CATALOG OF MEASUREMENT INSTRUMENTS
May 2007

TEMPERATURE LOGGERS

- ☐ **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 signal from a contact. 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.

Logger SO141 (SO841) with USB adapter

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 model 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

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

start/stop magnet

Types	LOGGERS WITH DISPLAY	Input signals	Measuring range
S0110 **SINGLE CHANNEL THERMOMETER** with internal sensor		1xT	-30 to +70˚C
S0111 **SINGLE CHANNEL THERMOMETER** for temperature logging from one external probe		1xT	-90 to +260˚C
S0121 **DUAL CHANNEL THERMOMETER** for temperature logging from two external probes, including temperature difference between channels		2xT	-90 to +260˚C
S0122 **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
S0141 **FOUR CHANNEL THERMOMETER** for temperature logging from four external probes		4xT	-90 to +260˚C
S0841 **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
Types	LOGGERS WITHOUT DISPLAY	Input signals	Measuring range
R0110 **SINGLE CHANNEL THERMOMETER** with internal sensor		1xT	-40 to +80˚C
R0110E ECONOMY THERMOMETER with internal sensor with measuring accuracy: ±0.6˚C from -30 to +30˚C and ±0.8˚C to +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 connector for input signals connection of model S0841 is necessary to order.

INCLUDED ACCESSORIES: Calibration certificate from the manufacturer, 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.

R0110, R0110E

F9000 - wall holder

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 S0111, S0121, S0122, S0141, S0841 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 M1306B, 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

WARRANTY: 2 years

RELATIVE HUMIDITY AND TEMPERATURE LOGGERS

- **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.

S3120 logger

- easy user ajdjustment 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 R0110
Operating temperature range of display loggers S3xxx:	-30 to +70°C
Accuracy of the Pt1000 input without probe :	±0.2°C from -50 do +100°C
(S3631 logger) :	±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 senor 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

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

start/stop magnet

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 (±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
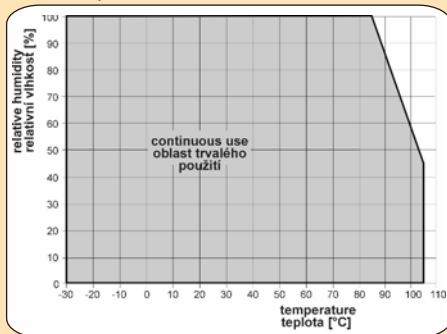
Thermo-hygrometer S3541
with additional inputs 0 to 5V

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: Calibration certificate from the manufacturer, 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 M1306B, 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
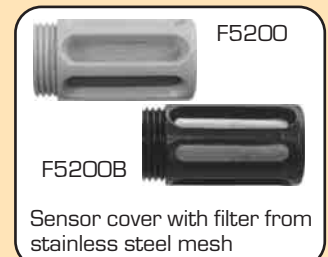
F9000-wall holder with lock

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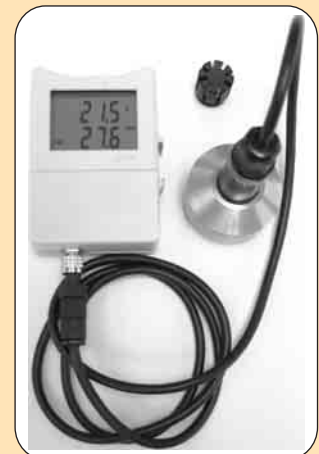
LOGGERS for current 0-20mA, voltage 0-5Vdc and binary signal

- 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 uA (contact closed)
Voltage accross open contact at binary input:	maximum 3.6 V
Low voltage level at binary input:	0 to +0.2 V (maximum current from the input 3 uA
High voltage level at binary input:	+3.0 to +30 V (maximum current to the input 100 nA
Logging interval:	adjustable from 10s to 24hours
Display refresh and alarm state refresh:	every 10 s
Total memory capacity:	32000 values (in non cyclic mode)
Logging modes:	**noncyclic** logging stops after filling the memory **cyclic** after filling memory oldest data is overwritten by new
Operation temperature range:	-30 to +70˚C
Real time clock:	year, leap year, month, day, hour, minute, second
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:** Calibration certificate from the manufacturer, 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

KO945 - adapter with terminals for easy connection of signals

COM adapter and USB adapter for communication with the PC

KO921 - 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, T-PRINT-2 TEMPERATURE DATALOGGERS WITH BUILT-IN PRINTER

Datalogger T-PRINT is designed for logging temperature from one external probe into its internal memory. Datalogger T-PRINT-2 logs temperature from two external probes. Anytime it is possible to print out the record on the built in needle printer. The result is a hardcopy on the strip of paper of 58mm width. Format is numerical with date, time, place of measurement (vehicle, cold store). It is possible to repeat the print out from the last stored temperature to the past until a button is pressed to stop printing. Consequently it is easily possible to print out a hardcopy of transport conditions to every client.

It is also possible to transfer logged data into a PC. Then it is possible to analyze and print out temperature in numerical and graphic format. The PC software enables to erase datalogger memory, set logging interval, set internal real time clock. It also enables to enter the place of measurement (vehicle) to printout heading. After datalogger memory is full, datalogging continues and the oldest stored values are cyclically being replaced by the Newest.

The T-PRINT datalogger memory is fulfilled in 40 days of continuous record with logging interval of 5 minute or 4 months with 15 minutes sampling interval. Memory fulfilling times of dual channel datalogger T-PRINT-2 are 20 days/5minute interval and 2 months/15 minute interval.

TECHNICAL PARAMETERS

Measuring temperature range:	-50 to +250°C
Operating temperature range:	-30 to +65°C
Operating temperature range of the printer:	-20 to +65°C
Temperature sensor type:	RTD Ni1000, 6180ppm/°C
Accuracy of the input without probe:	±0.2°C from -50 to +100°C, ±0.2% from reading +100 to +250°C
Resolution:	0.1°C
Connector for temperature probe:	CINCH
Logging interval:	1 minute to 24 hours, user adjustable
Memory capacity:	12192 values of temperature maximum
Power:	9 to 32V dc, protected against alternator load shedding + internal lithium battery 3.6V, 5 years of minimum life - internal clock back-up
Current consumption during print-out:	peak 2 A
Current consumption - not printing:	approximately 50 mA
Dimensions (H x W x D), weight:	180 x 123 x 66 mm, weight 600 grams
Protection:	IP 20

Tested by accredited laboratory in accordance with the European Standard EN12830 - Temperature recorders for the transport, storage and distribution of chilled and frozen food.

It is necessary to order temperature probe with the Ni1000/6180ppm sensor. Recommended is the multi-purpose watertight probe N1ATG8U/C on the PVC cable with Cinch connector. Range of the probe -30 to +80°C. Please specify required cable length 5, 10 or 15 meters.

