKRF510	DKRF515	DKRF517
Exchangeable sensor	✓	✓	✗	✗	✓	✗
Exchangeable filter	✓	✓	✗	✗	✓	✗
Probe head Tmax	+80°C	+120°C			+80°C	+80°C
Probe body Tmax		+80°C				
Probe head length	101 mm	65 mm	20 mm	200 mm	122 mm	29 mm
Probe body length		105 mm		100 mm		53 mm
Ø Probe head	8 mm	8 mm	4 mm		13 mm	4 mm
Ø Probe body		8 mm	8 mm			13 mm
Pressure-resistant	✗	✗	✗	✗	0 to 2 bar	0 to 30 bar

Calibration & Accessories
HumiProbe Series

High-precision Sensor
The sensor is user-exchangeable. Simply remove the protective cap and the sensor part and insert the replacement as is shown on the left.
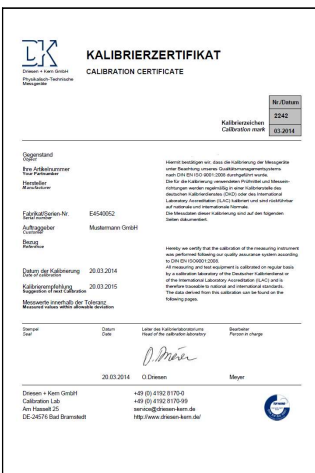
Calibration Concept
We recommend calibrating your HumiProbes every 12 months. Calibration can either be done on site or you can send in your probes to our calibration laboratory.

It can be even **easier**, **cheaper** und much **more convenient** with models **DKRF500**, **DKRF505** and **DKRF515** thanks to user-exchangeable sensor elements: Purchase a fully calibrated replacement sensor which can be put into operation with a single command and which immediately complies with specifications.

Replacing the sensor is also an option for models with enhanced or highest accuracy (EA/DA). The required correction values are listed on the included certificate.

Exchanging the sensor element helps prevent down times and renders your measurement almost interruption free.

Available Certificates

ISO17025 Calibration
(Option DA, ±1.5% RH / ±0.1..0.2°C)*
(with DAkkS Certificate)

ISO9001 Calibration
(Option EA, ±1.8%rF / ±0.2°C)*

* = See page 1 or specifications for more details regarding the sensor accuracy.

RS232 Connector
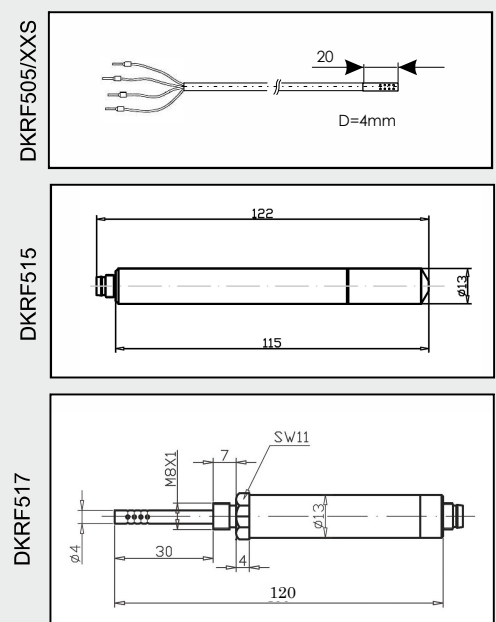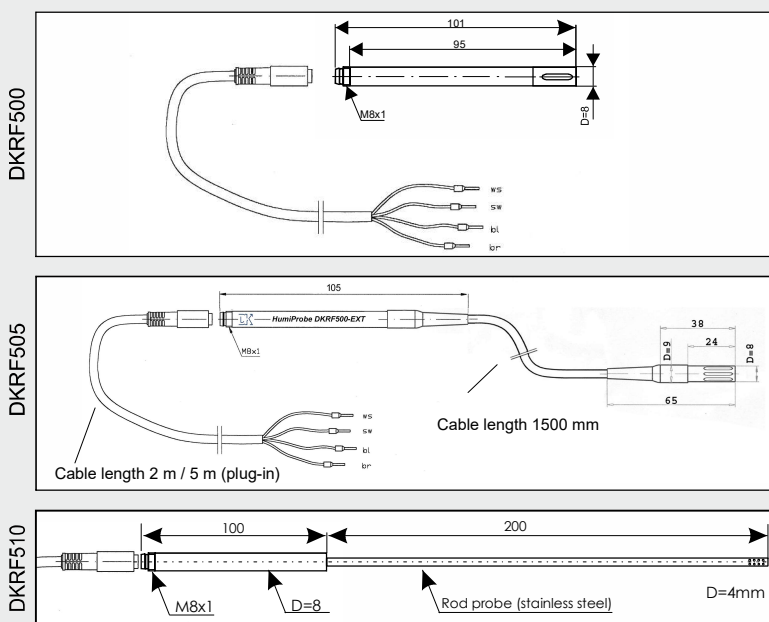D-sub, 9 pin connector, with 2 m or 5 m connection cable or custom length

USB Cable
(Type A, 2 m, 5 m or custom length)
Note:
DKRF500 comes with RS485 Modbus by default. Protocols can be changed to RS485-ASCII by the user or chosen upon purchasing.

