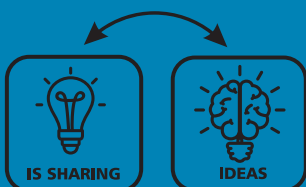


COMET IS SHARING IDEAS



Inspiration and news

- ▶ Sigfox power
- ▶ 4G mobile dataloggers
- ▶ Zener barrier
- ▶ Cometeo – new radiation shield
- ▶ Administer COMET Cloud to your customers
 - museums
 - doctor offices, medical laboratories
 - hospitals
 - the goods on the way under temperature supervision
- ▶ Become a master of calibration and adjustment



COMET
since 1991



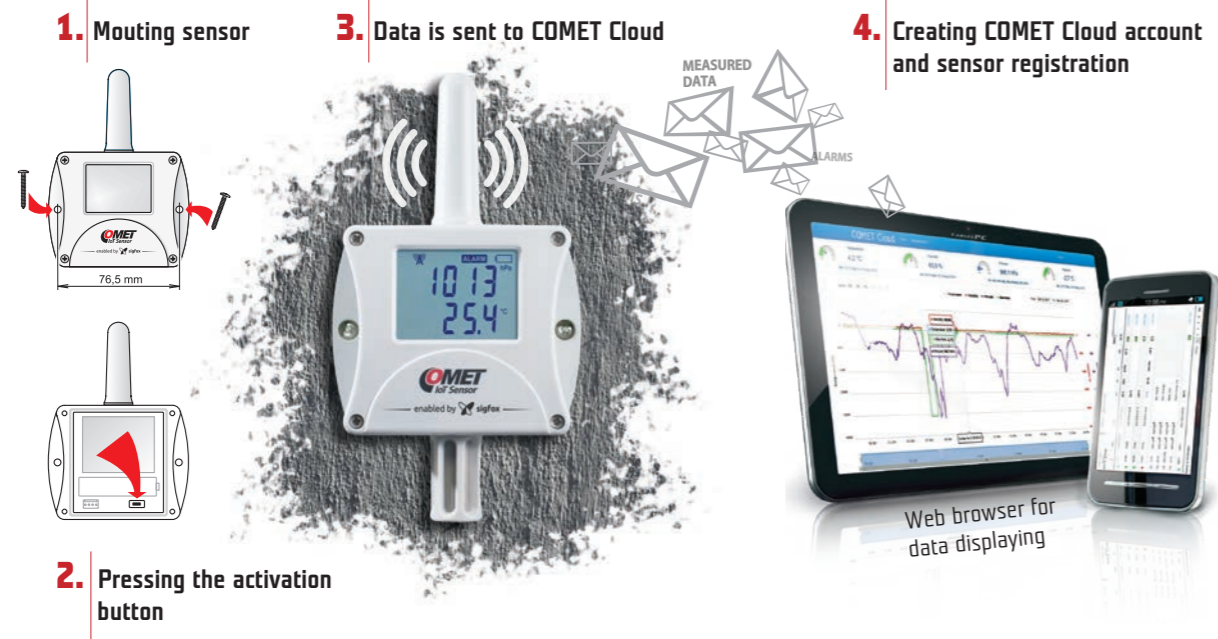
SIGFOX Internet of Things (IoT)

The world's leading service provider



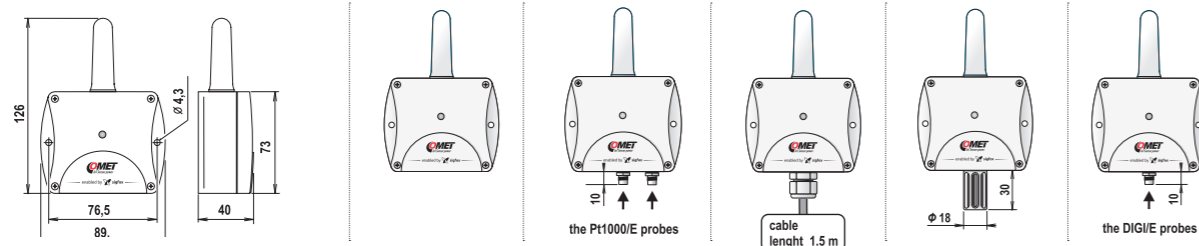
Sigfox Power - Double Energy for twice longer operation time
Sigfox is radio network for data transmitting and collecting in COMET Cloud

