



PORTABLE PRECISION HYGROMETER

with Data logging

MODEL: HTD 200

INSTRUCTION MANUAL



1. SPECIFICATIONS

Model	HTD 200
Display	2.8" True colour TFT display with touch screen
Range	Temperature: -40 to 85 °C Humidity: 0 to 100% RH
Resolution	0.01 °C / 0.01 % RH
Accuracy	±0.2°C / ±0.8 % RH (at 23 °C± 5 °C)
Psychometric calculated indication	Dew / Frost point (Dp / Fp) Wet Bulb Temperature (Tw) Vapour partial pressure (E) Vapour Saturation pressure (Ew) Mixing ratio by weight (dry) (g / kg) Enthalpy (H) (KJ / kg) Specific Humidity (moisture) (g / kg) Absolute Humidity (moisture) (g / m³) Volume mixing ratio (dry) (ppm)
Calculation method	WMO method
Display refresh rate	1 s (typical)
Calibration	Multipoint Calibration feature available
Alarm	Audible & Visible user settable individual High & Low alarm set with alarm mode selection
Touch sound	On / Off option available
Data logging interval *	1 sec to 24 Hours (user selectable) (Only for HTD 200-A)
Data download *	Via USB C-type to PC software (Sansel-Soft-01) (Only for HTD 200-A)
Battery charging port	USB C type
Integrated battery	3.7V / 10,000 mAh Inbuilt rechargeable polymer Li-ion battery
Backlight time interval	OFF to 59 mins : 59 secs (user adjustable)
Brightness adjustment	10 to 100% (user adjustable)
Application environment range	-10 to 60 °C / 0 to 100% RH (non condensed)
Storage environment range	-10 to 45 °C / 10 to 90% RH
Housing material	ABS with anti-slip grip silicon cover
Protection class	IP40
Overall Dimension in mm	35 x 80 x 165 mm (L x B x H)
Instrument Weight	560 g (Approx.)

Note: Due to continuous product improvements, Published specifications may change with out notice

***Refer ROTRONICS Probe model number: XD33A – S3X**

Standard Delivery

1. Basic Instrument with sensor 2m cable
2. Charger with cable
3. Instruction manual

Optional

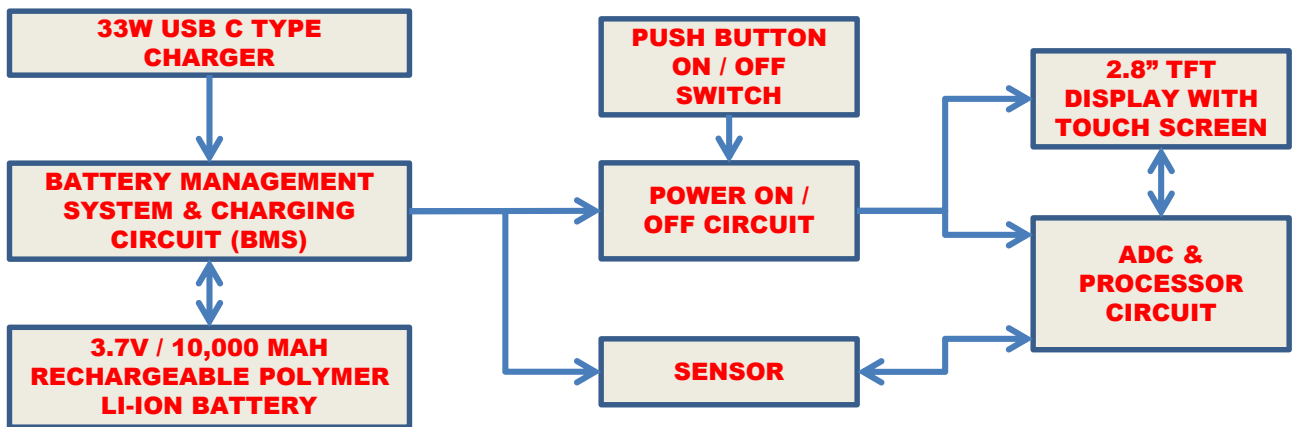
1. Protective Carrying Case
2. SANSEL-SOFT-01 software for HTD 200-A
3. ISO/IEC 17025 Accredited Calibration Certificate

2. BATTERY WARNING

WARNING:

- 1) The battery used in this device may present a risk of fire or chemical burn if mistreated.
- 2) Do not disassemble heat above 140 °F crush or puncture short circuit external contains or dispose of in fire or water.
- 3) Use specified charger only & charge once in a month.

3. BLOCK DIAGRAM



4. CHARGER CONNECTION

CAUTION:

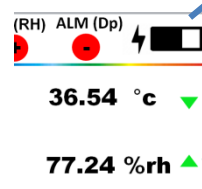


- 1) Don't recharge HTD 200 during a thunderstorm
- 2) Unplug your charger from electrical outlets when they are not in use, especially if they plug directly into a wall outlet and not a surge protector
- 3) Periodically inspect chargers for wear-and-tear or outright damage
- 4) Charge devices in shorter bursts rather than longer periods
- 5) When not in use, do your best to shut off battery-powered devices that you do not need on

- I. Insert the USB C type male connector to HTD 200 Female connector



- II. Insert the Charger to Power socket and switch ON, the charging symbol will appear on HTD 200 top right side corner (near charge status)

