

PRODUCT OVERVIEW

HUMIDITY AND TEMPERATURE MEASURING INSTRUMENTS



rotronic

LEADING IN HUMIDITY MEASUREMENT

ROTRONIC - A world leading manufacturer of humidity and temperature instrumentation

For over 40 years, ROTRONIC has been combining technical innovation and Swiss quality. The new HygroClip2, with integrated AirChip3000 technology, is setting the standard in terms of accuracy, operating range and OEM flexibility. ROTRONIC sells products worldwide in 40 countries and has subsidiaries in the USA, Germany, UK, France, Taiwan, Singapore and China.

ROTRONIC – AirChip3000 technology

ROTRONIC pioneered digital technology in humidity instrumentation with the HygroClip concept. The AirChip3000 is the result of intensive research and development work and is at the heart of the latest generation of our products, providing a degree of flexibility, precision and functionality that was not previously possible. ROTRONIC HygroClip2 probes can be connected to all new generation instruments and interchanged without the need for calibration or adjustment.

ROTRONIC – Validated measurement / Product safety

International companies (especially in the pharmaceutical and food industries) often have to document complete and continuous temperature and humidity monitoring histories for their manufactured, transported and stored products. ROTRONIC offers a full package: instruments, software solutions as well as the necessary certificates.

ROTRONIC – Reliable service

Once you have opted for a measurement instrument from ROTRONIC, you will soon discover you are working with sensors that offer a major benefit: namely long term stability. Nevertheless, it is possible that your instrument needs servicing at some time: you can rely on a fast customer orientated service from ROTRONIC.

ROTRONIC – A new partnership

- The most stable humidity sensor available in the world
- Innovative digital HygroClip technology
- High precision humidity measurement
- Long term stability
- Robust product design
- Core competency in humidity and temperature measurement

Ask for a copy of the latest ROTRONIC humidity and temperature measurement catalogue



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HYGROCLIP2

The HygroClip2 and the new AirChip3000 technology

When it comes to measuring humidity with the highest accuracy, the HygroClip2 probes are in a class of their own. Based on AirChip3000 technology, its unique features are impressive. In combination with advanced sensor technology and integration, the HygroClip2 will provide superb precision and state-of-the-art functionality, taking humidity measurement to a whole new level of performance and reliability ($<0.8\% \text{rh} / 0.1 \text{K}$).

Fast response

- By decoupling the Pt100 temperature sensor from the probe, thermal response is significantly improved

Innovative filter technology

- The latest in filter technology provides a high level of protection and maintains the optimum measurement environment for the Hygromer humidity and Pt100 temperature sensors

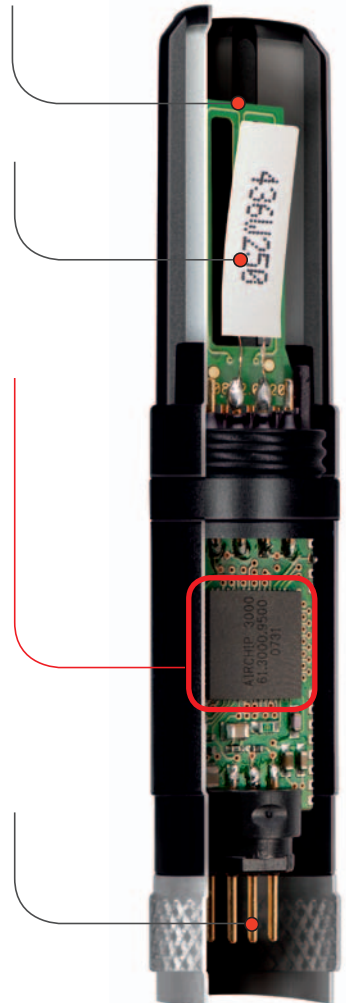
AirChip3000

- Compensates humidity and temperature over 30,000 reference points
- 2,000 data point memory
- Dew/frost point calculation
- Sensor auto-diagnostics and automatic correction
- Active alarming and information
- ASIC (Application Specific Integrated Circuit), micro-controller and EEPROM on one chip



Maximum flexibility

- The UART¹ interface and user scalable analogue outputs allow the probe to be used as a stand-alone device that can also be effortlessly integrated into an OEM application
- The probes can be interchanged without adjustment



¹ Universal Asynchronous Receiver Transmitter

HygroPalm Series - Handheld instruments with interchangeable probes

The ROTRONIC HygroPalm handheld instruments of the AirChip3000 generation are perfect for climatic measurements. Extremely precise, advanced features and easy to use.



