OMET
Since 1991

Complete Catalogue

MEASUREMENT INSTRUMENTS

MEASUREMENT INSTRUMENTS

About COMET SYSTEM

COMET SYSTEM, s.r.o. is an independent company developing and manufacturing computerized measuring devices since 1991. Currently the most of the production includes datalogging measuring systems in several instrument families, humidity and temperature transmitters and portable thermo-hygro-barometers. Company is concentrated especially to the high technological level of its products. Comet instruments are designed for accurate measurement. Each instrument comes with included traceable calibration certificate based on requirements of EN ISO/IEC 17025 standard with declared metrological traceability of etalons. All instruments enable adjustment and calibration. Comet instruments are designed not only for measurement but also for long term monitoring in applications requiring accuracy and reliability.

Our mission is to develop and manufacture high quality instruments for measurement and record of:

- temperature
- relative humidity
- atmospheric pressure
- CO2
- electrical current
- electrical voltage
- pulses
- two-state signals

Most instruments also enable to calculate:

- dew point temperature
- absolute humidity
- specific humidity
- mixing ratio
- specific enthalpy

Products:

- transmitters and regulators
- battery powered data loggers
- sixteen channel monitoring system
- temperature recorders for the transport
- portable thermo-hydro-barometers

CATALOG OF MEASURING INSTRUMENTS May 2012

CONTENT

DATA LOGGERS Sxxxx, Rxxxx, Gxxxx

2 Temperature data loggers
4 Relative humidity and temperature data loggers
7 Data loggers for current 0 - 20mA and voltage 0 - 5V
9 Pulse logger for counting pulses
11 Event logger with four binary inputs
13 Temperature recorder with printer T-PRINT G0221E, G0241 for cabin
15 Temperature recorder with printer T-PRINT G0841 for semi-trailer
17 Wireless communication with loggers via GSM

PORTABLE THERMOMETERS HYGROMETERS BAROMETERS Cxxxx, Dxxxx

19 Commeter - thermometers hygrometers barometers
21 Commeter - thermometers -200 to +500°C for Pt1000 and Ni1000
22 Commeter - thermometers -200 to +1700°C for thermocouples
23 Optional programs for data loggers Sxxxx, Rxxxx, Gxxxx, Dxxxx

MONITORING SYSTEMS

24 Low cost monitoring system Hx531R for rack 19"
27 Universal monitoring system MS6D, MS6-Rack, MS6R
30 Monitoring system MS55D
35 Accessories for MS6x, MS55D

41 **TEMPERATURE HUMIDITY PRESSURE CO_2 TRANSMITTERS Pxxxx, Txxxx**

42 Low cost temperature transducers Pt100, Pt1000 - output 4-20mA, Pxxxx family
43 Temperature and humidity transmitters - 4-20mA output
45 Atmospheric pressure transmitters - 4 - 20mA or 0 - 10V output
46 CO_2 concentration transmitters - 4 - 20mA or 0 - 10V output
47 Temperature and humidity transmitters - 0 - 10V output
49 Temperature humidity pressure CO_2 transmitters - RS485 output
51 Temperature humidity pressure CO_2 transmitters - RS232 output
53 PoE Ethernet thermometers P8610, P8631
55 Low cost Ethernet thermometers P8510, P85x1
57 Compact Ethernet temperature humidity pressure CO_2 transmitters
59 Precise Ethernet temperature humidity pressure transmitters
62 Accessories for Ethernet transmitters

INTERIOR TRANSMITTERS Txx18

63 Interior temperature humidity pressure transmitters - 4 - 20mA, 0 - 10V output
65 Interior temperature humidity pressure transmitters - RS485, RS232 output

67 **TEMPERATURE HUMIDITY PRESSURE CO_2 TRANSMITTERS Hxxxx**

68 Temperature humidity regulators with relay output
70 Transmitters and regulators with relay outputs and RS485 interface
72 Transmitters and regulators with relay outputs and RS232 interface
74 Transmitters and regulators with relay outputs and Ethernet interface

SOFTWARE AND ACCESSORIES FOR TRANSMITTERS

77 Accessories for humidity transmitters and regulators
79 Data acquisition software DBS Sensor Monitor

TEMPERATURE PROBES

81 Temperature probes with RTD Pt1000 sensor
83 Temperature probes with type K thermocouple (NiCr-Ni)

TEMPERATURE DATA LOGGERS

Data logger S0141 (S0541, S0841, S0842) with USB adapter

- **transport of food**
- **warehouses**
- **technological processes**
- **museums, archives, galleries**

Type approval certificate accordingly with EN 12830 - Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream.

Data loggers are designed for recording of temperature only or temperature in combination with other signals. Values are stored to a non volatile memory. Data transfer to the PC is performed via serial interface USB, RS232 or Ethernet by means of a proper adapter or GSM modem.

Advantages:

- included traceable calibration certificate
- fast data transfer to the PC - full memory of 32 000 readings for approximately 30s
- variability of connection to the computer - USB, RS232, Ethernet, GSM modem
- permanent connection to the PC enabled, data is possible to download even during logging
- large dual line display with special symbols
- optional display of minimum and maximum measured values (reset of min/max memory from PC or by magnet)
- dual level alarm is enabled for each channel, alarm is indicated by blinking of the value on the LCD display or LED
- two alarm modes: instant or with memory (detected alarm is indicated permanently till alarm memory is cleared)
- robust watertight case, easy installation, locking enabled
- low power consumption - battery life up to 7 years, indication of remaining battery life, easy battery replacement
- standard temperature sensor is Pt1000, switchable to Ni1000/6180ppm at range -50 to +150°C
- models S0841, S0842 enable to combine temperature measurement with logging of contact state - e.g.door contact
- logging start/stop is enabled in several ways: at certain time and date programmed from computer, by delivered magnet or depending on binary input state (S0841, S0842 model)
- also special logging mode is enabled, when logging runs only, if some of measured values are out of adjusted alarm limits
- each logger is possible to describe with text of maximum 32 characters
- each channel is possible to describe with text of maximum 16 characters
- password protection is enabled to prevent unauthorized manipulation with logger

COMMON TECHNICAL PARAMETERS:

Operating temperature range - models R0110 no display:	-30 to +80°C, -40 to +80°C logger R0110
Operating temperature range - models S0xxx with display:	-30 to +70°C
Accuracy of temperature measurement - internal sensor:	±0.4°C (not valid for economy loggers S0110E and R0110E)
Accuracy of Pt1000 temperature input without probe:	±0.2°C from -50 to +100°C
	±0.2% from reading from +100 to +260°C
	±0.4% from reading from -90 to -50°C
Resolution:	0.1°C
Real time clock:	year, leap year, month, day, hour, minute, second
Logging interval:	adjustable from 10s to 24h
LCD display and alarm state refresh:	every 10 s
Total memory capacity:	32000 values in non-cyclic mode
Logging modes:	non-cyclic – logging stops after filling the memory
	cyclic – after filling memory oldest data is overwritten by new
Dimensions without connectors:	loggers with display 93x64x29mm
	loggers without display 93x64x26mm
Power:	Lithium battery 3.6V, size AA
Typical battery life:	7 years R0110, 6 years S0xxx
Protection:	IP67 - protected against influence of temporary immersion into water

LP004
Start/stop magnet

LP012
COM adapter for communication via RS232

LP003
USB adapter for communication

TEMPERATURE DATA LOGGERS

Model	LOGGERS WITH DISPLAY	measured signals	measuring range
S0110	Single channel thermometer with internal sensor	1 x T	-30 to +70°C
S0110E	Economy single channel thermometer with internal sensor. Measuring accuracy: ±0.6°C from -30 to +30°C and ±0.8°C from +30 to +70°C	1 x T	-30 to +70°C
S0111	Single channel thermometer for record from one external probe	1 x T	-90 to +260°C
S0121	Dual channel thermometer for recording from two external probes	2 x T	-90 to +260°C
S0122	Dual channel thermometer for recording from one internal sensor and one external probe	2 x T	external -90 to +260°C internal -30 to +70°C
S0141	Four channel thermometer for recording from four external probes	4 x T	-90 to +260°C
S0541	Dual channel thermometer for record from two external probes. Additional two universal inputs 0 to 5Vdc. Accuracy ±0.2% FS.	2 x T 2 x 0-5V	-90 to +260°C
S0841	Dual channel thermometer for recording from two external probes. Additional inputs for two binary signals, e.g. from door contact.	2 x T 2 x contact	-90 to +260°C
S0842	Three channel thermometer for recording from three external probes. Additional input for one binary signal, e.g. from door contact.	3 x T 1 x contact	-90 to +260°C
Model	**LOGGERS WITHOUT DISPLAY**	measured signals	measuring range
R0110	Single channel thermometer with internal sensor	1 x T	-40 to +80°C
R0110E	Economy single channel thermometer with internal sensor. Measuring accuracy: ±0.6°C from -30 to +30°C and ±0.8°C from +30 to +70°C	1 x T	-30 to +70°C

No accessory or temperature probes are included. For thermometer basic use it is necessary to order USB adapter or COM adapter for communication with computer, optionally start/stop magnet, if needed to control logging the other way than directly from computer. Also connector(s) for external signals for S0541, S0841, S0842 loggers is necessary to order.

Included accessories:

Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard. It is possible to download free basic program for Windows anytime. Program enables to control all logger functions and viewing and printing of record in numerical and simple graphic format.

LP005 - LAN adapter

Thermometer R0110, R0110E

F9000 - wall holder

Optional accessories:

- SWR004 - optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions - see also page 23.
- DBL Logger Program - database program for working with data from Comet loggers. Program enables i.a.:
  - To set locally the GSM modem via RS232 link by means of QMS2901 cable.
  - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
  - Measurement from different Comet devices is possible to combine in one table or graph.
  - To choose any time interval for analysis.
  - Print, export to PDF - table and graph.

  Other freeware needed for system operation:
  - database server Microsoft SQL or MySQL - see also page 23
- SW100 - CD with free Windows program
- LP012 - COM adapter for communication with the PC via serial RS232 link
- LP003 - USB adapter for communication with the PC via USB port
- LP005 - LAN adapter with 50 cm cable - external converter for communication with the PC via Ethernet. Including ac/dc adapter 100 to 240Vac/5Vdc.
- LP005-5 - LAN adapter with 5m cable - external converter for communication with the PC via Ethernet. Including ac/dc adapter 100 to 240Vac/5Vdc.
- Accessories for wireless communication with loggers via GSM - see further
- LP004 - start/stop magnet
- MD036 - self adhesive Dual Lock for easy installation

  A4203 – spare Lithium battery 3.6V size AA

  For models S0xx1, S0xx2 it is necessary to order temperature probes with RTD Pt1000 sensors equipped with female K1321 connectors - there is a symbol /E behind probe name.
- K1321 - female connector for connection of S0541 logger voltage signal 0-5V, S0841,
- S0842 logger binary signal, protection IP67
- F9000 - wall holder secured against unauthorized removal

RELATIVE HUMIDITY AND TEMPERATURE LOGGERS

Thermometer hygrometer S3120

- **Food and beverages industry (HACCP)**
- **Pharmaceutical industry**
- **HVAC (heating, ventilation, air conditioning, cooling)**
- **Building and energy management**
- **Research and development, Laboratories (GLP)**
- **Technological processes and warehouses**
- **Museums, archives, galleries**

Data loggers are designed for recording of temperature or temperature together with signal from a contact. Values are stored to a non volatile electronic memory. Data transfer to the personal computer for further analysis is performed via USB, RS232, GSM or Ethernet interface by means of a proper adapter.

Advantages:

- included traceable calibration certificate
- easy user ajdjustment and calibration of relative humidity by means of optional accessory and PC software
- variability of connection to the computer - USB, RS232, Ethernet, GSM modem
- fast data transfer to the PC (full memory of 32 000 readings for approximately 30s)
- permanent connection to the PC enabled, data is possible to download even during logging
- large dual line display with special symbols, switchable
- optional display of minimum and maximum measured values (reset of min/max memory from PC or by magnet)
- dual level alarm is enabled for each channel, alarm is indicated by blinking of the value on the LCD display or LED
- two alarm modes: instant or with memory (detected alarm is indicated till alarm memory is cleared)
- robust watertight case, easy installation, locking enabled
- low power consumption - battery life up to 7 years, indication of remaining battery life, easy battery replacement
- standard temperature sensor is Pt1000
- combination of measurement of temperature and RH with two user calibrated voltage signals 0-5V
- also logging mode enabled, when logging runs only, if measured values are out of adjusted alarm limits
- each logger is possible to describe with text of maximum 32 characters
- each channel is possible to describe with text of maximum 16 characters
- password protection is enabled to prevent unauthorized manipulation with logger

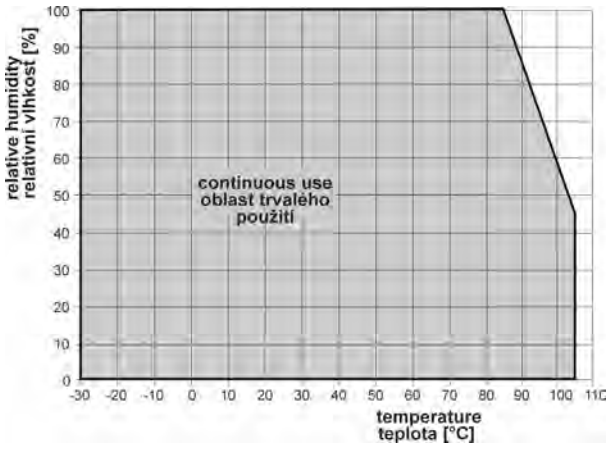
TECHNICAL PARAMETERS

Operating temperature range - models R312x no display:	-30 to +80°C
Operating temperature range - models S3xxx with display:	-30 to +70°C
Accuracy of temperature measurement - internal sensor:	±0.4°C
Accuracy of the S3631 data logger Pt1000 input without probe:	±0.2°C from -50 to +100°C ±0.2% from reading from +100 to +260°C ±0.4% from reading from -90 to -50°C
Accuracy of relative humidity measurement:	±2.5% RH from 5 to 95% at 23°C
Accuracy of dew point temperature measurement:	±1.5°C from 30 to 95% RH
Resolution:	0.1°C, 0.1%RH
Real time clock:	year, leap year, month, day, hour, minute, second
Logging interval:	adjustable from 10s to 24h
Display and alarm refresh:	every 10 s (every minute in low power mode)
Total memory capacity:	32000 values in non-cyclic mode
Data logging modes:	non-cyclic – logging stops after filling the memory cyclic – after filling memory oldest data is overwritten by new
Dimensions without connectors:	S3xxx loggers with display 93x64x29mm R312x loggery without display 93x64x26mm
Power:	Lithium battery 3.6V, size AA
Typical battery life in low power mode (1min):	7 years R312x, 6 years S3120, S3121, S3631, S3541
Typical battery life in standard mode (10 second):	3 years R312x, 2.5 years S3120, S3121, S3631, S3541
Battery life in continuous online mode with interval 1 min:	reduced to 70% of the above lives
Battery life in continuous online mode with interval 10 s:	1 year
Protection of loggers with internal sensors:	IP67, sensors covered with a plastic cover with IP30 protection
Protection of loggers S3121, R3121 with probe on the cable:	IP67, sensors protected with a stainless steel mesh with IP40 protection. Filtering ability 0.025mm.

RELATIVE HUMIDITY AND TEMPERATURE LOGGERS

Model	LOGGERS WITH DISPLAY	measured signals	measuring range
S3120	THERMOMETER-HYGROMETER with internal sensors. Dew point temperature reading.	T+RH	temperature -30 to +70°C humidity 0 to 100%
S3121	THERMOMETER-HYGROMETER including dew point temperature reading. With external T+RH probe on a 1 meter cable. Cable lengths 2 and 4 meters available optionally. Probe diameter is 18mm, length 90mm.	T+RH	temperature -30 to +105°C* humidity 0 to 100%
S3631	THERMOMETER-HYGROMETER with internal T+RH sensors. Additional connector for external temperature probe. Alternative display of dew-point temperature, external probe temperature and the temperature difference of external probe and dew-point temperature.	T+RH +Text	internal -30 to +70°C external -90 to +260°C humidity 0 to 100%
S3541	THERMOMETER-HYGROMETER including dew-point calculation with internal T+RH sensors. Additional Canon 9 pins connector for two signals 0 to 5Vdc (±0.2% FS accuracy). Necessary to order connector for connection of input signals.	T+RH 2 x 0 to 5V	internal -30 to +70°C humidity 0 to 100%
Model	**LOGGERS WITHOUT DISPLAY**	measured signals	measuring range
R3120	THERMOMETER-HYGROMETER with internal sensors. Dew point temperature reading.	T+RH	temperature -30 to +80°C humidity 0 to 100%
R3121	THERMOMETER-HYGROMETER including dew point temperature reading. With external T+RH probe on a 1 meter cable. Cable lengths 2 and 4 meters available optionally. Probe diameter is 18mm, length 90mm.	T+RH	temperature -30 to +105°C* humidity 0 to 100%

* temperatures over +85 with the limitation specified in graph



Thermometer hygrometer S3541 with 0 to 5V inputs

No accessory is included. For basic use it is necessary to order USB adapter or COM adapter for communication with computer, optionally start/stop magnet, if needed to control logging the other way than directly from computer. Also connector for input signals connection is necessary to order - only for model S3541.

Included accessories:
Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard. Included is also battery. Free program for Windows is ready to download from www.cometsystem.cz. Program enables to control all logger functions and viewing and printing of record in numerical and simple graphic format. It is possible to export logged values to dbf or txt formats for further analysis.

Optional accessories:
- SW100 - CD with free PC program
- LP012 - COM adapter for communication with personal computer via RS232 serial port
- LP003 - USB adapter for communication with personal computer via USB port
- LP005 - LAN adapter with cable 50cm for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc.
- LP005-5 - LAN adapter with cable 5m for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc.
  Accessories for wireless communication with loggers via GSM - see further
- LP004 - start/stop magnet
- MD036 - self adhesive Dual Lock for easy installation
- A4203 - spare Lithium battery 3.6V, no leads, size AA
- for S3631 it is necessary to order probe with Pt1000 sensor with K1321 connector - symbol /E behind probe name
- K0921 - watertight female connector Canon 9 pins for connection of 0-5V signals of S3541 logger, protection IP67
- K0925 - female connector Canon 9 pins for connection of input signals of S3541 logger, protection IP20
- K0945 - adapter with terminals for easy connection of 0-5V signals of S3541, protection IP20

- F5200 - grey sensor cover with filter from stainless steel mesh, filtering ability 0,025mm
- F5200B - black sensor cover with filter from stainless steel mesh, filtering ability 0,025mm for S3121, R3121 loggers
- F9000 - wall holder with lock
- SWR004 - optional software for Windows color print, vertical and time zooming of graphs and other functions
- DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.:
- To set locally the GSM modem via RS232 link by means of QMS2901 cable.
- To view selected channels from any Comet logger together with selected channels of other Comet loggers.
- Measurement from different Comet devices is possible to combine in one table or graph.
- To choose any time interval for analysis, print or export to PDF - table and graph - see also page 23.

LP004 - start/stop magnet

LP003
USB adapter for communication

LP012
COM adapter for communication via RS232

Logger R3120

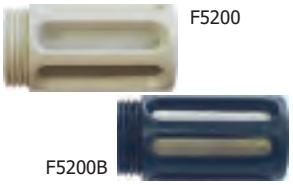
Thermometer hygrometer S3121

F9000 - wall holder with lock

K0945 - adapter for S3541

K0921- watertight connector
for input signals of S3541

LP005 - LAN adapter



Sensor cover with filter from
stainless steel mesh

Accessory for humidity adjustment and calibration by the user:

- MD046 - vessel for humidity calibration and adjustment
- HM023 - set of 5 humidity standards 10% RH with 5 application pads
- HM024 - set of 5 humidity standards 80% RH with 5 application pads

LOGGERS for current 0-20mA, voltage 0-5Vdc and binary signal

- **locations with no electric power**
- **technological processes and laboratories**
- **long term field measurement**

Loggers are designed for recording of voltage signal 0 - 5V (optionally 0 - 10V) or current signal 0 - 20mA. Values are stored to a non volatile electronic memory. Data transfer to the personal computer for further analysis is performed via serial interface RS232, USB or Ethernet by means of a proper adapter or GSM modem.

Advantages:

- included traceable calibration certificate
- variability of connection to the computer - USB, RS232, Ethernet, GSM modem
- fast data transfer to the PC - full memory for approximately 30s
- permanent connection to the PC enabled, data is possible to download even during logging
- large data memory 32000 values
- large dual line display with special symbols
- optional display of minimum and maximum measured values (reset of min/max memory from PC or by magnet)
- dual level alarm is enabled for each channel, alarm is indicated by blinking of the value on the LCD display
- two alarm modes are enabled: instant or with memory (detected alarm is indicated permanently till alarm
- memory is cleared)
- robust watertight case, easy installation, locking enabled
- low power consumption, battery life up to 6 years, indication of remaining battery life, easy battery replacement
- logging start/stop is enabled: at certain time and date programmed from computer or by delivered magnet
- also special logging mode is enabled, when logging runs only, if some of measured values are out of adjusted
- alarm limits
- input signal is recalculated and displayed in real measured physical units by means of the PC software
- each channel is possible to describe with text of 16 characters, each logger with text of maximum 32 characters password protection enabled to prevent unauthorized manipulation

TECHNICAL PARAMETERS

Measurement accuracy:	±0.2% FS
Resolution of voltage input:	13 bits (8192 levels)
Resolution of current input:	7900 levels
Signal character at binary input:	from potential-less contact or two-state voltage signal
Minimum pulse duration at binary input:	500 ms (shorter pulses may not be recorded)
Maximum frequency at binary input:	0.5 Hz (i.e. maximum 5 pulses for 10 s)
Power current through contact at binary input:	3 uA (contact closed)
Voltage accross open contact at binary input:	maximum 3.6 V
Low voltage level at binary input:	0 to +0.2 V (maximum current from the input 3 uA)
High voltage level at binary input:	+3.0 to +30 V (maximum current to the input 100 nA)
Logging interval:	adjustable from 10s to 24hours
Display refresh and alarm state refresh:	every 10 s
Total memory capacity:	32000 values (in non cyclic mode)
Logging modes:	noncyclic logging stops after filling the memory cyclic after filling memory oldest data is overwritten by new
Operation temperature range:	-30 to +70°C
Real time clock:	year, leap year, month, day, hour, minute, second
Dimensions without connectors, weight:	93x64x29mm, 130g
Power:	Lithium battery 3.6V, size AA
Typical battery life:	6 years
Battery life in on-line mode with interval 1min:	4 years
Battery life in on-line mode with interval 10s:	1 year
Protection:	IP67 - protected against influence of temporary immersion into water

LOGGERS for current 0-20mA, voltage 0-5Vdc and binary signal

Model	DESCRIPTION	measuring range
S5011	Single channel voltage logger	0-5V dc + binary signal
S5021	Dual channel voltage logger. Input channels are not galvanic isolated and have common ground.	0-5V dc + binary signal, optionally range 0-10V dc
S6011	Single channel current logger. The current loops should be powered from external power supply.	0-20mA dc + binary signal
S6021	Dual channel current logger. The current loops should be powered from external power supply. Input channels are not galvanic isolated and have common ground.	0-20mA dc + binary signal

No accessory is included. For basic use it is necessary to order USB adapter or COM adapter for communication with computer, optionally start/stop magnet, if needed to control logging the other way than directly from computer. Also connector for input signals connection is necessary to order.

Included accessories:

Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard. Included is also battery. Free program for Windows is ready to download from www.cometsystem.cz. Program enables to control all logger functions and viewing and printing of record in numerical and simple graphic format. It is possible to export logged values to dbf or txt formats for further analysis.

Optional accessories:

- SWR004 - optional software for Windows - color print, vertical and time zoom of graphs and other functions
- DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.:
  - To set locally the GSM modem via RS232 link by means of QMS2901 cable.
  - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
  - Measurement from different Comet devices is possible to combine in one table or graph.
  - To choose any time interval for analysis, print or export to PDF - table and graph - see also page 23.
- SW100 - CD with free PC program
- LP012 - COM adapter for communication with personal computer via RS232 serial port
- LP003 - USB adapter for communication with personal computer via USB port
- LP005 - LAN adapter with 50cm cable for communication with the PC via Ethernet, including ac/dc adapter
- LP005-5 - LAN adapter with 5m cable for communication with the PC via Ethernet, including ac/dc adapter
- Accessories for wireless communication with loggers via GSM - see further
- LP004 - start/stop magnet
- MD036 - self adhesive Dual Lock for easy installation
- K0921 - watertight female connector Canon 9 pins with cover for connection of input signal, protection IP67
- K0925 - female connector Canon 9 pins with cover for connection of input signal, no protection (IP20)
- K0945 - adapter with terminals for easy connection of input signals, protection IP20
- F9000 - wall holder secured against unauthorized removal
- A4203 - spare Lithium battery 3.6V, no leads, size AA

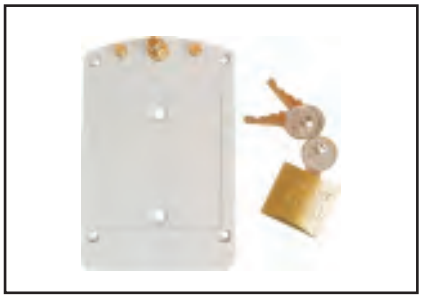
K0945 Adapter for input signals

LP012 COM and LP003 USB adapter for communication with PC

K0921 watertight connector

LP005 LAN adapter

LP004 start/stop magnet



F9000 wall holder with lock

S7021 PULSE LOGGER
WITH COUNTING AND BINARY INPUTS

- **recording of pulses from water meter, gas meter, electrometer, flow meter, revolution counter**
- **time event record from binary signal (e.g. door opening/closing ..)**
- **production monitoring**
- **long term field measurement**

Logger is designed for counting of pulses, optionally for logging of time events from binary signal. Counter reading and actual state of binary input are displayed on dual line LCD display. Counter status is stored in adjustable time interval into logger's non-volatile memory. Time of event (change of binary input state) is stored immediately after event. Data transfer to the personal computer for further analysis is performed via serial interface RS232, USB or Ethernet by means of a proper adapter or GSM modem.

- Counter reading is possible to display in real value, range of the LCD display is 19999, after exceeding of displayable value only lowest places are displayed with warning symbol.
- Counter has two modes enabled: after counting of maximum value counter stops or overflows and counts again.
- Counter reset enabled from the PC.
- In the record is possible to indicate counter state or counter state increment between logging intervals.
- Record from binary input contains date and time (resolution of 1 s) when change of input logic level appeared and its logic state.
- Record from binary input is possible to disable.
  It is possible from the PC to assign both logic states of binary input a description, which is displayed on the record.
- On the LCD logic states are always displayed as ON (contact closed) and OFF (contact opened).
- Variability of connection to the computer - USB, RS232, Ethernet, GSM modem.
- Permanent connection to the PC enabled, data is possible to download even during logging.
- Logging start/stop is enabled: at certain time and date programmed from computer, by signal connected to binary input or by delivered magnet.
- Also special logging mode is enabled, when logging runs only, if counter reading is out of adjusted alarm limits.
- Input pulse signal is recalculated and displayed in real measured physical units by means of the PC software.
- Each channel is possible to describe with text of maximum 16 characters, each logger with text of 32 characters.
- Password protection enabled to prevent unauthorized manipulation.
- Extremely low consumption from the battery, indication of remaining battery life, easy battery replacement.
- Robust watertight case, easy installation, locking enabled.

TECHNICAL PARAMETERS	
Counter range – user selectable:	in 16bit mode: 0 to 61 695 pulses, memory of 32 504 records in non-cyclic mode
	in 32bit mode: 0 to 2 021 654 527 pulses, memory of 16 252 records in non-cyclic mode
Input signals:	from potential-less contact or two state voltage signal
Parameters of counting input:	minimum pulse duration: 1 ms (shorter pulses may not be recorded)
	maximum frequency: 500 Hz
Parameters of binary input:	current through closed contact: 30microA, maximum voltage across opened contact: 3.6V
	LOW voltage level: 0 to +0.2V (current from input max 30microA)
	HIGH voltage level: +3.0 to +30V (current to input max 100nA)
	minimum pulse duration: 500 ms (shorter pulses may not be recorded)
	maximum frequency: 0.5Hz (i.e. maximum 5 pulses in 10s)
	current through closed contact: 3microA, maximum voltage across opened contact: 3.6V
	LOW voltage level: 0 to +0.2V (current from input max 3microA)
	HIGH voltage level: +3.0 to +30V (current to input max 100nA)
Operational temperature range:	-30 to +70°C
Real time clock:	year, leap year, month, day, hour, minute, second
Data logging interval of counting input:	adjustable from 10s to 24hours
Refresh of display and alarm state:	every 10 s
Data logging modes:	noncyclic – logging stops after filling the memory
	cyclic – after filling memory oldest data is overwritten by new
Built-in connector for input signals:	male Canon 9 pins
Dimensions without connector, weight:	93x64x29mm, 130g
Power:	Lithium battery 3,6V, size AA, typical life 3 years, indication of remaining life
Protection:	IP67- protected against influence of temporary immersion into water

S7021 PULSE LOGGER
WITH COUNTING AND BINARY INPUTS

No accessories are included. For basic use it is necessary to order USB adapter or COM adapter for communication with computer, optionally start/stop magnet, if needed to control logging the other way than directly from computer or external binary signal. Also connector for input signals connection is necessary to order.

Included accessories: battery, free program for Windows is ready to download from www.cometsystem.cz. Program enables to control all logger functions and viewing and printing of recorded data in numerical and simple graphical format. It is possible to export logged values to dbf or txt formats for further analysis.

Optional accessories:

- SWR004 - optional software for Windows color print, vertical and time zooming of graphs and other functions
- DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.:
  - To set locally the GSM modem via RS232 link by means of QMS2901 cable.
  - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
  - Measurement from different Comet devices is possible to combine in one table or graph.
  - To choose any time interval for analysis, print or export to PDF - table and graph - see also page 23.
- SW100 - CD with free PC program
- LP012 - COM adapter for communication with personal computer via RS232 serial port
- LP003 - USB adapter for communication with personal computer via USB port
- LP005 - LAN adapter with cable 50cm for communication with the PC via Ethernet, including ac/dc adapter
- LP005-5 - LAN adapter with cable 5m for communication with the PC via Ethernet, including ac/dc adapter
- Accessories for wireless communication with loggers via GSM - see further
- LP004 - start/stop magnet
- MD036 - self adhesive Dual Lock for easy installation
- K0921 - watertight female connector Canon 9 pins with cover for connection of input signal, protection IP67
- K0925 - female connector Canon 9 pins with cover for connection of input signal, no protection (IP20)
- K0945 - adapter with terminals for easy connection of input signals, protection IP20
- F9000 - wall holder secured against unauthorized removal
- A4203 - spare Lithium battery 3.6V, size AA, no leads

Warranty: 2 years

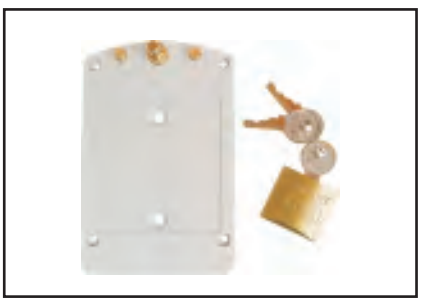
K0945 Adapter for input signals

LP012 COM and LP003 USB adapter for communication with PC

K0921 watertight connector

LP005 LAN adapter

LP004 start/stop magnet



F9000 wall holder with lock

S7841 EVENT LOGGER
WITH FOUR BINARY INPUTS

Applications:

- **record of door opening / closing**
- **monitoring of functions of a machine**
- **record of technological processes**
- **record of running hours of a machine**

Event logger records beginning and end of monitored event by sensing logical state of signal coming to its input from monitored object.
It is possible to download recorded values to the PC by a communication adapter.

Advantages:

- Variability of PC connectivity - RS232, USB, Ethernet, GSM modem.
- Permanent connection to the PC enabled, data is possible to download even during logging.
- Large dual line display, switchable.
- Robust case, easy installation, locking enabled.
- Low power consumption from battery, battery life up to 4 years.
- Indication of remaining battery life, easy replacement of the battery.
- Logging start/stop is enabled in several ways: at certain time and date programmed from computer, by delivered magnet or depending on logical state on channel 4 input.
- Each logical state is possible to describe from the PC with the text of maximum 8 characters.
- Description is used on the list of the recorded values.
- Each logger is possible to describe with text of maximum 32 characters.
- Each channel is possible to describe with text of maximum 16 characters.
- Password protection is enabled to prevent unauthorized manipulation with logger.