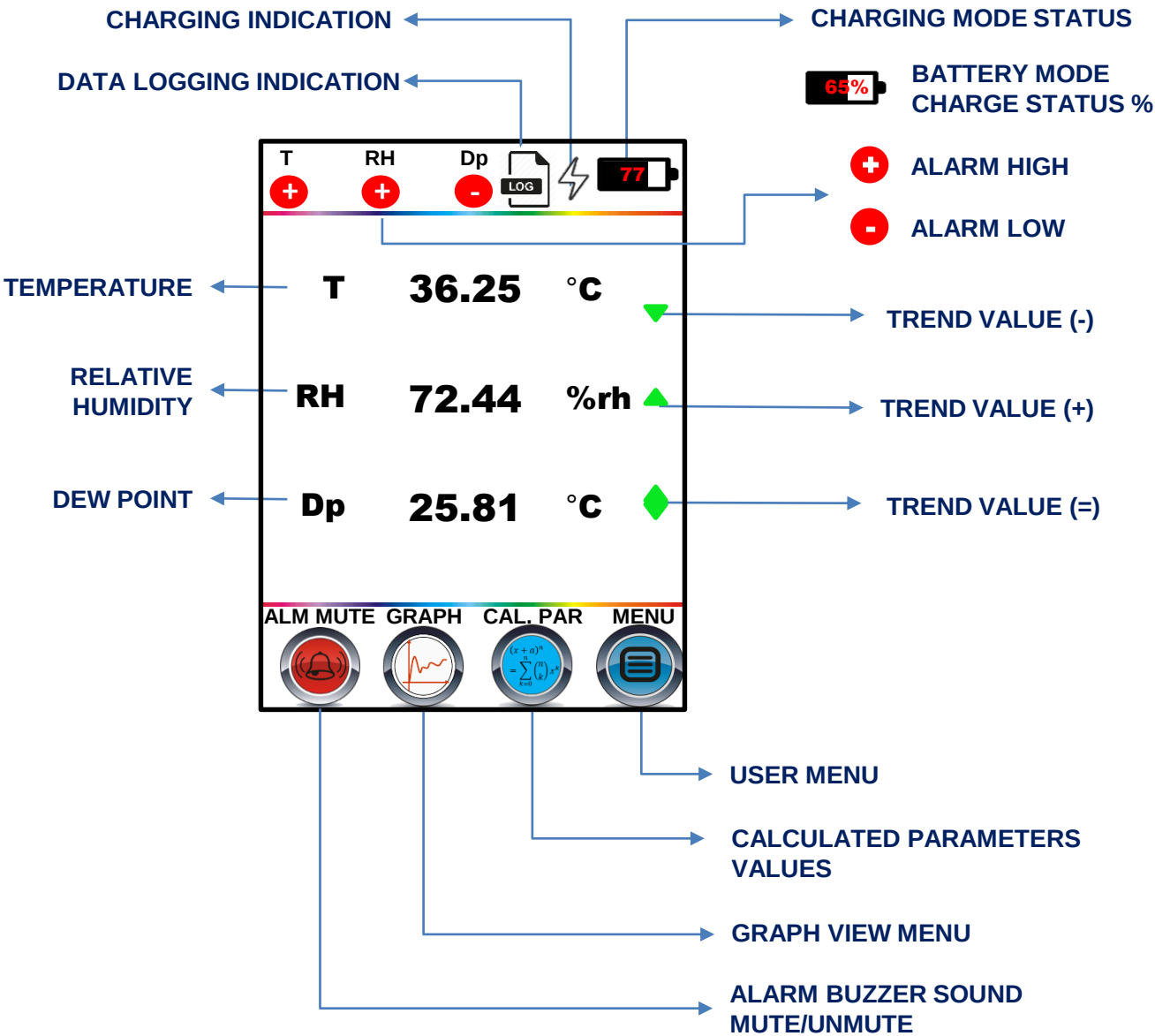


5. INTENDED USE OF HTD 200

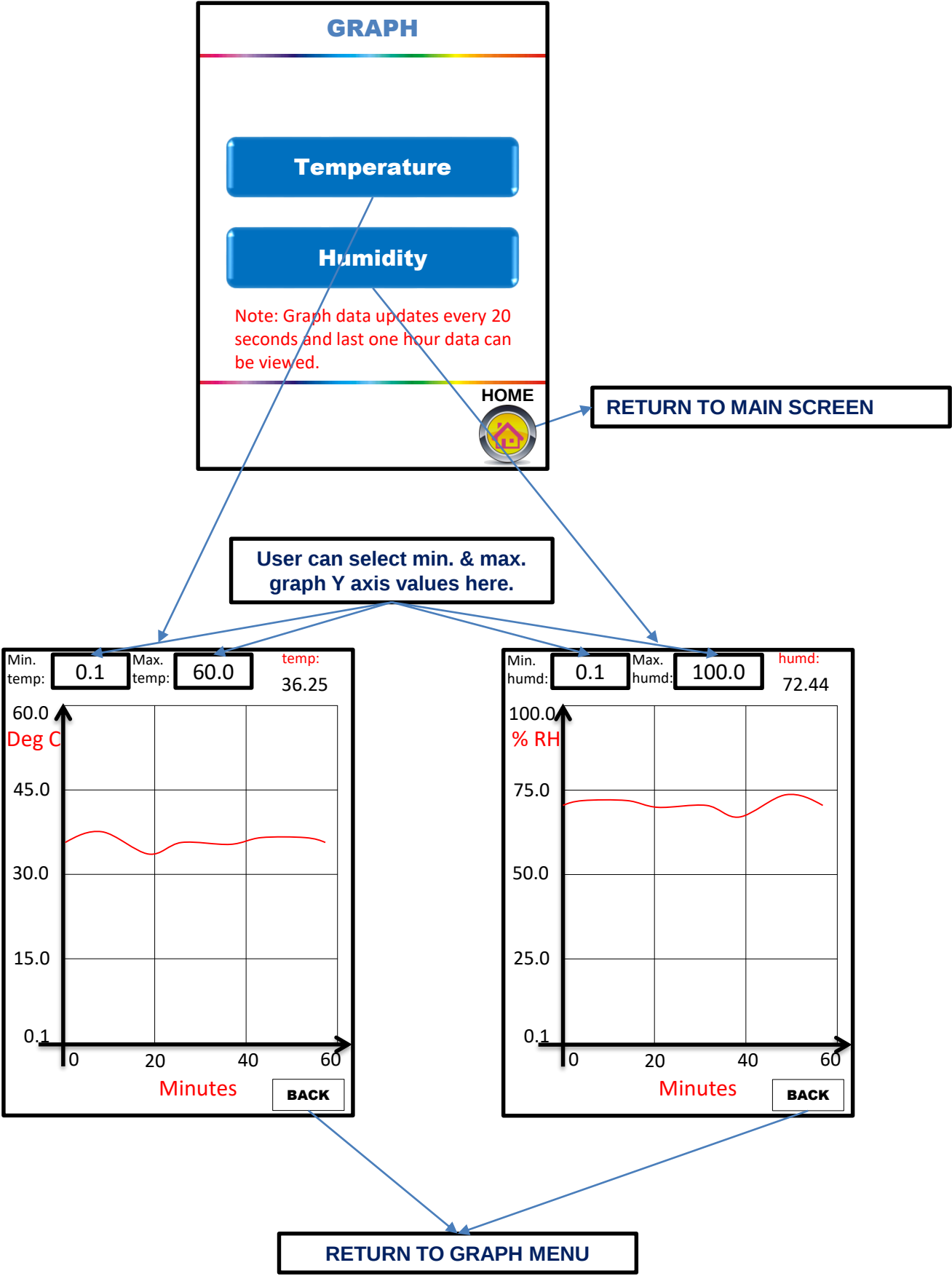
CAUTION : Use the HTD 200 series only as specified intended uses below. Otherwise the protection provided by the HTD 200 series may be impaired.