Highlights

- Measures humidity, temperature and dew/frost point
- Highest possible measuring accuracy
- All psychrometric calculations available
- Outstanding accuracy and repeatability
- Data Logger with spot-logging features
- Real-time clock with back-up battery
- Analogue inputs
- Auto-diagnostics and automatic correction
- UART interface
- Trend indicators

Technical specifications:

- 1 or 2 interchangeable probes
- Displays up to 3 values
- Adjustment of the probe via the instrument
- Operating ranges: 0...100 %rh / -10...60 °C



HygroClip probes for handheld instruments

We offer a wide range of application specific probes for our handheld instruments.

Highlights

- Interchangeable within seconds
- Can also be used with industrial transmitters
- Digital HygroClip2 technology
- Saves up to 2.000 data records

Technical specifications:

- Measuring ranges: 0...100 %rh / -100...200 °C (probe dependent)
- Accuracy: ± 0.8 %rh / ± 0.1 K

Application examples

- | | |
|----------------------------|---------------------------------|
| • Warehouses and storage | • Museums and libraries |
| • Production processes | • Paper industry |
| • Test environments | • Industrial process monitoring |
| • Building management HVAC | |



HygroFlex3 series

The new HygroFlex3 series is the latest development in HVAC transmitters for relative humidity, temperature and dew point. Based on AirChip3000 technology, these transmitters offer high accuracy at a low cost.

Highlights

- Relative humidity, temperature measurement and dew point calculation
- Outstanding accuracy and repeatability
- Hygromer® IN-1 humidity sensor
- Auto-diagnostics and automatic correction
- Freely selectable and scalable analogue outputs
- Also available as a hygrostat and thermostat

Technical specifications:

- Operating ranges: 0...100 %rh / -40...60 °C, with LCD: -10...60°C
- Accuracy: ± 1 %rh / ± 0.2 K



HygroFlex4 series

The new HygroFlex4 series is another development in HVAC transmitters for relative humidity, temperature and dew point. Based on AirChip3000 technology, these precision instruments achieve a new level of accuracy in this product category.

Highlights

- Relative humidity, temperature measurement and dew point calculation
- Outstanding accuracy and repeatability
- Auto-diagnostics and automatic correction
- Freely selectable and scalable analogue outputs
- Optional digital outputs allow integration on a network
- Integrated probe
- Wall and duct versions
- Can be mounted on a DIN rail

Technical specifications:

- Measurement ranges: 0...100 %rh / -50...100 °C
- Operating ranges:
- 0...100 %rh / -40...60 °C, with LCD: -10...60°C
- Accuracy: ± 1 %rh / 0.2 K



TRANSMITTERS

HygroFlex5 series

The HygroFlex5 series offers ultimate performance and flexibility thanks to its interchangeable HygroClip2 probes. The transmitters come in wall and duct mount versions. Many useful functions are accessible with the optional HW4 software.

Highlights

- Relative humidity, temperature measurement and dew point calculation
- All psychrometric calculations available
- Outstanding accuracy and repeatability
- Interchangeable probe for easy maintenance
- Optional digital outputs allow integration on a network
- Auto-diagnostics and automatic correction
- Highest possible measuring accuracy
- Freely scalable analogue signals
- Various digital outputs available
- Update possible via the Internet

Technical specifications:

- Measurement ranges and accuracy: probe dependent
- Operating ranges: 0...100 %rh / -40...60 °C, with LCD: -10...60°C



HygroFlex6 series

The HygroFlex6 series provides a high specification and a wide range of configurations for industrial applications. The transmitters come in wall, cable and duct versions. Many useful functions can be activated with the optional HW4 software. The measuring circuits of the HF62x series are galvanically isolated.

