Measuring.
Calibrating.
Testing.

Measuring and calibration for use in Ex-hazardous areas.
Guaranteed Precision:
ecom MEASURING AND CALIBRATION TECHNOLOGY

### PRECISION
This is our main priority where measuring and calibrating are concerned. We do not compromise on safety. This is also obvious with regard to safety.

### PRECISE DATA
Accurate equipment and precise data are the basis for every successful production process and the prerequisite for effective quality assurance. Regular measurement and calibration is among the most important and most challenging tasks that companies have to perform.

### CAUTION
Working with caution is particularly important when working in hazardous areas e.g. in the chemical, petrochemical or other sectors involving potentially explosive gases and dusts. Testing with non-certified equipment would place workers at risk leading to, in the worst case scenario, insufficient explosion protection, placing the plant, machinery or people in danger.

### SAFE AND RELIABLE
ecom provides a wide range of safe and reliable mobile instruments for measuring and calibrating inside and outside hazardous areas. Ranging from the multimeter to devices for measuring temperature, pressure and rpm, plus pressure, current loop and process calibrators, ecom have got you covered.

### SAFETY
As varied as the possible applications may be, our devices all guarantee the same advantages: safe, easy to operate, powerful and ergonomically designed.

### CHOOSE YOUR MEASUREMENT DEVICE, CALIBRATOR OR TEST EQUIPMENT ACCORDING TO YOUR REQUIREMENTS
- Multimeter
- Infrared-Thermometer
- Loop Calibrator
- Magnet Probe
- Wall Clock

Safety, quality and performance: three words that sum up the advantages of our product range. Our instruments are designed to help you carry out your work more quickly, efficiently and with greater precision.

A suitable device exists for each application. You can choose from a range of portable devices with numerous functions. These are high-precision instruments that can also record and display data.
The 28 II EX carries the most important Ex-certifications and is also tested for drops of up to 3 meters. Additionally it is waterproof and dustproofed (IP67). Therefore, the 28 II EX DMM can survive the roughest treatment in the harshest environments.

Multimeter FLUKE 28II EX FOR ZONE 1

FEATURES & FUNCTIONS
- CAT III 1000 V/CAT IV 600 V
- Dustproof, waterproof (IP67)
- Measures up to 1000V / 10A (outside of the Ex-hazardous area)
- Min/Max/Avg and Peak capture
- Low pass filter for accurate measurements on variable speed motor drives
- Input alert
- 4½" digit display (20,000 counts) with backlight

APPROVALS
The Fluke 28 II EX is available with different approvals - from ATEX to IECEx to NED, so that the corresponding versions enable worldwide use on different continents in potentially explosive environments.

This makes the multimeter a perfect example of portable, intrinsically safe measurement instruments - not least of all due to the numerous features unique to this kind of measurement devices.

EASY TO USE
- Backlit keypad for extra visibility in poor lit areas
- Large display digits and 2-level backlight
- Long battery life: 400 hours typical (without backlight)

HANDLING BENEFITS
- Only one DMM is needed because of the safe and compact solution which allows safe measurement both inside and outside (max. 10A / 1000V) the Ex-hazardous area
- A separate battery compartment makes it easy to change batteries on fuses

EXTREME RUGGEDNESS
- Completely sealed IP67 rated case
- Water and dustproof
- Meets IEC Overvoltage Electrical Safety Standard EN 61010-1:2001; CAT III 1000V and CAT IV 600V

WATER AND DUSTPROOF
- CAT III 1000 V
- CAT IV 600 V
- Dustproof, waterproof (IP67)
- Measures up to 1000V / 10A (outside of the Ex-hazardous area)
- Min/Max/Avg and Peak capture
- Low pass filter for accurate measurements on variable speed motor drives
- Input alert
- 4½" digit display (20,000 counts) with backlight
CAN BE USED WORLDWIDE

ACCESSORIES

<table>
<thead>
<tr>
<th>ARTICLE NO.</th>
<th>PRODUCT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>481761</td>
<td>Replacement protection module 440mA t. 28 II EX</td>
</tr>
<tr>
<td>484495</td>
<td>Temperature sensor 88PK-27</td>
</tr>
<tr>
<td>483770</td>
<td>AC Clamp i400 (400A)</td>
</tr>
<tr>
<td>482713</td>
<td>Leather case with strap</td>
</tr>
<tr>
<td>482770</td>
<td>TL175 Twist Guard Test Leads</td>
</tr>
</tbody>
</table>