- I. Used to Testing or Calibrate the Humidity, Temperature & Dew point parameters for UUC / UUT Hygrometer, Humidity / Temperature / Dew point Sensor / Transducer / Transmitter / Indicator / Controller.
- II. Used to Testing or Calibrate the Humidity, Temperature & Dew point parameters for UUC / UUT Humidity & Temperature generator, Environment chamber.
- III. Used to measure the Environmental Humidity, Temperature & Dew point parameters for Laboratories & Industries.

6. MAIN SCREEN DESCRIPTION



6.1. GRAPH VIEW MENU



6.2. Calculated parameters values

CALCULATED PARAMETERS

PRESSURE : 1007.00 hpa

1. Wet-Bulb Temperature : 31.71 °C

2.Vapour partial pressure : 43.64 hpa

3.Vapour saturation pressure : 60.24 hpa

4.Mixing ratio by weight (dry) : 28.17 g/kg

5.Enthalpy : 108.74 kJ/kg

6.Specific humidity(moisture) : 27.40 g/kg

7.Absolute humidity(moisture): 30.55 g/m³

8.Volume mixing ratio (dry) : 45298.4 ppm

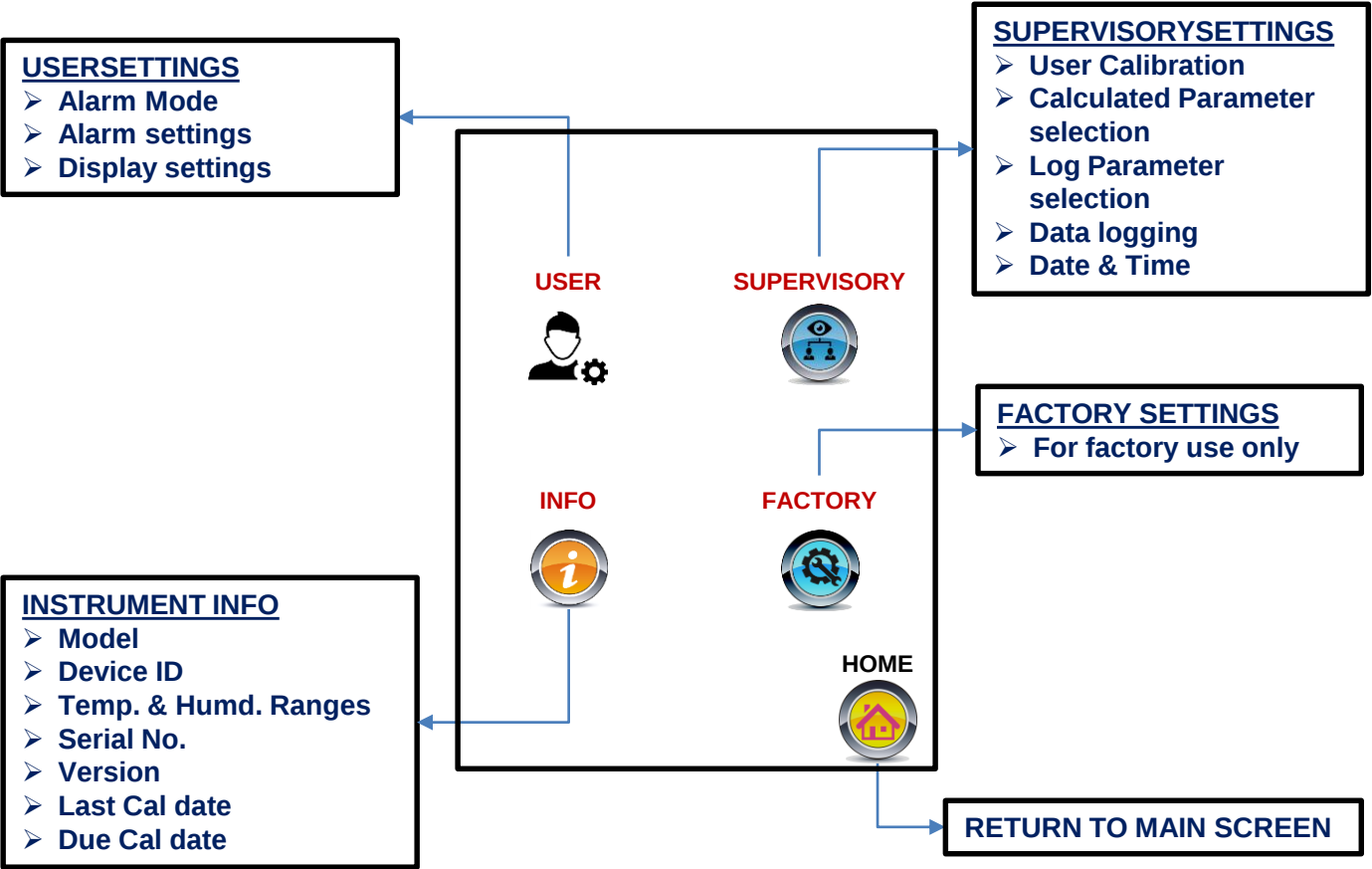


Enter present environment Atmospheric pressure value in “hpa” here, to get exact “CALCULATED PARAMETER” VALUES BASED ON YOUR AMBIENT