Highlights

- Relative humidity, temperature measurement and dew point calculation
- Outstanding accuracy and repeatability
- Auto-diagnostics and automatic correction
- Freely selectable and scalable analogue outputs
- Optional digital outputs allow integration on a network
- Integrated probe
- Wall and duct versions
- Mains or low voltage power supply
- Can be mounted on a DIN rail

Technical specifications:

- Measurement ranges: 0...100 %rh / -100...150 °C
- Operating ranges: 0...100 %rh / -40...60 °C, with LCD: -10...60°C
- Accuracy: ± 1 %rh / ± 0.2 K



TRANSMITTERS

HygroFlex7 series

The HygroFlex7 series is equipped with a sturdy metal housing and a stainless steel probe for harsh industrial conditions. The HF7 comes in wall, cable and duct mount versions.

Highlights

- Relative humidity, temperature measurement and dew point calculation
- Outstanding accuracy and repeatability
- Hygromer® IN-1 humidity sensor
- Auto-diagnostics and automatic correction
- Highest possible measuring accuracy
- Freely selectable and scalable analogue outputs
- Highly configurable via HW4 software

Technical specifications:

- Measurement ranges (probe dependent): 0...100 %rh / -100...200 °C
- Operating range transmitter: -50...100 °C
- Adjusted at 23 °C and 10, 35, 80 %rh
- Accuracy: ± 1 %rh / ± 0.2 K



HygroFlex8 series

Highlights

- Relative humidity, temperature measurement and dew point calculation
- Logging function (20,000 data records)
- All psychrometric calculations available
- Outstanding accuracy and repeatability
- Interchangeable probe for easy maintenance
- Auto-diagnostics and automatic correction
- Highest possible measuring accuracy
- 2 Probe inputs
- Optional digital outputs allow integration on a network
- Update possible via the Internet

Technical specifications:

- Measurement ranges and accuracy: probe dependent
- Operating ranges: 0...100 %rh / -40...60 °C, with LCD: -10...60°C



HygroClip industrial probes for -100...200 °C

Due to the wide range of industrial probes available, the HygroFlex series can be used for almost every application.

Highlights

- Special probe configurations for different applications
- Suitable for the pharmaceutical and food industries
- Probes can be used on every HygroClip2 transmitter
- ATEX approved for EX Zones

Technical specifications:

- Measuring ranges: 0...100 %rh / -100...200 °C (probe dependent)
- Accuracy: ± 0.8 %rh / ± 0.1 K



Application examples

- Drying processes
- Process control
- Monitoring applications
- Pasta machines
- Power stations
- Paper industry

HygroClip-EX probes

Humidity measurement in industrial processes in ATEX rated (EX) Zones, compatible with HygroFlex HTS transmitters.

Highlights

- Intrinsically safe probe ATEX rated
- Power supply via HygroFlex transmitter (15 VDC)
- Measures relative humidity and temperature, dew point and other parameters available
- Digital interface

Technical specifications:

- Electronics operating range 0...100 %rh / -40...40 °C
- Temperature measurement range: -50...200 °C (at probe)
- Accuracy: ± 1 % rh / ± 0.3 K



HygroClip
IE-1-EX



HygroClip
IW-EX

HygroLog HL-NT for interchangeable probes

The new generation of data loggers with AirChip3000 technology.



Highlights

- Interchangeable probes, one integrated and up to two external
- Data retrievable by card reader, PDA or PC with HW4 via docking station
- Real-time clock
- Logging interval selectable between 5 s and 24 h
- Battery life up to 1 year
- Logging mode selectable: start/stop, text/protected mode
- LED status indicator and audible alarm (beep tone)
- Networkable with optional docking station



Technical specifications:

- Up to 3 probe inputs directly on the data logger
- Saves up to 47,000 data records per MB card storage capacity
- Measurement ranges: 0...100 %rh / -100...200 °C (probe dependent)
- Logger operating range: 0...100 %rh; -30...70 °C; with display -10...60 °C

Application examples

- Production, storage and transportation of food and pharmaceutical products
- Validation of climatic conditions in chambers, laboratories and buildings
- Container monitoring
- Museums and galleries

Docking stations for HygroLog HL-NT

We offer a wide range of docking stations with various interfaces and specifications making the HygroLog HL-NT series very versatile.

