PRODUCT OVERVIEW

- HUMIDITY
- DEW POINT
- MOISTURE IN OIL
- MASS FLOW
- CARBON DIOXIDE - CO_2
- AIR VELOCITY
- TEMPERATURE
- PRESSURE
- CALIBRATION SERVICES

E+E ELEKTRONIK®

YOUR PARTNER IN SENSOR TECHNOLOGY

E+E ELEKTRONIK®

www.epluse.com

AUSTRIA

STAATLICHE AUSZEICHNUNG

IQNet

qualityaustria SYSTEMZERTIFIZIERT

NEW

HUMIDITY AND TEMPERATURE INDUSTRIAL TRANSMITTER

EE310

- Temperature working range -40...180 °C (-40...356 °F)
- Pressure tight probe up to 20 bar (290 PSI)
- Analogue and alarm outputs
- RS485 or Ethernet interface
- Protective sensor coating for dirty and corrosive environment
- USB port for configuration and adjustment
- 3,5” TFT colour display with data-logging function

MODULAR, COMPACT IN-LINE FLOW METER FOR COMPRESSED AIR AND GASES

EE741

- For DN15, DN20, DN25, DN32, DN40, DN50
- Installation and removal without disassembling the pipework
- LC-display with intuitive device setup
- Analogue, pulse and switch output
- Modbus RTU and M-Bus
- Integrated consumption meter

HUMIDITY AND DEW POINT MEASUREMENT MODULES

EE1900, EE1950

- Temperature working range -70...180 °C (-94...356 °F)
- Heated sensing element for high humidity and condensing condition
- Automatic sensor recovery function
- Stainless steel and plastic probes
- Sensor protection by E+E proprietary coating

DIFFERENTIAL PRESSURE SENSOR

EE600

- Multi-range, full scale:
  0...1000 Pa (4 inch WC)
  0...10000 Pa (40 inch WC)
- Fully user configurable
- Zero and span point adjustment
- Voltage and current output signals available simultaneously
- Large graphic display with backlight

DIGITAL SENSOR MODULE FOR CO_2, TEMPERATURE, HUMIDITY AND AMBIENT PRESSURE

EE894

- Dual wavelength NDIR technology
- Temperature and pressure compensated
- Autocalibration for outstanding long-term stability
- High insensitivity to pollution
- Low power consumption
- Small size

HUMIDITY AND TEMPERATURE MEASUREMENT

Humidity Measurement Competence at E+E Elektronik

E+E Elektronik's history goes hand in hand with the development of highly accurate humidity measuring devices. This has been based on continuous research and development in the thin-film sensor technology, evaluation electronics as well as humidity measurement engineering and adjustment.

The manufacturing of capacitive humidity sensor elements in thin-film technology started in 1990, which are employed also in a comprehensive range of E+E humidity, dew point and moisture in oil measuring devices. An important lead throughout the entire E+E history is the commitment to highest quality standard as documented in the certificates according to ISO 9001:2008 and ISO TS 16949:2009.

The manufacturing takes place in state-of-the-art clean rooms and assembly facilities at E+E Elektronik head-quarters in Engerwitzdorf, Austria. The excellent reputation of the E+E calibration laboratory is reflected in E+E being awarded the Austrian National Standard for humidity and air velocity. The E+E accredited laboratory performs humidity calibrations in the range 0...98 % RH at temperature between -70...200 °C (-94...392 °F), comprehensive information at **www.eplusecal.com**.

Humidity Measurement Products

The E+E product portfolio includes humidity measurement devices for most applications. E+E humidity measuring elements are well proven at major OEM customers in the automotive industry. Humidity, dew point and moisture in oil transmitters for process control are available in an industrial, sturdy design. Other humidity transmitter lines are optimised for demanding climate control, meteorology or for cost-effective building automation.

OEM transmitters, probes and modules are tailored to specific customer requirements. The E+E product spectrum is rounded at by hand-held instruments, data loggers and wireless sensors.

A humidity calibrator based on the 2 pressure – 1 temperature reactor principle offers unparalleled accuracy and speed. Being independent of the ambient temperature, it can be used for both laboratory and on-site calibration.