Various Calibration on Request

TECHNICAL DATA

- Ambient temperature: Different temperature ranges for $T_{amb}$ are fixed by the type approved batteries.
- Storage temperature: -40°C ... +60°C without batteries
- Power supply: 3 x AAA, type-proofed
- Operating time: approx. 400 h
- Dimensions: approx. 210 x 100 x 64 mm (with holster)
- Weight: approx. 690 g
- Protective rating: IP67

STANDARD DELIVERY

- Fluke 28 II EX
- Ex-holster
- Alligator clips
- Test leads TL175
- Batteries
- Documentation
- CD-ROM

SPECIFICATION

| DC voltage | Range: 0.1 mV to 1000 V | Accuracy: ± 0.05 % + 1 |
| AC voltage | Range: 0.1 mV to 1000 V | Accuracy: ± 0.7 % + 4 |
| DC current | Range: 0.1 μA to 10 A | Accuracy: ± 0.2 % + 4 |
| AC current | Range: 0.1 μA to 10 A | Accuracy: ± 1.0 % + 2 |
| Resistance | Range: 0.1 Ω to 50 MΩ | Accuracy: ± (0.2 % + ½) |
| Conductance | Range: 60.00 nS | Accuracy: ± (1.0 % + 10) |
| Diode test | Range: 2.0 V | Accuracy: ± (2.0 % + 1) |
| Duty cycle | Range: 0.0 % to 99.9 % | Accuracy: ± (0.2 % per kHz + 0.1 %) for rise times <1 µs |
| Display counts | 6000 counts / 19.999 counts in high-resolution mode |
| Capacitance | Range: 10 nF to 9999 μF | Accuracy: ± (1.0 % + 10) |
| Frequency | Range: 0.5 Hz to 199.99 kHz | Accuracy: ± (0.005 % + 1) |
| Temperature | Range: -200 °C to +1990 °C (-328 °F to +3924 °F) | Accuracy: ± (1.0 % + 10) °C ± (1.0 % + 10) °F |

REMARKS

- Measurement inside the Ex-hazardous area: $U_{i} \leq 65 V, I_{i} \leq 5 A$
- Measurement outside the Ex-hazardous area: $U_{i} \leq 1000 V, I_{i} \leq 10 A$

Error: % of reading + number of digits.
This intrinsically safe Fluke 568 EX infrared thermometer is the ideal companion for taking complex measurements in hazardous areas easily and efficiently. Due to the ergonomic and rugged design, even in harsh environments the 568 EX is the ideal device. The thermometer can be used to capture and recall up to 99 values at one time. The adjustable emissivity feature allows you to take readings from a range of different materials during your round thanks to the integrated material table.

**FEATURES & FUNCTIONS**
- Precise measurements with accuracy
- Easily measure hard-to-reach objects
- Measurements from Zone 1 into Zone 0
- Measurements of moving materials
- Easy emissivity adjustment
- Data logging up to 99 points
- 6 languages available

**STANDARD DELIVERY**
- Fluke 568 EX
- Batteries
- Leather case
- Carrying case
- Documentation
- K-type thermocouple

**APPROVALS**
The Fluke 568 EX combines a large number of worldwide approvals for use in potentially explosive environments – from ATEX to IECEx and NEC – meaning that it is no longer necessary to deploy and integrate different equipment on different continents. This makes the thermometer a perfect example of portable, intrinsically safe measuring instruments – not least of all due to the numerous features unique to measurement devices in potentially explosive areas.

**CERTIFICATIONS**
- ATEX: II 2 G Ex ia IIC T4 Gb
- IECEx: Ex ia IIC T4 Gb
- NEC: Class I, Division 1, Groups A-D, T4
- Class I, Division 2, Groups A-D, T4
- Class I, Zone 1, AEx ia IIC T4 Gb
- Class I, Zone 1, Ex ia IIC T4 Gb
- INMETRO: Ex ia IIC T4 Gb
- TÜ V: 1Ex ia (op ia Gal) IIC T4 Gb X

**TECHNICAL DATA**
- Ambient temperature: 0 °C … +50 °C (+32°F … +122°F)
- Infrared temperature range: -40 °C … +800 °C (-104 °F … +1472 °F)
- Display resolution: 0.1 °C / 0.1 °F
- Infrared response time: <500 ms
- Distance to measurement spot size (D:S): 50:1
- Storage: Up to 99 points with time and date
- Accuracy: ±0 °C ±1 °C or 1 %, whichever is greater
- Emissivity adjustment: Digitally from 0.1 to 1.00 by 0.01
- Min/Max/Avg/Dif: Yes
- Laser sighting: Single-point laser
- Power supply: 2x AAA, type approved
- Battery life: 4 h (continuous operation)
- Dimensions: 175 x 166 x 55 mm
- Weight: Approx. 365 g (12.87 oz)

**ACCESSORIES**
- WKS-Calibration
- DAkkS-Calibration
- Leather grip LH568
Ex-MP4 a

The intrinsically-safe non-contact temperature measuring equipment Ex-MP4 a is a robust yet exceedingly handy and easy to use instrument for temperature measuring in ex-hazardous areas.

