

# WATER ACTIVITY

## WATER ACTIVITY MEASUREMENT

The measurement of water activity or equilibrium relative humidity is a key parameter in the quality control of any moisture sensitive product or material. Water activity is by definition the free or non chemically bound water in foods and other products. The bound water cannot be measured with this method.

### Why is water activity measured?

The free water in a product influences its microbiological, chemical and enzymatic stability. This is especially important in the case of perishable products such as foods, grain, seeds, etc. as well as in the case of medicines and other products of the pharmaceutical and cosmetic industries. If there is too much free water available, the foods spoil, and if there is too little water available, other product properties can be affected.

The table below shows typical growth thresholds below which the specified contaminant cannot replicate and therefore spoil the product. Control of water activity therefore has a significant impact on the shelf life of a product.

The measurement of water activity also supplies useful information on properties such as the cohesion, storability, agglomeration or pourability of powders, tablets, etc. or adherence of coatings.

Based on HygroClip digital technology for high performance and easy digital calibration, ROTRONIC water activity probes are suitable for almost any application. All water activity stations and probes incorporate temperature measurement as standard.

Water activity	Contaminant
aw = 0.91...0.95	Most bacteria
aw = 0.88	Most yeasts
aw = 0.80	Most mildews
aw = 0.75	Halophile bacteria
aw = 0.70	Osmiophile yeasts
aw = 0.65	Xerophile mildew

Water activity measurement stations measure in the range of 0...1 aw which equates to 0...100 %ERH and supply a digital output signal to interface with HygroLab and HygroPalm water activity indicators. Digital calibration can be performed with the help of these instruments, or with PC software. The HC2-AW and AW-DIO measurement stations have a large thermal mass. This means the probes react very slowly to temperature changes so that virtually no variations arise during measurement – especially when using the AW Quick function. The extremely small internal volume of the sensor chamber ensures humidity equilibrium is reached very quickly in the case of all products. The section «Accessories» describes the sample holders, sample containers and sealing mechanism in detail.

## HYGROLAB SERIES

### Applications

Water activity measurements in the laboratory: cheese, meat, tobacco, building materials, pet foods, bakery products, paper, medicines, horticulture, agriculture, etc.

### Use

With AW-DIO probes and insertion probes for bulk materials

### Highlights

- Suitable for many applications
- AW Quick mode for results in typically 4-5 minutes
- High measurement precision
- Long term stability
- Interchangeable measurement stations
- Multichannel display
- Validated PC analysis software



### HYGROLAB 2

Order code HygroLab 2

- 4-channel benchtop display unit for measurement of water activity, temperature and relative humidity
- Display option: aw or %rh
- All psychrometric calculations available
- Definable pressure constant for calculations
- AC power supply
- RS232/485 interface
- Dimensions: 225 x 170 x 70 mm

### HYGROLAB 3

Order code HygroLab 3

- 4-channel benchtop display unit for measurement of water activity, temperature and relative humidity
- All psychrometric calculations available
- Definable pressure constant for calculations or with pressure probe
- Integrated AW Quick function
- AC power supply
- RS232/485 interface
- Dimensions: 225 x 170 x 70 mm



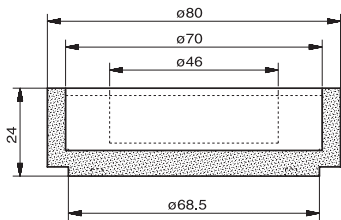
### HYGROLAB 3-E

Order code HygroLab 3-E

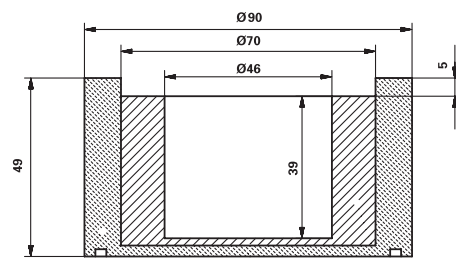
- As HygroLab 3, but with Ethernet TCP/IP interface

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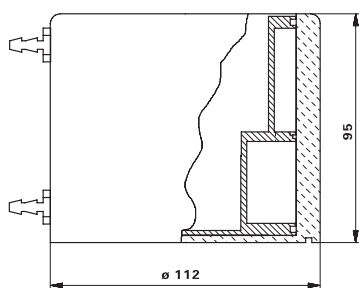
Specifications			
Feature	HygroLab 2	HygroLab 3	HP23-AW
Probe connections	4	4	1
PC interface	RS232/485	TCP/IP or RS232	USB
Networking	Up to 64 devices using RS485		No
Aw Quick mode	Option. Only via PC	Integrated and with PC and HW4 software	Yes, directly readable
Calibration with keypad			
1-point %rh (aw)	Yes		
4-point %rh / 2-point °C/°F	Yes		
Calibration with PC	Yes	Yes	
1-point %rh (aw)	Yes	Yes	
4-point %rh (aw) / 2-point °C/°F	Yes	Yes	
Display units	%rh, aw, °C, °F,	%rh, aw, °C, °F,	
Calculated parameters	Dew point, wet-bulb temperature, enthalpy, ratio of mixture, water vapor content, partial water vapor pressure, saturation water vapor pressure		
Audible signal at end of measurement	No	Yes	No
Electronics operating range	0...99 %rh, -10...60 °C (14...140 °F)		
LC display	3 lines alphanumeric		
Trend indicator	Yes		
Display resolution	0.1 %rh / 0.1 °C/°F, 0.001 aw	0.1 %rh / 0.1 °C/°F, 0.001 aw, 0.01 calculated value °C/°F	0.001 aw 0.01 °C/°F
Housing	Aluminium, 220 x 170 x 55 mm		ABS
Power supply	9 V power supply, via AC power adapter		9 V battery or 9 V power supply unit via mini USB
Current consumption	Max. 20 mA		<10 mA
CE conformity	EN 61000-6-2:2001, EN 61000-6-4:2001		
Weight	1100 g	1100 g	300 g



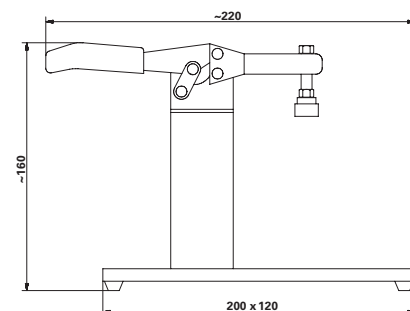
WP-14-S



WP-40



WP-40TH



AW-KHS