sauermann®

DATA SHEET

AMI 310

Multifunction instrument

Interchangeable modules
1 device = several possible ranges & parameters

PLUG & PLAY system
Wired probes automatically recognized

Large color display

Supplied with calibration certificate

Features

- Hygrometry, temperature, CO_2, CO, air velocity, airflow, pressure, tachometry measurement
  (depending on model & probe)
- Expandable memory with micro-SD card
- 2 inputs for Pt100 temperature from -328 to +1,112 °F (-200 to +600 °C)
- Up to 6 measurements simultaneously

References

Reference	Description		
AMI 310	Portable instrument only		
AMI 310 STD	• Portable instrument • ±40.17 inWg (±10,000 Pa) pressure module	• $^{15}/_{64}$" (6 mm) diameter Pitot tube • 2 x 3' 3" (2 x 1 m) of silicone tube • 1 stainless steel tip	• ABS hygrometry probe • Hotwire probe • 4" (100 mm) diameter vane probe
AMI 310 PRO	• Portable instrument • ±2 inWg (±500 Pa) pressure module • $^{15}/_{64}$" (6 mm) T Pitot tube	• 2 x 3' 3" (2 x 1 m) of silicone tube • 1 stainless steel tip • Stainless steel hygrometry probe	• Telescopic hotwire probe • 4" (100 mm) diameter telescopic vane probe

The probes use a mini-DIN cable unique and pluggable that fits on every probes. Each device is supplied with 2 cables of this type.

The instruments are supplied in a transport case with a calibration certificate, a charger and a USB cable.

Climatic conditions measurement

Hygrometry and air velocity measurement

Pressure measurement

AMI 310 General features

Connections	2 mini-DIN connections SMART-2014 probes and 1 micro-USB port for charging and PC connection
Power supply	Lithium-Ion battery
Autonomy	32 h with hygrometry probe
Memory capacity	Up to 1,000 dataset of 20,000 points in the internal memory + 4 GB micro-SD card
Conditions of use °F (°C), %RH, yd (m)	From 32 to +122 °F (0 to +50 °C). In non condensing conditions. From 0 to 2,188 yd (from 0 to 2,000 m)
Storage temperature	From -4 to +176 °F (-20 to +80 °C)
Auto shut-off	Adjustable from 15 to 120 minutes or Off
Weight	1.07 lbs (485 g)
Operating environment	Neutral gas
European directives	2014/30/EU ECM; 2014/35/EU Low tension; 2011/65/UE RoHS II; 2012/19/UE DEEE
Languages	French, English, Dutch, German, Italian, Portuguese, Swedish, Norwegian, Finn, Danish, Chinese, Japanese

Innovations

Expandable memory

These new instruments have an internal memory of 1,000 datasets of 20,000 points.
The AMI 310 also has a slot for a 4 GB micro-SD card (included in the delivery).

Measure continuously

This new generation of instruments has a Li-ion battery, rechargeable directly on the instrument.

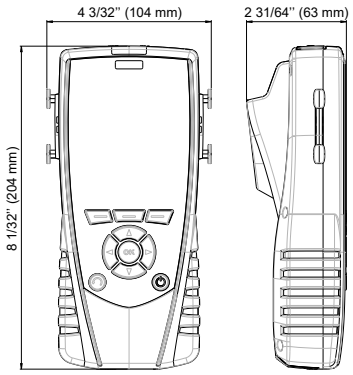
Maintenance

We carry out calibration, adjustment and maintenance of your devices to guarantee a constant level of quality of your measurements. As part of Quality Assurance Standards, we recommend you to carry a yearly checking.

Precautions for use

Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device.

Dimensions (in "/mm)



Housing features

Material	ABS/PC and elastomer
Protection	IP54
Display	LCD 120 x 160 px Dimensions: 2 $^{9}/_{32}$ x 2 $^{63}/_{64}$" (58 x 76 mm) Backlight Display of 6 measurements including 3 simultaneously
Keypad	Elastomer 10 keys

Accessories

Name	Reference
PC software for data recording and processing	Datalogger
Mini-DIN / mini-DIN cable for probe	CSM
Backpack	SAD
Infrared printer	KIMP23
Telescopic extension 39 $^{3}/_{8}$" (1 m) length, with index at ±90°	RTE

Only the accessories supplied with the device must be used.

Specifications of probes & modules

- Air velocity & airflow probes

Features in air velocity and airflow depend on the type of probe connected to the instrument.