Four steps for getting your measured data into COMET Cloud



The Libušín National Cultural Monument was opened to the public in 1899. In 2014, the building completely burned down. At present, the building has been rebuilt with elements of a combined extinguishing system based on the principle of inert gas (interior) and water mist (exterior). However, in order to use the extinguishing gas, a certain tightness of the building is necessary, which the Libušín log construction alone cannot ensure. For this reason, the insertion of foil between the log cabin and the wooden lining of the inner walls was designed. it was required to preventively monitor the relative humidity in an isolated area, where the measurement of temperature, relative humidity and dew point was installed at four selected points between the foil and the wooden interior paneling.

measured values			temperature		voltage	temperature, relative humidity	
SIGFOX SENSOR MODELS			W0810P	W0832P	W0870P	W3810P	W3811
tempe- rature	internal	range	-30 to +60 °C	-30 to +60 °C	-30 to +60 °C	-30 to +60 °C	according to the probe
		accuracy	±0.4 °C	±0.4 °C	±0.4 °C	±0.4 °C	
	external	range	-	-90 to +260 °C	-	-	
		accuracy	-	±0.2°C *	-	-	
relative humidity**		range	-	-	-	0 to 100 % RH	
		accuracy***	-	-	-	±1.8% RH **	±1.8% RH **
dew point		range ****	-	-	-	-60 to +60 °C	according to the probe
voltage		range	-	-	-30 to +60 Vss	-	-
		accuracy	-	-	±0.03 V	-	-
sending interval / typical battery life			-	-	-	-	-
class of protection of case with electronics / sensors			-	-	IP65	IP65 / IP40	



There are many bridges and footbridges in Prague and their technical condition is monitored. For the static analysis of the supporting structure of the bridge, it is necessary to know not only the mechanical and physical properties of the materials from which the bridge is made, but also its deformation. These deformations depend on the direct load (eg traffic), but also on the ambient temperature conditions and the temperature in the bridge structure itself. Temperature information is therefore an integral part of the bridge's behavior. Both bridges, on which we perform on-line measurements, are arch structures where the course of temperatures is difficult to simulate by numerical modeling.



Mobile dataloggers Battery operated GSM modem

NEW 4G
version



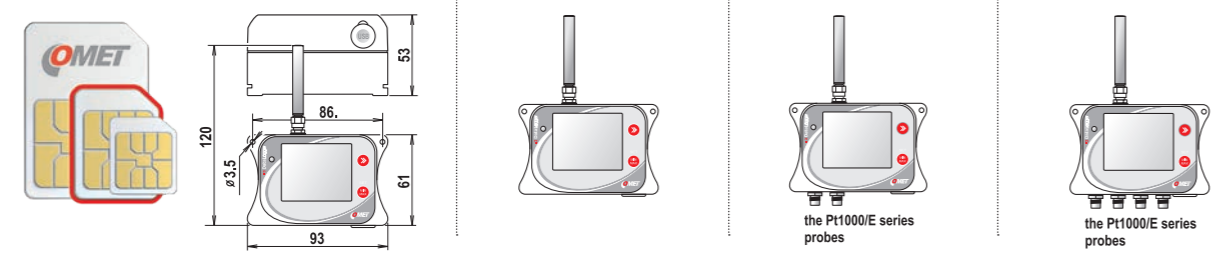
Connectors for removable and interchangeable probes.

Wall holder for all premium dataloggers.

Connector USB-C for simple connection and battery charging.