TECHNICAL PARAMETERS

Number of binary inputs:	4
Input signals:	from potential-less contact or two-state voltage signal - selection by the switch
Parameters of the potential-less contact input:	
- minimum pulse duration:	500 ms (shorter pulses may not be recorded)
- max.number of changes at input:	maximum 20 changes on all inputs in 10s interval
- current through closed contact:	5 uA
- voltage at open contact:	< 3.6 V
- maximum voltage at the input:	±30 V
Parameters of voltage input:	inputs are mutually galvanically isolated
- minimum pulse duration:	500 ms (shorter pulses may not be recorded)
- max.number of changes at input:	maximum 20 changes on all inputs in 10s interval
- low voltage level:	0 to +2.0 V
- high voltage level:	+4.5 to +30.0 V
- current to the input:	maximum 1.5 mA at 30V
Terminal of input signals:	removeable WAGO 734, maximum cross section of leads 1,5mm2
Data logging modes:	noncyclic – logging stops after filling the memory
	cyclic – after filling memory oldest data is overwritten by new
Memory capacity:	noncyclic record - 16254 input signal changes
	cyclic mode - 15778 input signal changes
Real time clock:	integrated calendar including leap years
Real time clock error:	< 200 ppm (i.e. 0.02%, 17.28 s in 24 h)
LCD display refresh:	5 s
Communication with the PC:	via RS232 by means of COM adapter
	via USB by means of USB adapter
	via Ethernet by means of LAN adapter

S7841 EVENT LOGGER
WITH FOUR BINARY INPUTS

Operating temperature range:	-30 to +70°C
Power:	Lithium battery 3,6V, size AA, typical life 4 years, indication of remaining life
Dimensions without terminals:	93 x 64 x 29 mm
Weight:	130g
Protection:	IP20
Warranty:	2 years

No accessories is included. For basic use it is necessary to order at minimum a COM adapter or USB adapter for communication with computer, optionally a start/stop magnet, if needed to control record the different way than **directly from computer or by logical state on channel 4 input.**

Included accessories: battery, free program for Windows is ready to download from www.cometsystem.cz. Program enables to control all logger functions and viewing and printing of record in numerical and simple graphic format. It is possible to export logged values to dbf or txt formats for further analysis.

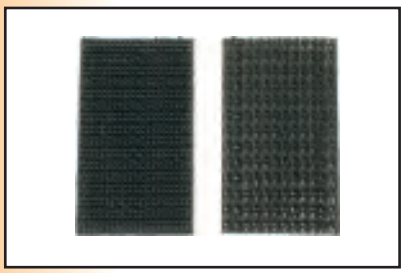
Optional accessory:

- SWR004 - optional software for Windows color print, vertical and time zooming of graphs and other functions
- DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.:
  - To set locally the GSM modem via RS232 link by means of QMS2901 cable.
  - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
  - Measurement from different Comet devices is possible to combine in one table or graph.
  - To choose any time interval for analysis, print or export to PDF - table and graph - see also page 23.
- SW100 - CD with free PC program
- LP012 - COM adapter for communication with personal computer via RS232 serial port
- LP003 - USB adapter for communication with personal computer via USB port
- LP005 - LAN adapter with 50cm cable for communication with the PC via Ethernet, including ac/dc adapter
- LP005-5 - LAN adapter with 5m cable for communication with the PC via Ethernet, including ac/dc adapter
- Accessories for wireless communication with loggers via GSM - see further
- LP004 - start/stop magnet
- MD036 - self adhesive Dual Lock for easy installation
- F9000 - wall holder secured against unauthorized removal
- A4203 - spare Lithium battery 3.6V, size AA, no leads

LP003 USB adapter for communication with the PC

LP012 COM adapter for communication with the PC via COM port

LP005 LAN adapter for communication with the PC via LAN network



MD036 self adhesive Dual Lock

LP004 start/stop magnet

F9000 wall holder with lock

TEMPERATURE RECORDERS WITH PRINTER

T-PRINT G0221E - dual channel temperature recorder
T-PRINT G0241 - dual channel temperature recorder with two-state inputs and RS232 output

USE:

- printout of temperature record during transport of food, pharmaceuticals, flowers, live animals and other goods
- designed especially for installation in driver's cabin

FEATURES:

- record from one or two temperature probes
- Delivery Ticket, Journey Ticket and Multi Day printouts
- graphical and numerical printout of temperature
- easy history printouts
- fast print to usual 57mm thermo paper in 10m rolls
- 3400 record lines/one paper roll, 5 years printout archivability
- large graphic illuminated display
- indication of temperature exceeding by LED and acoustically
- record of actual or average values at logging interval
- cyclic record - after filling the memory oldest records are overwritten by new
- no need to download data - large 1MB memory stores up to 5 years of record permanently in memory
- USB interface for record download to the PC, free PC software
- calculated MKT - mean kinetic temperature of pharmaceuticals in the PC program
- optional RS232 link for GSM modem connection
- fifteen selectable languages - e.g. English, German, French, Italian, Polish, Dutch, Spanish, Portuguese, Romanian, Czech
- degrees of Celsius and Fahrenheit

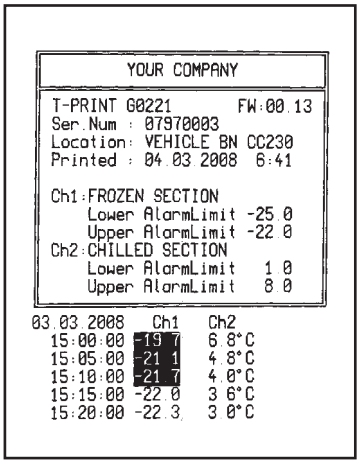
TECHNICAL PARAMETERS

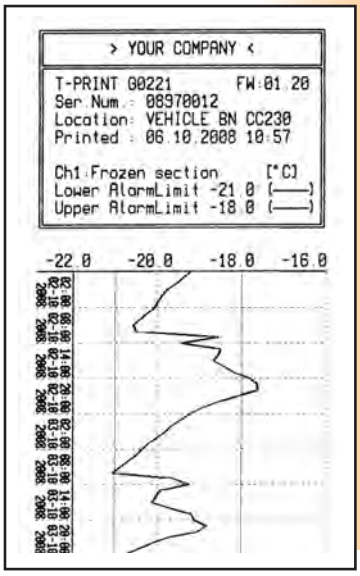
Measuring temperature range:	-90 to +260°C
Operating temperature range:	-30 to +65°C
Operating temperature range of the printer:	-20 to +50°C
Compatible temperature probes:	with Pt1000 sensor with maximum cable length 10 meters
Accuracy of the input without probe:	±0.2°C
Resolution:	0.1°C
Logging interval:	user selectable from 1 minute to 60 minutes
Memory capacity:	1MB - 172 032 records from one probe, 102 400 records from two probes (up to 5 years with 15 minutes interval and one probe)
Power:	9 to 32Vdc, protected against alternator load shedding+internal Lithium battery
Consumption while printing:	approximately 8 W
Consumption - not printing:	approximately 0.1 W
Dimensions without holders, connectors: Weight:	175 x 124 x 51 mm (w x h x d)
Protection:	approximately 430 grams
	IP20

Included accessories:

Traceable calibration certificate from the manufacturer with declared metrological traceability of ethalons is based on requirements of EN ISO/IEC 17025 standard. Included are also metal wall holders for recorder mounting, roll of paper with 5 years print-out archivability, USB cable for communication with the PC, battery for internal clock.

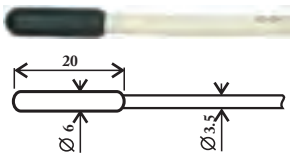
Anytime it is possible to download free basic program for Windows. Program enables to control all recorder functions and viewing and printing of record in numerical and simple graphic format.
It is necessary to order temperature probes - see further.





TEMPERATURE RECORDERS WITH PRINTER

T-PRINT G0221E - dual channel temperature recorder
T-PRINT G0241 - dual channel temperature recorder with two-state inputs and RS232 output

Optional accessories:		
	**DBL**	DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.: - To set locally the GSM modem via RS232 link by means of the QMS2901 cable. - To view selected channels from any Comet logger together with selected channels of other Comet loggers. - Measurement from different Comet devices is possible to combine in one table or graph. - To choose any time interval for analysis. - Print, export to PDF - table and graph. Other freeware needed for system operation: - database server Microsoft SQL or MySQL - see also page 23
	**SWR004**	Optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions. Calculation of MKT - mean kinetic temperature of pharmaceuticals in the program - see also page 23.
	**SW100**	CD with free PC program.
	**Probes Pt1000**	Temperature probes with Pt1000 sensors equipped with no connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the cable. Specify required cable length 1, 2, 5, 10, 15 or 20 meters. Available probes: Pt1000TR160/0-2m, Pt1000TR160/0-5m, Pt1000TR160/0-10m, Pt1000TR160/0-15m, Pt1000TR160/0-20m.
	**SA200A**	Magnetic door contact, connectable to recorder's binary inputs, without cable.
	**SA200A-2** **SA200A-5** **SA200A-10** **SA200A-20** **SA200A-30**	Magnetic door contact, connectable to recorder's binary inputs with cable lengths 2, 5, 10, 20, 30 meters.
	**PR033**	Wireless communication with recorders via GSM/GPRS - see page 17
	**A1940**	Spare roll of thermo paper - width 57mm, length 10m, 5 years archivability.
		Acdc adapter 230V-50Hz/24Vdc/24W for power outside of the vehicle.

TEMPERATURE RECORDER G0841 WITH PRINTER

T-PRINT G0841W - with output for G9000 wireless unit

T-PRINT G0841M - with built-in GSM modem

USE:

- printout of temperature record during transport of food, pharmaceuticals, flowers, live animals and other goods
- designed for outdoor installation e.g. on semi-trailer of the truck

FEATURES:

- record from one or two temperature probes
- two binary inputs for event record - door opening, fridge unit on/off
- Delivery Ticket, Journey Ticket and Multi Day printouts
- numerical or graphical printout of temperature
- fast print to usual 57mm thermo paper in 10m rolls
- 3400 record lines/one paper roll, 5 years printout archivability
- large graphic illuminated display
- indication of temperature exceeding by LED and acoustically
- record of actual or average values at logging interval
- USB interface for record download to the PC, free PC program
- calculated MKT - mean kinetic temperature of pharmaceuticals
- included RS232 link for GSM modem connection
- cyclic record - oldest values in memory are overwritten by new
- no need to download data - large 1MB memory stores up to 5 years
- robust heavy duty PA and polycarbonate case, easy installation
- degrees of Celsius and Fahrenheit
- included traceable calibration certificate
- fifteen selectable languages - e.g. English, German, French, Italian, Polish, Dutch, Spanish, Portuguese, Romanian, Czech
- TÜV SÜD certified to conform EN 12830, Class 1 and EN 13486, Class 1 for the transport of food

T-PRINT G0841, G0841W, G0841M, G0841MW and wireless alarm unit G9000

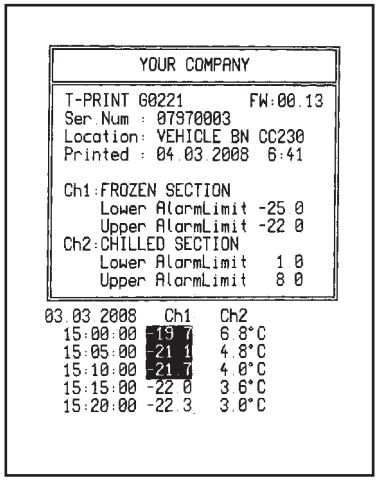
TECHNICAL PARAMETERS

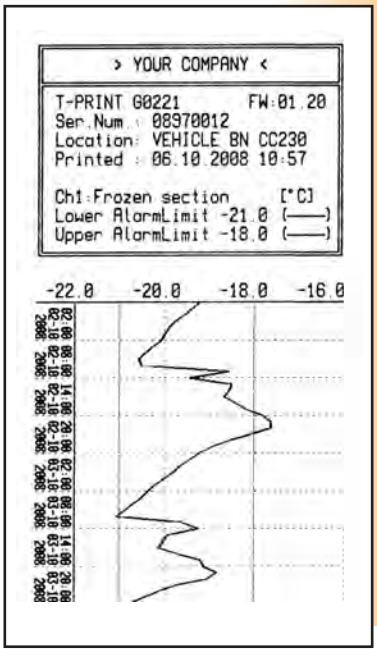
Measuring temperature range:	-90 to +260°C
Operating temperature range:	-30 to +65°C
Operating temperature range of the printer:	-20 to +50°C
Compatible temperature probes:	with two-wire Pt1000 sensor, maximum cable length 20 meters
Accuracy of the input without probe:	±0.2°C
Resolution:	0.1°C
Connection of temperature probes:	to terminals under removeable recorder electronics
Logging interval:	user selectable from 1 minute to 60 minutes
Memory capacity:	1MB - 172 032 records from one probe, 102 400 records from two probes (up to 5 years with 15 minutes interval and one probe)
Power:	9 to 32Vdc, protected against alternator load shedding+internal Lithium battery
Consumption while printing:	approximately 8 W
Consumption - not printing:	approximately 0.1 W
Dimensions, weight:	approximately 250 x 242 x 110 mm (w x h x d), weight 1650 grams
Protection:	IP65

Included accessories:

Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard. Included is also roll of paper with 5 years print-out archivability, USB cable for communication with the PC, battery for internal clock.

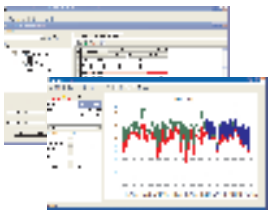
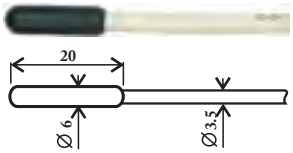
It is possible to download free basic program for Windows anytime. Program enables to control all recorder's functions and viewing and printing of record in numerical and simple graphic format. It is possible to export recorded temperature values to dbf or txt formats for further analysis. It is necessary to order temperature probes - see further.



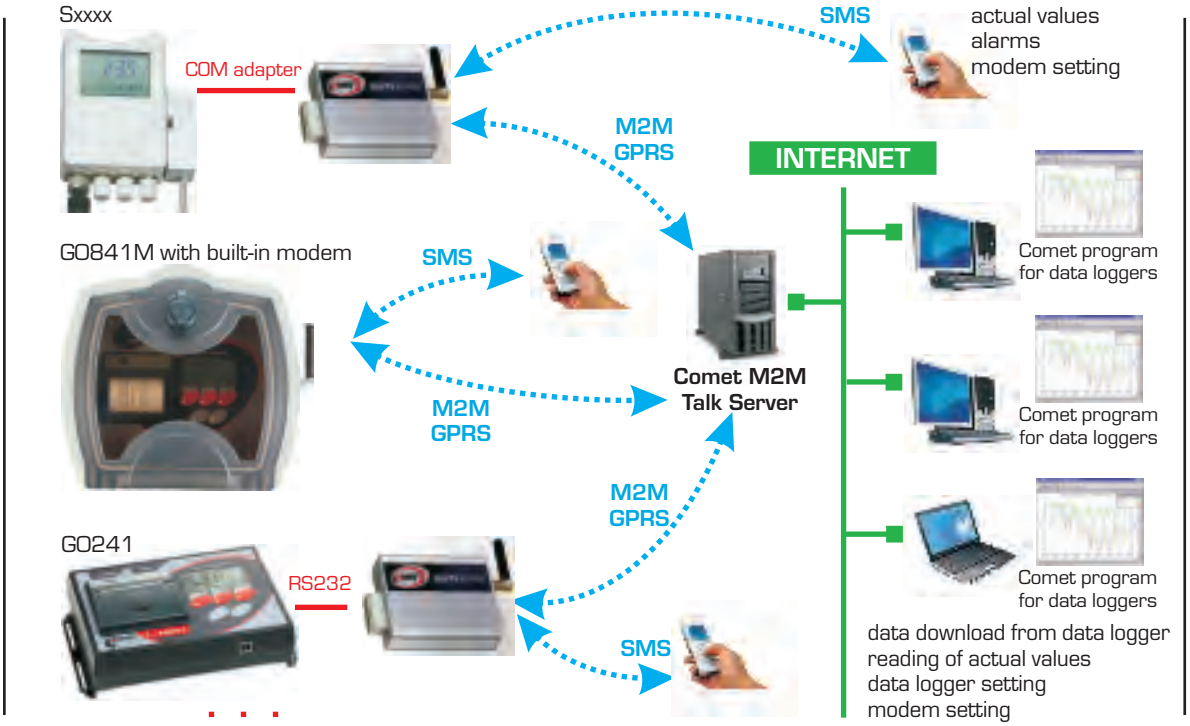


TEMPERATURE RECORDER G0841 WITH PRINTER

T-PRINT G0841W - with output for G9000 wireless unit
T-PRINT G0841M - with built-in GSM modem
T-PRINT G0841MW - with output for G9000 wireless unit and built-in GSM modem

Optional accessories:		
	**DBL**	DBL Logger Program - database program for work with data from Comet loggers. Program enables i.a.: - To set locally the GSM modem via RS232 link by means of the QMS2901 cable. - To view selected channels from any Comet logger together with selected channels of other Comet loggers. - Measurement from different Comet devices is possible to combine in one table or graph. - To choose any time interval for analysis. - Print, export to PDF - table and graph. Other freeware needed for system operation: - database server Microsoft SQL or MySQL - see also page 23
	**SWR001**	Optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions. Calculation of MKT - mean kinetic temperature of pharmaceuticals in the program - see also page 23.
	**SW100**	CD with free PC program.
	**Probes Pt1000**	Temperature probes with Pt1000 sensors equipped with no connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the cable. Specify required cable length 1, 2, 5, 10, 15 or 20 meters. Available probes: Pt1000TR160/0-2m, Pt1000TR160/0-5m, Pt1000TR160/0-10m, Pt1000TR160/0-15m, Pt1000TR160/0-20m.
	**SA200A**	Magnetic door contact, connectable to recorder's binary inputs, without cable.
	**SA200A-2** **SA200A-5** **SA200A-10** **SA200A-20** **SA200A-30**	Magnetic door contact, connectable to recorder's binary inputs with cable lengths 2, 5, 10, 20, 30 meters.
	**G9000**	Wireless alarm unit with display for driver's cabin. Compatible with G0841W model. Audible and LED alarm in case of exceeding set temperatures inside of the semi-trailer. Also signals the state of the binary inputs. Operating distance from the semi-trailer - approximately 50m. Powered from included battery - life approximately 3 years. Included self adhesive Dual Lock for easy installation.
	**PR033**	Spare roll of thermo paper - width 57mm, length 10m, 5 years archivability.
	**A1940**	Acdc adapter 230V-50Hz/24Vdc/24W for power outside of the vehicle.

WIRELESS COMMUNICATION WITH LOGGERS VIA GSM



FEATURES:

1. Wireless communication with Sxxxx, Rxxxx loggers via GPRS

- Remote data download from logger
- Logger configuration (setting, erasing of data, etc.)
- Reading of actual values (online display mode)
- All actions available as via COM/USB adapter
- Connection realized via M2M Talk server
- Communication via M2M server can be disabled, if data download is not required = saving of cost (no need to pay GPRS data tariff)

2. SMS queries about actual values

- Sending of SMS query to modem phone number returns actual values. After receiving of SMS query modem sends required info in SMS.
- It is possible to limit phone numbers SMS commands are sent from. Same it is also for configuration-service SMS commands.

3. Alarm SMS messages - modem sends to phone numbers alarm SMS messages:

- If upper/lower limit of measured value is exceeded
- Information on filling of the logger memory (90% and 100%)
- Information on low logger battery or end of estimated battery approaches.
- Information on logger on/off.
- Error messages (communication error with logger, internal clock error, measured value error)

4. Setting of modem

a) Local - service setting via RS232 link from user program:

- Setting of configuration
- Download and erasing of diagnostic log file from modem
- Upload of new firmware to modem

b) Remote - via M2MTalk server from user program

- Setting of configuration
- Download and erasing of diagnostic log file from modem
- Log out from M2MTalk server
- Restart of modem

c) By means of SMS message

- Update of application in modem
- Detection of description and firmware version in GPRS modem
- Detection of GSM status
- Enable/disable of alarm evaluation
- Setting of GPRS parameters for connection
- Setting of parameters of M2MTalk server
- Log in and log out with M2MTalk server
- Halting or restart of application in modem

Every Sxxxx or Rxxxx datalogger in monitoring system is connected via COM adapter to "its" GSM modem LP040. It is necessary to order several items from accessories. Minimum set of one logger connected to GSM contains: Sxxxx or Rxxxx logger, LP002 COM adapter for logger connection to modem, GSM modem LP040, GSM antenna, Ac/dc adapter 230V-50Hz/24Vdc/24W, QMS2901
cable for modem setting, SWR004 Optional PC program for data loggers or DBL Logger Program - database program for work with data from Comet data loggers, fee for using M2M server - see further.

WIRELESS COMMUNICATION WITH LOGGERS VIA GSM

Optional accessories for communication with loggers:

	**LP040**	GSM/GPRS modem with SIM card holder - without accessories. Enables full communication with data logger via GPRS - data download, logger configuration .. Data logger can be controlled by means of SMS messages from mobile phone. Actual values and alarm status can be received as SMS.
	**MP001/1**	GSM antenna 3dB for modem, right angled.
	**A1940**	Power adapter 230V-50Hz/24Vdc/24W for modem.
	**QMS2901**	Cable for modem setting via serial RS232 link by means of optional PC program for data loggers SWR001. Needed only for local setting of modem during configuration of the operation.
	**MP006** **MD036**	RS232/USB converter to QMS2901 cable for modem setting via USB. Needed only for local setting of modem during configuration of the operation. Self adhesive Dual Lock for modem easy installation.
	**MP036**	Modem wall holder.
	**MP037**	Modem DIN rail 35mm holder.
	**LP012**	COM adapter for Sxxxx, Rxxxx logger connection to modem via serial link RS232.
	**DBL**	DBL Logger Program - database program. Program enables i.a.: - To set locally the GSM modem via RS232 link by means of the QMS2901 cable. - To view selected channels from any Comet logger together with selected channels of other Comet loggers. - Measurement from different devices is possible to combine in one table or graph. - To choose any time interval for analysis. - Print, export to PDF - table and graph.
	**SWR004** **M2M server**	Optional program for data loggers enables * local GSM modem setting via serial link RS232 by means of QMS2901 cable * numerical list of recorded values * comfortable work with graphs * export to dbf or txt format One time fee for using M2M server - applied for each data logger with modem.

COMMETER - THERMOMETERS, HYGROMETERS, BAROMETERS

for measurement and record

C3120, D3120
C4130, D4130

- **dual line LCD display with special symbols**
- **adjustable dual alarm with audio**
- **indication for each channel**
- **memory of minimum and maximum values**
- **function Hold - manual storing of actual values for later displaying**

Instruments are designed for direct measurement and datalogging to internal nonvolatile memory in adjustable time interval. Recorded data is possible to transfer by means of free program via serial Rs232 link to a PC for archiving or analyzing. Instrument is connected to a PC by included communication cable only for data transfer from the memory. During connection to the PC nor measurement and record is enabled. Instruments are designed for non-aggressive air measurement.

TECHNICAL PARAMETERS - all instruments:

Operating temperature range:	-10 to +60°C
Temperature sensor:	RTD
Accuracy of temperature measurement:	± 0.4°C at range -50 to +100°C, ± 0.5% from reading from +100 to +250°C
Accuracy of air humidity measurement:	± 2.5%RH at 23°C at range 5 to 95%, resolution 0.1%
Accuracy of dew-point reading:	±1.5°C at range 30 to 95%RH
Accuracy of air-pressure measurement:	± 2hPa at 23°C, resolution 0.1hPa
Power:	battery 9V
Battery life:	4 months typically (barometers 2 months typically)
Dimensions:	141 x 71 x 27mm

TECHNICAL PARAMETERS - loggers (model names beginning from D) :

Modes of logging:	1. manual logging - capacity of 1000 stored value sets 2. automatic noncyclic logging (logging stops after filling the memory) - total capacity of 16000 values 3. automatic cyclic logging (logging continues after filling the memory - oldest values are being replaced by newest) - total capacity approx. 15200 values
Real time clock:	year, leap year, month, day, hour, minute, second
PC interface:	serial RS232
Sampling interval in logging mode:	18 adjustable values from 10s to 24hours (10s,1min,2min,3min, 4min,5min,10min,15min,20min,30min,1h,2h,3h,4h,6h,8h,12h,24h)

Model	Description	Measuring range
C3120	THERMOMETER-HYGROMETER with switchable dew-point temperature reading, built-in sensors	temperature -10 to +60°C relative humidity 5 to 95%RH
D3120	same as C3120, in addition 3 logging modes with PC interface	
C3121	THERMOMETER-HYGROMETER with switchable dew-point temperature reading and external temperature-humidity probe with 1meter cable. Cable lengths 2 meters and 4 meters available optionally. Probe diameter of 18mm, length of 135mm.	temperature -30 to +105°C* relative humidity 0 to 100%RH
D3121	same as C3121, in addition 3 logging modes with PC interface	
C3631	THERMOMETER-HYGROMETER with switchable dew-point temperature reading, built-in sensors. A Cinch connector for connection of an external RTD Ni1000/6180ppm temperature probe. Surface, pointed-tip, insertion and other probes with Cinch connector are available. Indication of temperature difference of external probe and dew-point temperature.	air temperature -10 to +60°C probe temperature -50 to +250°C relative humidity 5 to 95%RH
D3631	same as C3631, in addition 3 logging modes with PC interface	

031-150/C - surface temperature probe -30 to +150°C with Ni1000 sensor on 1meter cable for C3631, D3631instruments

031-60 - surface temperature probe -10 to +60°C with Ni1000 sensor for direct plug in C3631, D3631 connector

COMMETER - THERMOMETERS, HYGROMETERS, BAROMETERS

for measurement and record

Type	Description	Measuring range
C3633	THERMOMETER-HYGROMETER simultaneous reading of temperature and relative humidity, dew-point temperature reading selectable, built-in sensors. Surface temperature probe on the instrument back side with attaching magnets. Indication of temperature difference of surface probe and dew-point temperature. Adjustable audio and optical alarm for indication of the temperature difference for application of surface coatings	air temperature -10 to +60°C surface temperature -10 to +60°C relative humidity 5 to 95%RH
D3633	same as C3633, in addition 3 logging modes with PC interface	
C4130	THERMO-HYGRO-BAROMETER with switchable dew-point temperature reading, built-in sensors, air pressure trend reading for last 3 hours	temperature -10 to 60°C relative humidity 5 to 95%RH air pressure 800-1100hPa
D4130	same as C4130, in addition 3 logging modes with PC interface	
C4141	THERMO-HYGRO-BAROMETER with external temperature-humidity probe on a 1 meter cable. Built-in indoor temperature and air pressure sensors. Switchable dew-point temperature reading, air pressure trend reading for last 3 hours. Cable lengths 2 meters and 4 meters available optionally. Probe diameter of 18mm, length of 135mm.	outdoor temperature -30 to 105°C* indoor temperature -10 to 60°C relative humidity 0 to 100%RH air pressure 800-1100hPa
D4141	same as C4141, in addition 3 logging modes with PC interface	

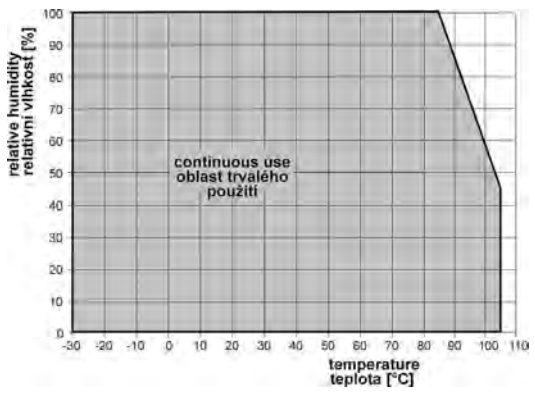
* Temperature from +85 to +105°C with the limitation specified in the graph

Included accessory:
Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
All instruments are equipped with connector for external ac/dc adapter.

Loggers (models Dxxxx) come complete with a plastic transport case, 9V battery, communication cable for PC. Free Windows program is ready to download at www.cometsystem.cz
Program enables to control all logger functions and viewing and printing of data in numerical and simple graphic formats. It is possible to export data to dbf or txt formats.

Instruments with no PC interface (models Cxxxx) are delivered in a plastic case. 9V battery is included.

Optional accessory:
- **MP006** - RS232/USB converter for communication with the PC via USB port
- **F5200B** - sensor protection with filter from stainless steel mesh for instruments C3121, D3121, C4141, D4141. Filtering capability 0.025mm.
- **F1000** - sensor protection from sintered bronze for instruments C3121, D3121, C4141, D4141. Filtering capability 0.025mm.
- for easy mounting of C3121, D3121, C4141, D4141 instruments probes it is possible to order circular plastic flange **PP4** with gland or right-angled stain-less steel flange **PP90** with gland for wall mounting.
- **A1515** - adapter 230V-50Hz/12Vdc. 9V battery should be replaced with NiMH accumulator 9V.
- **A3400** - NiMH accumulator 9V
- **SW100** - CD with free PC program for Dxxxx loggers
- **SWR004** - Optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions (only for Dxxxx loggers) - see page 23
- DBL Logger Program - database program for work with data from Dxxxx loggers
  - see also page 23.



D3121, C3121
D4141, C4141

F5200B sensor cover with filter from stainless steel mesh

COMMETER - THERMOMETERS

-200 TO +500°C FOR RTD SENSORS
Pt1000 AND Ni1000 FOR MEASUREMENT AND RECORD

- **dual line LCD display with special symbols**
- **adjustable dual level alarm with audio indication for each channel**
- **memory of minimum and maximum temperatures**
- **function Hold - manual storing of actual temperature for later displaying**

AVAILABLE MODELS

without record		with record	
C0111	single channel	**D0211**	single channel
C0121	dual channel	**D0221**	dual channel
C0141	four channel	**D0241**	four channel

TECHNICAL PARAMETRES - common:

Operating temperature range:	-30 to +65°C
Temperature probe connector:	Cinch
Power:	battery 9V
Battery life:	typically 6 months
Dimensions without probes:	141 x 71 x 27 mm

TECHNICAL PARAMETERS – temperature loggers D0211, D0221, D0241 –200 to +500°C:

Temperature inputs:	RTD Pt1000: –200 to +500°C and Ni1000-6180ppm/°C: –50 to +250°C
Accuracy of the Pt1000 input without probe:	±0.3°C from -50 to +100°C, ±0.3% from reading from +100 to +500°C, ±0.6% from reading from -200 to -50°C
Accuracy of the Ni1000 input without probe:	±0.2°C from -50 to +100°C, ±0.2% from reading from +100 to +250°C
Resolution:	0.1°C from –99.9 to +500.0°C, otherwise 1°C
Logging modes:	1. manual logging - capacity of 1000 stored temperature sets 2. automatic noncyclic logging (logging stops after filling the memory) - total capacity of 16000 values 3. automatic cyclic logging (logging continues after filling the memory - oldest values are replaced by newest) - total capacity approximately 15200 values (14400 values for D0211)
Real time clock:	year, leap year, month, day, hour, minute, second
PC interface:	serial RS232
Logging interval:	18 adjustable values from 10 s to 24 hours

TECHNICAL PARAMETERS – thermometers without record C0111, C0121, C0141 –50 to +250°C:

Temperature input:	RTD Ni1000-6180ppm/°C: –50 to +250°C, resolution 0.1°C
Accuracy of the Ni1000 input without probe:	±0.2°C from -50 to +100°C, ±0.2% from reading from +100 to +250°C
Temperature measurement accuracy: (including Ni1000 probes):	±0.4°C from -50 to +100°C, ±0.5% from reading from +100 to +250°C

No temperature probes are included.

- **Included accessories**:Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
  In price of D0211,D0221,D0241 thermometers included are also plastic transport case, 9V battery, communication cable for PC. Free Windows program is ready to download at www.cometsystem.cz. Program enables to control all logger functions and viewing and printing of data in numerical and simple graphic formats. It is possible to export data to dbf or txt formats.
- In price of C0111, C0121, C0141 thermometers included are plastic case and 9V battery .

Optional accessories:

- MP006 - RS232/USB converter for communication with the PC via USB port
- SW100 - CD with free PC program
- probes for D02x1 loggers with RTD sensor Pt1000/3850ppm with connector Cinch - probe marking followed by letter /C
- A1515 - adapter 230V-50Hz/12Vdc, 9V battery should be replaced with NiMH accumulator 9V.
- A3400 - NiMH accumulator 9V
- SWR004 - Optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions
- DBL Logger Program - database program for work with data from Comet loggers - see also page 23.