Engineering Drawings

Specifications
HumiProbe-Serie

Sensor Accuracy

		SA Standard Accuracy	**EA** Enhanced Accuracy	**DA** Highest Accuracy
RH	0...80%	**±2.5%**	**±1.8%**	**±1.5%**
	beyond	**±3.0%**	**±2.3%**	**±2.0%**
T	-40...+90°C	**±0.3°C**	**±0.2°C**	**±0.2°C**
	-20...+60°C	**±0.3°C**	**±0.2°C**	**±0.1°C**
	beyond	**±0.6°C**	**±0.3°C**	**±0.2°C**

Humidity Range: **0...100% RH** (noncondensing)
(All models)
Temperature Range: **-40...+80°C**
Models DKRF500, DKRF515, DKRF517
Temperature Range: **-40...+120°C**
Models DKRF505, DKRF505/XXS, DKRF510

Calculated Variables
Dew point, mixing ratio, absolute humidity, wet-bulb temperature, optionally water vapour partial pressure[1].
Parameter and its corresponding required range can be configured and scaled using the digital interface.

Analogue outputs:	0...1 V, 0...2.5 V, 0...5 V, 0...10 V available, user-configurable
Digital interface:	RS485/Modbus (standard)[2] RS232 and USB optional
Housing:	Stainless steel
Connection cable:	Pluggable, PVC, Tmax = 80°C 2 m, 5 m, 10 m, 15 m
Cable assembly:	Open ends (connectors optionally available) Other cable lengths upon request

Sensor cables
DKRF505 / DKRF505/XXS/G: 1500 mm, PFA, Tmax = 120°C
DKRF505/XXS/V: 1500 mm, PVC, Tmax = 80°C

Power supply:
Output: 0...1/2.5/5 V   9.0...30 VDC[3], 800 µA
Output: 0...10 V   12...30 VDC, 1.5 mA

Settling time:	80 msec
Output load:	> 2 kOhm
Refresh (output)	1x per second.
Response time (T63):	8 s (RH, without filter) 30 s (RH, with filter)

Accessories (optional)
Flansch400:   Mounting flange (L = 300 mm) for installation in ducts or pipes
WM400:   Wall mount, stainless steel bracket

Replacement parts
CAP500:   Protective cap (stainless steel) for DKRF500, DKRF505
FILTER500   Filter for DKRF500, D = 7.8 mm
SENSOR500SA: Replacement sensor for DKRF500, DKRF505, DKRF515, pluggable
SENSOR500EA/DA: Replacement sensor for the same models but with calibration certificate[4]
FILTER415:   Sintered filter for DKRF515

Order Code

TYP	A	DP	AO	CH1	CH2	CL	CO
DKRF◯	◯	◯	◯	◯	◯	◯	◯

TYP = Model Number
500	= DKRF500 Standard probe
505	= Removed probe, up to 120°C
505/XXS/V	= Miniaturized probe, 1,5m/80°C
505/XXS/G	= Miniaturized probe, 1,5m/120°C
510	= Rod type probe
515	= Robust probe for up to 2 bar
517/M8	= Screw-in probe, 30 bar, M8 male thread
517/1/2	= Screw-in probe, 30 bar, G½" male thread

A = Accuracy
SA	= Standard accuracy
EA	= Enhanced accuracy, includes ISO9001 calibration certificate
DA	= Highest accuracy, incl. DAkkS certificate (ISO17025 calibration)

DP = Digital Protocol
MOD	= Modbus
ASC	= ASCII
XXX	= Custom

AO = Analog Output
0	= Without analog signal
01	= 0...1 VDC
025	= 0...2.5 VDC
05	= 0...5 VDC
10	= 0...10 VDC

CH1 = Channel 1 Configuration
STD	= Temperature (depending on model -40...+80°C or -40...+120°C)
ABS	= Absolute humidity (0...30 g/m³)
TP	= Dew point (-5...+60°C)
WB	= Wet-bulb temperature (depending on model -40...+80°C or -40...+120°C)
PV	= Water vapour partial pressure
X	= Mixing ratio (0...30 g/kg)
XXX	= custom

CH2 = Channel 2 Configuration
STD	= Relative humidity (0...100% RH)
ABS	= Absolute humidity (0...30 g/m³)
TP	= Dew point (-5...+60°C)
WB	= Wet-bulb temperature (depending on model -40...+80°C or -40...+120°C)
PV	= Water vapour partial pressure
X	= Mixing ratio (0...30 g/kg)
XXX	= Custom

CL = Cable length
0	= Without connection cable
2000	= 2 m
5000	= 5 m
10000	= 10 m
15000	= 15 m
20000	= 20 m
XXX	= Custom

CO = Connector
0	= Open ends
232	= RS232 Interface with 9 pin D-sub connector
USB	= USB-Interface with USB connector Type A
XXX	= With custom connector

Footnotes:
[1] Standard for MODBUS probes, optional for ASCII models.
[2] A RS485 termination resistor can be enabled by commands.
[3] Down to 3.0V technically feasible upon request
[4] Traceable to national / international standards. DAkkS certificate optionally available.

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