Introduction

Measurement of humidity and temperature is very important in many production, storage, transportation and test applications. Many processes can only be performed, or goods correctly stored, if humidity and temperature conditions are within a specific range. Materials and products may not behave correctly, or can even degrade, if climatic conditions are incorrect.

ROTRONIC handheld instruments are the perfect tool for spot checks, which must be the first step in defining ambient conditions and solving humidity or moisture related problems.

Our handheld instruments are highly accurate, and include many useful features, yet they are easy to use and maintain. Configuration and calibration is carried out in the factory, so they are ready for immediate use on delivery. Certain models offer the facility to change the instrument's configuration to suit specific application needs, either with user friendly software, or the integrated keypad. A range of interchangeable probes means application flexibility, simple maintenance and convenient calibration.

Key Features

- Accuracy and long term stability
- Interchangeable digital sensor modules
- Wide range of digital probes
- Ergonomic and modern instruments
- Large display with good contrast
- HOLD Function
- Battery powered

Your Benefits

- ➤ Reliable data and less frequent calibration
- ➤ Simple calibration and maintenance
- ➤ One instrument – many applications
- ➤ Comfortable to use and handle
- ➤ Clear observation of measured values
- ➤ To capture measured values
- ➤ Suitable for use anywhere

Section contents

Building Management /HVAC
Accurate and reliable thermo-hygrometers are needed to verify correct system performance during commissioning. The ability of ROTRONIC handhelds to be calibrated on-site and their high accuracy predestine ROTRONIC instruments for this kind of applications.

Climatic Test Cabinets
Many products are tested over a variety of climatic conditions. The exceptionally wide measuring range of the ROTRONIC handheld units means these test conditions can be easily checked.

Paper Industry
The first ROTRONIC products were developed for the paper industry, and today we have the largest world-wide sales of sword hygrometers for paper stack ERH measurement.

Health and Fitness Centres, Hospitals, Classrooms
In public areas it is especially important to maintain correct humidity values to minimise health risks.

Research
Many research tests must have the humidity conditions defined for the results to be accepted or considered to be reliable.

Museums, Libraries and Art Galleries
Conservation applications require dependable measurements and low cost of ownership. ROTRONIC handhelds have been a mainstay in this market for three decades.

Warehouses and Storage
Many products need to be stored in certain conditions to remain in good condition.

Industrial Process Monitoring
The maximum measurement temperature of 200 °C and the robust design of our probes means that even the most difficult process application can be checked with a ROTRONIC handheld.

HygroPalm Series

Humidity and Temperature Display Instrument for digital HygroClip®, Probes

HygroPalm represents a new generation of portable humidity/temperature instruments, utilising the very latest digital technology. The advantage of digital technology is clear; highest precision is assured as a result of digital signal processing and data transmission in a digital format, which means that signal loss over extended cable lengths and external interference cannot influence measured values. Calibration data is maintained within the probe itself, which means there is no need to calibrate the whole system when a probe change is required, and probes for different applications can be fitted in seconds.

The HygroPalm 0 is a value engineered instrument designed to be cost effective, yet still provide high measurement performance. By removing some of the more advanced HygroPalm features such as probe interchangeability and external interface connections, the HygroPalm 0 is the perfect entry level instrument, yet maintains the core ROTRONIC values of high precision and excellent long term stability. Essential functionality such as dew point/wet bulb computation, keypad calibration adjustment and battery recharging options are retained to make the HygroPalm 0 the ideal balance of performance and price. HygroPalm 1, 2 and 3 feature interchangeable probes. New probes for changing measurement tasks can be installed in seconds.

HygroPalm 0

Key features:

- Cost effective instrument
- 0…100 %rh, -10…60 °C
- Integrated probe
- Standard alkaline batteries or chargeable batteries used
- Display of dew point or wet bulb temperature
- One-point calibration with keypad
- Optional docking station for battery recharging
- Large clear LC-display

Order Code:
HygroPalm 0

HygroPalm 1

The instrument has the same features as HygroPalm 0, but features interchangeable probes and additional functions:

Key features:

- Service interface for HygroFlex transmitters
- One-point adjustment with keypad
- Measurement range -50…200 °C (probe dependent)

Order Code:
HygroPalm 1   (probe must be ordered separately)

HygroPalm 2

Key features:

- All functions of HygroPalm 1
- Second probe input %rh and °C
- Multiple point probe adjustment
- RS232 PC interface
- Calculation of various psychrometric parameters
- Formula Editor for customer specific calculations

Order Code:
HygroPalm 2   (probe must be ordered separately)

HygroPalm 3

Key features:

- All functions of HygroPalm 2
- Universal input for pressure, air speed etc.
- Dynamic pressure compensation for calculations (requires pressure probe)
- Bi-directional interface for HygroFlex transmitters

Order Code:
HygroPalm 3   (probe must be ordered separately)

HygroPalm Feature Overview

Highly precise, stable humidity and temperature sensors

Large display with trend indicators for easy reading

HOLD function for freezing the display

5-button keypad for easy operation

Battery charging

Interchangeable probes
Calibration can be updated, or the range of the application met by the simple connection of a different probe.

Interface connector for HygroFlex transmitters

Universal probe input

Psychrometric calculations available

Option: Lock

Docking station

Socket for power adaptor

RS232 interface for use with a PC
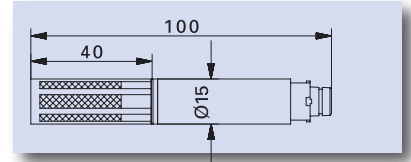
HygroClip Probes for HygroPalm

A range of probes for different applications are available for the HygroPalm instruments. All probes are based on digital HygroClip technology, and can be interchanged within seconds without the need for recalibration. With special adaptor cables, even probes designed for Industrial applications can be used (see pages 27 and 119).

HygroClip S/S1

Standard probe for humidity and temperature.
A wire mesh filter provides sensor protection against dust and high air velocity. Dimensions Ø15 x 100 mm.
IP rating: IP65

Measurement range:	-40…85 °C, 0…100 %rh	
Accuracy:	Standard:	±1 %rh, ±0.3 K (at 23 ±5 °C)
	S1:	±0.6 %rh, ±0.2 K (at 23 ±5 °C)
Output:		ROV analogue and DIO digital signal

Order Code:
HygroClip S   Standard probe
                 with factory adjustment certificate
HygroClip S1   High accuracy probe with
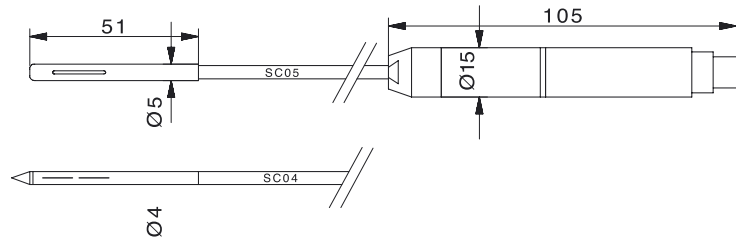   SCS certificate

HygroClip SC04 / SC05

4 or 5 mm diameter cable mounted probes for humidity and temperature measurements in small spaces such as product and packaging testing, concrete, electronic test and climatic chambers. Cable length 2m

Measurement range:	-40…100 °C , 0…100 %rh
Accuracy:	±1.5 %rh, ±0.3 K (at 23 ±5 °C)
Output:	ROV analogue and DIO digital signal
Recommended application range:	-40...40 °C: 0...99 %rh / 40...100 °C: 0...70 %rh

Order Code:
HygroClip SC04   Ø 4 x 2000 mm cable probe
HygroClip SC05   Ø 5 x 2000 mm cable probe

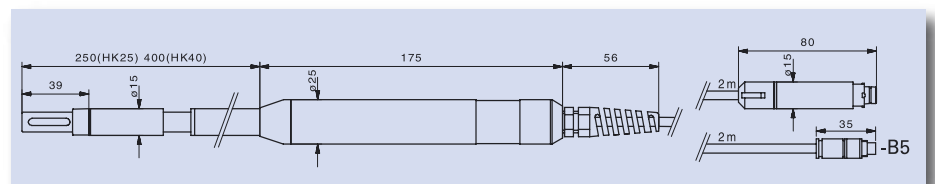## HygroClip HK 25 / HK40

High temperature probe for measurements in ducts, dryers, climatic chambers etc. Probe length 250 or 400 mm.