Warranty: two years

T-PRINT, T-PRINT-2 TEMPERATURE DATALOGGERS WITH BUILT-IN PRINTER

```
COMET T-PRINT-2          V1.1
SERIAL NUMBER: 99180039
PLACE: VEHICLE *BN CC 230*
PRINT: 12.01.2001 12:16
INTERVAL: 1 min.

T1(˚C): FROZEN SECTION
T2(˚C): CHILLED SECTION

12.01.2001    T1     T2
  10:20      -21.2   6.1
  10:25      -21.3   6.0
  10:30      -21.2   6.1
  10:35      -21.1   6.0
  10:40      -21.2   6.1
  10:45      -21.3   6.2
  10:50      -21.2   6.1
  10:55      -21.3   6.0
  11:00      -21.2   6.1
  11:05      -21.3   6.0
  11:10      -21.2   6.1
  11:15      -21.1   6.2
  11:20      -21.2   6.1
  11:25      -21.3   6.2
  11:30      -21.2   6.1
  11:35      -21.3   6.0
  11:40      -21.2   6.1
  11:45      -21.3   6.0
  11:50      -21.2   6.1
  11:55      -21.1   6.0
  12:00      -21.2   6.1
  12:05      -21.3   6.2
  12:10      -21.2   6.1
  12:15      -21.3   6.0
```

Datalogger is designed for installation at driver's cabin. Connected temperature probes are located in chilled or frozen space. Anytime it is possible to print out the record. Low cost operation is the advantage. Needle printer requires only usual paper in 58mm rolls of 30 meters length. One roll of the paper enables to print out 9000 lines of record. Life of ribbon cassette enables to print out 3 rolls of paper.

Included accessory: calibration certificate from the manufacturer, PC cable, internal Lithium battery 3.6V for supplying the internal clock, ribbon cassette, roll of paper, self adhesive Dual Lock for easy installation. 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:
- **SW100** - CD with free PC program
- probes with Ni1000/6180 RTD sensor with Cinch connector
  - probe marking followed by letter /C
- **MP006** - RS232/USB converter for communication with the PC via USB port
- **A1536** - mains ac/dc adapter 230V-50Hz/12V-500mA
- **A4203** - spare Lithium battery 3.6V
- **PR002** - spare roll of paper for printer, width 58mm,
  length 30m 9000lines of record
- **DPN-290BL** - spare ribbon cassette for printer,
  life 3 printed out rolls of paper
- **SWR004** - optional software for Windows
  color print, vertical and time zooming of graphs and other functions

Warranty: two years

COMMETER 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:	**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	

COMMETER 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:

Calibration certificate from the manufacturer is included in all instruments. 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 leather bag. 9V battery is included.
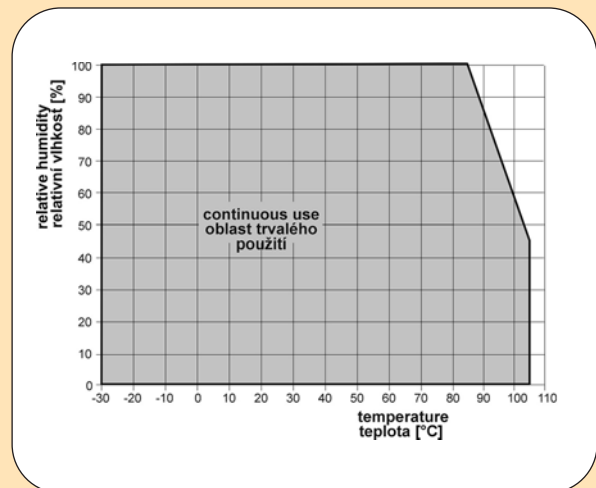
OPTIONAL ACCESSORY:

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

COMMETER 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: Calibration certificate from the manufacturer, 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.

COMMETER 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:	**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:**
  Calibration certificate from the manufacturer is included in all instruments.
  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 leather bag. 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

Warranty: two years

UNIVERSAL MONITORING SYSTEM
MS5D, MS5
Preliminary ! Available from July 2007

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)
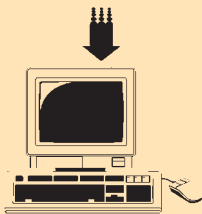
Sixteen channel dataloggers are designed for recording of values from transducers of variety of quantities, alarm state indication, and process control. Parameters of inputs are defined by the types of installed input modules. Datalogger with transducers configured accordingly to client order can measure 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:

ALARMING via - ANALOG or GSM MODEM
- SMS
- E-MAIL, SNMP TRAP
- PHONE DIALER
- AUDIBLE SIGNAL

AUDIBLE

COMMUNICATION via - USB
- RS232
- RS485
- ETHERNET
- GSM

SMS

GSM modem

PHONE DIALER

ALARM OUTPUTS:
- RELAY CONTACT
- VOLTAGE SIGNAL

EXTERNAL DISPLAY & KEYBOARD

ETHERNET, RS485

OUTPUTS

INPUTS

temperature

OUTPUT RELAYS MODULE

CONTROLLED DEVICE

CONTROLLED DEVICE

CONTROLLED DEVICE

interior temperature, humidity, pressure

temperature transducer

OTHER MONITORED DEVICES

temperature, humidity, pressure probe

temperature, humidity, pressure probe

temperature transducer

UNIVERSAL MONITORING SYSTEM
MS5D, MS5

TABLE OF INPUTS			
TYPE	MEASURED VALUE	ACCURACY	NOTE
AO	dc current 4 to 20 mA	±0.1% FS	With source approximately 21V for two-wire transducers with current loop (e.g. temperature and humidity transducers Comet). Only galvanically not isolated.
A1*	dc current 4 to 20 mA	±0.1% FS	for passive sensing of current
BO*	dc current 0 to 20 mA	±0.1% FS	
B1*	dc current 0 to 1A	±0.1% FS	
B2*	dc current 0 to 5A	±0.1% FS	
CO	ac current 0 to 20mA	±1% FS	galvanically isolated
C1	ac current 0 to 1A	±1% FS	galvanically isolated
C2	ac current 0 to 5A	±1% FS	galvanically isolated
DO*	dc voltage 0 to 100mV	±0.1% FS	
D1*	dc voltage 0 to 1V	±0.1% FS	
D2*	dc voltage 0 to 10V	±0.1% FS	
D5*	dc voltage -10 to +10V	±0.1% FS (±20mV)	**New !**
D4*	dc voltage +75V	±0.1% FS	**New !**
EO	ac voltage 0 to 100mV	±1% FS	galvanically isolated
E1	ac voltage 0 to 1V	±1% FS	galvanically isolated
E2	ac voltage 0 to 10V	±1% FS	galvanically isolated
E4	ac voltage 0 to 50V	±1% FS	**New !** galvanically isolated
F*	measurement of resistance	±0.1% FS	two-wire connection
J*	input for Nickel RTD temperature sensor Ni1000, 6180 ppm/˚C, range -50 to +250˚C	-50 to 100˚C±0.2˚C 100 to 250˚C ±0.2% from reading	two-wire connection
K*	input for Platinum RTD temperature sensor Pt100, range -140 to +600˚C	-140 to+100˚C ±0.2˚C 100 to 600˚C±0.2% from reading	two-wire connection
K1*	input for Platinum RTD temperature sensor Pt1000, range -140 to +600˚C	-140 to+100˚C ±0.2˚C 100 to 600˚C ±0.2% from reading	two-wire connection available also with sensors and transmitters
K3	precise input for RTD temperature sensor Pt1000, range -10 to +50˚C	±0.06˚C	**New !** Two-wire connection. Only galvanically not isolated. Available also with sensors.
N*	thermocouple K (NiCr-Ni) range -70 to +1300˚C	±(0.3% + 1.5˚C) from reading	linearized, cold junction compensation
T*	thermocouple T (Cu-CuNi) range -200 to +400˚C	±(0.3% + 1.5˚C) from reading	linearized, cold junction compensation
O*	thermocouple J (Fe-Co) range -200 to +750˚C	±(0.3% + 1.5˚C) from reading	linearized, cold junction compensation
P*	thermocouple S (Pt10%Rh-Pt), range 0 to +1700˚C	±(0.3% + 1.5˚C) from reading from +200 to +1700˚C	linearized, cold junction compensation
Q*	thermocouple B (Pt30%Rh-Pt), range +100 to +1800˚C	±(0.3% + 1˚C) from reading from +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 ±(0.2% from reading + 1Hz), input voltage for state "H": 3 to 24Vdc, input current in state "H": approximately 7mA, minimum duration of input impuls: 30us, galvanically isolated	
FK	input for measurement of frequency contact switching	0 to 5kHz, resolution 1Hz, accuracy ±(0.2% from reading + 1Hz), maximum resistance of closed contact: 10 kohms, minimum resistance of open contact: 250 kohms, minimum duration of input pulse: 30us, galvanically unisolated	
RS	input for serial signal RS485 for devices supporting Advantech ADAM protocol	e.g. measurement from transmitters with RS485 digital output connected to the serial RS485 network. ADAM Advantech protocol , galvanically isolated	