Highlights

- Up to 4 additional probes can be added
- RS232, RS485, USB and TCP/IP interfaces available
- Connection of Pt100 and analogue probes
- Digital inputs

Technical specifications:

- Up to 64 instruments can be connected on a network in master/slave mode
- Networkable via RS485 interface



RS-Series ventilated weather shields for meteorological probes

Used together with a meteorological probe, the ventilated weather shields allow precise measurements of temperature and humidity uninfluenced by radiation.



Highlights

- Simple-to-install protective shield with integrated fan
- Constant air flow at the sensor
- Special white coating minimises solar heating (RAL 9010)
- Suitable for various probes
- Easy probe mounting

Technical specifications:

- 12 VDC or 24 VDC power supply
- Lifetime of fan: at 40 °C ~70,000 h, at 70 °C ~35,000 h
- Operating range -30...60 °C



Meteorological probes for RS weather shield system MP102H/402H

MP102H and MP402H series probes provide first class accuracy and stability. Based on the HygroClip HC2-S3 probe, they have linear voltage or current outputs for secure transmission over extended cable lengths. An RS485 interface is available on request.

Highlights

- Current or voltage output signal
- Humidity and temperature measurement using interchangeable HC2-S3 probe
- Optional: directly connected Pt100 sensor
- Service interface
- Various temperature ranges available

Technical specifications:

- Range of application: -40...85 °C



Application examples

- Weather stations
- Ice warning systems
- Agronomical applications
- Building management systems

WATER ACTIVITY

Water activity measuring instruments HygroPalm HP23 series / HygroLab series

For many applications it can be very useful to measure water activity in production processes or storage rooms, e.g. inspection of bulk materials to ensure they meet specifications.



Highlights

- Measures humidity and temperature (aw or %rh and °C/°F)
- Calibration and adjustment possible via HW4 software (single-point / multi-point)
- Calculates absolute humidity
- UART interface
- Battery power monitor and trend indicator

Technical specifications:

- Range of application 0...1 aw (0...100 %rh) / -10...60 °C
- Battery: 9 VDC
- Accuracy: ± 0.8 %rh (0.008 aw) / ± 0.1 K (depending on probe used)



Measurement stations

Due to small sample chamber volumes and large thermal masses, our water activity probe measures quickly and accurately. All critical surfaces are made of stainless steel.

Highlights

- Small sample chamber volumes
- High temperature stability
- Equilibrium reached quickly

Technical specifications:

- Measurement range: 0...1 aw / 0...100 %rh
- Operating range: 5...50 °C
- Accuracy: ± 0.8 %rh (0.008 aw) / ± 0.1 K



Application examples

- Food industry
- Pharmaceutical industry
- Paper and building materials
- Horticulture and agriculture

Water activity

aw = 0.91...0.95
aw = 0.88
aw = 0.80
aw = 0.75
aw = 0.70
aw = 0.65

Contaminant

most bacteria
most yeast
most mildew
halophile bacteria
osmiophile yeast
xerophile mildew

CALIBRATION

Although long term sensor stability and ROTRONIC are now synonymous, we recommend that our customers calibrate their ROTRONIC probes regularly – once a year is typically suggested.

Why is calibration important?

Humidity and temperature measuring instruments are precision instruments that must be serviced regularly to maintain reliability. Measuring errors can cause substantial product damage during production and storage. National and international standards require companies that are subject to ISO Standards to have their measuring instruments calibrated on a regular basis. Regulators such as the FDA, EMEA1 and Swissmedic also demand that measuring instruments are calibrated according to national standards.

Calibration options

a) Calibration by ROTRONIC

We have a calibration laboratory accredited by the Swiss organisation *METAS for the parameters of relative humidity and temperature. We can offer you calibration services and SCS (Swiss Calibration Service) certificates verifiable to the national standard.

- b) **You can calibrate your measuring instruments yourself** with your own calibration device and SCS-certified standards.
- c) **We come to you** with our calibration mobile saving you time and effort.