Measurement range:	HK25: -50…150 °C, 0…100 %rh
	HK40: -50…200 °C, 0...100 % rh
Accuracy:	±1 %rh, ±0.3K (at 23 ±5 °C)
Output:	ROV analogue and DIO digital signal
Wire mesh filter:	Included. Other filters must be ordered separately! See page 114.

Order Code:
HygroClip HK 25   (250 mm probe, max. 150 °C, standard)
HygroClip HK40   (400 mm probe, max. 200 °C, standard)
HygroClip HK 25-B5   With Binder 5-pin connector
HygroClip HK40-B5   With Binder 5-pin connector
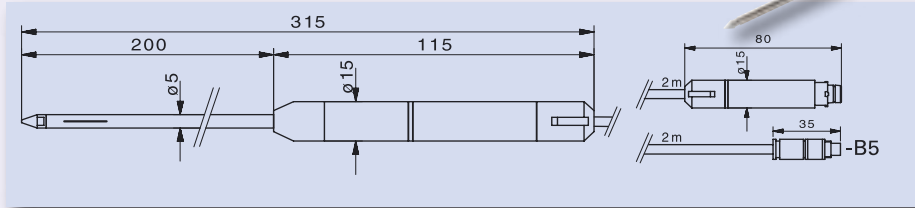
HygroClip Probes for HygroPalm

HygroClip SP05

Fast response 5 mm diameter insertion probe with laser cut air slots, suitable for use bulk goods such as corn, wheat and granules. Also suitable for measurements in concrete and brick. Not suitable for powders. Probe length 200 mm.

Measurement range: -40…85 °C, 0…100 %rh,
Accuracy: ±1 %rh, ±0.3 K (at 23 ±5 °C)
Output: ROV analogue and DIO digital signal

Order Code:
HygroClip SP05 Standard probe
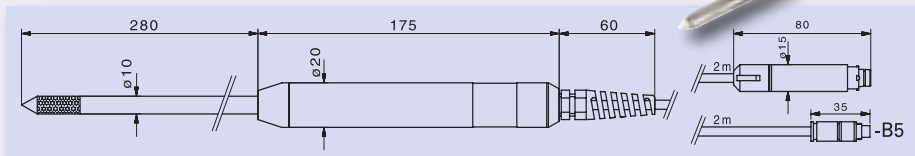HygroClip SP05-B5 with Binder 5-pin connector

HygroClip HP28

Robust 10 mm diameter tubular probe for measurements in bulk products such as powders and granules.
Probe length 280 mm, 2m cable, steel sinter filter.

Measurement range: -40…85 °C, 0…100 %rh
Accuracy: ±1 %rh, ±0.3 K (at 23 ±5 °C)
Output: ROV analogue and DIO digital signal

Order Code:
HygroClip HP28 Standard
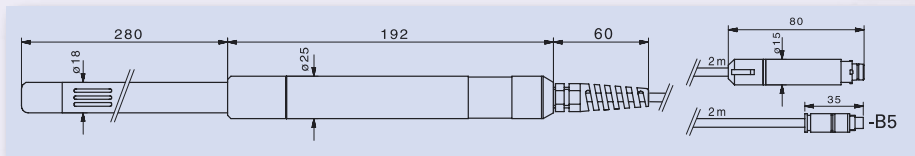HygroClip HP28-B5 with Binder 5-pin connector

HygroClip HS28 Sword Probe

For measurements in paper stacks and rolls. Lightweight, yet robust aluminium blade for fast temperature and humidity equilibrium. Sword blade 280 x 18 x 4 mm,

Measuring range: -40…85 °C, 0… 100 %rh
Accuracy: ±1 %rh, ±0.3 K (at 23 ±5 °C)
Output: ROV analogue and DIO digital signal

Order Code:
HygroClip HS28 Standard
HygroClip HS28-B5 with Binder 5-pin connector

Instruments for the Paper Industry

HygroPalm 2-Set-HS28

- HygroPalm 2 handheld instrument
- HygroClip HS28 sword probe
- Calibration device EGS, for sword probes
- Humidity standard EA50-SCS
  (5 ampoules 50 %rh with SCS certificate)
- Robust carrying case AC1117
- Software HW3
- Connection cable AC1622

Order Code:
HygroPalm 2-Set-HS28

Suitable for: Paper processing industry
                        Cut sheet material

GTS and GTS-Set

The GTS is a classic ROTRONIC product which has stood the test of time. It was designed specifically for the measurement of humidity and temperature within stacks of paper, cardboard or any other cut sheet material. The robust design, in combination with updated electronics make the GTS the most popular instrument for paper and card applications.