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
Preliminary !

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 passeords
  - 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, 230400 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-mailu 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
Preliminary !
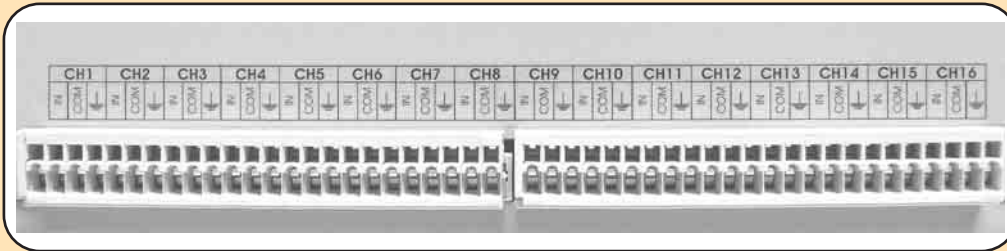
Terminals for input signal connection - each input has three terminals including shielding

Included accessory:

Calibračtion certificate from the manufacturer, 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:

	SWR003	Optional Windows program – comfortable graphic analysis, including on-line graph
	A1759	Universal ac/dc adapter 230V-50Hz/21Vdc/1A
	A5948	Switching power source 230V-50Hz/24Vdc/30VA for DIN 35mm rail, triple 24Vdc terminals
	MP013	Universal wall holders
	MP012	Holder for data logger installing to DIN 35mm rail
	M2007	Built-in LAN interface for data logger connection to Ethernet. In case of exceeding of set limits alarm is activated and warning e-mail or SNMP trap is sent to specified addresses.
	MP010	Built-in independent SMS port for GSM modem connection for reception and sending of SMS messages. Reception of information from data logger by means of SMS messages - actual values, alarms, memory occupation and other - as a reply to SMS query from the client or in case of alarm activation at data logger. Not necessary, if data logger is connected to the computer via GSM modem.
		Cover of connection cables

UNIVERSAL MONITORING SYSTEM MS5D, MS5

Preliminary !

	MP001	RS485/RS232 converter for serial port COMx of the PC, ac/dc adapter included
	M2002	External audio indication unit
	MP002	Telephone voice dialer for alarm reporting, ac/dc adapter included
	MP016	External user terminal with dualline LCD, control buttons and 32 alarm LEDs including connection cable - for easy mounting to a panel or a switchboard lid
	MP018	Output relay module with connection cable. It contains 16 mains relays 250V/8A with switching-over contact. Each relay can be controlled depending on creation of one or several alarms at different input channels in accordance with user program setting. Output relays are designed for control of external devices (switching of heating, cooling, fans, distant alarma and others.).
	MP009	GSM modem Fastrack M1306B, without accessories
	MP009/1 MP009/2 MP009/3	GSM antenna 3dB for modem Fastrack, right-angled Data cable for setting of GSM modem Fastrack Ac/dc source 230V/12V for powering of GSM modem Fastrack

Temperature, humidity, pressure transmitters Comet are directly compatible with the MS5D, MS5 data logger. Also complete monitoring systems with data logger and transmitters are available.

SELECTION TABLES OF TEMPERATURE, HUMIDITY, PRESSURE TRANSMITTERS
- detailed information follows

⬭___INDUSTRIAL TRANSMITTERS of Txx1x, Pxxxx family:

MEASURED VALUE /OUTPUT	4 to 20mA	0 to 10V	RS485	RS232	Ethernet
temperature	T0110 page26 T4111 page26 P0120 page23 Px1x1 page23		T0410 page33 T4411 page33	T0310 page35 T4311 page35	T4511 page31 P8511 page24 P8541 page24
humidity	T1110 page26				
barometric pressure	T2114 page26	T2214 page28	T2414 page33	T2314 page35	T2514 page31
temperature+humidity	T3110 page26 T3113 page26 T3117 page26 T3111 page26	T0210 page28 T0213 page28 T0211 page28	T3411 page33 T3413 page33 T3417 page33 T3419 page33	T3311 page35	T3511 page31
temperature+pressure			T5410 page33		
temperature+humidity +barometric pressure			T7410 page33 T7411 page33	T7310 page35 T7311 page35	T7511 page31

Illustrative pictures of mechanical construction of industrial transmitters.

150mm   700mm

⬭___INTERIOR TRANSMITTERS of Txx18 family:

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

Detailed information on models follows.

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 88 x 151 x 37mm
Protection:	IP65
Power:	9 to 30 V DC (typically 24 V)

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

Transduders 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 37mm
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 calibration certificate from the manufacturer Comet.   Warranty: 2 years

LOW COST INTELLIGENT ETHERNET THERMOMETER

APPLICATIONS

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

Ethernet thermometer is designed for temperature measurement from up to four temperature cable probes. Measurement in degrees Celsius and 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:

COMMUNICATION MODES	
ModBus:	Modbus protocol enables to read measured values, set alarm limits, adjust the probe.
Telnet:	Port 9999 enables to set alarm limits (lower, upper limits, hysteresis for temperature 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 values. Password protection of this port is enabled. Automatic IP address assignment from DHCP server is also enabled.
WWW pages:	User selectable design of www pages enabling to display curve of measurement history. User can design the look of www pages and temperature history.
SNMP:	It is possible to read actual values and alarm limits. In case of alarm creation warning message (trap) is sent to addresses defined by the user (maximum three addresses).
E-mail:	In case of alarm creation warning e-mail message is sent to addresses defined by the user (maximum three addresses). Synchronizing of time and record to www table and temperature history is enabled by SNTP via Internet.