Built-in battery operated GSM modem allows alarm indication and data transmitting. Data can be sent in the shortest interval of 5min to Comet database software or Comet cloud thru data network. For saving battery live there is a function of data buffering to keep GSM modem in the sleeping mode for longer time. Users can also set up still active texts which periodically inform of current state.

measured values			temperature		
datalogger model			U0110M	U0121M	U0141M
temperature	internal	range	-20 to +60°C	-	-
		accuracy	±0.4°C	-	-
	external	range	-	-90 to +260°C	-90 to +260°C
		accuracy*	-	±0.2°C	±0.2°C
typical battery life			> 6 months to several years, according to the device setting and number of messages sent		
IP protection class			IP67		



* accuracy of device w/o probe in measuring range of -90 to 100 °C (in range +100 to +260 °C is accuracy ±0,2 % of measured value)

ISOtank containers are produced in China and distributed worldwide



HongKe
虹科

ordered 233 sets of U0121M and 1165 sets of U0141M from Comet, all for similar applications.

- suitable for very demanding field conditions (the containers will be used for sea and land transport)
- with high temperature measurement accuracy
- a large memory range (as containers can take up to 6 months or more by sea)
- support for high-capacity battery power
- a real-time transmission function so that the temperature of the product can be seen at all times on a global scale.
- OEM service for a lot of accessories
- In addition, given the global acceptance, a global brand, multi-language support
- quality supplier with relevant project experience was required to undertake the project.



Inside the ISOtank containers contain chemicals goods (some with a value of up to US\$500,000) that are very sensitive to temperature and therefore need to be monitored over a long period of time



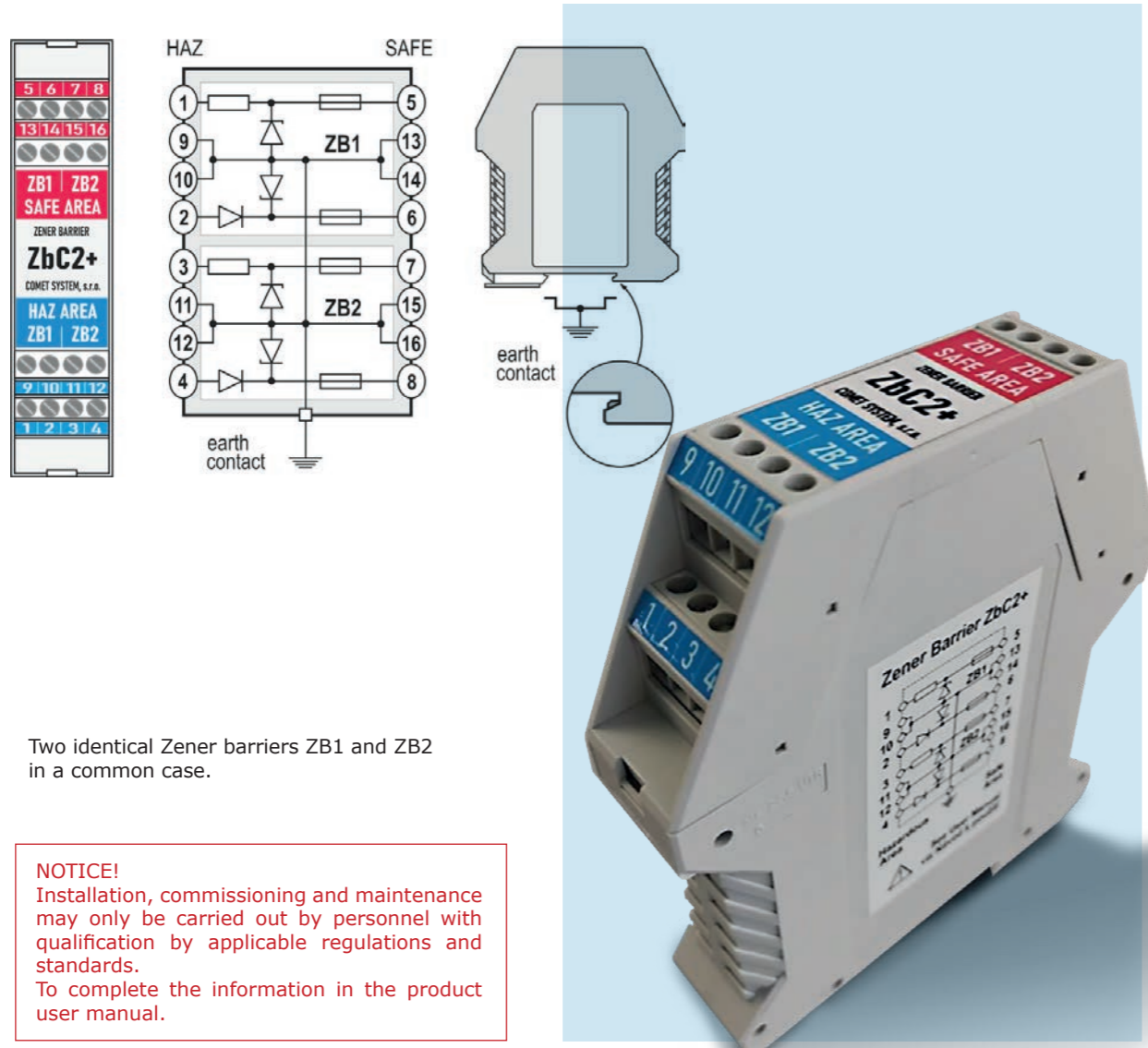
Zener barrier ZbC2 + Two in one, this is Zener's barrier from Comet

