



CATALOG OF MEASUREMENT INSTRUMENTS

September 2008

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TEMPERATURE LOGGERS



Logger SO141 (SO541, SO841)
with USB adapter

- Transport of food or pharmaceuticals
- Food and beverages industry (HACCP)
- Pharmaceutical industry, blood stations, pharmacies
- HVAC (heating, ventilation, air conditioning, cooling)
- Building and energy management
- Research and development, Laboratories (GLP)
- Warehouses
- Technological processes
- Museums, archives, galleries

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

Type approval certificate accordingly with EN 12830 - Temperature recorders for transport, storage and distribution of chilled, frozen food.

- included calibration certificate from the manufacturer - Comet
- 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, 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 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
- with SO841 it is possible 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 (SO841 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

TECHNICAL PARAMETERS

Operating temperature range of loggers RO110x without display:	-40 to +80 °C logger RO110, -30 to +70 °C logger RO110E
Operating temperature range of loggers SOxxx with display:	-30 to +70 °C
Accuracy of the Pt1000 input without probe - loggers SOxxx:	±0.2 °C from -50 do +100 °C ±0.2% from reading from +100 to +260 °C ±0.4% from reading from -90 to -50 °C
Accuracy of temperature measurement of internal sensor:	±0.4 °C (except economy models SO110E, RO110E)
Resolution of the reading:	0.1 °C
Real time clock:	year, leap year, month, day, hour, minute, second
Logging interval:	adjustable from 10s to 24h
Display and alarm refresh:	each 10 s
Total memory capacity:	32000 values in noncyclic logging mode
Logging modes: noncyclic	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 RO110x, 6 years SO1xx, 5 years SO141, SO841
Battery life in continuous on-line mode with interval 1min:	reduced to 70% of the above lives
Battery life in continuous on-line mode with interval 10s:	1 year
Protection:	IP67- protected against influence of temporary immersion into water



start/stop magnet

COM adapter for communication via RS232 port and USB adapter for communication via USB





Types	LOGGERS WITH DISPLAY	Input signals	Measuring range
	SO110 SINGLE CHANNEL THERMOMETER with internal sensor	1xT	-30 to +70 °C
	SO110E ECONOMY THERMOMETER with internal sensor with measuring accuracy: ±0.6 °C from -30 to +30 °C and ±0.8 °C from +30 to +70 °C. NEW !	1xT	-30 to +70 °C
	SO111 SINGLE CHANNEL THERMOMETER for temperature logging from one external probe	1xT	-90 to +260 °C
	SO121 DUAL CHANNEL THERMOMETER for temperature logging from two external probes, including temperature difference between channels	2xT	-90 to +260 °C
	SO122 DUAL CHANNEL THERMOMETER for temperature logging from internal sensor and external probe including temperature difference between channels	2xT	internal -30 to +70 °C external -90 to +260 °C
	SO141 FOUR CHANNEL THERMOMETER for temperature logging from four external probes	4xT	-90 to +260 °C
	SO841 DUAL CHANNEL THERMOMETER- for temperature logging from two external probes, including temperature difference between channels. Additional inputs for two binary signals (e.g. from door contact)	2xT + 2xbinary	-90 to +260 °C
	SO541 DUAL CHANNEL THERMOMETER- for temperature logging from two external probes with two universal voltage inputs 0-5Vdc, accuracy ±0.2% FS NEW !	2xT + 2x0-5Vdc	-90 to +260 °C
Types	LOGGERS WITHOUT DISPLAY	Input signals	Measuring range
	RO110 SINGLE CHANNEL THERMOMETER with internal sensor	1xT	-40 to +80 °C
	RO110E ECONOMY THERMOMETER with internal sensor with measuring accuracy: ±0.6 °C from -30 to +30 °C and ±0.8 °C from +30 to +70 °C.	1xT	-30 to +70 °C

External temperature probes are not included. To order RTD probes with Pt1000 sensors see Optional accessory.

No accessory 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 logging the other way than directly from computer. Also connectors for input signals of models SO541 and SO841 is necessary to order.

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.

Battery is also included.

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:

- **SW100 - CD with free PC program**
- **LP002 - COM adapter** for communication with the PC via RS232 serial port
- **LP003 - USB adapter** for communication with personal computer via USB port
- **LP005 - LAN adapter** for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc.
Exceeding of adjusted limits is alarmed by sending e-mail message or trap.
- **LP004 - start/stop magnet**
- **MD036 - self adhesive Dual Lock** for easy installation
- **A4203 - spare Lithium battery 3.6V**, no leads, size AA
- for types SO111, SO121, SO122, SO141, SO841 it is necessary to order **probes with RTD Pt1000 sensor**, equipped with K1321 connectors - there is a symbol /E behind probe name. Recommended is a multipurpose watertight probe Pt1000TG8/E with cable. Please specify the required cable length (1, 2, 5 or 10 meters).
- **K1321 - spare female connector** for connection of temperature probe and external signal, protection IP67
- **F9000 - wall holder** secured against unauthorized removal
- **LP006 - GSM adapter** for communication of Sxxxx, Rxxxx loggers via GSM
- **MP009 - GSM modem Fastrack Supreme**, without accessories
- **MP009/1 - GSM antenna 3dB** for modem Fastrack, right-angled
- **MP009/2 - Data cable** for setting of GSM modem Fastrack
- **MP009/3 - Ac/dc source 230V/12V** for powering of GSM modem Fastrack
- **SWR004 - optional software for Windows** color print, vertical and time zoom of graphs and other functions



RELATIVE HUMIDITY AND TEMPERATURE LOGGERS



S3120 logger

- 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

Loggers are designed for record of air relative humidity and temperature, optionally in combination with voltage signal 0-5V. 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.

- easy user adjustment and calibration of relative humidity by means of optional accessory and PC software
- included calibration certificate from the manufacturer - Comet
- 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 of no display loggers R312x:	-30 to +80°C, -40 to +80°C logger RO110
Operating temperature range of display loggers S3xxx:	-30 to +70°C
Accuracy of the Pt1000 input without probe : (S3631 logger) :	±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 humidity measurement:	±2.5% RH from 5 to 95% at 23°C
Accuracy of dew point measurement:	±0.5°C from 30 to 95% RH
Resolution of the reading:	0.1°C, 0.1%RH
Real time clock:	year, leap year, month, day, hour, minute, second
Logging interval:	adjustable from 10s to 24h (1 minute to 24h in low-power mode)
Display and alarm refresh:	each 10 s
Total memory capacity:	32000 values in noncyclic logging mode
Logging modes:	noncyclic logging stops after filling the memory cyclic after filling memory oldest data is overwritten by new
Dimensions without connectors and sensor cover:	loggers with display 93x64x29mm loggers without display 93x64x26mm
Power:	Lithium battery 3,6V, size AA
Typical battery life in low-power mode (1 minute sampling):	7 years R3120, R3121, 6 years S3120, S3121, S3631, S3541
Typical battery life in fast mode (10 second sampling):	3 years R312x, 2.5 years S3120, S3121, S3631, S3541
Battery life in continuous on-line mode with interval 1min:	reduced to 70% of the above lives
Battery life in continuous on-line mode with interval 10s:	1 year
Protection of the electronics:	IP67- protected against influence of temporary immersion into water



start/stop magnet

COM adapter for communication via RS232 port and USB adapter for communication via USB

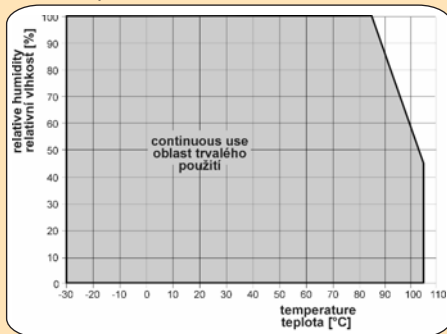




RELATIVE HUMIDITY AND TEMPERATURE LOGGERS

Types	LOGGERS WITH DISPLAY	Input signals	Measuring range
S3120	THERMOMETER-HYGROMETER with internal T+RH sensors. Alternative display of dew-point temperature.	T+RH	temperature -30 to +70 °C Humidity 0 to 100%
S3121	THERMOMETER-HYGROMETER with external T+RH probe with 1 meter cable. Alternative display of dew-point temperature. Cable lengths 2 meters and 4 meters available optionally. Probe diameter of 18mm, length of 105mm.	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 with internal T+RH sensors. Additional connectors for two signals 0-5Vdc ($\pm 0.2\%$ FS accuracy). Alternative display of dew-point temperature.	T+RH + 2x0-5V	internal -30 to +70 °C humidity 0 to 100%
Types	LOGGERS WITHOUT DISPLAY	Input signals	Measuring range
R3120	THERMOMETER-HYGROMETER with internal T+RH sensors. Calculated reading of dew-point temperature.	T+RH	temperature -30 to +80 °C humidity 0 to 100%
R3121	THERMOMETER-HYGROMETER with external T+RH probe with 1 meter cable. Calculated reading of dew-point temperature. Probe diameter of 18mm, length of 105mm. Cable lengths 2 meters and 4 meters available optionally.	T+RH	temperature -30 to +105 °C* humidity 0 to 100%

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



Thermo-hygrometer S3541 with additional inputs 0 to 5V

No accessory 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 logging the other way than directly from computer. Also connector for input signals connection is necessary to order - only model S3541.

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. 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 ACCESSORY:

- SW100 - CD with free PC program
- LP002 - 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 for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc.
Exceeding of adjusted limits is alarmed by sending e-mail message or trap.
- 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 equipped with K1321 connectors there is a symbol /E behind probe name
- K1321 - spare female connector for connection of temperature probe of S3631 logger, protection IP67
- 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
- F0000 - sensor cover from sintered bronze for thermo-hygrometers S3xxx, R3120, R3121



- **F9000** - wall holder with lock
- **LP006** - GSM adapter for communication of Sxxxx, Rxxxx loggers via GSM
- **MP009** - GSM modem Fastrack Supreme, without accessories
- **MP009/1** - GSM antenna 3dB for modem Fastrack, right-angled
- **MP009/2** - Data cable for setting of GSM modem Fastrack
- **MP009/3** - Ac/dc source 230V/12V for powering of GSM modem Fastrack
- **SWR004** - optional software for Windows color print, vertical and time zooming of graphs and other functions

WARRANTY: 2 years



Logger R3120



Thermo-hygrometer S3121



F9000-wall holder with lock



KO945 adapter for S3541



KO921- watertight connector for input signals of S3541



LAN adapter LP005



F5200
F5200B
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 record 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.

- included calibration certificate from the manufacturer
- 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, 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
- 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 µA (contact closed)
Voltage across 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 µA)
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
Built-in connector for input signals:	Canon 9 pins, male
Dimensions without connectors:	93x64x29mm
Weight including battery:	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	0-5Vdc (optionally 0-10V) + binary signal
S5021	Dual channel voltage logger. Input channels are not galvanic isolated and have common ground.	0-5Vdc (optionally 0-10V) + binary signal
S6011	Single channel current logger. The current loop 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 at minimum a COM adapter or USB adapter for communication with computer, optionally a start/stop magnet, if needed to control logging the other way than directly from computer or by binary signal. Also connector for input signals connection is necessary to order.

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. 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 ACCESSORY:

- SW100 - CD with free PC program**
- LP002 - 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** for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc. Exceeding of adjusted limits is alarmed by sending e-mail message or trap.
- LP004 - start/stop magnet**
- MD036 - self adhesive Dual Lock** for easy installation
- K092 - 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
- SWR004 - optional software for Windows** - color print, vertical and time zoom of graphs and other functions



K0945 - adapter with terminals for easy connection of signals



COM adapter and USB adapter for communication with the PC



K0921 - watertight connector IP67



Start/stop magnet



F9000 wall holder with lock



S7021 DUAL-CHANNEL LOGGER WITH COUNTING AND BINARY INPUTS

- record 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 current through closed contact: 30uA, maximum voltage across opened contact: 3.6V LOW voltage level: 0 to +0.2V (current from input max 30uA) HIGH voltage level: +3.0 to +30V (current to input max 100nA)
Parameters of binary input:	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: 3uA, maximum voltage across opened contact: 3.6V LOW voltage level: 0 to +0.2V (current from input max 3uA) 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
Logging interval of counting input:	adjustable from 10s to 24hours
Refresh of display and alarm state:	every 10 s
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,	93x64x29mm



S7021 DUAL-CHANNEL LOGGER WITH COUNTING AND BINARY INPUTS

Weight:	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

Logger includes no accessories. 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 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 record in numerical and simple graphic format. It is possible to export logged values to dbf or txt formats for further analysis.