**FEATURES**
- Measuring range: up to +400 °C
- High accuracy
- Measurements from Zone 1 into Zone 0
- Simple operation
- Quick response time
- Laser target sighting

**SCOPE OF DELIVERY**
- Ex-MP4 a
- Battery
- Leather handle
- Wrist strap
- Documentation

**EX DATA**

| EX | IIC 2 G Ex ia op is IIC T4 |

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>0 °C ... +50 °C</td>
</tr>
<tr>
<td>Storage temperature (without battery)</td>
<td>-20 °C ... +65 °C</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-18 °C ... +400 °C</td>
</tr>
<tr>
<td>Display resolution</td>
<td>0.2 °C</td>
</tr>
<tr>
<td>Target sighting</td>
<td>Laser (class 2)</td>
</tr>
<tr>
<td>Accuracy (at 23°C)</td>
<td>-18 °C ... -1 °C ± 3 °C</td>
</tr>
<tr>
<td></td>
<td>-1 °C ... +400 °C ± 2 °C or 2 % of reading or ±2 °C, whichever is greater</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±2 % of reading or ±2 °C, whichever is greater</td>
</tr>
<tr>
<td>Response time</td>
<td>500 ms/sec</td>
</tr>
<tr>
<td>Emissivity</td>
<td>0.95 preset</td>
</tr>
<tr>
<td>Optics D/L</td>
<td>1/8</td>
</tr>
<tr>
<td>Spectral response</td>
<td>7-18 μm</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95% r. H. at 30 °C [non-condensing]</td>
</tr>
<tr>
<td>Power supply</td>
<td>1x IEC 6L61, type approved</td>
</tr>
<tr>
<td>Dimensions</td>
<td>~152 x 101 x 38 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>~200 g</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>ARTICLE NO.</th>
<th>PRODUCT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>482959</td>
<td>Leather handle</td>
</tr>
<tr>
<td>312962</td>
<td>WKS-Calibration</td>
</tr>
</tbody>
</table>

**FOR QUICK TEMPERATURE MEASUREMENTS**

The benefits of non-contact-measurement

- Moving objects
  - increased safety when determining the temperature of fast moving objects
  - no antennas mean that frictional heat cannot affect the measurement
  - no mark or blemish is left on the object being measured

- Response time
  - fast and accurate. Pyrometers respond to emitted energy and are around 20 to 1000 times quicker than traditional direct contact thermometers.

- Low maintenance and non invasive
  - the temperature of the object being measured is not affected by the procedure

Hard to reach objects and moving materials

- the optics of the pyrometer are aimed at the object to be measured and with the laser sighting it is possible for both small and distant objects to be targeted
- hazardous and aggressive materials can be safely measured - and without fear of damaging the equipment
- the compact size of the pyrometer allows it to be used in even the most awkward positions, with only a clear line of sight to the target area being required
- voltage carrying objects can be measured without any danger
- with direct contact measurement, poor heat conduction or heat capacity of the object can prevent insufficient heat flow to a measuring device

Non-Contact Temperature Meter Ex-MP4 a

FOR ZONE 1
### FEATURES & FUNCTIONS

- Large display and simple, quick click push rotary button for easy one-handed operation.
- Simultaneous mA and % readout for quick, easy interpretation of readings.
- mA accuracy of 0.015 %
- 1 µA resolution for mA source, simulate and measure.
- Push button with 25 % steps for fast, easy linearity checks.
- 0-100 % “span check” for fast confirmation of zero and span.
- Internal loop supply, so you can power and read a transmitter at the same time.
- Measures up to 28 V dc.
- 0-20 mA or 4-20 mA default start-up modes.
- HART® compatible resistance is connected in series with the loop supply for compatibility with HART® communicators.