TRANSMITTERS FOR PROCESS MONITORING

- Temperature range -40…180 °C (-40…356 °F), remote probe up to 20 m (66 ft) and pressure tight probes up to 100 bar (1450 psi), intrinsically safe versions
- Temperature compensated for high accuracy over entire T-range
- Sensor protection against corrosive and electrically conductive contamination
- Heated sensor/probe for best performance in applications with permanent high humidity or chemical contamination
- Calculation of physical quantities such as dew point or absolute humidity
- User configurable and adjustable
- Optional display, relay output, integrated power supply, RS485 or Ethernet interface, data logging function


EE310


EE300Ex

TRANSMITTERS FOR DEMANDING CLIMATE CONTROL

- Hard wired and wireless versions
- Highest accuracy for RH and T measurement
- Heated RH probe for continuous high humidity
- Temperature range -40…120 °C (-40…248 °F)
- Replaceable probes for easy maintenance
- Easy on-site (loop) calibration
- Modbus RTU and BACnet MS/TP
- Optional metal housing, display and relay output


EE210


EE23


EE211


EE220

TRANSMITTERS FOR BUILDING AUTOMATION

- Room, wall or duct-mounted devices and condensation monitors
- Exceptional price/performance ratio in elegant enclosure
- Accuracy of 2 % or 3 % RH
- Modbus RTU and BACnet MS/TP
- Optional display
- Available also as OEM products


EE160


EE10


EE060


EE150


EE046

TRANSMITTERS FOR METEOROLOGY

- Highest RH and T measuring accuracy
- Compact probe and remote probe version
- Integrated sensor heater for fast recovery time after condensation conditions
- E+E sensor coating protects against environmental influences
- Suitable for long-term measurement under permanent high humidity conditions
- Appropriate radiation shields available
- Modbus RTU


EE210 Outdoor

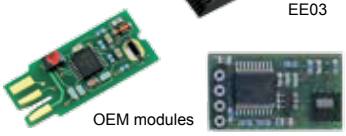

EE07 / EE071 / EE08


EE33-M

OEM PRODUCTS

- Customised and cost-effective
- E+E sensing elements and electronics
- Extensive E+E experience in OEM products design
- Available from as little as 200 units
- Various analogue and digital outputs


EE03


OEM modules

HAND-HELD INSTRUMENTS / DATA LOGGERS

- Accurate measurement of humidity/temperature, moisture-in-oil, air flow, CO_2 and pressure
- Data logging function & USB connectivity
- Comprehensive range of probes for various application
- Capacitive touch screen in TFT quality
- User friendly interface
- Integrated air pressure sensor
- Free data management software
- Calibratable / adjustable probes


OMNIPORT30


HUMLOG 20

DIGITAL HUMIDITY SENSORS

- Integrated protection of the active sensor surface by E+E proprietary coating
- Interfaces: I²C, PWM, PDM, SPI, analogue voltage output for humidity
- Supply voltage: 3 V or 5 V


EEH110 / EEH210
3.6 x 2.8 x 0.75 mm (0.14 x 0.11 x 0.03")

CAPACITIVE HUMIDITY SENSORS

- Available as preadjusted version – no humidity adjustment required
- Wettable, outstanding long-term stability and excellent chemical resistance
- High sensitivity and outstanding linearity
- Excellent reproducibility of sensor characteristics


HC109
4.21 x 0.95 x 0.3 mm
(0.17 x 0.04 x 0.01")


HMC03M
5.85 x 2.85 x 0.55 mm
(0.23 x 0.11 x 0.02")