OPTIONAL ACCESSORY:

- **SW100 - CD with free PC program**
- **LP002 - 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** for communication with the PC via Ethernet, including ac/dc adapter 230Vac/5Vdc.
Exceeding of adjusted limits is alarmed by sending e-mail message or trap.
- **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
- **SWR004 - optional software for Windows** color print, vertical and time zooming of graphs and other functions



K0945 adapter with terminals for easy connection of signals



COM adapter and USB adapter for communication with the PC



K0921 watertight connector - IP67



Start/stop magnet

F9000 wall holder with lock



T-PRINT TEMPERATURE DATA LOGGER WITH BUILT-IN PRINTER

New !

USE:

- print-out 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
- graphical and numerical print-out of temperature
- print from the last record to the history till button is pressed
- print up to set hour in current day
- print of set number of hours to the history
- fast print to usual 57mm thermo paper in 10m rolls
- 3400 record lines/one paper roll, 5 years print-out 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
- easy installation by means of self adhesive Dual Lock
- included traceable calibration certificate
- conforms to EN 12830, Class 1 and EN 13486, Class 1 for the transport of food
- 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
Connector for temperature probes:	Cinch
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 0,05 W
Dimensions without connectors, weight:	175 x 124 x 51 mm (w x h x d), weight 370 grams
Protection:	IP20

Included in delivery:

Included is **traceable calibration certificate** from the manufacturer. Calibration certificate 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, power supply cable 5m, battery for internal clock, self adhesive Dual Lock for easy installation.

Anytime it is possible to download free basic program for Windows. Program enables to control all logger 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.

Optional accessory:

- **SWR001** - optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions.
- **SW100** - CD with free PC program
- **LP007** - universal metal wall holders for recorder wall mounting. Package contains a pair of holders and 4 screws.
- Built-in RS232 interface
- **A1941**- acdc adapter 230V-50Hz/24Vdc/24W for power outside of the vehicle
- **A4101**- spare Lithium battery CR2032 3V
- **PR033** - roll of thermo paper - width 57mm, length 10m, 5 years archivability
- **Temperature probes** with Pt1000 sensors equipped with male Cinch connectors - there is a symbol /C behind probe name. Recommended is universal hermetic probe Pt1000TGL40/C with PVC cable 1, 2, 5 or 10 meters - see further.

YOUR COMPANY		
T-PRINT 00221	FW:00 13	
Ser Num : 07970003		
Location: VEHICLE BN CC230		
Printed : 04 03 2008 6:41		
Ch1:FROZEN SECTION		
Lower AlarmLimit	-25 0	
Upper AlarmLimit	-22 0	
Ch2:CHILLED SECTION		
Lower AlarmLimit	1 0	
Upper AlarmLimit	8 0	
03.03.2008	Ch1	Ch2
15:00:00	-19 7	6 8 °C
15:05:00	-21 1	4 8 °C
15:10:00	-21 7	4 0 °C
15:15:00	-22 0	3 6 °C
15:20:00	-22 3	3 0 °C



T-PRINT TEMPERATURE DATA LOGGER WITH BUILT-IN PRINTER FOR SEMI-TRAILER

Preliminary - available in February !

USE:

- print-out of temperature record during transport of food, pharmaceuticals, flowers, live animals and other goods
- designed especially for installation on semi-trailer of the truck

FEATURES:

- record from one or two temperature probes
- numerical graphical print-out of temperature
- print from the last record to the history till button is pressed
- print up to set hour in current day
- print of set number of hours to the history
- fast print to usual 57mm thermo paper in 10m rolls
- 3400 record lines/one paper roll, 5 years print-out archivability
- large graphic illuminated display
- indication of temperature exceeding by LED and acoustically
- record of actual or average values at logging interval
- free PC software
- fifteen selectable languages
- 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
- easy installation by means of self adhesive Dual Lock
- included traceable calibration certificate
- conforms to EN 12830, Class 1 and EN 13486, Class 1 for the transport of food
- degrees of Celsius and Fahrenheit



TECHNICAL PARAMETERS

Measuring temperature range:	-90 to +260 °C (-50 to +250 °C for Ni1000 sensor)
Operating temperature range:	-30 to +65 °C
Operating temperature range of the printer:	-20 to +50 °C
Compatible temperature probes:	with four-wire Pt1000 sensor; maximum cable length 30 meters
Accuracy of the input without probe:	±0.2 °C
Resolution:	0.1 °C
Connection of temperature probes:	to terminals under removeable instrument 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 0,05 W
Dimensions without connectors, weight:	approximately 220 x 200 x 100 mm (w x h x d), weight 500 grams
Protection:	IP65

Included in delivery:

Included is **traceable calibration certificate** from the manufacturer. Calibration certificate 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.

Anytime it is possible to download free basic program for Windows. Program enables to control all logger 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.

Optional accessory:

- **SWR001** - optional software for Windows - color printing, vertical and horizontal zooming of graphs and other functions.
- **SW100** - CD with free PC program
- Built-in RS232 interface
- **A1940**- acdc adapter 230V-50Hz/24Vdc/24W for power outside of the vehicle
- **A4101**- spare Lithium battery CR2032 3V
- **PR033** - roll of thermo paper - width 57mm, length 10m, 5 years archivability
- **Temperature probes** with Pt1000 four-wire sensors without connectors - there is a symbol /O behind probe name.

YOUR COMPANY		
T-PRINT 00221	FW:00 13	
Ser Num : 07970003		
Location: VEHICLE BN CC230		
Printed : 04 03 2008 6:41		
Ch1:FROZEN SECTION		
Lower AlarmLimit	-25 0	
Upper AlarmLimit	-22 0	
Ch2:CHILLED SECTION		
Lower AlarmLimit	1 0	
Upper AlarmLimit	8 0	
03.03.2008	Ch1	Ch2
15:00:00	-19 7	6 8 °C
15:05:00	-21 1	4 8 °C
15:10:00	-21 7	4 0 °C
15:15:00	-22 0	3 6 °C
15:20:00	-22 3	3 0 °C



COMETER THERMOMETERS, HYGROMETERS, BAROMETERS for direct measurement and logging



- 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.

Thermo-hygrometer C3120,D3120
Thermo-hygro-barometer C4130,D4130

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:	±0.5 °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 (type names beginning from D) :

Modes of logging:	<ol style="list-style-type: none"> 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)

INSTRUMENTS ARE AVAILABLE IN THE FOLLOWING TYPES:

Type	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	



COMETER THERMOMETERS, HYGROMETERS, BAROMETERS for direct measurement and logging

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

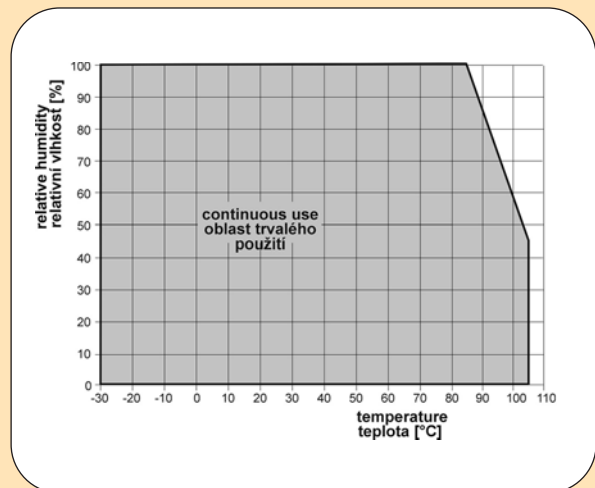
All instruments are equipped with connector for external ac/dc adapter.

- Loggers (types 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 (types 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 C/D3121, C/D4141. Filtering capability 0.025mm.
- F1000** - sensor protection from sintered bronze for instruments C/D3121, C/D4141. Filtering capability 0.025mm.
- for easy mounting of C/D3121, C/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 NiCd accumulator 9V.
- A3400** - NiCd 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)



Thermo-hygrometer C/D3121,
Thermo-hygro-barometer C/D4141



F5200B sensor cover with filter from stainless steel mesh and F1000 sintered bronze filter for instruments C/D3121, C/D4141



COMETER THERMOMETERS

-200 to +500 °C for RTD Pt1000 and Ni1000 sensors for actual measurement and logging



- 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:

DO211	single channel
DO221	dual channel with possible reading of temperature difference among channels
DO241	quad channel

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 included 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.

TECHNICAL PARAMETERS:	
Operating temperature range:	-30 to +65 °C
Temperature input:	RTD Pt1000-3850ppm/°C, from -200 to +500 °C
Temperature input:	switchable RTD Ni1000-6180ppm/°C, from -50 to +250 °C
Temperature probe connector:	Cinch
Accuracy of the Pt1000 input without probes:	±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 probes:	±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 °C, otherwise 1 °C
Power:	battery 9V, typical battery life 6 months
Mechanical dimensions:	141 x 71 x 27mm
Modes of logging:	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 approx. 15200 values (14400 values for DO211)
Real time clock:	year, leap year, month, day, hour, minute, second
PC interface:	serial RS232
Sampling interval in logging:	18 adjustable values from 10s to 24hours

Thermometers are delivered without probes. To order probes, please see below.

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. Included is also plastic transport case, 9V battery, communication cable for PC. Loggers are equipped with connector for external ac/dc adapter. 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.

- OPTIONAL ACCESSORY:**
- MP006** - RS232/USB converter for communication with the PC via USB port
- SW100** - CD with free PC program
- probes** 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 NiCd accumulator 9V
- A3400** - NiCd accumulator 9V
- SWR004** - Optional software for Windows
- color printing, vertical and horizontal zooming of graphs and other functions

Tested by accredited laboratory accordingly with **EN 12830** - **Temperature recorders for transport, storage and distribution of chilled, frozen food.**

WARRANTY: two years.



COMETER THERMOMETERS

-200 to +1700 °C for thermocouple J,K,S for direct measurement and record



- selection of thermocouple type from the thermometer keyboard
- 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
- automatic compensation of cold junction temperature

Model	Description
CO311	single channel thermometer no PC interface
DO311	single channel thermometer and datalogger with RS232 serial output
CO321	dual channel thermometer with possible reading of temperature difference among channels, no PC interface
DO321	dual channel thermometer with possible reading of temperature difference among channels, datalogger with PC interface

TECHNICAL PARAMETERS - 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 (PtRh-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 PARAMETERS - thermometers with logging function (types DO311, DO321)

Modes of logging:	<ol style="list-style-type: none"> 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 DO111)
Real time clock:	year, leap year, month, day, hour, minute, second
PC interface:	serial RS232
Logging interval:	18 adjustable values from 10s to 24hours

Thermometers are delivered without probes. To order probes, please see **Optional accessory**.

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 DO311, DO321 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

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 CO311, CO321 are delivered in a plastic case. 9V battery is included.

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 NiCd accumulator 9V

- A3400** - NiCd accumulator 9V

- SWR004** - Optional software for Windows - color printing, vertical and horizontal zoom of graphs and other functions

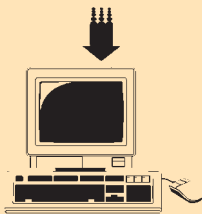


UNIVERSAL MONITORING SYSTEM MS5D, MS5



COMPLETE SOLUTION FOR MONITORING OF TEMPERATURE, HUMIDITY, PRESSURE AND OTHER VALUES IN THESE FIELDS:

- Food and beverages industry (HACCP)
- Pharmaceutical industry
- Blood stations, pharmacies
- Horticulture and cultivation of plants
- HVAC (heating, ventilation, air conditioning, cooling)
- Building and energy management
- Research and development
- Laboratories (GLP)



Sixteen channel dataloggers are designed for recording of values from transducers of variety of quantities, alarm state indication, and process control. Parameters of inputs are defined by the types of installed input modules. Datalogger 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 ADAM Advantech protocol (ModBus is under preparation). Data is ready to download to a personal computer anytime via USB, RS232, RS485, Ethernet or GSM modem. Analyzing of the record is enabled after data download to the PC by means of the included program.

NEW FIRMWARE AND SOFTWARE ENABLE ESPECIALLY TO:

- Configure individually each input channel for measurement, alarm evaluation and data logging, including individual logging interval for each input.
- Each input channel can be individually programmed for different modes of record (continuous record, time dependent record, record only if specified logic conditions are matched, record triggered by external signal, etc.). It is enabled to record with shorter interval in case, measured values match previously defined conditions e.g. to map in detail trouble state. It is also enabled to memorize actual value and time if defined time event appears.
- Set up to four different logic conditions for each channel to activate alarm. Each condition compares measured values from inputs with set limits. It is possible to set hysteresis and delay of condition validity. Also weekly program can be set and distant condition from the PC.
- Indicate alarm states - visually, audibly, by relay contact, by e-mail or SMS message.
- Control processes by means of the optional relay module enabling to switch 16 output relays depending on alarm states.
- Receive information from data logger by means of SMS messages via GSM modem - actual values, alarms, memory occupation and other.
- 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.
- Store several configuration profiles (all logger parameters setting) for different measuring tasks and select profiles from MS5D logger keyboard or optional external terminal.
- Change easily input modules if different input signals are required for measurement.
- To connect input signals easily to removeable terminal connector. Each input channel is equipped with three terminals including shielding.

