



Abbeon Instruments

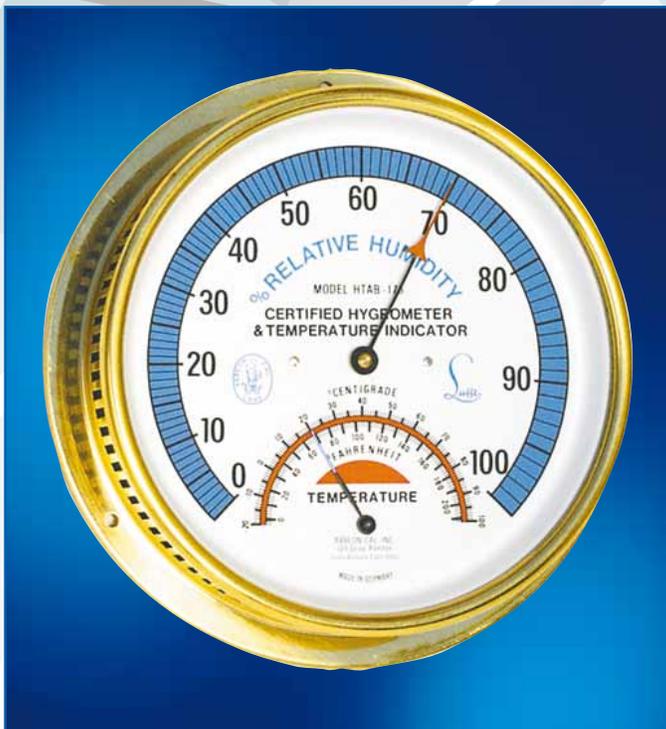
Precision Climate Monitoring Instruments since 1946



XP200 KIT



OPUS20



HTAB176



XC250

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Abbeon's Certified Humidity/Temperature Instruments

HTAB-176 Humidity and Temperature

The Abbeon Certified Hygrometer Model HTAB-176 is certified to be accurate within $\pm 3\%$ RH + 1 scale division. The dial indicates the complete range of 0 to 100% relative humidity. Each instrument has been tested at three different positions of the dial at temperatures ranging from 32° to 230°F. The calibration and certification are done under ISO-9001 control. The bi-metallic thermometer on the model HTAB-176 is accurate to $\pm 1\%$ (0 - 40°C) of scale with a range of -20 to 100° Centigrade and 0 to 210° Fahrenheit. Graduations are $\pm 1^\circ + 1$ scale graduation for Centigrade, 2° Fahrenheit and 1% RH. This is the only humidity indicator that we know of that has a 1-year guarantee and a 5-year warranty. Some of our humidity indicators working on the same principle as this instrument have been in use for over 20 years and are giving satisfactory service day after day, month after month, and year after year. Both the humidity and temperature are direct read without any calculations whatsoever. Solid 6-inch overall brass case drilled for wall mounting. Shipping weight: 3 pounds. Color differentiated 5-inch dial with black letters and numbers and red pointer.

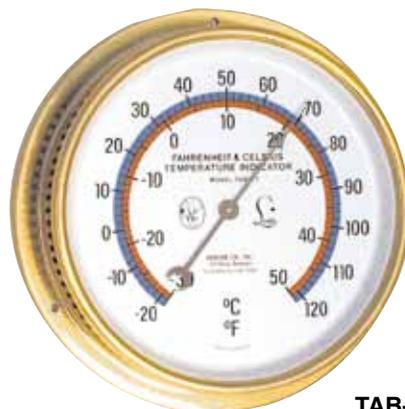


HTAB-176

| | |
|----------|---------------------------|
| HTAB-176 | Hygrometer/Thermometer |
| | Test certificate included |
| NIST | NIST Certification |

TAB-77 Temperature

The TAB-77 has an easy-to-read 5-inch dial that indicates the temperature in a range of -20 to 120° Fahrenheit or -30 to 50° Celsius. The pointer actuated by a bi-metallic strip, reads with an accuracy of $\pm 1\%C$ (0 - 40°C) + 1 scale graduation. Comes with a one-year guarantee and five-year warranty. Color differentiated 5-inch dial, 6-inch overall solid brass case, shipping weight: 3 pounds.



TAB-77

| | |
|--------|--------------------|
| TAB-77 | Thermometer |
| NIST | NIST Certification |

The Hygrometers of Models HTAB-169 and AB-167 are certified to be accurate within $\pm 3\%$ RH + 1 scale division. The dial indicates the complete range of 0 to 100% relative humidity. Each instrument has been tested at three different positions of the dial at temperatures ranging from 32° to 230°F. The calibration and certification are done under ISO-9001 control. **Plastic lens available upon request.**



HTAB-169

HTAB-169 Humidity and Temperature

| | |
|---------------|--|
| Case: | Solid gleaming brass, drilled for wall mounting |
| Dial | Black with white numbers and letters |
| Dimensions | 6" overall, 5" dial |
| Range | 0 to 100% RH -10 to 190°F Accuracy $\pm 3\%$ RH + 1 scale division $\pm 2^\circ F$ |
| Divisions | 1% RH / 2°F gradations |
| Certification | Manufactured and tested under ISO-9001 Test certification included |
| Model No. | |
| HTAB-169 | Hygrometer/Thermometer |
| NIST | NIST Certification |



AB-167

AB-167 Humidity

| | |
|---------------|---|
| Case | Solid gleaming brass, drilled for wall mounting |
| Dial | Black with white numbers and letters |
| Dimensions | 6" overall, 5" dial |
| Range | 0 to 100% RH |
| Accuracy | $\pm 3\%$ RH + 1 scale division |
| Divisions | 1% RH gradations |
| Certification | Manufactured and tested under ISO-9001. Test Cert included. |
| Model No. | |
| AB-167 | Hygrometer |
| NIST | NIST Certification |

Humidity/Temperature Analog Dial Instruments

5091-00 Humidity and Temperature

| | |
|-------------------|--|
| Case/Cover | Chromed brass housing, Mineral glass cover |
| Dimensions | 6" overall |
| Range | 30 to 100% RH |
| Accuracy | ±3% RH + 1 scale division |
| Divisions | 1% RH gradations |
| Model No. | |
| 5091-00 | Hygrometer |
| NIST | NIST Certification |



5091-00

5064.34 Humidity and Temperature

| | |
|-------------------|---|
| Case: | Black aluminum with flange for mounting and chrome bezel |
| Size: | 6" overall, 5" dial |
| Range: | 0 to 100% RH 10 to 170°F -12 to 75°C |
| Divisions: | 3% RH + 1 scale division / 5°F / 2°C Test certification included |
| Model No. | |
| 5064.34 | Hygrometer/ Thermometer |
| NIST | NIST Certification |