- Voltage U_0 29,4 V
- Current I_0 95mA
- Resistance R_{omin} . 306 Ω

The Zener barrier is a certified intrinsically safe interface. It is used to connect a certified intrinsically safe device located in a potentially explosive atmosphere (Hazardous area) to a non-certified device that is in a safe area.

Key features

- Two identical Zener barrier ZB1 and ZB2 in the common housing
- Positive polarity with return diode
- Series resistance
- Series resistance R_{s1} = max. 348 Ω (terminals 1-5, terminals 3-7)
 R_{s2} = max. 34 Ω (terminals 2-6, terminals 4-8)
- Fuse rating
- DIN rail mounting in a safe area



Two identical Zener barriers ZB1 and ZB2 in a common case.

NOTICE!
Installation, commissioning and maintenance may only be carried out by personnel with qualification by applicable regulations and standards.
To complete the information in the product user manual.

Paint shops and adhesive warehouses, chemicals, etc.

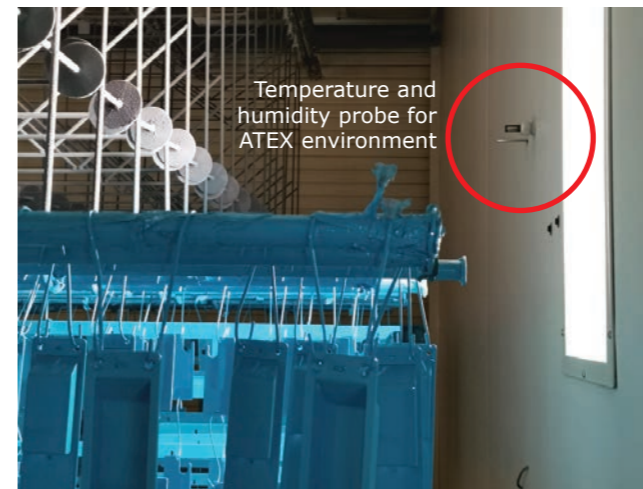
A complete monitoring of the entire production hall, where various parts are painted not only for the automotive and rail industry, was required. The measurements also included some facilities such as mixing plants, paint booths, and painted parts drying plants that fall into the explosion hazardous environment, specifically Zone II.