Following data loggers are available:



- MS5D** - completely equipped data logger
- dual line alphanumeric LCD display
- four control buttons
- 32 alarm LEDs

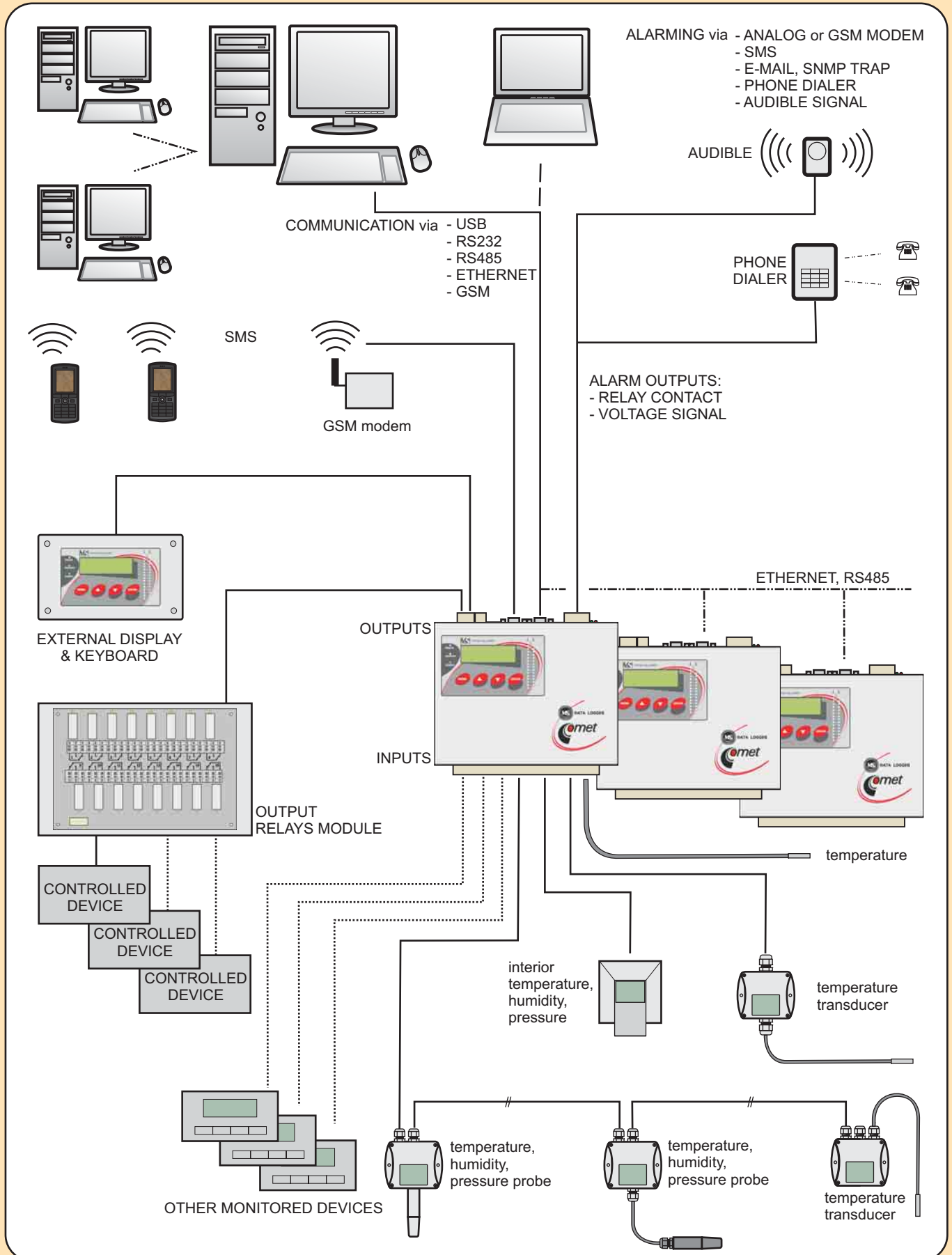


- MS5** - all functions as MS5D data logger
- without dual line alphanumeric LCD display
- without control buttons
- without 32 alarm LEDs
- common alarm indication with one LED



UNIVERSAL MONITORING SYSTEM MS5D, MS5

ARCHITECTURE OF MONITORING SYSTEM:





UNIVERSAL MONITORING SYSTEM

MS5D, MS5

TABLE OF INPUTS			
TYPE	MEASURED VALUE	ACCURACY	NOTE
A0	dc current 4 to 20 mA	$\pm 0.1\% \text{ FS}$	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	$\pm 0.1\% \text{ FS}$	for passive sensing of current
B0*	dc current 0 to 20 mA	$\pm 0.1\% \text{ FS}$	
B1*	dc current 0 to 1A	$\pm 0.1\% \text{ FS}$	
B2*	dc current 0 to 5A	$\pm 0.1\% \text{ FS}$	
C0	ac current 0 to 20mA	$\pm 1\% \text{ FS}$	galvanically isolated
C1	ac current 0 to 1A	$\pm 1\% \text{ FS}$	galvanically isolated
C2	ac current 0 to 5A	$\pm 1\% \text{ FS}$	galvanically isolated
D0*	dc voltage 0 to 100mV	$\pm 0.1\% \text{ FS}$	
D1*	dc voltage 0 to 1V	$\pm 0.1\% \text{ FS}$	
D2*	dc voltage 0 to 10V	$\pm 0.1\% \text{ FS}$	
D5*	dc voltage -10 to +10V	$\pm 0.1\% \text{ FS} (\pm 20\text{mV})$	New !
D4*	dc voltage +75V	$\pm 0.1\% \text{ FS}$	New !
E0	ac voltage 0 to 100mV	$\pm 1\% \text{ FS}$	galvanically isolated
E1	ac voltage 0 to 1V	$\pm 1\% \text{ FS}$	galvanically isolated
E2	ac voltage 0 to 10V	$\pm 1\% \text{ FS}$	galvanically isolated
E4	ac voltage 0 to 50V	$\pm 1\% \text{ FS}$	New ! galvanically isolated
F*	measurement of resistance	$\pm 0.1\% \text{ FS}$	two-wire connection
J*	input for Nickel RTD temperature sensor Ni1000, 6180 ppm/°C, range -50 to +250°C	-50 to 100°C $\pm 0.2^\circ \text{C}$ 100 to 250°C $\pm 0.2\%$ from reading	two-wire connection
K*	input for Platinum RTD temperature sensor Pt100, range -140 to +600°C	-140 to +100°C $\pm 0.2^\circ \text{C}$ 100 to 600°C $\pm 0.2\%$ from reading	two-wire connection
K1*	input for Platinum RTD temperature sensor Pt1000, range -140 to +600°C	-140 to +100°C $\pm 0.2^\circ \text{C}$ 100 to 600°C $\pm 0.2\%$ from reading	two-wire connection available also with sensors and transmitters
K3	precise input for RTD temperature sensor Pt1000, range -10 to +50°C	$\pm 0.06^\circ \text{C}$	New ! Two-wire connection. Only galvanically not isolated. Available also with sensors.
N*	thermocouple K (NiCr-Ni) range -70 to +1300°C	$\pm(0.3\% + 1.5^\circ \text{C})$ from reading	linearized, cold junction compensation
T*	thermocouple T (Cu-CuNi) range -200 to +400°C	$\pm(0.3\% + 1.5^\circ \text{C})$ from reading	linearized, cold junction compensation
O*	thermocouple J (Fe-Co) range -200 to +750°C	$\pm(0.3\% + 1.5^\circ \text{C})$ from reading	linearized, cold junction compensation
P*	thermocouple S (Pt10%Rh-Pt), range 0 to +1700°C	$\pm(0.3\% + 1.5^\circ \text{C})$ from reading from +200 to +1700°C	linearized, cold junction compensation
Q*	thermocouple B (Pt30%Rh-Pt), range +100 to +1800°C	$\pm(0.3\% + 1^\circ \text{C})$ from reading from +300 to +1800°C	linearized, without cold junction compensation
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 $\pm(0.2\%$ 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 $\pm(0.2\%$ 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 supporting Modbus RTU or Advantech	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.



UNIVERSAL MONITORING SYSTEM MS5D, MS5

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.
- **Optional software** for Windows is also available. Program has all functions as free program. In addition optional software enables:
 - most complex graphic processing of recorded data including any zooming of time and vertical axes
 - on-line graphic visualization of curves with selectable refresh interval - the Display Mode
 - the Distant Display Mode on Internet/ Ethernet network
 - direct record of the Display Mode to the PC
 - automatic data download to the PC in preprogrammed intervals
 - automatic data export to the PC in preprogrammed intervals in dbf format
 - record of data to the network
 - administration of users and passwords
 - other functions

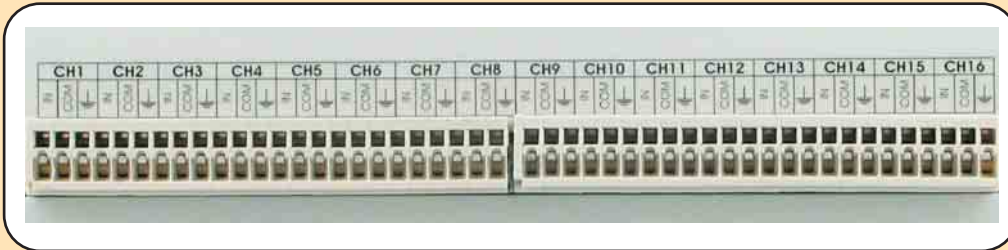
TECHNICAL PARAMETERS	
Memory type:	internal SRAM, backed-up by Lithium battery
Total memory capacity:	2MB (up to 480 000 values)
Logging mode:	noncyclic logging stops after filling the memory cyclic after filling memory oldest data is overwritten by new
Logging interval:	adjustable individually for all 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 channels):	are defined for each channel by installed input modules (see table) accordingly to user requirements
AD converter (analog channels):	16 bits, conversion duration approximately 60ms/channel
Interfaces for communication with computer:	RS232 (RxD, TxD, RTS, CTS, GND), cable up to 15 m - included . Enables direct connection to the computer or via land line modem and GSM modem. USB interface - included RS485 - cable up to 1200 m, galvanically isolated, possibility of connection of several data loggers to one communication link - included Ethernet interface LAN - optional
Supported communication speeds:	9600, 19200, 57600, 115200 Bd
Output for alarm indication:	1) Red LED at the side of the case, 32 LEDs - only MS5D data logger 2) Relay max. 8A/250Vac, switching-over contact 3) Voltage signal 0V/4.8V, maximum current 50mA, output designed for connection of external audio indication unit or telephone voice dialer 4) Alarm can be signalled also by e-mail message, SNMP trap, SMS - please 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



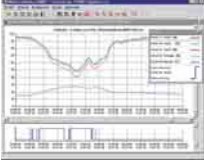





UNIVERSAL MONITORING SYSTEM MS5D, MS5



Terminals for input signal connection - each input has three terminals including shielding

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. Included is also communication cable for RS232 2meters long, free Windows program (also downloadable for free from www.cometsystem.cz). Program enables to 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.

Optional accessory:

	<p>SWR006</p>	<p>Optional software for Windows - comfort graphic environment data acquisition, including on-line graph, automatic data download, remote Display mode on Internet-Ethernet network, storing data on the network, administration of users and passwords and many others ..</p>
<p>Accessories for data logger mounting:</p>		
	<p>MP013</p>	<p>Universal metal wall holders for data logger wall mounting. Package contains a pair of holders and 4 screws.</p>
	<p>MP012</p>	<p>Holder for data logger mounting to DIN 35mm rail. Package contains the holder and 6 screws.</p>
<p>Power sources :</p>		
	<p>A1759</p>	<p>Universal ac/dc adapter 230V-50Hz/21Vdc/1A.</p>
	<p>A1940</p>	<p>Universal ac/dc adapter 230V-50Hz/24Vdc/1A/24W for socket plug-in, switch-mode.</p>
	<p>A5948</p>	<p>Power source 230V-50Hz/24Vdc/2,5A for DIN rail 35mm, dual terminals 24Vdc, switch-mode, including DIN rail of 100mm length.</p>



UNIVERSAL MONITORING SYSTEM MS5D, MS5

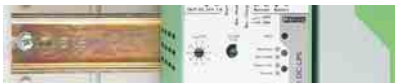
Backup power supplies:



**A6963
supply**

**A7963
battery**

Backup power supply A6963, model MINI-DC-UPS/24DC/2 with battery 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. Included is a DIN rail for mounting to the case. 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

MP035 DIN rail 35mm of 226mm length with screws for mounting of A6963 power supply with A7963 battery 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.