5064.34

5063.33 Humidity and Temperature

| | |
|-------------------|---|
| Case: | Stainless steel with chrome bezel (keyhole in back for hanging). |
| Size: | 5 " overall, 5" dial |
| Range: | 0 to 100% RH 10 to 170°F -12 to 75°C |
| Divisions: | 3% RH + 1 scale division / 5°F / 2°C Test certification included |
| Model No. | |
| 5063.33 | Hygrometer/Thermometer |
| NIST | NIST Certification |



5063.33

5033.32 Humidity and Temperature

| | |
|-------------------|---|
| Case | Gleaming brass with flange for mounting |
| Size | 6" overall, 5" dial |
| Ranges | 0 to 100% RH 10 to 170° F -12 to 75° C |
| Resolution | 3% RH + 1 scale division. Temp: ±1°C (0-40°C) + 1 scale graduation. 5°F / 2°C Test certificate included |
| Model No. | |
| 5033.32 | Thermometer/Hygrometer |
| NIST | NIST Certification |



5033.32

Humidity/ Temperature Analog Dial Instruments

11701 Thermometer (°F and °C)

Celsius bimetal thermometer.

- **Range:** - 35° to + 55° C, -31° to 131° F
- **Accuracy:** ± 2° C
- **Graduation:** ± 1° C (0 - 40°C) + 1 scale graduation

Stainless steel case diameter: 4" (102 mm)



11701

11101 Hygrometer (Humidity - Hair)

Outdoor Measurements and High Humidity

Hair hygrometers are specially used for outdoor measurements (in shaded or protected areas) or in places where it is very humid. The specially treated human hair of the Hair-hygrometer 11101 is temperature-insensitive (temperature range -35 °C to +65 °C) and reacts quickly to any change of humidity. In low humidity environments, real hair hygrometers will require some maintenance.

- **Range:** 0 to 100 % relative humidity
 - **Accuracy:** ± 3 % RH +1 scale div (30 .. 95%)
 - **Graduation:** RH 1 %
- In temperatures up to +80°C (176°F) only high relative humidity will be indicated. In medium to high relative humidity the accuracy of our hygrometers is ±3%. In low humidity it is ±5% after regeneration.

Stainless steel case diameter: 4" (102 mm)

Unit weight: 12oz (340g)



11101

12201 Hygrometer (Humidity - Synthetic Fiber)

Indoor Measurements and Low Humidity

For indoor measurements and in low humidity synthetic hygrometers are preferable. The specially treated fibers of the synthetic hygrometer 12201 are insensitive to temperature (temperature range 0 to +70 °C) and respond quickly to changes in humidity.

- **Range:** 0 to 100 % relative humidity
- **Accuracy:** ± 3 % RH +1 scale div (30 .. 95%)
- **Graduation:** RH 1 %

Stainless steel case diameter: 4" (102 mm)

Unit weight: 12oz (340g)



12201

15-01 Barometer

4" Barometer with stainless steel housing

Displays the metric units (mbar) on the inner scale and imperial units (inHg) on the outer scale. The barometer features a bezel made of stainless steel, with a mineral glass cover.

- **Barometer range:** 960 to 1060 hPa
- **Accuracy:** ± 0.08 inHg
- **Scale division:** 1 hPa | 1 mmHg



15-01

XC200 Meter (Air Temp/Humidity/Dew Point)



The powerful and compact handheld device with state-of-the-art and robust design. Excellent accuracy. The high-resolution color screen displays rel. humidity, temperature and dew point. Excellent readability. The calibration function (offset correction) guarantees the long-term use without compromising the accuracy.

Hand-held Measuring Device XC200 - Model No. 5700.00

Excellent accuracy of temperature and relative humidity. Display of calculations and statistical functions. Adjustment of local pressure and local height possible. Calibration function and offset correction. Including a calibration certificate. USB interface with SmartGraph3 software.

| | | |
|-----------------------------|---------------------------|---|
| Technical data | Dimensions | 6 ¹¹ / ₁₆ " x 2 ²³ / ₆₄ " x 1 ³ / ₈ " (170x60x35mm). Weight: 8.89 oz (250g) |
| Temperature Sensor | Principle | NTC. Resolution: 0.1 °C |
| | Measurement range | -4 ° - 122 °F (-20 ... +50 °C) |
| | Accuracy | ±0.2 °C (0...40 °C) otherwise ±0.4 °C |
| Humidity Sensor | Principle | Capacitive. Measurement range: 0 - 100%RH |
| | Accuracy | 2%RH. Resolution: 0.1%RH |
| | Calculations | Dew point temperature °C or °F. Absolute humidity g/m ³ Mixed ratio g/kg or gr/lb |
| | Functions | Statistical calculations MAX, MIN, HOLD, AVG, ACT, Temperature correction and humidity correction factors (offset) Power saving functions |
| | Storage conditions | Permitted ambient temp. -4 ° - 140 °F (-20 ... +60 °C) |
| Operating conditions | Permitted rel. humidity | <90%r.h. non-condensing |
| | Permitted altitude | 4,000m (above sea level) |
| | Power consumption | 5.5V ± 10% DC, max. 200mA |
| Power supply | Active power consumption | Approx. 70mA. Passive Approx. 40µA |
| | Battery life | Approx. 24h (2.6Ah battery capacity) |
| Warranty | | 12 months |

XC250 Meter (Air Temp/Humidity/Dew Point/Surface Temp)



The powerful and compact handheld device with state-of-the-art and robust design. Excellent accuracy. The high-resolution color screen displays rel. humidity, temperature and dew point. Excellent readability. The calibration function (offset correction) guarantees the long-term use without compromising the accuracy.

Special features: Contact-free temperature measurement

Hand-held Measuring Device XC250 - Model No. 5725.00

Excellent accuracy of temperature and relative humidity. Contact-free temperature measurement. Display of calculations and statistical functions. Adjustment of local pressure and local height possible. Calibration function and offset correction. Including a calibration certificate. USB interface with SmartGraph3 software.