TECHNICAL PARAMETERS	
Supported units:	degrees Celsius, degrees Fahrenheit
Applied temperature sensor:	digital temperature sensor Dallas DS18B20
Measuring range:	-30 to +80˚C
Accuracy:	±0.5˚C from -10 to +80˚C
Resolution:	0.1˚C
Measuring interval:	2 s
Operating temperature:	-30 to +80˚C
Protection:	IP30
Connection of temperature probes:	connector CINCH
Connection of LAN:	connector RJ-45
Power:	5Vdc, maximum consumption 250mA
Power connector:	co-axial, diameter 5 x 2.1 mm
Dimensions of the case (W x H x D)::	88 x 98 x 37 mm
Weight:	240 g
Warranty:	two years

LOW COST INTELLIGENT ETHERNET THERMOMETER

Available thermometer models:

Single channel thermometer P8511

Four channel thermometer P8541

Included accessory:

Calibration certificate of the temperature probe from the manufacturer, instruction manual. Free configuration program for thermometer adjustment is ready to download anytime from www.cometsystem.cz
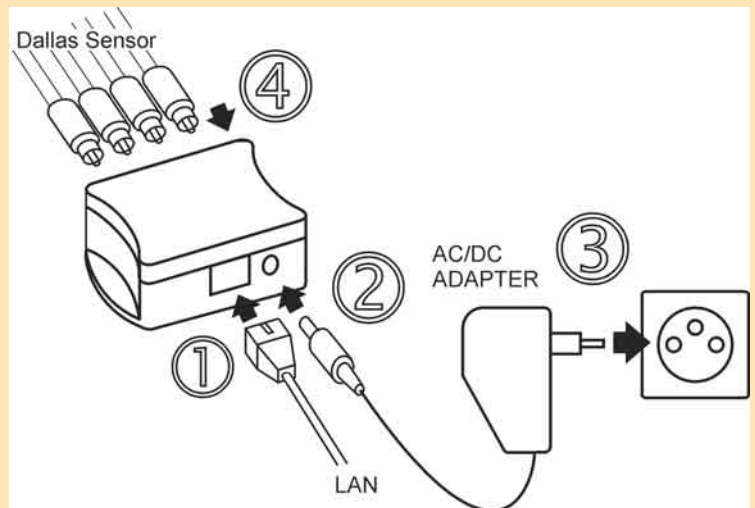
Wiring of thermometer P8541 with probes

Optional accessory:

DSTGL40/C - temperature probes -30 to +80˚C with digital sensor Dallas DS18B20 with the Cinch connector. Stainless steel 17241 with PVC cable of specified length. Diameter 5.7mm, length 40mm. Cable lengths 1,2,5 or 10 meters available.
Specify required cable length please.
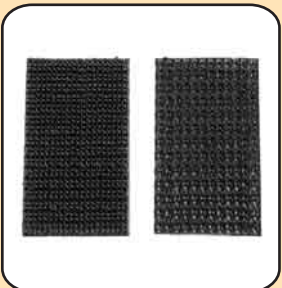
MD036 - self adhesive Dual Lock for easy installation

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

TEMPERATURE AND HUMIDITY TRANSMITTERS
with 4-20mA output

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

Transmitter T1110, T3110

Transmitter T3111

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

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/m³ at ambient temperature T < 40°C, range 0 to 400 g/m³
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 37mm
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.
T0110	T	-30 to +80˚C	53mm	-30 to +80˚C[2)]	-	outdoor and indoor use
T4111	T	-200 to +600˚C	-	-200to+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
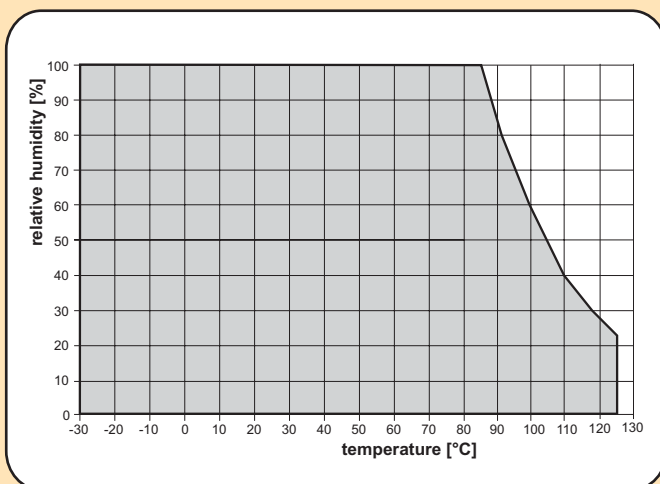
2) Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to each output of dual output transmitters. Also identical value can be assigned to both outputs. The T1110 transmitter has only relative 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 SP003 - 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 T0110

relative humidity [%] vs temperature [°C]

Optional cable SP003 for transmitter adjustment

Included accessory: calibration certificate from the manufacturer, instruction manual. Free configuration program for transmitter adjustment is ready to download anytime from www.cometsystem.cz

Comet probes with Pt1000 sensors are directly connectable to T4111 transducer - see further. There is a symbol /0 behind probe name.

Other optional accessory: see further

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

Application wiring of transmitter with one 4-20mA output

Application wiring of transmitter with two 4-20mA outputs
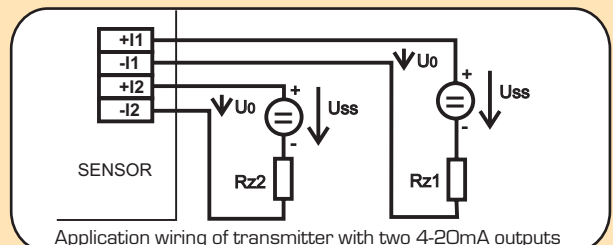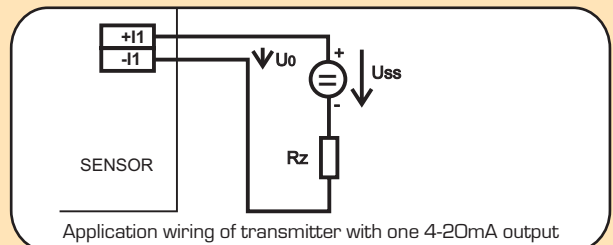
TEMPERATURE AND HUMIDITY TRANSMITTERS
with 0-10V output
temperature * relative humidity * dew point temperature *
absolute humidity * specific humidity * mixing ratio * specific enthalpy

Transmitter TO210

Transmitter TO211

Transmitter TO213

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/m³ at ambient temperature T < 40˚C, range 0 to 400 g/m³
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 37mml
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
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.

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 SP003 - 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

Optional cable SP003 for transmitter adjustment

Application wiring of transmitter with one 0-10V output

Included accessory: calibration certificate from the manufacturer, instruction manual. Free configuration program for transmitter adjustment is ready to download anytime from www.cometsystem.cz

Other optional accessory: see further

Application wiring of transmitter with two 0-10V outputs
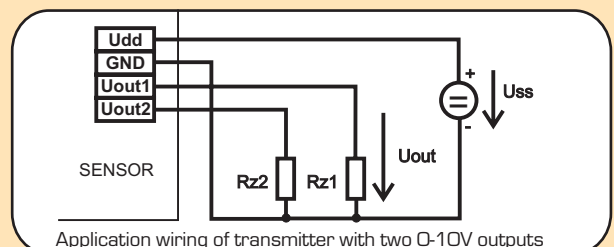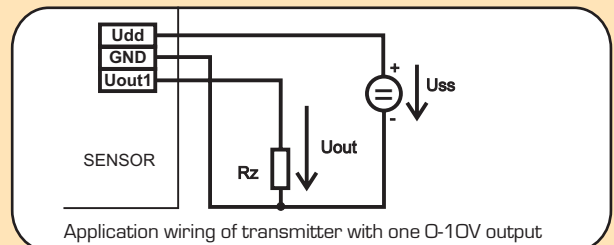
BAROMETER with 4-20mA or 0-10V output

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, inH_2O, PSI, oz/in^2.