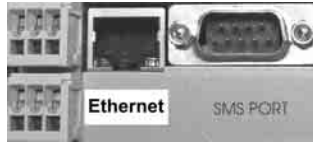
UNIVERSAL MONITORING SYSTEM MS5D, MS5

Optional internal equipment:



MPO24

Built-in independent SMS port for GSM modem connection for SMS reception and sending. Enables to receive information from data logger by means of SMS messages - actual values, alarms, memory occupation and others - as a response to SMS query from user or in case of alarm creation at data logger. Not necessary, if data logger is connected to the PC via GSM modem.



MPO25

Built-in LAN interface for data logger connection to Ethernet network. In case of limits exceeding alarm is activated and warning e-mail or SNMP trap are sent to specified addresses.

External communication converters:



MO021

Converter RS485/RS232 for serial port COMx at the PC side, including ac/dc adapter and terminator T485.



MPO22

Converter USB/RS485 for USB port at the PC side, including terminator T485. Powered from computer USB interface.

MPO23

Converter Ethernet/RS485 including ac/dc adapter and terminator T485. Designed for several data loggers connected via RS485 network for connection to the computer via Ethernet.

Accessories for ALARM OUT output:



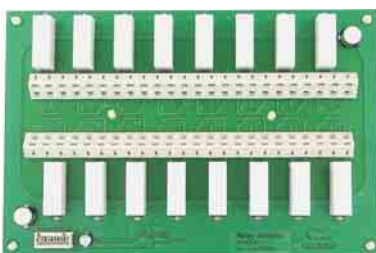
MPO26

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).

MPO02

Telephone voice dialer for alarm reporting, ac/dc adapter included. Enables in ALARM OUT output activity to send voice report to selected telephone numbers. Voice dialer is connected to land line.

Output relays module:















MPO18

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 MPO17, optionally other accessories.



UNIVERSAL MONITORING SYSTEM

MS5D, MS5

  	<p>MPO17</p>	<p>Connection cable for terminal with display and output relays module - cable length approximately 60cm. Longer cable lengths available - maximum 2m for relay module.</p>
<p>Terminals with display:</p>	<p>MPO13</p>	<p>Universal metal wall holders for data logger wall mounting. Package contains a pair of holders and 4 screws.</p>
	<p>MPO19</p>	<p>Holder for relay module mounting to DIN 35mm rail. Package contains the holder and 6 plastic rivets.</p>
	<p>MPO20</p>	<p>DIN rail for relay module with elevated consoles for mounting to the MPO33, MPO34 case. Rail enables to raise the relay module enables to lead cables to data logger under the module.</p>
<p>Terminals with display:</p>	<p>MPO16</p>	<p>Terminal with dual line alphanumeric 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 MPO17 connection cable to data logger.</p>
	<p>MPO17</p>	<p>Connection cable for terminal with display - cable length approximately 60cm. Longer cable lengths available - maximum 50m.</p>
	<p>MPO17-5</p>	<p>Connection cable for terminal with display - cable length 5m</p>
	<p>MPO17-10</p>	<p>Connection cable for terminal with display - cable length 10m</p>
	<p>MPO32</p>	<p>External terminal with dual line alphanumeric LCD and control buttons and 32 alarm LEDs - 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.</p>
<p>GSM modem and accessories:</p>	<p>MPO09</p>	<p>GSM modem WaveCom Fastrack Supreme, without accessories</p>
	<p>MPO09/1</p>	<p>Antenna for GSM modem WaveCom Fastrack, right-angled</p>
	<p>MPO09/2</p>	<p>Communication cable for GSM modem Fastrack</p>
	<p>MPO09/3</p>	<p>Ac/dc adapter 230V/12V for GSM modem Fastrack</p>



UNIVERSAL MONITORING SYSTEM MS5D, MS5

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.



MP007

USB connection cable A-B, 1,8m. Standard computer cable.



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 rate:



MP033

Case with IP65 protection with wall holders and data logger holders - no cutout in the lid. Dimensions 270 x 570 x 140 mm.



MP034

Data logger MS5 in IP54 protection case with connected terminal with display built in the lid. Dimensions 270 x 570 x 140 mm.

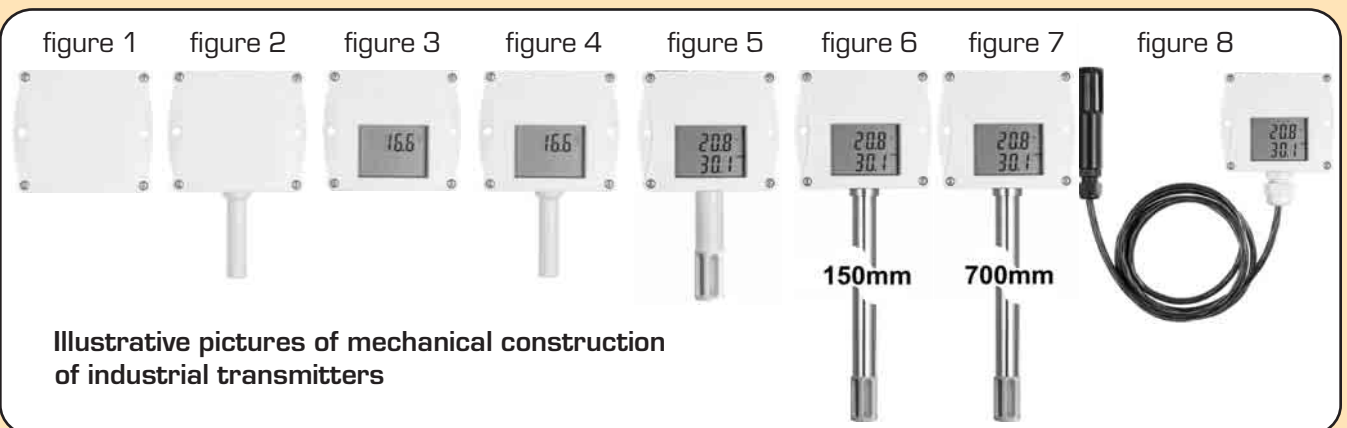
Temperature, humidity, pressure transmitters Comet are directly compatible with MS data loggers. Also complete monitoring system with data logger and transmitters can be delivered.



SELECTION TABLES OF TEMPERATURE, HUMIDITY, PRESSURE TRANSMITTERS

INDUSTRIAL TRANSMITTERS of Txx1x, Pxxxx family:

MEASURED VALUE / OUTPUT	4 to 20mA	0 to 10V	RS485	RS232	Ethernet
temperature	P0120 figure 2 page27		T0410 figure 4 page33	T0310 figure 4 page35	P8510 figure 2 page37
	Px1x1 figure 1 page27		T4411 figure 3 page33	T4311 figure 3 page35	P85x1 figure 1 page37
	T0110 figure 4 page28				T0510 figure 4 page39
	T4111 figure 3 page28				T4511 figure 3 page41
humidity	T1110 figure 5 page28				
barometric pressure	T2114 figure 3 page30	T2214 figure 3 page30	T2414 figure 3 page33	T2314 figure 3 page35	T2514 figure 3 page41
temperature+humidity	T3110 figure 5 page28	T0210 figure 5 page31	T3411 figure 5 page33	T3311 figure 5 page35	T3510 figure 5 page39
	T3113 figure 6 page28	T0213 figure 6 page31	T3413 figure 6 page33		T3511 figure 8 page41
	T3117 figure 7 page28	T0211 figure 8 page31	T3417 figure 7 page33		
	T3111 figure 8 page28		T3419 figure 8 page33		
temperature+pressure			T5410 figure 4 page33		
temperature+humidity +barometric pressure			T7410 figure 5 page33	T7310 figure 5 page35	T7510 figure 5 page39
			T7411 figure 8 page33	T7311 figure 8 page35	T7511 figure 8 page41



INTERIOR TRANSMITTERS of Txx18 family:

MEASURED VALUE / OUTPUT	4 to 20mA page 47	0 to 10V page 47	RS485 page 49	RS232 page 49
temperature	T0118	T0218	T0418	T0318
barometric pressure	T2118	T2218		
temperature+humidity	T3118	T3218	T3418	T3318
temperature+humidity +barometric pressure			T7418	T7318





TEMPERATURE PROBES AND TRANSDUCERS FOR Pt1000 Pt100 WITH 4-20mA OUTPUT

P0120 - AIR TEMPERATURE PROBE 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 88x15x39.5 mm
Protection:	IP65
Power:	9 to 30 V DC (typically 24 V)



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

Transducers are designed for signal conversion from RTD Pt1000 and Pt100 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
- 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

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

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

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.

Warranty: 2 years



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

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 (except T1110 transmitter). 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. 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
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 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



TEMPERATURE AND HUMIDITY TRANSMITTERS with 4-20mA output

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

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
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.
TO110	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. Relative humidity at temperature over +85 °C is limited in accordance with the graph. Near plastic case with electronics maximum temperature is

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. 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 SPO03 - see photo. Free configuration program 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

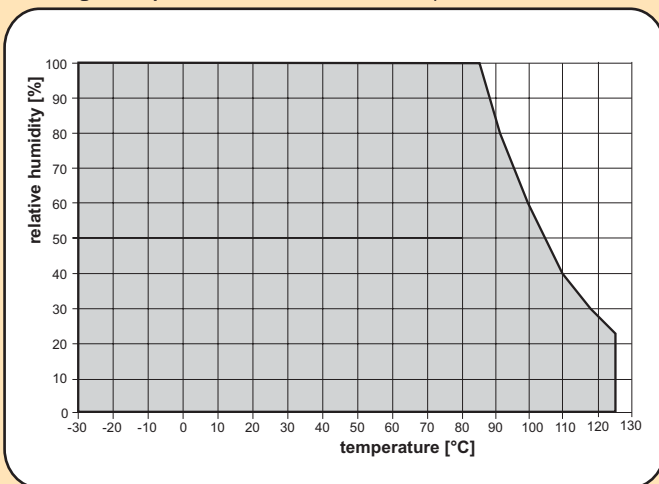
Ordering example: Transducer T4111, output: -100 to +30 °C



Transducer T4111



Thermometer TO110



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.

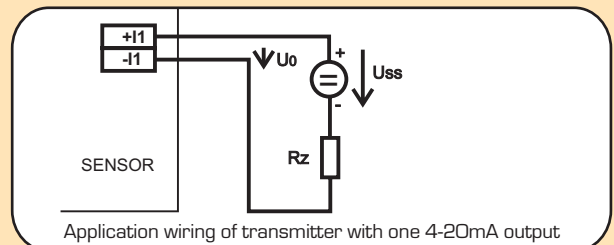
Comet probes with Pt1000 sensors are directly connectable to T4111 transducer - see further. There is a symbol /O behind probe name.

Other optional accessory: see further

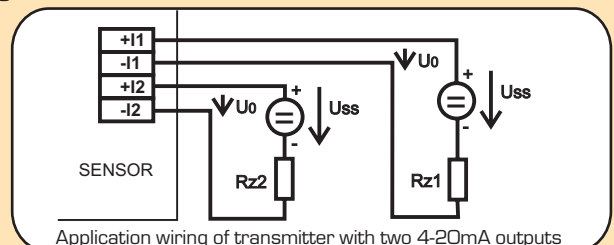
Transmitters are directly compatible with sixteen channel Comet data acquisition system MSx.



Optional cable SPO03 for transmitter adjustment



Application wiring of transmitter with one 4-20mA output



Application wiring of transmitter with two 4-20mA outputs



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, inH₂O, PSI, oz/in².

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 SPO03 - 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.

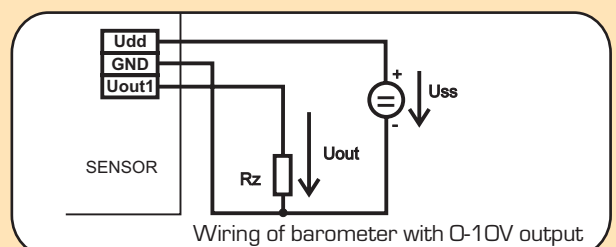
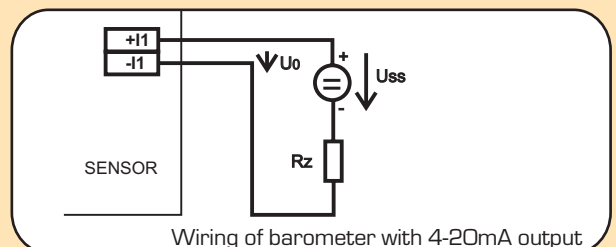
Included accessory:

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:

- SPO03** - cable for transmitter adjustment via USB port
- MD036** - self adhesive Dual Lock for easy installation
- SPO05** - tool for easy wire connection to terminals



Barometer is directly compatible with sixteen channel Comet data acquisition system MS5D, MS5.