Our calibration mobile is only available in certain European countries

SCS* certificate

SCS certificates are required primarily by companies in the pharmaceutical, chemical and food industries.

As an accredited calibration laboratory for relative humidity and temperature, we are able to perform SCS calibrations with the best possible measurement uncertainty. ROTRONIC is accredited by *METAS (Metrology and Accreditation Switzerland) with the number SCS 065.

* SCS = Swiss Calibration Service

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 	S Schweizerischer Kalibrierdienst C Service suisse d'étalonnage S Swiss Calibration Service SCS 065	Seite 1 von 3 Seiten Page 1 of 3 Pages		
<small>Vom Bundesamt für Metrologie und Akkreditierung akkreditierter Kalibrierstelle nach ISO/IEC 17025 Calibration Laboratory accredited by the Swiss Federal Office of Metrology and Accreditation according to ISO/IEC 17025</small>			<small>SCS Akkreditierungs-Nr. SCS 065 SCS Akkreditations No. SCS 065</small>	
KALIBRIERZERTIFIKAT / CALIBRATION CERTIFICATE				
Zertifikat-Nr. Certificate No.	20050797	Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind auf den folgenden Seiten aufgeführt und sind Teil dieses Zertifikates.		
Auftraggeber Customer	Rotronic AG	Der Inhalt dieses Zertifikates darf nur in vollständiger Form veröffentlicht oder weitergegeben werden.		
Auftragsdatum Order date	-	Zertifikate ohne Unterschrift und Stempel haben keine Gültigkeit.		
Auftrags-Nr. Order No.	PM-2043119			
Gegenstand Object	Sensormodul			
Hersteller Manufacturer	Rotronic AG	The measurements, the uncertainties with confidence probability and the calibration methods are given on the following pages and are part of the certificate.		
Typ Model	HygroClip S			

* EMEA: European Agency for the Evaluation of Medicinal Products

* METAS: Metrology and Accreditation Switzerland

HygroGen2– humidity and temperature generator

Many customers already use our HygroGen humidity generators to calibrate their humidity measuring instruments themselves. A significant advantage is the minimisation of instrument downtime and the reduction in administrative work for the customer.



Highlights

- Generates stable humidity and temperature conditions
- Transportable calibration instrument
- Humidity equilibrium typically in three minutes or less
- Suitable for the calibration of most relative humidity instruments
- Integrated touch screen PC and USB hub
- Connect and calibrate up to five probes simultaneously
- Standard external heated sample loop connection
- Integrated dryer cell condition monitoring
- Digital water level indication
- Easy-to-use graphical user interface
- Direct certificate printing

Technical specifications:

- Probe: HC2-S
- Controller: Embedded PC, PID, Touch Screen
- Range: 5...95 %rh / 0...60 °C
- Stability: <0.1 %rh / <0.05 °C
- Accuracy at 23 °C: 0.6 %rh / ± 0.1 K

ROTRONIC humidity standards

ROTRONIC humidity standards are an inexpensive alternative when you only have a few probes to calibrate. They are unsaturated salt solutions in ampoules that generate the humidity value required in a ROTRONIC calibration device - wide range available.



HW4 software

The HW4 software is used to record and analyse data, monitor measurements and to configure ROTRONIC instruments.



Highlights

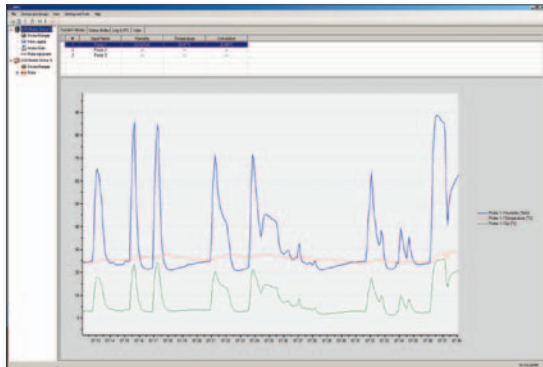
- FDA 21 CFR 11 compliant and validated
- Universal software for data logging, monitoring and instrument configuration
- Alarm functions
- OPC server version available
- Audit trail (electronic signature)
- Comprehensive validation documentation available
- Charting function