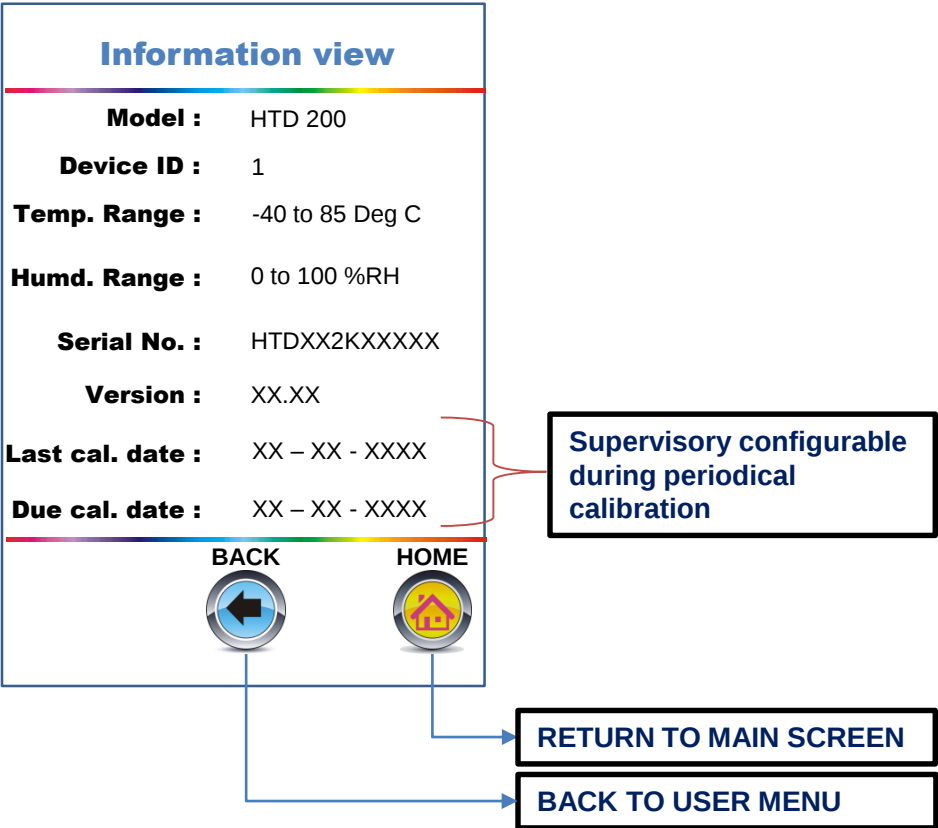
Based on Amb. Relative humidity, temperature & Atmospheric value, Psychometrical calculated parameter’s value will appear here.

RETURN TO MAIN SCREEN

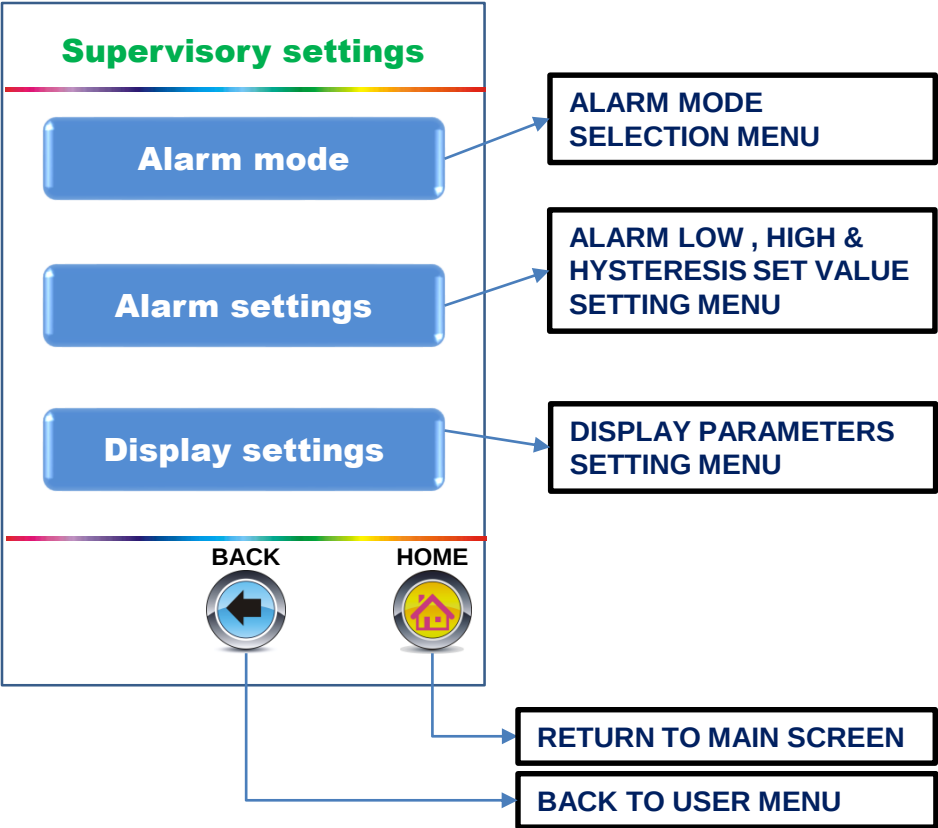
7. SETTING MENU DESCRIPTION



7.1. Instrument Info



7.2. User settings



7.2.1. Alarm mode selection menu

Alarm mode

Temperature : HIGH

LOWHIGHHI & LOOFF

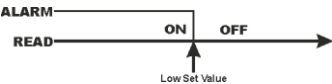
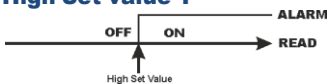
Humidity : LOW

LOWHIGHHI & LOOFF

Dew point : HI & LO

LOWHIGHHI & LOOFF

BACKHOME

NAME	DESCRIPTION
OFF	To Switch OFF the “Alarm Output” at any condition of PV.
LOW	To Switch ON “Alarm Output” during PV below “Low Set value” and Switch OFF above “Low Set value”. 
HIGH	To Switch ON “Alarm Output” during PV above “High Set value” and Switch OFF below “High Set value”. 
HI & LO	To Switch ON “Alarm Output” during PV above “High Set value” and below “Low Set value”. Switch OFF between both set values. 

RETURN TO MAIN SCREEN

BACK TO USER MENU

7.2.2. Alarm Set value setting menu (Low, High & Hysteresis)

Alarm settings

Temperature

LOWHIGHHYS.

12.0050.000.00

Humidity

LOWHIGHHYS.

50.0065.000.00

Dew point

LOWHIGHHYS.

