HYGROPALM

Portable humidity and temperature instrument
Operating instructions

General description:
All HygroPalm instruments are just indicators, i.e. the measurement is done by the HygroClip digital plug-in sensor module.
The sensor module measures relative humidity and temperature; all indicated psychrometric values are calculated by the HygroPalm.
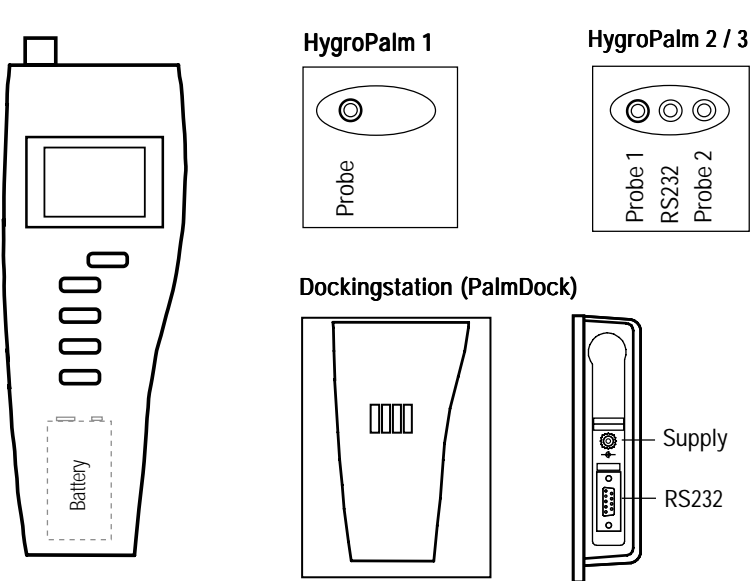(Exeption: Measurement of other units like pressure etc.)

Configuration ex works:
Certain basic configurations like for instance the display of metric or english units as well as the configuration of the probe inputs; standard configuration: HygroClip digital probes.
All these configurations can be changed with the HW3 software (Option).

These operating instructions are a concentrated excerpt of the full version (in english and german) that is published on the internet. For better comprehension, it is completed with flow charts.

You find the full version in the internet under www. rotronic-humidity.com

The HygroPalm versions

HygroPalm 1 — Probe

HygroPalm 2 / 3 — Probe 1, RS232, Probe 2

Dockingstation (PalmDock)

Supply
RS232
Battery

Power Requirements
The HygroPalm operates with a regular 9V alkaline battery or with a 9V rechargeable battery.
Important: the HygroPalm is shipped with a regular 9V battery and is factory preset with the battery charge function turned off. If you plan on using a rechargeable battery (requires docking station), you should turn on the charge function (see Menu – Sys-Status). Before using a regular battery again, be sure to turn off the battery charge function. Trying to charge a regular battery may cause the battery to burst and may damage the instrument.
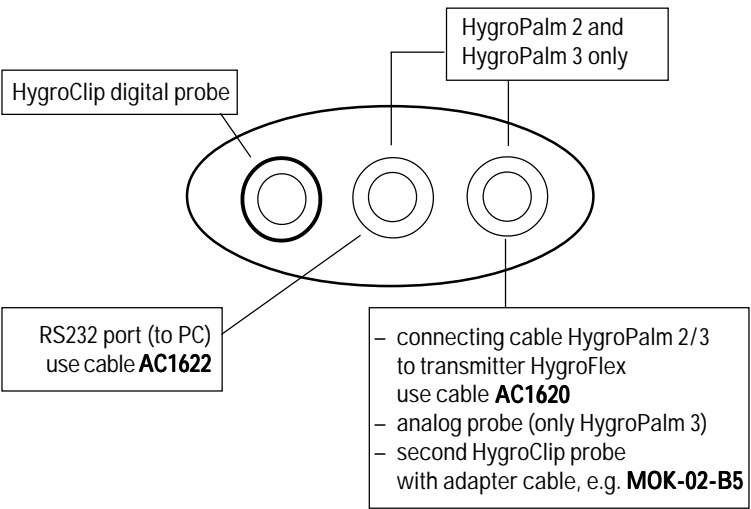
Optional Docking Station (PalmDock)
The HygroPalm is available with an optional docking station. The docking station accepts an external AC adapter for recharging the battery. HygroPalms with an RS232 port can be connected to the COM port of a PC via the docking station.