GTS – for paper and cardboard stacks

Main features:

- Display of relative humidity or temperature
- Strong but lightweight aluminium sword for fast equilibrium
- Simple one button operation
- Auto power off function
- Low battery indicator

Order code:
GTS

Measurement set for cut sheet material includes:

- GTS instrument
- Robust carrying case AC1102
- Calibration device EGS
- Humidity standard EA50-SCS
  (5 ampoules 50 %rh with SCS certificate)
- adjustment screw driver

Order code:
GTS-Set

S1 for paper stack measurement

Another classic design which we retain thanks to continuing demand from our customers:

- Sword probe for equilibrium relative humidity and temperature
- Adjustable probe position
- Large, clear display
- Simple operation
- Hold function
- Auto power off
- Battery status indicator
- Battery or accumulator operation
- Temperature display in °C or °F

Order Code:
S1   Handheld instrument with integrated sword probe
AC1115   Carry case for the S1

Plate probe for on-line ERH measurement on paper webs

Complementary to the handheld instruments for the paper industry, ROTRONIC also manufacture a unique on-line ERH measurement probe, which can be used either with a handheld instrument or with a transmitter.

Key Features

- On-line measurement of equilibrium humidity
- Continuous operation
- Temperature compensated
- Combined %rh °C measurement
- Compatible software for data logging

Your Benefits

- ➤ Enables on-line control of production process
- ➤ Minimises further work for quality control
- ➤ Accurate measurement at temperature variations
- ➤ Both values available simultaneously
- ➤ Independent data for analysis and reporting

**Detailed information for this probe may be found in the Transmitter section of this catalogue **

Docking Station for HygroPalm instruments

PalmDock Docking Station

- Benchtop docking station designed for use with all HygroPalm models with RS232* PC interface and power connection (with external power adaptor).
- HygroPalm 1 does not feature an RS232 interface.

Order Code:
PD 1   PalmDock without lock
PD 2   PalmDock with lock
PalmDock-1   with HW3 Software* and data cable, without lock
PalmDock-2   with HW3 Software, data cable, and lock
AC1207   Power adapter

* Further information in the chapter HW3 Software

Handheld Accessories and Sets

Measuring instruments often need to be transported to site, or from building to building. Handheld measurement sets package together the most commonly used standard equipment and accessories. Carry cases are also useful for storing instruments, and help to maintain long-term stability by protecting the units from mechanical damage or contamination when being transported or stored.

HygroPalm 1-Set:

- HygroPalm 1 handheld instrument
- HygroClip S probe
- Calibration device ER-15, suitable for HygroClip S
- Humidity standards EA50-SCS
  (5 ampoules 50 %rh with SCS certificate)
- Robust carrying case AC1116
- Suitable for facilities managers, HVAC technicians, surveyors.

Order Code:
HygroPalm 1-Set

HygroPalm 3-Set-PC:

- HygroPalm 3 handheld instrument
- HygroClip S probe
- Calibration device ER-15, fitting for HygroClip S
- Humidity standard EA50-SCS
  (5 ampoules 50 %rh with SCS certificate)
- Robust carrying case AC1116
- Software HW3
- Data cable AC1622
- Suitable for: Users who want to record measured values
  and calibrate their probes using a PC

Order Code:
HygroPalm 3-Set-PC

Temperature adaptors for Pt100 probes

Using these adapters, the HygroPalm can accept Pt100 probes either in probe input 1 using the TH100-DAT05, or via probe input 2 (where fitted) using TH100-B5 (standard Binder connector) see page 93 for a range of compatible Pt100 probes.

Order Code:
HygroClip TH100-DAT05   for HygroPalm 1, 2 and 3, probe input 1
HygroClip TH100-B5   for HygroPalm 2 and 3, probe input 2

Air velocity probe Mini Air6

Mini Air 6 can be connected to the HygroPalm 3
as well as to compatible data loggers and industrial transmitters

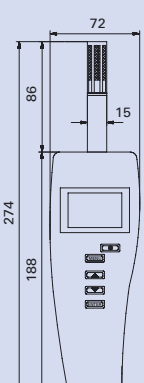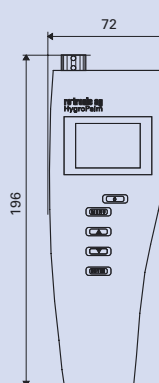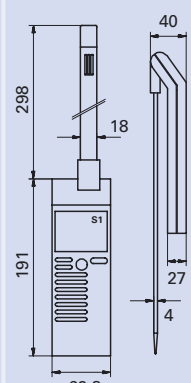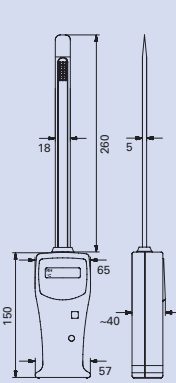|	
Measuring range:	0.3 - 20 m/s
Temperature range:	-10...+80 °C
Output signal:	0.03…2.0 V = 0…20 m/s
Head-Size:	Ø 22 x 28 mm
Probe length	175 mm, cable length 5 m

Order code:
MiniAir6 Mini 20M-S
Other air velocity probes are available on request.

Technical Data Summary

Technical Data

Features	HygroPalm 0 / 1	HygroPalm 2	HygroPalm 3	S1	GTS
Humidity sensor Hygromer®	HygroClip S probes with Hygromer®, AC-1 Sensor (except HygroPalm 0: fixed probe, non-interchangeable)			Hygromer® AC-1	
Temperature sensor	Pt 100 1/3 DIN				
Probe connections (combined %rh/ °C)	1	2		Integrated probe	
Signal input	1 digital	2 digital	2 digital or 4 analogue ROV*	No third party probe input	
Input for 3rd party probe	No		0…2.5 V	No	
Supply for 3rd party probe			9 V / 10 mA	No	
RS232 Interface	No	Yes		No	
Display	3-line alphanumeric LCD			%rh 3 digit LCD °C. 3 ½ digit LCD	3-digit LCD (%rh or °C)
Display units	% rh, °C, °F, calculated parameters	Selectable		% rh, °C, °F	% rh, °C, °F
Display in Aw	No		Yes	No	
Resolution	0.1 %rh / 0.1 °C, calculated parameters 0.01				
Probe adjustment					
1 point %rh, °C	By Keypad	By Keypad or HW3 software		By potentiometer	
4 point %rh, 2 point °C	No	By Keypad or HW3 software		No	
3-point %rh, T min/T max	N/A			35 / 80 / 10 %	N/A
2-point %rh, T min /T max	N/A			N/A	35 / 80 %
Calculation & unit display					
Dew point and wet bulb temperature	Yes			No	
Full psychrometric calculation	No	Yes		No	
Pressure compensation of calculated values	No	Manually with software/ constant	Dynamically with probe input and manual	No	
Formula Editor	No	Yes		No	
Remote Transmitter Interface					
Transmitter adjustment	No		Yes	No	
Adjustment against reference probe	No	Yes		No	
Transmitter measurement display	HygroPalm 1 only	Yes		No	
Transmitter status display	No	Yes		No	
Specifications					
Operating ranges (electronics)	0…100 %rh, non condensing / -10…+60 °C				0…100 %rh -10…50 °C
Measuring ranges (probes)	Probe dependent 0...100 % rh / -50…200 °C			5…99.9 % rh -25…75 °C	5…99.9 %rh -10…50 °C
Accuracy at 23 °C**	Accuracy of probe			±1.5 %rh / ±0.3 K(±2.5 <15 %>90 %)	
Reproducibility	< 0.5 %rh / <0.1K				
Long term Stability	< 1 % rh /Year				
Power Supply					
9 V PP3 alkaline battery	Yes				
9 V rechargeable battery	Yes			No	Yes
External supply voltage 8…20 VDC	Yes. Charge via docking station			No	No
Type of enclosure/ IP Rating	IP 50				
Housing material	ABS				
Dimensions in mm	195 x 70 x 35			190 x 63 x 26	420 x 70 x 40
Weight (approx.)	300 g			350 g	400 g
Dimensional Diagrams	HygroPalm 0	HygroPalm 1,2,3		S1	GTS


```
*   ROV = 0…1 V = 0…100 %rh /
        -0.40 V…+0.85 V = -40…+85 °C
** HygroPalm 0:
        = ±1 %rh / ±0.3 K (at 23 ±5 °C)
```