### STANDARD DELIVERY

- 707Ex
- Ex-Holster
- Safety designed test leads
- Alligator test clips
- Battery
- CD-ROM
- Documentation

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-10 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-30 °C to +60 °C</td>
</tr>
<tr>
<td>Maximum voltage</td>
<td>28 Volt</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>95 % (0 °C to +30 °C); 75 % (+30 °C to +60 °C); 45 % (+60 °C to +50 °C)</td>
</tr>
<tr>
<td>Power supply</td>
<td>1x 6LR61, type approved</td>
</tr>
<tr>
<td>Operating time</td>
<td>18 hours typical, at 12 mA</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>164 x 75 x 47 mm (with holster)</td>
</tr>
<tr>
<td>Weight</td>
<td>350 g (with holster)</td>
</tr>
</tbody>
</table>

### SUMMARY SPECIFICATIONS (18 °C TO 28 °C)

<table>
<thead>
<tr>
<th>Function</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure voltage</td>
<td>0 to 28 V</td>
<td>0.001 V</td>
<td>±0.015 % of range, +2 Digits</td>
</tr>
<tr>
<td>Measure mA</td>
<td>0 to 24 mA</td>
<td>0.001 mA</td>
<td>±0.015 % of range, +2 Digits</td>
</tr>
<tr>
<td>Source mA1</td>
<td>0 to 24 mA</td>
<td>0.001 mA</td>
<td>±0.015 % of range, +2 Digits</td>
</tr>
<tr>
<td>Simulate mA2</td>
<td>0 to 24 mA</td>
<td>0.001 mA</td>
<td>±0.015 % of range, +2 Digits</td>
</tr>
<tr>
<td>Loop supply</td>
<td>24 V</td>
<td>n. z.</td>
<td>24 V ± 1 V DC</td>
</tr>
</tbody>
</table>

- Max load, 700 Ohms at 20 mA
- Max applied voltage for simulation, 28 V
DETECTING MAGNETIC FIELDS

Magnet-Ex 12 is a pencil sized magnet probe, designed to detect magnetic fields in hazardous areas. Within seconds it is possible to detect whether or not a solenoid valve is electrically activated.

Connection to electronic circuitry or opening of terminal boxes is rendered unnecessary.

The highly sensitive probe point of the Magnet-Ex 12 only needs to be brought near the coil of a solenoid valve, if a magnetic field is detected, the test tip illuminates red. In the same manner tests can be carried out on flowmeters or any other equipment that is working magnetically, even when located in hazardous areas.

The Magnet-Ex 12 comes with an integral test magnet that is securely fitted in such a way that it cannot be easily lost. Using this magnet, tests can be carried out to establish the working state of both unit and batteries.

After any check the Magnet-Ex 12 will automatically switch off if it is no longer being used. This ensures a long battery life.

The clip attached to the instrument's side secures it from accidental loss and allows the maintenance engineer to easily carry it at all times.

FEATURES & FUNCTIONS

• Highly sensitive probe point
• No contact with test object required
• Resistant to dirt
• Optical indication
• Built-in test magnet for testing Magnet-Ex 12 and for battery check

STANDARD DELIVERY

• Magnet-Ex 12
• Batteries
• Documentation

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-20 °C ... +50 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 °C ... +60 °C</td>
</tr>
<tr>
<td>Magnetic field types</td>
<td>alternating, direct and permanent fields</td>
</tr>
<tr>
<td>Detection</td>
<td>non-contact detection</td>
</tr>
<tr>
<td>Indication</td>
<td>optical, built-in LED</td>
</tr>
<tr>
<td>Power supply</td>
<td>2 x LR03 (AAA) according to IEC, type approved</td>
</tr>
<tr>
<td>Casing material</td>
<td>metal (probe point: plastic)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>150 x 18 mm (L x Ø)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 60 g (batteries included)</td>
</tr>
<tr>
<td>IP protection class</td>
<td>IP 54</td>
</tr>
</tbody>
</table>
Ex-Time 40

FEATURES & FUNCTIONS

- Quartz movement
- Robust metal casing
- Simple daylight saving

STANDARD DELIVERY

- Ex-Time 40
- Battery
- Documentation

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>0 °C ... +50 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>0 °C ... +50 °C</td>
</tr>
<tr>
<td>Clock Movement</td>
<td>Quartz</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5/+15 Seconds/month</td>
</tr>
<tr>
<td>Power Supply</td>
<td>1 x LR 14 according to IEC (type approved)</td>
</tr>
<tr>
<td>Operating time</td>
<td>1 year</td>
</tr>
<tr>
<td>Dimensions</td>
<td>400 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 2.0 kg</td>
</tr>
</tbody>
</table>
Your automation, our passion.

Explosion Protection
- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors
- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity