

5000

AirDistSys 5000

air distribution measuring system

APPLICATION

The AirDistSys5000 offers efficient solutions for air temperature and low air velocity measurements at several points in rooms, as well as in jets from air thermal devices. Many years experience and the latest achievement in electronics were used in designing of the system.

It offers the following properties:

- simultaneous measurement of air speed and temperature at several points (up to 64 points)
- high accuracy and sensitivity as recommended in the standards
- short response time sufficient for measurement of fluctuating air velocity
- sensor calibrated with high precision in a wind tunnel with Laser-Doppler anemometer as reference
- stable calibration with possibility for periodical re-calibration by user
- several measuring units can be serially connected with one single cable, no measuring station or AD converter are required
- small size, with anemometer transducer built into the probe
- individual calibration certificate traceable to present ISO 7726, ISO 7730 and ASHRAE 55 standards
- logging of the data can be done on a portable PC through USB port.
- wire-less communication enabling data logging from distance (e.g. measurements with mobile stand or far way from supply sources).

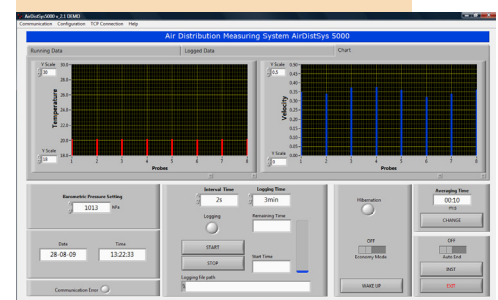
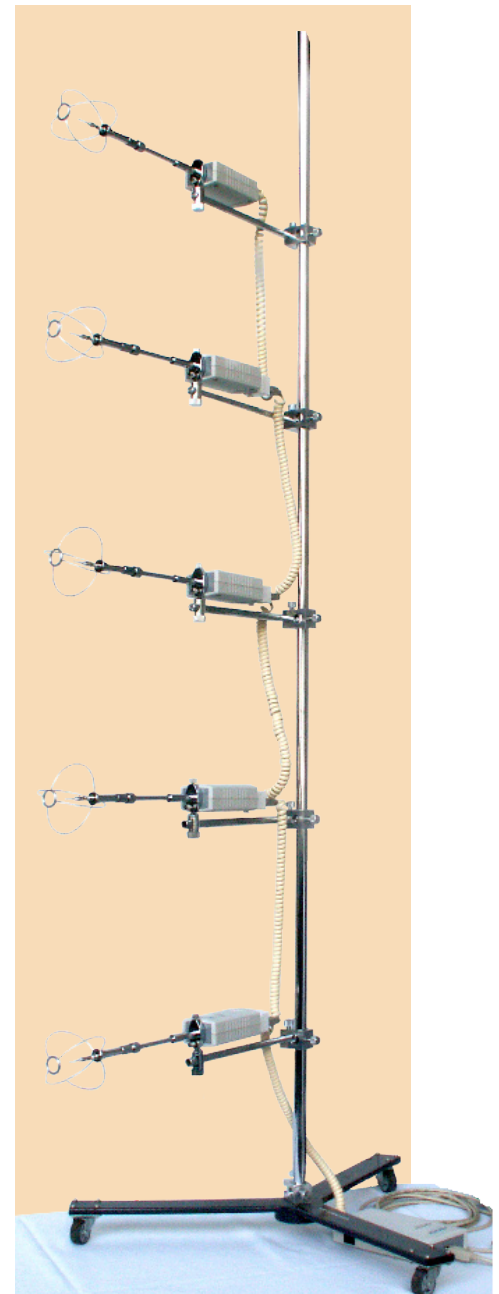
Two types of thermoanemometer transducers can be used with the system.

- SensoAnemo5100SF is a transducer with omnidirectional (spherical) air speed (magnitude of velocity vector) sensor. The sensor has wide range of frequency response and high sensitivity at low air speed. It is designated for low speed measurement and indoor environment assessment. The transducer measures mean and standard deviation of air speed as well as air temperature.
- SensoAnemo5100CL is a transducer with cylindrical air velocity sensor. It is designated for air velocity measurement in the ducts, openings and inside air supply devices. The transducer measures mean of air velocity and temperature.

The system may be upgraded up to 64 transducers. Digital RS485 output allows transmission of measured data at distance up to 1000 m. Transducers are serially connected and they create a mesh configuration. Optionally the system may be equipped with transducer SensoHigBar5300 which makes it possible to compensate automatically for the influence of barometric pressure changes on the anemometer readings. Through the SensoConnect USB interface the transducers are connected with USB port of computer. The wire-less version of the system uses SensoBee485 transmitter which is connected with the transducers and SensoBeeUSB receiver which is connected with a computer.

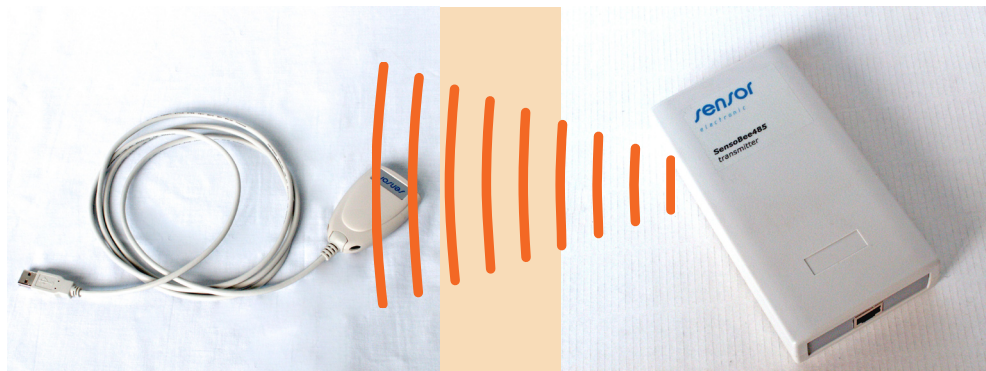
The system is supplied with a software made on the LabView platform. It allows for:

- automatic scanning configuration of the measuring system
- calculating mean temperature, mean and standard deviation of air speed, turbulence intensity, draught rating
- automatic compensation for the impact of changes in the barometric pressure
- logging and reporting of all data on a notebook PC or PDA



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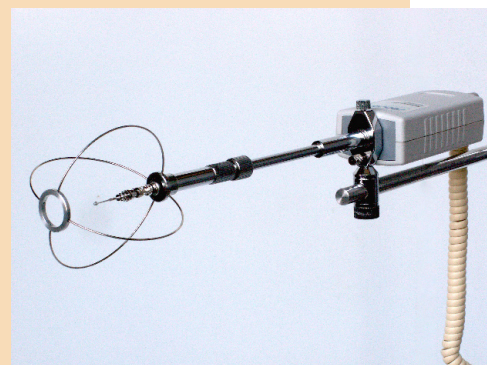
THERMOANEMOMETER TRANSDUCERS

Thermoanemometer transducers are equipped with a probe, which includes the velocity and temperature sensors. The sensors are vacuum covered with special aluminium coating that increases their resistance to contamination and decreases the effect of thermal radiation on the accuracy of velocity measurement. The sensors are mounted on a support arm with standard length of 185 mm (the length of the support arm can be ordered to be different). The velocity sensor operates in a constant temperature anemometer bridge (CTA) with automatic temperature compensation. The support arm is mechanically connected with transducer casing or connected through a cable and connector. The second solution allows for easy and fast replacement of a probe damaged during measurement with a new probe. The anemometer probe is automatically recognised by the transducer and in case of not proper probe connection the error code is generated. Optionally the transducer unit can be equipped with a non-linear analogue current output which enables to be used with any recorder, A/C converter or multimeter.

TECHNICAL DATA OF SENSOANEMO 5100SF

■ type of speed sensor:	omnidirectional, spherical
■ diameter of speed sensor	2mm
■ measurement speed range:	0.05...5 m/s (on request up to 10m/s)
■ accuracy of speed:	$\pm 0.02\text{m/s} \pm 1\%$ of readings
■ automatic temperature compensation:	< than $\pm 0.1\%/K$
■ upper frequency $f_{up}^{*)}$:	min. 1 Hz, typ. 1.5 Hz
■ temperature range:	-10...+50 °C
■ accuracy of temperature:	0.2 °C
■ sampling rate:	8 Hz
■ interface:	RS485
■ analog output (only velocity):	0...2V...5V or 0...20mA, non-linear
■ max analog output resistance:	250 Ohm
■ power supply:	3.6...9VDC
■ power consumption:	max. 80mA, typ.60mA, peak. 110mA, sleep 6mA

*) The upper frequency is defined as the highest frequency up to which the standard deviation ratio remains in the limits of 0.9 to 1.1 (see EN13182 Ventilation in buildings - Instrumentation requirements for air velocity measurements in ventilated spaces, 2002, European Committee for Standardization, Brussels).



TECHNICAL DATA OF SENSOANEMO 5100CL

■ type of velocity sensor:	cylindrical
■ measurement velocity range:	0.2...10 m/s (on request up to 20m/s)
■ accuracy:	$\pm 0.05\text{m/s} \pm 3\%$ of readings
■ automatic temperature compensation:	< than $\pm 0.2\%/K$
■ temperature range:	-10...+50 °C
■ accuracy of temperature:	0.4 °C
■ interface:	RS485
■ analog output (only velocity):	0...2V...5V or 0...20mA, non-linear
■ max analog output resistance:	250 Ohm
■ power supply:	3.6...9VDC
■ power consumption:	max. 80mA, typ.60mA, peak. 110mA, sleep 6mA

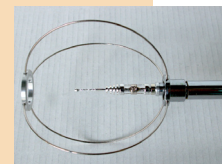


ORDERING CODES

Thermoanemometer transducer with omnidirectional spherical sensor

SensoAnemo 5100SF
SensoAnemo 510xSF
SensoAnemo 511xSF
SensoAnemo 512xSF
SensoAnemo 513xSF
SensoAnemo 514xSF

support arm permanently connected with transducer casing
 with probe cable of x length (1, 2 or 3m)
 with individual dynamic test report
 with analog output 0-2V
 with analog output 0-5V
 with analog output 0-20mA



Thermoanemometer transducer with cylindrical sensor

SensoAnemo 5100CL
SensoAnemo 510xCL
SensoAnemo 51TxCL
SensoAnemo 512xCL
SensoAnemo 513xCL
SensoAnemo 514xCL

support arm permanently connected with transducer casing
 with probe cable of x length (1, 2 or 3m)
 with telescopic support arm
 with analog output 0-2V
 with analog output 0-5V
 with analog output 0-20mA



Pressure and/or humidity transducer

SensoHigBar 5301
SensoHigBar 5303

only with barometric pressure sensor
 with pressure and humidity sensors

ACCESSORIES

SensoConnect USB
SensoBoxSupply

interface RS485/USB (to computer)
 3-way adapter for power supply and SensoCable connecting
 (one SensoBoxSupply for no more than 8 transducers for
 distance between transducers and SensoBoxSupply no more
 than 30m)

SensoBee 485

wire-less transmitter with battery compartment for
 4 Ni-Mh accu 1.2V (recommended for connecting a group of
 4 transducers, operating time: 6-8h)

SensoBee USB

wire-less receiver with USB port (to computer)

SensoCable 56xx

connecting cables for power supplying and data transferring
 – where xx is the length of cable (i.e. xx=05 for 5m, xx=10
 for 10m)