Technical specifications:

- Runs with Windows XP Service Pack, Windows 2000 Service Pack 3, Windows Server 2003, Windows Vista, Windows 7
- Supports TCP/IP, USB, RS232, OPC

HW4 Functions

- Viewing of measured values/ monitoring
- File formats/handling of data/ export functions
- Archiving of data
- Analysis and calculation tool/ psychrometric values
- Statistical analysis
- Report printing
- Alarms
- OPC* server



- *Object Linking and Embedding for Process Control

OEM products for customised solutions

OEM (Original Equipment Manufacturer) products are customised solutions tailored to the specific needs that a customer has. The range extends from a sensor to complex transmitters

Highlights

- ROTRONIC has wide-ranging experience of many different applications
- Savings in development costs for end users
- Short development times
- Digital communication

Technical specifications:

- Specifications to meet customer requirements
- Maximum accuracy
- Repeatability <0.5 %rh

Application examples

- OEM pcb
- Drying chambers
- Data loggers
- Transmitters
- Your application?



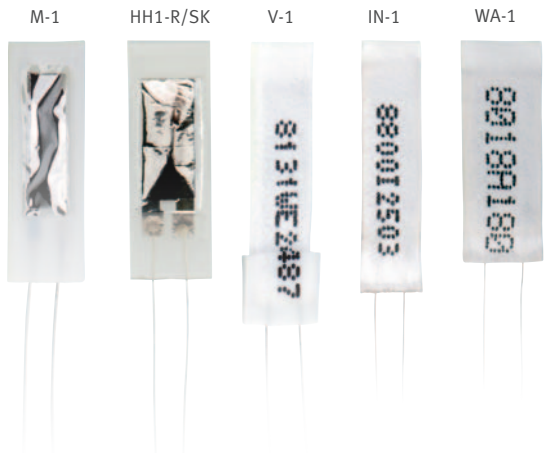
OEM Sensors

Highlights

- For special applications
- Fast response sensors
- Sensors with high chemical resistance
- Surface protected
- Compact dimensions
- Special electrodes with reinforced connections

Technical specifications:

- Range, humidity: 0...100 %rh
- Range, temperature: -80...200 °C



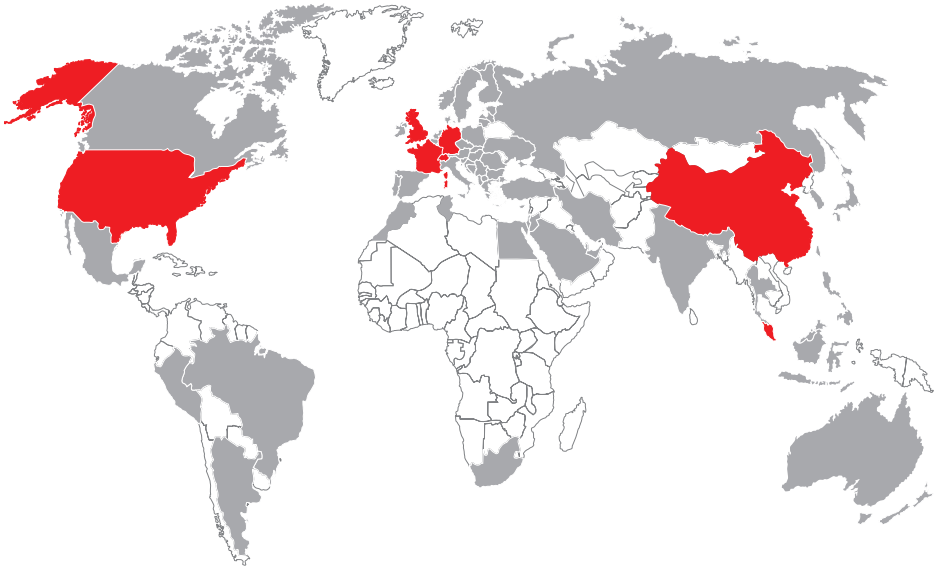
ROTRONIC WORLDWIDE

ROTRONIC is represented in over 40 countries around the world.

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