TEMPERATURE AND HUMIDITY TRANSMITTERS with 0-10V output

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



Transmitter TO213



Transmitter TO210



Transmitter TO211

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 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
Current outputs - two-wire connection:	0-10V, dual-output models have common ground, galvanically unisolated
Configuration of outputs and output range:	user adjustable from the PC
Filtering ability of 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



TEMPERATURE AND HUMIDITY TRANSMITTERS with 0-10V output

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

TRANSMITTERS ARE AVAILABLE IN THE FOLLOWING MODELS:

MODEL	MEASUR. VALUE	MAXIMUM RANGE OF TEMPERATURE MEASUREMENT	STEM LENGTH	OUTPUT 1 ²⁾	OUTPUT 2 ²⁾	NOTE
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.

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

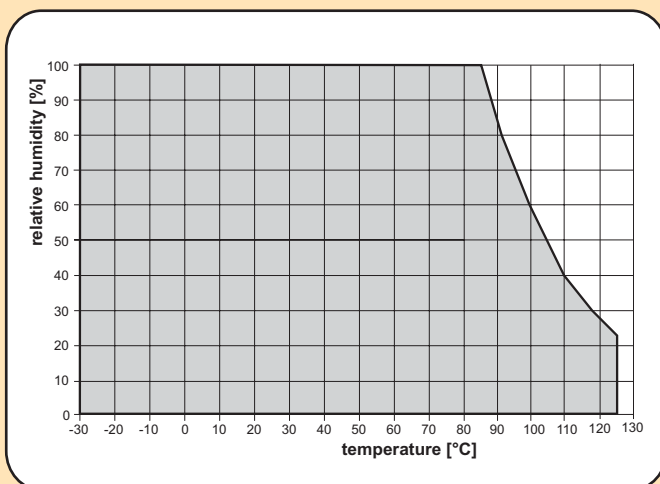
2) Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to each output of dual output transmitters. Also identical value can be assigned to both outputs. The T1110 transmitter has only relative 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 SPO03 - see photo. Free configuration program 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

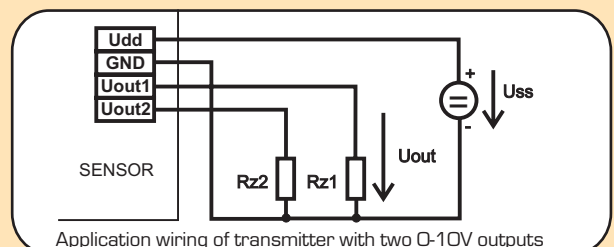
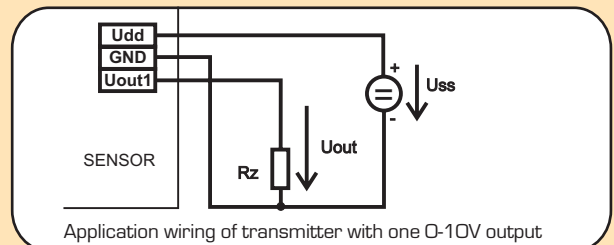
Ordering example: Transducer T4111, output: -100 to +30 °C



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.

Other optional accessory: see further





TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS

with serial RS485 output

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



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

Measured temperature, barometric pressure, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy 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. Degrees Celsius and Fahrenheit are user selectable. 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 in special configuration mode by means of the PC. 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.

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, switch OFF the display over +70 °C
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 ₂ O, PSI, oz/in ²
Range of temperature compensation of RH sensor:	-30 to +125 °C
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 sensor cover:	0,025mm
Communication protocols:	ModBus RTU, ADAM Advantech
Communication speed:	110 to 115200 Bd
Dimensions of the case without cable glands:	89 x 73 x 39.5 mm
Warranty:	two years



TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS

with serial RS485 output

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

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	4
T3417	T+H	-30 to +125 °C ¹⁾	700mm	Thermometer-hygrometer - bar type	4
T3419	T+H	-30 to +105 °C ¹⁾ probe, cable up to + 80 °C	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
T5410	T+P	-30 to +80 °C 600 to 1100hPa	53mm	Thermometer-barometer - outdoor, indoor use	2
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 1 m cable, diameter 18mm. Available also with cable 2m or 4m.	5
T2414	P	600 to 1100hPa	-	Barometer - outdoor, indoor use	6

T - temperature H - humidity P - barometric pressure

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

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



Fig. 1 Transducer T4411



Fig. 2 Transmitter T0410, T5410



Fig. 3 Transmitter T3411, T7410



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



Fig. 6 Barometer T2414



Fig. 5 Transmitter T3419, T7411

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.

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 /O behind probe name.

Other accessories - see further

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



TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS

with serial RS232 output

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



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

Measured temperature, barometric pressure, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy is converted to digital serial output with the RS232 link parameters. Degrees Celsius and Fahrenheit are user selectable. 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 in special configuration mode by means of the PC. 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. Transmitters with RS232 output can be powered directly from the PC port or from external ac/dc adapter.

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, switch OFF the display over +70 °C
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 ₂ O, PSI, oz/in ²
Range of temperature compensation of RH sensor:	-30 to +125 °C
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 sensor cover:	0,025mm
Communication protocols:	ModBus RTU, ADAM Advantech
Communication speed:	110 to 115200 Bd
Dimensions of the case without cable glands:	89 x 73 x 39.5 mm
Warranty:	two years



TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS

with serial RS232 output

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

AVAILABLE MODELS - 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
T7310	T+H+P	-30 to +80 °C 600 to 1100hPa	75mm	Thermometer-hygrometer - T+RH probe with 1 m cable, diameter 18mm. Available also with cable lengths 2m or 4m.	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 1 m cable, diameter 18mm. Available also with cable 2m or 4m.	5
T2314	P	600 to 1100hPa	-	Barometer - outdoor, indoor use	4

T - temperature H - humidity P - barometric pressure

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

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



Fig. 1 Thermometer T0310



Fig. 2 Transmitter T3311, T7310



Fig. 3 Transducer T4311



Fig. 4 Barometer T2314



MP006 - RS232/USB converter



Fig. 5 Transmitter T7311

Included accessory:

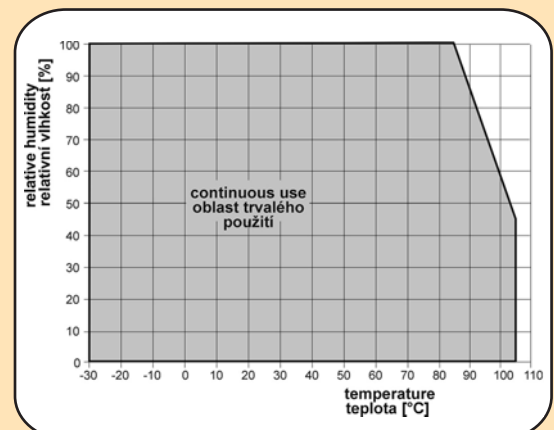
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

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

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 /O behind probe name.
- Other accessories - see further





LOW COST INTELLIGENT ETHERNET THERMOMETER



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

Ethernet thermometer is designed for ambient temperature measurement and measurement from up to four external temperature cable probes. Measurement in degrees Celsius and degrees Fahrenheit supported. Ethernet thermometer is built in a durable plastic case. Ethernet interface enables to control thermometer via PC. The following communication modes are supported:

MODES OF COMMUNICATION

ModBus TCP:	Modbus TCP protocol enables to read measured values, set alarm limits, adjust the probe, read firmware version.
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 message to selected web server in preset interval 10-65535 s. In case message is not received by the server till next message is sent, warning trap 1/2 is sent.

ALARM OPTIONS

E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses).
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

Supported temperature units:	degrees Celsius, degrees Fahrenheit
Temperature sensor:	digital temperature sensor Dallas DS18B20
Range and accuracy of P8511, P8541:	-55 to +80 °C, accuracy ±0.5 °C from -10 to +80 °C
Range and accuracy of P8510 :	-30 to +80 °C, accuracy ±0.8 °C
Resolution:	0.1 °C
Measuring interval:	2 s
Operating temperature range:	-30 to +80 °C
Protection:	IP30
Temperature probe connector:	connector CINCH
LAN connection:	connector RJ-45
Power:	5Vdc, max. consumption 250mA, e.g. ac/dc adapter - see Optional accessory
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:	240 g



LOW COST INTELLIGENT ETHERNET THERMOMETER

Available thermometer models:



Thermometer P8510 with built-in temperature sensor



Single-channel thermometer P8511 for one cable probe DSTGL40/C



Four-channel thermometer P8541 for four cable probes DSTGL40/C

Included accessory:

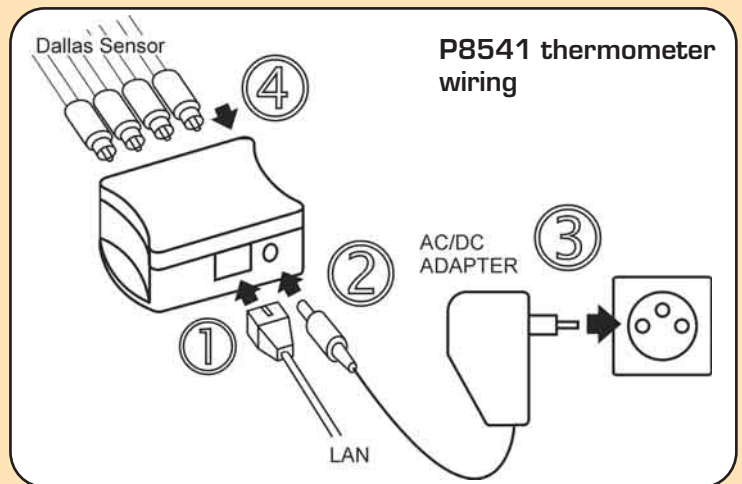
Traceable calibration certificate from the manufacturer, instruction manual. Calibration certificate with declared metrological traceability of etalons is based on requirements of EN ISO/IEC 17025 standard.

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

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 necessary to use. Tested functionality is with programs TIRS.NET, ControlWeb, EasyView.

For record of values to graphs via web interface, project Cacti www.cacti.net is available.



Optional accessory:



DSTGL40/C - temperature probes -30 to +80 °C with digital sensor Dallas DS18B20 with Cinch connector for thermometers P8511, P8541. Stainless steel 17241 with PVC cable of specified length. Diameter 5.7mm, length 40mm. Cable lengths 1,2,5 or 10 meters available.



MDO36 - self adhesive Dual Lock for easy installation



A1825 - ac/dc adapter 230V-50Hz/5Vdc

For power over Ethernet any PoE splitter is necessary - e.g. D-Link DWL-P50.



COMPACT TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS with Ethernet interface
 temperature * barometric pressure * relative humidity * dew point temperature * absolute humidity * specific humidity * mixing ratio * specific enthalpy



Transmitter T0510



Transmitter T3510, T7510

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

Ethernet sensor is designed for measurement of temperature, barometric pressure, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Degrees Celsius and Fahrenheit are user selectable. Large dual line LCD for simultaneous display of temperature, pressure or relative humidity or other calculated humidity interpretation is an advantage. Display is possible to switch off. 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.

Transmitter can be controlled by means of the PC. The following communication modes are supported:

MODES OF COMMUNICATION	
ModBus TCP:	Modbus TCP protocol enables to read measured values, set alarm limits, adjust the probe, read firmware version.
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 message to selected web server in preset interval 10-65535 s. In case message is not received by the server till next message is sent, warning trap 1/2 is sent.

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).
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.



COMPACT TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS with Ethernet interface

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

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:	±1,8 °C at ambient temperature T < 25 °C and RH>30%, range -60 to +80
Accuracy of absolute humidity measurement:	±3g/m ³ at ambient temperature T < 40 °C, range 0 to 400 g/m ³
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 ₂ O, PSI, oz/in ²
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
Range of temper. compensation of RH sensor:	-30 to +80 °C
Filtering ability of sensor cover:	0.025mm
Protection:	case with electronics IP30, T+RH probe IP40
LAN connector:	connector RJ-45
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:	89 x 126 x 39.5 mm (W x H x D)
Mechanical dimensions T3510, T7510:	89 x 148 x 39.5 mm (W x H x D)

AVAILABLE TRANSMITTER 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. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH ₂ O, 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.

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 necessary to use. Tested functionality is with programs TIRS.NET, ControlWeb, EasyView.