COMMETER - THERMOMETERS

-200 TO +1700°C FOR THERMOCOUPLES J, K, S FOR MEASUREMENT AND RECORD

- **selection of thermocouple type from the keyboard**
- **dual line LCD display with special symbols**
- **adjustable dual level alarm with audio indication for each channel**
- **memory of minimum and maximum temperatures**
- **function Hold - manual storing of actual temperature for later displaying**
- **automatic compensation of cold junction temperature**

TECHNICAL PARAMATERS - common:

Operating temperature range:	-10 to +60°C
Connector for probe connection:	subminiature connector for thermocouples
Accuracy without probes thermocouple K (NiCr-Ni):	± (0.4°C + 0.1% from reading) from -200 to +1300°C
Accuracy without probes thermocouple J (Fe-Co):	± (0.4°C + 0.1% from reading) from -200 to +750°C
Accuracy without probes thermocouple S (Pt10%Rh-Pt):	± (0.85°C + 0.1% from reading) from -50 to +1700°C
Resolution thermocouple J,K:	0.1°C from -99.9 do +999.9°C, otherwise 1°C
Resolution thermocouple S:	0.4°C from -50.0 do +999.9°C, otherwise 1°C
Power:	battery 9V, typical life 2 months
Dimensions without probes:	141 x 71 x 27mm

TECHNICAL PARAMATERS - thermometers with record - models D0311, D0321 :

Modes of logging:	**1. manual logging** - capacity of 1000 stored temperature sets **2. automatic non-cyclic logging** (logging stops after filling the memory) - total capacity of 16000 values **3. automatic cyclic logging** (logging continues after filling the memory - oldest values are replaced by newest) - total capacity approx. 15200 values (14400 values for D0111)
Real time clock:	year, leap year, month, day, hour, minute, second
PC interface:	serial RS232
Logging interval:	18 adjustable values from 10s to 24hours

Model	Description
C0311	single channel thermometer, no PC interface
D0311	single channel thermometer and datalogger with RS232 serial output
C0321	dual channel thermometer, no PC interface
D0321	dual channel thermometer and datalogger with RS232 serial output

Thermometers are delivered without probes. To order K type probes, please see Optional accessories.

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. **Calibration certificate** with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

- All thermometers are also equipped with connector for external ac/dc adapter.
  Dataloggers D0311, D0321 come complete with a plastic transport case, 9V battery, communication cable for PC and self adhesive Dual Lock for easy mounting.
- Free Windows program is ready to download at www.cometsystem.cz

Optional accessory:

- **MP006** - RS232/USB converter for communication with the PC via USB port
  SW100 - CD with free PC program
  probes with the "K" thermocouple with subminiature connector are specified at the end of catalog
- **A1515** - adapter 230V-50Hz/12Vdc. 9V battery should be replaced with NiMH accumulator 9V
- **A3400** - NiMH accumulator 9V
- **SWR004** - Optional software for Windows - color printing, vertical and horizontal zoom of graphs and other functions - see also page 23

OPTIONAL PROGRAMS FOR DATA LOGGERS

DBL Logger Program
Database program DBL Logger Program for work with data from Comet loggers

Program enables i.a.:

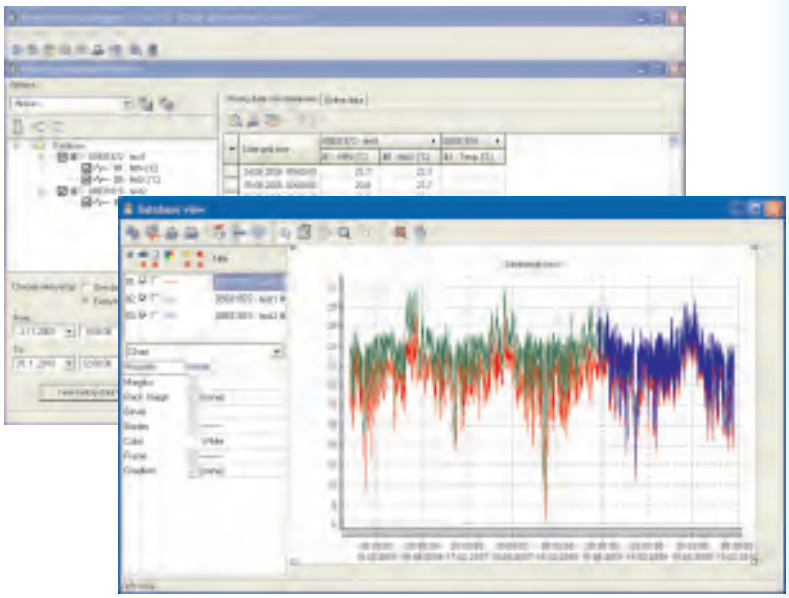
* To set locally the GSM modem via RS232 link by means of the QMS2901 cable.

* To view selected channels from any Comet logger together with selected channels of other Comet loggers.

* Measurement from different Comet devices is possible to combine in one table or graph.

* To choose any time interval for analysis.

* Print, export to PDF - table and graph.



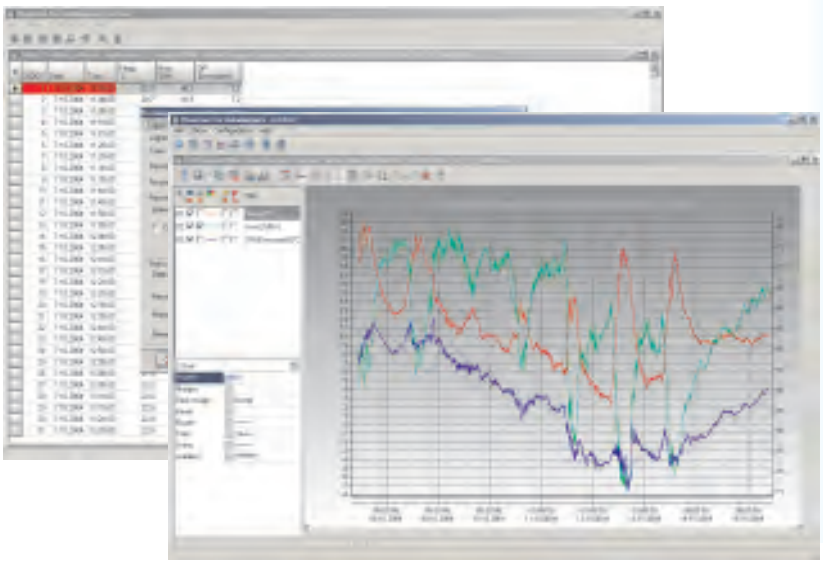
Other freeware needed for system operation:
- database server Microsoft SQL or MySQL

SWR004 Program for Data Loggers Sxxxx, Rxxxx, Gxxxx, Dxxxx.

Program is designed for communication with data loggers, read out the configuration of the device and setting up the parameters. It also allows to read out the data from the device in order to get the measured values. For the temperature and humidity devices is possible to select one counted value (dew point temperature, absolute humidity, specific humidity, mixing ratio, specific enthalpy). Data can be viewed and printed as table or graph.
It it also possible to export data to DBF or TXT files. You can change the axis and select any time range to view or print out the data. It is allowed to zoom the graph, modify the drawing width and the its color.
It is also possible to separate the quantities from each other and print some of them or all of them separately.

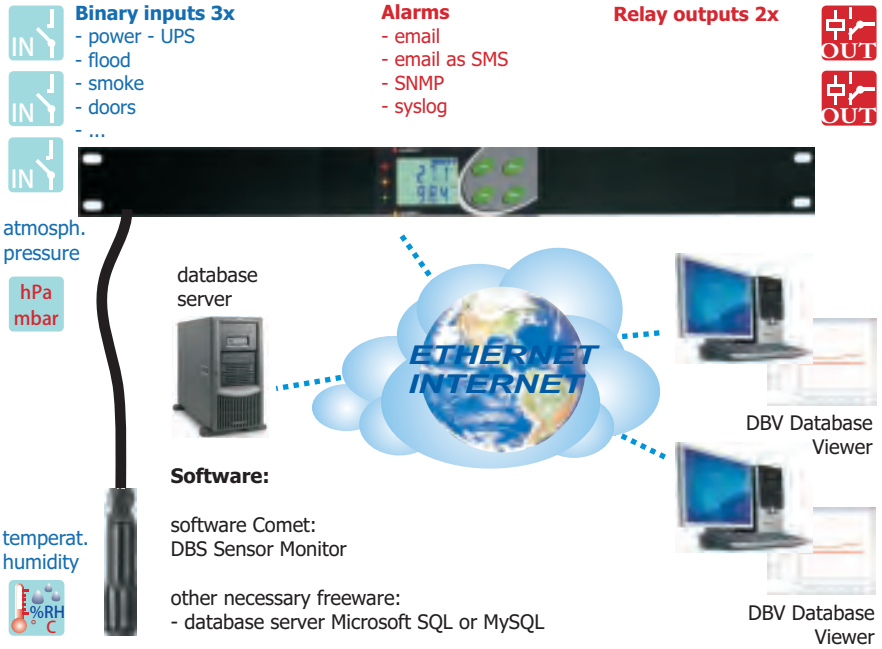
The main advantages of optional software comparing to the freeware:

* different graphical engine (zoom, selection of the curves, axis modification)
* selection of the values from table to print them out
* communication with more LAN adapters (freeware supports only one)
* statistic values, counting of MKT (Mean Kinetic Temperature)
* online visualization of actual values
* communication via GSM modem (dialling) or GPRS (data)
* autodownload from more data loggers
* automatic export to DBF or TXT after data download
* selectable path to store data



Low cost rack mount server environment monitor Hx531R

Server monitoring system is designed for 19-inch rack mounting, the height is one rack unit - 1U.
Model H4531R is prepared for connection of external Pt1000 temperature probe and models H3531R, H7534R are equipped with 1 meter temperature + humidity probe.
Unit contains three binary inputs for detection of two-state events - e.g. power presence, water, smoke, airflow, glass break detection, door contact.
Rack unit provides 5Vdc and 12dc power supply for external all sensors and detectors.
Large dual line LCD for simultaneous display of temperature, humidity is an advantage. Parameters are easy adjustable from transmitter keyboard or from the computer.
Environmental monitor is equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured value.



MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values and binary input states, set alarm limits, adjust the probe.
Telnet:	Port 9999 enables to set alarm limits (lower, upper limits, hysteresis for measured values and time delay), e-mail addresses, SNMP addresses, probe description, refresh of www pages (10s to 65535s), set storing interval to history (10s to 65535s), enable each communication channel. Capacity of the history memory is 100 sets of temperature, humidity, pressure + computed values. Password protection of this port is enabled. Automatic IP address assignment from DHCP server is also enabled.
www pages:	User selectable design of www pages enabling to display curve of measurement history and binary input states.
SNMP:	It is possible to read actual values, alarm limits and binary input states. In case of alarm creation warning message (trap) is sent to addresses defined by the user (maximum three addresses).
SOAP:	Online system enables to send actual measured data in the format of SOAP message to selected web server in preset interval 10-65535 s.

ALARM INDICATION OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses) or via e-mail to SMS message. Basic SMTP autentization is supported.
www pages:	In case of exceeding of adjusted temperature, humidity, pressure + computed value limits or binary input states active alarm is displayed on www page.
SNMP:	In case of exceeding of adjusted temperature, humidity, pressure + computed value limits or binary input states alarm is activated and warning trap is sent to user specified IP addresses (maximum 3 addresses).
syslog:	Online system enables to send text messages to selected syslog server after different events appear. E.g. after transmitter restart, alarm activation, communication error with SNTP, after firmware change, after alarm termination, after communication error with SOAP server.

Low cost rack mount server environment monitor Hx531R

TECHNICAL PARAMETERS

Maximum switching voltage, current, power of relay output:	50V, 2A, 60VA, resistive load
Audible alarm indication:	from built-in acoustic converter - switchable
Operating relative humidity range:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature measurement:	±0.4°C
Accuracy and range of atmospher.pressure measurement:	±1.3hPa at 23°C, range from 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Signal for binary inputs:	from voltage-less contact, open collector or two-state voltage signal. Inputs are not galvanically isolated.
Minimum pulse length at binary input:	500 ms (shorter pulse may not be detected)
Voltage at open contact:	3.3 V
Low voltage level:	0 to +0.5 V
High voltage level:	+3.0 to +30V
Operating temperature range:	-30 to +80°C
Filtering ability of sensor cover:	0.025mm
Protection:	IP30, T+H probe IP40
LAN connection:	RJ-45 connector
Power:	12Vdc, maximum consumption 250mA
Power connector:	axial, diameter 5.5 x 2.1 mm
Dimensions of the case (W x H x D):	483 x 44 x 45 mm, one rack unit 1U

AVAILABLE MODELS:

MODEL	MEASURED VALUE	MAXIMUM RANGES OF MEASURED VALUES	DESCRIPTION
H4531R	temperature+ 3 binary inputs	-200 to +600°C	Temperature transducer for RTD Pt1000probes (not included). Accuracy of the input without probe ±0.2°C
H3531R	temperature+ humidity+ 3 binary inputs	-30 to +105°C*probe including cable relative humidity 0 to 100%	Thermometer-hygrometer. T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally.
H7531R	temperature+ humidity+ atmospheric pressure+ 3 binary inputs	-30 to +105°C*probe including cable relative humidity 0 to 100% pressure: 600 to 1100hPa accuracy: ±1,3hPa at 23°C	Thermometer-hygrometer-barometer. T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally. Humidity values available also as dew-point temperature, absolute humidity, specific humidity, mixing ratio, specific enthalpy. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH2O, PSI, oz/in^2. Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

Included accessories:

Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz
SensorReader - freeware for online logging values from one transmitter to a PC disk file is also ready to download.
Program enables to alarm acoustically the PC user if adjusted alarm limits are exceeded.
Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessories:

DBS Sensor Monitor - database program for online data acquisition and analysis from Comet sensors. It contains all necessary components for monitoring of sensors, including one licence of DBV Database Viewer.

Probes with RTD Pt1000 sensors are directly compatible with H4531R transducer - see end of catalogue for Comet probes without connector - probe marking is followed by symbol /0.

Other accessories - see further in catalogue.

Low cost rack mount server environment monitor Hx531R

Optional accessories:		
	**DBS**	**DBS Sensor Monitor** - database program - enables online data acquisition and analysis of actually measured and stored values from unlimited number of Comet sensors connected to Ethernet - it is a data acquisition system of client-server type - it contains: *software for server computer: *SOAP server for data acquisition *Administration program database *Microsoft SQL or MySQL database server (third party freeware) *one licence of DBV Database Viewer. More information at page 72.
	**Pt1000 probes**	Temperature probes with Pt1000 RTD sensor without connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the shielded PVC cable 2 x 0.14mm2. Specify required cable length 1, 2, 5, 10, 15 or 20 meters.
	**MP047**	Universal holder for probes for easy mounting to rack 19" (probes not included)
	**SP008**	AC voltage presence sensor, connectable to binary Hx531R inputs.
	**LD12**	Water leakage detector, two-state output, connectable to binary Hx531R inputs. With 3 meters cable. Powered from Hx531R 12Vdc output.
	**SD280**	Optical smoke detector, relay output, connectable to binary Hx531R inputs, powered from Hx531R 12Vdc output. The SD280 detector combines an optical smoke sensor with a heat sensor. Both sensors have their outgoing signals processed digitally, resulting in higher false alarm immunity.
	**JS20**	P.I.R. motion detector is for interior protection. It detects object movement having a human body temperature. The JS-20 distinguishes itself with excellent RF immunity. The signal from the sensor is electronically analyzed. This ensures that the detector provides excellent sensitivity and false alarms are basically eliminated. The detection analysis rate can be adjusted to increase its immunity if the JS20 is installed in a problem location. It can be mounted on a flat wall or in a corner. Connectable to binary Hx531R inputs, powered from Hx531R 12Vdc output.
	**SA200A**	Magnetic door contact, connectable to binary Hx531R inputs, without cable.
	**SA200A-2** **SA200A-5** **SA200A-10** **SA200A-20** **SA200A-30**	Magnetic door contact, connectable to binary Hx531R inputs with cable lengths 2, 5, 10, 20, 30 meters.
	**A1515**	AC/DC adapter 230V-50Hz/12V.

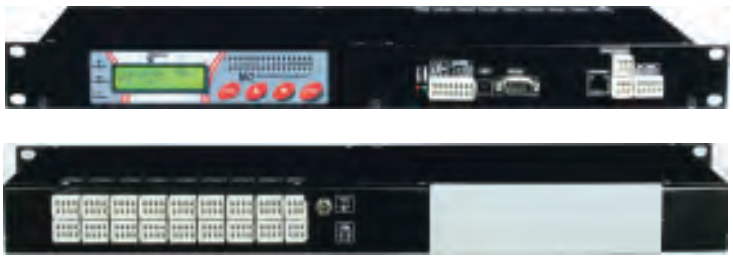
Universal monitoring system with data logger MS6D, MS6-Rack, MS6R

COMPLETE SOLUTION FOR MONITORING OF TEMPERATURE, HUMIDITY AND OTHER SIGNALS

Main advantage - user configurable inputs from PC program without any need to open the data logger unit. Each data logger contains 16 inputs for measurement and record of both analog and two-state values. Each input is individually configurable from user PC program to one from 17 measuring ranges.
Also signals from sensors working on RS485 bus with ModBus or Advantech protocol can be recorded.
Universal sixteen channel data logger is designed for data acquisition from sensors of variety values, alarm state indication, optionally for control of consecutive processes.
Data is possible to download to the PC via USB, RS232, Ethernet interfaces or GSM modem for processing.

Available models:

MS6D
* for wall mounting or to the switch board
* enables mounting to the optional watertight case MP033, MP034
* dual line illuminated alphanumeric display
* four control buttons
* 32 alarm LEDs



MS6-Rack
* for mounting to 19" rack - one rack unit 1U
* enables to build in the optional MP018 output relays module with 16 relays
* dual line illuminated alphanumeric display
* four control buttons
* 32 alarm LEDs

MS6R
* for mounting to 19" rack - one rack unit 1U
* for desktop use with rubber feet
* dual line illuminated alphanumeric display
* four control buttons
* 32 alarm LEDs

Data logger enables to:

- Configure inputs for different input signal types from the PC program without any need to open the data logger unit.
- Individully configure each input channel for measurement, alarm evaluation and data logging , including individual logging interval for each input.
- Individually program each input channel for different modes of record (continuous record, time dependent record, record only if specified logic conditions are matched, record triggered by external signal, etc.).
- Set up to four different logic conditions for each channel to active alarm. Each condition compares measured values from inputs with set limits. It is possible to set hysteresis and delay of condition validity.
  Indicate alarm state after matching defined combination up to four alarms from any inputs.
- Activate selected relays depending on alarm states by means of output relays module.
- Receive information from monitoring system by means of SMS messages via GSM modem - actual values, alarms, memory occupation etc.
- Assign to each input channel name of actual recorded process to identify monitored object (e.g. type of monitored product). It is enabled to select this name from data logger keyboard during the operation.
- Connect several data loggers via RS485 bus or Ethernet network.
- Power external sensors and detectors directly from input terminals 12Vdc or 24Vdc.

Universal monitoring system with data logger MS6D, MS6-Rack, MS6R

TECHNICAL PARAMETERS

Total memory capacity:	2MB (up to 480 000 values)
Memory type:	internal backed-up SRAM memory
Data logging modes:	noncyclic - logging stops after filling the memory cyclic - after filling memory oldest data is overwritten by new
Data logging intervals:	adjustable individually for all input channels from 1 second to 24 hours
Real time clock:	year, leap year, month, day, hour, minute, second, backed-up by Lithium battery
Input signals:	16 user configurable channels - see parameters in the table below
AD converter (analog chanells):	16 bits, conversion duration approximately 60ms/channel
Supported interface for communication with computer:	RS232, cable up to 15 m. Enables direct connection with the PC or via GSM modem, including sending/reception of SMS messages - included USB interface - included RS485 - cable up to 1200 m, galvanically isolated, enables to connect several data loggers to one communication line - included Ethernet interface LAN - communication via: SNMP, SOAP, www pages - optionally
Communication speed:	9600, 19200, 57600, 115200 Bd
Outputs for alarm indication:	Red LED at the side of the case, 32 LEDs Relay max. 8A/250Vac, switching-over contact Voltage signal 0V/4.8V, maximum current 50mA. Alarm SMS messages E-mails, SNMP traps - see optional accessory
Power:	24Vdc, consumption of data logger itself approximately 80 mA
Power of connected sensors and detectors:	Switchable voltage +12Vdc or +24Vdc available at sixteen input terminals
Operating temperature range:	0 to +50°C
Dimensions with plugged connectors - MS6D:	215 x 225 x 44 mm (W x H x D)
Dimensions with plugged connectors - MS6-Rack:	483 x 190 x 44 mm (W x H x D) - one rack unit 1U
Dimensions with plugged connectors - MS6R:	483 x 230 x 44 mm (W x H x D) - one rack unit 1U
Dimensions without rack holders - MS6R:	225 x 230 x 44 mm (W x H x D)
Protection:	IP20

PARAMETERS OF CONFIGURABLE INPUTS

MEASURED VALUE	ACCURACY	NOTE
dc current 4 to 20 mA	±0.1% FS (±0.02 mA)	either from active source connected to COM and GND terminals or passive sensor across terminals +24V and COM
dc voltage -10V to +10V	±0.1% FS (±10 mV)	input resistance appr. 10 MOhms, input terminals IN and COM
dc voltage -1V to +1V	±0.1% FS (±1 mV)	input resistance appr. 10 MOhms, input terminals IN and COM
dc voltage -100mV to +100mV	±0.1% FS (±100 uV)	input resistance appr. 10 MOhms, input terminals IN and COM
dc voltage -18mV to +18mV	±0.1% FS (±18 uV)	input resistance appr. 10 MOhms, input terminals IN and COM
thermocouple K (NiCr-Ni) -200 to +1300°C	±0.3% from reading + 1.5°C	linearized, cold junction compensation, input terminals IN and COM
thermocouple J (Fe-Co) -200 to +750°C	±0.3% from reading + 1.5°C	linearized, cold junction compensation, input terminals IN and COM
thermocouple S (Pt10%Rh-Pt) 0 to +1700°C	±0.3% from reading + 1.5°C	linearized, cold junction compensation, input terminals IN and COM
thermocouple B (Pt30%Rh-Pt) +100 to +1800°C	±0.3% from reading + 1.0°C from +300 to +1800°C	linearized, without cold junction compensation, input terminals IN and COM
thermocouple T (Cu-CuNi) -200 to +400°C Platinum RTD	±0.3% from reading + 1.5°C	linearized, cold junction compensation, input terminals IN and COM
sensor Pt100 -200 to +600°C	±0.2°C from -200 to +100°C ±0.2% from +100 to +600°C	two-wire connection, measuring current appr. 0.8mA in 50ms pulse, input terminals IN and COM
Platinum RTD sensor Pt1000 -200 to +600°C	±0.2°C from -200 to +100°C ±0.2% from +100 to +600°C	two-wire connection, measuring current appr. 0.5mA in 50ms pulse, input terminals IN and COM
Nickel RTD sensor Ni1000/ 6180ppm -50 to +250°C	±0.2°C from -50 to +100°C ±0.2% from +100 to +250°C	two-wire connection, measuring current appr. 0.5mA in 50ms pulse, input terminals IN and COM
two-wire measuring of resistance 0 to 300 Ohms	0.1% FS (±0.3 Ohms)	two-wire connection, measuring current appr. 0.8mA in 50ms pulse, input terminals IN and COM
two-wire measuring of resistance 0 to 3000 Ohms	0.1% FS (±3 Ohms)	two-wire connection, measuring current appr. 0.5mA in 50ms pulse, input terminals IN and COM
two-wire measuring of resistance 0 to 10000 Ohms	0.1% FS (±10 Ohms)	two-wire connection, measuring current appr. 0.1mA in 50ms pulse, input terminals IN and COM
Binary input for two-state signal	Input voltage for state "L" (IN-COM) < 0.8 V (Rin < 1 kOhm). resistance of closed contact for state "L" (IN-COM) < 1 kOhm. input voltage for state "H" (IN-COM) > 2 V. resistance of closed contact for state "H" (IN-COM) > 10 kOhm. minimum duration for sensing of change: 200ms.	
RS485IN - input for serial signal RS485 - optionally	E.g. data acquisition from temperature, humidity, pressure sensors Tx41x, Hx43x. input serves for reading from devices supporting protocol ModBus RTU or Advantech. Connected to terminals next to terminals for channel 15 and 16. Input can work with 16 devices. Maximum speed 115200Bd. Galvanically isolated.	

Universal monitoring system with data logger MS6D, MS6-Rack, MS6R

Included Accessories:
Traceable calibration certificate from the manufacturer with declared metrological ethalon traceability in accordance with EN ISO/IEC 17025.
Calibration certificate contains calibration of 16 inputs 4-20mA, if it is not defined required configuration of inputs by the user.
If required configuration of inputs is defined by the user, calibration certificate proves calibration of inputs in accordance with this required configuration - maximum one range for each of 16 inputs.
Calibration of other ranges is optional.

Included is also USB communication cable of approximately 1.8 meter length and free program for Windows.
Free program is available to download anytime. Program enables to control all logger functions and view and print the record in numerical format. It is possible to export recorded data to dbf or xls formats for further analysis, e.g. in MS Excel.
For work with graphs and other functions is possible to order optional program SWR006 or
DBM MS Logger Program - database program - see Optional Accessories.

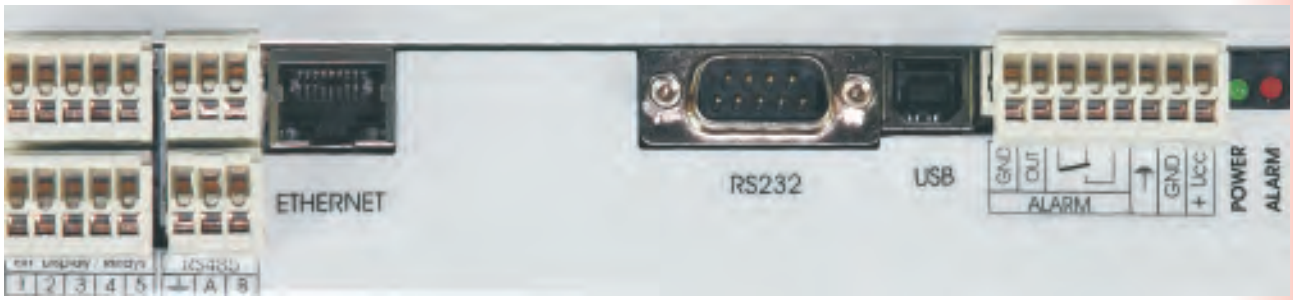


Figure: communication interface, alarm outputs, connection of power - Ethernet interface is optional

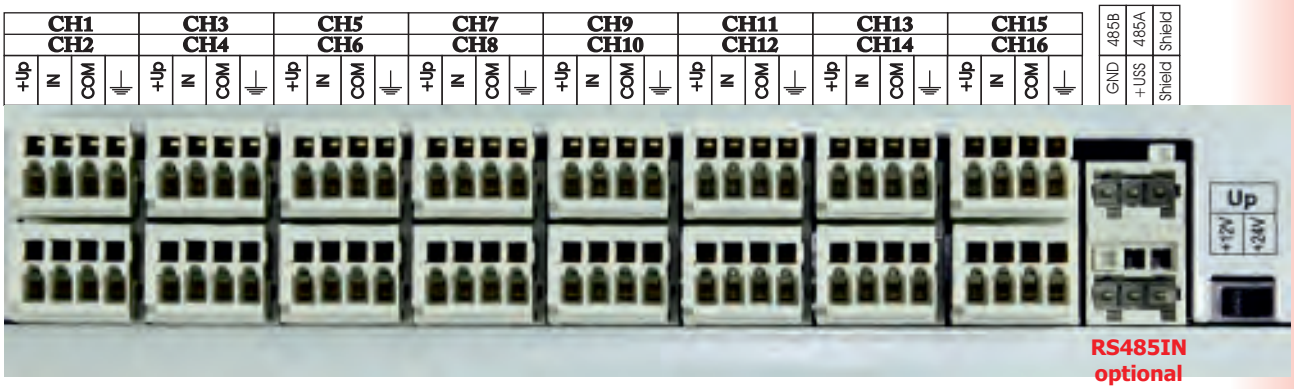


Figure: data logger inputs with power voltage 12Vdc/24Vdc switch to power connected sensors.

DIFFERENCES IN FEATURES OF DATA LOGGERS MS6D AND MS55D

Feature:	MS6D	MS55D
Character of inputs:	inputs configurable by the user from PC program	fixed - depends of installed HW input modules
Maximum measured dc current:	20 mA dc	5 A dc
Maximum measured dc voltage:	10 V dc	75 V dc
Most sensitive measuring range of dc voltage:	18 mV dc	100 mV dc
Maximum measured ac voltage:	-	50 V ac
Maximum measured ac current:	-	5 A ac
Input for measurement of frequency:	-	0 to 5 kHz
Input for counting of pulses:	-	yes
Possibility of galvanical isolation of inputs:	only serial input RS485IN, analog inputs cannot be isolated	yes
SMS port for sending/reception of SMS:	included	included
Dimensions including connectors:	215 x 225 x 44 mm	215 x 225 x 60 mm

For more details including accessories see further - together also for data loggers MS55D.

Monitoring system with data logger MS55D

- **Server rooms, data centers**
- **Food and beverages industry**
- **Pharmaceutical industry**
- **Blood stations, pharmacies**
- **Horticulture and cultivation of plants**
- **HVAC - heating, ventilation, air conditioning**
- **Building automation**
- **Research and development**
- **Laboratories**

Data logger MS55D replaces data loggers MS5D, MS5.
The reason of replacement is to offer system to user, which works from the user point identically as MS6 system, but it is equipped with input modules known from MS5 data loggers.
MS55D data loggers support all advantages of MS6 data loggers including faster communication protocol.
MS55D is designed to applications, where universal inputs of MS6 do not offer required parameters.

Sixteen-channel data loggers are designed for recording of values from transducers of variety of quantities, alarm state indication, and process control.
Data logger with transducers configured accordingly to client order can measure analog signals, frequency, count impulses, evaluate two-state quantities and read data from devices compatible with Modbus RTU and ADAM Advantech protocol. Input signals are connected to removable terminal block located on the logger upper side.
Analyzing of the record is enabled after data download to the personal computer by means of the included program via USB, RS232, Ethernet or GSM modem. Local or remote online data presentation is also enabled.

Data logger enables to:

- Acquire data online by means of the Ethernet interface. Communication via: SNMP, SOAP, internet www pages.
- Get information from data logger by means of the SMS messages - actual values, alarms, memory occupation and others - as response to SMS request from the user and after alarm creation at the logger. Data logger should be connected via GSM modem supporting SMS.
- Configure individually each input channel for measurement, alarm evaluation and data logging, including individual data logging interval for each input.
- Program individually each input channel different modes of record (continuous record, time dependent record, record only if specified logic conditions are matched, record triggered by external signal, etc.).
- Set up to four different logic conditions for each channel to active alarm. Each condition compares measured values from inputs with set limits. It is possible to set hysteresis and delay of condition validity.
- Assign to each input channel name of actual recorded process to identify monitored object (e.g. type of monitored product). It is enabled to select this name from data logger keyboard during the operation.
- Indicate alarm state after matching defined combination up to four alarms from any inputs.
- Store several configuration profiles (all logger parameters setting) for different measuring tasks and select profiles from logger keyboard.
- Connect several data loggers via RS485 bus or Ethernet network.

Monitoring system with data logger MS55D

PROGRAM FOR PERSONAL COMPUTER

Setting of all system parameters and the stored data processing is performed by the PC software for Windows.

- **Included software** - freeware is possible to download free from www.cometsystem.cz. It enables to communicate with logger through a serial RS232 link or through an RS485 network (long distance or several networked loggers), via USB, by means of modems (line or GSM) or via optional Ethernet interface. It also enables to configure the logger, read recorded values and display actual values of the inputs. It is possible to view and print recorded values in numeric format and export to dbf format for consequent analysis in any data processor (e.g. MS Excel). Free program version does not work with graphs.

- **DBM MS Logger Program** - low cost database program enables i.a.:
  - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
  - Measurement from different Comet devices is possible to combine in one table or graph.
  - To choose any time interval for analysis.
  - Print, export to PDF - table and graph.

  Other freeware needed for operation: database server Microsoft SQL or MySQL.

- **Optional software SWR006** for Windows is also available - more information on page 35

TECHNICAL PARAMETERS

Memory type:	internal SRAM, backed-up by Lithium battery
Total memory capacity:	2MB (up to 480 000 values)
Data logging modes:	noncyclic - logging stops after filling the memory cyclic - after filling memory oldest data is overwritten by new
Data logging interval:	adjustable individually for all input channels from 1 second to 24 hours
Real time clock:	year, leap year, month, day, hour, minute, second, backed-up by Lithium battery
Input measured values (1 to 16 inputs):	fixed by installed input modules for each channel (see table) in accordance with client´s order
AD converter (analog channels):	resolution 16 bits, conversion duration approximately 60ms/channel
Supported interface for communication with computer:	RS232, cable up to 15 m. Enables direct connection with the PC or via GSM modem, including sending/reception of SMS messages - included USB interface - included RS485 - cable up to 1200 m, galvanically isolated, enables to connect several data loggers to one communication line - included Ethernet interface LAN - communication via: SNMP, SOAP, www pages - optionally
Communication speed:	9600, 19200, 57600, 115200 Bd
Outputs for alarm indication:	Red LED at the side of the case, 32 LEDs Relay max. 8A/250Vac, switching-over contact Voltage signal 0V/4.8V, maximum current 50mA. Alarm SMS messages E-mails, SNMP traps - see optional accessory
Power:	9 to 30Vdc, 24Vdc recommended
Operating temperature range:	0 to +50°C
Dimensions including connectors:	215 x 225 x 60 mm
Protection:	IP20
Warranty:	2 years

Power and communication connectors, alarm outputs

Included Accessories:
Traceable calibration certificate from the manufacturer with declared metrological ethalon traceability in accordance with EN ISO/IEC 17025. Included is also 2 meter RS232 communication cable, 1.8 meter USB cable and free program for Windows. Program enables to control all logger functions and view and print the record.

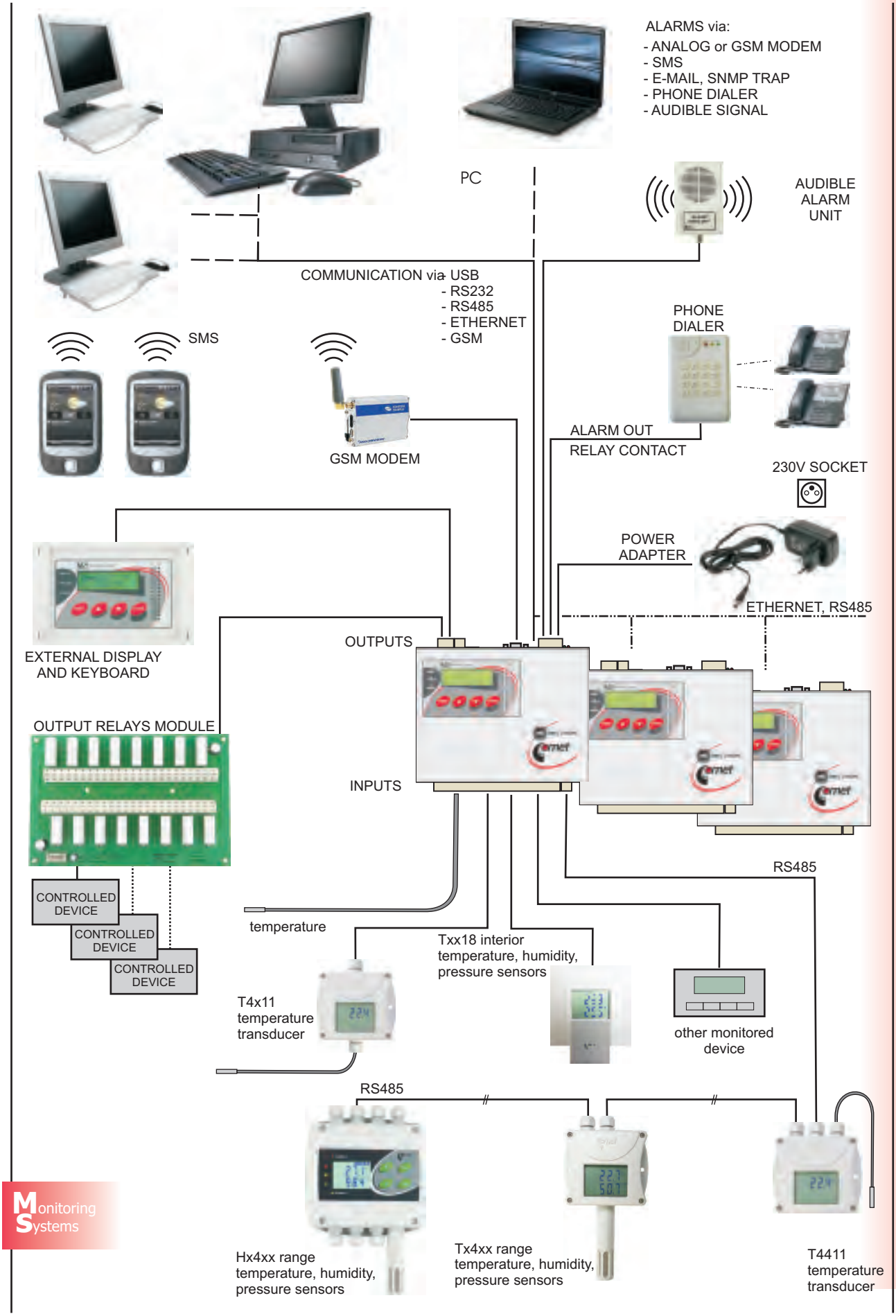
Monitoring system with data logger MS55D

TABLE OF INPUTS

TYPE	MEASURED VALUE	ACCURACY	NOTE
A0	dc current 4 to 20 mA	±0.1% FS	With source approximately 21V for two-wire transducers with current loop (e.g. temperature and humidity transducers Comet). Only galvanically not isolated.
A1*	dc current 4 to 20 mA	±0.1% FS	for passive sensing of current
B0*	dc current 0 to 20 mA	±0.1% FS	
B1*	dc current 0 to 1A	±0.1% FS	
B2*	dc current 0 to 5A	±0.1% FS	
C0	ac current 0 to 20mA	±1% FS	galvanically isolated
C1	ac current 0 to 1A	±1% FS	galvanically isolated
C2	ac current 0 to 5A	±1% FS	galvanically isolated
D0*	dc voltage 0 to 100mV	±0.1% FS	
D1*	dc voltage 0 to 1V	±0.1% FS	
D2*	dc voltage 0 to 10V	±0.1% FS	
D5*	dc voltage -10 to +10V	±0.1% FS (±20mV)	
D4*	dc voltage +75V	±0.1% FS	
E0	ac voltage 0 to 100mV	±1% FS	galvanically isolated
E1	ac voltage 0 to 1V	±1% FS	galvanically isolated
E2	ac voltage 0 to 10V	±1% FS	galvanically isolated
E4	ac voltage 0 to 50V	±1% FS	galvanically isolated
F*	measurement of resistance	±0.1% FS	two-wire connection
J*	input for Nickel RTD temperature sensor Ni1000, 6180 ppm/°C, range -50 to +250°C	-50 to 100°C±0.2°C 100 to 250°C ±0.2% from reading	two-wire connection
K*	input for Platinum RTD temperature sensor Pt100, range -140 to +600°C	-140 to+100°C ±0.2°C 100 to 600°C±0.2% from reading	two-wire connection
K1*	input for Platinum RTD temperature sensor Pt1000, range -140 to +600°C	-140 to+100°C ±0.2°C 100 to 600°C ±0.2% from reading	two-wire connection available also with sensors and transmitters
K3	precise input for RTD temperature sensor Pt1000, range -10 to +50°C	±0.06°C	Two-wire connection. Only galvanically not isolated. Available also with sensors.
N*	thermocouple K (NiCr-Ni) range -70 to +1300°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
T*	thermocouple T (Cu-CuNi) range -200 to +400°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
O*	thermocouple J (Fe-Co) range -200 to +750°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
P*	thermocouple S (Pt10%Rh-Pt), range 0 to +1700°C	±(0.3% + 1.5°C) from reading from +200 to +1700°C	linearized, cold junction compensation
Q*	thermocouple B (Pt30%Rh-Pt), range +100 to +1800°C	±(0.3% + 1°C) from reading from	
S*	binary input for potential-less contact	Maximum resistance of closed contact: 1000 ohms minimum duration for recording: 200ms	
S1	binary voltage input	Voltage for „switched ON" state: 3 to 30Vdc, input current in the „switched ON" state: 1 to 9mA - depending on the applied voltage, minimum duration for indication of change: 200ms, galvanically isolated.	
CTU	counter input for voltage signal	Voltage for „HIGH" state (for counter status change): 3 to 24Vdc, maximum pulse frequency 5kHz, backed-up operation, galvanically isolated.	
CTK	counter input for potential-less contact and open collector	Maximum pulse frequency 5kHz, programmable filter of pulse open collector ringing, backed-up operation during power mains failure, maximum resistance of closed contact: 10 kohms, minimum resistance of open contact: 250 kohms, galvanically unisolated.	
FU	input for measurement of frequency voltage signal	0 to 5kHz, resolution 1Hz, accuracy ±(0.2% from reading + 1Hz), input voltage for state "H": 3 to 24Vdc, input current in state "H": approximately 7mA, minimum duration of input impuls: 30us, galvanically isolated.	
FK	input for measurement of frequency contact switching	0 to 5kHz, resolution 1Hz, accuracy ±(0.2% from reading + 1Hz), maximum resistance of closed contact: 10 kohms, minimum resistance of open contact: 250 kohms, minimum duration of input pulse: 30us, galvanically unisolated.	
RP	input for serial signal RS485 for devices	E. g. measurement from Comet transmitters Tx4xx with RS485 digital output. Galvanically isolated. Maximum speed 115200Bd.	

Notes: Inputs marked (*) are not galvanically isolated and have common ground. These inputs are available also as galvanic isolated. Galvanic isolated analog inputs are marked with letter G following the name of input type (e.g. input for passive measurement of current 4-20mA - type A1 - with galvanic isolation is marked A1G). Galvanic isolation is not designed as safety protection.

Architecture of monitoring system with data loggers MS



Monitoring Systems

Features of optional Ethernet interface of monitoring system MS

Ethernet interface
Data logger is designed for connection to standard computer network. The 10 and 100Mb/s Ethernet is supported. No need to build new data lines. Thanks this installation cost are essentially reduced and instant easy start of monitoring system operation is enabled.

Fast data download
Record download speed was increased four-times from previous MS5 data logger generation.

E-mail
Data logger sends warning emails up to three different addresses. E-mail is immediately sent after alarm state of monitored technological process appears. User is also informed on error states of device itself (measuring channel error, fulfilling of internal memory, self-test error). SMTP servers requiring autentization are also supported.

Secured WEB server
WWW server is built in the device. Here it is possible to monitor actual values, alarm states and information on data logger.
Also access password for www pages can be entered.
WWW pages are user modifiable. Free SDK description is available to create own www pages.
WWW remote conditions

Control of remote condition and relays is enabled also via www interface.

SOAP protocol
Protocol designed for data logger integration to own www infrastructure. Available actual values can be captured by www server (Apache, IIS) and processed by the user. Communication protocol SOAP version 1.1. is supported. By means of this protocol data logger sends actual values in preset intervals to specified server.

Modbus TCP protocol
Enables to read actually measured values by means of industrial standard Modbus. Data is available in several formats. Protocol is suitable for implementing of MS data logger to SCADA system.

XML file
Actual values can be downloaded to XML file. This option is suitable for data logger integration to SCADA systems.

SNMP Trap
SNMP Traps are sent after alarm state or device error appears.

SNMPv1 protocol
Actually measured values can be acquired by means of SNMPv1 protocol. MIB tables are available for free.
Designed especially for IT applications and use in "managed" computer networks.

Syslog protocol
Syslog message is sent after alarm state or data logger error appears. Syslog is compatible with RFC5424.

Data logger display
Basic network parameters can be set directly from data logger display. It is possible to change IP address, subnetwork mask and initial gate.

Database system
Prepared for connection to database system including online values transfer.

Monitoring system MSx - optional accessories

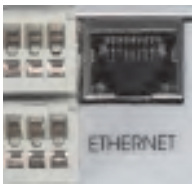
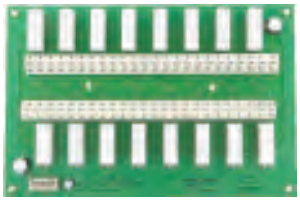
Common optional accessories for data loggers MS6 and MS55

Software:		
	**DBM**	**DBM MS Logger Program** for work with data from Comet MSx loggers. This database program enables i.a.: - To view selected channels from any Comet logger together with selected channels of other Comet loggers. - Measurement from different Comet devices is possible to combine in one table or graph. - To choose any time interval for analysis. - Print, export to PDF - table and graph. Other freeware needed for operation: database server Microsoft SQL or MySQL. For database viewing by other users at the network it is necessary to buy proper number of licences of DBV Database Viewer.
	**SWR006**	**Optional software for Windows** - comfort graphic environment data acquisition, including online graph, automatic data download, remote Display mode on Internet/Ethernet network, storing data on the network, administration of users and passwords and many others ..
Optional input for serial RS485 signal: 	**RS485IN** only MS6	E.g. data acquisition from temperature humidity pressure sensors Tx41x, Hx43x. Input is designed for reading from devices supporting protocol ModBus RTU or Advantech. Signal is connected to MS6 terminals right from terminals for channel 15 and 16. Input can work wit up to 16 devices. Maximum speed 115200Bd. Galvanically isolated.
Accessories for data logger mounting: 	**MP013**	Universal metal wall holders for data logger wall mounting. Package contains a pair of holders and 4 screws.
	**MP012**	Holder for data logger mounting to DIN 35mm rail. Package contains the holder and 6 screws.
 	**MP041** only MS6	Only for data logger MS6R. Four rubber feet with screews for desktop use of data logger MS6R.

Monitoring system MSx - optional accessories

Power supplies:		
	**A1759**	Universal ac/dc adapter 230V-50Hz/21Vdc/1A.
	**A1940**	Universal ac/dc adapter 230V-50Hz/24Vdc/1A/24W for socket plug-in, switch-mode.
	**A5948**	Power supply 230V-50Hz/24Vdc/2,5A for DIN rail 35mm, dual terminals 24Vdc, switch-mode, including DIN rail of 100mm length.
Backup power supplies:		
	**A6963 supply** **A7963 battery**	Backup power supply A6963, model MINI-DC-UPS/24DC/2 with batery A7963, model MINI-BAT/24DC/1.3AH, manufacturer Phoenix Contact. Power supply is designed for mounting to 35mm DIN rail in data logger case MP033 and MP034. It contains two modules - UPS and battery. Power supply is delivered uninstalled in original manufacturer packaging. Backup power supply is able to supply data logger system with 200 mA consumption at least 3 hours, data logger system with 500 mA consumption at least 2 hours, data logger system with 1A consumption at least one hour. Discharged accumulators are recharged to full capacity in approximately 3 hours. System enables to inform user on switch-over to battery operation. More details are in Manual Appendixes. For mounting to MP033 or MP034 case please order: 1pc A6963, 1pc A7963, 1pc MP035 rail.
	**MP035**	DIN rail 35mm of 226mm length with screws for mounting of A6963 power supply with A7963 batery to MP033 or MP034 case.
	**A6966 supply** **A7966 battery**	Backup power supply A6966, model AWZ224, manufacturer Pulsar sp.j., Poland. To this power supply it is necessary to buy two lead accumulators A7966 12V/7Ah in hermetical maintenance-free type of construction, e.g. type ELNIKA 12V/7.2Ah. Power supply is designed for mounting to vertical inflammable wall with sufficient air flow. Its protection rate is IP20. It is not designed for mounting to closed switchboard. This backup power supply is able to supply data logger with transmitters of current consumption 200mA for approximately 35 hours. Discharged accumulators are recharged to full capacity in approximately 14 hours. System enables to inform user on switch-over to battery operation. More details are in Manual Appendixes. Please order: 1pc A6966, 2pcs A7966.

Monitoring system MSx - optional accessories

Optional internal equipment:		
	**MP042**	Built-in LAN interface for online MS data logger connection to Ethernet (Internet) network. In case of limits exceeding alarm is activated and warning e-mail or SNMP trap are sent to specified addresses. Actually measured values can be read by standard communication protocols: www, XML, SNMP, SOAP, Modbus TCP.
External communication converters: 	**MP021**	Converter RS485/RS232 for serial port COMx at the PC side, including ac/dc adapter and terminator T485.
	**MP022**	Converter USB/RS485 for USB port at the PC side, including terminator T485. Powered from computer USB interface.
	MP023	Converter Ethernet/RS485 including ac/dc adapter and terminator T485. Designed for several data loggers conencted via RS485 network for connection to the computer via Ethernet.
Accessories for ALARM OUT output: 	**MP026**	External audio indication unit. Enables to signal alarm state acoustically at the location up to 50m from data logger. Audio unit is connected to data logger by a cable (not included).
Output relays module: 	**MP018**	Output relays module with interconnection cable. It contains 16 mains relays 250V/8A with switching-over contacts. Each relay can be controlled based on alarm creation at different input channels accordingly to setting of user program. Any relay can be assigned to any alarm at any input. Output relays are designed for external devices control (switching of heating, cooling, ventilation, distant alarm etc.). It is necessary to order connection cable to data logger MP017, optionally other accessories.

Monitoring system MSx - optional accessories

	**MP017**	Connection cable for terminal with display and output relays module - cable length approximately 60cm. Longer cable lengths available - maximum 2m for relay module, maximum 50m for the terminal with display.
	**MP019**	Holder for relay module mounting to DIN 35mm rail. Package contains the holder and 6 plastic rivets.
	**MP020**	DIN rail for relay module with elevated consoles for mounting to the MP033, MP034 case. Rail enables to raise the relay module enables to lead cables to data logger under the module.
Terminals with display: 	**MP016**	Terminal with dual line alphanumerical LCD and control buttons and 32 alarm LEDs - for panel mounting or mounting to a case lid. Identical functions as built-in terminal of MS5D data logger. It is possible to build in with IP54 protection. Maximum cable length to data logger 50m. It is necessary to order the MP017 connection cable to data logger.
	**MP017** **MP017-5** **MP017-10**	Connection cable for terminal with display and output relays module - cable length approximately 60cm. Longer cable lengths available - maximum 2m for relay module, maximum 50m for the terminal with display. Connection cable for terminal with display - cable length 5m. Connection cable for terminal with display - cable length 10m.
	**MP032**	External terminal with dual line alphanumerical LCD, control buttons, 32 alarm LEDs and audio alarm indication. Built in a IP54 protection case, including 2m cable with covered terminals. Identical functions as built-in terminal of MS5D data logger. Maximum cable length to data logger 50m.
GSM modem and accessories: 	**MP009**	GSM modem WaveCom Fastrack Supreme, without accessories.
	**MP009/1**	Antenna for GSM modem WaveCom Fastrack, right-angled.
	**MP009/2**	Communication cable for GSM modem Fastrack.
	MP009/3	Ac/dc adapter 230V/12V for GSM modem Fastrack.

Monitoring system MSx - optional accessories

Covers, cables and other accessories:		
	**MP027**	Covers of data logger terminals (pair). Designed for aesthetic covering of cables connected to terminals and connectors. Magnetic fixing to data logger.
	**MP030**	RS232 connector with terminals for RS232 interface connection by means of terminals, not by D-Sub connector.
	**MP031**	Screwdriver for easy connection of cables to WAGO terminals.
Assemblies in case with higher IP protection:		
	**MP033**	Case with IP65 protection with wall holders and data logger holders - no cutout in the lid. Dimensions 270 x 570 x 140 mm.
	**MP048**	Data logger MS6D in IP54 protection case with connected terminal with display built in the lid. Dimensions 270 x 570 x 140 mm.
	MP049	Data logger MS55D in IP54 protection case with connected terminal with display built in the lid. Dimensions 270 x 570 x 140 mm.

Comet temperature humidity pressure sensors are directly connectable to MS data loggers. Also complete monitoring systems with data logger and sensors are available.

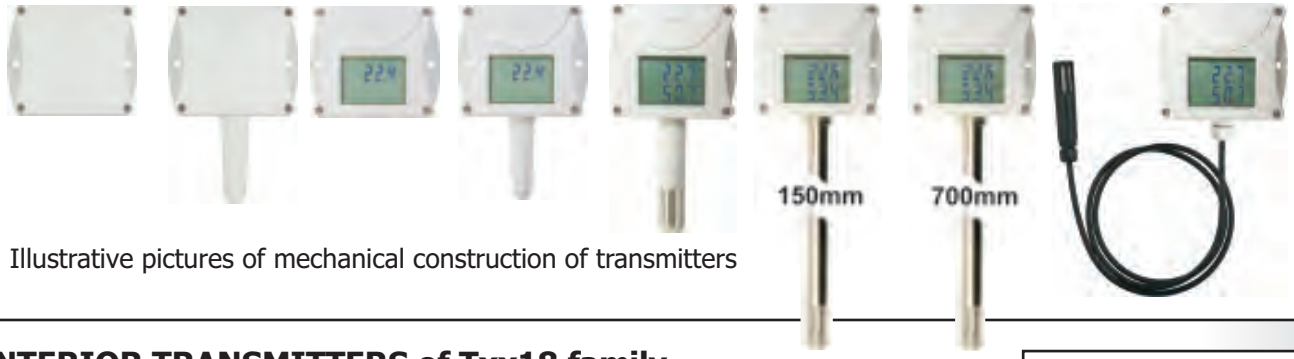
Monitoring system MSx - optional accessories

Temperature - humidity transmitters and probes:		
	**Px1xx** **Txxxx** **Hx43x**	Industrial and interior transmitters for monitoring of temperature, humidity atmospheric pressure - see next chapter.
	**Pt1000 probes**	Temperature probes with Pt1000 RTD sensor without connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the shielded PVC cable 2 x 0.14mm2. Specify required cable length 1, 2, 5, 10, 15 or 20 meters. Enclosure diameter 6mm, length 20mm. Diameter of the cable 3.5mm.
	**MP047**	Universal holder for probes for easy mounting to rack 19" (probes not included)
Two-state detectors connectable to binary inputs:		
	**SP008**	AC voltage presence sensor, connectable to binary inputs of MS5, MS6.
	**SA200A**	Magnetic door contact, connectable to binary inputs of MS5, MS6, without cable.
	**SA200A-2** **SA200A-5** **SA200A-10** **SA200A-20** **SA200A-30**	Magnetic door contact, connectable to binary inputs of MS5, MS6 with cable lengths 2, 5, 10, 20, 30 meters.
	**LD12** only MS6	Water leakage detector, two-state output, connectable to MS6 inputs. With 3 meters cable. Powered from MS6 12Vdc terminals.
	**SD280** only MS6	Optical smoke detector, relay output, connectable to MS6 inputs, powered from MS6 12Vdc terminals. The SD280 detector combines an optical smoke sensor with a heat sensor. Both sensors have their outgoing signals processed digitally, resulting in higher false alarm immunity.
	**JS20** only MS6	P.I.R. motion detector is for interior protection. It detects object movement having a human body temperature. The JS-20 distinguishes itself with excellent RF immunity. The signal from the sensor is electronically analyzed. This ensures that the detector provides excellent sensitivity and false alarms are basically eliminated. The detection analysis rate can be adjusted to increase its immunity if the JS20 is installed in a problem location. It can be mounted on a flat wall or in a corner. Connectable to MS6 inputs, powered from MS6 12Vdc terminals.

INDUSTRIAL TRANSMITTERS of Txxxx, Pxxxx family:

MEASURED VALUE /OUTPUT	4 to 20mA	0 to 10V	RS485	RS232	Ethernet
temperature	**P0120** figure 2 page 42	**T4211** figure 3 page 47	**T0410** figure 4 page 49	**T0310** figure 4 page 51	**P86xx** figure 2 page 53
	Px1x1 figure 1 page 42		**T4411** figure 3 page 49	**T4311** figure 3 page 51	**P85xx** figure 2 page 55
	T0110 figure 4 page 43				**T0510** figure 4 page 57
	T4111 figure 3 page 43				**T4511** figure 3 page 59
humidity	**T1110** figure 5 page 43				
atmospheric pressure	**T2114** figure 3 page 45	**T2214** figure 3 page 45	**T2414** figure 3 page 49	**T2314** figure 3 page 51	**T2514** figure 3 page 59
temperature+humidity	**T3110** figure 5 page 43	**T0210** figure 5 page 47	**T3411** figure 5 page 49	**T3311** figure 5 page 51	**T3510** figure 5 page 57
	T3113 figure 6 page 43	**T0213** figure 6 page 47	**T3413** figure 6 page 49	**T3313** figure 6 page 51	**T3511** figure 8 page 59
	T3117 figure 7 page 43	**T0211** figure 8 page 47	**T3417** figure 7 page 49	**T3319** figure 8 page 51	
	T3111 figure 8 page 43		**T3419** figure 8 page 49		
temperature+humidity +atmospheric pressure			**T7410** figure 5 page 49	**T7310** figure 5 page 51	**T7510** figure 5 page 57
			T7411 figure 8 page 49	**T7311** figure 8 page 51	**T7511** figure 8 page 59
CO_2	**T5140** figure 3 page 46	**T5240** figure 3 page 47	**T5440** figure 3 page 49	**T5340** figure 3 page 51	**T5540** figure 3 page 57
	T5141 figure 8 page 46	**T5241** figure 8 page 47	**T5441** figure 8 page 49	**T5341** figure 8 page 51	**T5541** figure 8 page 59
temperature+humidity+ CO_2			**T6440** figure 5 page 49	**T6340** figure 5 page 51	**T6540** figure 5 page 57

figure 1 figure 2 figure 3 figure 4 figure 5 figure 6 figure 7 figure 8



Illustrative pictures of mechanical construction of transmitters

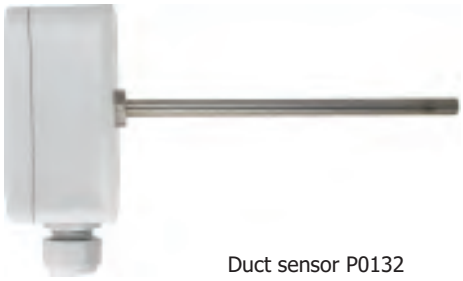
INTERIOR TRANSMITTERS of Txx18 family

MEASURED VALUE / OUTPUT	4 to 20mA page 63	0 to 10V page 63	RS485 page 65	RS232 page 65
temperature	T0118	T0218	T0418	T0318
atmospheric pressure	T2118	T2218		
temperature + humidity	T3118	T3218	T3418	T3318
temperature + humidity + atmospheric pressure			T7418	T7318

P0120 - AMBIENT TEMPERATURE SENSOR with 4-20mA output for outdoor and indoor use

TECHNICAL PARAMETERS

Measuring and operating temperature range:	-30 to +80°C
Accuracy:	±0.4°C
Break of sensor:	> 24mA
Short circuit of sensor:	< 3.5mA
Dimensions (W x H x D):	approximately 88x150x39.5 mm
Protection:	IP65
Power:	9 to 30 V DC (typically 24 V)



Duct sensor P0132

Ambient temperature sensor P0120

TEMPERATURE TRANSDUCERS from Pt100, Pt1000 sensor to current loop 4-20mA

Transduders are designed for signal conversion from RTD Pt100 and Pt1000 sensor to linearized signal 4 to 20mA. Transducer is built in a robust watertight ABS case with cable glands.

TECHNICAL PARAMETERS

Operating temperature range:	-30 to +80°C
Break of sensor:	> 24mA
Short circuit of sensor:	< 3.5mA
Dimensions with glands (W x H x D):	approximately 88 x 123 x 39.5 mm
Protection:	IP65
Power:	9 to 30 V DC (typically 24 V)

AVAILABLE MODELS for Pt1000 two-wire connection:

- **P4141** range 4 to 20mA / -100 to +30°C, accuracy of the input ±0.3°C
- **P4191** range 4 to 20mA / -50 to +50°C, accuracy of the input ±0.3°C
- **P4121** range 4 to 20mA / -30 to +80°C, accuracy of the input ±0.3°C
- **P4151** range 4 to 20mA / 0 to +35°C, accuracy of the input ±0.2°C
- **P4131** range 4 to 20mA / 0 to +150°C, accuracy of the input ±0.3°C
- **P4161** range 4 to 20mA / 0 to +250°C, accuracy of the input ±0.4°C
- **P4171** range 4 to 20mA / 0 to +400°C, accuracy of the input ±0.7°C

Trandsucer P6181 for Pt100
Trandsucer P41x1 for Pt1000

Transducers P41x1 are directly compatible with Comet temperature probes with the Pt1000 sensor with no connector - probe marking followed by /0.

- **AVAILABLE MODELS for Pt100** two-wire, three-wire and two-wire with compensation loop connection:
- **P6181** range 4 to 20mA / -100 to +200°C, accuracy of the input ±0.3°C up to +100°C, ±0,4°C over +100°C

Included is traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

TEMPERATURE AND HUMIDITY TRANSMITTERS with 4-20mA output

**temperature*relative humidity*dew point temperature*
absolute humidity*specific humidity*mixing ratio*specific enthalpy**

Transmitter T3113,length 150mm
Transmitter T3117,length 700mm

Transmitter T1110, T3110

Transmitter T3111, T3111P

Transmitter T3113D - duct mount

Programmable temperature and humidity transmitters are equipped with temperature and relative humidity sensors. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Degrees Celsius and Fahrenheit are user selectable. Transmitters are available in wall-mount, duct-mount and bar types. Also types with T+RH probe on a cable are available. Transmitter contains a microprocessor based control circuitry in a durable plastic case with connection terminals and sensors in a stainless steel mesh filter. Humidity transmitters are also available with two galvanic isolated 4-20mA outputs. Configuration of outputs and output range are user adjustable. Computerized design ensures temperature compensation of the humidity sensor and fail indication. State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation.

TECHNICAL PARAMETERS

Relative humidity operating range:	0 to 100%
Accuracy of relative humidity output:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature output:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy of temperature output of T4111:	±0.15°C + 0.1% from adjusted output span (without temperat. probe)
Accuracy and range of dew point temperature output:	±1.5°C at ambient temperature < 25°C and RH>30%,range-60 to+80°C
Accuracy and range of absolute humidity output:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity output:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio output:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy output:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Temperature operating range of the case:	-30 to +80°C
Temperature operating range of the LCD display:	readable to +70°C,recommended to switch off LCD over +70°C
Range of temperature compensation of RH sensor:	-30 to +125°C
Current outputs - two-wire connection:	4-20mA, galvanic isolated with dual-output models
Configuration of outputs and output range:	user adjustable from the PC
Filtering ability of the humidity sensor cover:	0.025mm
Power:	9-30Vdc
Dimensions of the case with electronics (W x H x D):	89 x 73 x 39.5 mm
Protection of the case with electronics:	IP65 electronics, IP40 sensors

TRANSMITTERS ARE AVAILABLE IN THE FOLLOWING MODELS:

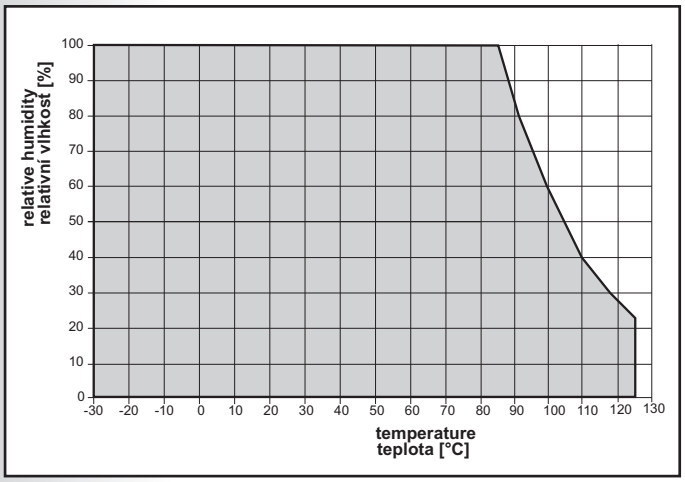
MODEL	MEASUR. VALUE	MAXIMUM RANGE OF TEMPERATURE MEASUREMENT	STEM LENGTH	OUTPUT 1 [2)]	OUTPUT 2 [2)]	NOTE
T1110	RH	-30 to +80°C	75mm	0-100%RH [2)]	-	outdoor and indoor use
T3110	RH+T	-30 to +80°C	75mm	0-100%RH [2)]	-30 to +80°C [2)]	outdoor and indoor use
T3113	RH+T	-30 to +125°C [1)]	150mm	0-100%RH [2)]	-30 to+125°C [2)]	duct mount, versions - T3113, T3113D
T3117	RH+T	-30 to +125°C [1)]	700mm	0-100%RH [2)]	-30 to+125°C [2)]	bar type
T3111	RH+T	-30 to +105°C [1)] probe including cable	probe cable 1,2,4m	0-100%RH [2)]	-30 to+105°C [2)]	T+RH probe with 1m cable. Diameter 18mm, length 90mm. Cable lengths 2m or 4m available.
T3111P	RH+T up to 25bars	-30 to +105°C [1)] probe including cable	probe cable 1,2,4m	0-100%RH [2)]	-30 to+105°C [2)]	Compressed air up to 25 bars. T+RH metal probe with 1m cable. Cable lengths 2m or 4m available. Diameter 18mm, length 110mm, thread G1/2.
T0110	T	-30 to +80°C	53mm	-30 to +80°C [2)]	-	outdoor and indoor use
T4111	T	-200 to +600°C	-	-200 to+600°C [2)]	-	transducer for external Pt1000 probes, output range adjustable by the user

1) Maximum temperature only at the measuring end with sensors. Maximum temperature +105°C for T3111 with cable probe is allowed also for the cable. Near plastic case with electronics maximum temperature is +80°C. Humidity at temperature over +85°C is limited - see the graph below.

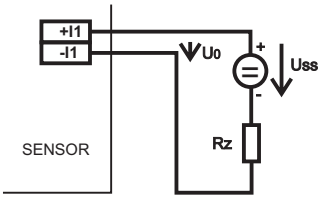
2) Any value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to each output of dual output transmitters. Also identical value can be assigned to both outputs. The T1110 transmitter has only relative humidity output.
Outputs are adjusted to maximum range from the manufacturer.
Output range is user adjustable from the PC by means of the optional cable SP003 - see photo. Free configuration program TSensor for transmitter adjustment is ready to download anytime from www.cometsystem.cz.
If different adjustment of outputs and output ranges are required, please specify required output values (RH, T, Tdp, ..) and required ranges.
Ordering example: Transmitter T3110, output 1: RH 10 to 90%, output 2: temperature 0 to 35°C
Ordering example: Transducer T4111, output: -100 to +30°C

Transducer T4111

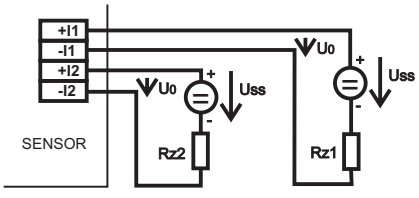
Thermometer T0110



Optional cable SP003 for transmitter adjustment



Application wiring of transmitter with one 4-20mA output



Application wiring of transmitter with two 4-20mA outputs

Included accessory: Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.
Comet probes with Pt1000 sensors are directly connectable to T4111 transducer - see further. There is a symbol /0 behind probe name.

Other optional accessory: see further
Transmitters are directly compatible with sixteen channel Comet data acquisition system MSx.

BAROMETER with 4-20mA or 0-10V output

APPLICATIONS - measuring of barometric pressure at:

- warehouses
- manufacturers
- air-conditioned rooms
- weather stations

Transmitter is equipped with absolute pressure sensor of high accuracy. Transmitter contains a microprocessor based control circuitry in a durable plastic case with connection terminals and sensors. Output range is user adjustable. Large dual line LCD is an advantage. Display is possible to switch off. Computerized design ensures temperature compensation of the pressure sensor and fail indication. State-of-the-art absolute pressure sensor ensures excellent long term stability.
Display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2.

TECHNICAL PARAMETERS

Maximum measuring range:	600 to 1100 hPa
Output setting from the manufacturer:	800 to 1100hPa
Accuracy:	±(1.3hPa+0.06% from adjusted output span) at 23°C from 800 to 1100hPa
Operating temperature range:	-30 to +80°C
Operating temperature range of LCD display:	readable to +70°C, it is recommended to switch OFF the LCD over +70°C
Output range:	user adjustable from the PC
Power:	9-30Vdc transmitter with 4-20mA output 15-30Vdc transmitter with 0-10V output, maximum consumption 20mA
Dimensions (W x H x D):	89 x 98 x 39.5 mm
Protection:	IP54
Warranty:	two years

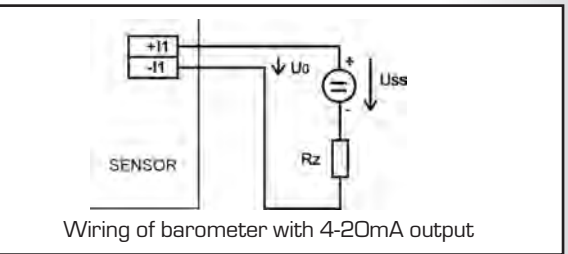
AVAILABLE BAROMETER MODELS:

- **T2114** - barometric pressure sensor with 4-20mA output
- **T2214** - barometric pressure sensor with 0-10V output

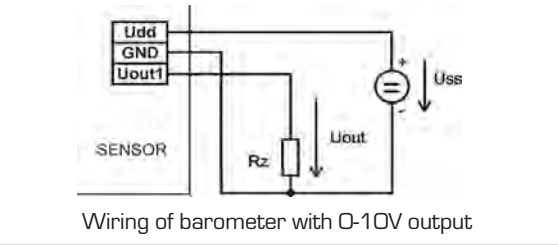
Output is adjusted to 800-1100hPa range from the manufacturer. Output range is user adjustable from the PC by means of the optional cable SP003 - see below. Free configuration program for transmitter adjustment is ready to download anytime. If different adjustment of output range is required, please specify required range.

Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

Optional cable SP003 for barometer setting



Wiring of barometer with 4-20mA output



Wiring of barometer with 0-10V output

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.

Optional accessory:
SP003 - cable for transmitter adjustment via USB port
MD036 - self adhesive Dual Lock for easy installation
SP005 - tool for easy wire connection to terminals

Barometer is directly compatible with sixteen channel Comet data acquisition system MS.

CO_2 concentration transmitter with 4-20mA or 0-10V output

Transmitters T5140, T5240
with built-in sensor and
T5141, T5241 with external probe

APPLICATIONS - measuring of CO_2 concentration at:

- building HVAC management
- climate technology
- schools, universities
- meeting rooms, hospitals, cinemas, theatres
- weather stations

NEW CO_2 SENSOR

The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.

The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.

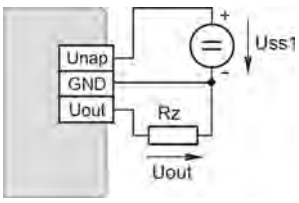
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

TECHNICAL PARAMETERS

Maximum measuring range T5140, T5240:	0 to 2000 ppm, accuracy ±(50ppm +2% from reading) at 25°C and 1013hPa
Maximum measuring range T5141, T5241:	0 to 10000 ppm, accuracy ±(100ppm +5% from reading) at 25°C and 1013hPa
Operating temperature range:	-30 to +60°C
Alarm indication:	color LED
Output range:	user adjustable from the PC
Dimensions (W x H x D):	89 x 94 x 39.5 mm
Power:	9-30Vdc transmitter with 4-20mA output 15-30Vdc transmitter with 0-10V output
Protection T5140, T5240:	IP30
Protection T5141, T5241:	IP65

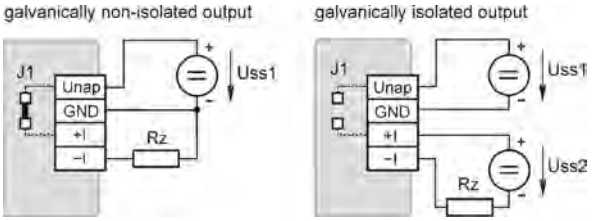
AVAILABLE MODELS:

T5140 - ambient CO_2 concentration transmitter with 4-20mA output, built-in sensor
T5141 - CO_2 transmitter with 4-20mA output with external CO_2 probe on 1m cable, diameter 18.5mm, length 96mm.
T5240 - ambient CO_2 concentration transmitter with 0-10V output, built-in sensor
T5241 - CO_2 transmitter with 0-10V output with external CO_2 probe on 1m cable, diameter 18.5mm, length 96mm.



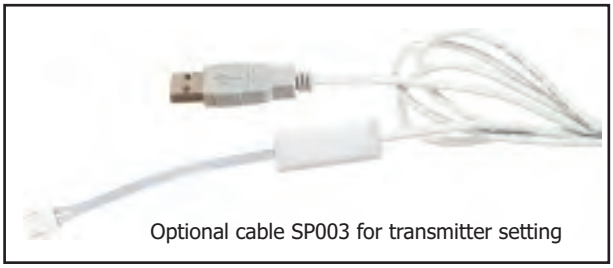
Wiring of transmitter with 0-10V output

Output is adjusted to 0-2000 ppm, resp.0-10000ppm range from the manufacturer. Output range is user adjustable from the PC by means of the optional cable SP003 - see below. Free configuration program for transmitter adjustment is ready to download anytime. If different adjustment of output range is required, please specify required range.



Wiring of transmitter with 4-20mA output

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.



Optional cable SP003 for transmitter setting

Optional accessory:
SP003 - cable for transmitter adjustment via USB port
MD036 - self adhesive Dual Lock for easy installation
SP005 - tool for easy wire connection to terminals

Transmitter is directly compatible with sixteen channel Comet data acquisition system MS.

TEMPERATURE AND HUMIDITY TRANSMITTERS with 0-10V output

**temperature*relative humidity*dew point temperature*
absolute humidity*specific humidity*mixing ratio*specific enthalpy**

Transmitter T0213

Transmitter T0210

Transmitter T0211, T0211P

Transmitter T0213D - duct mount

Programmable temperature and humidity transmitters are equipped with temperature and relative humidity sensors. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Degrees Celsius and Fahrenheit are user selectable. Transmitters are available in wall-mount, duct-mount and bar types. Also types with T+RH probe on a cable are available. Transmitter contains a control circuitry in a durable plastic case with connection terminals and sensors in a stainless steel mesh filter. Humidity transmitters are also available with two 0-10V outputs. Configuration of outputs and output range are user adjustable. Large dual line LCD for simultaneous display of T+RH, or other humidity interpretation is an advantage. Display is possible to switch off. Computerized design ensures temperature compensation of the humidity sensor and fail indication. State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitters are designed for use in non-aggressive environment.

TECHNICAL PARAMETERS

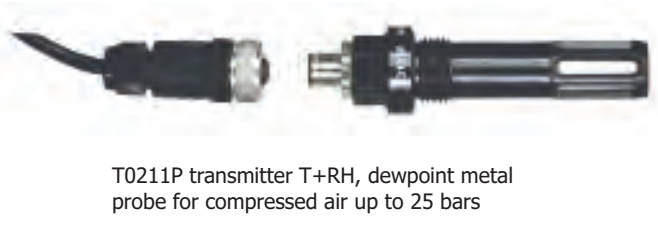
Relative humidity operating range:	0 to 100%
Accuracy of relative humidity output:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature output:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy of temperature output of T4111:	±0.15°C + 0.1% from adjusted output span (without temperat. probe)
Accuracy and range of dew point temperature output:	±1.5°C at ambient temperature < 25°C and RH>30%,range-60 to+80°C
Accuracy and range of absolute humidity output:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity output:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio output:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy output:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Temperature operating range of the case:	-30 to +80°C
Temperature operating range of the LCD display:	readable to +70°C,recommended to switch off LCD over +70°C
Range of temperature compensation of RH sensor:	-30 to +125°C
Voltage outputs:	0-10V, dual-output models have common ground, galvanically unisolated
Configuration of outputs and output range:	user adjustable from the PC
Filtering ability of the humidity sensor cover:	0.025mm
Power:	15-30Vdc, maximum consumption 20mA
Dimensions of the case with electronics (W x H x D):	89 x 73 x 39.5 mm
Protection of the case with electronics:	IP65 electronics, IP40 sensors

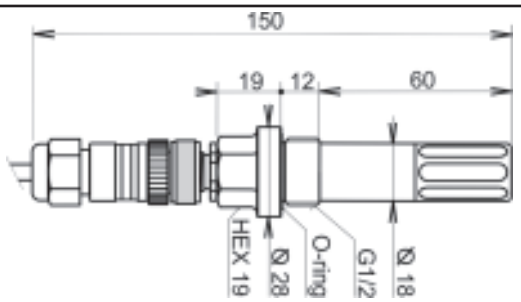
TRANSMITTERS ARE AVAILABLE IN THE FOLLOWING MODELS:

MODEL	MEASUR. VALUE	MAXIMUM RANGE OF TEMPERATURE MEASUREMENT	STEM LENGTH	OUTPUT 1 [2)]	OUTPUT 2 [2)]	NOTE
T4211	T	-200 to +600°C	-	-200to+600°C	-	Pt1000 trandsducer, adjustable range
T0210	RH+T	-30 to +80°C	75mm	0-100%RH [2)]	-30 to +80°C [2)]	outdoor and indoor use
T0213	RH+T	-30 to +125°C [1)]	150mm	0-100%RH [2)]	-30 to+125°C [2)]	duct mount
T0211	RH+T	-30 to +105°C [1)] probe including cable	probe cable 1,2,4m	0-100%RH [2)]	-30 to+105°C [2)]	T+RH probe with 1m cable. Diameter 18mm, length 90mm. Cable lengths 2m or 4m available.
T0211P	RH+T up to 25bars	-30 to +105°C [1)] probe including cable	probe cable 1,2,4m	0-100%RH [2)]	-30 to+105°C [2]	Compressed air up to 25bars. T+RH metal probe with 1m cable. Cable lengths 2m or 4m available. Diameter 18mm, length 110mm, thread G1/2.

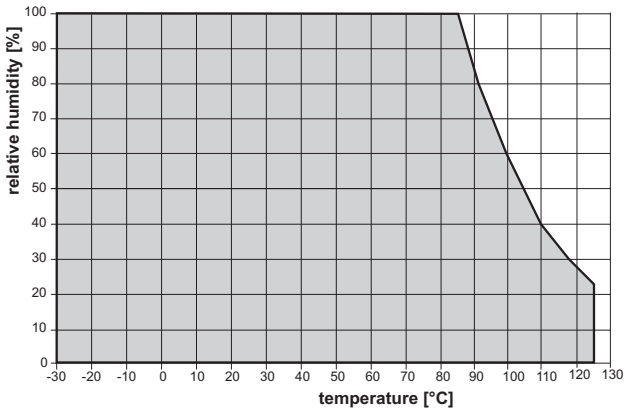
1) Maximum temperature only at the measuring end with sensors. Maximum temperature +105°C for T0211 with cable probe is allowed also for the cable. Relative humidity at temperature over +85°C is limited in accordance with the graph. Near plastic case with electronics maximum temperature is +80°C.

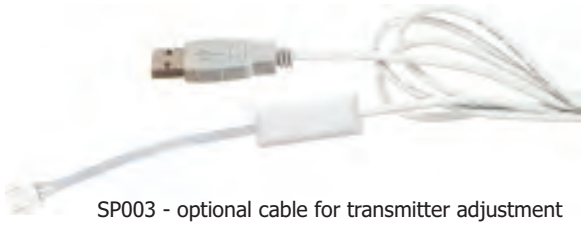
2) Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to each output of dual output transmitters. Also identical value can be assigned to both outputs.
Outputs are adjusted to maximum range from the manufacturer. Output range is user adjustable from the PC by means of the optional cable SP003 - see photo. Free configuration program TSensor for transmitter adjustment is ready to download anytime from www.cometsystem.cz.
If different adjustment of outputs and output ranges are required, please specify required output values (RH, T, Tdp, ..) and required ranges.
Ordering example: Transmitter T0210, output 1: RH 10 to 90%, output 2: temperature 0 to 35°C



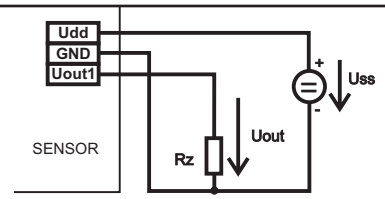


T0211P transmitter T+RH, dewpoint metal probe for compressed air up to 25 bars

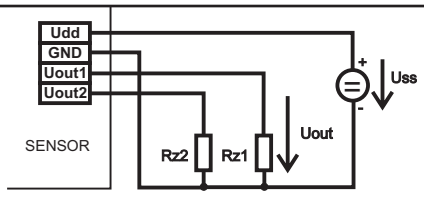




SP003 - optional cable for transmitter adjustment



Application wiring of transmitter with one 0-10V output



Application wiring of transmitter with two 0-10V outputs

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to be downloaded from www.cometsystem.cz.
Other optional accessory: see further

TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE, CO_2 TRANSMITTERS with serial RS485 output

temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy*CO_2

APPLICATIONS

- server rooms
- telecommunication devices
- warehouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms
- weather stations

Measured temperature, atmospheric pressure, CO_2 concentration is converted to digital serial output with the RS485 link parameters. Transmitter circuitry is galvanically isolated from power circuitry to prevent collision in RS485 network. Large dual line LCD for display of temperature, humidity, pressure or other calculated humidity interpretation is an advantage. Computerized design ensures maximum long term stability and fail indication. The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol. Protocol is user selectable. Serial link enables to read actual readings and modify transmitter configuration. Instrument works always in slave mode, i.e. responds only to master device query.

NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

TECHNICAL PARAMETERS

Applied temperature sensor:	RTD, Pt1000-3850ppm/°C
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Operating temperature range of the electronics:	-30 to +80°C (-30 to +60°C CO2 transmitters T5440, T6440)
Accuracy of temperature measurement:	±0.4°C, accuracy of T4411 transducer input is ±0.2°C
Range of temperature measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5%RH from 5 to 95% at 23°C
Accuracy and range of dew point temperature:	±1.5°C at ambient temperature < 25°C and RH>30%, range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range 0 to 995 kJ/kg
Accuracy and range of barometric pressure:	± 1.3hPa at 23°C, range: 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy of CO2 level measurement T5440,T6440:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
Accuracy of CO2 level measurement T5441:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Range of temperature compensation of RH sensor:	all temperature range
Power:	9 to 30 V DC, consumption approximately 0,5W
Protection - temperature and humidity transmitters:	IP65 electronics with terminals, IP40 humidity and temperature sensors
Protection - transmitters measuring pressure: :	IP54 electronics with terminals, IP40 humidity and temperature sensors
Filtering ability of the humidity sensor cover:	0.025mm
Communication protocols:	ModBus RTU, ADAM Advantech, HW group
Communication speed:	110 to 115200 Bd
Dimensions of the case without cable glands:	89 x 73 x 39.5 mm

TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE
CO_2 TRANSMITTERS with serial RS485 output

temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy*CO_2

AVAILABLE MODELS - electronic circuitry GALVANICALLY ISOLATED from power:

MODEL	MEASURED VALUE	MAXIMUM TEMPERATURE AND PRESSURE MEASURING RANGE	STEM LENGTH	DESCRIPTION	Figure
T4411	T	-200 to +600°C	-	**Temperature transducer** for external probes with Pt1000-3850 sensor (not included), input accuracy ±0.2°C	1
T0410	T	-30 to +80°C	53mm	**Thermometer** - outdoor, indoor use	2
T3411	T+H	-30 to +80°C	75mm	**Thermometer-hygrometer** - outdoor, indoor use	3
T3413	T+H	-30 to +125°C[1)]	150mm	**Thermometer-hygrometer** - duct mount, T3413, T3413D	4
T3417	T+H	-30 to +125°C[1)]	700mm	**Thermometer-hygrometer** - bar type	4
T3419	T+H	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	**Thermometer-hygrometer** - T+RH probe with 1 m cable, diameter 18mm. Available also with cable lengths 2m or 4m.	5
T7410	T+H+P	-30 to +80°C 600 to 1100hPa	75mm	**Thermometer-hygrometer-barometer** - outdoor, indoor use	3
T7411	T+H+P	-30 to +105°C[1)] 600 to 1100hPa	probe cable 1,2,4m	**Thermometer-hygrometer-barometer** - T+RH probe with 1m cable, diameter 18mm. Available also with cable 2m or 4m.	5
T2414	P	600 to 1100hPa	-	**Barometer** - outdoor, indoor use.	6
T5440	CO_2	0 to 2000ppm CO_2	-	**CO_2 level transmitter**, built-in sensor, outdoor, indoor use. **NEW**	6
T5441	CO_2	0 to 10000ppm CO_2 -30 to +60°C	probe cable 1,2,4m	CO_2 level transmitter, probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m.	5
T6440	T+H+CO_2		75mm	**Temperature humidity CO_2** transmitter, outdoor, indoor use.	3

T - temperature **H** - humidity **P** - barometric pressure **CO_2** - carbon dioxid concentration

1] Maximum temperature only at the measuring end with sensors. +105°C is allowed also for the cable. Relative humidity at temperature over +85°C is limited in accordance with the graph. Near plastic case with electronics maximum temperature is +80°C.

Fig.1 Transducer T4411

Fig.2 Transmitter T0410

Fig.3 Transmitter T3411,T7410.T6440

Fig.4
Transmitter T3413 length 150mm
Transmitter T3417 length 700mm

Fig.6 Transmitter T2414, T5440

Fig.5 Transmitter T3419, T7411, T5441

Included accessory:

Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to be downloaded from www.cometsystem.cz.

Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download. Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessory:

Comet probes with Pt1000 sensors are directly connectable to T4411 transducer - see further. There is a symbol /0 behind probe name.

Other accessories - see further

Transmitters are directly compatible with sixteen channel Comet data acquisition system MSx.

TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE CO_2 TRANSMITTERS with serial RS232 output

temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy*CO_2

APPLICATIONS

- server rooms
- telecommunication devices
- warehouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms
- weather stations

Measured temperature, atmospheric pressure, CO_2 concentration is converted to digital serial output with the RS485 link parameters. Large dual line LCD for display of temperature, humidity, pressure or other calculated humidity interpretation is an advantage. Computerized design ensures maximum long term stability and fail indication. The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol. Protocol is user selectable. Serial link enables to read actual readings and modify transmitter configuration. Instrument works always in slave mode, i.e. responds only to master device query.

NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

TECHNICAL PARAMETERS

Applied temperature sensor:	RTD, Pt1000-3850ppm/°C
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Operating temperature range of the electronics:	-30 to +80°C (-30 to +60°C CO2 transmitters T5340, T6340)
Accuracy of temperature measurement:	±0.4°C, accuracy of T4411 transducer input is ±0.2°C
Range of temperature measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5%RH from 5 to 95% at 23°C
Accuracy and range of dew point temperature:	±1.5°C at ambient temperature < 25°C and RH>30%, range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range 0 to 995 kJ/kg
Accuracy and range of barometric pressure:	± 1.3hPa at 23°C, range: 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy of CO2 level measurement T5340,T6340:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
Accuracy of CO2 level measurement T5341:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Range of temperature compensation of RH sensor:	all temperature range
Power:	9 to 30 V DC, consumption approximately 6mA
Protection - temperature and humidity transmitters:	IP65 electronics with terminals, IP40 humidity and temperature sensors
Protection - transmitters measuring pressure: :	IP54 electronics with terminals, IP40 humidity and temperature sensors
Filtering ability of the humidity sensor cover:	0,025mm
Communication protocols:	ModBus RTU, ADAM Advantech, HW group
Communication speed:	110 to 115200 Bd
Dimensions of the case without cable glands:	89 x 73 x 39.5 mm

TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE
CO_2 TRANSMITTERS with serial RS232 output

AVAILABLE MODELS - electronic circuitry is not galvanically isolated from power:

MODEL	MEASURED VALUE	MAXIMUM TEMPERATURE AND PRESSURE MEASURING RANGE	STEM LENGTH	DESCRIPTION	Figure
T4311	T	-200 to +600°C	-	**Temperature transducer** for external probes with Pt1000-3850 sensor (not included), input accuracy ±0.2°C	3
T0310	T	-30 to +80°C	53mm	Thermometer - outdoor, indoor use	1
T3311	T+H	-30 to +80°C	75mm	Thermometer-hygrometer - outdoor, indoor use	2
T3313	T+H	-30 to +125°C[1)]	150mm	**Thermometer-hygrometer** - duct mount, T3313, T3313D	5
T3319	T+H	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	**Thermometer-hygrometer** - T+RH probe with 1 m cable, diameter 18mm. Available also with cable lengths 2m or 4m.	6
T7310	T+H+P	-30 to +80°C 600 to 1100hPa	75mm	**Thermometer-hygrometer-barometer** - outdoor, indoor use	2
T7311	T+H+P	-30 to +105°C[1)] 600 to 1100hPa	probe cable 1,2,4m	**Thermometer-hygrometer-barometer** - T+RH probe with 1m cable, diameter 18mm. Available also with cable 2m or 4m.	6
T2314	P	600 to 1100hPa	-	**Barometer** - outdoor, indoor use.	4
T5340	CO_2	0 to 2000ppm CO_2	-	**CO_2 level transmitter**, built-in sensor, outdoor, indoor use.	3
T5341	CO_2	0 to 10000ppm CO_2 -30 to +60°C	probe cable 1,2,4m	**CO_2 level transmitter**, probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m. **NEW**	6
T6340	T+H+CO_2	0 to 2000ppm CO_2	75mm	**Temperature humidity CO_2** transmitter, outdoor, indoor use.	2

T - temperature **H** - humidity **P** - barometric pressure **CO_2** - carbon dioxid concentration

1] Maximum temperature only at the measuring end with sensors. +105°C is allowed also for the cable. Relative humidity at temperature over +85°C is limited in accordance with the graph. Near plastic case with electronics maximum temperature is +80°C.

Fig.1 Thermometer T0310

Fig.2
Transmitter T3311,T7310,T6340

Fig.3
Transducer T4311,T5340

Fig.4 Barometer T2314

Fig.5
T3313

Fig.6 Transmitter T3319, T7311, T5341

Included accessory:

Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to be downloaded from www.cometsystem.cz.

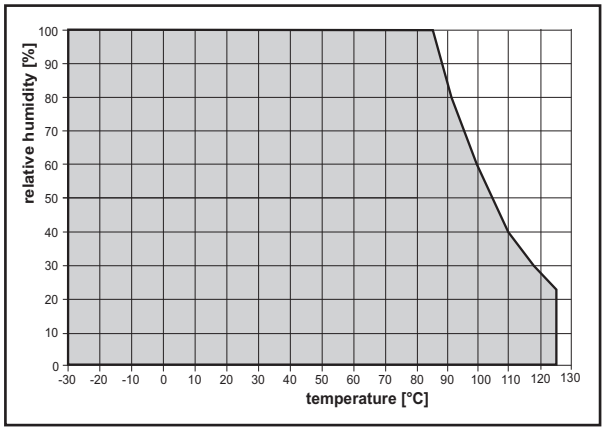
Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download. Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessory:

MP006 - RS232/USB converter for easy connection to the PC USB port

- Comet probes with Pt1000 sensors are directly connectable to T4311 transducer - see further. There is a symbol /0 behind probe name.

Other accessories - see further



PoE ETHERNET THERMOMETER, HYGROMETER
with Power over Ethernet

World´s smallest PoE thermometer

APPLICATIONS

- server rooms
- telecommunication devices
- warehouses, glasshouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms

Ethernet thermometer hygrometer is designed for ambient temperature and humidity measurement or measurement from up to four external cable probes. Measurement in degrees Celsius and degrees Fahrenheit supported.
Ethernet transmitter is built in a durable plastic case.
Online data acquisition system from transmitters connected to Ethernet/Internet can be easily built by means of Comet software Database Sensor Monitor.

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values and alarm states. This most applied protocol in automation is possible to use for connection of sensors to third party software such as SCADA systems, etc.
www pages:	At instrument www pages actually measured values are displayed including history graphs. It enables export of history values to CSV format for consequent processing. Measured values can be read also in XML format. User can design the look of www pages and select values to display.
SNMP:	Protocol enables to read actual values hodnoty and alarm states. Thanks SNMPv1 protocol sensor can be easily added to your IT infrastructure. MIB tables are available to download at www.cometsystem.cz
SOAP:	Transmitter enables to send actual measured data in the format of SOAP protocol. Transmitter can send measured values in XML with selected period to selected www server.

ALARM OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses). Basic SMTP autentization is supported.
www pages:	In case of exceeding adjusted limits of measured values active alarm is displayed at www page.
SNMP:	In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
syslog:	Transmitter enables to send text messages to selected Syslog server after different events appear.

TECHNICAL PARAMETERS

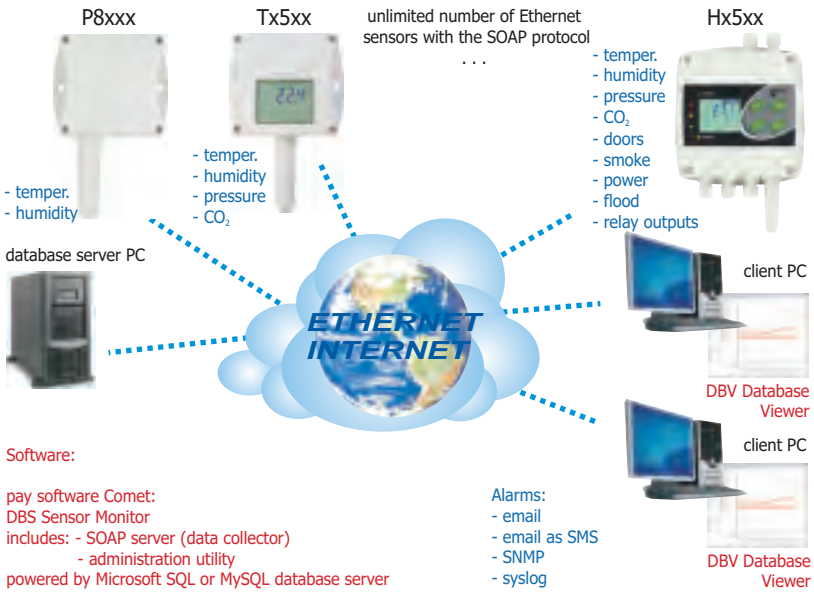
Range and accuracy of thermometer P8610 :	-20 to +60°C, accuracy ±0.8°C above -10°C
Maximum input range for external temperature probes P8631:	-55 to +80°C
Accuracy of precise external temperature probes DSTxxx:	±0.5°C above -10°V, ±2°C below -10°C.
Range and accuracy of humidity measurement - DSRH probe:	0 to 100% RH not condending, ±3.5% RH at 25°C
Range and accuracy of temperature measurement - DSRH probe:	0 to 50°C, ±2.0°C
Resolution:	0.1°C, 1%RH
Measuring interval:	2 s
Operating temperature range:	-20 to +60°C
Protection:	IP30
Connector for temperature - humidity probes P8631:	connector CINCH
LAN connection:	connector RJ-45, 10Base-T or 100Base-TX
Power:	Power over Ethernet as per IEEE 802.3af, class 0 or 5Vdc
Power connector:	axial, diameter 5 x 2.1 mm
Mechanical dimensions of model P8610 :	88 x 126 x 39.5 mm (W x H x D)
Mechanical dimensions of P8631 :	88 x 74 x 39.5 mm (W x H x D)
Weight:	approximately 140 g

Available models

World´s smallest PoE thermometer

P8610 thermometer
with built-in
temperature sensor

Three-channel transmitter P8631
for maximum three cable probes
3xT or (1xRH)+(1xT)



Included accessory:

Traceable calibration certificate from the manufacturer is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to download.

Free program SensorReader for logging values from one transmitter to a PC disk file is ready to download.

Optional accessory:

DBS Sensor Monitor

- database program for online data acquisition and analysis from Comet sensors. It contains necessary components for monitoring of sensors, including a licence of DBV Database Viewer.

DSRH/C - humidity-temperature probe -30 to +80°C with digital output with Cinch connector for transmitters P8xx1. **PRELIMINARY PARAMETERS**
Measured values: relative humidity and temperature (RH, °C, °F).
Range and accuracy of relative humidity measurement 0 to 100% RH not condensing, ±3.5% RH at 25°C.
Range and accuracy of temperature measurement 0 to 50°C, ±2.0°C.
Relative humidity is compensated at all temperature measuring range.
Diameter 18mm, length 88mm. PVC cable lengths 1,2 or 5 meters available.
It is possible to connect three DSRH probes to three-channel P8631 measuring only humidity (one DSRH probes measuring RH+temperature).

DSTR162/C - temperature probe -40 to +80°C with digital sensor Dallas DS18B20 with Cinch connector for transmitter P8631.
Accuracy of temperature measurement ±0.5°C from -10 to +80°C, ±2°C below -10°C.
Protection IP67 - protected against influence of temporary immersion into water.
Diameter 10mm, length 25mm. PVC cable lengths 1,2,5 or 10 meters available.

DSTGL40/C - temperature probe -30 to +80°C with digital sensor Dallas DS18B20 with Cinch connector for transmitter P8631. Stainless steel 17241 with PVC cable of specified length.
Accuracy of temperature measurement ±0.5°C from -10 to +80°C, ±2°C below -10°C.
Protection IP67 - protected against influence of temporary immersion into water.
Diameter 5.7mm, length 40mm. Cable lengths 1,2,5 or 10 meters available.