Probe	Units	Measuring range	Accuracy*	Resolution
$^{35}/_{64}$" (14 mm) diameter vane probe	Air velocity: m/s, fpm, km/h	From 0 to 590 fpm (0 to 3 m/s) From 591 to 4,921 fpm (3.1 to 25 m/s)	From 158 to 590 fpm: ±3% of reading ±20 fpm (0.8 to 3 m/s: ±3% of reading ±0.1m/s) From 591 to 4,921 fpm: ±1% of reading ±60 fpm (3.1 to 25 m/s: ±1% of reading ±0.3 m/s)	1 fpm (0.1 m/s)
	Air flow: m³/h, cfm, l/s, m³/s	From 0 to 99,999 cfm (0 to 99,999 m³/h)	±3% of reading ±0.00003*sheath surface in ft² (±3% of reading or ±0.03*sheath surface in cm²)	1 cfm (1 m³/h)
	Temperature: °C, °F	From -4 to 176 °F (-20 to +80 °C)	±0.4% of reading ±0.54 °F (±0.4% of reading ±0.3 °C)	0.1 °F (0.1 °C)
4" (100 mm) diameter vane probe	Air velocity: m/s, fpm, km/h, mph	From -984 to 590.5 fpm (-5 to 3 m/s) From 610 to 6,890 fpm (3.1 to 35 m/s)	From 60 to 590 fpm: ±3% of reading ±20 fpm (0.3 to 3 m/s: ±3% of reading ±0.1m/s) From 591 to 6,890 fpm: ±1% of reading ±60 fpm (3.1 to 35 m/s: ±1% of reading ±0.3 m/s)	0.1 fpm (0.01 m/s) 1 fpm (0.1 m/s)
	Air flow: m³/h, cfm, l/s, m³/s	From 0 to 99,999 cfm (0 to 99,999 m³/h)	±3% of reading ±0.00003*sheath surface in ft² (±3% of reading or ±0.03*sheath surface in cm²)	1 cfm (1 m³/h)
	Temperature: °C, °F	From -4 to 176 °F (-20 to +80 °C)	±0.4% of reading ±0.54 °F (±0.4% of reading ±0.3 °C)	0.1 °F (0.1 °C)
Hot wire probe	Air velocity: m/s, fpm, km/h	From 29.5 to 197 fpm (0.15 to 1 m/s) From 30 to 590 fpm (0.15 to 3 m/s) From 591 to 5,900 fpm (3.1 to 30 m/s)	±2% of reading ±6 fpm (±2% of reading ±0.03 m/s) (Specific adjustment and calibration in option) ±3% of reading ±6 fpm (±3% of reading ±0.03 m/s) ±3% of reading ±20 fpm (±3% of reading ±0.1 m/s)	0.1 fpm (0.01 m/s) 0.1 fpm (0.01 m/s) 1 fpm (0.1 m/s)
	Air flow: m³/h, cfm, l/s, m³/s	From 0 to 99,999 cfm (0 to 99,999 m³/h)	±3% of reading ±0.00003*sheath surface in ft² (±3% of reading or ±0.03*sheath surface in cm²)	1 cfm (1 m³/h)
	Temperature: °C, °F	From -4 to 176 °F (-20 to +80 °C)	±0.3% of reading ±0.45 °F (±0.3% of reading ±0.25 °C)	0.1 °F (0.1 °C)

AMI 310 instruments have the following functions for the measurement of air velocity and airflow: Selection of the Pitot tube or coefficient / Selection of the section / Selection of the unit / Automatic or manual temperature compensation / Manual atmospheric pressure compensation / K factor, K2 factor