For record of values to graphs via web interface, project Cacti www.cacti.net is available.

Optional accessories: - see further

Warranty: 2 years



PRECISE TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS with Ethernet interface
 temperature * barometric pressure * relative humidity * dew point temperature * absolute humidity * specific humidity * mixing ratio * specific enthalpy



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

Ethernet sensor is designed for measurement of temperature, barometric pressure, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Degrees Celsius and Fahrenheit are user selectable.

Large dual line LCD for simultaneous display of temperature, pressure or relative humidity or other calculated humidity interpretation is an advantage. Display is possible to switch off. 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.

MODES OF COMMUNICATION	
ModBus TCP:	Modbus TCP protocol enables to read measured values, set alarm limits, adjust the probe, read firmware version.
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 message to selected web server in preset interval 10-65535 s. In case message is not received by the server till next message is sent, warning trap 1/2 is sent.

ALARM OPTIONS	
E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses).
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
Accuracy of absolute humidity measurement:	±3g/m ³ at ambient temperature T < 40 °C, range 0 to 400 g/m ³
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



PRECISE TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS with Ethernet interface

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

TECHNICAL PARAMETERS - continuance	
Accuracy and range of barometric pressure:	±1.3hPa at 23 °C, range 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH ₂ O, PSI, oz/in ²
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:	-30 to +105 °C
Filtering ability of sensor cover:	0.025mm
Protection:	case with electronics IP30, T+RH probe IP40
LAN connector:	RJ-45 connector
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 OF TRANSMITTERS:

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 ₂ O, 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, cable + 80 °C max, optionally with cable up to +105 °C	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, cable + 80 °C max, optionally with cable up to +105 °C 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. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH ₂ O, PSI, oz/in ² Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

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

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.

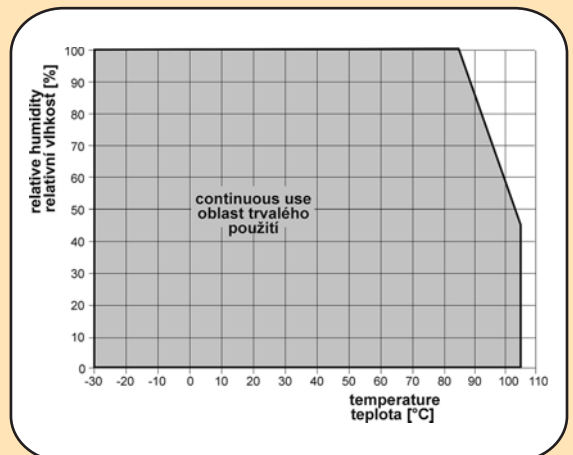
Free program TSensor for configuring of the transmitter is ready to download from www.cometsystem.cz.

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 necessary to use. Tested functionality is with programs TIRS.NET, ControlWeb, EasyView.

For record of values to graphs via web interface, project Cacti www.cacti.net is available.

Optional accessory: - see further





ETHERNET TEMPERATURE, HUMIDITY, PRESSURE SENSORS Hx531 WITH RELAY OUTPUTS

Preliminary - available from November



Transmitter H3531, H7531



Transmitter H4531

APPLICATION: monitoring of temperature, humidity, pressure and three binary signals:

- server and computer rooms
- building management and automation
- industrial Ethernet
- telecommunication devices
- warehouses, glasshouses
- air-conditioned rooms
- weather stations

Transmitter is equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact. Fully equipped transmitter contains temperature, humidity, pressure sensors. 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/in². Degrees Celsius and Fahrenheit are user selectable.

Large dual line LCD for simultaneous display of temperature, pressure or relative humidity or other calculated humidity interpretation is an advantage. Parameters are easy adjustable from transmitter 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. 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.

COMMUNICATION MODES

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 curves of measurement history and binary input states. User can design the look of www pages and temperature, humidity, pressure + computed values
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 transmitter enables to send actual measured data in the format of SOAP message to selected web server in preset interval 10-65535 s. In case message is not received by the server till next message is sent, warning trap 1/3 is sent.

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).
www pages:	In case of exceeding of adjusted temperature, humidity, pressure + computed value limits active alarm is displayed on www page.
SNMP:	In case of exceeding of adjusted temperature, humidity, pressure + computed value limits or binary input change 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. 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

Maximum switching power of the relay contact:	60 W, 62.5 VA, resistive load
Maximum switching voltage of the relay contact:	220 Vdc, 125Vac
Maximum switching current of the relay contact:	2 A
Operating relative humidity range:	0 to 100%
Accuracy of relative humidity:	±2.5% relative humidity from 5 to 95% at 23 °C
Accuracy of temperature:	±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

ETHERNET TEMPERATURE, HUMIDITY, PRESSURE SENSORS Hx531 WITH RELAY OUTPUTS

TECHNICAL PARAMETERS - continuation	
Accuracy and range of atmospheric pressure:	±1.3hPa at 23 °C, range 600 to 1100hPa
Supported pressure units:	hPa, kPa, mbar, mmHg, inHg, inH ₂ O, 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 +0.2 V
High voltage level:	+3.0 to +30V
Operating temperature range of the case:	-30 to +80 °C
Operating temperature range of the LCD	readable to operating temperature +70 °C
Temperature range of RH sensor compensation:	-30 to +105 °C
Filtering ability of RH 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
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:

MODEL	MEASURED VALUE	MAXIMUM RANGE OF MEASURED VALUES	DESCRIPTION
H4531	temperature+ 3 binary inputs	-200 to +600 °C	Temperature transducer for external probe with Pt1000/3850ppm sensor (not included), accuracy of the input without probe ±0.2 °C.
H3531	temperature+ 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. Measured values are also converted to other humidity interpretation - dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy.
H7531	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 of 18mm diameter, 88mm length 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. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH ₂ O, PSI, oz/in ² . Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.

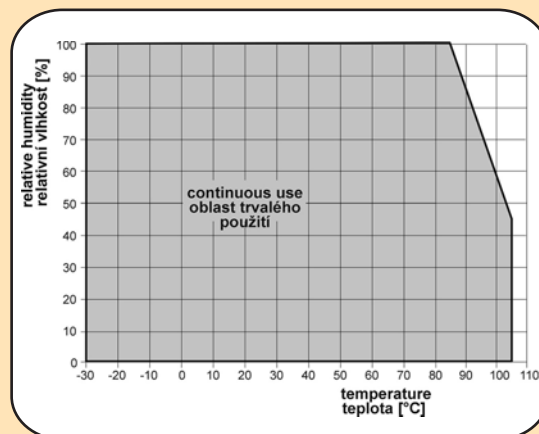
* Relative humidity at temperature over +85 °C is limited in accordance with the graph. Near plastic case with electronics and probe cable maximum temperature is +80 °C.

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 transmitter to a PC disk file is ready to download from www.cometsystem.cz. Recorded values in CSV format are easy to process in e.g. Excel.

Optional accessories:

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 /O. Other accessories - see further in catalogue.





TEMPERATURE, HUMIDITY, PRESSURE REGULATORS AND TRANSMITTERS Hxxxx

- RELAY OUTPUTS

- 4-20mA, RS485 OUTPUTS

Preliminary - available from November

APPLICATIONS:

- temperature and humidity control
 - monitoring of temperature, humidity, pressure and three binary signals:
- at server and computer rooms
 at air-conditioned rooms
 in building management and automation
 at warehouses, glasshouses
 in telecommunication devices
 in museums, archives, galleries
 in weather stations

Temperature and humidity regulators 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.

Fully equipped transmitter contains temperature, humidity, pressure sensors. 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 are available in these units: hPa, kPa, mbar, mmHg, inHg, inH₂O, PSI, oz/in². Degrees Celsius and Fahrenheit are user selectable. Parameters are easy adjustable from regulator keyboard or from the computer.

Large dual line LCD for simultaneous display of temperature, pressure or relative humidity or other calculated humidity interpretation 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.

Transmitter can be optionally equipped with three binary inputs for detection of two-state events - e.g. water, smoke, glass break detection, door contact.



Regulator H3020,
H3120

Regulator H3023

Regulator H3021,
H3431, H7431

COMMON TECHNICAL PARAMETERS

Maxim. switching current,voltage,power of the relay:	220 Vdc, 125Vac, 2A, 60W, 62,5VA
Operating relative humidity range:	0 to 100%
Accuracy of relative humidity:	±2.5% relative humidity at range 5 to 95% at 23 °C
Accuracy of temperature:	±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 RV>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
Operating temperature range of the case:	-30 to +80 °C
Operating temperature range of the LCD display:	readable up to operating temperature +70 °C
Temperature range of RH sensor compensation:	-30 to +125 °C
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 +0.2 V
High voltage level:	+3.0 to +30V
Filtering ability of RH sensor cover:	0.025mm - filter from stainless steel mesh
Power:	9-30Vdc
Dimension of the case with electronics (W x H x D):	135 x 136 x 45 mm
Protection of the case with electronics:	IP65 electronics with terminals, IP40 sensors

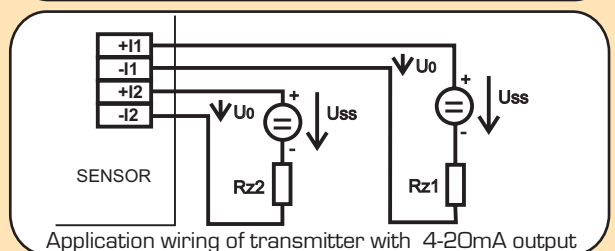
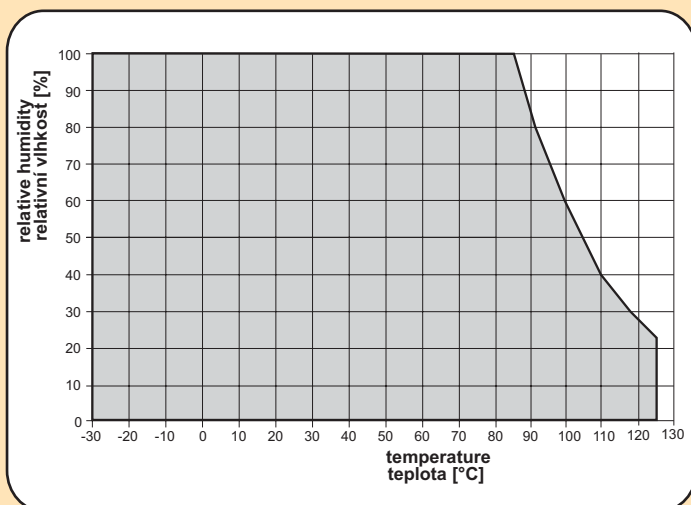


TEMPERATURE, HUMIDITY, PRESSURE REGULATORS AND TRANSMITTERS Hxxxx - RELAY OUTPUTS - 4-20mA, RS485 OUTPUTS

AVAILABLE MODELS:

MODEL	MEASURED VALUE	MAXIMUM MEASURING RANGES	STEM LENGTH	OUTPUT	OTHER OUTPUT	DESCRIPTION
H3020	temperat.+humidity	-30 to +80 °C	75mm	2x relay	-	outdoor and indoor use
H3023	temperat.+humidity	-30 to +125 °C ¹⁾	150mm	2x relay	-	duct mount
H3021	temperat.+humidity	-30 to +105 °C ¹⁾ probe including cable	probe cable 1,2,4m	2x relay	-	T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally.
H3120	temperat.+humidity	-30 to +80 °C	75mm	2x relay	2x4-20mA ²⁾	outdoor and indoor use
H3431	temperat.+humidity + 3 binary inputs	-30 to +105 °C ¹⁾ probe including cable	probe cable 1,2,4m	2x relay	RS485 ³⁾	T+RH probe of 18mm diameter, 88mm length with 1m cable. Cable lengths 2m or 4m available optionally.
H7431	temperat.+humidity+ barometric pressure + 3 binary inputs	-30 to +105 °C ¹⁾ probe including cable Pressure: 600 to 1100hPa accuracy: ±1,3hPa at 23 °C	probe cable 1,2,4m	2x relay	RS485 ³⁾	Thermometer-hygrometer-barometer. T+RH probe of 18mm diameter, 88mm length 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. Reading and pressure output in these units: hPa, kPa, mbar, mmHg, inHg, inH ₂ O, PSI, oz/in ²

- 1) Relative humidity at temperature over +85 °C is limited in accordance with the graph. Near plastic case with electronics and probe cable maximum temperature is +80 °C.
- 2) **Current outputs 4-20mA** are galvanically isolated. Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to any from both current outputs. Outputs are adjusted to maximum range from the manufacturer (-30 to +80 °C, 0 to 100%RH). Output range is user adjustable from the PC by means of the optional cable SPO03 - see photo. 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.
- 3) **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. Protocol is user selectable in special configuration mode by means of the PC. 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 0 to 255. Communication speed is 110 to 115200Bd.