APPLICATIONS

- server rooms
- telecommunication devices
- warehouses, glasshouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms

Ethernet thermometer hygrometer is designed for ambient temperature and humidity measurement or measurement from up to four external cable probes. Measurement in degrees Celsius and degrees Fahrenheit supported.
Ethernet transmitter is built in a durable plastic case.
Online data acquisition system from transmitters connected to **Ethernet/Internet** can be easily built by means of Comet software **Database Sensor Monitor.**

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values and alarm states. This most applied protocol in automation is possible to use for connection of sensors to third party software such as SCADA systems, etc.
www pages:	At instrument www pages actually measured values are displayed including history graphs. It enables export of history values to CSV format for consequent processing. Measured values can be read also in XML format. User can design the look of www pages and select values to display.
SNMP:	Protocol enables to read actual values hodnoty and alarm states. Thanks SNMPv1 protocol sensor can be easily added to your IT infrastructure. MIB tables are available to download at www.cometsystem.cz
SOAP:	Transmitter enables to send actual measured data in the format of SOAP protocol. Transmitter can send measured values in XML with selected period to selected www server.

ALARM OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses). Basic SMTP autentization is supported.
www pages:	In case of exceeding adjusted limits of measured values active alarm is displayed at www page.
SNMP:	In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
syslog:	Transmitter enables to send text messages to selected Syslog server after different events appear.

TECHNICAL PARAMETERS

Range and accuracy of thermometer P8510 :	-30 to +80°C, accuracy ±0.8°C above -10°C
Maximum input range for external temperature probes:	-55 to +80°C
Accuracy of precise external temperature probes DSTxxx:	±0.5°C above -10°V, ±2°C below -10°C.
Range and accuracy of humidity measurement - DSRH probe:	0 to 100% RH not condending, ±3.5% RH at 25°C
Range and accuracy of temperature measurement - DSRH probe:	0 to 50°C, ±2.0°C
Resolution:	0.1°C, 1%RH
Measuring interval:	2 s
Operating temperature range:	-30 to +80°C
Protection:	IP30
Connector for temperature - humidity probes P8511, P8541:	connector CINCH
LAN connection:	connector RJ-45, 10Base-T or 100Base-TX
Power:	5Vdc, maximum consumption 1W
Power connector:	axial, diameter 5 x 2.1 mm
Mechanical dimensions of model P8510 :	88 x 126 x 39.5 mm (W x H x D)
Mechanical dimensions of P8511, P8541 :	88 x 74 x 39.5 mm (W x H x D)
Weight:	approximately 140 g

Available models:

P8510 thermometer with built-in temperature sensor

P8511 single-channel transmitter for one input value from cable probe 1xT or 1xRH

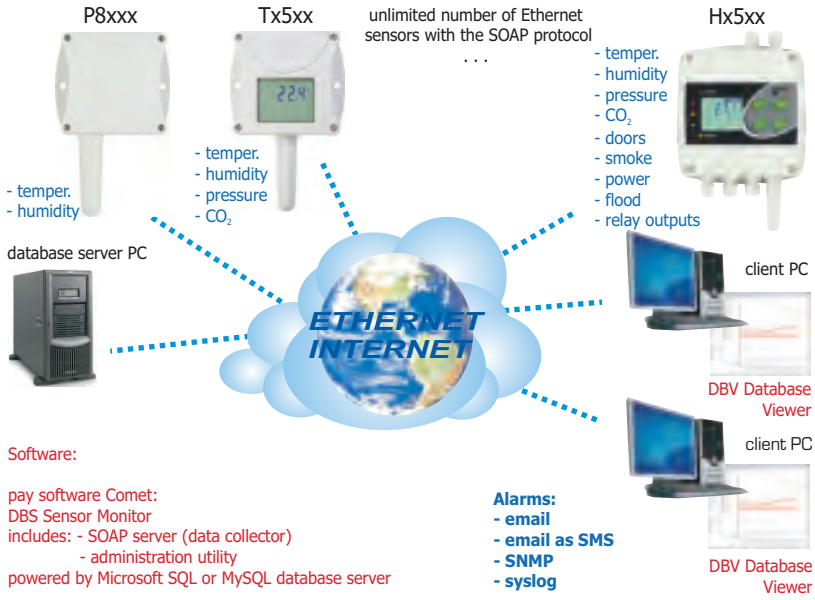
Four-channel transmitter P8541 for maximum four cable probes 4xT or 4xRH or 2x(T+RH)

Included accessory:

Traceable calibration certificate from the manufacturer is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to download.

Free program SensorReader for logging values from one transmitter to a PC disk file is ready to download.



Optional accessory:

DBS Sensor Monitor
- database program for online data acquisition and analysis from Comet sensors. It contains necessary components for monitoring of sensors, including a licence of DBV Database Viewer.

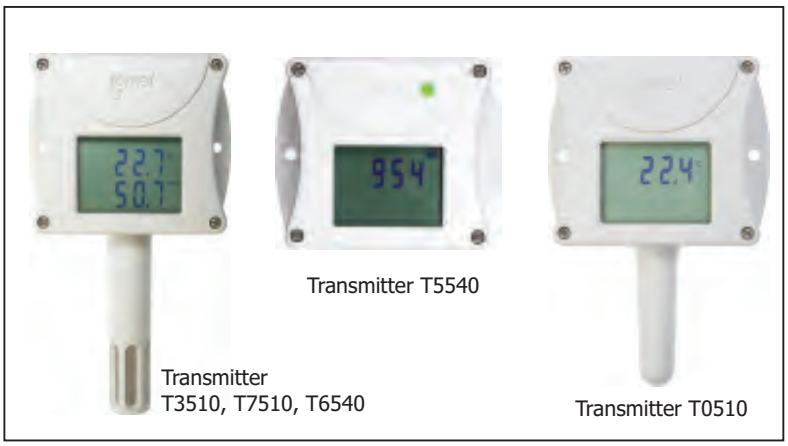
PRELIMINARY PARAMETERS

DSRH/C - humidity-temperature probe -30 to +80°C with digital output with Cinch connector for transmitters P8xx1.
Measured values: relative humidity and temperature (RH, °C, °F).
Range and accuracy of relative humidity measurement 0 to 100% RH not condensing, ±3.5% RH at 25°C.
Range and accuracy of temperature measurement 0 to 50°C, ±2.0°C.
Relative humidity is compensated at all temperature measuring range.
Diameter 18mm, length 88mm. PVC cable lengths 1,2 or 5 meters available.
It is possible to connect four DSRH probes to four-channel P8541 measuring only humidity (two DSRH probes measuring RH+temperature).
It is possible to connect one DSRH probe to single-channel P8511 measuring only humidity.

DSTR162/C - temperature probe -40 to +80°C with digital sensor Dallas DS18B20 with Cinch connector for transmitters P8xx1.
Accuracy of temperature measurement ±0.5°C from -10 to +80°C, ±2°C below -10°C.
Protection IP67 - protected against influence of temporary immersion into water.
Diameter 10mm, length 25mm. PVC cable lengths 1,2,5 or 10 meters available.

DSTGL40/C - temperature probe -30 to +80°C with digital sensor Dallas DS18B20 with Cinch connector for transmitters P8xx1. Stainless steel 17241 with PVC cable of specified length.
Accuracy of temperature measurement ±0.5°C from -10 to +80°C, ±2°C below -10°C.
Protection IP67 - protected against influence of temporary immersion into water.

A182**5** - ac/dc adapter 230V-50Hz/5Vdc.
For power over Ethernet any PoE splitter is necessary.



APPLICATIONS

- server rooms
- telecommunications
- warehouses
- glasshouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms

NEW CO_2 SENSOR

Ethernet sensor is designed for measurement of temperature, atmospheric pressure, relative humidity CO2 concentration. Large dual line LCD for simultaneous display of measured or calculated values is an advantage. State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitter is designed for use in non-aggressive environment.

Online data acquisition system from Ethernet transmitters can be easily built by means of Comet software Database Sensor Monitor.

NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values, set alarm limits, adjust the probe.
Telnet:	Port 9999 enables to set alarm limits (lower and upper limits for T, RH, Tdp, hysteresis and time delay), e-mail addresses, SNMP addresses, probe description, refresh of www pages (10s to 65535s), select type of www pages, set storing interval to history (10s to 65535s), enable each communication channel. Capacity of the history memory is 100 sets of measured temperature, humidity, pressure+computed value. Password protection of this port is enabled. Automatic IP address assignment from DHCP server is also enabled.
www pages:	User selectable design of www pages enabling to display curves of measurement history. User can design the look of www pages and select values to display.
SNMP:	It is possible to read actual values and alarm limits. In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
SOAP:	Transmitter enables to send actual measured data in the format of SOAP protocol. Transmitter can send measured values in XML with selected period to selected www server.

In case of exceeding adjusted limits of measured values warning message can be sent to selected addresses.

ALARM OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses). Basic SMTP autentization is supported.
www pages:	In case of exceeding adjusted limits of measured values active alarm is displayed at www page.
SNMP:	In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
syslog:	Transmitter enables to send text messages to selected syslog server after different events appear. E.g. after transmitter restart, alarm activation, communication error with SNTP, write to transmitter via mdb, sntp, after firmware change, after alarm termination, after communication error with SOAP server.

Synchronizing of time and record to www table and temperature history is enabled by SNTP via Internet.

TECHNICAL PARAMETERS

Accuracy and range of temperature:	±0.6°C, range -30 to +80 °C
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Measuring range of relative humidity:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy and range of dew-point temperature:	±1,5 °C at ambient temperature T < 25°C and RH>30%, range -60 to +80 °C
Accuracy of absolute humidity measurement:	±3g/m3 at ambient temperature T < 40°C, range 0 to 400 g/m3
Accuracy of specific humidity measurement:	±2,1g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy of mixing ratio measurement:	±2,2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy of specific enthalpy measurement:	± 4kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of barometric pressure:	±1.3hPa at ambient temperature 23°C, range 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy of CO2 concentration measurement:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
Operating temperature range:	-30 to +80°C, -30 to +60°C for CO2 transmitters T5540, T6540
Operating temperature range of LCD display:	readable to +70°C, it is recommended to switch OFF the LCD over +70°C
Range of temper. compensation of RH sensor:	all temperature range
Filtering ability of the humidity sensor cover:	0.025mm
Protection:	case with electronics IP30, T+RH probe IP40
LAN connector:	connector RJ-45, 10Base-T or 100Base-TX
Power:	9-30Vdc, maximum consumption about 1W.
Power over Ethernet:	for power over Ethernet any PoE splitter is necessary - e.g. D-Link DWL-P50
Power connector:	axial, diameter 5.5 x 2.1 mm
Mechanical dimensions T0510: Mechanical dimensions T3510, T7510:	89 x 126 x 39.5 mm (W x H x D) 89 x 148 x 39.5 mm (W x H x D)

AVAILABLE MODELS:

MODEL	MEASURED VALUES	DESCRIPTION
T0510	temperature	**Thermometer** with built-in temperature sensor for measurement of ambient temperature
T3510	temperature humidity	Thermometer-hygrometer. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
T7510	temperature humidity barometric pressure	**Thermometer-hygrometer-barometer.** Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.
T5540	CO_2	**CO_2** concentration transmitter - built-in sensor. NEW
T6540	T+H+CO_2	Temperature humidity CO_2 transmitter - built-in sensors. NEW

Included accessories:

Traceable calibration certificate from the manufacturer with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.

Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download.

Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessories:

DBS Sensor Monitor - database program for online data acquisition and analysis from Comet sensors.

It contains all necessary components for monitoring of sensors, including one licence of DBV Database Viewer.

See further in catalog.

Transmitter T3511, T7511

CO_2 Transmitter T5541

Barometer T2514

Pt1000 Transducer T4511

APPLICATIONS

- server rooms
- telecommunications
- warehouses
- glasshouses
- manufacturers
- museums, archives, galleries
- air-conditioned rooms

Ethernet sensor is designed for measurement of temperature, atmospheric pressure, relative humidity CO2 concentration. Large dual line LCD for simultaneous display of measured or calculated values is an advantage. State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitter is designed for use in non-aggressive environment.

Online data acquisition system from Ethernet transmitters can be easily built by means of Comet software **Database Sensor Monitor.**

NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values, set alarm limits, adjust the probe.
Telnet:	Port 9999 enables to set alarm limits (lower and upper limits for T, RH, Tdp, hysteresis and time delay), e-mail addresses, SNMP addresses, probe description, refresh of www pages (10s to 65535s), select type of www pages, set storing interval to history (10s to 65535s), enable each communication channel. Capacity of the history memory is 100 sets of measured temperature, humidity, pressure+computed value. Password protection of this port is enabled. Automatic IP address assignment from DHCP server is also enabled.
www pages:	User selectable design of www pages enabling to display curves of measurement history. User can design the look of www pages and select values to display.
SNMP:	It is possible to read actual values and alarm limits. In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
SOAP:	Transmitter enables to send actual measured data in the format of SOAP protocol. Transmitter can send measured values in XML with selected period to selected www server.

ALARM OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses). Basic SMTP autentization is supported.
www pages:	In case of exceeding adjusted limits of measured values active alarm is displayed at www page.
SNMP:	In case of alarm creation warning message (trap) is sent to IP addresses defined by the user (maximum three addresses).
syslog:	Transmitter enables to send text messages to selected syslog server after different events appear. E.g. after transmitter restart, alarm activation, communication error with SNTP, write to transmitter via mdb, sntp, after firmware change, after alarm termination, after communication error with SOAP server.

TECHNICAL PARAMETERS

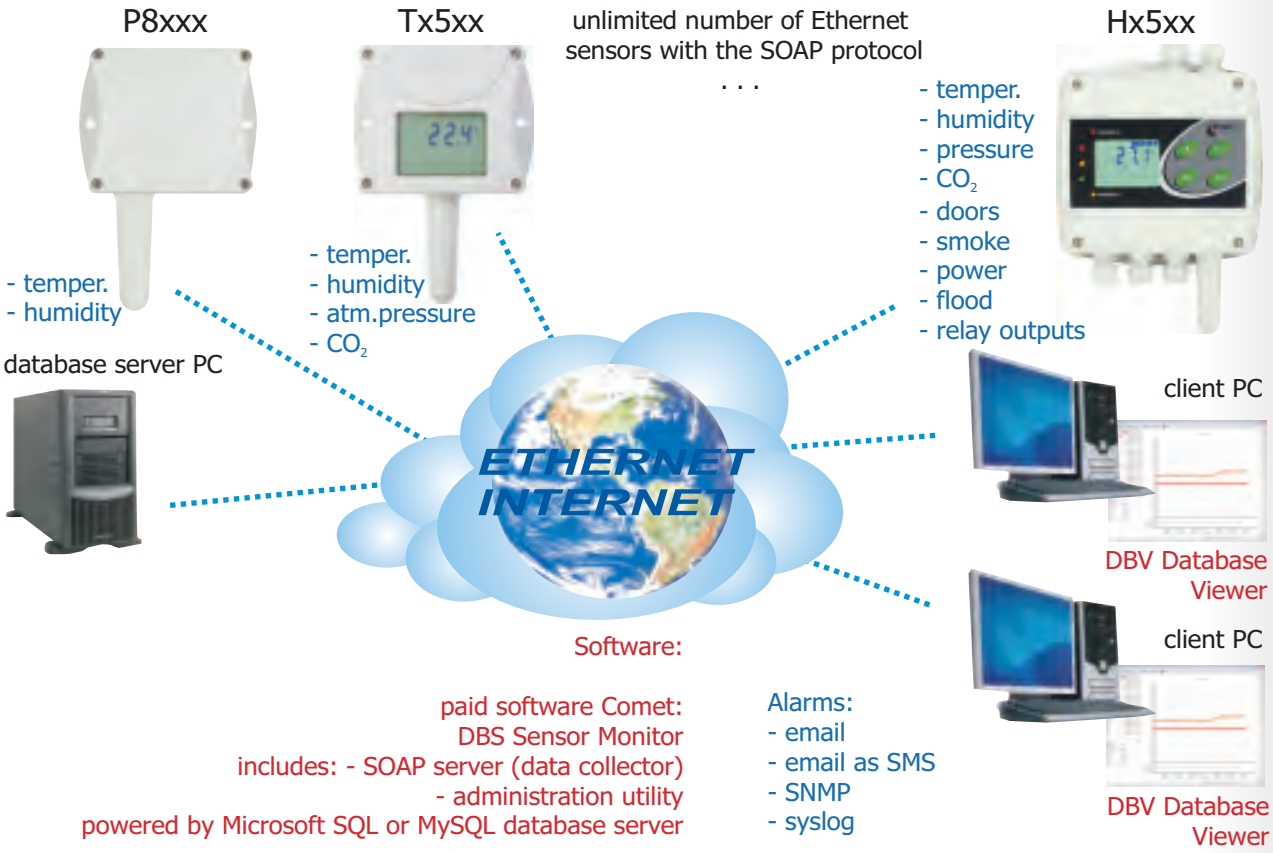
Accuracy of temperature measurement:	±0.4°C, accuracy of temperature transducer T4511 is ±0.2°C
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Range and accuracy of relative humidity:	0 to 100%, accuracy ±2.5% relative humidity from 5 to 95% at 23°C
Accuracy and range of dew-point temperature:	±1,5 °C at ambient temperature T < 25°C and RH>30%, rozsah -60 až +80 °C
Accuracy of absolute humidity measurement:	±3g/m3 at ambient temperature T < 40°C, range 0 to 400 g/m3
Accuracy of specific humidity measurement:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy of mixing ratio measurement:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy of specific enthalpy measurement:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of barometric pressure:	±1.3hPa at 23°C, range 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy of CO2 concentration measurement:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa NEW
Operating temperature range of the case:	-30 to +80°C
Operating temperature range of LCD display:	readable to +70°C, it is recommended to switch OFF the LCD over +70°C
Range of temper. compensation of RH sensor:	all temperature range
Filtering ability of the humidity sensor cover:	0.025mm
Protection:	case with electronics IP30, T+RH probe IP40
LAN connector:	RJ-45 connector, 10Base-T or 100Base-TX
Power:	9-30Vdc, maximum consumption 1W
Power over Ethernet:	for power over Ethernet any PoE splitter is necessary - e.g. D-Link DWL-P50
Power connector:	co-axial, diameter 5.5 x 2.1 mm
Mechanical dimensions of the case (W x H x D):	89 x 73 x 39.5 mm

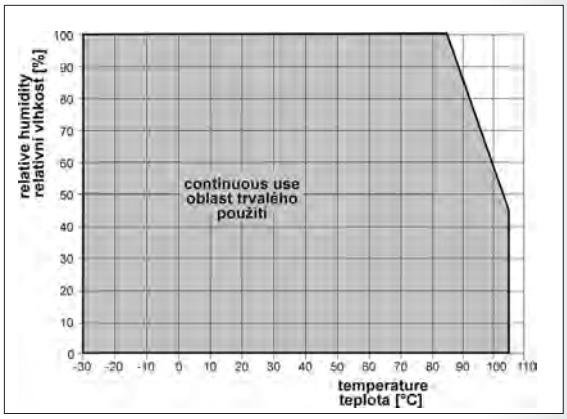
AVAILABLE MODELS:

TYPE	MEASURED VALUE	MAXIMUM MEASURING RANGE OF TEMP.,PRESSURE	DESCRIPTION
T4511	temperature	-200 to +600°C	**Temperature transducer** for external probes with Pt1000/3850ppm sensor (not included), accuracy of the input ±0.2°C
T2514	barometric pressure	600 to 1100hPa accuracy: ±1,3hPa at 23°C	Barometer - Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.
T3511	temperature humidity	-30 to +105°C*probe including the cable	**Thermometer-hygrometer.** T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
T7511	temperature humidity barometric pressure	-30 to +105°C* probe including the cable Pressure: 600 to 1100hPa accuracy: ±1,3hPa at 23°C	**Thermometer-hygrometer-barometer.** T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally. Pressure sensor is located in the control unit with display. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.
T5541	CO_2	0 to 10000ppm CO_2 -30 to +60°C	**CO_2 concentration transmitter**, probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m. NEW

Relative humidity at temperature over +85°C is limited in accordance with the graph. Near plastic case with electronics maximum temperature is +80°C.

Online data acquisition system from transmitters connected to Ethernet/Internet can be easily built by means of Comet software **Database Sensor Monitor.**





Included accessories:

Traceable calibration certificate from the manufacturer is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.

Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download. Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessories:

DBS Sensor Monitor - database program for online data acquisition and analysis from Comet sensors.

It contains all necessary components for monitoring of sensors, including one licence of DBV Database Viewer.

See further in catalog.

	**DBS**	**DBS Sensor Monitor** - - database program - enables online data acquisition and analysis of actually measured and stored values from unlimited number of Comet sensors connected to Ethernet - it is a data acquisition system of client-server type - it contains: *software for server computer: *SOAP server for data acquisition *Administration program database *Microsoft SQL or MySQL database server (third party freeware) *one licence of DBV Database Viewer. More information further in catalog.
	**MP046**	Universal holder for Tx5xx, P8xxx transmitters for easy mounting to rack 19".
	**MP047**	Universal holder for probes for easy mounting to rack 19" (probes not included).
	**Pt1000 probes**	Temperature probes for Tx5xx transmitters with Pt1000 RTD sensor without connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the shielded PVC cable 2 x 0.14mm2. Specify required cable length 1, 2, 5, 10, 15 or 20 meters. Enclosure diameter 6mm, length 20mm. Diameter of the cable 3.5mm.
	**TL-POE**	TL-POE10R Power over Ethernet (PoE) adapter from company TP-Link. The adapter is supposed to be connected to Ethernet switch supporting PoE. Only for models without PoE function.
	**TP-LINK-TL**	TP-LINK TL-WA5110G wifi adapter for wireless connection of transmitter or data logger to Ethernet network. Including replaceable antenna and power adapter. Long term proved operation.
	**A1515**	AC/DC adapter 230V-50Hz/12V for transmitter range Tx5xx.

INTERIOR TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE TRANSMITTERS

with analog 4-20mA, 0-10V output

temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy

APPLICATIONS - measuring of temperature, humidity and pressure at:

- **residential and official buildings**
- **building energy management and HVAC systems**
- **pharmaceutical industry**
- **museums, archives, galleries**

Temperature, humidity, barometric pressure transmitters are specially designed for use in exacting interiors in building energy management and HVAC systems. Are designed for easy installation on ordinary KU68 wiring boxes for household switches and sockets.
Large dual line LCD for display of temperature, humidity, barometric pressure or other computed value is an advantage. Display is possible to switch off. Computerized design ensures temperature compensation of the humidity and pressure sensors and fail indication. Transmitters are designed for use in non-aggressive environment.

COMMON TECHNICAL PARAMETERS

Operating temperature range:	0 to +50°C
Range of measured values:	user adjustable from the PC
Power of transmitters with 4-20mA output:	9-30Vdc
Power of transmitters with 0-10V output:	15-30Vdc, maximum consumption 20mA
Dimensions (W x H x D):	88 x 106 x 33mm
Protection:	IP20
Material of the case:	ABS, white
Warranty:	two years

TRANSMITTERS WITH CURRENT OUTPUT 4-20mA:

TYPE	MEASURED VALUE	OUTPUT 1	OUTPUT 2	DESCRIPTION
T0118	temperature	0-50°C	-	Output 4 to 20mA / 0 to +50°C. Accuracy ±0,5 °C Display reading and temperature output are user selectable in degrees Celsius or Fahrenheit.
T2118	barometric pressure	800-1100hPa	-	Maximum pressure range: 600 to 1100hPa. Accuracy: ±(1,3hPa+0.06% from adjusted output span) at 23°C from 800 to 1100hPa. Display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
T3118	temperature humidity	0-50°C	0-100%RH	Output 1: 4 to 20mA / 0 to +50°C Output 2: 4 to 20mA / 0 to 100%RH Both outputs are galvanically isolated. Output values and range are user adjustable. Display reading and temperature output are user selectable in degrees Celsius or Fahrenheit. Measured relative humidity and temperature are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.

TRANSMITTERS WITH VOLTAGE OUTPUT 0-10V:

TYPE	MEASURED VALUE	OUTPUT 1	OUTPUT 2	DESCRIPTION
T0218	temperature	0-50°C	-	Output 0 to 10V / 0 to +50°C. Accuracy ±0,5 °C Display reading and temperature output are user selectable in degrees Celsius or Fahrenheit.
T2218	barometric pressure	800-1100hPa	-	Maximum pressure range: 600 to 1100hPa. Accuracy: ±(1,3hPa+0.06% from adjusted output span) at 23°C from 800 to 1100hPa. Display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
T3218	temperature humidity	0-50°C	0-100%RH	Output 1: 0 to 10V / 0 to +50°C Output 2: 0 to 10V / 0 to 100%RH Both outputs are not galvanically isolated, have common ground. Output values and range are user adjustable. Display reading and temperature output are user selectable in degrees Celsius or Fahrenheit. Measured relative humidity and temperature are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.

INTERIOR TEMPERATURE, HUMIDITY, ATMOSPHERIC PRESSURE TRANSMITTERS

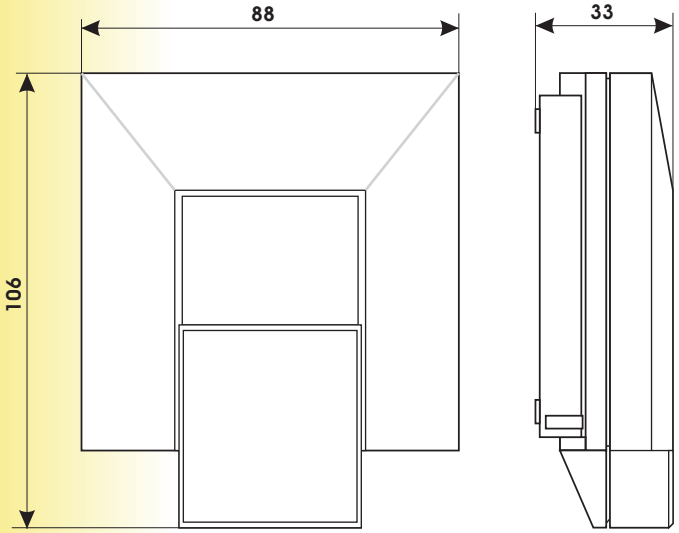
with analog 4-20mA, 0-10V output

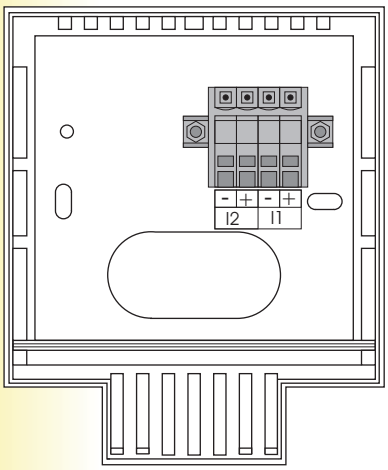
temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy

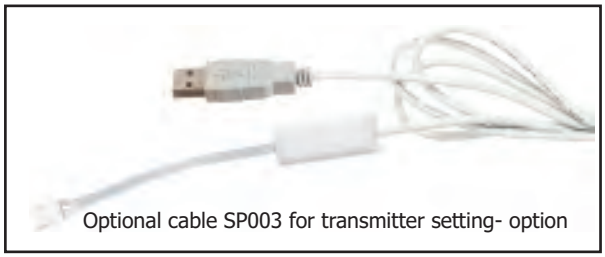
TECHNICAL PARAMETERS OF TRANSMITTERS T3118, T3218

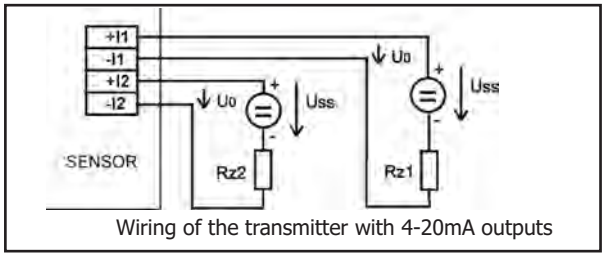
Measuring range of relative humidity:	5 to 95%
Accuracy of relative humidity measurement:	±2.5% RH from 5 to 60%RH, ±3.0% RH from 60 to 95%RH at 23°C
Accuracy and range of temperature measurement:	±0.5°C from 0 to +50°C, switchable to degrees Fahrenheit
Accuracy and range of dew point temperature:	±1.6°C at ambient temperature < 25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2.2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3.5kJ/kg at ambient temperature T < 25°C, range 0 to 995 kJ/kg

Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to any of the two outputs of T3118 or T3218 transmitter. Also identical value can be assigned to both outputs. Outputs are adjusted to maximum range from the manufacturer (0 to 50°C, 0 to 100%RH). Output range is user adjustable from the PC by means of the optional cable SP003 - see below.
Free configuration program TSensor for transmitter adjustment is ready to download anytime.
If different adjustment of outputs and output ranges are required, please specify required output values (RH, T, Tdp, ..) and required ranges.
Barometer T2118 or T2218 enables to measure sea level pressure by setting of correction to altitude above sea level.
Ordering example: Transmitter T3118, output 1: RH 10 to 90%, output 2: temperature 0 to 35°C

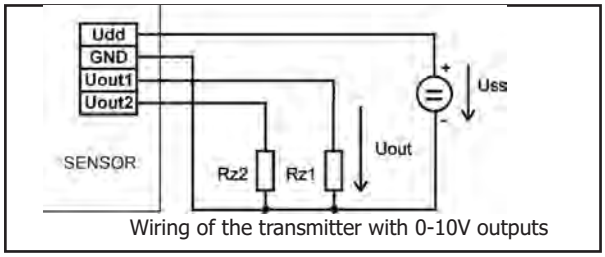





Optional cable SP003 for transmitter setting- option



Wiring of the transmitter with 4-20mA outputs



Wiring of the transmitter with 0-10V outputs

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to be downloaded from www.cometsystem.cz.

Transmitters are directly compatible with sixteen channel Comet data acquisition system MSx.

INTERIOR TEMPERATURE, HUMIDITY, PRESSURE TRANSMITTERS with serial RS485, RS232 output

temperature*barometric pressure*relative humidity*dew point temperature* absolute humidity*specific humidity*mixing ratio*specific enthalpy

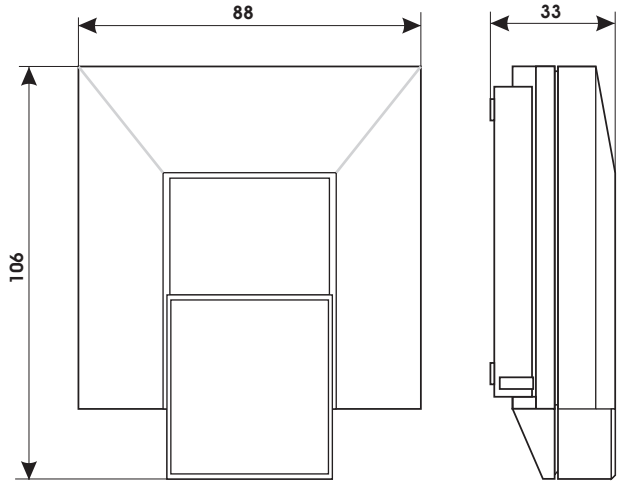
APPLICATIONS - measuring of temperature, humidity and pressure at:

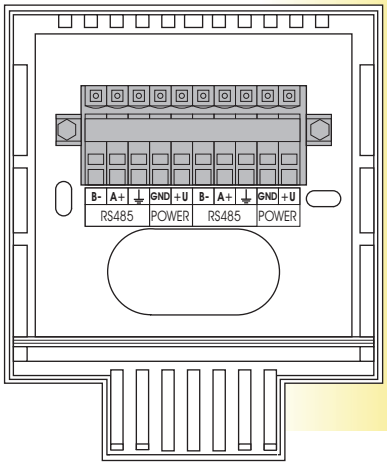
- **residential and official buildings**
- **building energy management and HVAC systems**
- **pharmaceutical industry**
- **museums, archives, galleries**
- **wireless data acquisition via GSM**

Temperature, humidity, barometric pressure transmitters are specially designed for use in exacting interiors in building energy management and HVAC systems. Are designed for easy installation on ordinary KU68 wiring boxes for household switches and sockets.
Large dual line LCD for display of temperature, humidity, barometric pressure or other computed value is an advantage. Display is possible to switch off.
Computerized design ensures temperature compensation of the humidity and pressure sensors and fail indication.
Measured value is converted to digital serial output with the RS485 or RS232 link parameters. The RS485 transmitter circuitry is galvanically isolated from power circuitry to prevent collision in RS485 network. The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol.
Serial link enables to read actual readings and modify transmitter configuration. Wireless data acquisition system via GSM can be built easily with Comet software package Database Sensor Monitor.