Frequent solution requirements - measurement of

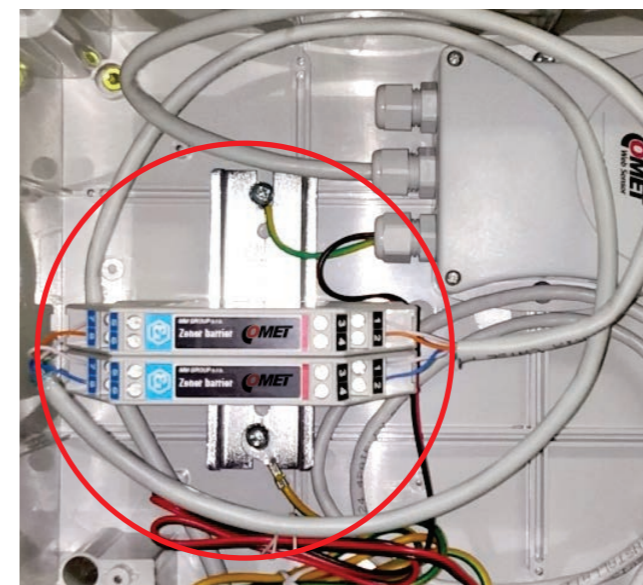
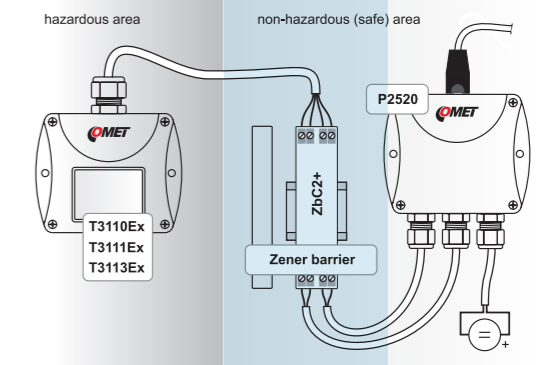
- temperature and relative humidity.
- designed for explosive atmospheres (Ex).
- transmission of measured values to the company's Ethernet network



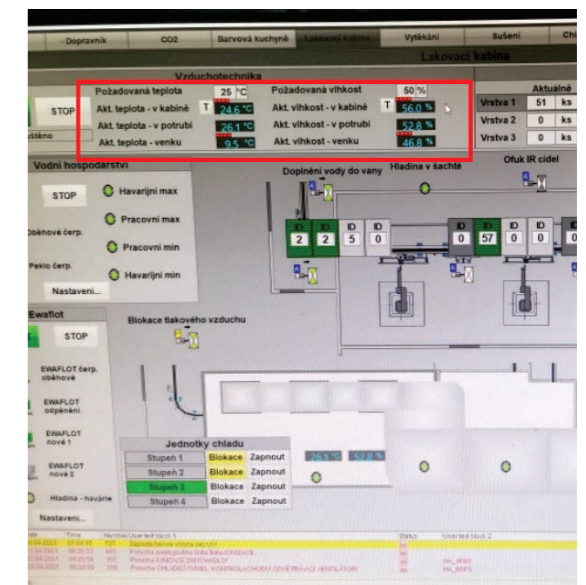
P2520 - current loop output and conversion to IT protocols



Paint shop



Third-party barrier solution





Cometeo - professional solar shield

The Multi-plate radiation shield is used to protect weather monitor systems and provides the most accurate climate measurement results. The uniquely designed screen minimizes solar radiation reaching the sensor, minimizes radiation absorbed by the screen, and maximizes ambient airflow around the weather station sensor. The surface exposed to sunlight is made of highly reflective UV and long-term stable ASA plastic. The inner surfaces of the screen are made of matt black plastic to minimize internal reflections. A large 210mm diameter of 14 plates is designed to provide full protection for measuring sensor.

1.

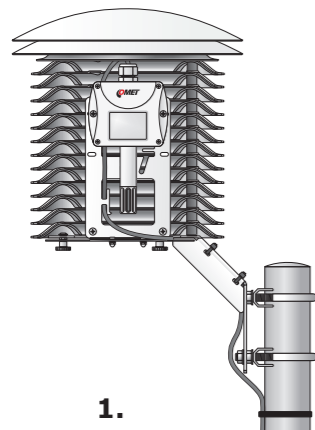
Cometeo F8000 has a large diameter of lamels 210 mm and provides full protection of the measuring devices that can be located inside the cylindrical space with a diameter of 110 mm.