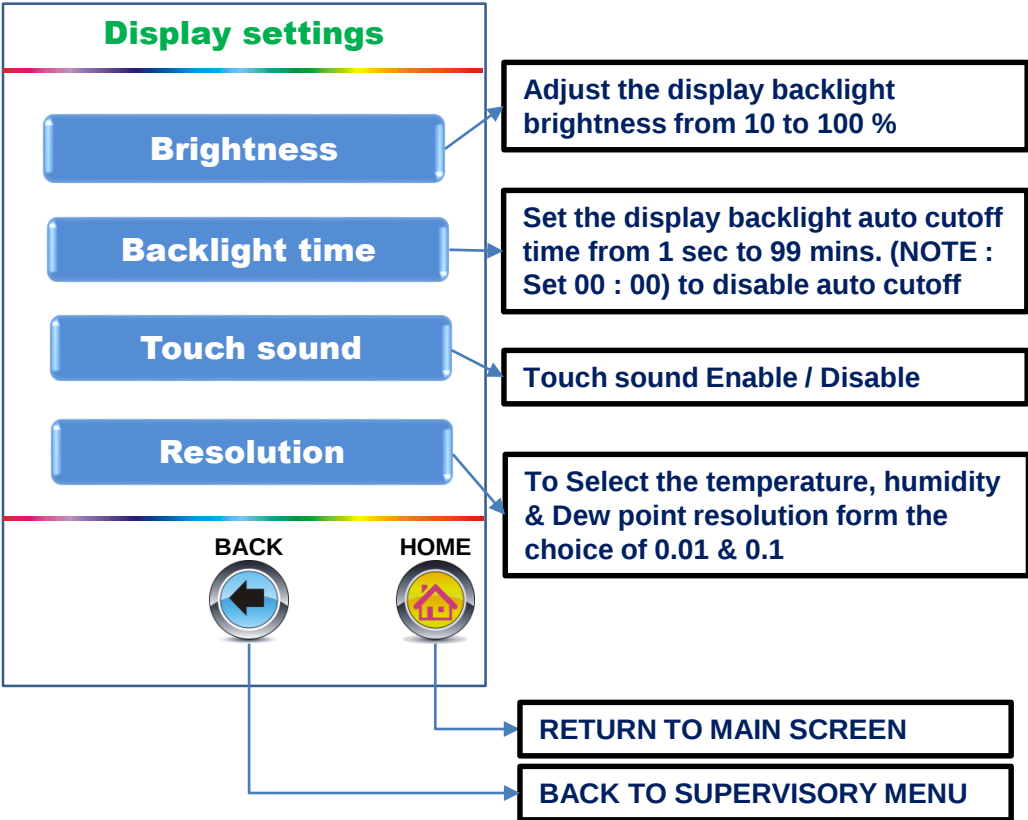
20.0030.000.00

BACKHOME

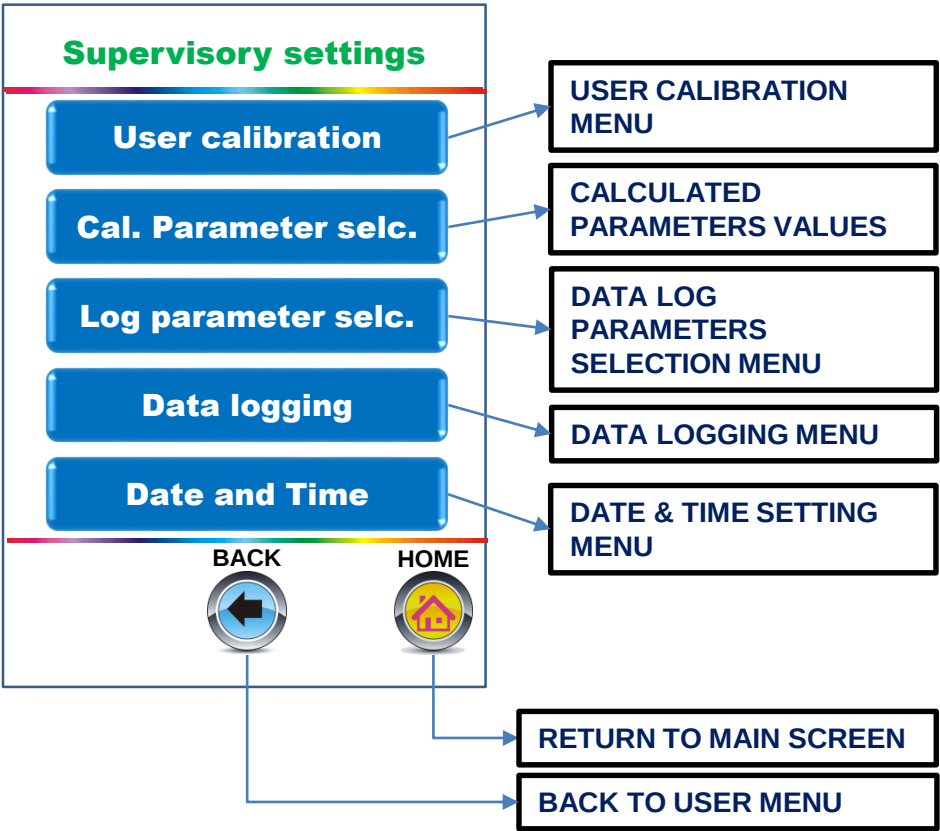
RETURN TO MAIN SCREEN

BACK TO SUPERVISORY MENU

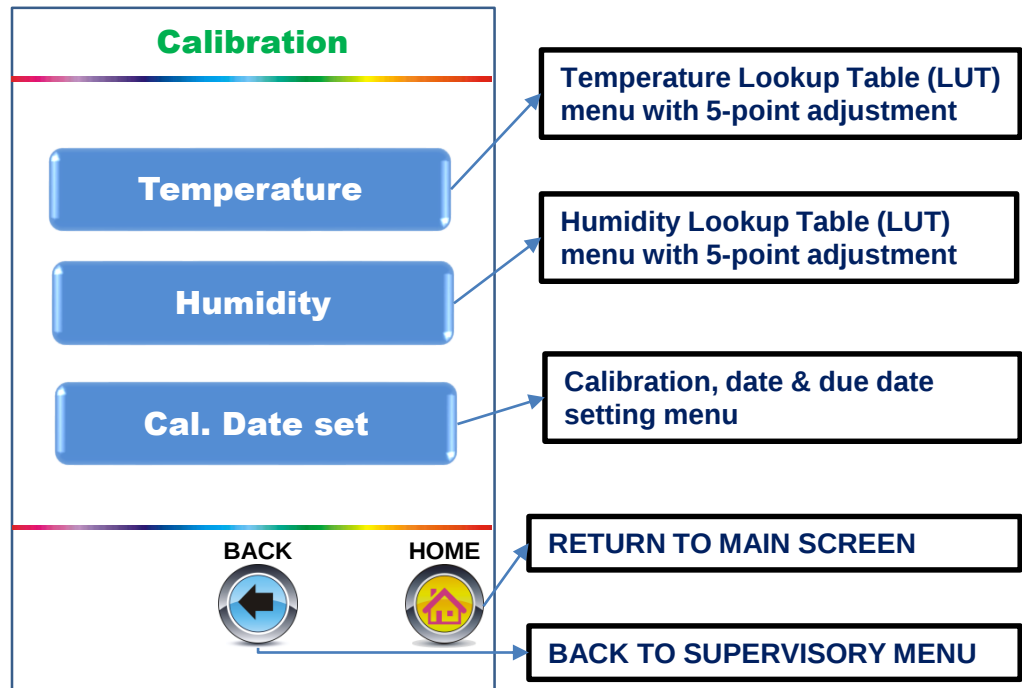
7.2.3. Display parameters setting menu



7.3. Supervisory settings (Password = 3579)



7.3.1. User calibration menu (for Humidity & Temperature)



For better accuracy, Periodic Calibration of the HTD 200 is recommended. In addition, the HTD 200 must be recalibrated whenever:

- a. The sensor is replaced.
- b. After testing long term in high temperature.
- c. Where high accuracy is required.
- d. At least twice an year.

NOTE : For Best results, calibrate with certified accurate master hygrometer. Follow the steps given below to calibrate the HTD 200.

7.3.1.1. Temperature Linearization Lookup Table(LUT) Adjustment

This feature can be used for Temperature Read which have Non-Linear transfer characteristics. We utilize this typical application for temperature error Adjustment. HTD 200 Allows 1 to 5 LUT points adjustment for temperature. The effect of a 5-point Temperature adjustment depends on the calibration points stored in LUT points and No. of points selection.

HTD can be programmed to Lookup pre-calibration set of LUT values. HTD can then fit Straight lines between two adjacent pre-calibration LUT points. The number of pre-calibration points is limited from 1 to 5 LUT points. The more number of LUT points you can define the more accuracy. However HTD 200 has a fixed 1 to 5 LUT points feature.