- Pressure modules and Pitot tubes

Pressure module	Units	Measuring range	Accuracy*	Resolution	Tolerated overpressure
MPR 500	Pa, mmH_2O, inWg, mbar, hPa, mmHg, daPa, kPa	From 0 to ±2 inWg (0 to ±500 Pa)	From -0.40 to +0.40 inWg: ±0.2% of reading ±0.003 inWg Beyond: ±0.2% of reading ±0.006 inWg (From -100 to +100 Pa: ±0.2% of reading ±0.8 Pa Beyond: ±0.2% of reading ±1.5 Pa)	From -0.40 to +0.40 inWg: 0.0004 inWg Beyond: 0.004 inWg (From -100 to +100 Pa: 0.1 Pa. Beyond: 1 Pa)	100.5 inWg (250 mbar)
MPR 2500	Pa, mmH_2O, inWg, mbar, hPa, mmHg, daPa, kPa	From 0 to ±10.05 inWg (0 to ±2,500 Pa)	±0.2% of reading ±0.008 inWg (±0.2% of reading ±2 Pa)	From -0.40 to +0.40 inWg: 0.0004 inWg Beyond: 0.004 inWg (From -100 to +100 Pa: 0.1 Pa. Beyond: 1 Pa)	200 inWg (500 mbar)
MPR 10000	Pa, mmH_2O, inWg, mbar, hPa, mmHg, daPa, kPa	From 0 to ±40.19 inWg (0 to ±10,000 Pa)	±0.2% of reading ±0.04 inWg (±0.2% of reading ±10 Pa)	0.004 inWg (1 Pa)	481 inWg (1,200 mbar)
MPR 500 M	mmH_2O, inWg, mbar, hPa, mmHg, daPa, kPa, PSI	From 0 to ±7.25 PSI (0 to ±500 mbar)	±0.2% of reading ±0.007 PSI (±0.2% of reading ±0.5 mbar)	0.0014 PSI (0.1 mbar)	802 inWg (2 bar)
MPR 2000 M	bar, inWg, mbar, hPa, mmHg, kPa, PSI	From 0 to ±29 PSI (0 to ±2,000 mbar)	±0.2% of reading ±0.029 PSI (±0.2% of reading ±2 mbar)	0.014 PSI (1 mbar)	2,408 inWg (6 bar)
Pitot tube	Air velocity: m/s, fpm, km/h, mph	From 600 to 984 fpm (3 to 5 m/s) From 985 to 16,730 fpm (5.1 to 85 m/s)	±60 fpm (±0.3 m/s) ±0.5% of reading ±40 fpm (±0.5% of reading ±0.2 m/s)	1 fpm (0.1 m/s)	-
	Air flow: m^3/h, cfm, l/s, m^3/s	From 0 to 99,999 cfm (0 to 99,999 m^3/h)	±0.2% of reading ±1% FS	1 cfm (1 m^3/h)	-

Pressure modules also have a thermocouple connection allowing to connect a K, J, T or S thermocouple probe.

Thermocouple	Units	Measuring range	Accuracy*	Resolution
Thermocouple	°C, °F	K: From -328 to +2372 °F (-200 to +1,300 °C) J: From -148 to +1382 °F (-100 to +750 °C) T: From -328 to +752 °F (-200 to +1 300 °C) S: From +32 to 3200 °F (-200 to +400 °C) N: From -328 to 2372 °F (0 to 1,760°C)	K, J, T, N: From -328 to 32 °F (-200 to 0 °C): ±0.72 °F ±0.3% of reading (±0.4 °C ±0.3% of reading) From 32 to 2,372 °F (0 to 1,300 °C): ±0.8 °F (±0.4 °C) S: ±1.1 °F (±0.6 °C)	0.1 °F (0.1 °C)

AMI 310 instruments have the following functions for the measurements of pressure: Automatic autozero by solenoid valve (AMI310 PRO) / Manual autozero (AMI310 STD) / Pressure integration (0 to 9) / Point/point average / Automatic point/point average / Automatic average

- Hygrometry probes

Probe	Units	Measuring range	Accuracy*	Resolution
Hygrometry probes SHR 110 and SHR 300	Relative humidity: %RH	From 3 to 98 %RH	Accuracy (Repeatability, linearity, Hysteresis): ±1.5%RH from 59 °F to 77 °F (15 °C to 25 °C) Factory calibration uncertainty: ±0.88 %RH Temperature dependence: ±0.04 x ([(T°Fx3/5)+32]-20) %RH (if T<59 °F or T>77 °F) ±0.04 x (T-20) %RH (if T<15 °C or T>25 °C)	0.1 %RH
	Absolute humidity**: g/m^3	From 0 to 600 g/m^3	-	0.1 g/m^3
	Dew-point**: °C_{td}, °F_{td}	From -58 to +212 °F_{td} (-50 to +100 °C_{td})	±0.6% of reading ±0.9 °F_{td} (±0.6% of reading ±0.5 °C_{td})	0.1 °F_{td} (0.1 °C_{td})
	Wet temperature**: °C_{tw}, °F_{tw}	From -58 to +212 °F_{tw} (-50 to +100 °C_{tw})	±0.6% of reading ±0.9 °F_{tw} (±0.6% of reading ±0.5 °C_{tw})	0.1 °F_{tw} (0.1 °C_{tw})
	Enthalpy**: kj/kg	From 0 to 10,000 kj/kg	-	0.1 kj/kg
	Temperature: °C, °F	SHR 110: From -4 to +176 °F (-20 to +80 °C) SHR 300: From -40 to +356 °F (-40 to +180 °C)	±0.3% of reading ±0.45 °F (±0.3% of reading ±0.25 °C)	0.1 °F (0.1 °C)
	Combination ratio**: g/kg	From 0 to 10,000 g/kg	-	0.1 g/kg
Omnidirectional probe of airstream SOM 900	Air velocity: m/s, fpm, km/h, mph	From 0 to 984 fpm (0.00 to 5.00 m/s)	±3% of reading ±10 fpm (±3% of reading ±0.05 m/s)	0.1 fpm (0.01 m/s)
	Relative humidity: %RH	From 5 to 95% RH	Accuracy (Repeatability, linearity, Hysteresis): ±1.5%RH from 59 °F to 77 °F (15 °C to 25 °C) Factory calibration uncertainty: ±0.88 %RH Temperature dependence: ±0.04 x ([(T°Fx3/5)+32]-20) %RH (if T<59 °F or T>77 °F) ±0.04 x (T-20) %RH (if T<15 °C or T>25 °C)	0.1% RH
	Temperature: °C, °F	From +32 to +122 °F (-0 to +50 °C)	±0.3% of reading ±0.45 °F (±0.3% of reading ±0.25 °C)	0.1 °F (0.1 °C)
CO_2 / hygrometry / temperature probe SCOH 112	Temperature: °C, °F	From -4 to +176 °F (-20 to +80 °C)	±0.3% of reading ±0.45 °F (±0.3% of reading ±0.25 °C)	0.1 °F(0.1 °C)
	CO_2: ppm	From 0 to 5,000 ppm	±3% of reading ±50 ppm	1 ppm
	Hygrometry: %RH	From 5 to 95% RH	Accuracy (Repeatability, linearity, Hysteresis): ±1.5%RH from 59 °F to 77 °F (15 °C to 25 °C) Factory calibration uncertainty: ±0.88 %RH Temperature dependence: ±0.04 x ([(T°Fx3/5)+32]-20) %RH (if T<59 °F or T>77 °F) ±0.04 x (T-20) %RH (if T<15 °C or T>25 °C)	0.1% RH

AMI 310 instruments can also calculate and display the **WBGT index** that corresponds to a index of composite temperature used to estimate the effect of temperature, humidity and solar radiation on humans. It is calculated from the following temperatures:

- T_w= Wet-bulb temperature or natural wet temperature, measurement calculated from the relative humidity of a thermo-hygro probe;
- T_g= Globe temperature, measured with a globe thermometer, or black globe thermometer, whose sensitive element is in black glass or black-smoke coated in order to run approximatively as a black body to measure the solar radiation. The measurement is realised with a temperature probe placed in a black ball;
- T_d=Air temperature (measured by a thermometer whose bulb is protected from the solar radiation by a screen). The temperature measurement is realised with a thermo-hygro probe;

AMI 310 instruments have the following functions for the measurement of temperature, hygrometry and air quality:

- **Air Quality probes (CO / temperature, CO_2 / temperature, CO_2 / temperature / hygrometry):**
  Audible alarm (2 setpoints), Selection of units, Hold function, minimum and maximum values
- **Thermocouple module:**
  Delta T, Alarm (lower and upper setpoints), Selection of units, Hold function, minimum and maximum values

*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.
**Calculated parameters. / ***Depending on the differential pressure element connected to the instrument.