TECHNICAL PARAMETERS

Operating temperature range:	0 to +50°C
Accuracy and range of temperature measurement:	±0.5°C from 0 to +50°C, switchable to degrees Fahrenheit
Measuring range of relative humidity:	5 to 95%RH
Accuracy of relative humidity measurement:	±2.5% RH from 5 to 60%RH, ±3.0% RH from 60 to 95%RH at 23°C
Accuracy and range of dew point temperature:	±1.6°C at ambient temperature < 25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2.2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3.5kJ/kg at ambient temperature T < 25°C, range 0 to 995 kJ/kg
Accuracy and range of barometric pressure:	± 1,3hPa at 23°C, range: 600 to 1100 hPa
Communication protocols:	ModBus RTU, ADAM Advantech, HW group
Communication speed:	110 to 115200 Bd
Power:	9-30Vdc, consumption with RS485 approximately 0,5W,with RS232 6mA
Dimensions (W x H x D):	88 x 106 x 33mm
Protection:	IP20
Material of the case:	ABS, white
Warranty:	two years





temperature*barometric pressure*relative humidity*dew point temperature*
absolute humidity*specific humidity*mixing ratio*specific enthalpy

TRANSMITTERS WITH RS485 OUTPUT
- communication circuitry is GALVANICALLY ISOLATED from power circuitry to prevent collision in RS485 network

TYPE	MEASURED VALUE	DESCRIPTION
T0418	temperature	**Air temperature transmitter.** Display reading and temperature output is user selectable in degrees Celsius or Fahrenheit.
T3418	temperature humidity	**Air temperature and humidity transmitter.** Measured temperature and relative humidity are converted to other humidity interpretation - dew point **temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.** **Air temperature, humidity, pressure transmitter.**
T7418	temperature humidity atmospheric pressure	Measured temperature and relative humidity are converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

TRANSMITTERS WITH RS232 OUTPUT
- communication circuitry is GALVANICALLY CONNECTED to power circuitry

TYPE	MEASURED VALUE	DESCRIPTION
T0318	temperature	**Air temperature transmitter.** **Display reading and temperature output is user selectable in degrees Celsius or Fahrenheit.**
T3318	temperature humidity	**Air temperature and humidity transmitte**r. Measured temperature and relative humidity are converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
T7318	temperature humidity atmospheric pressure	**Air temperature, humidity, pressure transmitter.** Measured temperature and relative humidity are converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Display reading and pressure output is user selectable in these units: hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

Included accessory:
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

Free program TSensor for configuring of the transmitter is ready to be downloaded from www.cometsystem.cz.

Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download. Recorded values in CSV format are easy to process in e.g. Excel.

For acquiring values from several transmitters, third party software is possible to use. Tested functionality is with programs LabVIEW from National Instruments, TIRS.NET, ControlWeb, EasyView.

Optional accessory:
Transmitters Tx418 with RS485 output are directly compatible with sixteen channel Comet data logger MS.

SELECTION TABLE OF TEMPERATURE, HUMIDITY, PRESSURE CO_2 TRANSMITTERS Hxxxx

MEASURED VALUE / OUTPUT	2 x Relay	2 x Relay RS485	2 x Relay RS232	2 x Relay Ethernet
temperature + 3 binary inputs		**H0430** fig.2 page 70 **H4431** fig.1 page 70	**H4331** fig.1 page 72	**H0530** fig.2 page 74 **H4531** fig.1 page 74 **H4531R** page 24
temperature + humidity	**H3060** fig.3 page 68 **H3061** fig.5 page 68 **H3020** fig.3 page 68 **H3021** fig.5 page 68 **H3023** fig.4 page 68			
temperature + humidity + 3 binary inputs		**H3430** fig.3 page 70 **H3431** fig.5 page 70 **H3433** fig.4 page 70	**H3331**fig.5 page 72	**H3530** fig.3 page 74 **H3531** fig.5 page 74 **H3531R** page **24**
temperature +humidity +atmos. pressure + 3 binary inputs		**H7430** fig.3 page 70 **H7431** fig.5 page 70	**H7331** fig.5 page 72	**H7530** fig.3 page 74 **H7531** fig.5 page 74 **H7531R** page 24
CO_2 concentration **CO_2 + temperature + humidity**	**H5024** fig.1 page 68 **H5021** fig.5 page 68 **H6020** fig.3 page 68	**H5424** fig.1 page 70 **H5421** fig.5 page 70 **H6420** fig.3 page 70	**H5324** fig.1 page 72 **H5321** fig.5 page 72 **H6320** fig.3 page 72	**H5524** fig.1 page 74 **H5521** fig.5 page 74 **H6520** fig.3 page 74

fig. 1 fig. 2 fig. 3 fig. 4 fig. 5

Illustrative pictures of mechanical construction of Hxxxx transmitters
- number of cable glands of particular models may differ

APPLICATIONS - temperature, humidity, CO_2 control and monitoring: in building management and automation, warehouses, glasshouses, air-conditioned rooms, museums, archives, galleries.

H5024

H3060
H3020
H6020

H3023

H3061
H3021

H5021

Note: cable glands location of particular models may differ

Humidistats are designed for two-state control of e.g. heating, ventilation, humidifier, dehumidifier, etc.
Transmitter is equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured or computed value. For each relay setting of delay, hysteresis, audible alarm is enabled.
Measured temperature and relative humidity is recalculated to other humidity interpretations - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
Parameters are easy adjustable from regulator keyboard or from the computer.
Large dual line LCD for simultaneous display of measured or calculated values is an advantage.
State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitter is designed for use in non-aggressive environment.

NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

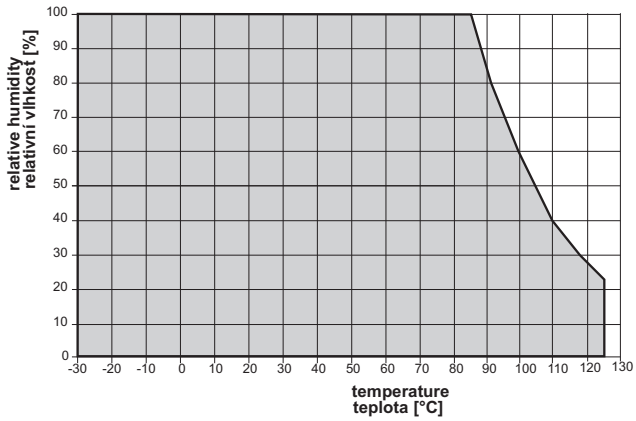
TECHNICAL PARAMETERS

Maximum switching voltage, current of relay output - models H3060, H3061:	250Vac, 8A, 2000VAac
Maximum switching voltage, current of relay output - models H3020, H3021, H3023:	50V, 2A, 60VA
Audible alarm:	from built-in beeper - switchable
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Range of relative humidity measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature measurement:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy and range of dew point temperature:	±1.5 °C at ambient temperature<25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of CO_2 level H5024, H6020:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa **NEW**
Accuracy and range of CO_2 level measurement H5021:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Operating temperature range of case with electronics:	-30 to +80°C (-30 to +60°C for CO_2 transmitters H5024, H6020)
Operating temperature range of LCD display:	readable up to operating temperature +70°C
Range of temperature compensation of RH sensor:	in all temperature range
Filtering ability of humidity sensor cover:	0.025mm, air filter from stainless steel mesh
Power - models H3060, H3061:	110 to 240V/50 to 60Hz
Power - models H302x, H502x, H6020:	9-30Vdc
Dimensions of the case without glands (W x H x D):	135 x 136 x 45 mm

TEMPERATURE, HUMIDITY CO_2 REGULATORS Hx0xx WITH RELAY OUTPUTS

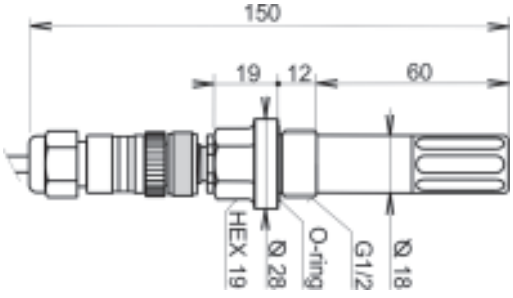
MODEL	MEASURED VALUE	MAXIMUM MEASURING RANGE	STEM LENGTH	OUTPUT	DESCRIPTION
H3060	temperature+humidity	-30 to +80°C	75mm	2x relay	**Thermostat-Humidistat** - outdoor indoor use
H3061	temperature+humidity	-30 to +105°C[1] probe including cable	probe cable 1,2,4m	2x relay	**Thermostat-Humidistat** - T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally.
H3061P	temperature+humidity up to 25bars	-30 to +105°C[1] probe including cable	probe cable 1,2,4m	2x relay	**Thermostat-Humidistat** with compressed air probe up to 25 bars. T+RH metal probe with 1m cable. Cable lengths 2m or 4m available optionally. G1/2 thread.
H3020	temperature+humidity	-30 to +80°C	75mm	2x relay	**Thermostat-Humidistat** - outdoor indoor use
H3023	temperature+humidity	-30 to +125°C[1]	150mm	2x relay	**Thermostat-Humidistat** - for duct mounting
H3021	temperature+humidity	-30 to +105°C[1] probe including cable	probe cable 1,2,4m	2x relay	**Thermostat-Humidistat** - T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally.
H3021P	temperature+humidity up to 25bars	-30 to +105°C[1] probe including cable	probe cable 1,2,4m	2x relay	**Thermostat-Humidistat** with compressed air probe up to 25 bars. T+RH metal probe with 1m cable. Cable lengths 2m or 4m available optionally. G1/2 thread.
H5024	CO_2 concentration	0 to 2000ppm	-	2x relay	**CO_2 level transmitter,** built-in sensor, outdoor, indoor.
H5021	CO_2 concentration	0 to 10000ppm	probe cable 1,2,4m	2x relay	**CO_2 level transmitter,** probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m.
H6020	CO_2 concentration+ temperature+humidity	0 to 2000ppm	75mm	2x relay	**Temperature humidity CO_2** transmitter,outdoor,indoor.

1) Maximum temperature range for models with T+RH probe on the cable is valid for the whole T+RH probe including the cable. Near plastic case with electronics maximum temperature is +80°C (+60°C for CO_2 transmitters H5024, H6020).
Relative humidity at temperature over +85°C is limited in accordance with the graph.



SP003 - optional cable for humidity regulator adjustment via USB port

SH-PP Flow chamber for compressed air measurement up to 25 bars - stainless steel



Included accessories: traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz

Other optional accessories: - see further in catalog

TEMPERATURE, HUMIDITY, PRESSURE CO_2 REGULATORS AND TRANSMITTERS Hx4xx - RELAY OUTPUTS AND RS485 OUTPUTS

APPLICATIONS - temperature and humidity control and monitoring:
in building management and automation, warehouses, glasshouses, air-conditioned rooms, museums, archives, galleries, weather stations


H4431
H5424


H0430


H3430
H7430
H6420


H3433


H3431
H7431
H5421

Note: number of cable glands of particular models may differ

Humidistats are designed for two-state control of e.g. heating, ventilation, humidifier, dehumidifier, etc.
Transmitter is equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured or computed value. Measured values are converted to galvanically isolated RS485 serial output .
Measured temperature and relative humidity is recalculated to other humidity interpretations - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
Degrees Celsius and Fahrenheit are user selectable.
Parameters are easy adjustable from regulator keyboard or from the computer.
State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitter is designed for use in non-aggressive environment.
Transmitters, except CO_2 transmitters, are also equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact.
NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source.

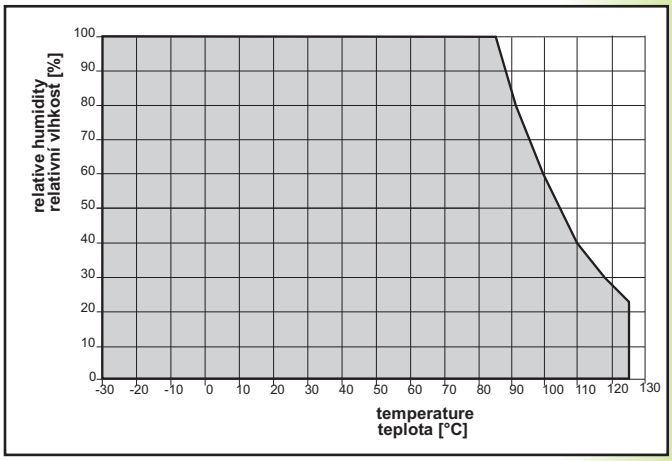
TECHNICAL PARAMETERS

Maximum switching voltage, current, power:	50V, 2A, 60VA, resistive load
Audible alarm:	from built-in beeper - switchable
Range of relative humidity measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature measurement:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy and range of dew point temperature:	±1.5 °C at ambient temperature<25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of barometric pressure output:	± 1.3hPa at 23°C range: 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy and range of CO_2 level H5424, H6420:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
Accuracy and range of CO_2 level measurement H5421:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Operating temperature range of electronics:	-30 to +80°C (-30 to +60°C for CO_2 transmitters H5424, H6420)
Signal for binary inputs:	from voltage-less contact, open collector or two-state voltage signal. Inputs are not galvanically isolated.
Minimum pulse length at binary input:	500 ms, shorter pulse may not be detected
Voltage at open contact:	3.3 V
Low voltage level:	0 to +0.5 V
High voltage level:	+3.0 to +30V
Filtering ability of humidity sensor cover:	0.025mm, filter from stainless steel mesh
Power:	9 to 30Vdc
Dimensions of the case without cable glands:	135 x 136 x 45 mm (W x H x D)
Protection of instruments measuring T+H :	IP65 electronics with terminals, IP40 humidity and temperature sensor
Protection of instruments also measuring pressure:	IP54 electronics with terminals, IP40 humidity and temperature sensor
Protection of instruments with built-in CO_2 sensor:	IP30

TEMPERATURE, HUMIDITY, PRESSURE CO_2 REGULATORS AND TRANSMITTERS Hx4xx - RELAY OUTPUTS AND RS485 OUTPUTS

MODEL	MEASURED VALUE	MAXIMUM MEASURING RANGE	STEM LENGTH	OUTPUT	OTHER OUTPUT	DESCRIPTION
H0430	temperature+3 binary	-30 to +80°C	53mm	2x relay	RS485[2)]	Outdoor and indoor use.
H4431	temperature+3 binary	-200 to +600°C	-	2x relay	RS485[2)]	Temperature transducer for Pt1000 probes.
H3430	temp.+humidity+3binar	-30 to +80°C	75mm	2x relay	RS485[2)]	Outdoor and indoor use.
H3431	temperature+humidity+ 3 binary inputs	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	2x relay	RS485[2)]	**Thermometer-hygrometer.** T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally.
H3433	temp.+humidity+3binar	-30 to +125°C[1)]	150mm	2x relay	RS485[2)]	**Thermometer-hygrometer.** Duct mount.
H7430	temp.+humidity+atm. pressure+3 binary	-30 to +80°C	75mm	2x relay	RS485[2)]	**Thermometer-hygrometer-barometer.** Outdoor and indoor use.
H7431	temperature+humidity+ atmospheric pressure+ 3 binary inputs	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	2x relay	RS485[2)]	**Thermometer-hygrometer-barometer.** Outdoor and indoor use. T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally.
H5424	CO_2 concentration	0 to 2000ppm	-	2x relay	RS485[2)]	CO_2 transmitter, built-in sensor, outdoor.
H5421	CO_2 concentration	0 to 10000ppm	probe cable 1,2,4m	2x relay	RS485[2)]	CO_2 level transmitter, probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m.
H6420	CO_2 concentration+ temperature+humidity	0 to 2000ppm	75mm	2x relay	RS485[2)]	**Temperature humidity CO_2 transmitter**, outdoor, indoor use.

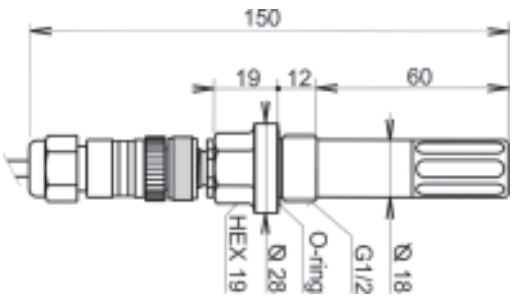
1) Maximum temperature range for models with T+RH probe on the cable is valid for the whole T+RH probe including the cable.
Near plastic case with electronics maximum temperature is +80°C (+60°C for CO_2 transmitters H5424, H6420).
Relative humidity at temperature over +85°C is limited in accordance with the graph.



2) Serial output RS485 is galvanically isolated from other circuitry to prevent collisions on the RS485 bus.
The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol - user selectable.
Serial link enables to read actual readings and modify transmitter configuration.
Instrument works always in slave mode, i.e. responds only to master device query. Transmitters have the address space available from 1 to 255. Communication speed up to 115200Bd.

SH-PP Flow chamber for compressed air measurement up to 25 bars - stainless steel

All transmitters with probe onthe cable are available with metal probe T+RH for compressed air up to 25 bars.
Model marking is then H3431P.



Included accessories: traceable calibration certificate from the manufacturer, instruction manual.
Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz
Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download.

Optional accessories: - see further in catalog

TEMPERATURE, HUMIDITY, PRESSURE CO_2 REGULATORS AND TRANSMITTERS Hx3xx - RELAY OUTPUTS AND RS232 OUTPUTS

APPLICATIONS - temperature and humidity control and monitoring:
in building management and automation, warehouses, glasshouses, air-conditioned rooms, museums, archives, galleries, weather stations

H4331
H5324

H6320

H3331
H7331

H5321

Note:
number of cable glands of particular models may differ

Humidistats are designed for two-state control of e.g. heating, ventilation, humidifier, dehumidifier, etc.
Transmitter is equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured or computed value. Measured values are converted to RS232 serial output .
Measured temperature and relative humidity is recalculated to other humidity interpretations - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
Degrees Celsius and Fahrenheit are user selectable.
Parameters are easy adjustable from regulator keyboard or from the computer.
State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability, inertia against water and condensation. Transmitter is designed for use in non-aggressive environment.
Transmitters, except CO_2 transmitters, are also equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact.
NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source.

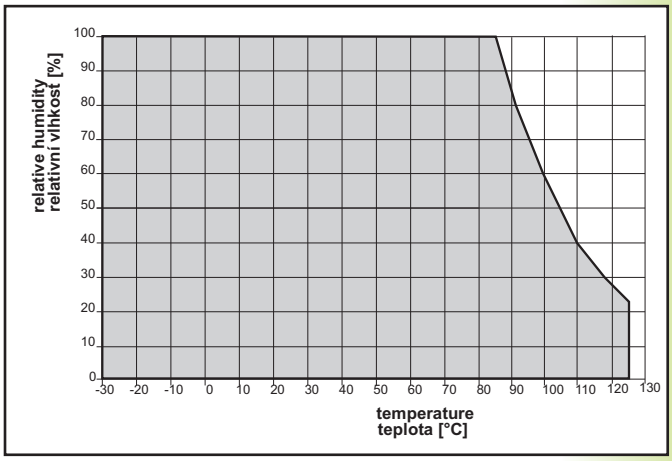
TECHNICAL PARAMETERS

Maximum switching voltage, current, power:	50V, 2A, 60VA, resistive load
Audible alarm:	from built-in beeper - switchable
Range of relative humidity measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature measurement:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy and range of dew point temperature:	±1.5 °C at ambient temperature<25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of barometric pressure output:	± 1.3hPa at 23°C range: 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy and range of CO_2 level H5324, H6320:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
Accuracy and range of CO_2 level measurement H5321:	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Operating temperature range of electronics:	-30 to +80°C (-30 to +60°C for CO_2 transmitters H5324, H6320)
Signal for binary inputs:	from voltage-less contact, open collector or two-state voltage signal. Inputs are not galvanically isolated.
Minimum pulse length at binary input:	500 ms, shorter pulse may not be detected
Voltage at open contact:	3.3 V
Low voltage level:	0 to +0.5 V
High voltage level:	+3.0 to +30V
Filtering ability of humidity sensor cover:	0.025mm, filter from stainless steel mesh
Power:	9 to 30Vdc
Dimensions of the case without cable glands:	135 x 136 x 45 mm (W x H x D)
Protection of instruments measuring T+H :	IP65 electronics with terminals, IP40 humidity and temperature sensor
Protection of instruments also measuring pressure:	IP54 electronics with terminals, IP40 humidity and temperature sensor
Protection of instruments with built-in CO_2 sensor:	IP30

TEMPERATURE, HUMIDITY, PRESSURE CO_2 REGULATORS AND TRANSMITTERS Hx3xx - RELAY OUTPUTS AND RS232 OUTPUTS

MODEL	MEASURED VALUE	MAXIMUM MEASURING RANGE	STEM LENGTH	OUTPUT	OTHER OUTPUT	DESCRIPTION
H4331	temperature+3 binary	-200 to +600°C	-	2x relay	RS232[2)]	**Temperature transducer** for Pt1000 probes. Outdoor and indoor use.
H3331	temperature+humidity+ 3 binary inputs	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	2x relay	RS232[2)]	**Thermometer-hygrometer.** T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally.
H7331	temperature+humidity+ atmospheric pressure+ 3 binary inputs	-30 to +105°C[1)] probe including cable	probe cable 1,2,4m	2x relay	RS232[2)]	**Thermometer-hygrometer-barometer.** Outdoor and indoor use. T+RH probe with 1m cable. Cable lengths 2m or 4m available optionally.
H5324	CO_2 concentration	0 to 2000ppm	-	2x relay	RS232[2)]	CO_2 transmitter, built-in sensor, outdoor.
H5321	CO_2 concentration	0 to 10000ppm	probe cable 1,2,4m	2x relay	RS232[2)]	**CO_2 level transmitter,** probe with 1m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m.
H6320	CO_2 concentration+ temperature+humidity	0 to 2000ppm	75mm	2x relay	RS232[2)]	**Temperature humidity CO_2** transmitter, outdoor, indoor use.

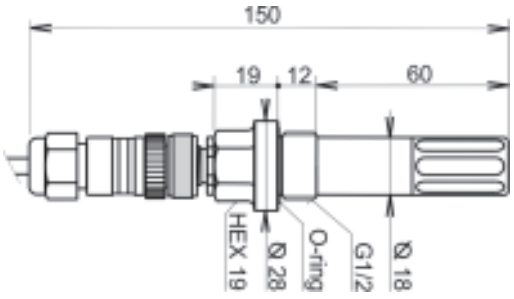
1) Maximum temperature range for models with T+RH probe on the cable is valid for the whole T+RH probe including the cable.
Near plastic case with electronics maximum temperature is +80°C (+60°C for CO_2 transmitters H5324, H6320).
Relative humidity at temperature over +85°C is limited in accordance with the graph.



2) Serial output RS232 is not galvanically isolated from other circuitry.
The transmitter works with ModBus RTU communication protocol or with Advantech ADAM compatible protocol - user selectable.
Serial link enables to read actual readings and modify transmitter configuration.
Instrument works always in slave mode, i.e. responds only to master device query.
Communication speed up to 115200Bd.

SH-PP Flow chamber for compressed air measurement up to 25 bars - stainless steel

All transmitters with probe onthe cable are available with metal probe T+RH for compressed air up to 25 bars.
Model marking is then H3331P.



Included accessories: traceable calibration certificate from the manufacturer, instruction manual.
Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz
Free program SensorReader for logging values from one thermometer to a PC disk file is ready to download.

Optional accessories: - see further in catalog

ETHERNET TEMPERATURE, HUMIDITY, PRESSURE CO_2 SENSORS Hx5xx WITH RELAY OUTPUTS

H4531
H5524

H0530

H3530
H7530
H6520

H3531
H7531
H5521

Measured temperature and relative humidity is recalculated to other humidity interpretations - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
Reading and pressure output available in these units: hPa, kPa, mbar, mmHg, inHg, inH2O, PSI, oz/in^2.
Degrees Celsius and Fahrenheit are user selectable.
State-of-the-art capacitive polymer sensor ensures excellent calibration long term stability.
Transmitter is equipped with two relay outputs for alarm indication or control of external devices. Each relay can be assigned to any measured or computed value. For each relay setting of delay, hysteresis, audible alarm is enabled.
Transmitters, except CO_2 transmitters are equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact. Transmitter is equipped with internal terminals for powering of connected external detectors.
NEW The CO_2 - carbon dioxide level is recently regarded as an important parameter that substantially determines the quality of the interior climate. Especially in buildings where many people gather, such meeting rooms, hospitals, schools, cinemas, theatres and care centres. With the help of CO_2 sensor engineers, technical advisors, environmental experts and health specialists can optimize the ventilation for creation of a healthy interior climate.
The CO_2 measurement is based on a 2-source, 2-beam process. CO_2 measurement with long-term stability is guaranteed thanks to the proven non-dispersive infrared (NDIR) CO_2 measurement cell.
The unique patented auto-calibration procedure compensates for aging of the infrared source and guarantees high reliability, long term stability and eliminates the need of periodical recalibration in the field.

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values and binary input states, set alarm limits, adjust the probe.
Telnet:	Port 9999 enables to set alarm limits (lower, upper limits, hysteresis for measured values and time delay), e-mail addresses, SNMP addresses, probe description, refresh of www pages (10s to 65535s), set storing interval to history (10s to 65535s), enable each communication channel. Capacity of the history memory is 100 sets of temperature, humidity, pressure + computed values. Password protection of this port is enabled. Automatic IP address assignment from DHCP server is also enabled.
www pages:	User selectable design of www pages enabling to display curve of measurement history and binary input states. User can design the look of www pages and recorded values history.
SNMP:	It is possible to read actual values, alarm limits and binary input states. In case of alarm creation warning message (trap) is sent to addresses defined by the user (maximum three addresses).
SOAP:	Transmitter enables to send actual measured data in the format of SOAP protocol. Transmitter can send measured values in XML with selected period to selected www server.

ALARM INDICATION OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses) or via e-mail to SMS message. Basic SMTP autentization is supported.
www pages:	In case of exceeding of adjusted measured value limit or binary input states active alarm is displayed on www page.
SNMP:	In case of exceeding of adjusted measured value limit or binary input states alarm is activated and warning trap is sent to user specified IP addresses (maximum 3 addresses).
syslog:	Online transmitter enables to send text messages to selected syslog server after different events appear.

ETHERNET TEMPERATURE, HUMIDITY, PRESSURE CO_2 SENSORS Hx5xx WITH RELAY OUTPUTS

TECHNICAL PARAMETERS

Maximum switching voltage, current, power:	50V, 2A, 60VA, resistive load
Audible alarm:	from built-in beeper - switchable
Range of relative humidity measurement:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23°C
Accuracy of temperature measurement:	±0.4°C from -30 to +100°C, ±0.4% from reading over +100°C
Accuracy and range of dew point temperature:	±1.5 °C at ambient temperature<25°C and RH>30%,range -60 to +80°C
Accuracy and range of absolute humidity:	±3g/m^3 at ambient temperature T < 40°C, range 0 to 400 g/m^3
Accuracy and range of specific humidity:	±2g/kg at ambient temperature T < 35°C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	±2g/kg at ambient temperature T < 35°C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3kJ/kg at ambient temperature T < 25°C, range: 0 to 995 kJ/kg
Accuracy and range of atmospheric pressure:	±1.3hPa at 23°C, range 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH_2O, PSI, oz/in^2
Accuracy and range of CO_2 level H5524, H6520:	±(50ppm +2% from reading) 0 to 2000ppm at 25°C and 1013hPa NEW
	±(100ppm +5% from reading) 0 to 10000ppm at 25°C and 1013hPa
Signal for binary inputs:	from voltage-less contact, open collector or two-state voltage signal. Inputs are not galvanically isolated.
Minimum pulse length at binary input:	500 ms (shorter pulse may not be detected)
Voltage at open contact:	3.3 V
Low voltage level:	0 to +0.5 V
High voltage level:	+3.0 to +30V
Operating temperature range of the case:	-30 to +80°C (-30 to +60°C for CO_2 transmitters H5524, H6520).
Operating temperature range of the LCD displeje:	readable to operating temperature +70°C
Temperature range of RH sensor compensation:	-30 to +105°C
Filtering ability of humidity sensor cover:	0.025mm, filter from stainless steel mesh
Protection:	case with electronics IP30, protection of T+H probe IP40
LAN connector:	connector RJ-45, 10Base-T or 100Base-TX
Power:	9-30Vdc, maximum consumption approximately 1W
Power connector:	co-axial, diameter 5.5 x 2.1 mm
Mechanical dimensions of the case (W x H x D):	135 x 136 x 45 mm

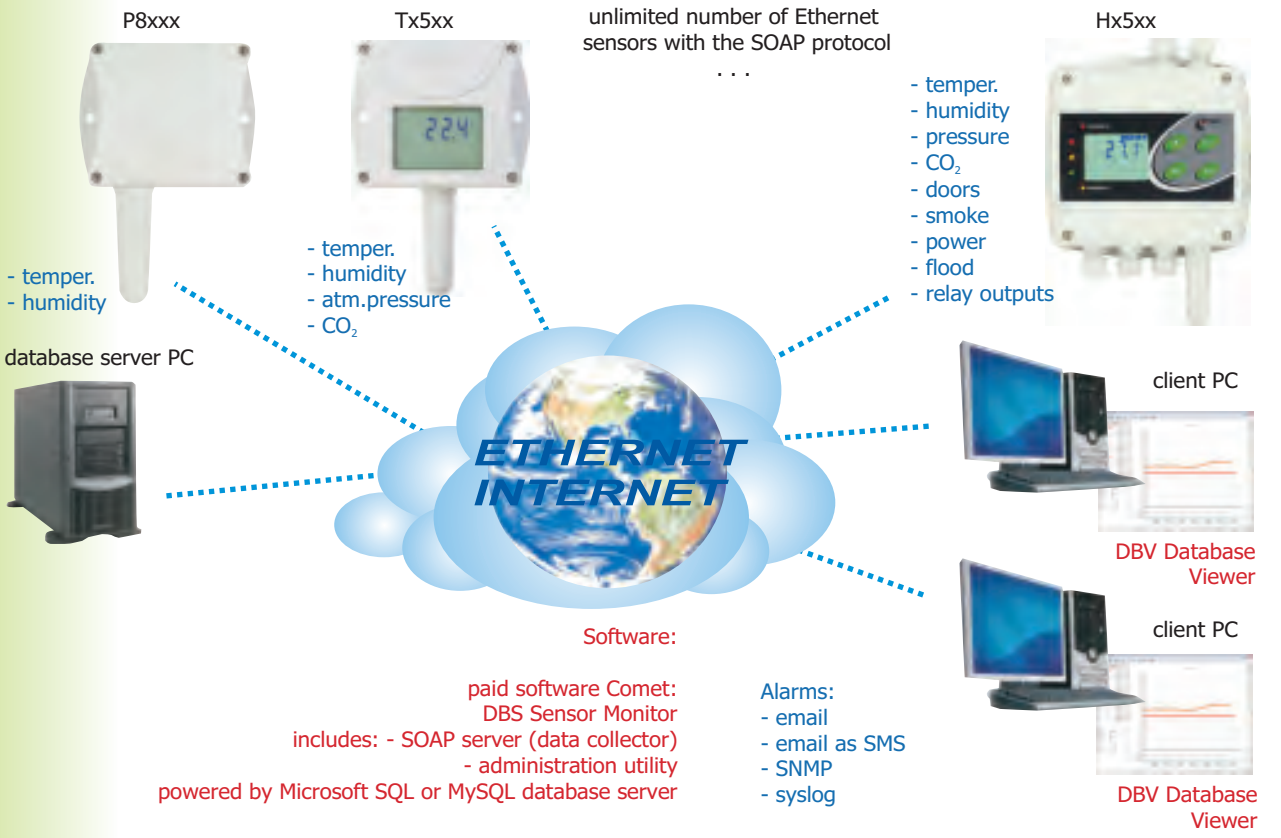
AVAILABLE MODELS:

TYPE	MEASURED VALUE	MAXIMUM RANGE OF MEASURED VALUES	DESCRIPTION
H0530	temperature + 3 binary inputs	-30 to +80°C	T**hermometer** - for outdoor/indoor use.
H4531	temperature+ 3 binary inputs	-200 to +600°C	**Temperature transducer** - for external probe Pt1000 sensor (not included). Accuracy of the input ±0.2°C
H3530	temp.+humidity +3 binary inputs	-30 to +80°C relative humidity 0 to 100%	**Thermometer** - hygrometer - for outdoor/indoor use.
H3531	temp.+humidity +3 binary inputs	-30 to+105°C*probe including cable relative humidity 0 to 100%	**Thermometer - hygrometer** - T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally.
H7530	temp.+humidity +atmospheric pressure + 3 binary inputs	-30 to + 80°C relative humidity 0 to 100% pressure: 600 to 1100hPa	**Thermometer - hygrometer - barometer** - for outdoor/indoor use.
H7531	temp.+humidity +atmospheric pressure + 3 binary inputs	-30 to+105°C*probe including cable relative humidity 0 to 100% pressure: 600 to 1100hPa	**Thermometer - hygrometer - barometer.** T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally. Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.
H5524	CO_2 level	0 to 2000ppm	**CO_2 concentration transmitter,** built-in sensor.
H5521	CO_2 level	0 to 10000ppm	**CO_2 concentration transmitter,** probe with 1 m cable, diameter 18.5mm. Available also with cable lengths 2m or 4m.
H6520	CO_2 level+ temperature+	0 to 2000ppm	**Temperature, humidity, CO_2 concentration transmitter.**

* Maximum temperature range for models with T+RH probe on the cable is valid for the whole T+RH probe including the cable. Near plastic case with electronics maximum temperature is +80°C (+60°C for CO_2 transmitters H5524, H6520). RH at temperature over +85°C is limited in accordance with the graph.