RS232, Probe Connections
HygroPalm 2 and 3:
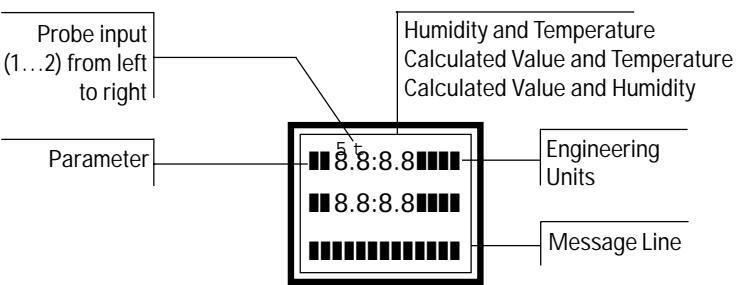The probe can be connected to any probe input - the HygroPalm automatically senses the probe.

HygroPalm3:
All probe inputs are factory programmed to accept a HygroClip digital probe. Prior to using any analog probe, the corresponding probe input should be re-programmed. This can be done with the HW3 software after connecting the RS232 port of the HygroPalm 3 to a PC (see documentation in the software HW3).

HygroPalm 2 and HygroPalm 3 only

HygroClip digital probe

RS232 port (to PC) use cable **AC1622**

– connecting cable HygroPalm 2/3 to transmitter HygroFlex use cable **AC1620**
– analog probe (only HygroPalm 3)
– second HygroClip probe with adapter cable, e.g. **MOK-02-B5**
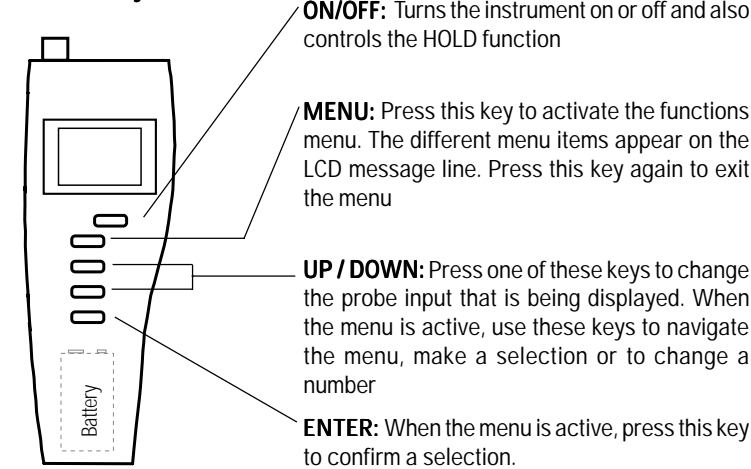
Probe Input Selection
(HygroPalm 2 and HygroPalm 3)
The display can be switched between probes with the UP or the DOWN key. The selection is confirmed on the message line of LC display as well as by an indicator located at the top of the display.

Display

Probe input (1…2) from left to right

Parameter

Humidity and Temperature Calculated Value and Temperature Calculated Value and Humidity

Engineering Units

Message Line

The display provides information regarding the battery status. When the message Low Batt appears, the instrument can typically be used for another 10 to 15 minutes

Fuctions Keys

ON/OFF: Turns the instrument on or off and also controls the HOLD function

MENU: Press this key to activate the functions menu. The different menu items appear on the LCD message line. Press this key again to exit the menu

UP / DOWN: Press one of these keys to change the probe input that is being displayed. When the menu is active, use these keys to navigate the menu, make a selection or to change a number

ENTER: When the menu is active, press this key to confirm a selection.