TECHNICAL PARAMETERS	
Maximum measuring range:	600 to 1100 hPa
Output setting from the manufacturer:	800 to 1100hPa
Accuracy:	±(1.3hPa+0.06% from adjusted output span) at 23˚C from 800 to 1100hPa
Operating temperature range:	-30 to +80˚C
Operating temperature range of LCD display:	readable to +70˚C, it is recommended to switch OFF the LCD over +70˚C
Output range:	user adjustable from the PC
Power:	**9-30Vdc** transmitter with 4-20mA output
	15-30Vdc transmitter with 0-10V output, maximum consumption 20mA
Dimensions (W x H x D):	89 x 98 x 37mm
Protection:	IP54
Warranty:	two years

AVAILABLE BAROMETER MODELS:

T2114 - barometric pressure sensor with 4-20mA output

T2214 - barometric pressure sensor with 0-10V output

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

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

Cable SP003 for barometer setting - option

Included accessory:
Calibration certificate from the manufacturer, instruction manual. Free configuration program for adjustment and work with transmitter is ready to download anytime.

Wiring of barometer with 4-20mA output

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

Wiring of barometer with 0-10V output
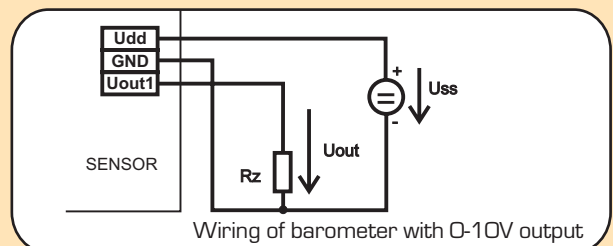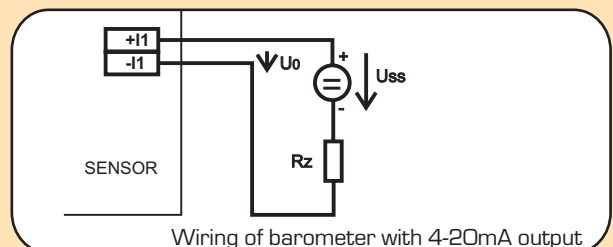
Barometer is directly compatible with sixteen channel Comet data acquisition system MS5D, MS5.

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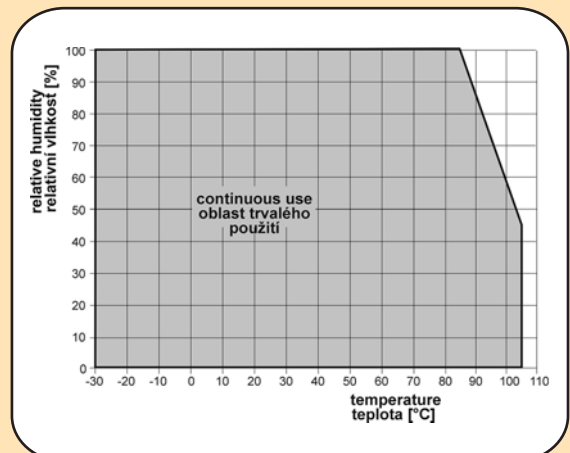## with Ethernet interface
temperature * barometric pressure * relative humidity * dew point temperature * absolute humidity * specific humidity * mixing ratio * specific enthalpy

Transmitter T3511, T7511

Barometer T2514

Transducer T4511

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

TECHNICAL PARAMETERS	
Accuracy of temperature measurement:	±0.4 ˚C
Supported temperature units:	degrees Celsius, degrees Fahrenheit
Measuring range of relative humidity:	0 to 100%
Accuracy of relative humidity measurement:	±2.5% relative humidity from 5 to 95% at 23 ˚C
Accuracy and range of dew-point temperature:	±1,5 ˚C at ambient temperature T < 25 ˚C and RH>30%, range -60 to +80 ˚C
Accuracy of absolute humidity measurement:	±3g/m3 at ambient temperature T < 40 ˚C, range 0 to 400 g/m3
Accuracy of specific humidity measurement:	±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

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_2O, 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 connector:	co-axial, diameter 5.5 x 2.1 mm
Mechanical dimensions of the case (W x H x D):	89 x 73 x 37 mm
Warranty:	two years

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_2O, PSI, oz/in^2 Barometer enables to measure sea level pressure by setting of correction to altitude above sea level.
T3511	temperature humidity	-30 to +105°C* probe, 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_2O, 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:
Calibration certificate from the manufacturer, instruction manual.
Free configuration program for adjustment and work with transmitter is ready to download anytime.

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/m³ at ambient temperature T < 40°C, range 0 to 400 g/m³
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, inH₂O, PSI, oz/in²
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 37 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

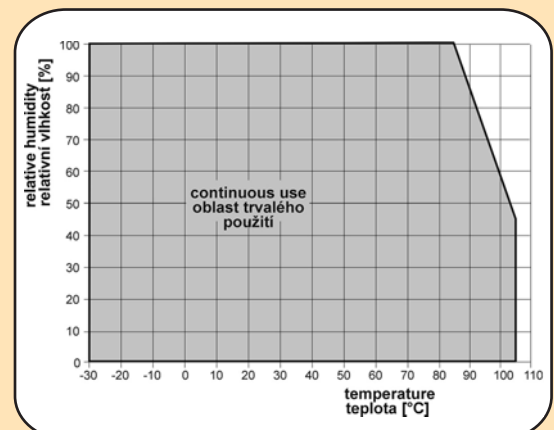## Included accessory:
- **Calibration certificate** from the manufacturer and instruction manual with the complete communication protocol description.
- **Free configuration program** for adjustment and work with transmitter is ready to download anytime.