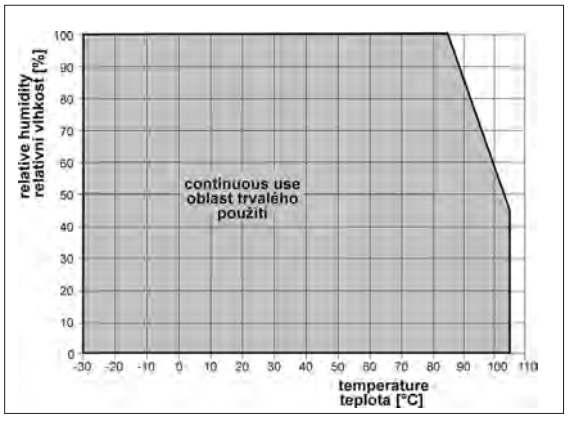
ETHERNET TEMPERATURE, HUMIDITY, PRESSURE CO_2 SENSORS Hx5xx WITH RELAY OUTPUTS

Online data acquisition system from transmitters connected to Ethernet/Internet can be easily built by means of Comet software **Database Sensor Monitor.**



Included accessories:

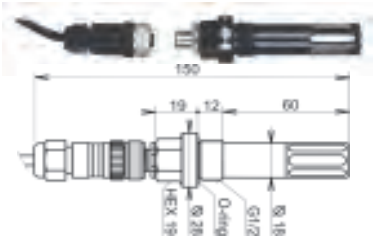
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz
SensorReader - freeware for online logging values from one transmitter to a PC disk file is also ready to download.
Program enables to alarm acoustically the PC user if adjusted alarm limits are exceeded.
Recorded values in CSV format are easy to process in e.g. Excel.



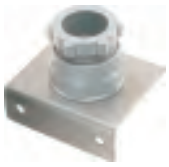
Optional accessories:

DBS Sensor Monitor - database program for online data acquisition and analysis from Comet sensors. It contains all components
for monitoring of sensors, including one licence of DBV Database Viewer.
Probes with RTD Pt1000 sensors are directly compatible with H4531 transducer - see end of catalogue for Comet probes without connector - probe marking is followed by symbol /0.
Other accessories - see further in catalogue.

OPTIONAL ACCESSORIES FOR HUMIDITY TRANSMITTERS

New - probe for compressed air	Order code	
	**TxxxxP** **Hxxx1P**	Optional temperature, humidity, dew-point probe designed for compressed air measurement up to 25 bars. Cable lengths 1, 2 or 4m available. Length 110mm, diameter 18mm, G1/2 thread. Available with TxxxxP, HxxxxP transmitters.
	**SH-PP**	Flow chamber for compressed air measurement up to 25 bars - stainless steel DIN 1.430. Inlet and outlet connection - G1/8 thread. Humidity probe connection - G1/2 thread. Screw-coupling not included.
	**TxxxxL** **HxxxxL**	Transmitter version with watertight male connector IP67 Lumberg RSFM4 instead of cable gland for easy connection/disconnection of the output. Specify please your order with letter L behind model code - e.g. T3110L or H3020L
	**K1427**	Female connector ELKA 4012PG7 for TxxxxL, HxxxxL transmitters with male connector Lumberg for easy connection/disconnection of the output. Cable is easily connected to screw terminals of the connector. IP67 protection.
	**without LCD**	Transmitter version with blind lid without LCD. Specify please the requirement in your order.
		
	**OEM**	Transmitters are also available without Comet logo as OEM products. Specify please the requirement in your order. Minimum order of OEM transmitters without Comet logo is 100 pcs.
	**F8000**	Solar radiation shield for transmitters with T+RH probe on a cable.

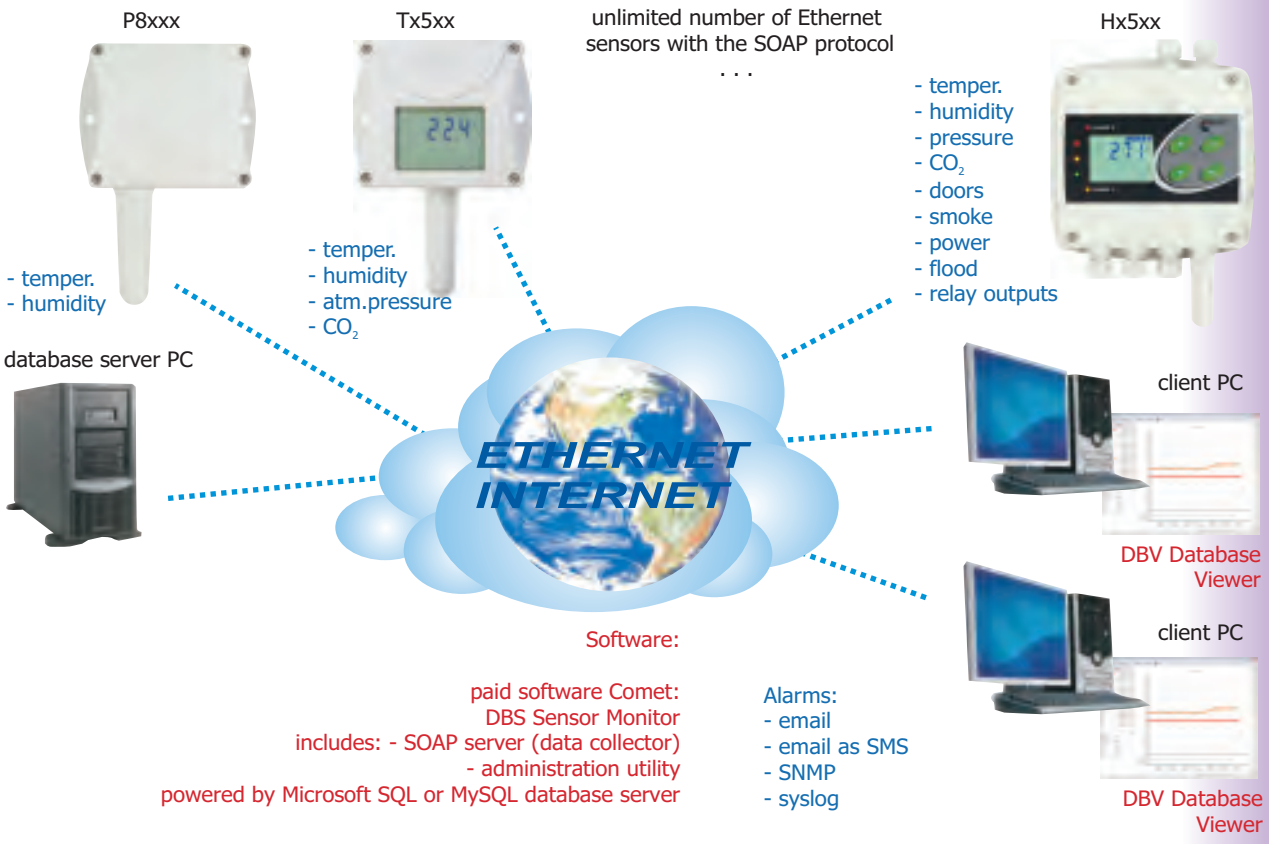
OPTIONAL ACCESSORIES FOR HUMIDITY TRANSMITTERS

	Order code	
	F5200	grey sensor cover with filter from stainless steel mesh, filtering ability 0,025mm
	F5200B	black sensor cover with filter from stainless steel mesh, filtering ability 0,025mm
	SP003	Cable for transmitter adjustment via USB port - for models Tx1xx, Tx2xx with analog outputs and models Hx0xx.
	PP4	flat plastic circular flange for duct mounting
	PP90	right-angled stain-less steel flange for wall mounting
	SP004	plastic gland for direct mounting of the humidity probe to a 29 mm diameter hole
	SP005	tool for easy wire connection to WAGO terminals Wago - for transmitters with current and voltage output
	SP006	tool for easy wire connection to WAGO terminals Wago - for Txxxx transmitters with serial output RS485 and RS232 and Hxxxx transmitters
	MD036	self adhesive Dual Lock for easy installation
	A1515	ac/dc adapter 230V-50Hz/12Vdc for Ethernet transmitters Tx5xx, Hx5xx - with co-axial connector
	A1510	ac/dc adapter 230V-50Hz/12Vdc for serial output Txxxx transmitters and Hxxxx transmitters - for connection to terminals
	**ACCESSORIES FOR EASY RELATIVE HUMIDITY CALIBRATION AND ADJUSTMENT**	
	MD046	anodized duraluminum vessel for relative humidity calibration and adjustment
	HM023	set of 5 humidity standards 10% RH with 5 application pads
	HM024	set of 5 humidity standards 80% RH with 5 application pads

ONLINE MONITORING SYSTEM WITH SENSORS CONNECTED TO ETHERNET- DBS Sensor Monitor

New

Easy creation of online data acquisition system from Ethernet temperature, humidity, pressure sensors by using low cost database software Comet DBS Sensor Monitor.



Database program DBS Sensor Monitor for online data acquisition and analysis from Comet sensors is a client-server data acquisition system.
It contains all necessary components for monitoring of sensors, incl. one licence of DBV Database Viewer.

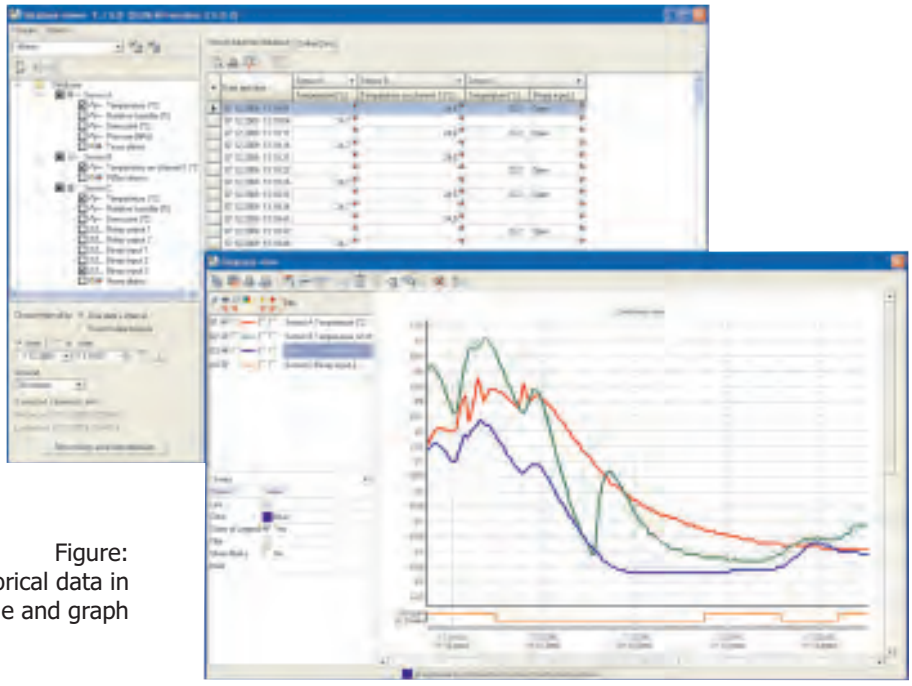


Figure:
historical data in table and graph

ONLINE MONITORING SYSTEM WITH SENSORS CONNECTED TO ETHERNET - DBS Sensor Monitor

System enables i.a.:

* Data acquisition from Comet sensors connected to Ethernet network.
* To view selected channels from any Comet sensor together with selected channels of other Comet sensors (i.e. comparing/monitoring of values from different measurement points).
* Measurement from different Comet devices is possible to combine in one table or graph.
* To present data (temperature, humidity, pressure, binary state, etc.), alarm status.
* To choose any time interval for analysis.
* Print, export to PDF - table and graph. Export to other formats for subsequent processing.
* Online visualization of actual values and alarms.
* Online graphic visualization of measurement in curves. I.e. graph presenting actual data e.g. for last hour. The length of history is selectable. Graph is automatically updated.
* Compression of on-line data
  - optimizes data storing
  - in usual use reduces volume of recorded data down to 4%
  - speeds up recorded data viewing
  - database server is not overloaded even after long term operation

The advantage is a simple system expanding:

* Connection of sensors is very easy thanks to the used communication protocol SOAP. Needed is only to enter server address and connect sensor to intranet/ethernet.
* It is possible to build large data acquisition system. SOAP protocol is commonly used in internet. Data acquisition from sensors located anywhere in the world is enabled.
* System can be expanded with other and other devices without any charge. Buying DBS Sensor Monitor enables to capture data from unlimited number of sensors - 2, 10 or 100 sensors.
* Low cost browsers DBV Database Viewer can be bought in successive steps as necessary. It enables several **clients to view database from different places on network/internet.**

Administration of system enables i.a.:

* To name device in database (e.g. „sensor at warehouse").
* To backup database.
* To diagnose error states.
* To administrate user accounts. DBV Database Viewers use for connection to database read-only accounts. Database is thus protected against damage by unauthorized person.

System is based on stable and world-wide popular freeware platform Microsoft SQL or MySQL.

System installation and administration is simple. Instruction Manual guides installation of the system step by step, including all needed freeware.

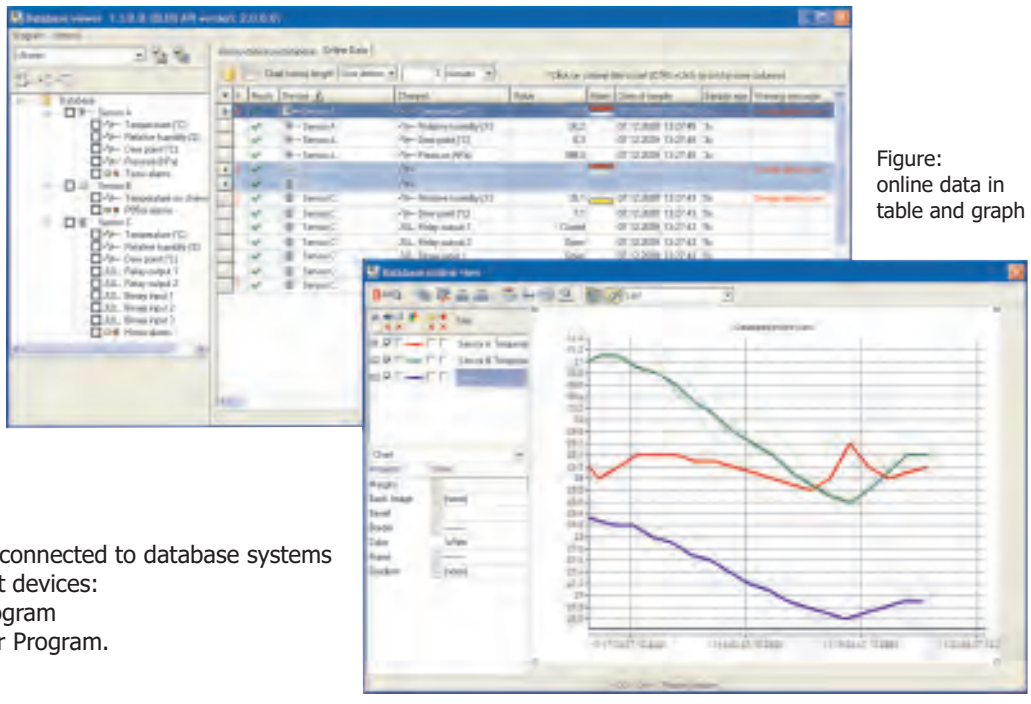
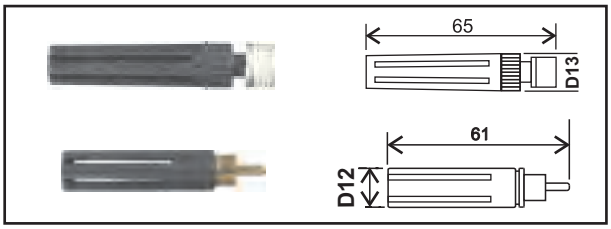


Figure:
online data in table and graph

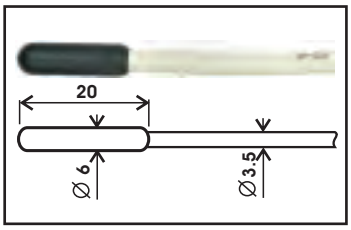
System can be connected to database systems for other Comet devices:
DBL Logger Program
DBM MS Logger Program.

TEPMPERATURE PROBES
with RTD Pt1000 sensor

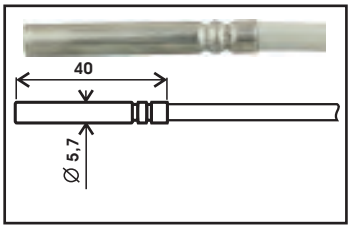
Unless otherwise indicated probes use sensor tolerance ±(0.15+0.002*|t|).



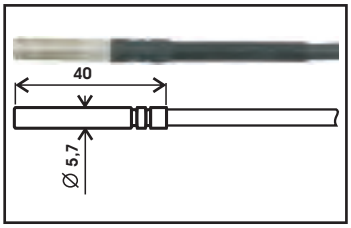
200-80/E - with female connector K1321 for data loggers Sxxxx
200-80/C - with male Cinch connector for T-Print G0221 and Commeter **thermometers D02x1**
Fast precise air probe -30 to +80°C for direct insertion to the connector.
Tolerance: ±(0.1+0.0017*|t|).
Response time: t63 < 10s, t95 < 30s (air flow 1m/s)
Probe is not resistant against moisture.



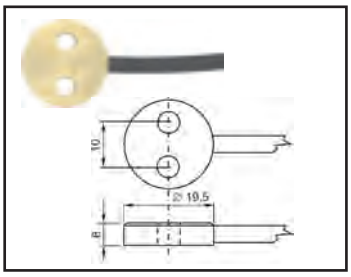
Pt1000TR160/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31
Pt1000TR160/E - cable with female K1321 connector for data loggers Sxxxx
P**t1000TR160/C** - cable with male Cinch connector for T-Print G0221 and Commeters D02x1
Low cost multipurpose probe -30 to +80°C, watertight IP67.
Tolerance ±(0.3+0.005*|t|).
With PVC shielded cable 2 x 0.14 mm^2 length 1, 2, 5, 10, 15 or 20 meters.
Length of polyamide tip 20mm, diameter of the tip 6mm, cable diameter 3.5mm.
Response time: t50 < 12s, t90 < 32s (measured in fluid).



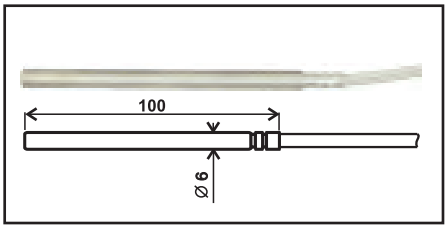
Pt1000TGL40/0 - without connector for TPrint G0x41, data loggers MS and temperat. transducers
Pt1000TGL40/E - cable with female K1321 connector for data loggers Sxxxx
Pt1000TGL40/C - cable with male Cinch connector for T-Print G0221 and Commeters D02x1
multipurpose probe -30 to +80°C from stainless steel 17240 with IP67 protection with PVC shielded cable 2 x 0.34 mm^2.
Available with cable lengths 1, 2, 5 and 10 meters.
Cable shielding is not connected to metal cover.
Response time:
t63 < 10s, t95 < 30s (measured in fluid), t63 < 60s, t95 < 150s (air flow 1m/s)



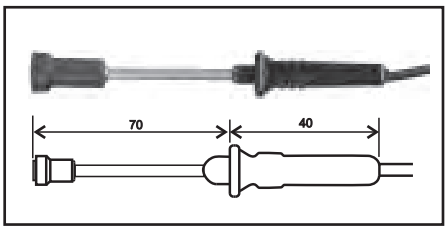
Pt1000TG8/0 - without connector for TPrint G0x41, data loggers MS and temperat. transducers
Pt1000TG8/E - cable with female K1321 connector for data loggers Sxxxx
Pt1000TG8/C - cable with male Cinch connector for T-Print G0221 and Commeters D02x1
multipurpose probe -80 to +200°C from stainless steel 17240 with IP67 protection with shielded silicon cable 2 x 0,34 mm^2.
Available with cable lengths 1, 2, 5 and 10 meters.
Cable shielding is not connected to metal cover.
Response time:
t63 < 10s, t95 < 30s (measured in fluid), t63 < 60s, t95 < 150s (air 1m/s)



Pt1000TG7/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31
Pt1000TG7/E - cable with female K1321 connector for data loggers Sxxxx
Pt1000TG7/C - cable with male Cinch connector for T-Print G0221 and Commeters D02x1
Brass surface probe with shielded silicon cable 2 x 0.22 mm^2 of specified length, range -30 to +200°C.
Mounting by an M4 screw or fixing by a self adhesive tape. Available cable lengths 1, 2, 5 and 10 meters.
Probe is not resistant against moisture.
Response time: t50 < 7s, t90 < 17s (measured in fluid).



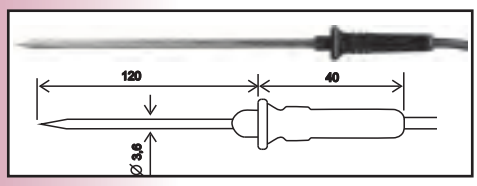
Pt1000TR050/0 - for TPrint G0xx1, data loggers MS and temperature transducers P41x1, T4xx1, H4xx1
Pt1000TR050/E - cable with female K1321 connector for data loggers Sxxxx
Pt1000TR050/C - cable with Cinch connector for T-Print G0221 and Commeters D02x1
Multi-purpose probe e.g. for dryers, soldering machines etc. Measuring range 0 to +350°C. Available with cable lengths 1, 2, 5 and 10 meters. Cable 2 x 0.35 mm^2 with glass insulation and metal shielding is resistant up to +400°C.
Cable shielding is connected to metal cover. Probe is not resistant against moisture. Response time: t50 < 10s, t90 < 25s (measured in fluid).
Tolerance ±(0.3+0.005*|t|).



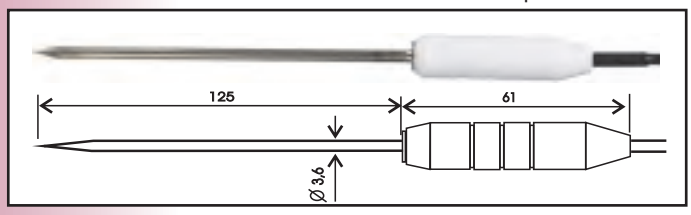
2031-150/C - 1 meter cable with Cinch connector for T-Print G0221 and Commeters D02x1.
Surface probe -30 to +150°C for measurement of solid substances with plane and smooth surface. Temperature sensor is located in a dural bowl which is firmly inserted in a special rubber case reducing the influence of ambient environment.
Tolerance ±(0.3+0.005*|t|).

TEPMPERATURE PROBES with RTD Pt1000 sensor

Unless otherwise indicated probes use sensor tolerance ±(0.15+0.002*|t|).

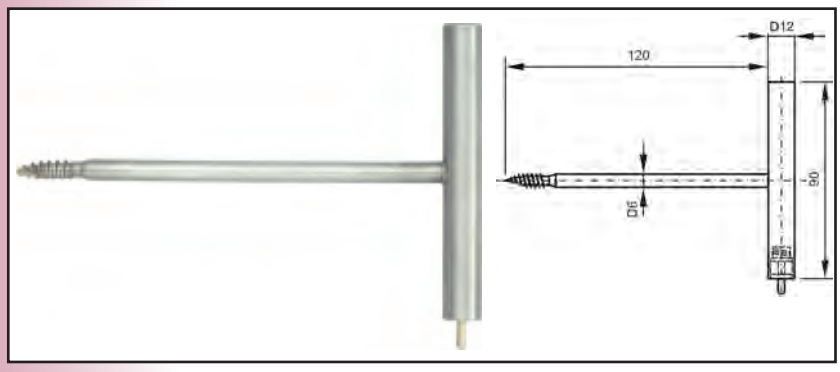


2301-220/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31.
2301-220/E - cable with female K1321 connector for data loggers Sxxxx.
2301-220/C - cable with male Cinch connector for T-Print G0221 and Commeter thermometers D02x1.
Pointed tip probe -30 to +220°C with 1 meter cable.
Response time: t63 < 10s, t95 < 30s (measured in fluid).



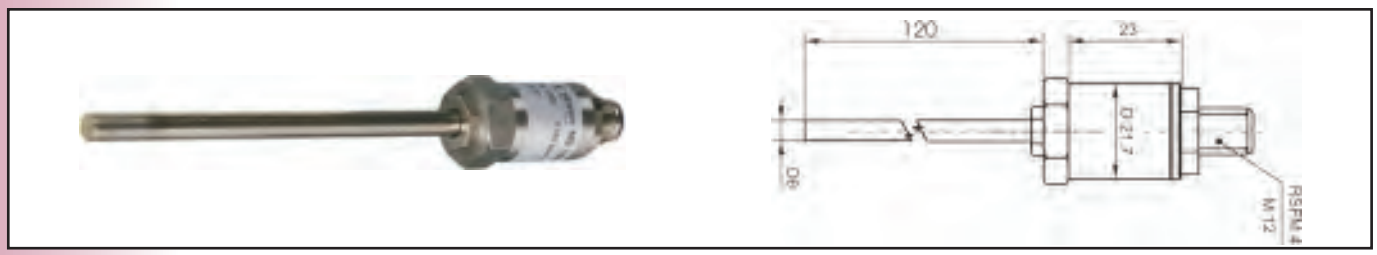
2061-250/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31.
2061-250/E - cable with female K1321 connector for loggers Sxxxx.
2061-250/C - cable with male Cinch connector for T-Print G0221 and Commeter thermometers D02x1.
Food industry pointed tip probe -30 to +250°C, stainless steel 17240 with teflon handle and teflon cable 1 meter, protection IP67. Response time: t63 < 7s, t95 < 15s (measured in fluid).

2091-200/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31.
2091-200/E - cable with female K1321 connector for data loggers Sxxxx.
2091-200/C - cable with male Cinch connector for T-Print G0221 and Commeter thermometers D02x1.
Food industry pointed tip probe -30 to +200°C, stainless steel 17240 with LCP handle and silicon cable 2 x 0.22 mm^2 1 meter length. IP67 protection. Response time: t50 < 9s, t90 < 25s (measured in fluid).



2071-80/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers P41x1, T4x11, H4x31.
2071-80/E - cable with female K1321 connector for data loggers Sxxxx.
2071-80/C - cable with male Cinch connector for T-Print G0221 and Commeter thermometers D02x1.

Special pointed tip probe -30 to +80°C for food industry, stainless steel 17240 with 1 meter silicon cable. IP67 protection.
For measurement of deep frozen food.



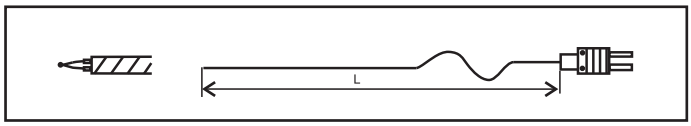
PTS380K/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers.
PTS380K/E - cable with female K1321 connector for data loggers Sxxxx.
PTS380K/C - cable with male Cinch connector for T-Print G0221 and Commeters D02x1.
Food industry probe -30 to +200°C for temperature measurement of fluid substances, stainless steel 17240. IP67 protection. Temperature near the connector -30 to +100°C.
Optional cable with Lumberg RKT connector, 5m length.

PTS350-2/0 - without connector for TPrint G0x41, data loggers MS and temperature transducers.
PTS350-2/E - cable with female K1321 connector for data loggers Sxxxx.
PTS350-2/C - cable with male Cinch connector for T-Print G0221 and Commeters D02x1.
Surface probe -30 to +130°C for tubing and flat surfaces, cable length 2 m.

TEPMPERATURE PROBES

with type K thermocouple for thermometers C0311, D0311, C0321, D0321 and data loggers MS

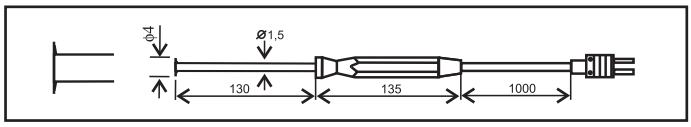
Probe tolerances: class 1 in accordance with IEC584-2 ±1.5°C or ±0.004 x t (whichever is greater)



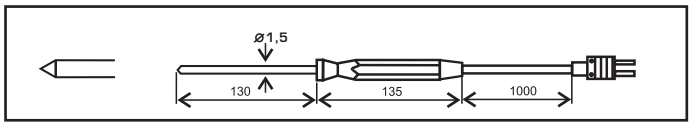
Fast response multi-purpose wire probe
lengths 1m, 2m, 3m, 4m

type GD 260 -65 to 260°C teflon insulated, 0.8mm diameter with subminiature male connector
type GD 700 -65 to 700°C duplex insulated - glass, 2mm diameter with subminiature male connector
type GD 1250 -65 to 980°C duplex insulated - Nextel ceramic, 4mm diameter with subminiature male connector
type GD 260/0 -65 to 260°C teflon insulated, 0.8mm diameter, connection end - uninsulated wires for MS logger
type GD 700/0 -65 to 700°C duplex insulated - glass, 2mm diameter, connection end - uninsulated wires for MS
type GD 1250/0 -65 to 980°C duplex insulated - Nextel ceramic, 4mm diameter, connection end - uninsulated wires for connection to MS

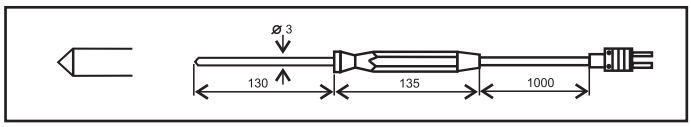
SNP04 self-adhesive labels 25x40 mm to secure wire probes to surfaces, temperature range -70 to 260°C, package of 20 labels



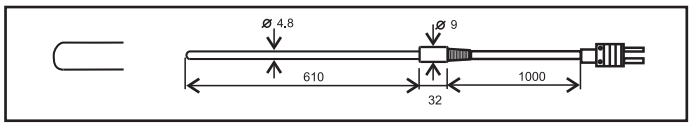
Fast response surface probe
for flat surface
type CP 500 -65 to 500°C



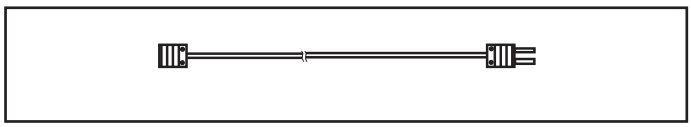
Fast penetration needle probe
for soft materials
type CZ 550 -65 to 550°C



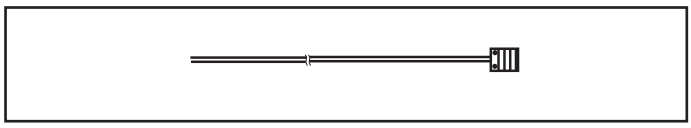
Penetration needle probe
for soft materials
type CZ 900 -65 to 1000°C



Insertion probe
for fluids and gases
type GT1150 -50 to 1150°C



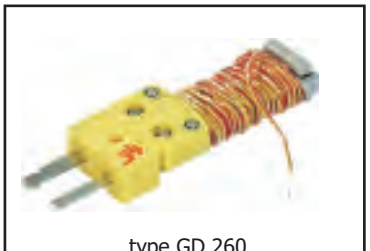
SNP03 extension cable type"K"
with connectors up to 200°C,
duplex insulated.
Please specify length.



SNP03/0 extension cable type"K"
with one female connector up to 200°C,
duplex insulated.
For monitoring system MS5.
Please specify length.

Subminiature connector up to +200°C
for thermocouples J, K, S
(please specify thermocouple type)
male, female


types GD 700, GD 1250


type GD 260


SNP03/0 extension cable


type CZ900


type CP500

NOTES

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