

EXPLOSION-PROTECTED HUMIDITY MEASUREMENT



The production and storage of chemicals is usually a sensitive and sometimes a dangerous job. Accordingly, great care is required for the handling of large quantities of these substances.

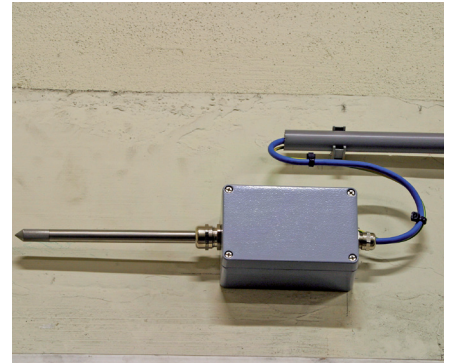
Various basic substances which are produced for the food, agriculture, pharmaceutical and cosmetics industries are often highly reactive or toxic and lose their effectiveness if certain ambient conditions are exceeded or not achieved.

In order to secure definite evidence concerning the optimal storage of these products, high-rise warehouses are equipped with intrinsically safe, high-accuracy humidity and temperature monitoring from E+E Elektronik. A condition required by the FDA (Food and Drug Administration) is the maintenance of certain ambient conditions for the storage of basic substances and active ingredients in order to ensure the specified characteristics of the chemicals. The climate data must be recorded, documented and archived in compliance with FDA specifications. The records must be available for inspection at all times in order to provide traceable evidence of proper storage. This condition is fulfilled perfectly by means of a centrally installed monitor recorder.

Particularly for the storage of such sensitive products, great demands are placed on the accuracy and long-term stability of humidity measurements. E+E Elektronik specialises in the production and reliable application of humidity and temperature measurement devices and is now a dependable and recognised partner for the industry. The drift of the humidity measurement cell, which is produced in our own clean room, is less than 1% per year even under extreme conditions. Reproducibility is better than 0.5% relative humidity.

Thanks to the approval of Type EE30-EX for operation according to ex ia IIC T6, the measurement sensors may be used in even zones with the highest explosion hazards (i.e. Zone 0). Via a digital signal transfer between the sensors and the actual measuring transducer, cable lengths of up to 100 m can be used without impairing the calibration.

Both ends of the cable can be connected with plugs or terminals, which enables installation at remote measuring points as well as central configuration of the measuring transducer



EE30-EX sensor

in a switching cabinet.

In many cases, too few (often only one) humidity measuring transducers are used. Because of this, critical zones are not detected. However, it is often important to install humid-



EE30-EX switching cabinet

ity measuring transducers at various points in the warehouse, near to the roof as well as near to the floor in a variety of areas in order to record as many zones as possible. Monitoring is carried out 24/7. An alarm is given immediately if the defined limiting values are exceeded or undershot. In this case, all of the affected substances must be subjected to a new laboratory test in order to re-check the stated effectiveness of the chemicals.

A further criterion for successful use is not only the requirement for high product quality but also the fulfilment of certain quality guidelines according to ISO9001, QS9000 as well as FDA.

As well as being an accredited ÖKD calibration facility for humidity and temperature, E+E has been entrusted by the Austrian Weights and Measures Office with the provision of the national standard for humidity, which makes us the first port of call for queries with regard to humidity. Furthermore, users can provide evidence of a return to the national or international origin at any time.

The secure archiving of recorded climate data as specified by the FDA is carried out via a centrally integrated monitor recorder, which together with the associated PC software components forms a closed system for recording, saving and archiving electronic measurement data.

In contrast to conventional recording devices with rolls or endless paper, the monitor recorder saves the measurement data electronically on a Compact Flash Card and shows the data on a colour display. With a maximum storage capacity of 128 MB (which with a storage rate of 60 seconds and 6 measurement inputs corresponds to about 125 rolls of recording paper) the device has a typical storage period of approx. 13 years.

Through to the combination of E+E measurement technology and tried-and-tested writing technology, which has proved itself millions of times, the FDA requirement for simple and reliable data recording can be optimally fulfilled.



Monitor recorder

• Application conditions

Measurement range: 0-100% rel. hum.; -40...180°C and derived values
 Output: 0-5V, 0-10V, 4-20mA
 Accuracy: ± 1.3% rel. hum.; ±0.2°C
 Working range: 0.01...15bar (pressure-sealed version)

• E+E solution



EE30-EX
 Humidity measurement transformers for intrinsically safe applications

Measurement of humidity and temperature in intrinsically safe applications. For use in Zone 0 and temperature class T6 according to ATEX and IECEx guidelines.