

Short Glossary

HVAC - Heating, Ventilation and Air Conditioning

IEQ - Indoor Environmental Quality encompasses all aspects of the indoor setting including air quality, ventilation, thermal comfort, lighting and noise.

IAQ - Indoor air quality may be broadly defined as the nature of air that affects the health and well-being of occupants.

WBGT - Wet Bulb Globe Temperature is commonly used as a guidance for environmental heat stress to prevent heat stroke during physical exercise or while at work. It determines heat stress given in humans on the job in thermally harsh environments. It is specified in ISO 7243 under 'Hot Environments.' Estimation of the heat stress on is based on the WBGT-index.

PMV - Predicted Mean Vote is average comfort vote predicted by a theoretical index for a group of subjects when subjected to a particular set of environmental conditions.

PPD - Predicted Percentage Dissatisfied is the percentage of subject population who will be dissatisfied (uncomfortable) in a given environment as predicted by a theoretical index.

Class 1 / Class 2 - Instruments, processors and probes are classified as being **Class 1 or Class 2** (also Type 1 or Type 2) according to the measurement accuracy achieved. A class 1 instrument may only be formed by combining a class 1 probe with a class 1 processor. Class 1 processor shall, at least, cover the range from 45 Hz to 7,1 kHz in one third octave bands. Class 2 processor shall, at least, cover the same range, or 45 Hz to 5,6 kHz in octave bands, as specified in ISO 9614.

Octave - The difference between two frequencies where one is twice the other. For example, 200 Hz is an octave higher than 100 Hz. 400 Hz is one octave higher than 200 Hz.

Decibel (dB) - A logarithmic measurement unit that describes a sound's relative loudness, though it can also be used to describe the relative difference between two power levels. In sound, decibels generally measure a scale from 0 (the threshold of hearing) to 130 dB (the threshold of pain). A 1dB difference over a broad frequency range is noticeable to most people, while a 0.5dB difference can affect the subjective impression of a sound.

Illuminance - The density of incident luminous flux on a surface; illuminance is the standard metric for lighting levels, and is measured in lux (lx).

Luminance - The luminous intensity of a surface in a given direction per unit area of that surface as viewed from that direction.

Carbon monoxide (CO) - Poisonous gas that has no color or odor. It is given off by burning fuel (as in exhaust from cars or household heaters) and tobacco products. Carbon monoxide prevents red blood cells from carrying enough oxygen for cells and tissues to live.

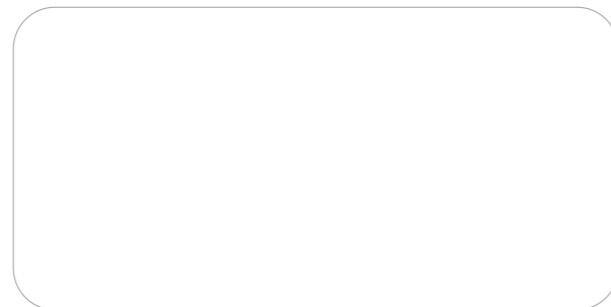
Carbon Dioxide (CO₂) - Colorless, odorless, noncombustible gas. Present in the atmosphere as a result of the decay of organic material and the respiration of living organisms, and it represents about 0.033% of the air. Carbon dioxide is produced by the burning of wood, coal, coke, oil, natural gas, or other fuels containing carbon, by the action of an acid on a carbonate, or naturally from springs and wells.

Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery. Subject to technical change without notice.

INDOOR ENVIRONMENT QUALITY

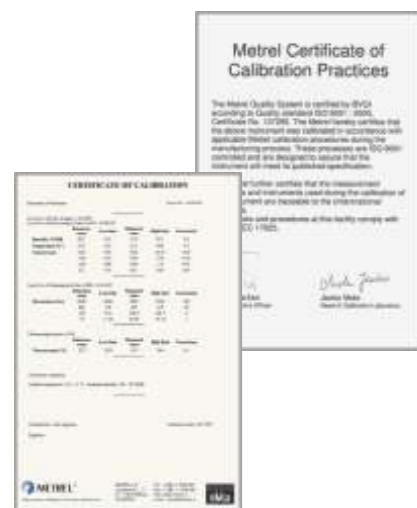


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METREL®

**Multinorm
 FonS
 Poly**



Multinorm, FonS, Poly

Universal handheld instruments for measurement, logging and analysing parameters specific for indoor environments are designed to provide flexibility, versatility and convenience to most demanding of professional users. Target customers are IAQ inspectors, HVAC engineers, safety officers, building managers, industrial hygienists and lab managers.

The Metrel Indoor Environment family includes the following models:

Multinorm MI 6201 (Pro Set, Euro Set and Standard Set)

FonS MI 6301 (Pro Set and Euro Set)

Poly MI 6401 (Euro Set and Standard Set)

Applications

- To measure the thermal environment parameters in buildings, warehouses, laboratories, garden centres, schools etc,
- To perform tests of the ventilation / air conditioning systems, the HVAC systems.
- Calculation of dew point, mass flow,
- To measure the illuminance and luminance in the workplace,
- Calculation of luminance contrast,
- Calculation of PMV, PPD and WBGT,
- The noise measurements and the analysis in the workplace,
- To measure the environmental noise levels and perform the analyses in general.

Benefits

- Use only one instrument instead of the number of separate instruments to measure and analyse:
 - air temperature, contact temperature, air velocity, relative humidity,
 - black globe radiant temperature,
 - illuminance and luminance (with optional probe)
 - sound level meter.
- Octave and one third octave sound analysis.
- More probes can be connected and used with the instrument at the same time. Optional probe connection with extensional cable or telescopic rod available.
- Special design facilitates easy handling:
 - all probes are connected directly to the instrument without any additional cables enabling user to hold instrument with only one hand,
 - an oversized graphic display 160x160 dots with backlight,
 - a tripod holder for an easy handling,
 - the rechargeable batteries for up to 8 hours of continuous operation,
 - an internal memory to store over 4000 readings,

- a self-management internal logger,
- a time and date display and the help menus,
- optional probe connection with extension cable for illuminance / luminance probe or telescopic rod for microclimatic probe available.
- Provided powerful logging software is used for data downloads to a computer and simplifies the creation of test reports.
- ISO calibration certificate for complete system guarantees an overall quality and accuracy especially since the probes and the instrument are calibrated together as an integral device.

Standards

EN/IEC 61010-1	Safety
IEC 61326	Electromagnetic compatibility
EN 60751	Industrial platinum resistance thermometer sensors.
ISO 7726 Class C	Standard about ergonomics of the thermal environment and instruments for measuring its physical quantities.
EN ISO 7726	Ergonomic of thermal environment - Instruments for measuring physical quantities.
ISO 7730	Moderate thermal environments - Determination of the PMV and PPD indices and specification of the conditions for thermal comfort.
ISO 7243	Hot environments Estimation of the heat stress on working man based on the temperature WBGT index.
EN 60584-1	Thermocouples
EN 12599	Ventilation for buildings.
ISO 10526	CIE standard colorimetric observers.
DIN 5032	Photometry, illuminance meters.
IEC 61672	Class 1 and Class 2 sound level meter.
IEC 61260	Octave and one third octave frequency analysis.

Quick reference table

	Pro Set	Euro Set	Standard Set
Multinorm MI 6201	Air temperature Air velocity Relative humidity Illuminance Sound Class 1 ISO calibration certificate for complete system	Air temperature Air velocity Relative humidity Illuminance Sound Class 2 ISO calibration certificate for complete system	Air temperature Air velocity Relative humidity Illuminance Sound Class 2 Product verification data
FonS MI 6301	Sound Class 1 ISO calibration certificate for complete system	Sound Class 2 ISO calibration certificate for complete system	
Poly MI 6401		Air temperature Air velocity Relative humidity Illuminance ISO calibration certificate for complete system	Air temperature Air velocity Relative humidity Illuminance Product verification data

Comparison table presents different models summary of the features

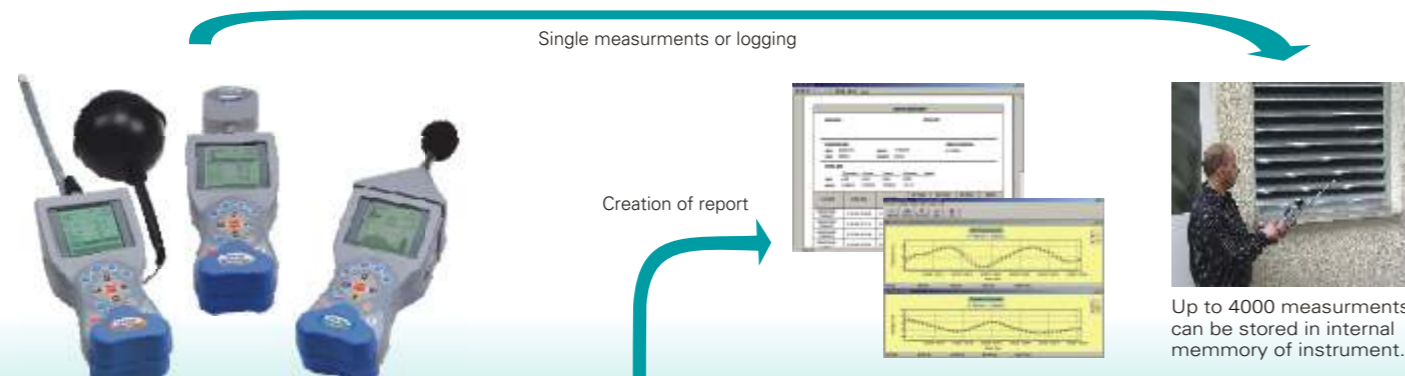
Features	Multinorm MI 6201		FonS MI 6301		Poly MI 6401		
	MI 6201 PR Pro Set	MI 6201 EU Euro Set	MI 6201 ST Standard Set	MI 6301 PR Pro Set	MI 6301 EU Euro Set	MI 6401 EU Euro Set	MI 6401 ST Standard Set
Air Velocity	✓	✓	✓	-	-	✓	✓
Air Flow	✓	✓	✓	-	-	✓	✓
Relative Humidity	✓	✓	✓	-	-	✓	✓
Dew point	✓	✓	✓	-	-	✓	✓
Air temperature	✓	✓	✓	-	-	✓	✓
Temperature difference	✓	✓	✓	-	-	✓	✓
K Thermocouple temperature	✓	✓	✓	-	-	✓	✓
Illuminance	✓	✓	✓	-	-	✓	✓
Luminance	option	option	option	-	-	option	option
Contrast	option	option	option	-	-	option	option
Black globe radiant temperature	option	option	option	-	-	option	option
Sound							
Class 1 (IEC 1672) SLM	✓	-	-	✓	-	-	-
Class 2 (IEC 1672) SLM	-	✓	✓	-	✓	-	-
Real time 1/1 octave analysis	✓	✓	✓	✓	✓	-	-
Real time 1/3 octave analysis	✓	✓	✓	✓	✓	-	-
Test probes							
A 1091 Universal microclimatic probe m/s, %rh, °C	✓	✓	✓	-	-	✓	✓
A 1127 Humidity/Temperature probe %rh, °C	option	option	option	-	-	option	option
A 1092 Illuminance probe type B	✓	✓	✓	-	-	✓	✓
A 1132 Luminance probe	option	option	option	-	-	option	option
A 1128 Thermocouple probe	option	option	option	-	-	option	option
A 1146 Class 1 sound probe	✓	-	-	✓	-	-	-
A 1151 Class 2 sound probe	-	✓	✓	-	✓	-	-
A 1131 Black globe thermometer	option	option	option	-	-	option	option
A 1180 CO ₂ probe	option	option	option	-	-	option	option
A 1181 CO probe	option	option	option	-	-	option	option
PC Software							
A 1134 SensorLink PRO	✓	✓	✓	-	-	✓	✓
A 1167 SoundLink LITE	✓	✓	✓	✓	✓	-	-
A 1162 SoundLink PRO	option	option	option	option	option	-	-
Certificates							
ISO calibration certificate for complete system	✓	✓	-	✓	✓	✓	-
Product Verification Data	-	-	✓	-	-	-	✓

Multinorm

Universal all-in-one instrument for measurement of air temperature, air velocity, relative humidity, illuminance and Class 1 (Pro Set) or Class 2 (Euro Set and Standard Set) sound level.

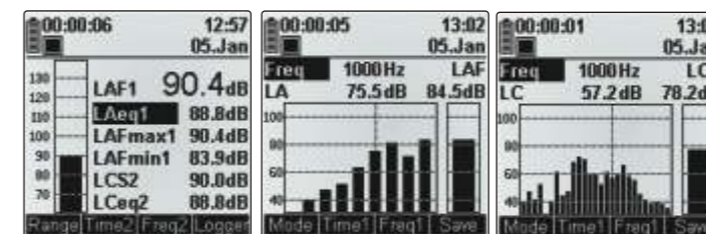
- Measurement functions: air temperature, air velocity/multipoint/mass flow calculations, relative humidity / dew point, illuminance and sound level meter and analyser. Completely digitalised Class 1 (Pro Set) or Class 2 (Euro Set and Standard Set) sound level meter with two independent measuring channels compliant with IEC 61672 standard. Each channel can be set with different time and frequency weighting. Multinorm is also real-time octave and one third octave frequency analyser compliant with IEC 61260 standard. It operates in two modes: in an on-line reading mode which displays current measurement and in a logger mode, which automatically stores all measurement values per logging interval.
- Additional measurement features are: luminance measurement, contrast, globe temperature, thermocouple (contact temperature), PMV (predicted mean vote), PPD (predicted percentage of dissatisfied) and WBGT (wet bulb globe temperature).
- PC software SensorLink PRO with RS232 cable enables data analysis, charting and reporting.
- PC software SoundLink LITE is used to download, review and export data to other spreadsheet software applications. Optional frequency analysis PC software SoundLink PRO enables data analysis, charting and reporting.

Measurements with Multinorm, Poly and FonS

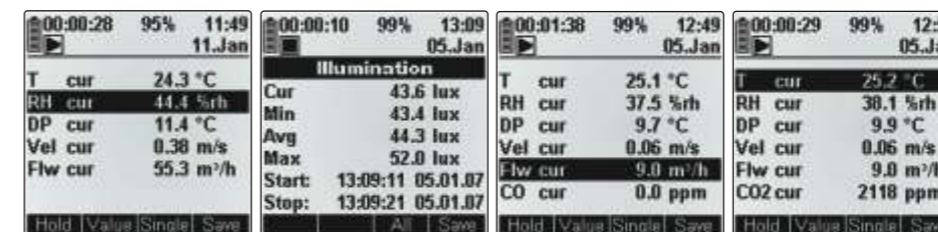


Technical Specification

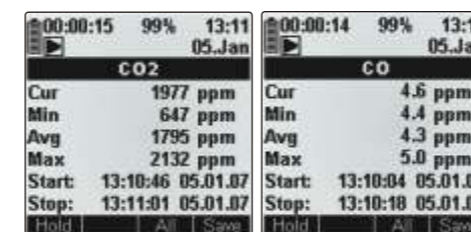
- Communication: RS 232 serial interface for connection to a PC, fully opto isolated, 57600 baud, 9 pin D-type connector.
- Memory: approximately 4000 values
- Logger: approximately 4000 values
- Dimensions (WxHxL): 110 x 85 x 220 mm
- Weight: 0.56 kg (without batteries)
- Battery: 6 x 1.2 V AA rechargeable, with internal charger
- Display: graphical LCD with backlight, 160 x 160 dots
- Pollution degree: 2
- Protection degree: IP 42