Detailed instructions you find on the back side.

CALCULATE

Definition
This function is used to select or view the humidity parameter that is calculated by the instrument. The calculated parameter is selected individually for each probe connected to the instrument [1]. Prior to entering this function, select on the display the probe to programmed.

1) does not apply to third-party analog probes.

The default units are Metric [**M**]; however they can be changed to the english units [**E**] either by the user or by the distrbutor with the optional HW3 software.

Selections

Parameter	M	E	HygroPalm 1	HygroPalm 2	HygroPalm 3
Dew Point / Frost Point [1]	°C	°F	●	●	●
Wet Bulb Temperature	°C	°F	●	●	●
Enthalpy	J/g	BTU/lb	–	●	●
Vapor Concentration	g/m³	gr/cuft	–	●	●
Specfic Humidity	g/kg	gr/lb	–	●	●
Mixing Ratio	g/kg	gr/lb	–	●	●
Vapor Concentration at Saturation	g/m³	gr/cuft	–	●	●
Partial Pressure of Water Vapor	hPa	PSI In Hg	–	●	●
Saturation Pressure of Water Vapor	hPa	PSI In Hg	–	●	●
Pressure Constant [2] (Barometric Pressure)	hPa	PSI In Hg	–	●	●

1) The standard factory setting is frost point for values below freezing. This setting can be changed to dew point with the optional HW3 software (except HygroPalm 1)
2) This selection shows the fixed value that is used for computing the parameters that require barometric pressure as an input. The fixed pressure value can be changed with the optional HW3 software. The HygroPalm 3 can also be programmed to accept the input from a pressure probe (variable pressure value).

Technical data

Operation	9V alkaline battery
	12...15 VDC adapter (100 mA) C (+) Tip
	9V rechargeable battery, 110 mAh
Max. current consumption	30 mA

Operating limits
at electronics
0…99 % rh (no condensing)
-10…+50 °C (14...122°F)

Measured parameters
relative humidity   0,0…100,0 %rh
temperature   -99,9…+999,9 °C or °F
barometric pressure [1]   0,000…9999 hPa / PSI / In Hg

Calculated parameters [2]
dew / frost point [3]   -99.9…999.9 °C / °F
wet bulb temperature [4]   0,0…100,0 °C / 32,0…212,0 °F
enthalpy [4]   -99,9…+9999 J/g oder BTU/lb
vapor concentration   0,000…9999 g/m³ oder gr/cuft
specific Humidity [4]   0,000…9999 g/kg oder gr/lb
mixing ratio [4]   0,000…9999 g/kg oder gr/lb
vapor concentration at sat   0,000…9999 g/m³ oder gr/cuft
part. pressure of water vapor 0,000…9999 hPa / PSI / In Hg
sat. pressure of water vapor 0,000…9999 hPa / PSI / In Hg

Indicating range

System accuracy
at 23 °C/73 °F
with HygroClip probe   Accuracy of the HygroClip
and 4-point calibration   ± 1Digit of the display

Number of probe inputs

HygroPalm 1	1
HygroPalm 2 and 3	2

Probe type [5]
all models   ROTRONIC HygroClip digital probe
HygroPalm 3 only   ROTRONIC analog probe [6]
                        Third-party analog probe [6]

Display   Alphanumerical LC displaiy
Serial output
(except HygroPalm 1)   RS232
Battery status   Automatic Indication
HOLD function   Briefly push the ON/OFF Button
Housing material   ABS
Housing dimensions   230 x 80 x 30 mm (9,05 x 3,15 x 1,18")
Weight (w/o probe)   200 g (0,44 lb)