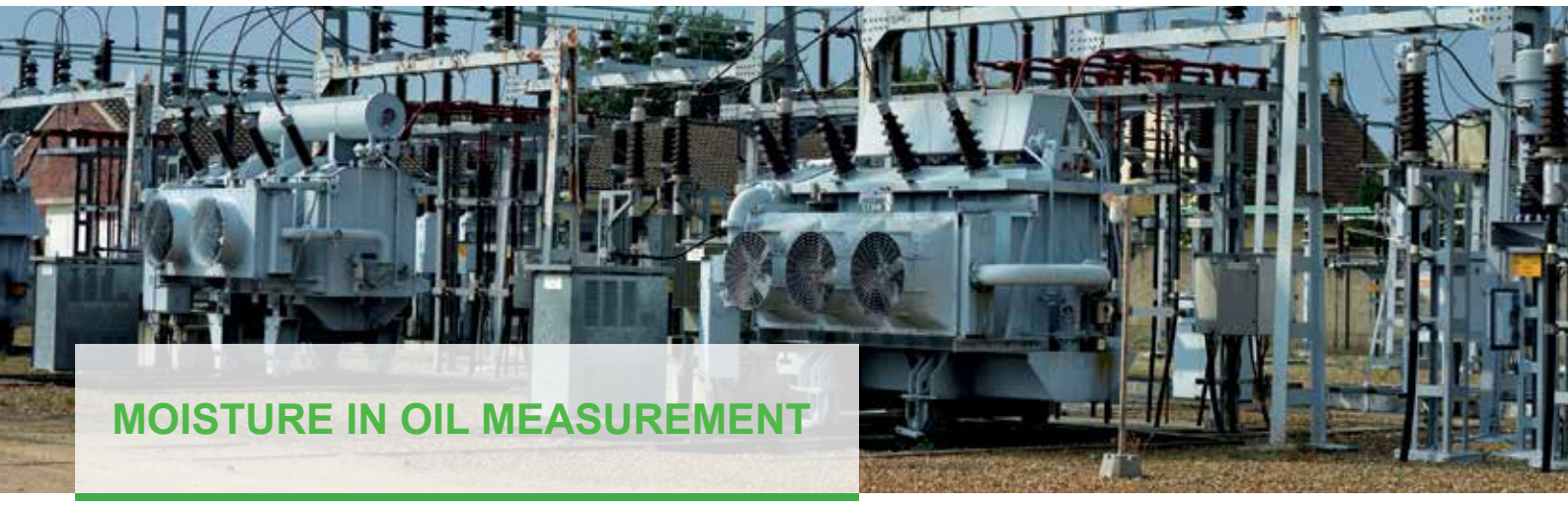

HCT01
5 x 5 x 0,95 mm
(0.20 x 0.20 x 0.04")


HC801
0.3 x 0.765 mm
(0.01 x 30.12")

HUMIDITY CALIBRATOR

- Primary standard: 2 pressure – 1 temperature calibrator
- Highest accuracy
- Compliant to international standards
- Automatic calibration
- Independent from ambient temperature
- Extremely fast stabilisation time


HUMOR 20



MOISTURE IN OIL MEASUREMENT

Online monitoring of moisture content in lubricating, hydraulic and insulation oil is an important factor in the predictive maintenance of equipment and machinery.

The moisture content in transformer oil, for example, has a considerable influence on the insulating capabilities. Continuous monitoring of moisture levels is therefore essential for safety in daily operation.

The moisture content in oil can be specified in absolute terms, as water content x [ppm] or in relative terms as water activity aw.

The E+E accredited laboratory performs humidity calibrations in the range 0...98 % RH at temperature between -70...200 °C (-94...392 °F), comprehensive information at **www.eplusecal.com**.

TRANSMITTERS AND HAND-HELD INSTRUMENTS

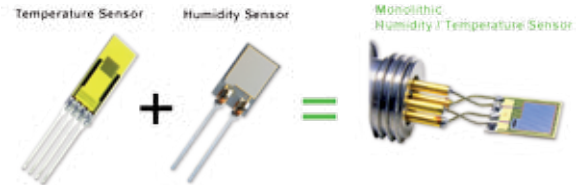
- Online monitoring of lubrication, insulation and hydraulic oils
- Measurands: water content [ppm], water activity, temperature
- Input of oil-specific parameters for water content output
- Intrinsically safe version
- RS485 or Ethernet interface
- Sturdy housing for harsh environment
- Temperature range -40 °C...180 °C (-40 °F...356 °F)
- Installation with ball valve (optional)
- User configurable and adjustable

DEW POINT MEASUREMENT

Accurate dew point (Td) monitoring in compressed air and gas networks, dryers, plastics and other industries is a prerequisite for optimising the process and the product quality.