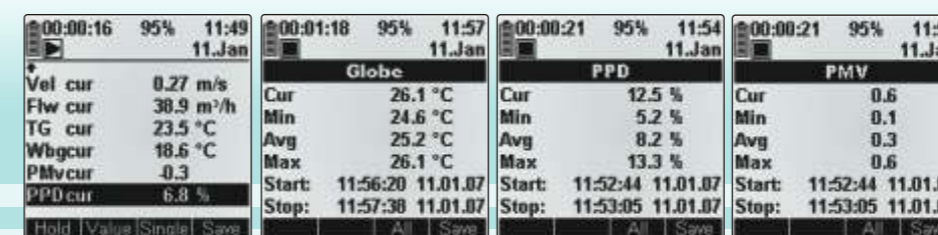
Sound level measurement, 1/1 and 1/3 octavian analysis.



Measurement with universal microclimatic, illuminance, CO and CO₂ probes.



Detailed CO and CO₂ measurement.



Thermal comfort measurement and calculation.



Recalling of memory, sample of help menu.

Ordering information

Standard Set Part No. MI 6201 ST



- Instrument Multinorm
- Probe adapter
- Universal microclimatic probe (A 1091)
- Illumination probe type B (A 1092)
- Class 2 sound probe (A 1151)
- Plastic shield
- Windscreen
- Carrying case
- SensorLink and SoundLink LITE PC software with RS232 cable
- Power supply adapter/charger + 6 NiMH batteries
- Tripod adapter
- Instruction manual
- Product verification data

Euro Set Part No. MI 6201 EU

- Standard Set
- ISO calibration certificate for complete system instead of product verification data

Pro Set Part No. MI 6201 PR

- Euro Set with Class 1 sound probe (A 1146) instead of Class 2 sound probe (A 1151)

Optional accessories



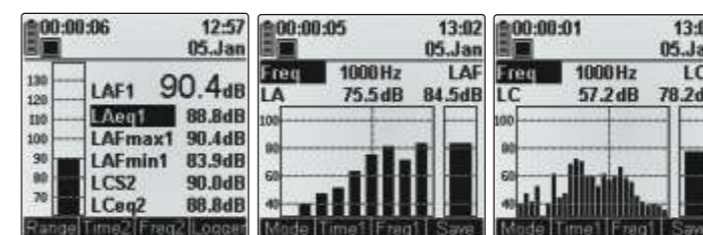
- A 1130 - Telescopic rod with 2.5 m cable
- A 1127 - Humidity & air temperature probe
- A 1128 - Thermocouple probe type K wire
- A 1132 - Luminance probe
- A 1131 - Black globe thermometer
- A 1159 - Tripod
- A 1161 - Tripod holder for instrument and black globe
- A 1145 - Extension Cable
- A 1160 - Fast cell charger with a set of 6 pcs NiMH AA batteries, 100-240 V AC cable and 12 V DC cable
- A 1152 - Sound calibrator Class 1
- A 1165 - Sound calibrator Class 2
- A 1162 - SoundLink PRO PC software
- A 1180 - CO₂ probe
- A 1181 - CO probe



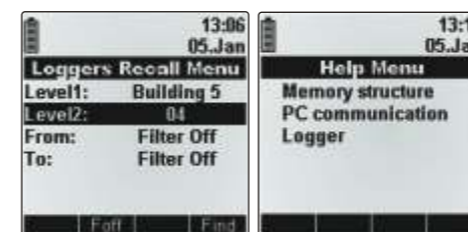
FonS

Completely digitalised Class 1 (Pro Set) or Class 2 (Euro Set) sound level meter with two independent measuring channels compliant with IEC 61672 standard. Each channel can be set to a different time and frequency weighting. FonS is also a real-time octave and one third octave frequency analyser compliant with IEC 61260 standard. It operates in two modes: an on-line reading mode which displays current measurement and in a logger mode, which automatically stores all measurement values per logging interval.

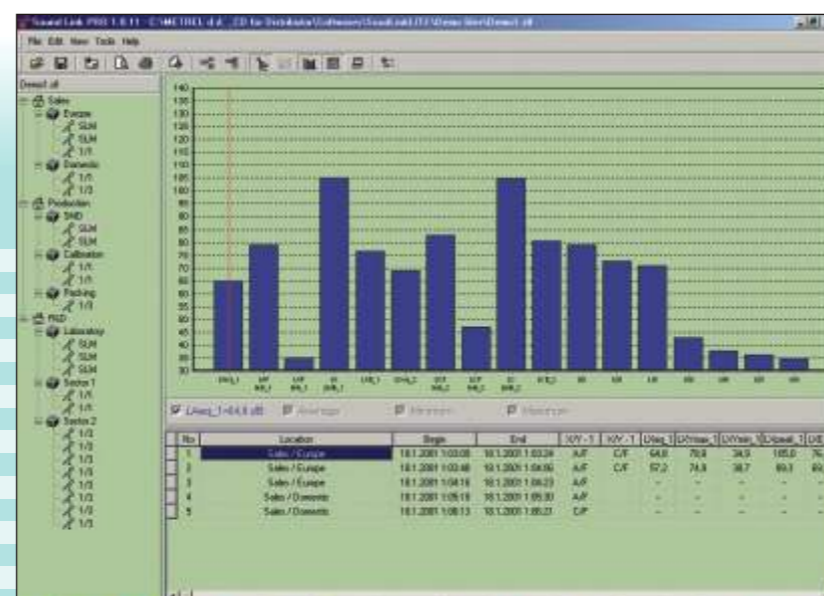
- The measurement functions (where letter X stands for A, C or Z frequency weighting, Y for fast, slow or impulse time weighting applicable to both first and second measuring channels) are:
 - LXy, a time weighted sound level;
 - LXeq, a time average sound level, or equivalent continuous sound level;
 - LXy_{max}, a maximum time weighted sound level;
 - LXy_{min}, a minimum time weighted sound level;
 - LX_{peak}, a peak sound level;
 - LX_E, a sound exposure level;
 - L%, a percentile sound pressure level (only first channel)
- A windscreen and a sound shield facilitate the outdoor measurements by reducing the wind noise and/or give a protection against the dust or other small particles often found in the air of harsh industrial environments.
- PC software SoundLink LITE is used to download, review and export data to other spreadsheet software applications. Optional frequency analysis PC software SoundLink PRO enables data analysis, charting and reporting.



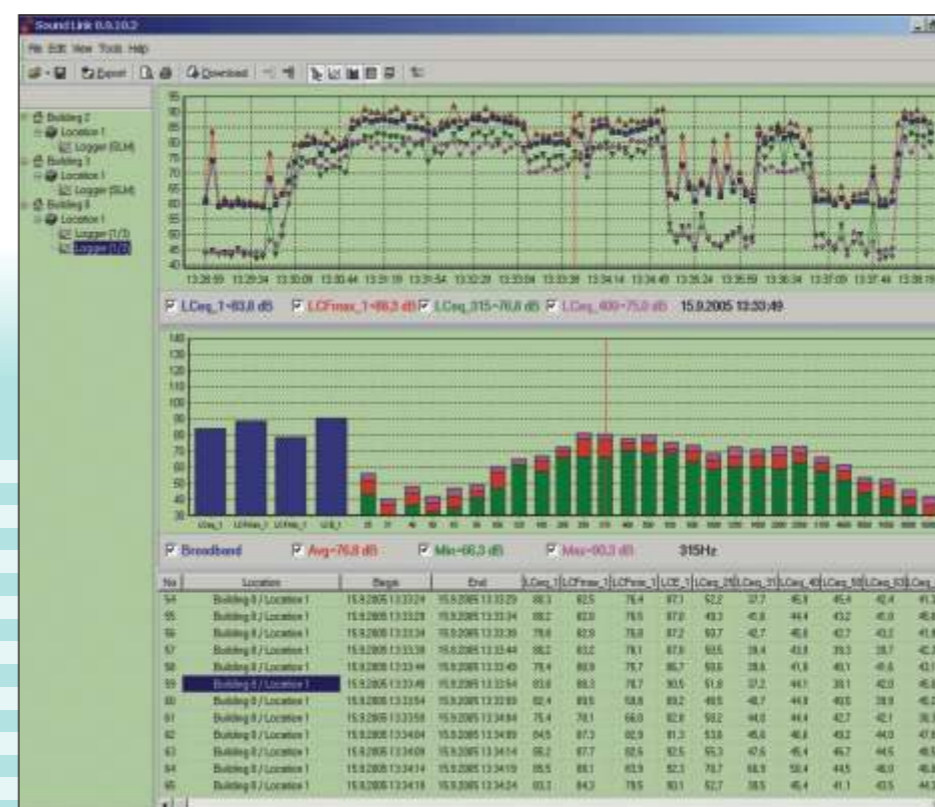
Sound level measurement, 1/1 and 1/3 octavian analysis.



Recalling of memory, sample of help menu.



Sample of on-line reading data analysis with SoundLink PRO PC software.



Logged data analysis with SoundLink PRO PC software.

Technical Specification

- Communication: RS 232 serial interface for connection to a PC, fully opto isolated, 57600 baud, 9 pin D-type connector.
- Memory: approximately 4000 values
- Logger: approximately 4000 values
- Dimensions (WxHxL): 110 x 85 x 220 mm
- Weight: 0.56 kg (without batteries)
- Battery: 6 x 1.2 V AA rechargeable, with internal charger
- Display: graphical LCD with backlight, 160 x 160 dots
- Pollution degree: 2
- Protection degree: IP 42

Ordering information

Euro Set Part No. MI 6301 EU



- Instrument FonS
- Class 2 sound probe (A 1151)
- Windscreen
- Plastic shield
- Carrying case
- PC software SoundLink LITE
- with RS232 cable
- Power supply adapter + 6 NiMH batteries
- Tripod adapter
- Instruction manual
- ISO calibration certificate for complete system

Pro Set Part No. MI 6301 PR

- Euro Set
- Class 1 sound probe A 1146 instead of Class 2 sound probe A 1151.

Optional accessories



- A 1159 - Tripod
- A 1160 - Fast cell charger with a set of 6 pcs NiMH AA batteries, 100-240 V AC cable and 12 V DC cable
- A 1152 - Sound calibrator Class 1
- A 1165 - Sound calibrator Class 2
- A 1162 - SoundLink PRO PC software

Poly

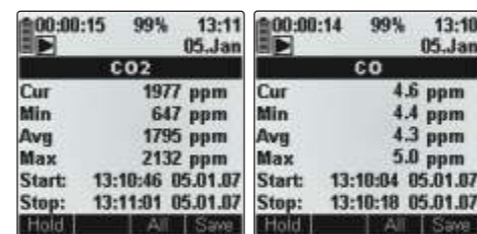


Measurement functions for air temperature, air velocity, relative humidity and illuminance are all found within one device.

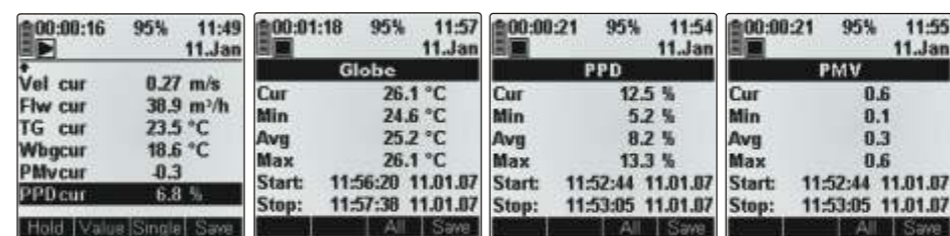
- Standard measurement functions:
 - air temperature,
 - air velocity and mass flow calculation,
 - relative humidity and dew point calculation,
 - illuminance
- Additional measurement features:
 - luminance measurement and contrast calculation,
 - globe temperature,
 - thermocouple (contact) temperature,
 - PMV (predicted mean vote),
 - PPD (predicted percentage of dissatisfied),
 - WBGT (wet bulb globe temperature).
- PC software SensorLink PRO with RS232 cable enables data analysis, charting and reporting.



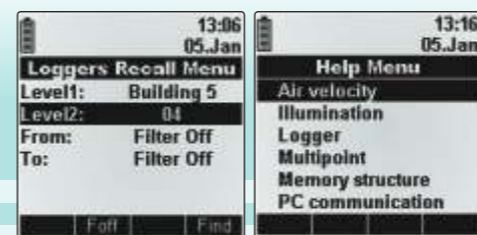
Measurement with universal microclimatic, illuminance, CO and CO₂ probes.



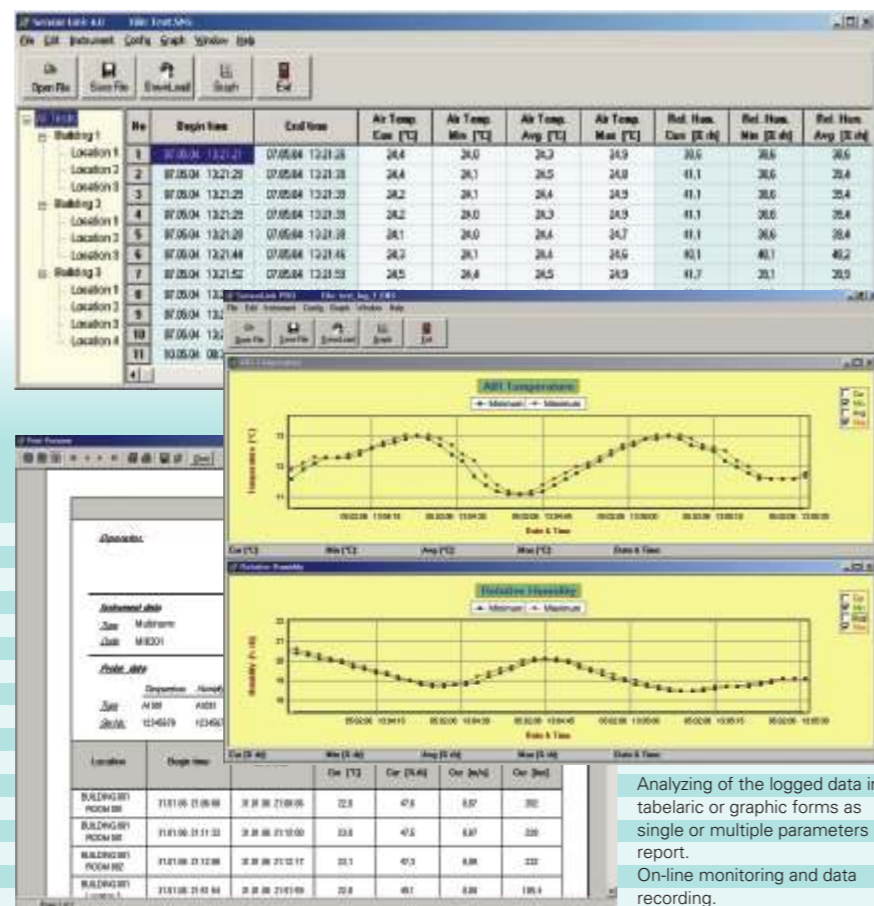
Detailed CO and CO₂ measurement.



Thermal comfort measurement and calculation.



Recalling of memory, sample of help menu.



Analyzing of the logged data in tabular or graphic forms as single or multiple parameters report. On-line monitoring and data recording.

Technical Specification

- Communication: RS 232 serial interface for connection to a PC, fully opto isolated, 57600 baud, 9 pin D-type connector.
- Memory: approximately 4000 values
- Logger: approximately 4000 values
- Dimensions (WxHxL): 110 x 85 x 220 mm
- Weight: 0.56 kg (without batteries)
- Battery: 6 x 1.2 V AA rechargeable, with internal charger
- Display: graphical LCD with backlight, 160 x 160 dots
- Pollution degree: 2
- Protection degree: IP 42

Ordering information

Standard Set Part No. MI 6401 ST



- Instrument Poly
- Probe adapter
- Universal microclimatic probe (A 1091)
- Illumination probe type B (A 1092)
- Carrying case
- SensorLink PC software with RS232 cable
- Power supply adapter/charger + 6 NiMH batteries
- Tripod adapter
- Instruction manual
- Product verification data

Euro Set Part No. MI 6401 EU

- Standard Set
- ISO calibration certificate for complete system instead of product verification data

Optional accessories




- A 1130 - Telescopic rod with 2.5 m cable
- A 1127 - Humidity & air temperature probe
- A 1128 - Thermocouple probe type K wire
- A 1132 - Luminance probe
- A 1131 - Black globe thermometer
- A 1159 - Tripod
- A 1161 - Tripod holder for instrument and black globe
- A 1145 - Extension Cable
- A 1160 - Fast cell charger with a set of 6 pcs NiMH AA batteries, 100-240 V AC cable and 12 V DC cable
- A 1180 - CO₂ probe
- A 1181 - CO probe

Technical specification (measuring probes)


A 1091 Universal microclimatic probe (for MI 6201 and MI 6401)

Parameter	Range	Accuracy	Resolution	Sensor type
Air temperature	-20 °C to +60 °C	± 0.2 °C at 25 °C ± 0.5 °C (over working range)	0.1 °C	Resistive
Maximum humidity:	100 %RH			
Relative humidity	0 %RH to 100 %RH	± 3 %RH (0 %RH to 10 %RH) ± 2 %RH (10 %RH to 90 %RH) ± 3 %RH (90 %RH to 100 %RH)	0.1 %RH	Capacitive
Working temperature range:	-20 °C to +60 °C			
Air velocity	0.10 m/s to 9.99 m/s 10.0 m/s to 20.0 m/s	± (0.05 m/s + 5 % of r.) ± (5% of r.)	0.01 m/s 0.1 m/s	HFA method (Hot Film Anemometer)
Working temperature range:	-20 °C to +60 °C			
Dimensions:	∅ 12 mm x 320 mm			



A 1092 Illuminance probe (for MI 6201 and MI 6401)

Type	Range	Accuracy	Resolution	Sensor type
Type B	0.01 lux to 19.99 lux 20.0 lux to 199.9 lux 200 lux to 1999 lux 2000 lux to 20000 lux	± 0.02 Lux + 8% of reading ± 8% of reading ± 8% of reading ± 8% of reading	0.01 lux 0.1 lux 1 lux 1 lux	Silicon photodiode with V(λ) filter
Working temperature range:	0 °C to 40 °C			
Maximum humidity:	95 %RH			
Standard:	DIN 5032 class B			



A 1146 Class 1 sound probe (for MI 6201 and MI 6301)


A 1151 Class 2 sound probe (for MI 6201 and MI 6301)

Two independent digital channels: each channel can be set with different time and frequency weighting
Measurement modes: normal sound level meter (SLM), real time octave frequency analysis (1/1) and one third octave frequency analysis (1/3).

The instrument can simultaneously measure and calculate all 19 measurements shown in table below, where:

- Letter X means A, C or Z frequency weighting.
- Letter Y means Fast, Slow or Impulse time weighting.
- Number 1 or 2 means first or second measuring channel.

Measurement	Definition
LXY1	Time weighted sound level as defined in IEC 61672 standard.
Lxeq1	Time average sound level, or equivalent continuous sound level as defined in IEC 61672 standard
LXYmax1	Maximum time weighted sound level
LXYmin1	Minimum time weighted sound level
Lxpeak1	Peak sound level as defined in IEC 61672 standard
LXE1	Sound exposure level as defined in IEC 61672 standard
L01	Percentile sound pressure level for 1%
L05	Percentile sound pressure level for 5%
L10	Percentile sound pressure level for 10%
L50	Percentile sound pressure level for 50%
L90	Percentile sound pressure level for 90%
L95	Percentile sound pressure level for 95%
L99	Percentile sound pressure level for 99%
LXY2	Time weighted sound level as defined in IEC 61672 standard
Lxeq2	Time average sound level, or equivalent continuous sound level as defined in IEC 61672 standard
LXYmax2	Maximum time weighted sound level
LXYmin2	Minimum time weighted sound level
Lxpeak2	Peak sound level as defined in IEC 61672 standard
LXE2	Sound exposure level as defined in IEC 61672 standard