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

Fig.5 Transmitter T3419, T7411

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 37 mm
Warranty:	two years

TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS
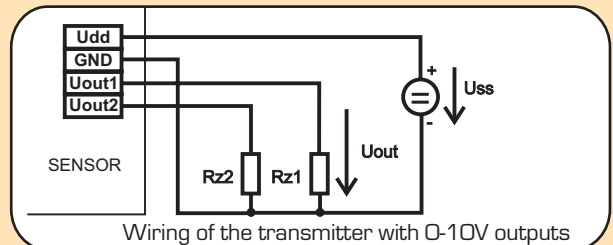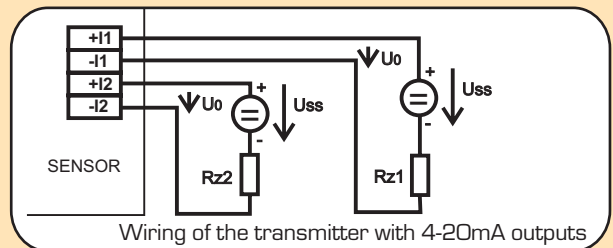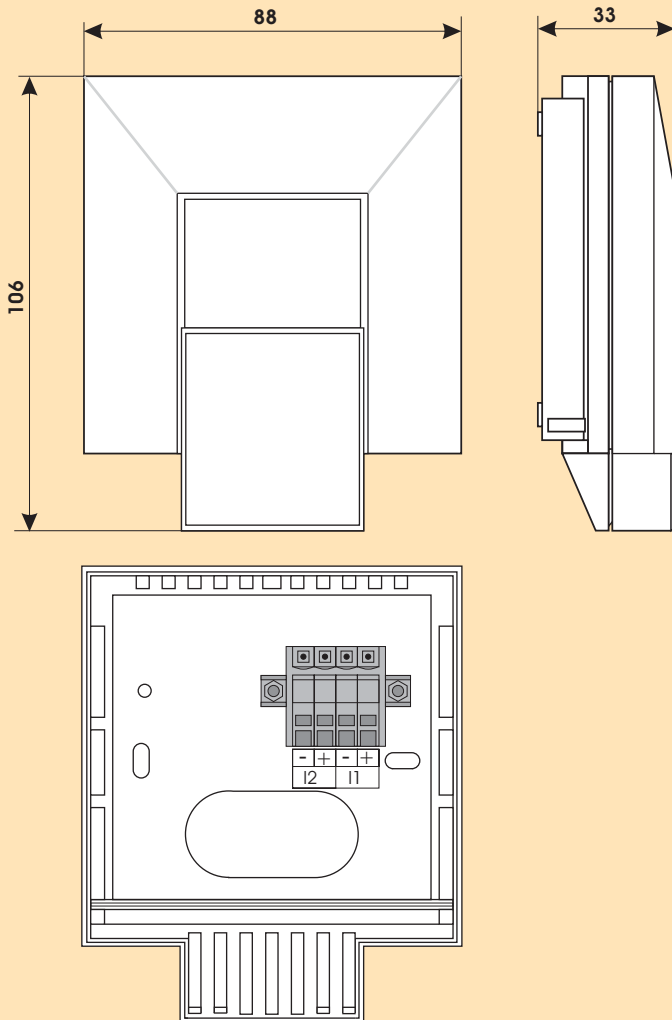## with serial RS232 output
temperature * barometric pressure * relative humidity * dew point temperature *
absolute humidity * specific humidity * mixing ratio * specific enthalpy

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
TO310	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 TO310

Fig.2 Transmitter T3311,T7310

Fig.3 Transducer T4311

Fig.4 Barometer T2314

Fig.5 Transmitter T7311

MP006 - RS232/USB converter

Included accessory:
- **Calibration certificate** from the manufacturer and instruction manual with the complete communication protocol description.
- **Cable** for communication with RS232 computer port (length 1.6 meter).
- **Free configuration program** for adjustment and work with transmitter is ready to download anytime.

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

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

TRANSMITTERS WITH VOLTAGE OUTPUT 0-10V:

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

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

Any measured value - temperature, relative humidity, dew point temperature, absolute humidity, specific humidity, mixing ratio or specific enthalpy can be assigned to 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 SP003 - 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

Cable SP003 for transmitter setting- option

Wiring of the transmitter with 4-20mA outputs

Wiring of the transmitter with 0-10V outputs

Included accessory:

Calibration certificate from the manufacturer, instruction manual. Free program for transmitter configuration is available 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.
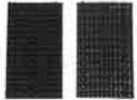Large dual line LCD for display of temperature, humidity, barometric pressure or other computed value is an advantage. Display is possible to switch off. Computerized design ensures temperature compensation of the humidity and pressure sensors and fail indication. Transmitters are designed for use in 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/m³ at ambient temperature T < 40°C, range 0 to 400 g/m³
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
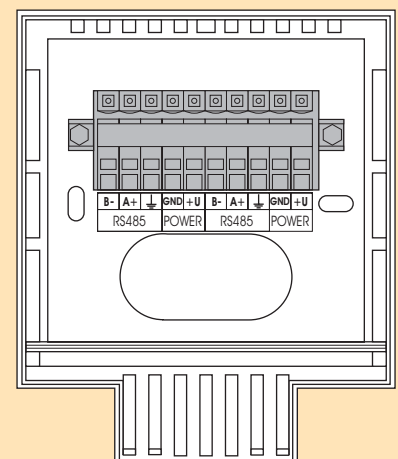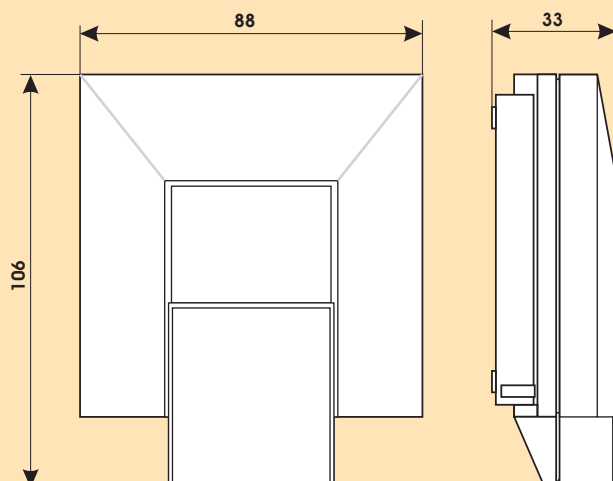
INTERIOR TEMPERATURE, HUMIDITY, BAROMETRIC PRESSURE TRANSMITTERS with serial RS485, RS232 output

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:

Calibration certificate from the manufacturer, instruction manual. Free program for transmitter configuration is ready to download from www.cometsystem.cz

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

	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
	F0000	spare sintered bronze sensor cover. Filtering ability 0.025mm.
	PP4	flat plastic circular flange for duct mounting
	PP90	right-angled stain-less steel flange for wall mounting
	SP004	plastic gland for direct mounting of the humidity probe to a 29 mm diameter hole
	SP005	tool for easy wire connection to WAGO terminals Wago - for transmitters with current and voltage output
	SP006	tool for easy wire connection to WAGO terminals Wago - for transmitters with serial output RS485 and RS232
	MD036	self adhesive Dual Lock for easy installation
	A1515	ac/dc adapter 230V-50Hz/12Vdc for Ethernet transmitters - with co-axial connector
	A1510	ac/dc adapter 230V-50Hz/12Vdc for serial output transmitters - for connection to terminals
	MD046 HM023 HM024	**ACCESSORIES FOR EASY RELATIVE HUMIDITY CALIBRATION AND ADJUSTMENT** stainless steel vessel for relative humidity calibration and adjustment set of 5 humidity standards 10% RH with 5 application pads set of 5 humidity standards 80% RH with 5 application pads