The E+E dew point transmitters feature an auto-calibration procedure which allows for accurate Td measurement from -60...60 °C (-76...140 °F).

Furthermore, they include the E+E monolithic humidity and temperature sensor specially designed for this application.



The combination of humidity and temperature sensor on a single substrate leads to exceptional thermal uniformity of the entire sensor structure. This is the key for accurate and repeatable auto-calibration and for best long term stability.

The E+E accredited laboratory performs dew point calibrations in the range -90...95 °C (-130...203 °F), comprehensive information at **www.eplusecal.com**.

TRANSMITTERS

- Dew point measurement from -60...60 °C Td (-76...140 °F Td)
- Auto-calibration for high measuring accuracy of ±2 °C Td (±3.6 °F)
- Pressure rated up to 100 bar (1450 psi)
- Modbus RTU and 4-20 mA output
- Sturdy housing for use in harsh industrial environments
- Freely scalable and configurable analogue or switch outputs
- Available as OEM version

EE371

EE354 & EE355

MASS FLOW MEASUREMENT

The E+E mass flow transmitters measure highly accurate mass flow, volumetric flow, standard flow and consumption of compressed air, nitrogen, helium, argon, oxygen or other non-corrosive gases. The devices can be employed over a wide range of temperature and pressure.

The E+E thermal flow meters feature the well proven E+E sensor element operating on the thin film anemometer principle. Factory adjustment at working pressure in a high-precision mass flow calibration bench ensures outstanding measurement accuracy.

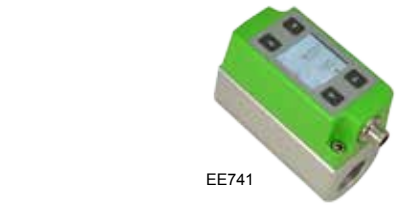
Due to their innovative construction, the E+E mass flow meters facilitate installation, calibration and service. Interchangeable intelligent probes can be replaced within seconds.

Measurement ball valves allow for installing and replacing the devices with only short interruption of the flow, while with gauge mounting blocks the transmitters can be installed and removed even without process interruption.

The E+E accredited laboratory performs mass flow calibrations in the range 3...2090 m³/h, comprehensive information at **www.eplusecal.com**.

TRANSMITTERS

- Measuring accuracy ±1.5 % of measured value over a measuring range of 1:400
- DN15 to DN700 (1/2“ to 28”)
- Maximum sensitivity even at minimal flow rates
- Service-friendly, the device can be replaced during operation
- Integrated USB interface for easy configuration
- Remote probe option
- Various outputs: analogue, switch, pulse or consumption
- Available as OEM versions
- Modbus RTU and M-Bus



EE741

EE771

EE772

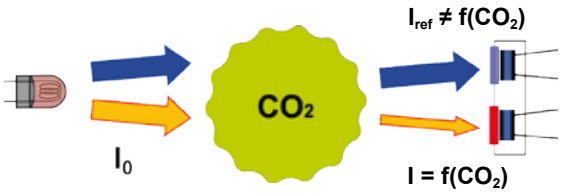
EE776

CO_2 MEASUREMENT

E+E's years of experience in sensors and thin-film technology lead to highest quality non-dispersive infrared (NDIR) CO_2 measuring cells. The cells with gold-plated light path are assembled in state-of-the-art clean rooms and represent the prerequisite for highly accurate and long term stable CO_2 measurement.

The E+E CO_2 sensors feature the dual wavelength/dual detector NDIR principle. One detector is tuned to 4.2 µm wavelengths, which is absorbed by CO_2, the second detector on 3.9 µm, which is not affected by any gas. For every single measurement the CO_2 concentration is calculated from the outputs of the two detectors.

This procedure is highly insensitive to pollution and appropriate for both HVAC and demanding applications.



A multiple point CO_2 and temperature adjustment procedure leads to excellent CO_2 measurement accuracy over the entire temperature working range.

Several E+E CO_2 measuring devices feature also temperature and humidity measurement.