2.

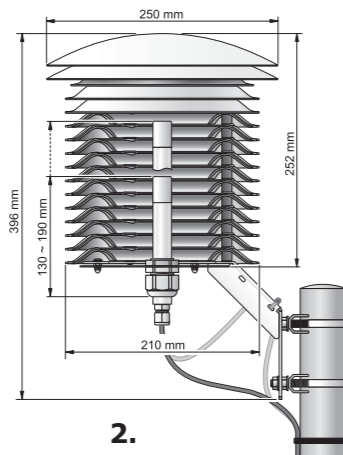
F8001 - Universal naturally ventilated weather cover any measuring probes with a diameter of 133 to 18 mm before weather effects. As required a weather cover can be provided for another size mounting bushings for the probe.

3.

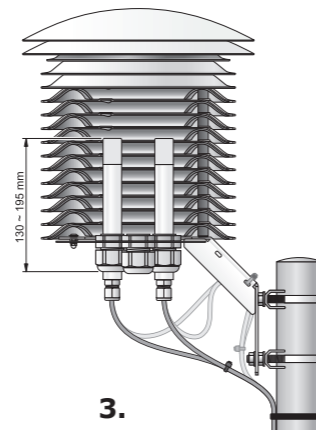
F8004 - version with four bushings
Version 2 and 3 can be used with most devices and probes, e.g. Vaisala, Rotronic.



1.



2.



3.

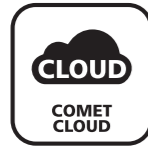
COMET System has established cooperation with Masaryk University in Brno and is involved in its research at the Czech polar station Johann Gregor Mendel, located on James Ross Island.

The U3121 datalogger and a temperature and humidity probe are used for measurements in Antarctic conditions where temperatures drop well below freezing. The entire set is housed in a COMETEO F8800 which protects the datalogger and sensors in extreme conditions.

The datalogger U0141 is used as an additional measuring instrument with the usual temperature probes, but also with probes for cryo environments. With these sensors it is possible to measure both air temperature and temperature just above the surface.



Previous version of the F8800 radiation shield in Antarctica. The new design of the latest F8000 product is developed using experience from extreme environments.



COMET Cloud

Measured data where you need

Without measure, there is no control.

High quality, accurate and stable sensors of • Temperature • Humidity • Dew point • Barometric pressure • CO₂ •

COMET Cloud is the internet storage of data measured by COMET sensors. The data is accessible in the internet and displayed in an internet browser. Every user has the access to his account COMET Cloud protected by password. COMET Cloud enables to add sensors, creates organisational structures such sensor groups and user groups. The different rights can be set up for displaying and administration for each user.



- **unlimited space for data**
- **management and organization of**
 - equipments
 - measured points
 - users and their access rights
- **e-mail alarming when**
 - exceeding alarm limits with the option define recipients according to the level of exceedance
 - a fault occurs (connection, measurement error)
- **easy report creating**
- **device setup from COMET Cloud**



Tutorials

- How to** create account
- How to** add device
- How to** set role – administrator/user
- How to** create measured place

Try GUEST access at
<https://cometsystem.cloud/device/list>

COMET Cloud supports following device families:

- IoT wireless sensors, powered by Sigfox
- IoT wireless dataloggers with built-in GSM modem
- WiFi Sensors
- Web Sensors (t-line, p-line, h-line)



For more information visit www.cometsystem.com

Comet Cloud, you don't want it..... you need it.

Comet Cloud Features

- Multiple layers of Organisation (Parent companies and Sub organisations)
- Multiple layers of user rights (User – Admin User)
- Multiple alarms, allows for adding multiple users to various profiles
- Customisable reporting Feature. (Automatic report generation coming soon. Weekly, monthly)
- User defined Overview screen (Floor Plan or Table – Measured Place)
- Almost all Ethernet, Sigfox, wifi and GSM sensors can integrate seamlessly to the cloud.