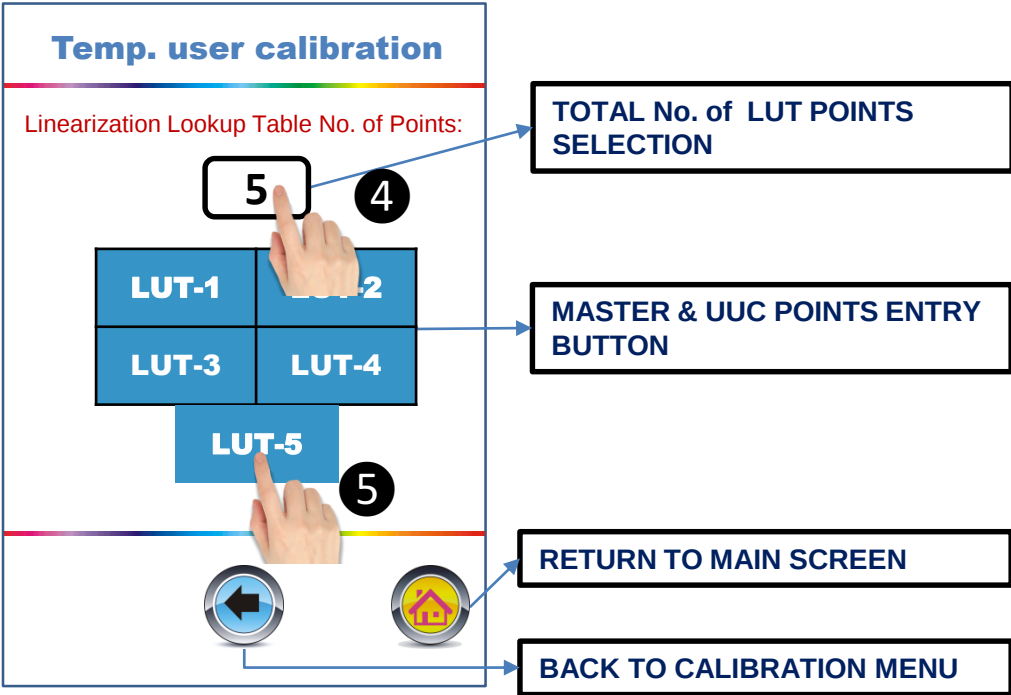
NOTE :

- 1) Any temperature adjustment should be done prior to adjusting humidity.**
- 2) Before start calibration, Ensure that the No. of points = 0 to disable existing LUT points.**

- STEP – 1 :** Place HTD 200 sensor & Master hygrometer sensor on an stability chamber.
- STEP – 2 :** Decide the required temperature test point 1 to 5 to be adjust and after stabilize of each points, note down as sample points(recommended) as below table.

LUT POINT No.	CHAMBER SET POINT	MASTER READ	HTD 200 (UUC) READ
1	5	5.2523	5.34
2	15	14.7461	14.97
3	30	30.1256	30.32
4	45	44.9264	45.14
5	60	60.2762	59.95

- STEP – 3 :** After completion of all points, Enter Settings → Supervisory → User calibration menu → Temperature.



- STEP – 4 :** Click on No. of Points and select required Total No. of LUT points.
- STEP – 5 :** Click on all LUT-1.....LUT-5 button one by one and enter all the MASTER & UUC values as already noted readings as above table.
- STEP – 6 :** Now Temperature calibration finished successfully and click on HOME button to return back to main screen.

7.3.1.2. Humidity Linearization Lookup Table(LUT) Adjustment

This feature can be used for Humidity Read which have Non-Linear transfer characteristics. We utilize this typical application for humidity error Adjustment. HTD 200 Allows 1 to 5 LUT points adjustment for humidity. The effect of a 5-point humidity adjustment depends on the calibration points stored in LUT points and No. of points selection.