1) Not available with HygroPalm 1 and HygroPalm 2
2) Not available with HygroPalm 1. The accuracy of the computed parameter is limited by the accuracy of the measured parameters on which it is based
3) The standard factory setting is frost point for values below freezing. This setting can be changed to dew point with the optional HW3 software
4) A fixed value is used for the computations of this parameter. The fixed pressure value can be changed by the user with the optional HW3 software. The HygroPalm 3 can also be programmed to accept the input from a pressure probe (variable pressure value)
5) Accuracy, repeatability and operating limits are specified separately for each model of probe
6) ROTRONIC analog probes: because the HygroPalm cannot read a negative input voltage, temperature measurement with probes having astandard output is generally limited to values above freezing. Third-party probe (pressure or other): linearized voltage output signal within the range of 0..2.5 VDC, supply voltage 7.6…9 VDC (non regulated, direct from HygroPalm battery), 10 mA
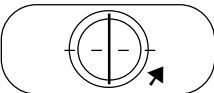
Option for HygroPalm 2 and 3:
Temperature adapter type HygroClip TH100-B5 for the connection of a Pt100 temperature probe with 4 pole connector type Binder.
Connection to probe input 2 of the HygroPalm.

Connector pin configuration

Probe 1
RS232
Probe 2

Probe 1 and 2	
Pin	**Function**
1	Temperature
2	+5VDC
3	GND
4	DIO (digital HygroClip signal)
5	Humidity or other analogue signals

RS232	
Pin	**Function**
1	SG
2	TXD
3	RXD
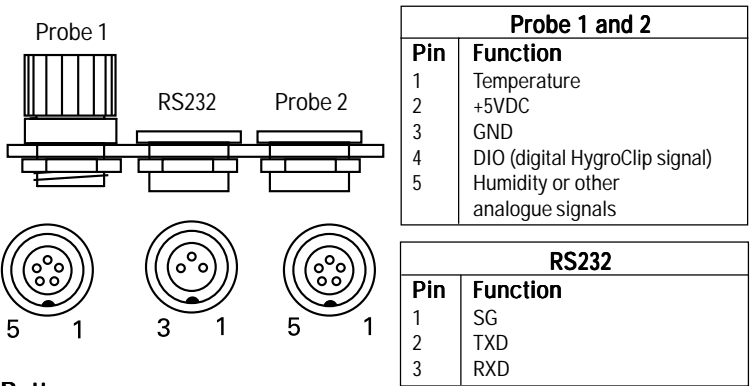
Battery:
Type: 9V / 6AM6
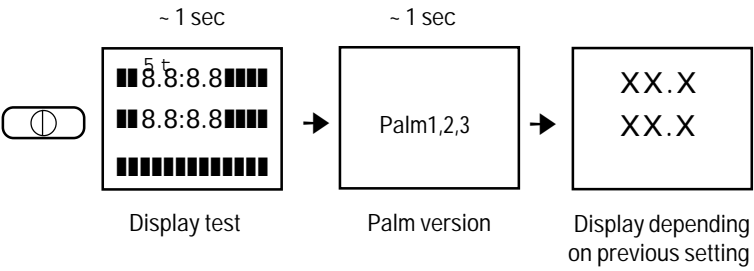   or 8,4V rechargeable battery TR 7/8

Battery compartment:

For opening: Turn and Pull

Operating of Hygropalm 1, 2, 3
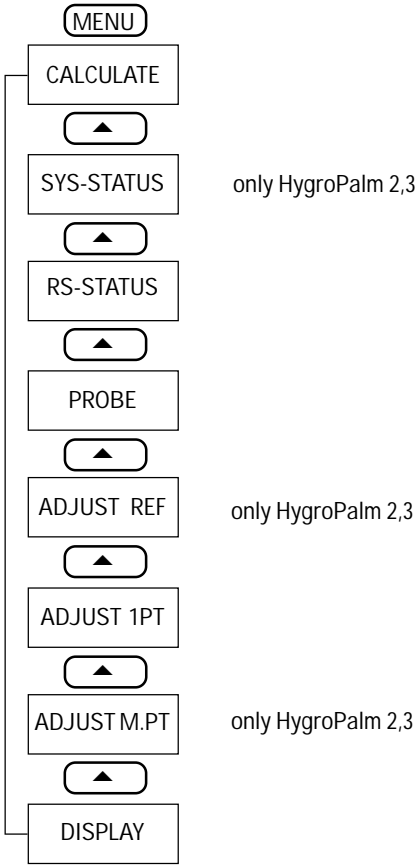
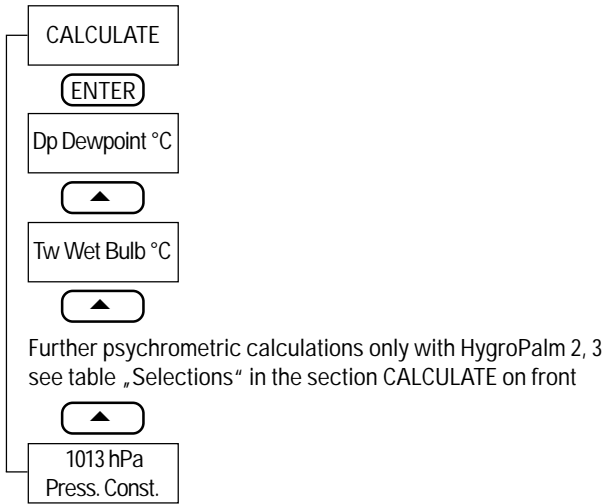### 1. Switching-on, measurement, HOLD-function, switching-off

~ 1 sec   ~ 1 sec

```
■■5 t
■■8.8:8.8■■■■   →   Palm1,2,3   →   XX.X
■■8.8:8.8■■■■                        XX.X
■■■■■■■■■■■■■
```
Display test   Palm version   Display depending
                                     on previous setting

HOLD ON/OFF: Press once ⟨⏻⟩

Instrument switching-off: Press and hold ⟨⏻⟩

2. Menu selection

```
(MENU)
  │
CALCULATE
  │ (▲)
SYS-STATUS        only HygroPalm 2,3
  │ (▲)
RS-STATUS
  │ (▲)
PROBE
  │ (▲)
ADJUST REF        only HygroPalm 2,3
  │ (▲)
ADJUST 1PT
  │ (▲)
ADJUST M.PT       only HygroPalm 2,3
  │ (▲)
DISPLAY
```

3. Menu CALCULATE

```
CALCULATE
(ENTER)
Dp Dewpoint °C
(▲)
Tw Wet Bulb °C
(▲)
```
Further psychrometric calculations only with HygroPalm 2, 3
see table „Selections" in the section CALCULATE on front
```
(▲)
1013 hPa
Press. Const.
```

3a. Psychrometric calculation
Example: Measurement of wet bulb temperature

```
CALCULATE
(ENTER)
Dp Dewpoint
(▲)
Tw Wet Bulb
(ENTER) ─ ─ Programming of psychrometric calculation
(MENU)       Programming of display
(▼)
(ENTER)
(▼)
```

```
Calc + Humi  →  (ENTER)  →  Tw   XX.XX°C
                            XX.X% rh
(▼)

Calc + Temp  →  (ENTER)  →  Tw   XX.XX°C
                            XX.X°C
```

back to RH + T measurement:

```
Tw  XX.XX°C   →  (MENU) → (▼) → (ENTER) →  XX.X %rh
    XX.X% rh                      2 x      XX.X°C
```

4. Menu SYS-STATUS

```
SYS-STATUS
(ENTER)
  │
VX.X              HygroPalm version
  │ (▲)
XXXXXXXX          HygroPalm serial number
  │ (▲)
Battery  → (ENTER) → Charge off → (▲) → Charge on
  │ (▲)
User text         only HygroPalm 2, 3
```