	Range	Frequency range	Resolution	Frequency weighting	Time weighting
Class 1 sound probe	30 dB - 140 dB	20 Hz-20000 Hz	0.1 dB	A, C, Zero	Fast, Slow, Impulse
Class 2 sound probe	30 dB - 140 dB	20 Hz-10000 Hz	0.1 dB	A, C, Zero	Fast, Slow, Impulse

Ranges (A, C and Z frequency weighting)

Lower limit	Upper limit	Max. Peak C level
30 dB	110 dB	113 dB
40 dB	120 dB	123 dB
50 dB	130 dB	133 dB
60 dB	140 dB	143 dB

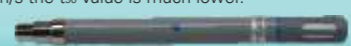
Standards applied:

EN 61762: Class 1 / Class 2 sound level meter,
EN 61260: real time octave and one-third octave frequency analysis.

Optional accessories


A 1127 - Humidity & air temperature probe (for MI 6201 and MI 6401)

Parameter	Range	Accuracy	Resolution	Sensor type
Air temperature	-20 °C to +60 °C	± 0.5 °C	0.1 °C	Resistive
Maximum humidity:	100 %RH			
Reaction time t ₉₀ :	7.4 min*			
Relative humidity	0 %RH to 100 %RH	± 3 %RH	0.1 %RH	Capacitive
Working temperature range:	-20 °C to +60 °C			
Reaction time t ₉₀ :	15 s*			
*This is the worst case value. If the starting air flow speed is not 0 m/s the t ₉₀ value is much lower.				
Dimensions:	∅ 12 mm x 160 mm			




A 1128 - Thermocouple probe type K wire (for MI 6201 and MI 6401)

Type	Range	Accuracy	Resolution	Sensor
Type K	-40 °C to +1370 °C	± (3 °C + 1 dig.) (-40 °C to 9 °C) ± (1 % + 1 °C) (+9 °C to 400 °C) ± (3 % of r.) (401 °C to 1370 °C)	0.1 °C (-40 °C to 200 °C) 1 °C (>200 °C)	Resistive
Maximum humidity:	100 %RH			
Standard:	EN 60584-1			




A 1131 - Black globe thermometer (for MI 6201 and MI 6401)

Range	Accuracy	Resolution	Sensor
-10 °C to 9.9 °C	± 1.0 °C	0.1 °C	Resistive
10 °C to 49.9 °C	± 0.5 °C		
90 °C to 84.9 °C	± 1.0 °C		
85 °C to 120 °C	± 1.0 °C		
Maximum humidity:	100 %RH		
Reaction time t ₉₀ :	12 min		
Protection degree:	IP 42		
Standard:	ISO 7726 Class C		
Weight:	0.47 kg		




A 1132 - Luminance probe (for MI 6201 and MI 6401)

Class	Range	Accuracy	Resolution	Sensor
Class B	0.1 cd/m ² to 39.9 cd/m ² 40 cd/m ² to 399 cd/m ² 400 cd/m ² to 3999 cd/m ² 4000 cd/m ² to 40000 cd/m ²	± (0.2 cd/m ² + 8% of r.) ± (8% of r.) ± (8% of r.) ± (8% of r.)	0.1 cd/m ² (200 °C) 1 cd/m ² 1 cd/m ² 1 cd/m ²	Silicon photodiode with filter
Working temperature range:	0 °C to 40 °C			
Maximum humidity:	95 %RH			
Standard:	DIN 5032 class B			
Spectral response error:	less than 3.8 % according to CIE curve			
Acceptance angle:	3.5°			
Measuring distance:	0.75 m to 7 m			
Weight:	0.35 kg			



A 1180 - CO₂ probe (for MI 6201 and MI 6401)



CO₂ probe is used for carbon dioxide measuring in crowded places, such as schools, hospitals, hotels, universities and industry. It should be plugged to Multinorm instrument MI 6201.

Technology:	NDIR
Range:	0 - 5000 ppm
Accuracy:	± (3 % of reading + 40 ppm)
Resolution:	1 ppm
Stability:	< 2 % of Full scale over 10 years
Non Linearity:	< 1 % of Full scale
Response time t ₉₀ :	< 60 seconds
Warm up time:	< 2 minutes

A 1181 - CO probe (for MI 6201 and MI 6401)



CO probe A 1181 is used for carbon mono oxide measuring in workplaces, garages, rooms with furnaces and heaters. It should be plugged to Multinorm instrument MI 6201.

Technology:	electro chemical
Range:	0 - 500 ppm
Accuracy:	± (5 % of reading + 5 ppm)
Resolution:	1 ppm
Non Linearity:	< 5 % of Full scale
Response time t ₉₀ :	< 30 seconds
Sensor life:	> 2 years

Optional accessories









A 1159 - Tripod

A 1152 - Sound calibrator Class 1

A 1165 - Sound calibrator Class 2

A 1130 - Telescopic rod with 2.5 m cable for universal microclimatic probe A 1091 or Humidity & Air temperature probe A 1127

A 1161 - Tripod holder for black globe

A 1160 - Fast cell charger with a set of 6 pcs NiMH AA batteries, 100-240 V AC cable and 12 V DC cable

A 1145 - Extension cable for luminance or illuminance probe. Length: 1 m