Product range:

- HVAC transmitters
- Transmitters for agriculture and other demanding applications
- OEM modules and probes
- Data loggers
- Hand-held instruments

Applications:

- Demand controlled ventilation
- Indoor air quality
- Stables
- Incubators
- Greenhouses
- Industrial process control

The E+E accredited laboratory performs CO_2 calibrations in the range 5...300,000 ppm, comprehensive information at **www.eplusecal.com**.

TRANSMITTERS FOR DEMANDING CLIMATE CONTROL

- Hard wired and wireless versions
- Outstanding temperature compensation for agriculture and outdoors
- Remote probe or wall-mounted versions
- Replaceable sensors for easy maintenance
- Auto-calibration for long-term measurement stability
- High measuring accuracy
- Sturdy housing for use in demanding environment


EE820


EE244

TRANSMITTERS FOR DEMAND CONTROLLED VENTILATION

- Hard wired and wireless versions
- Room, wall and duct-mounted devices
- Elegant housing with an optional display
- CO_2, temperature and humidity measurement in one unit
- Modbus RTU and BACnet MS/TP
- OEM versions available


EE245


EE800


EE850

OEM PROBES AND MODULES

- Measuring range up to 5 % (50.000 ppm) CO_2
- Optimised measuring cell for demanding applications
- Analogue and digital outputs
- Low power consumption down to 60 µA
- Settable measurement interval
- Compact design
- Exceptional price/performance ratio


EE894


EE871


EE870

AIR VELOCITY MEASUREMENT

Measuring Method

E+E air velocity sensors operate on the hot-film anemometry principle which makes use of E+E thin-film technology specially developed for the automotive industry.

Due to their small mass and dimensions, the E+E air velocity sensors offer highest sensitivity even close to 0 m/s air speed. The innovative design of the sensor head around the sensing elements allows reliable measurement up to 40 m/s (7874 ft/min).

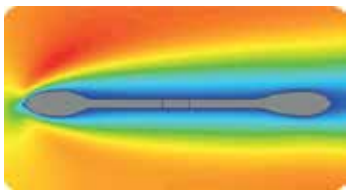
Air velocity transmitters from E+E Elektronik fulfil the accuracy, long term stability and reproducibility requirements of various industries, from building automation and ventilation to clean rooms, laminar flow monitoring and industrial process control.

The E+E accredited laboratory performs air velocity calibrations in the range 0.04...40 m/s (7.9...7874 ft/min), comprehensive information at **www.eplusecal.com**.

SENSING ELEMENTS

- Very robust construction
- High resistance to pollution
- Low angle dependency

VTQ sensing element



Optimised VTQ flow profile

TRANSMITTERS

- Highly accurate air speed measurement 0.06 m/s...40 m/s (12...7874 ft/min)
- Rated for a pressure up to 10 bar (145 psi) and temperature up to 120 °C (248 °F)
- Temperature measurement and calculation of volume flow
- Variable housing concept for easy installation and maintenance
- USB interface for easy configuration
- Special versions for clean room and laminar flow monitoring
- Installation largely independent of direction
- High measurement accuracy
- Compact version available for confined space

DIFFERENTIAL PRESSURE MEASUREMENT

E+E differential pressure transmitters are dedicated for use in HVAC and building automation. They are ideal for measuring the differential pressure in ventilation and air conditioning systems or for filter monitoring. Additionally to air, the devices can also be employed for all non-flammable and non-aggressive gases.

The piezo-resistive pressure sensing element stands out by excellent long-term stability and measures even minimal pressure differences.

The E+E accredited calibration laboratory performs pressure calibration in the ranges:

- » absolute pressure: 0.1...101 bar (1.45...1465 psi)
- » relative pressure: -0.9...100 bar (-13...1450 psi)
- » differential pressure: 0...9 bar (0...131 psi)

Comprehensive information is available at **www.eplusecal.com**.