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

Optional accessories - see further in catalog



INTERIOR TEMPERATURE, HUMIDITY, BAROMETRIC 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 $\pm 0,5$ °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: $\pm [1,3hPa + 0.06\%$ 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 ₂ O, 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 $\pm 0,5$ °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: $\pm [1,3hPa + 0.06\%$ 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 ₂ O, 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, BAROMETRIC PRESSURE TRANSMITTERS with analog 4-20mA, 0-10V output

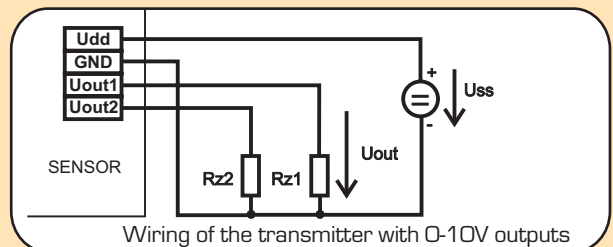
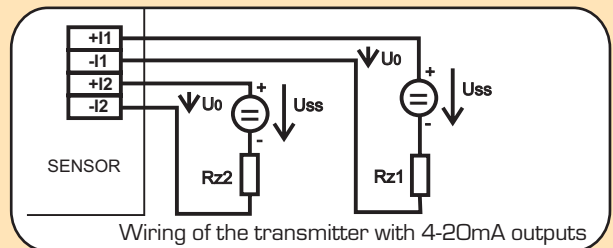
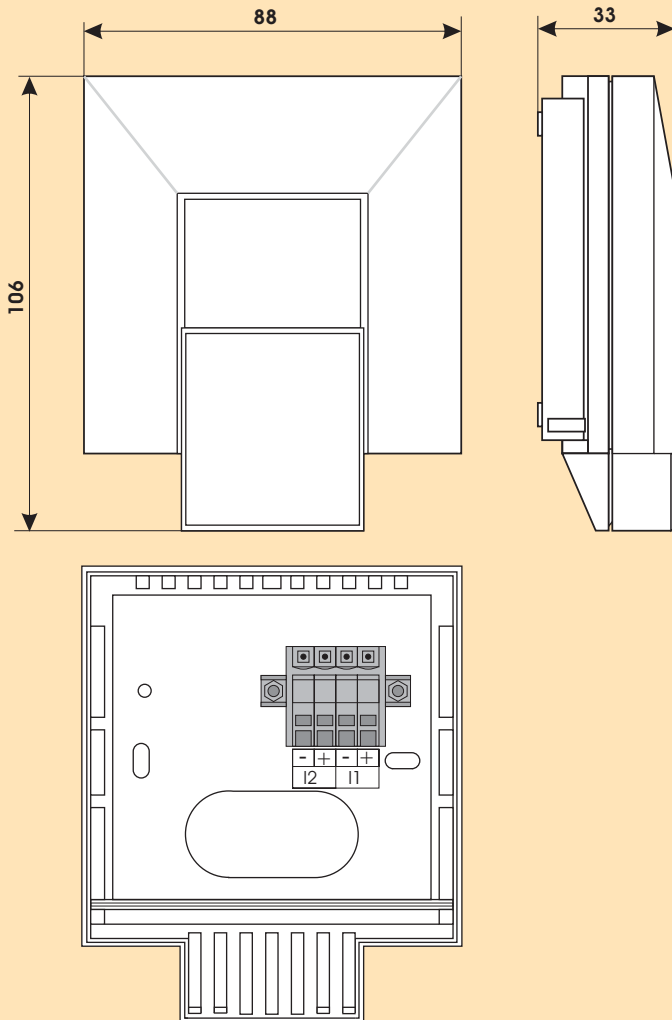
temperature * barometric pressure * relative humidity * dew point temperature * absolute humidity * specific humidity * mixing ratio * specific enthalpy

TECHNICAL PARAMETERS OF TRANSMITTERS T3118, T3218	
Measuring range of relative humidity:	5 to 95%
Accuracy of relative humidity measurement:	$\pm 2.5\%$ RH from 5 to 60%RH, $\pm 3.0\%$ 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:	± 3 g/m ³ at ambient temperature T < 40 °C, range 0 to 400 g/m ³
Accuracy and range of specific humidity:	± 2 g/kg at ambient temperature T < 35 °C, range 0 to 550 g/kg
Accuracy and range of mixing ratio:	± 2.2 g/kg at ambient temperature T < 35 °C, range 0 to 995 g/kg
Accuracy and range of specific enthalpy:	± 3.5 kJ/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 each output of dual output T3118 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 SPO03 - see below. Free configuration program 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 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



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.

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



INTERIOR TEMPERATURE, HUMIDITY, BAROMETRIC 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:

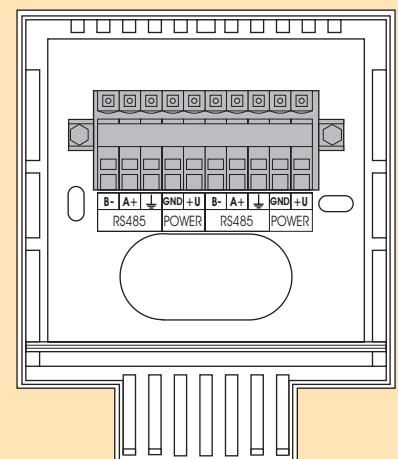
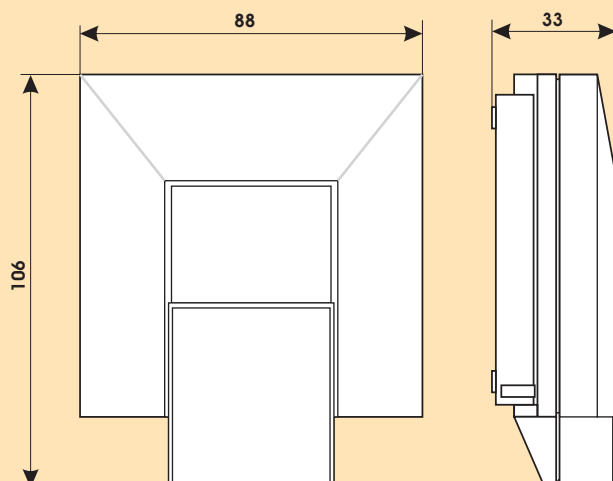
- residential and official buildings
- building energy management and HVAC systems
- pharmaceutical industry
- museums, archives, galleries

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. 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. Protocol is user selectable in special configuration mode by means of the PC. 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 address space available from 1 to 255.



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
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





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

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.
T7418	temperature humidity barometric 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 ₂ O, 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 transmitter. 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 barometric 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 ₂ O, 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 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.

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

Transmitters Tx418 with RS485 output are directly compatible with sixteen channel Comet data acquisition system MS5D, MS5.

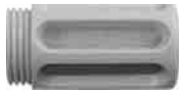




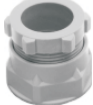


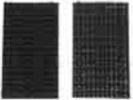





OPTIONAL ACCESSORIES FOR HUMIDITY TRANSMITTERS

	Order code TxxxL	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. TxxxL)
	K1427	Female connector ELKA 4012PG7 for TxxxL transmitters with male connector Lumberg for easy connection/disconnection of the output. Cable is easily connected to screw terminals of the connector. IP67 protection.
		Transmitter version with blind lid without LCD. Specify please the requirement in your order.
		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.
	SPO03	Cable for transmitter adjustment via USB port - for models Tx11x, Tx21x with analog outputs.
	F8000	Solar radiation shield.



OPTIONAL ACCESSORIES FOR HUMIDITY TRANSMITTERS

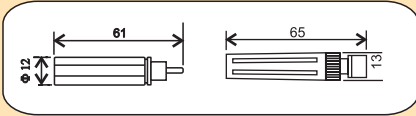
	Order code	
 	<p>F5200</p> <p>F5200B</p>	<p>grey sensor cover with filter from stainless steel mesh, filtering ability 0,025mm</p> <p>black sensor cover with filter from stainless steel mesh, filtering ability 0,025mm</p>
	<p>F0000</p>	<p>spare sintered bronze sensor cover. Filtering ability 0.025mm.</p>
	<p>PP4</p>	<p>flat plastic circular flange for duct mounting</p>
	<p>PP90</p>	<p>right-angled stain-less steel flange for wall mounting</p>
	<p>SP004</p>	<p>plastic gland for direct mounting of the humidity probe to a 29 mm diameter hole</p>
	<p>SP005</p>	<p>tool for easy wire connection to WAGO terminals Wago - for transmitters with current and voltage output</p>
	<p>SP006</p>	<p>tool for easy wire connection to WAGO terminals Wago - for transmitters with serial output RS485 and RS232</p>
	<p>MDO36</p>	<p>self adhesive Dual Lock for easy installation</p>
	<p>A1515</p>	<p>ac/dc adapter 230V-50Hz/12Vdc for Ethernet transmitters - with co-axial connector</p>
	<p>A1510</p>	<p>ac/dc adapter 230V-50Hz/12Vdc for serial output transmitters - for connection to terminals</p>
	<p>MDO46</p> <p>HMO23</p> <p>HMO24</p>	<p>ACCESSORIES FOR EASY RELATIVE HUMIDITY CALIBRATION AND ADJUSTMENT</p> <p>stainless steel vessel for relative humidity calibration and adjustment</p> <p>set of 5 humidity standards 10% RH with 5 application pads</p> <p>set of 5 humidity standards 80% RH with 5 application pads</p>



TEMPERATURE PROBES

with RTD Pt1000 sensor

tolerances class "A" IEC751 $\pm(0.15+0.002t)$



Fast precise air probe -30 to +80°C for direct insertion to the connector.

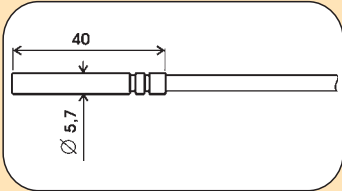
Tolerance: $\pm(0.1+0.0017t)$

Response time: $t_{63} < 10s$, $t_{95} < 30s$ (air flow 1m/s)

Probe is not resistant against moisture.

type 200-80/E with female connector K1321 for loggers Sxxxx, Rxxxx

type 200-80/C with male Cinch connector for Commeter DO211, DO221, DO241



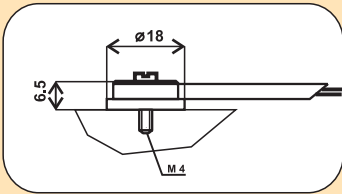
Low cost multipurpose watertight probe (IP67), stainless steel 17241, with PVC cable of specified length, range -30 to +80°C, available with cable lengths 1, 2, 5 and 10 meters.

Response time: $t_{63} < 10s$, $t_{95} < 30s$ (in fluid), $t_{63} < 60s$, $t_{95} < 150s$ (air flow 1m/s)

type Pt1000TGL40/O - cable with tin coated wires for transducers and monitoring system MS

type Pt1000TGL40/C - cable with male Cinch connector for Commeter models DO2x1

type Pt1000TGL40/E - cable with female connector K1321 for logger range Sxxxx, Rxxxx



Multipurpose watertight probe (IP67), stainless steel 17241, with silicone cable of specified length, range -80 to +200°C, available with cable lengths 1, 2, 5 and 10 meters.

Response time: $t_{63} < 10s$, $t_{95} < 30s$ (in fluid), $t_{63} < 60s$, $t_{95} < 150s$ (air flow 1m/s)

type Pt1000TG8/O - cable with tin coated wires for transducers and monitoring system MS

type Pt1000TG8/C - cable with male Cinch connector for Commeter models DO2x1

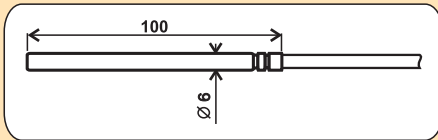
type Pt1000TG8/E - cable with female connector K1321 for logger range Sxxxx, Rxxxx

Brass surface probe with cable of specified length, range -30 to +200°C. Mounting by a M4 screw or fixing by a self adhesive tape. Available cable lengths 1, 2, 5 and 10 meters. Probe is not resistant against moisture.

type Pt1000TG7/O - cable with tin coated wires for transducers and systems MS

type Pt1000TG7/C - cable with Cinch connector for Commeter models DO2x1

type Pt1000TG7/E - cable with connector K1321 for logger range Sxxxx, Rxxxx

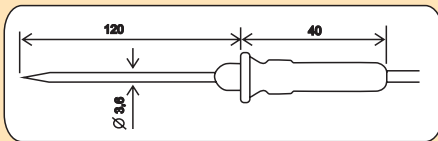


Multi-purpose probe e.g. for dryers, soldering machines etc. Measuring range 0 to +350°C. Cable with metal shielding is resistant up to 400°C. Cable lengths 1, 2, 5 or 10 meters available. Probe is not resistant against moisture.

type Pt1000TRO50/O - cable without connector for transducers and system MS

type Pt1000TRO50/C - cable with Cinch connector for Commeters DO2x1

type Pt1000TRO50/E - cable with connector K1321 for loggers Sxxxx, Rxxxx



Hand held pointed tip probe -30 to +220°C, 1 meter cable.