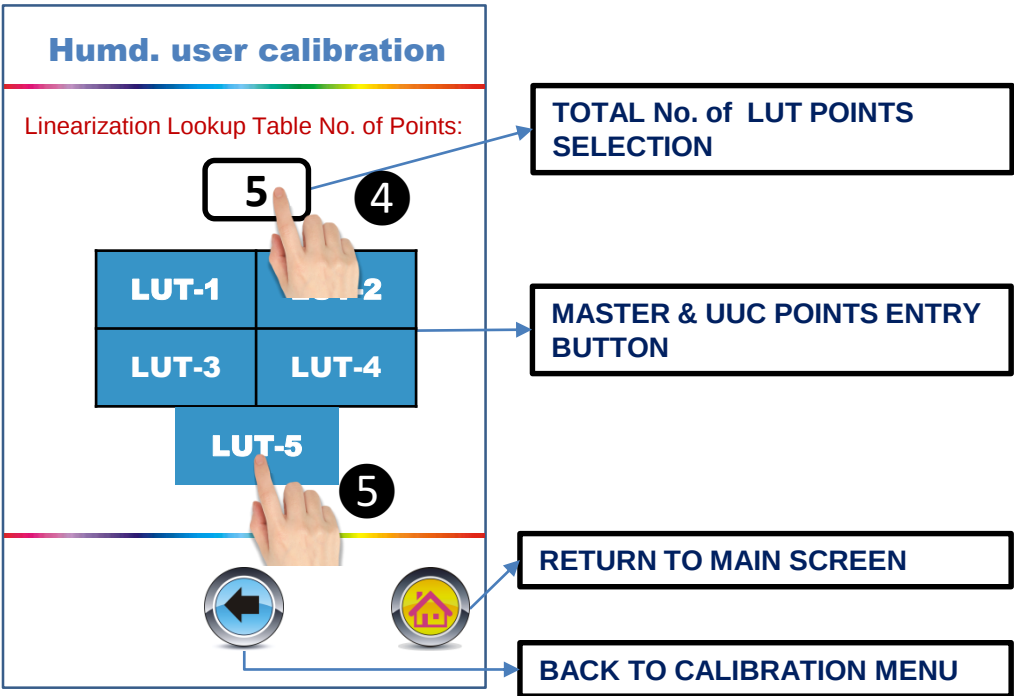
HTD can be programmed to Lookup pre-calibration set of LUT values. HTD can then fit Straight lines between two adjacent pre-calibration LUT points. The number of pre-calibration points is limited from 1 to 5 LUT points. The more number of LUT points you can define the more accuracy. However HTD 200 has a fixed 1 to 5 LUT points feature.

 **NOTE : Before start calibration, Ensure that the No. of points = 0 to disable existing LUT points.**

- STEP – 1 : Place HTD 200 sensor & Master hygrometer sensor on an stability chamber.
- STEP – 2 : Decide the required temperature test point 1 to 5 to be adjust and after stabilize of each points, note down as sample points(recommended) as below table.

LUT POINT No.	CHAMBER SET POINT	MASTER READ	HTD 200 (UUC) READ
1	20	20.479	19.32
2	40	39.789	40.27
3	60	60.323	60.52
4	80	79.452	79.84
5	90	90.428	90.47

STEP – 3 : After completion of all points, Enter Settings → Supervisory → User calibration menu → Humidity.



- STEP – 4 : Click on No. of Points and select required Total No. of LUT points.
- STEP – 5 : Click on all LUT-1.....LUT-5 button one by one and enter all the MASTER & UUC values as already noted readings as above table.
- STEP – 6 : Now Humidity calibration finished successfully and click on HOME button to return back to main screen.

7.3.1.3. Calibration date & due date setting menu

Cal. Date set

Last Cal. Date :

Day

Month

Year

12

01

2023

Due Cal. Date :

Day

Month

Year

11

01

2024

BACK

HOME

RETURN TO MAIN SCREEN

BACK TO CALIBRATION MENU

7.3.2. Calculated parameter selection menu

Cal. Parameter selection

7

0 - Absolute humidity (moist) (Dv)

1 - Specific Humidity (moist) (Q)

2 - Mixing Ratio by Wt. (dry) (R)

3 - Vapour partial pressure (E)

4 - Vapour saturation pressure (Ew)

5 - Enthalpy (H)

6 - Volume Mixing Ratio (dry) (PPM_v)

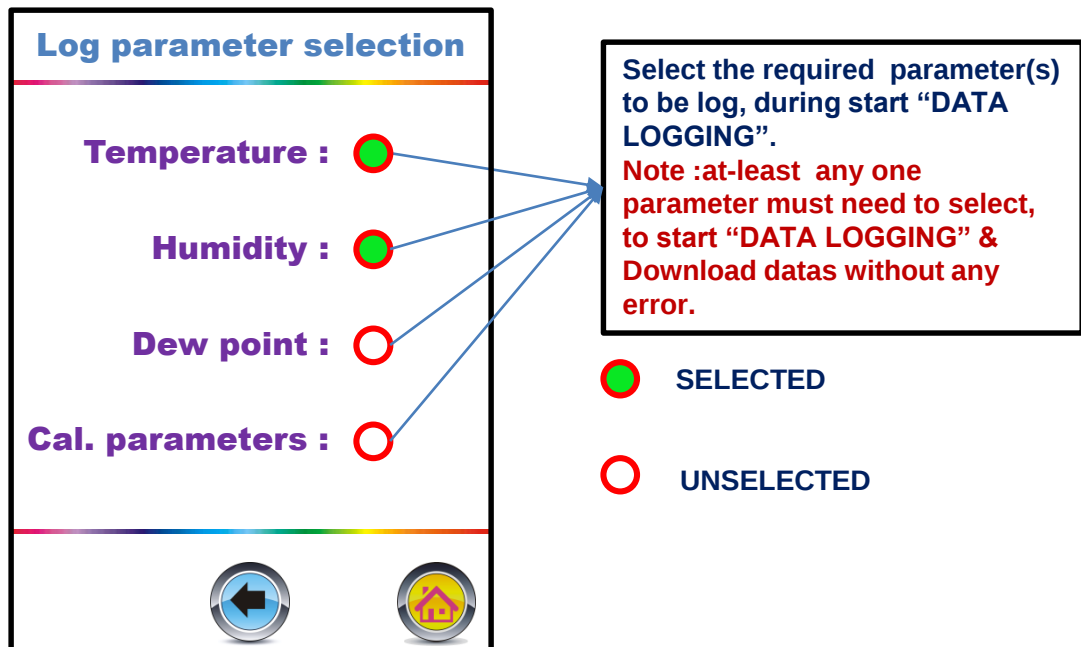
7 - Wet-Bulb Temperature (°C)

BACK

HOME

Enter the number code of “CALCULATED PARAMETER” to be Log during selecting the “CALCULATED PARAMETER” in Log Parameter selection menu