5. Menu RS-STATUS (only HygroPalm 2, 3)
see full version (Software HW3)

6. Menu PROBE

```
Probe
(ENTER)
VX.X              Probe version
(▼)
XXXXXXXX          Probe serial number
```
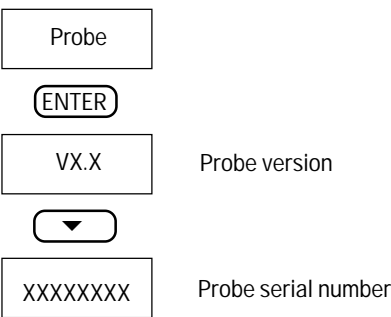
7. Menu ADJ REF (only HygroPalm 2, 3)
1-point adjustment against reference probe

Reference probe

Probe to be adjusted

Cable type:
MOK-01-B5
MOK-02-B5
MOK-05-B5

```
ADJUST REF
(ENTER)
XX.X %rh
XX.X °C
REF (Probe2)
(ENTER)
```
to exit
```
(MENU) ← Sure?
           │
         (ENTER)  if OK
```
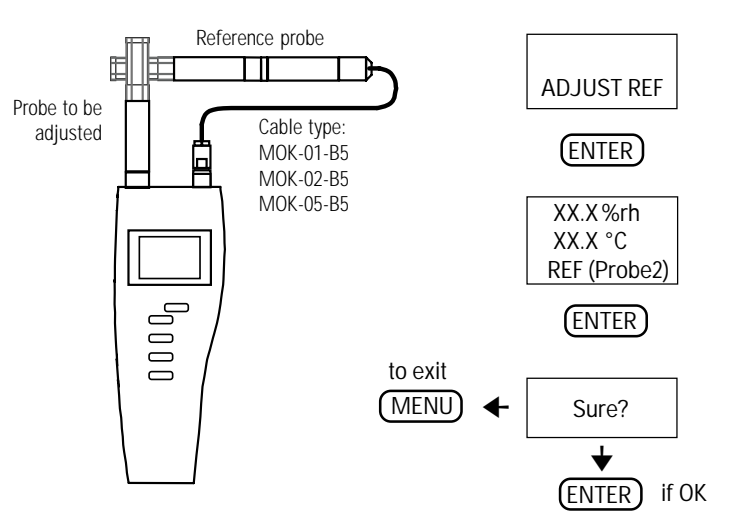
8. Menu ADJUST 1 PT
1-point adjustment

8.1 Adjustment with ROTRONIC humidity standards

Calibration device

Automatic compensation of the temperature dependence of the ROTRONIC humidity standards

```
ADJUST 1PT
(ENTER)
RHS
(ENTER)
          if OK
(ENTER) ← Sure? ← (ENTER) ← 35.0%rh
           │                Humidity RHS
         (MENU)             (▲)
         to exit            (▲)
```
all ROTRONIC humidity standards selectable
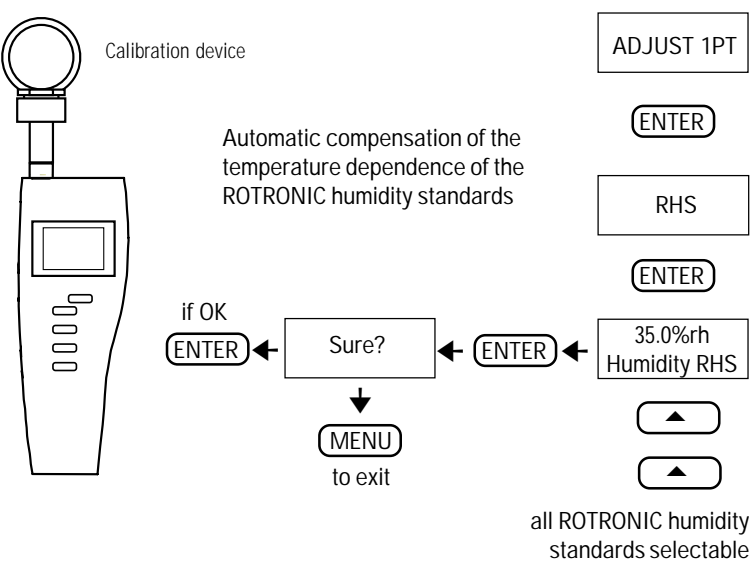
8.2 Adjustment with reference climate