| | | |
|--------------------------------|-------------------------------|---|
| Technical data | Dimensions | 6 ¹¹ / ₁₆ " x 2 ²³ / ₆₄ " x 1 ³ / ₈ " (170x60x35mm) |
| | Weight | approx. 8.8oz. (250g) |
| Temperature sensor | Principle | NTC. Measurement range -4 ° - 122 °F (-20 ... +50 °C) |
| | Accuracy | ±0.2 °C (0...40 °C) otherwise ±0.4 °C. Resolution 0.1 °C |
| Surface Temperature | Principle | Thermopile. Measurement range: -70 - 380 °C |
| | Unit | °C. Accuracy ±0.5 °C (0 - 50 °C) otherwise ±4 °C. Resolution 0.1 |
| Humidity Sensor Display | Principle | Capacitive. Measurement range: 0 - 100%RH |
| | Accuracy | ±2% RH. Resolution 0.1% RH. |
| | Calculations | Dew point temperature °C or °F. Absolute humidity g/m ³ . Mixed ratio g/kg or gr/lb |
| | Functions | Statistical calculations MAX, MIN, HOLD, AVG, ACT. Temperature correction and humidity correction factors (offset) |
| Storage conditions | Permitted ambient temperature | -4 ° - 140 °F (-20 ... +60 °C) |
| | Permitted rel. humidity | <95%RH non-condensing |
| Operating conditions | Permitted ambient temperature | -4 ° - 122 °F (-20 ... +50 °C) |
| | Permitted rel. humidity | <90%RH non-condensing |
| Power supply | Power consumption | 5.5V ± 10% DC, max 200mA. Active consumption: Approx. 70mA |
| | Passive consumption | Approx. 40µA |
| | Battery life | Approx. 24h (2.6Ah battery capacity) |
| Warranty | | 12 months |

Hand held measuring device XP100 for temperature



Model 5810-00K. XP100 meter with 3120.52 Plunge Sensor, 2m cable, batteries and case.



High-precision hand-held device for PT100 temperature sensors. Suitable for measuring tasks requiring a high degree of precision. Mini USB port with software and online data collection. 25 languages available. Accurate to $\pm 0.05^\circ\text{C}$ across the full measuring range. Solely for use with PT100 sensors. Data memory & software.

Hand-held Measuring Device XP100

Very exact temperature measuring device ($\pm 0.05^\circ\text{C}$). Ideal as a reference device and for comparison measurements in service or as part of ISO9000 tasks. We recommend a DAkkS calibration certificate for traceability to international standards.

| | | |
|-----------------------------|------------------------------------|---|
| Technical data | Dimensions | 6 ¹¹ / ₁₆ " x 2 ⁷ / ₁₆ " x 1 ¹¹ / ₃₂ " (170x62x34 mm) |
| | Weight | approx. 7 ¹ / ₄ oz. (205g) |
| Storage conditions | Permitted ambient temperature | -4° - 140°F (-20...+60°C) |
| | Permitted rel. humidity | <90%r.h. non-condensing |
| Operating conditions | Permitted rel. humidity | <90%r.h. (20g/m ³) non-condensing |
| | Permitted altitude above sea level | 4000m |
| Power supply | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V |
| | Active power consumption | Approx. 400mW |
| | Battery life passive | Approx. 1 year |
| | Battery life active | Min. 24 hours |
| | Sensor power supply | 5.5V \pm 10% DC, max. 200mA |
| Data storage | Integrated data storage | Up to 200 data/approx. 1 Mio measured values |
| Interface | USB | Cable and SmartGraph3 software included in delivery |
| Representation | Definition of measured values | 2 decimal places |
| Display | Control | Touch screen, capacitive |
| | Technology | TFT, resolution 240x320, 65k colors, very good contrast due to Piezoresistive technology |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant glass |

Model No.

| | |
|-------------------|---|
| 5810.00 | Hand-held Measuring Device XP100 |
| 5810-00K | XP100, 3120.52 Plunge Sensor, 2m Cable and Case |
| 8120.KAB2 | Connecting cable for external sensors, 2m |
| 8120.KAB10 | Connecting cable for external sensors, 10m |

Compatible sensors for XP100

| | | Page |
|--------------------|-------------------------------------|------|
| Temperature | PT100 surface probe | 10 |
| | PT100 probe | 10 |
| | PT100 probe/ immersion probe (long) | 10 |
| | PT100 food probe, stainless steel | 10 |
| | Immersion probe 300x4mm | 10 |

SmartGraph3 Software

All of our meters come with the SmartGraph3 software — Web-based visualization and data collection software.



FEATURES:

- Storage of data in database
- Flexible export and import functions for integration of external/third party software/data (CSV and XML)

Hand held device XP200 for temperature, humidity



Model 5820-00K. XP200 meter with 9130.540 Temp/RH Sensor, 2m cable, batteries and case.

X-pert range for humidity and temperature measurements in climate and environmental technology. For use with a variety of SDI Air temp & RH sensors. Data memory, software and manufacturer Calibration Certificate included.



Hand-held Measuring Device XP200

Temperature and humidity measuring device compatible with various intelligent sensors.

| | | |
|--|---|---|
| Technical data | Dimensions | 6 ¹¹ / ₁₆ " x 2 ⁷ / ₁₆ " x 1 ¹¹ / ₃₂ " (170x62x34 mm) |
| | Weight | approx. 7 ¹ / ₄ oz. (205g) |
| Storage conditions | Permitted ambient temperature | -4 ° - 140 °F (-20... +60 °C) |
| | Permitted rel. humidity | <90%r.h. non-condensing |
| Operating conditions | Permitted rel. humidity | <90%r.h. (20g/m ³) non-condensing |
| | Permitted altitude above sea level | 4000m |
| Power supply | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V |
| | Active power consumption | Approx. 400mW |
| | Battery life passive | Approx. 1 year |
| | Battery life active | Min. 24 hours |
| | Sensor power supply | 5.5V ± 10% DC, max. 200mA |
| Data storage | Integrated data storage | Up to 200 data/ approx. 1 mio. values |
| Interface | USB | Cable and SmartGraph3 software included |
| Representation | Definition of measured values | 2 decimal places |
| Display | Control | Touch screen, capacitive |
| | Technology | TFT, resolution 240x320, 65k colors, very good contrast due to Piezoresistive technology |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant glass |
| Calculated measurement categories for external temperature/humidity sensors | Mathematical: MIN/MAX/AVG/HOLD | |
| | Temperature (°C/°F) | |
| | Rel. humidity (%RH) | |
| | Rel. humidity of ice (%RH) | |
| | Water vapor density (absolute humidity) g/m ³ | |
| | Dew point temperature °C/°F | |
| | Frost point temperature °C/°F | |
| | Mixing ratio at saturation (100%) g/kg | |
| | Volume fraction of water vapor/mass fraction of water vapor (%) | |
| | Wet-bulb temperature C°/F° | |
| | Ice-bulb temperature C°/F° | |
| | Specific Enthalpy (mass of air) kJ/kg | |
| | Saturation vapor pressure above ice/water (hPa) | |
| | Water vapor particle pressure (hPa) | |
| | Air density kg/m ³ | |

| | |
|-------------------|--|
| Model No. | |
| 5820.00 | Hand-held Measuring Device XP200 |
| 5820.00K | XP200, 9130.540 Sensor, 2m Cable, Batteries & Case |
| 8120.KAB2 | Connecting cable for external sensors, 2m |
| 8120.KAB10 | Connecting cable for external sensors, 10m |

| | | |
|-------------------------------------|------------------------|------------------------|
| Compatible sensors for XP200 | | Page |
| Temperature/humidity | digital TFF20 | left side on this page |
| | Allround SDI | 11 |
| | 4mm diameter SDI | 11 |
| | High temperature SDI | 11 |
| CO₂ | Dual wavelength (NDIR) | left side of this page |

Additional Sensors for use with XP200, XP201 and XA1000 without cables.

Please See page 11 for sensors that require connection cables.



8120.TFF

External temp/rh sensor probe - plastic housing

| | |
|--------------------------------|---|
| Air temperature Range | -40 - 80° C |
| Accuracy | ±0.1° C at 20° C, ±0.2° C at 40° C, otherwise ±0.5° C |
| RH range | 0..100% |
| Accuracy | ±2% r.H. (0 - 90% r.H.), ±3% r.H. (90 - 100% r.H.) |
| Absolute humidity range | 0 - 300 g/m ³ |
| Dew point temp range | -40 - 80° C |
| Specific enthalpy range | 0 - 550 g/kg |
| Model | |
| 8120.TFF | External temp/rh sensor probe |



7120.CO2

| | |
|---|----------|
| XP200, XP201, XA1000 CO₂ Sensor | 7120.CO2 |
| Dual Wavelength, NDIR technology | |
| Measuring Range: 0...5000 ppm | |
| Unit: ppm | |
| Accuracy: at 25° C and 1013mbar: < ±50ppm +3% of measuring value (for avg output) | |
| Dual wavelength (NDIR) | |
| Operating Humidity: 0...100% RH (non-condensing) | |
| Operating Temp: -40...60° C | |

Hand held device XP400 for measuring airflow



Model 5840-00K. XP400 meter with 6120.52 Air Flow Sensor, 2m cable, batteries and case.



Ideal for volume measurements, air intake and air discharge measurements in climate measuring technology. Data memory, software and Manufacturer Calibration Certificate included.



Hand-held Measuring Device XP400

The X-pert for precise airflow measurements on various measurement ranges.

| | | |
|---|--|---|
| Technical data | Dimensions | 6 ¹¹ / ₁₆ " x 2 ⁷ / ₁₆ " x 1 ¹¹ / ₃₂ " (170x62x34 mm) |
| | Weight | approx. 7¼oz. (205g) |
| Storage conditions | Permitted ambient temperature | -4° - 140°F (-20 ... +60 °C) |
| | Permitted rel. humidity | <90% r.h. non-condensing |
| Operating conditions | Permitted rel. humidity | <90% r.h. (20g/m³) non-condensing |
| | Permitted altitude above sea level | 4,000m |
| Power supply | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V |
| | Active power consumption | Approx. 400mW |
| | Battery life passive | Approx. 1 year |
| | Battery life active | Min. 24 hours |
| | Sensor power supply | 5.5V ± 10% DC, max. 200mA |
| Data storage | Integrated data storage | Up to 200 gauges taking approx. 1 mill. values |
| Interface | USB | Cable and SmartGraph3 software included |
| Representation | Definition of measured values | 2 decimal places |
| Display | Control | Touch screen, capacitive |
| | Technology | TFT, resolution 240x320, 65k colors, very good contrast due to Piezoresistive technology |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant |
| Calculated measurement categories for external airflow sensors | Operating airflow volume - various units: | m³/s) (m³/h) (l/min) |
| | Standard airflow volume: DIN 1343 (°C, 1013.25hPa), ISO 2533 (15°C, 1013.25hPa), DIN 1945 (20°C, 1013.25hPa) | |
| | Various units: | (m³/s), (m³/h), l/min) |
| Model No. | | |
| 5840.00 | Hand-held Measuring Device XP400 | |
| 5840.00K | XP400, 6120.52 Sensor, 2m Cable, Batteries & Case | |
| 8120.KAB2 | Connecting cable for external sensors, 2m | |
| 8120.KAB10 | Connecting cable for external sensors, 10m | |

Allround SDI Temperature-/Humidity Sensor - Model No. 9130.54

Low Cost Combined Temperature/Humidity Sensor.

| | | |
|--------------------------|-----------------|-------------------------------------|
| Technical data | Dimensions | Length 74 mm, Ø 12 mm |
| | Measuring range | 0 ... 100% r.h. |
| Relative Humidity | Accuracy | ±2% (0 - 90%), ±3% (90 - 100%) r.h. |
| | Principle | NTC |
| Temperature | Measuring range | -20 - 70°C |
| | Accuracy | ±0.2°C at 20°C |
| | Compatibility | XA1000, XP200 |

Compatible sensors for XP400

| Flow/ Temperature | | Page |
|-------------------|--|------|
| SDI (0 - 2m/s) | | 11 |
| SDI (0 - 20m/s) | | 11 |

Premium Segment XA1000



Model 5900-00K, XA1000 meter with 9130.540 Temp/RH Sensor, 6120.52 Air Flow Sensor, 2m cable, batteries and case.



Measures and Records Air Temp, Humidity, Pressure and Airflow

The most precise and flexible all-around instrument for professional applications— easy to handle and robust. **Includes integrated air pressure sensor and high capacity data recorder.** Allows various high precision air temp & RH sensors to be connected with automatic recognition, saves measuring campaigns, allows all climate data to be calculated and archived on a computer for further evaluation by SmartGraph3 software. Highly precise measurements of temperature and relative humidity. Comes with equipment test certificate and can be recalibrated.

| Hand-held Measuring Device XA1000 "All-in-ONE" | | | |
|---|---|---|--|
| Technical data | Dimensions | 6 ¹ / ₁₆ " x 2 ⁷ / ₁₆ " x 1 ¹ / ₃₂ " (170x62x34 mm) | |
| | Weight | approx. 7 ¹ / ₄ oz. (205g) | |
| Storage conditions | Permitted ambient temperature | -4° - 140 °F (-20 ... +60 °C) | |
| | Permitted rel. humidity | <90%r.h. non-condensing | |
| Operating conditions | Permitted rel. humidity | <90%r.h. (20g/m ³) non-condensing | |
| | Permitted altitude above sea level | 4000m | |
| Power supply | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V | |
| | Active power consumption | Approx. 400mW | |
| | Battery life passive | Approx. 1 year | |
| | Battery life active | Min. 24 hours | |
| | Sensor power supply | 5.5V ± 10% DC, max. 200mA | |
| Data storage | Integrated data storage | Up to 200 gauges taking approx. 1 mill. values | |
| Interface | USB | Cable and SmartGraph3 software included | |
| Representation | Definition of measured values | 2 decimal places | |
| Display | Control | Touch screen, capacitive | |
| | Technology | TFT, resolution 240x320, 65k colors, very good contrast due to Piezoresistive technology | |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant | |
| Integrated air pressure sensor | Measuring range (full accuracy) | 800 - 1100mbar | |
| | Accuracy at 25 °C, 1013.25mbar | 0.5mbar | |
| | Long-term stability | typ. - 1mbar/year | |
| | Measurement resolution | 0.024mbar | |
| | Measuring principle | Piezoresistive | |
| Calculated measurement categories for external temperature/humidity sensors | Mathematical: | MIN/MAX/AVG/HOLD | |
| | Temperature (°C/°F) | | |
| | Rel. humidity (%RH) | | |
| | Rel. humidity of ice (%RH) | | |
| | Water vapor density (absolute humidity) g/m ³ | | |
| | Dew point temperature °C/°F | | |
| | Frost point temperature °C/°F | | |
| | Mixing ratio at saturation (100%) g/kg | | |
| | Volume fraction of water vapor/mass fraction of water vapor (%) | | |
| | Wet-bulb temperature °C/°F | | |
| | Ice-bulb temperature °C/°F | | |
| | Specific Enthalpy (mass of air) kJ/kg | | |
| | Saturation vapor pressure above ice/water (hPa) | | |
| | Vapor particle pressure (hPa) | | |
| | Air density kg/m ³ | | |
| | Calculated measurement categories for external airflow sensors | Operating airflow volume - various units: m ³ /s) (m ³ /h) (l/min) | |
| | | Standard airflow volume: DIN 1343 (°C, 1013.25hPa), ISO 2533 (15°C, 1013.25hPa), DIN 1945 (20°C, 1013.25hPa) | |
| Various units: (m ³ /s), (m ³ /h), l/min) | | | |
| Sensor/probe: all SDI/digital sensors (temperature, humidity, CO ₂ , SDI airflow, air pressure integrated) | | | |
| Model No. | | | |
| 5900.00 | Hand-held Measuring Device XA1000 "All-in-ONE" | | |
| 5900.00K | XA1000, 9130.54 Sensor, 6120.52 Sensor, 2m Cable, Batteries & Case | | |
| 8120.KAB2 | Connecting cable for external sensors, 2m | | |
| 8120.KAB10 | Connecting cable for external sensors, 10m | | |

| Compatible sensors for XA1000 | | Page |
|-------------------------------|------------------------|------|
| Temperature/humidity | digital TFF20 | 7 |
| | Allround SDI | 11 |
| | 4mm diameter SDI | 11 |
| | High temperature SDI | 11 |
| Current/temperature | SDI (0 - 2m/s) | 11 |
| | SDI (0 - 20m/s) | 11 |
| CO₂ | Dual wavelength (NDIR) | 7 |

PT100 Temperature Sensors

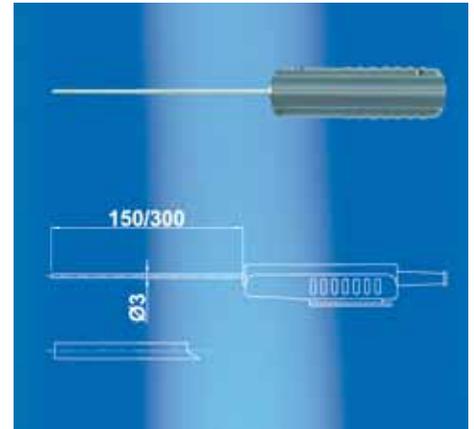
XP100

for use with XP100

| PT100 surface sensor | | Model No. |
|--|---|-----------|
| At the head of the surface temperature probe is a spring-loaded sensor which takes the temperature. Can be used on flat, matte and metallic surfaces. | | 3120.60 |
| Measuring range | -58 - 752°F (-50... 400°C) | |
| Response time | Approx. 30s | |
| Cable length | Approx. 3'3" (1 m), PUR-lead and handle to be used up to 176°F (80°C) | |
| Dimensions | approx 6" x 1/8" (155x4.5 mm) | |
| Accuracy | ±0.3 + 0.005 x t | |
| Technique | Four terminal sensing | |
| Compatibility | XP100 | |
| Model | | |
| 3120.60 | PT100 surface sensor | |



| PT100 Plunge Sensor, Short | | Model No. |
|--|---|-----------|
| The immersion probe is suitable for measurements in gaseous media, liquids and granular material, such as sand. | | 3120.52 |
| Sensor type | PT100 Cl. A in stainless steel protective tube | |
| Measuring range | -40 - 752°F (-40... 400°C) | |
| Response time | 10s | |
| Cable length | Approx. 3'3" (1 m), PUR-lead and handle to be used up to 176°F (80°C) | |
| Dimensions | approx 6" x 1/8" (150 x 3 mm) | |
| Compatibility | XP100 | |
| PT100 Plunge Sensor, Long | | 3120.53 |
| Dimensions | approx 11 4/5" x 1/8" (300 x 3 mm) | |
| Accuracy | ±0.15 +0.002 x t | |
| Technique | Four wire sensing | |
| Compatibility | XP100 | |
| Model | | |
| 3120.52 | PT100 Plunge Sensor, Short | |
| 3120.53 | PT100 Plunge Sensor, Long | |



| PT100 Plunge Sensor, Long | | Model No. |
|--|---|-----------|
| This high-precision immersion probe in stainless steel protective housing can also be used as a reference sensor for calibration and testing systems. | | 3120.54 |
| Measuring range | -40 - 752°F (-40... 400°C) | |
| Response time | 10s | |
| Cable length | Approx. 3'3" (1 m), PUR-lead and handle to be used up to 176°F (80°C) | |
| Dimensions | approx 11 4/5" x 1/8" (300x4 mm) | |
| Accuracy | ±0.03 +0.002 x t | |
| Technique | Four terminal sensing | |
| Compatibility | XP100 | |
| Model | | |
| 3120.54 | PT100 Plunge Sensor, Long (only for 9130.00N) | |



| PT100 Plunge Sensor, Short | | Model No. |
|---|---|-----------|
| Food probe in stainless steel protective casing for precise temperature measurements (PT100 1/10 class B). | | 3120.55 |
| Measuring range | -40 - 752°F (-40... 400 °C) | |
| Response time | 10s | |
| Cable length | Approx. 3'3" (1 m), PUR-lead and handle to be used up to 176°F (80°C) | |
| Dimensions | approx 6" x 1/8" (150x4 mm) | |
| Accuracy | ±0.03 +0.002 x t | |
| Technique | Four terminal sensing | |
| Compatibility | XP100 | |
| Model | | |
| 3120.55 | PT100 Plunge Sensor, Short (only for 9130.00N) | |



| SDI Airflow-/Temperature sensor (0 - 2m/s) | | Model No. |
|--|--|---|
| Combined Flow/Temperature Sensor 0 - 2 m/s. | | 6120.51 |
| Technical data | Dimensions | Length 200mm, Ø 6mm |
| Flow | Measuring range | 0...2m/s |
| | Accuracy | 20°C, 45% RH, 1013 hPa: ±(0.04 m/s + 1% of value) |
| Temperature | Measuring range | -20...70°C |
| | Accuracy | ±0.7°C within the range of 0...50°C and v>0.5 m/s |
| Compatibility | XA1000, XP400 | |
| Model | | |
| 6120.51 | SDI Airflow-/Temperature sensor (0 - 2m/s) | |



| SDI Airflow-/Temperature sensor (0 - 20m/s) | | Model No. |
|---|---|---|
| Combined Flow/Temperature Sensor 0 - 20 m/s. | | 6120.52 |
| Technical data | Dimensions | Length 200mm, Ø 6mm |
| | Measuring range | 0...20m/s |
| | Accuracy | 20°C, 45% RH, 1013 hPa: ±(0.2m/s + 2% of value) |
| Temperature | Measuring range | -20...70°C |
| | Accuracy | ±0.7°C within the range of 0...50°C and v>0.5 m/s |
| Compatibility | XA1000, XP400 | |
| Model | | |
| 6120.52 | SDI Airflow-/Temperature sensor (0 - 20m/s) | |



| SDI Temperature-/Humidity sensor with 4mm diameter | | Model No. |
|---|--|--|
| Compact, slim temperature-/humidity sensor in stainless steel protective tube. With a diameter of only 4mm, the sensor is suitable for applications in measurement areas that are difficult to access. | | 9130.520 |
| Technical data | Dimensions | Length 250mm, Ø 4mm |
| Relative Humidity | Measuring range | 0...100% r.h. |
| | Accuracy | ±2% (0 - 90%), ±3% (90 - 100%) r.h. |
| Temperature | Principle | PT1000 (tolerance class B, DIN EN 60751) |
| | Measuring range | -40 - 100°C |
| | Accuracy | ±0.2°C at 20°C, otherwise ± 0.7°C |
| Compatibility | XA1000, XP200 | |
| Model | | |
| 9130.520 | SDI Temperature-/Humidity sensor with 4mm diameter | |



| SDI Temperature-/Humidity sensor | | Model No. |
|--|----------------------------------|--|
| Combined High Temperature/Humidity Sensor | | 9130.530 |
| Technical data | Dimensions | Length 250mm, Ø 4mm |
| Relative Humidity | Measuring range | 0...100% r.h. |
| | Accuracy | ±2% (0 - 90%), ±3% (90 - 100%) r.h. |
| Temperature | Principle | PT1000 (tolerance class A, DIN EN 60751) |
| | Measuring range | -40 - 180°C |
| | Accuracy | ±0.2°C at 20°C, otherwise ± 0.7°C |
| Compatibility | XA1000, XP200 | |
| Model | | |
| 9130.530 | SDI Temperature-/Humidity sensor | |



| Allround SDI Temperature-/Humidity Sensor | | Model No. |
|---|---|-------------------------------------|
| Low Cost Combined Temperature/Humidity Sensor. | | 9130.540 |
| Technical data | Dimensions | Length 74mm, Ø 12mm |
| Relative Humidity | Measuring range | 0...100% r.h. |
| | Accuracy | ±2% (0 - 90%), ±3% (90 - 100%) r.h. |
| Temperature | Principle | NTC |
| | Measuring range | -20 - 70°C |
| | Accuracy | ±0.2°C at 20°C |
| Compatibility | XA1000, XP200 | |
| Model | | |
| 9130.540 | Allround SDI Temperature-/Humidity Sensor | |



XP101 for Temperature, Wood Case and PT100 Sensor



Highest-precision reference measurement standard meter currently on the market.

Used for industrial temperature calibrations. Suitable as temperature reference in block calibrators, climate chambers or liquid baths.

Mini USB interface with software, online data collection. The most accurate handheld device (0.005°C) for temperature. High quality wooden case and PT100 Sensor included.



A high quality wooden case, PT100 sensor, 2m cable, batteries and DAKKS calibration certificate are included.

| Hand-held measuring device XP101 | | |
|--|--|--|
| Technical data | Dimensions | 170 x 62 x 34 mm |
| | Weight | Approx. 205g |
| Temperature | Measurement range | - 150 ... 450 ° C |
| | Accuracy | 0.005°C at 0.005°C otherwise -40...+200°C 0.02°C |
| | Measuring technique | Four terminal sensing |
| | Reaction time | 10 s |
| Measuring current in normal operation | 1 mA DC with duty cycle of 50% = 0.50 mA, 1.85 measurements/sec. Automatic elimination of thermo voltage | |
| Measuring current "root 2 function" | 1 mA DC with duty cycle of 33% = 0.30 mA, 1.25 measurements/sec. Automatic elimination of thermo voltage | |
| Integrated sensor characteristic curves | DIN EN IEC 60751 / ITS-90 or XP101-mode | |
| Storage conditions | | |
| Permitted ambient temperature | -20...60°C | |
| Permitted rel. humidity | <90% RH non-condensing | |
| Operating conditions | Permitted rel. humidity | <90% RH non-condensing 4000m |
| | Permitted altitude | |
| Power supply | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V |
| | Active power consumption | Approx. 400mW |
| | Battery life passive Battery life active | Approx. 1 year Min. 24 hours |
| | Sensor power supply | 5.5V ± 10% DC, max. 200mA |
| Data storage | Integrated data storage | Up to 200 data/approx. 1 Mio measured values |
| Interface | USB Cable and SmartGraph3 software included in delivery | |
| Resolution | Definition of measured values | 3 decimal places |
| Display | Control | Touch screen, capacitive |
| | Technology | TFT, resolution 240x320, 65k colors, very good contrast, suitable for sunlight |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant |
| Integrated Air Pressure Sensor | Measuring range (full accuracy) | 800...1,100mbar |
| | Accuracy at 25°C, 1013.25mbar | 0.5mbar |
| | Long-term stability | typ. - 1mbar/year |
| | Measurement resolution | 0.024mbar |
| | Measuring principle | Piezoresistive |
| Accessories | 10m Connecting Cable, 8120.KAB10 | |
| | Power Supply Adapter, 8120.NT | |
| Model: 5810.10 | XP101, Case, Cable, Batteries, PT100 Sensor | |
| Precision PT100 (immersion) probe, long (included) | | |
| Precision PT100, ceramic sensor, bifilar coiled, mineral insulated version | | 3120.700 |
| Technical data | Dimensions, probe | 300 x 4 mm |
| | Dimensions, housing | 119 x 27/35 mm |
| | Weight | 120g |
| | Protective housing | IP40 |
| | Max. permitted operating temperature | PUR cable and handle can be used up to 80°C |

XP201 for Temperature and Humidity, Case, Sensor



Highest-precision reference measurement standard meter.

The XP-201 is the perfect choice when highest-precision measurements are needed for industrial temperature and humidity calibrations. It is suitable as a humidity reference in climate chambers (0.5%) or humidity generators. A Mini USB interface with software and online data collection are included.