Cable adapters

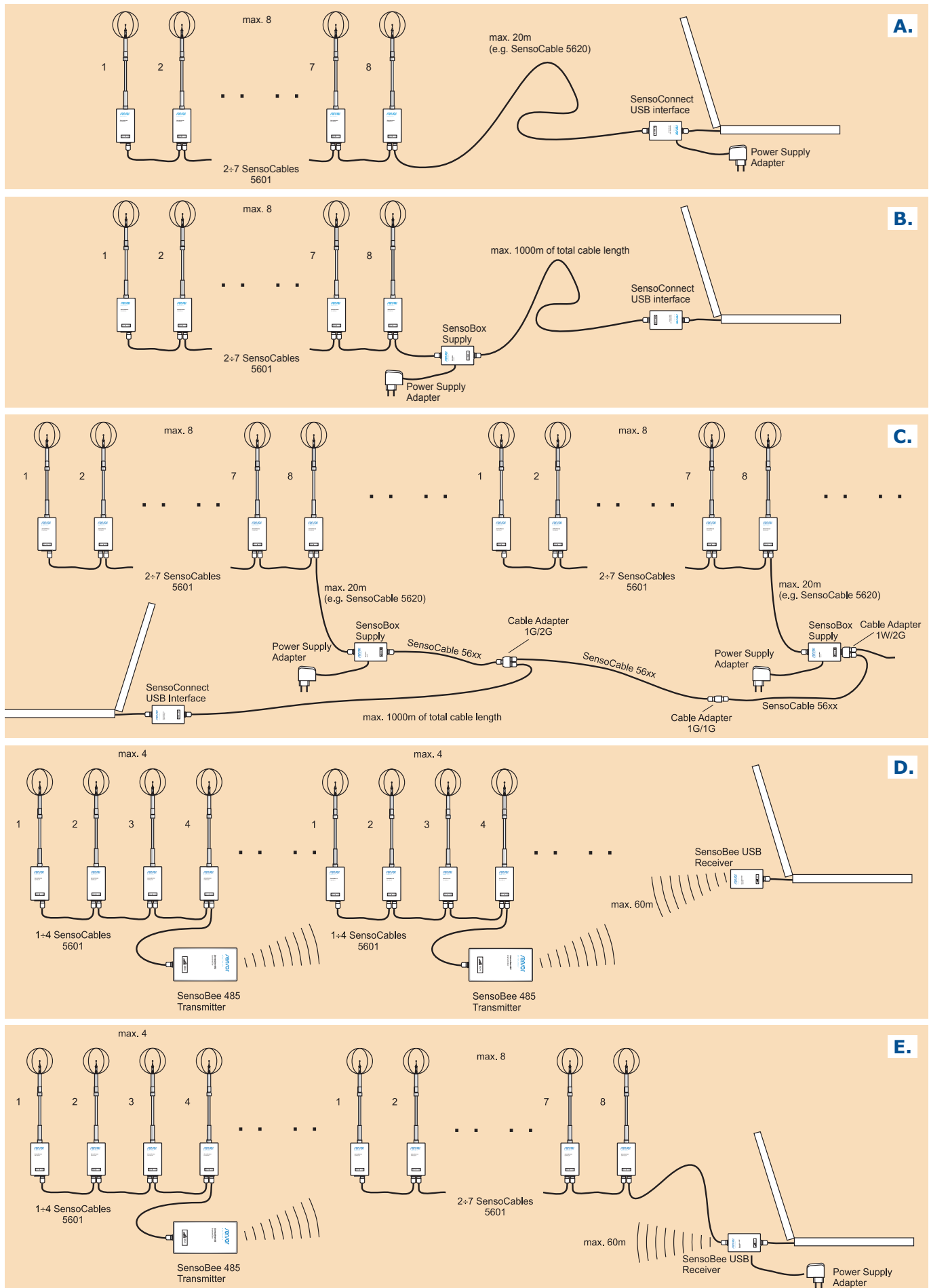
1W/2G RJ45
1G/2G RJ45
1G/1G RJ45

1-way plug/2-way socket adapter
 1-way socket/2-way socket adapter
 1-way socket/1-way socket adapter

Handle unit
Power supply adaptor

allows a quick mounting of the transducers in a tripod
 DC6-9V1A/110...230V 50...60Hz

EXAMPLES OF CONFIGURATION



- A.** Wire data transmission - single pole configuration (small distance <20m)
- B.** Wire data transmission - single pole configuration (great distance >20m)
- C.** Wire data transmission - multipole configuration
- D.** Wire-less data transmission (max distance <60m)
- E.** Hybrid data transmission