reference climate

```
ADJUST 1PT
(ENTER)
RHS
(▲)
correction with arrow keys
                    (▲)
(ENTER) ← Sure? ← (ENTER) ← (ENTER) ← Humidity
 if OK     │                (▼)        (▲)
         (MENU)
         to exit            Temperature
```
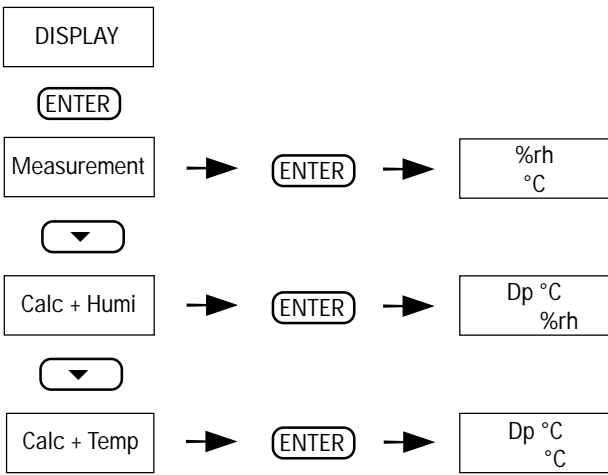same procedure if temperature is selected
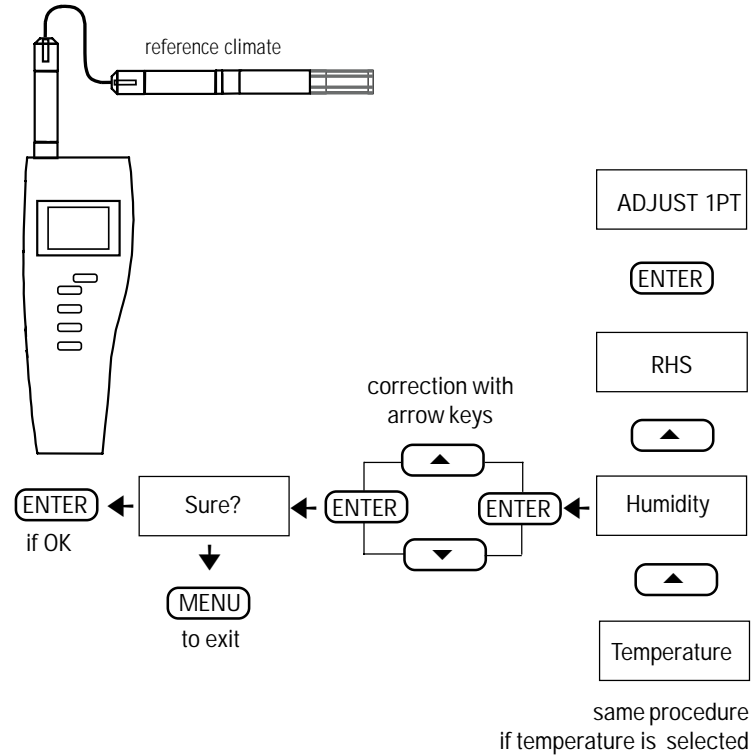
9. Menu ADJUST M.PT (only HygroPalm 2, 3)
Multi point adjustment

Same procedure as 1-point adjustment

10. Menu DISPLAY
Example dew point: Requires presetting of dew point measurement

```
DISPLAY
(ENTER)
Measurement  → (ENTER) →  %rh
  │ (▼)                    °C
Calc + Humi  → (ENTER) →  Dp °C
  │ (▼)                    %rh
Calc + Temp  → (ENTER) →  Dp °C
                           °C
```