TEMPERATURE PROBES
with RTD Pt1000 sensor
tolerances class "A" IEC751 $\pm(0.15+0.002t)$
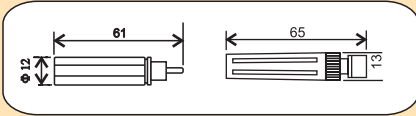
Fast precise air probe -30 to +80˚C for direct insertion to the connector.
Tolerance: $\pm(0.1+0.0017t)$
Response time: t63 < 10s, t95 < 30s (air flow 1m/s)
Probe is not resistant against moisture.
type 200-80/E with female connector K1321 for loggers Sxxxx, Rxxxx
type 200-80/C with male Cinch connector for Commeter D0211, D0221, D0241
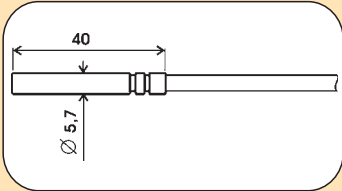
Low cost multipurpose watertight probe (IP67), stainless steel 17241, with PVC cable of specified length, range -30 to +80˚C, available with cable lengths 1, 2, 5 and 10 meters.
Response time: t63 < 10s, t95 < 30s (in fluid), t63 < 60s, t95 < 150s (air flow 1m/s)
type Pt1000TGL40/0 - cable with tin coated wires for transducers and monitoring system MS
type Pt1000TGL40/C - cable with male Cinch connector for Commeter models D02x1
type Pt1000TGL40/E - cable with female connector K1321 for logger range Sxxxx, Rxxxx
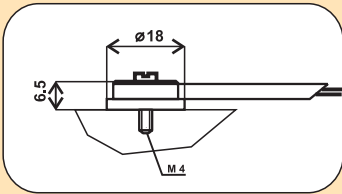
Multipurpose watertight probe (IP67), stainless steel 17241, with silicone cable of specified length, range -80 to +200˚C, available with cable lengths 1, 2, 5 and 10 meters.
Response time: t63 < 10s, t95 < 30s (in fluid), t63 < 60s, t95 < 150s (air flow 1m/s)
type Pt1000TG8/0 - cable with tin coated wires for transducers and monitoring system MS
type Pt1000TG8/C - cable with male Cinch connector for Commeter models D02x1
type Pt1000TG8/E - cable with female connector K1321 for logger range Sxxxx, Rxxxx
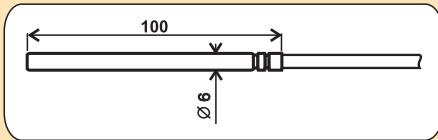
Brass surface probe with cable of specified length, range -30 to +200˚C. Mounting by a M4 screw or fixing by a self adhesive tape. Available cable lengths 1, 2, 5 and 10 meters. Probe is not resistant against moisture.
type Pt1000TG7/0 - cable with tin coated wires for transducers and systems MS
type Pt1000TG7/C - cable with Cinch connector for Commeter models D02x1
type Pt1000TG7/E - cable with connector K1321 for logger range Sxxxx, Rxxxx
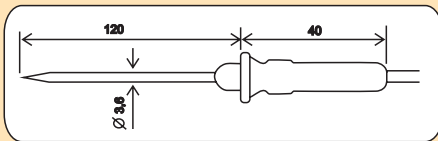
Multi-purpose probe e.g. for dryers, soldering machines etc. Measuring range 0 to +350˚C. Cable with metal shielding is resistant up to 400˚C. Cable lengths 1,2,5 or 10 meters available. Probe is not resistant against moisture.
type Pt1000TR050/0 - cable without connector for transducers and system MS
type Pt1000TR050/C - cable with Cinch connector for Commeters D02x1
type Pt1000TR050/E - cable with connector K1321 for loggers Sxxxx, Rxxxx
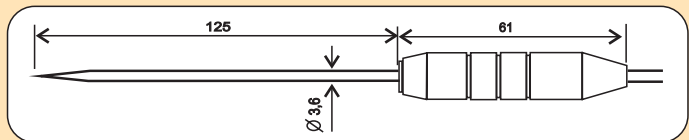
Hand held pointed tip probe -30 to +220˚C, 1 meter cable.
Probe is not resistant against moisture.
Time response: t63 < 10s, t95 < 30s (measured in fluid)
type 2301-220/0 - cable with tin coated wires
type 2301-220/C - with male Cinch connector
type 2301-220/E - with female connector K1321

Hand held pointed tip probe -30 to +250˚C, stainless steel 17241 for food industry, teflon handle, teflon cable 1metr, IP67
Time response: t63 < 7s, t95 < 15s (measured in fluid)
type 2061-250/0 - with tin coated wires for transducers and MS
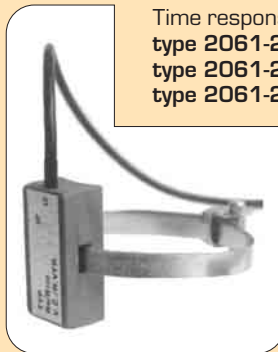**type 2061-250/C** - with male Cinch connector for Commeters
type 2061-250/E - with female connector K1321 for S/Rxxxx
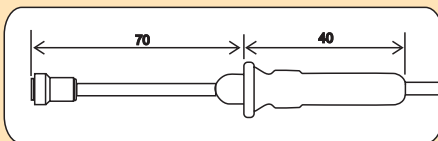
Direct surface probe -30 to +150˚C with 1 meter cable.
Probe is not resistant against moisture.
type 2031-150/C - with male Cinch connector
only in tolerance class B (IEC 751)

Surface probe for tubing and flat surface, range -30 to +130˚C, 2 meters cable, IP65
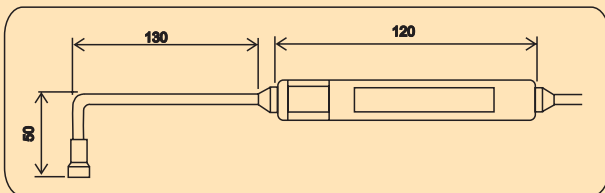**type PTS350-2/0**
- cable with tin coated wires for transducers and MS
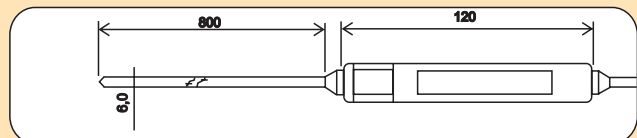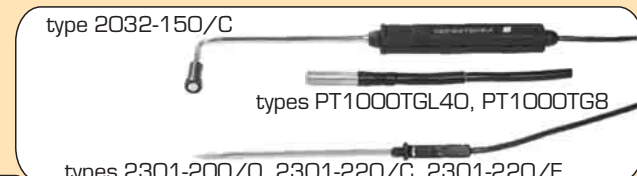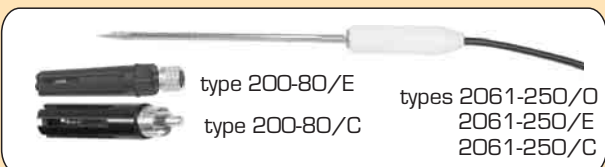**type PTS350-2/C**
- with male Cinch connector
type PTS350-2/E
with female connector K1321