The XP201 offers excellent stability, very good repeatable measurements, absolute hysteresis latitude as well as no drift of the measurement value at very high humidity levels. For traceability to national standards a DAkKS calibration certificate is attached.



A high quality wooden case, resistive-electrolytic sensor, 2m cable, batteries and DAkKS calibration certificate are included.

| Hand-held measuring device XP201 | | |
|---------------------------------------|--|--|
| Model No. 5810.20 | XP201, Case, Cable, Batteries, 8130.TFF Sensor | |
| Technical data | Dimensions | 170 x 62 x 34 mm |
| | Weight | Approx. 205g |
| Temperature | Measurement range | - 20 ... 80 ° C |
| | Accuracy | 0.15°C between 0...+70°C, otherwise 0.25°C |
| Relative Humidity | Principle: NTC | |
| | Principle: Resistive-electrolytic | |
| Integrated air pressure sensor | Measuring range: 0 ... 100 % | |
| | Unit % | |
| | Accuracy: 15...30°C, ±0.5% RH | |
| | Measuring range (full accuracy): 800...1,100mbar | |
| | Accuracy at 25°C, 1013.25mbar: 0.5mbar | |
| Operating Conditions | Long-term stability: typ. - 1mbar/year | |
| | Measurement resolution: 0.024mbar | |
| | Measuring principle: Piezoresistive | |
| Housing Material Sensor | Permitted rel. humidity: <90% RH (20g/m ₃) non-condensing | |
| Data Storage | Permitted altitude above sea level: 4000m | |
| Power Supply | PVDF black | |
| | Integrated data storage up to 200 gauges taking approx. 1 mill. values | |
| Interface | Power supply | 4 Alkaline LR6 AA 1.5V / USB 5V |
| | Active power consumption | Approx. 400mW |
| Resolution | Battery life passive | Approx. 1 year |
| | Battery life active | Min. 24 hours |
| Display | Sensor power supply | 5.5V ± 10% DC, max. 200mA |
| | USB Cable and SmartGraph3 software included in delivery | |
| Accessories: | Definition of measured values | 2 decimal places |
| | Control | Touch screen, capacitive |
| Display | Technology | TFT, resolution 240x320, 65k colors, very good contrast, suitable for sunlight |
| | Surface, toughened glass | Degree of hardness: 7, scratch-resistant |
| Accessories: | CO₂ Dual wavelength (NDIR) | See page 7 |
| | Extension/Connect cable for digital sensor, 10m | Item: 8120.KAB10 |



High-precision Temperature/Humidity Sensor (8130.TFF).

OPUS 20 Dataloggers THI/THIP/TCO

Temperature / Relative Humidity / Air Pressure / CO² Measurement

For climate monitoring and recording in buildings, air conditioning units, laboratory, cleanroom, storerooms and museums, alarm indication (current or historical since the last data transmission), conversion from % RH to absolute humidity or dewpoint with SmartGraph professional software.

- Economically priced
- Comes with SmartGraph 3 software, connecting cable and manual— everything needed to record and download
- NIST Certification
- USB, RS232 options on each model

THI



Temperature & Rel. Humidity

Finally available: Lufft's precise weather station for interior applications— an essential data collector for all calibration laboratories.

THIP



Temperature, Rel. Humidity & Air Pressure

Easy to read display provides high-precision temperature, humidity and air pressure readings at a glance and recorded for historical review.

TCO



Temperature, Rel. Humidity, & CO²

Regulation on CO² concentration was established in order to evaluate IAQ (Indoor Air Quality). A limit of 1,000 ppm applies in U.S. school rooms; workplaces' occupational exposure limit is 5,000 ppm.

| Measurement Categories | THI 8120.00 | THIP 8120.10 | TCO 8120.20 |
|-------------------------------------|----------------|-----------------|----------------|
| Temperature | | | |
| Air temperature | ■ | ■ | ■ |
| Humidity | | | |
| Relative Humidity | ■ | ■ | ■ |
| Absolute humidity | ■ | ■ | ■ |
| Dew point temperature | ■ | | ■ |
| Air pressure | | | |
| Barometric air pressure | | ■ | |
| Relative air pressure | | ■ | |
| CO² Concentration | | | |
| CO ² Concentration | | | ■ |

| Functions | THI 8120.00 | THIP 8120.10 | TCO 8120.20 |
|--|----------------|-----------------|----------------|
| Power supply battery | ■ | ■ | ■ |
| Power supply USB | ■ | ■ | ■ |
| LC-Display | ■ | ■ | ■ |
| One-button operation | ■ | ■ | ■ |
| 1-point calibration by user/operator | ■ | ■ | ■ |
| C/F switchable | ■ | ■ | ■ |
| Optical/acoustical alarm | ■ | ■ | ■ |
| Date/time | ■ | ■ | ■ |
| Records Min/Max/Avg. | ■ | ■ | ■ |
| SmartGraph 3 evaluation software | ■ | ■ | ■ |
| Function table software | | | |
| Graphical representation | ■ | ■ | ■ |
| Numerical data (measured value display) | ■ | ■ | ■ |
| Print function | ■ | ■ | ■ |
| Export function for measured values (e.g. Excel) | ■ | ■ | ■ |
| Gathered printouts of all measurement sites | ■ | ■ | ■ |
| User administration | ■ | ■ | ■ |
| Administration of up to 255 measuring devices | ■ | ■ | ■ |