Clients Needs determine Cloud Connection

- Are there multiple sites across a large area?
- Is it a smaller site, where additional hardware becomes expensive (PC, UPS, Internet connection, CDB software, SMS modem etc)
- Areas without power, e.g. Agri Space (Farms), warehousing and distribution
- Clients Internet connection unreliable, or IT managers being strict with network access. (IT Managers often think they are the gate keepers to the network)

The Clients benefits

- The end users/Clients appreciate that the monitoring of the equipment is available on a phone 24/7
- SMS alert available via 3rd party email to SMS service
- No additional hardware costs.
- One service provider for the full monitoring and alarming service.
- Online reporting
- Online sensor configuration (Sigfox) (GSM logger configuration coming soon)

Distributor Benefits, benefits for you

- Generate recurring annual/Monthly revenue.
- Annual SLA income, Cloud renewal, battery replacement, onsite Calibration and service. (Remember that one service provider for all Monitoring and Alarming needs).
- Allows for easy Fault finding anporting, when a client calls with an issue, you will be notified if any sensor is offline, or any probe is damaged etc. Allowing you to fix the problem, before it becomes a problem.
- The cloud system is scalable, so your client might add 1 or 2 sensors today, but tomorrow the site could expand or another location open up.



How to become a cloud administrator



Calibration services Calibrate and adjust comet devices for your customers

CALIBRATION COMET

Metrology of COMET is certified as a part of quality management system in accordance with ISO 9001:2015. Calibration certificate results from requirements of EN ISO/IEC 17025 standard. Metrological traceability of COMET etalons is declared in calibration certificate - identification of etalon, its validity and information on metrological traceability.

Calibration of temperature is performed by default at one point - at +23°C.
Calibration of humidity is performed by default at one point - at 50% RH.
Calibration of barometric pressure is performed in most cases at two points. At ambient pressure and at decreased pressure near lower limit of the measuring range (800 respective 750 hPa). Barometers T2xxx are calibrated at three points.
Calibration of electrical values - current, voltage, resistance is performed at several points (3 to 5) sufficiently covering measuring range of the instrument.

Calibration in an accredited calibration laboratory

COMET products can be delivered to order with a calibration certificate from an accredited calibration laboratory. It is especially in these cases that the COMET calibration certificate does not comply because

- The number of calibration points
- Calibration at values other than those listed above
- If required by legislation, supervised control authorities

KALIST

Calibration laboratory KALIST AKL s.r.o. No. 2394 is accredited according to the standard ČSN EN ISO / IEC 17025: 2018. Calibration of Comet system products is performed not only in its laboratory, but also directly at the customer.

KALIST AKL s.r.o.
Trebetice 8
769 01 Holesov, Czech republic
Telefon: (+420) 577 700 775
E-mail: kalist@kalist.cz



MEROS

Calibration laboratory MEROS is accredited by the Czech Accreditation Institute according to ČSN EN ISO / IEC 17025: 2018. Meros provides accredited calibration of instruments, meters and equipment.

MEROS, spol. s r. o.
Starozuberska 1453
756 54 Zubri, Czech republic
Telefon: (+420) 774 747 702
E-mail: info@meros.cz

Basic steps for the implementation of the calibration laboratory

- If you want to perform a calibration lab, you must know the legislative framework in your country. You can find out more details with help of National Institute of Metrology
- necessary equipment for calibration. It is necessary to consider whether you are considering calibration directly at the customer. This device must be calibrated regularly.
- it is necessary to calculate the uncertainties



Temperature ovens and relative humidity generators are devices for generating the required temperature and relative humidity for measurements directly in the field and meet the demanding technical requirements to meet the maximum measurement accuracy. Comet system meters are then calibrated by comparison with a standard. The result of the measurement is a calibration sheet with quantified deviation and measurement uncertainty.