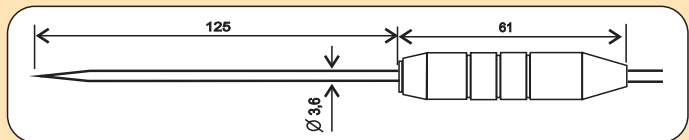
Probe is not resistant against moisture.

Time response: $t_{63} < 10s$, $t_{95} < 30s$ (measured in fluid)

type 2301-220/O - cable with tin coated wires

type 2301-220/C - with male Cinch connector

type 2301-220/E - with female connector K1321



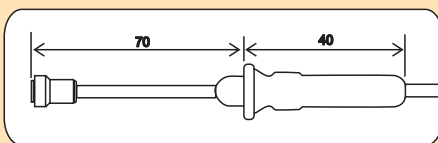
Hand held pointed tip probe -30 to +250°C, stainless steel 17241 for food industry, teflon handle, teflon cable 1 meter, IP67

Time response: $t_{63} < 7s$, $t_{95} < 15s$ (measured in fluid)

type 2061-250/O - with tin coated wires for transducers and MS

type 2061-250/C - with male Cinch connector for Commeters

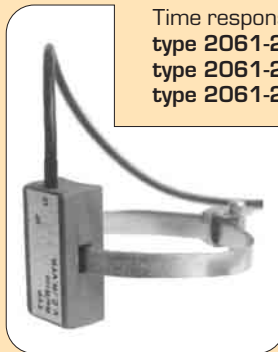
type 2061-250/E - with female connector K1321 for S/Rxxxx



Direct surface probe -30 to +150°C with 1 meter cable.

Probe is not resistant against moisture.

type 2031-150/C - with male Cinch connector only in tolerance class B (IEC 751)



Surface probe for tubing and flat surface, range -30 to +130°C, 2 meters cable, IP65

type PTS350-2/O

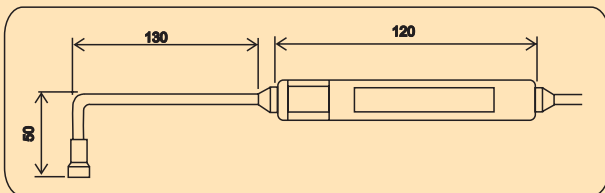
- cable with tin coated wires for transducers and MS

type PTS350-2/C

- with male Cinch connector

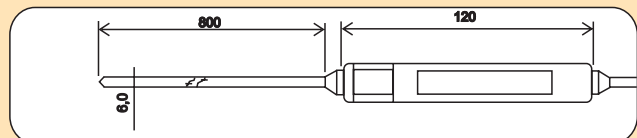
type PTS350-2/E

with female connector K1321



Right angled surface probe -30 to +150°C with 1 meter cable. Probe is not resistant against moisture.

type 2032-150/C - with male Cinch connector only in tolerance class B (IEC 751)



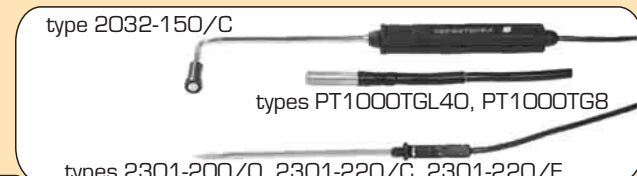
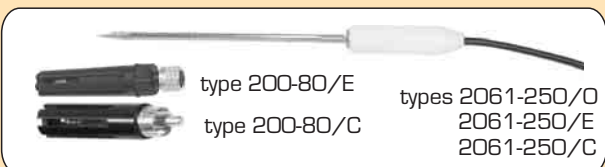
Multi purpose probe -30 to +150°C with 1 meter cable.

Probe is not resistant against moisture.

type 2021-150/O - with tin coated wires for transducers and MS

type 2021-150/C - with male Cinch connector for Commeters

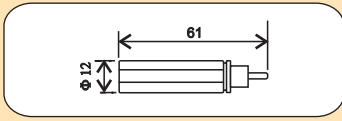
type 2021-150/E - with female connector K1321 for S/Rxxxx





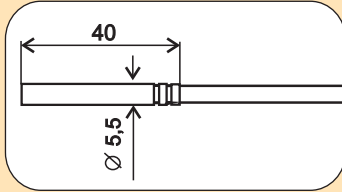
TEMPERATURE PROBES with RTD Ni1000/6180ppm sensor

tolerances $\pm(0.15+0.002t)$

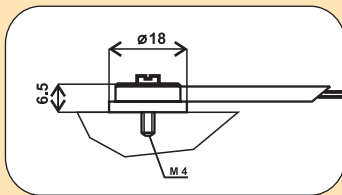


air probe -30 to +80 °C with male connector Cinch for direct insertion to connector of Commeter and T-Print thermometers **type 100-60**

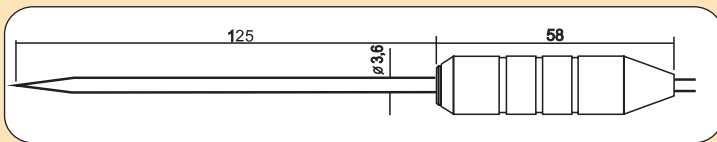
Do not use in new applications - will be replaced by Pt1000 probes



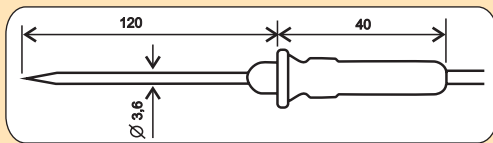
multipurpose watertight (IP67) probe with cable of specified length, range -50 to +200 °C. Available with cable lengths 1, 2, 5, 10 or 15 meters - please specify
type N1ATG8/O - cable with tin coated wires for MS2, MS3, MS4 loggers
type N1ATG8/C - cable with male connector Cinch for Commeter and T-PRINT thermometers
type N1ATG8U/C - multi purpose watertight (IP67) probe -30 to +80 °C with the PVC cable. Available at the cable length 5, 10 or 15 meters. For T-Print dataloggers.



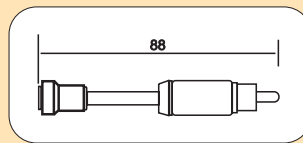
brass surface probe with cable of specified length, range -30 to 200 °C. Mounting by a M4 screw or fixing by a self adhesive tape. Available with cables 1, 2, 5, 10 or 15 meters - please specify.
type N1ATG7/O - cable with tin coated wires for MS2, MS3, MS4 loggers
type N1ATG7/C - cable with male connector Cinch for Commeter and T-PRINT thermometers



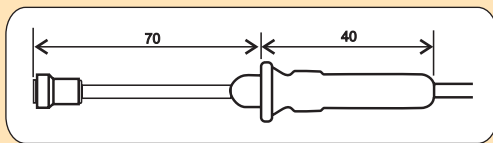
hand-held pointed tip probe -30 to +200 °C for food industry, teflon handle, cable length 1 meter
type 0061-200/O - with tin coated wires
type 0061-200/C - with male connector Cinch



hand-held pointed tip probe -30 to 220 °C, 1 meter cable
type 301-220/O - with tin coated wires
type 301-220/C - with male connector Cinch



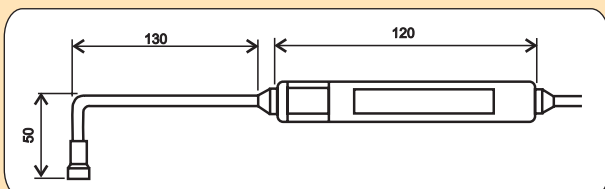
miniature surface probe -10 to +60 °C with Cinch male connector for direct insertion to Commeter instruments **type 031-60**



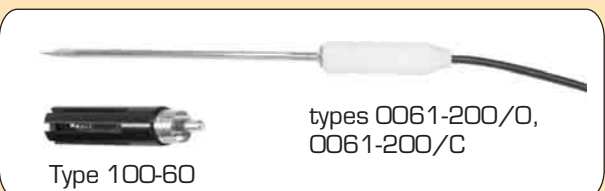
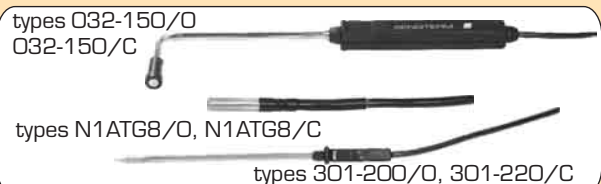
direct surface probe -30 to 150 °C, 1 meter cable
type 031-150/C - with male connector Cinch



surface probe for tubing and flat surface range -30 to +130 °C, cable length 2 meters
type NS151-2/O - with tin coated wires
type NS151-2/C with male connector Cinch



right-angled surface probe -30 to 150 °C, 1 meter cable
type 032-150/C - with male connector Cinch



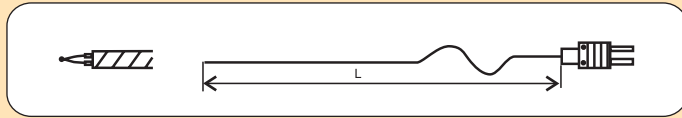
Type 100-60

types 0061-200/O,
0061-200/C



TEMPERATURE PROBES with type K thermocouple for thermometers C0311, D0311, C0321, D0321 and for monitoring systems MS5D, MS5

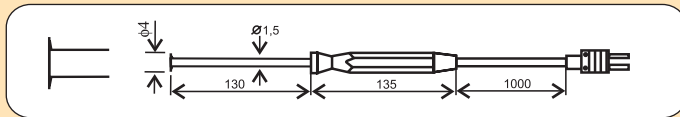
Probe tolerances: class 1 in accordance with IEC584-2 $\pm 1.5^{\circ}\text{C}$ or $\pm 0.004 \times t$ (whichever is greater)



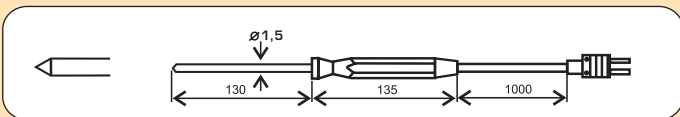
Fast response multi-purpose wire probe
lengths 1m, 2m, 3m, 4m

- 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 connection to MS5
- type GD 700/0** -65 to 700 °C duplex insulated - glass, 2mm diameter, connection end - uninsulated wires for connection to MS5
- type GD 1250/0** -65 to 980 °C duplex insulated - Nextel ceramic, 4mm diameter, connection end - uninsulated wires for connection to MS5

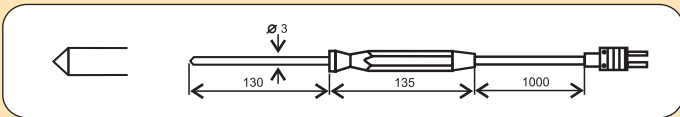
SNP04 self-adhesive labels 25x40 mm to secure wire probes to surfaces, temperature range -70 to 260 °C, package of 20 labels



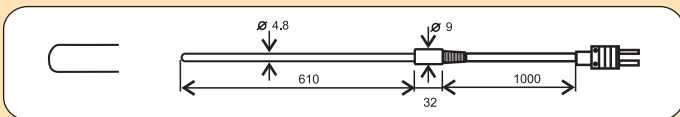
Fast response surface probe
for flat surface
type CP 500 -65 to 500 °C



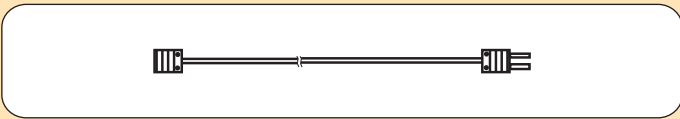
Fast penetration needle probe
for soft materials
type CZ 550 -65 to 550 °C



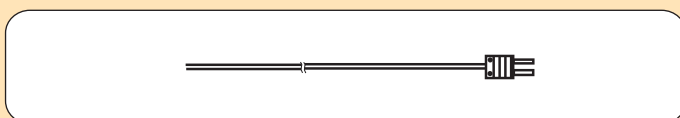
Penetration needle probe
for soft materials
type CZ 900 -65 to 1000 °C



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/O 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