7.3.3. Log parameter selection menu



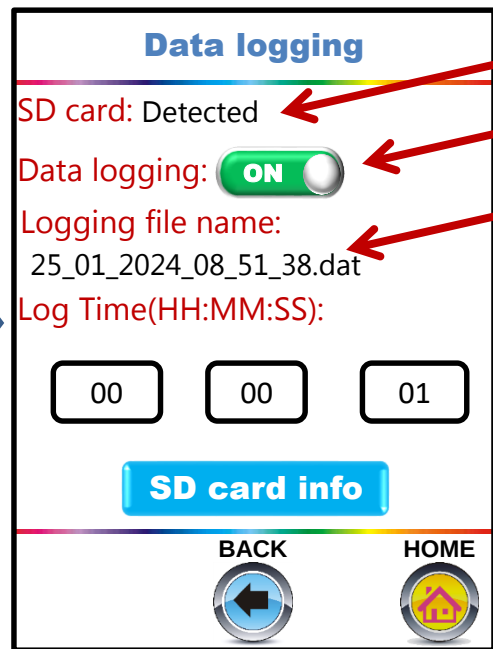
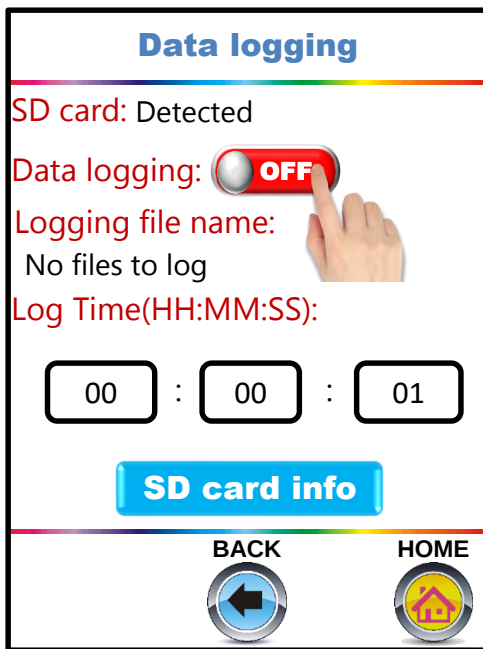
7.3.4. Data logging menu(Optional)

HTD 200-A models having an advanced feature of Data logging to store the data's along with date & time stamp with the user selectable Log interval from 1sec to 24 hours. To store the data's HTD 200-A models provide an wide internal storage SD card with the memory capacity from 4gb to 32gb(based on market availability of SD card the capacity may vary).

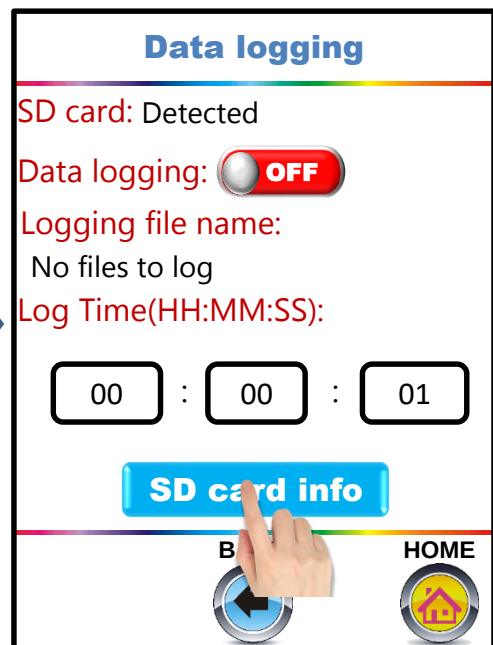
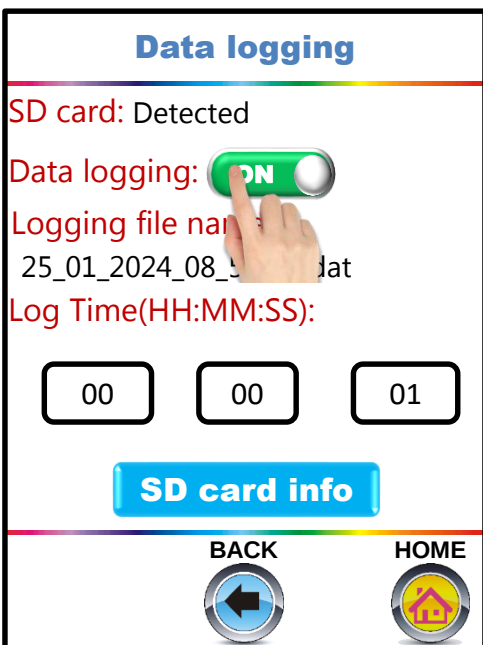
Based on Data logging ON & OFF trigger the Log file will generate a new file with the file name of Data logging ON period date & time.

Note : Before Data logging ON, configure the below mentioned points

- 1) Check & correct the HTD 200 series Date & time match with your local Date & time(Refer. 7.3.5.)
- 2) Select LOG PARAMETER(S) to be Log (Refer. 7.3.3)
- 3) Log Time(interval) in the format of (HH:MM:SS)(Hours:minutes:seconds)



Once after completion of Data logging, Switch OFF the Data Logging & check the SD card info by pressing “SD card info” button as below image.



Now the SD card info screen will appear as below image with the SD card memory status & last file name & Total files available in SD card. Now connect the HTD 200 series to PC using USB C type data cable provided along with HTD 200 series and Download the datas and analyze with the help of SANSEL-SOFT-01. For more details about data download and analyze refer SANSEL-SOFT-01 instruction manual.

SD card info

Total files: 20

Total files (GB): 14.829

Free space (GB): 14.828

Used space (GB): 0.001

Last file name:
25_01_2024_08_51_38.dat

BACK

HOME

7.3.5. Date & Time Setting menu

To Configure the Date & time for HTD 200 series by click on represent parameters below.

Date and time

HH

MM

SS

07

44

14

DD

MM

YY

08

05

2023

HH – hours

MM – Minutes

SS – Seconds

DD – Day

MM – Month

YY – Year

(Note : for year only last 2 digit is enough to enter.)

8. CONTACT US



SANSAL INSTRUMENTS AND CONTROLS
SANSAL CALIBRATION LABORATORIES LLP

ISO/IEC 17025 Accredited Calibration Laboratory by NABL CC - 2879
(Thermal, Mechanical, Electro-Technical, Dimension Parameters)



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