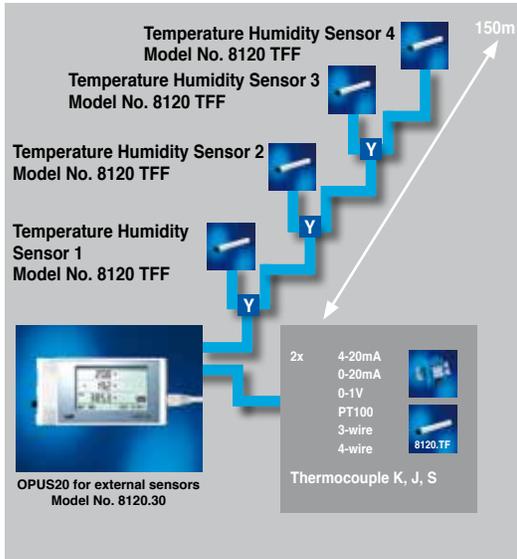
| Technical Data | |
|-----------------------------|--|
| Dimensions | 6½" x 3" x 1¼" (166mm x 78mm x 32mm) |
| Measuring interval | 10/30s, 1/10/12/15/30min, 1/3/6/12/24h |
| Construction | Plastic housing |
| Operating time with battery | > 1 year |
| Data storage | 16 MB, 3,200,000 measured values |
| LC-Display | 3½" x 2½" (90 x 64mm) |
| Weight | 8 oz. (250g) |
| Included in delivery | PC-Windows™- Software SmartGraph 3 for graphic and numerical representation of measured values / instruction manual/ data cable/ battery |
| Interface | USB |
| Storage rate | 1/10/12/15/30min, 1/3/6/12/24h |
| Power supply | 4 x LRG AA Mignon, USB |
| Operating temperature | -4 to 144°F (-20-50°C) |
| Max. rel. humidity | 0-95% RH, < 20g/m3 (non condensing) |
| Temperature | |
| Principle | NTC |
| Measuring range | -4 to 122°F (-20-50°C) |
| Accuracy | ±0.3°C (0-40°C), otherwise 0.5°C |
| Resolution | 0.1°C |
| Relative humidity | |
| Principle | capacitive |
| Measuring range | 10..95% RH |
| Accuracy | ±2% RH |
| Resolution | 0.5% RH |
| Air Pressure | for 8120.10 THIP |
| Measurement range | 300-1300 hPa abs. |
| Accuracy | 700..1100mbar at 25°C ±0.5 hPa |
| Resolution | 0.1 hPa |
| CO² | for 8120.20 TCO |
| Principle | NDIR |
| Measurement range | 0-5000 ppm |
| Accuracy | ±50 ppm + 3 measured values at 20°C and 1,013 mbar |
| Resolution | 1 ppm |
| Long Term stability | 20 ppm/a |
| Model No. | |
| 8120.00 | OPUS 20 THI temp/ rel. humidity |
| 8120.10 | OPUS 20 THIP temp/ RH/ air pressure |
| 8120.20 | OPUS 20 TCO temp/ RH/ CO ₂ |
| Accessories | |
| 8120.SV1 | 4 x LRG AA Mignon Battery |
| NIST-OPUS | NIST Certification |

POE (power over ethernet) models available.

OPUS20E Datalogger w/ External Temp/Humidity Sensor



OPUS20E Configuration Example



In connection with its LAN capabilities, the OPUS20E is able to realize universal measurement networks in real time. For standard applications the SmartGraph 3 comes into play, and in order to fulfill the 21 CFR 11 guidelines the well established and proven MCPS7 software is available.

| Accessories | |
|-------------|------------------------------|
| 8120.NT-A | Power supply adapter |
| 8120.STY | Y Connector |
| 8120.KAB2 | Cable 2m |
| 8120.KAB10 | Cable 10m |
| 8120.TFF | Temperature/ humidity sensor |

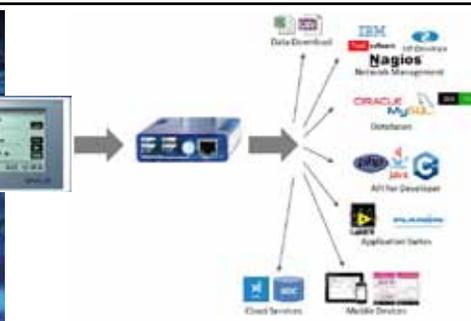
Temperature / Relative Humidity

For climate monitoring and recording in buildings, air conditioning units, laboratory, cleanroom, storerooms and museums, alarm indication (current or historical since the last data transmission). With up to 10 external channels/sensors per OPUS20E, the OPUS20E offers the highest flexibility and is excellent value for money. It allows the connection of up to 4 external temperature and relative humidity sensors, as well as 2 further analog sensors. Intelligent BUS sensors can be integrated via the OPUS20E's RS485 interface (e.g. particle counter).

8120-30K (Kit) includes: OPUS20E Datalogger (8120-30), Wall Power Supply (8120-NT), 10 Meter Cable (8120-KAB10), Temp/RH Sensor (8120-TFF), Case (BMC1203).

| Lufft OPUS20E Kit with External Temp/RH Sensors - Model No. 8120-30K | |
|---|---|
| Lufft OPUS20E Datalogger for External Sensors (Battery Power) - Model No. 8120.30 | |
| Lufft OPUS20E Datalogger PoE (Power over Ethernet) - Model No. 8120.31 | |
| Dimensions | 180mm L, 78mm W, 32mm D |
| Measurement rate | 10/30s, 1/10/12/15/30min, 1/3/6/12/24h |
| Storage rate | 1/10/12/15/30min, 1/3/6/12/24h |
| Construction | plastic housing |
| Operation life (battery) | > 1 Year |
| Data storage | 16 MB, 3,200,000 measured values |
| LC-Display | size 90x64 mm |
| Weight | approx. 250g |
| Included in delivery | PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values / instructions/ data cable/ battery/ WAGO connector / DIN rail bracket |
| Interface | USB, LAN |
| bus interface | RS 485 |
| Power supply | 4 x LR6 AA Mignon, USB, wall power supply |
| Max. operation temperature | -20 - +50°C |
| Input voltage 0-1V | |
| Measurement range | 0 - 1V |
| Accuracy | ± 200uV ± 0.1% of measured value |
| Resolution | < 500uV |
| Current measurement | |
| Measurement range | 2-wires: 4 - 20mA, 3-wires: 0 - 20mA |
| Accuracy | ± 4uA ± 0.1% of measured value |
| Resolution | < 5uA |
| Resistance | approx. 50 Ohm |

| External temp/rh sensor probe - plastic housing - Model No. 8120.TFF | |
|--|--|
| Air temperature Range | -40 - 80°C |
| Accuracy | ±0.1°C at 20°C, ±0.2°C at 40°C, otherwise ±0.5°C |
| RH range | 0..100% |
| Accuracy | ±2% r.H. (0 - 90% r.H.), ±3% r.H. (90 - 100% r.H.) |
| Absolute humidity range | 0 - 300 g/m³ |
| Dew point temp range | -40 - 80°C |
| Specific enthalpy range | 0 - 550 g/kg |



IBOX:

The Lufft "plug-and-play" I-BOX is the door opener for almost every interface. It gives a uniform query to live data from different instruments. The data logger OPUS20 can easily be integrated into corporate networks. An application for controlling alarms is included.

Providing precision climate monitoring technology to businesses for more than 50 years.



TAB77



OPUS20



XP101



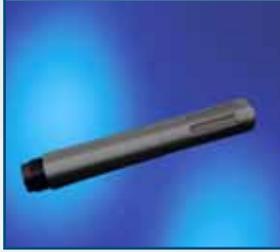
HTAB169



XA1000



XP200 KIT



XP100



XP400



XA1000 KIT

The screenshot shows the Abbeon Instruments website with a navigation menu on the left and a grid of product images. The products include various weather stations, sensors, and data loggers. The website header includes the company name and a search bar.

Visit AbbeonInstruments.com for more information on both our long standing mechanical meters as well as the digital hand-held meters, dataloggers and compact weather stations.