TRANSMITTERS

- » Multi-range, full scale:
  0...1000 Pa (4 inch WC)
  0...10000 Pa (40 inch WC)
- » Fully configurable with DIP switches
- » Zero and span point adjustment
- » Voltage and current output signals available simultaneously
- » Large graphic display with backlight
- » IP65 / NEMA 4 enclosure
- » Spring loaded terminals
- » Easy installation

EE600

TEMPERATURE MEASUREMENT

The E+E portfolio of temperature measurement devices includes several product lines optimised for HVAC and building automation, as well as for process control in clean rooms, pharmaceutical and other industries.
A special version is dedicated for intrinsically safe applications and complies with the classifications for Europe (ATEX), International (IECEx), USA / Canada (FM), China (NEPSI), Japan (TIIS) and Korea (KC).

The E+E accredited laboratory performs temperature calibrations for air sensors in the range -70...200 °C (-94...392 °F) and for contact thermometers in the range -45...425 °C (-49...797 °F), comprehensive information at **www.eplusecal.com**.

SENSORS AND TRANSMITTERS

- Active or passive outputs
- Modbus RTU and BACnet MS/TP
- High accuracy
- Innovative design for easy and quick installation
- IP65/NEMA 4 protection class
- Interchangeable, digital probes
- Easy loop-calibration
- Transmitter for intrinsically safe applications
- Complete model range for HVAC applications
  - Duct / immersion
  - Strap-on
  - Wall mount for indoor and outdoor
  - Cable sensor
  - Room mount
  - Remote probe version

CALIBRATION SERVICE

National Standards

Sophisticated metrology is one of the fundamental pre-requisites for quality and progress in trade, industry, science, health and environmental protection. “National standards” are at the pinnacle of the hierarchy of measuring equipment.

Every industrial nation has an authority that provides this measurement standard and verifies its accuracy by international comparison measurements.
In Austria this is the task of BEV - the National Metrology Institute. E+E Elektronik, as a ”designated laboratory“ is commissioned to provide and further develop the national etalon for humidity and air velocity.

Thanks to the direct traceability to a NMI (National Metrology Institute), a BEV certificate is of particular interest to accredited calibration authorities.

Based on the agreements between the members of EA (European Cooperation for Accreditation) and ILAC (International Laboratory Accreditation Cooperation), calibration certificates issued by E+E conform to worldwide recognised standards.

Accredited Calibration Laboratory

The calibration laboratory of E+E Elektronik GmbH is accredited by Akkreditierung Austria / Federal Ministry of Science, Research and Economy according to DIN EN ISO/IEC 17025 with identification number 0608.

- Humidity
- Dew point
- Air velocity
- Mass flow
- Temperature
- CO_2-fraction in gas
- Pressure

Details on the E+E scope of accreditation and calibration services are available at **www.eplusecal.com**.

E+E Elektronik Headquarters

E+E ELEKTRONIK - YOUR PARTNER IN SENSOR TECHNOLOGY.

E+E Elektronik GmbH, with headquarters in Engerwitzdorf, Austria, has been established in 1979 and is part of Dr. Johannes Heidenhain GmbH group.

Diverse. E+E Elektronik is a leading manufacturer of sensors and transmitters for a multitude of physical quantities and applications. Data loggers, hand-held meters as well as calibration systems and services round up the product portfolio.

Reliable. Best quality made in Austria, high accuracy and outstanding long-term stability, together with advanced understanding of customer specific requirements are the main competitive advantages of E+E Elektronik.

Versatile. Measuring devices from E+E Elektronik are used all over the world in most diverse industries such as building automation, meteorology, agriculture, food, pharmaceutical, process control or automotive.

Flexible. With own clean room sensor manufacturing, in-house design of state of the art electronics and highest competence in calibration, E+E Elektronik is the ideal partner for OEM customers.

Certified. The E+E quality assurance system is certified according to ISO 9001 and ISO/TS 16949. The company also complies with the environmental standard ISO 14001. The in-house calibration laboratories are accredited according to EN ISO/IEC 17025.

Global. E+E Elektronik sales subsidiaries are located in China, Germany, France, Italy, Korea and the USA. Additionally, E+E maintains a worldwide network of distribution partners.

- HUMIDITY
- TEMPERATURE
- DEW POINT
- MOISTURE IN OIL
- MASS FLOW
- CO_2
- AIR VELOCITY
- PRESSURE

E+E CALIBRATION SERVICE

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Subscribe to the E+E newsletter to be regularly informed about new products.

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