Delivery kits and options

✓ supplied with

Description	AMI 310	AMI 310 STD	AMI 310 PRO
MPR 500: Pressure module from 0 to ±2 inWg (0 to ±500 Pa)	Optional	Optional	✓
MPR 2500: Pressure module from 0 to ±10.05 inWg (0 to ±2,500 Pa)	Optional	Optional	Optional
MPR 10000: Pressure module from 0 to ±40.19 inWg (0 to ±10,000 Pa)	Optional	✓	Optional
MPR 500 M: Pressure module from 0 to ±7.25 PSI (0 to ±500 mbar)	Optional	Optional	Optional
MPR 2000 M: Pressure module from 0 to ±29 PSI (0 to ±2,000 mbar)	Optional	Optional	Optional
M4TC: 4 thermocouple channels module	Optional	Optional	Optional
MCC: Climatic conditions module	Optional	Optional	Optional
2 x 39 $^{3}/_{8}$" (1 m) of silicone tube $^{5}/_{32}$" x $^{9}/_{32}$" (4 x 7 mm) diameter	Optional	✓	✓
$^{15}/_{64}$" x 3 $^{15}/_{16}$" (6 x 100 mm) diameter silicone tip	Optional	✓	✓
$^{15}/_{64}$" (6 mm) diameter, 11 $^{13}/_{16}$" (300 mm) length Pitot tube	Optional	✓	Optional
$^{15}/_{64}$" (6 mm) diameter, 11 $^{13}/_{16}$" (300 mm) length T Pitot tube	Optional	Option	✓
$^{15}/_{64}$" (6 mm) diameter, 11 $^{13}/_{16}$" (300 mm) length S Pitot tube	Optional	Optional	Optional
SOM 900: Telescopic omnidirectional probe	Optional	Optional	Optional
SMT 900: Multifunction probe	Optional	Optional	Optional
SHR 110: ABS hygrometry probe	Optional	✓	Optional
SHR 300: Stainless steel hygrometry probe	Optional	Optional	✓
SCO 110: CO / temperature probe	Optional	Optional	Optional
SCO 112: CO_2 / temperature probe	Optional	Optional	Optional
SCOH 112: CO_2 / temperature / hygrometry probe	Optional	Optional	Optional
SFC 300: Hotwire probe	Optional	✓	Optional
SFC 900: Telescopic hotwire probe	Optional	Optional	✓
SFC 900 GN: Telescopic hotwire gooseneck probe	Optional	Optional	Optional
SFC 300 S: Air velocity measurement probe for laboratory hood	Optional	Optional	Optional
SH 14: $^{35}/_{64}$" (14 mm) diameter vane probe	Optional	Optional	Optional
SHT 14: $^{35}/_{64}$" (14 mm) diameter telescopic vane probe	Optional	Optional	Optional
SH 100: 4" (100 mm) diameter vane probe	Optional	✓	Optional
SHT 100: 4" (100 mm) diameter telescopic vane probe	Optional	Optional	✓
SLU: Light probe	Optional	Optional	Optional
STA: Tachometry probe	Optional	Optional	Optional
SFG 300: Gas leak probe SFG 300	Optional	Optional	Optional
Pt100 SMART-2014 probe	Optional	Optional	Optional
K, J, N, T and S thermocouple probe	Optional	Optional	Optional
Calibration certificate	Optional	✓	✓
MTP-310: Transport case	✓	✓	✓
Additional battery	✓	✓	✓

Available probes and modules (optional)

Light probe (SLU)
Measuring ranges from 0 to 150,000 lux and from 0 to 13,935 fc

4 thermocouple channels module (M4TC)
Measuring range from -328 to +3,200 °F (-200 to +1,760 °C) according to thermocouple type

Climatic conditions module (MCC)
Measuring ranges from 32 to 122 °F (0 to +50 °C), 800 to 1,100 hPa and 5 to 95 %RH

Optical tachometry probe (STA)
Measuring range from 60 to 60,000 tr/min

Contact tachometry probe (STA)
Measuring range from 30 to 20,000 tr/min

Hotwire probe
Measuring ranges from 29.5 to 5,900 fpm (0.15 to 30 m/s), 0 to 99,999 cfm (0 to 99,999 m³/h) and -4 to 176 °F (-20 to +80 °C)

Vane probe $^{35}/_{64}$" (14 mm) diameter
Measuring ranges from 0 to 4,921 fpm (0 to 25 m/s), 0 to 99,999 cfm (0 to 99,999 m³/h) and -4 to 176 °F (-20 to +80 °C)

4" (100 mm) diameter vane probe
Measuring ranges from -984 to 6,890 fpm (-5 to 35 m/s), 0 to 99,999 cfm (0 to 99,999 m³/h) and -4 to 176 °F (-20 to +80 °C) (Also available in telescopic model)

L and S Pitot tubes
Measuring ranges from 600 to 16,730 fpm (3 to 85 m/s) and 0 to 99,999 cfm (0 to 99,999 m³/h)

CO/temperature probe (SCO 110)
Measuring ranges from 0 to 500 ppm and -4 to 176 °F (-20 to +80 °C)

Gas leak probe (SFG 300)
Measuring range from 0 to 10,000 ppm

Si-K25 and Si-K85 Airflow cones for vane anemometers
Measuring range from 5.89 to 235.43 cfm (10 to 400 m³/h)

Large choice of temperature probes (see related datasheet):
ambient / contact / penetration / immersion...

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