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 2021-150/0 - with tin coated wires for transducers and MS
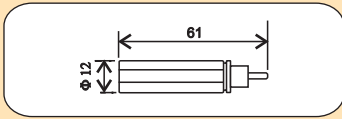**type 2021-150/C** - with male Cinch connector for Commeters
type 2021-150/E - with female connector K1321 for S/Rxxxx

type 200-80/E
type 200-80/C
types 2061-250/0
2061-250/E
2061-250/C

type 2032-150/C
types PT1000TGL40, PT1000TG8
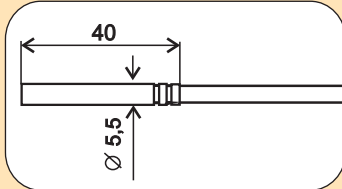types 2301-200/0, 2301-220/C, 2301-220/E

TEMPERATURE PROBES with RTD Ni1000/6180ppm sensor

tolerances ±(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**

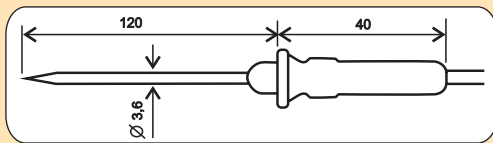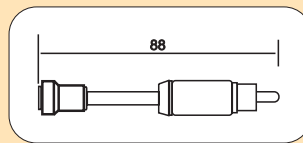**Do not use in new applications - will be replaced by Pt1000 probes**

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 N1ATG8/0 - 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.
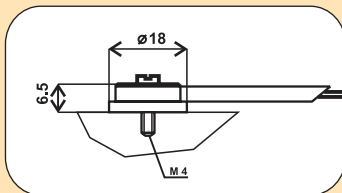
brass surface probe with cable of specified length, range -30 to 200˚C. Mounting by a M4 screw or fixing by a self adhesive tape. Available with cables 1,2,5,10 or 15 meters - please specify.
type N1ATG7/0 - cable with tin coated wires for MS2,MS3,MS4 loggers
type N1ATG7/C - cable with male connector Cinch for Commeter and T-PRINT thermometers
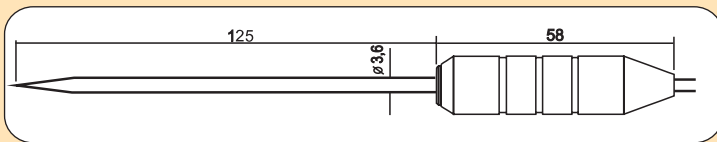
hand-held pointed tip probe -30 to +200˚C for food industry, teflon handle, cable length 1meter
type 0061-200/0 - with tin coated wires
type 0061-200/C - with male connector Cinch

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

hand-held pointed tip probe -30 to 220˚C, 1meter cable
type 301-220/0 - with tin coated wires
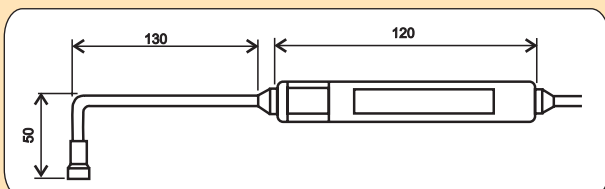**type 301-220/C** - with male connector Cinch

surface probe for tubing and flat surface range -30 to +130˚C, cable length 2meters
type NS151-2/0 - with tin coated wires
type NS151-2/C with male connector Cinch
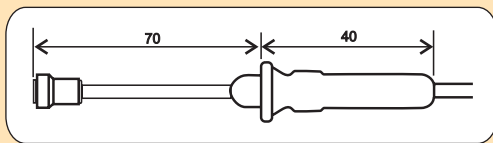
direct surface probe -30 to 150˚C, 1meter cable
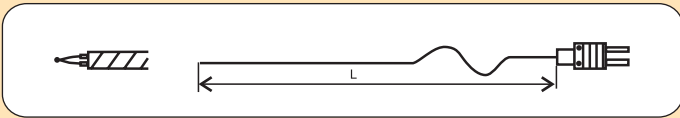**type 031-150/C** - with male connector Cinch

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

types 032-150/0 032-150/C

types N1ATG8/0, N1ATG8/C

types 301-200/0, 301-220/C
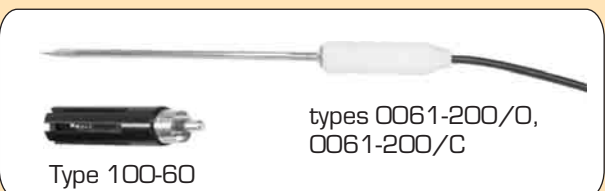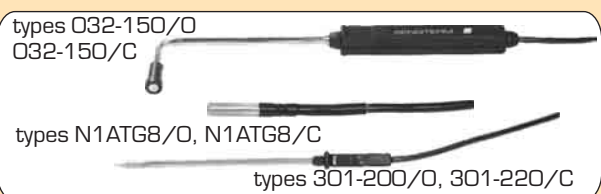
types 0061-200/0, 0061-200/C

Type 100-60

TEMPERATURE PROBES with type K thermocouple for thermometers CO311, DO311, CO321, DO321

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

type GD 260   -65 to 260°C   teflon insulated, 0,8mm diameter
type GD 700   -65 to 700°C   duplex insulated - glass, 2mm diameter
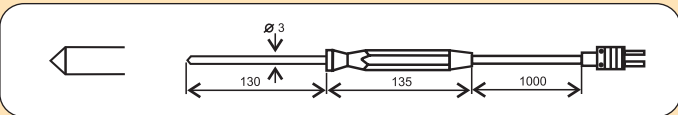**type GD 1250**   -65 to 980°C   duplex insulated - Nextel ceramic, 4mm diameter
self-adhesive labels 25x40 mm to secure wire probes to surfaces , temperature range -70 to 260°C, package of 20 labels
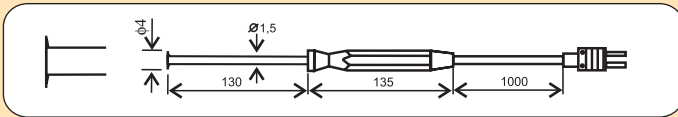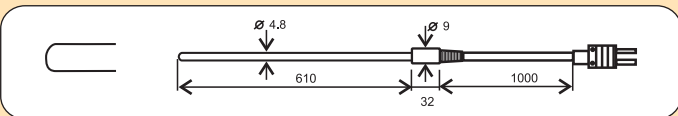
fast response surface probe
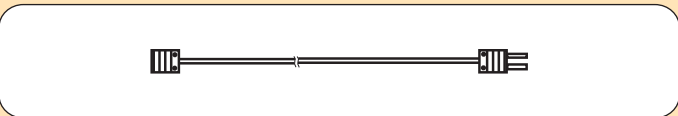**for flat surface**
type CP 500   -65 to 500°C
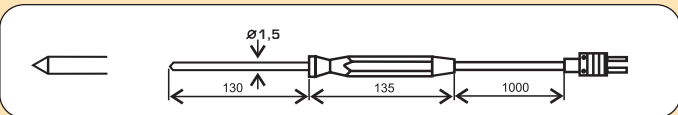
fast penetration needle probe
for soft materials
type CZ 550   -65 to 550°C

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

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

subminiature connector
for thermocouples J, K, S
(please specify thermocouple type)
male, female

type GD 1250

type GD 260

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

type GD 700

type CZ900

type CP500