ACCESSORIES FOR CALIBRATION AND ADJUSTMENT

The verification of the accuracy of measurement (calibration) and possibly the new settings (adjustment) of the instruments measuring the relative humidity with external probe can be done by using special accessories which can replace prescribed high cost special device for generating a relative humidity (calibration chamber).



HM023 – set of 5 humidity standards 10% RH with 5 application pads.

HM024 – set of 5 humidity standards 80% RH with 5 application pads.



MD046 – air-tight vessel for adjustment and calibration of humidity.



Check the public databases to find target for your newsletters and advertisements

Museums • Doctor offices • Hospitals • Schools

The example of proposal which was sent by post to doctor offices together with hard copies of catalogue. The database is publicly accesable.

COMET since 1991

COMET System, s.r.o. is a traditional Czech manufacturer engaged in the production of innovative monitoring devices to document climatic conditions. A large part of the COMET production is suitable for monitoring of condition during the transport or storage of vaccines and other medical material sensitive to storage temperature. This requires the use of very precise monitoring and alarm devices with real-time temperature monitoring. Exceeding the temperature limit can cause irreversible damage to medical equipment.

Three sets to make a simple choice

SET 1 - monitoring the temperature in the refrigerator or in transport boxes

Included in the price of the set:

- datalogger U0110
- USB-C cabel
- magnetic holder for mounting on metallic surface

Price 138.40 EUR

Included in the price of sets:

- software COMET Vision for settings, data analyse in form of table and charte
- calibration certificate COMET
- 3 years warranty

SET 2 - temperature monitoring using an external probe, solutions for refrigerators and transport boxes

Included in the price of the set:

- datalogger U0111
- temperature probe Pt1000TG3/E 2m
- USB-C cabel
- magnetic holder for mounting on metallic surface

Price 189.28 EUR
(Pfizer/BioNTech from -90°C with surcharge)

SET 3 - temperature monitoring and alarm via SMS, solution with external probe for refrigerators and shipping boxes


Included in the price of the set:

- datalogger U0121M
- temperature probe Pt1000TG3/E 2m
- USB-C cabel and power adapter
- magnetic holder for mounting on metallic surface

Price 469.88 EUR
(Pfizer/BioNTech from -90°C with surcharge)

We would like to respond as efficiently as possible to your needs so that there are no delays in deliveries.

More information about products can be found on our website www.cometsystem.com or you can contact us at any time:



Always breathe fresh air

Did you know that the level of carbon dioxide CO₂ indicates the air quality in the room? You can get rid of harmful substances, viruses and bacteria together with CO₂ by ventilation.

CO₂ monitor - T5000

CO₂ datalogger - U4440

COMET since 1991
www.cometsystem.com

- Clear indication of a coloured LED's gives instant information about CO₂ concentration and the need for ventilation.
- Quick and easy installation of the device on the wall.
- Easy start of the device by connecting of AC adapter.
- Acoustic and visual alarm signalisation.
- Internal CO₂ and T/RH sensor.
- Connector USB-C for simple connection and battery charging.



Did you know that most common diseases are related to the quality of the indoor environment of buildings?

U8410
Cost effective solution.

The state of the indoor environment is indicated by the concentration of carbon dioxide CO₂ which should not exceed 1500 ppm (0.15%).

The solution is natural ventilation

The calibrated data logger U8410 advises WHEN and HOW LONG to keep windows open for natural air exchange. We will not waste energy on heating and our children will be healthy.

The calibrated data logger U4440 enables monitoring of CO₂ along with temperature, humidity and atmospheric pressure.



Communication and battery charging via USB-C cable.



Accurate CO₂ measurement with NDIR sensors.



Anti-theft device holder with lock.



Acoustic and visual signalization of high CO₂ concentration.

COMET Data Logger

COMET IS SHARING IDEAS



Inspiration and news

The COMET System, s.r.o. company is continuously developing and improving its product. COMET System, s.r.o. reserves the right to carry out technical changes in equipment or product without any previous notice.

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