Product Catalogue
Measurement Technology
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Low-priced, robust Belt Scale for in-company Belt Weighing

Accuracy ±1%

Robust, low-priced Belt Scale

Specifically designed for operations where economy and ease of installation are important considerations, the Ramsey IDEA belt scale provides basic rate and totalization functions. The Ramsey IDEA belt scale is ruggedly designed and outstandingly easy to install.

The Ramsey IDEA belt scale lets you monitor production output and inventory, or regulate product loadout, while providing vital information for the effective management and efficient operation of your business.

The weighing assembly consists of the modular IDEA weighing frame and the speed sensor ZA-11 or 60-12. It also utilizes the Ramsey MINI series, Micro-Tech 9000 series or Micro-Tech 3000 series electronic integrator.

The Ramsey IDEA belt scale is suited for basic registration and monitoring of continuously conveyed bulk materials. Accuracy is normally ±1%.
System Components

The Ramsey IDEA belt scale has three major components: control unit (integrator), weighing frame and belt speed sensor.

Control Unit (Integrator)

As control units, the modern MINI, Micro-Tech 9000 and Micro-Tech 3000 series integrators are used. These devices are characterized by their high accuracy, their ruggedness and their easy handling. Various interfaces and expandabilities make it easy to connect the belt scale with process control systems.

Weighing Frame

The IDEA weighing frame is designed for one idler station. The weighing frame consists of either one or two scale modules, depending on conveyor width. Compact and designed to attach to the conveyor’s stringers, the modules support the weigh idler and measure the weight of material on the conveyor belt.

IDEA Weighing Frame Advantages

- Factory installed and calibrated overload protection.
- Pivotless design.
- No moving or wearing parts to cause potential maintenance problems.
- Compact design for easy installation and alignment.
- No place for material to build up and cause measurement errors.
- Identical scale modules fit on any belt width and are interchangeable.

Belt Speed Sensor

For belt speed measurement, either the ZA-11 digital lower belt measuring wheel or the 60-12 digital belt speed sensor can be used. The Ramsey 60-12 digital belt speed sensor is one of the most reliable and accurate speed-sensing device ever developed for belt scale service. Direct-coupling the sensor to the conveyor tail pulley, snubbing roll, or a large diameter return roller ensures an accurate belt-travel readout. No wheels ride on the belt, which eliminates problems related to material build-up and slippage.

ZA-11 Lower Belt Measuring Wheel Advantages

- Simplest installation.

60-12 Belt Speed Sensor Advantages

- Rugged housing, suitable for outdoor installations.
- A/C pulse generator means no brushes to adjust or replace.

Performance Guarantee

On installations approved by EmWeA, we warrant that the Ramsey IDEA belt scale will weigh and totalize to a value within ±1% of the test load when calibrated to our specifications.
Belt Scale Ramsey IDEA

IDEA-1 Single Scale Module Weighing Frame

IDEA-2 Dual Scale Module Weighing Frame
**Technical Specifications**

**IDEA Weighing Frame**
- No. of Weighing Idlers: one
- No. of Weighing Modules: one (IDEA-1) or two (IDEA-2)
- Clearance Requirements: fits any standard conveyor; no space required above belt line
- Belt Width: up to 800 mm (IDEA-1) / up to 1600 mm (IDEA-2)
- Construction: compact module, steel / aluminium (option: stainless steel)
- Mounting: four bolts to conveyor stringers

**Load Cells**
- Quantity: one load cell per weighing module in parallel
- Enclosure: environmentally-protected load cell, stainless steel, IP67
- Mounting: welded bending beam type load cell
- Excitation: 10 V DC ±5 %
- Output: 2 mV/V ±0.1 %
- Accuracy: ±0.02 % / 3000 d
- Operating Temperature: -40°C ... +80°C
- Nominal Temperature: -10°C ... +40°C
- Safe Load: 150 % full span
- Certificates (Standard): CE

**ZA-11 Lower Belt Measuring Wheel**
- Type: digital, brushless
- Mounting: lower belt measuring wheel
- Housing: weatherproof, IP65
- Mounting Hardware: supplied with coupling, restraint arm and restraint spring
- Certificates (Standard): CE
- Certificates (Option): ATEX

**60-12 Belt Speed Sensor**
- Type: digital, brushless
- Mounting: direct to stub shaft with M16 thread hole on tail pulley or bend pulley
- Housing: weatherproof, IP65
- Mounting Hardware: supplied with coupling, restraint arm and restraint spring
- Certificates (Standard): CE
- Certificates (Option): ATEX, FM, PTB, OIML, MID

**Control and Display Unit (Integrator)**
Various control units for variant requirements are available. Choose a weatherproof field mount enclosure or a DIN panel mount housing. A wide range of optional interfaces and expandabilities (binary and analog inputs and outputs, RS232, RS485, Profibus DP, Ethernet, BCD, or USB make it easy to connect the belt scale with customer’s process control systems. We would be happy to prepare a specific quotation for you!
Process Belt Scale, certifiable, for Bulk Material on Belt Conveyors

Accuracy ±0.5%
MID and OIML Class 1 and 2

Robust Precision Belt Scale

The Ramsey Series 20 process belt scale monitors feed to crushers, mills, screens and other processes with an accuracy of ±0.5%, even in the harshest applications.

The Ramsey Series 20 process belt scale lets you monitor production output and inventory, or regulate product loadout, while providing vital information for the effective management and efficient operation of your business.

The Ramsey Series 20 process belt scale incorporates the one-piece, drop-in style Ramsey 10-20 weighing frame and the Ramsey 60-12C or 60-12CR belt speed sensor. It also utilizes the Ramsey Micro-Tech 9000 series or Micro-Tech 3000 series electronic integrator.

The Ramsey Series 20 process belt scale represents the world standard of accuracy and performance for loadout, inventory monitoring and fee-holder type applications requiring certification.
System Components

The Ramsey Series 20 process belt scale has four major components: control unit (integrator), weighing frame, load cell(s) and belt speed sensor.

Control Unit (Integrator)

As control units, the modern Micro-Tech 9000 and Micro-Tech 3000 series integrators are used. These devices are characterized by their high accuracy, their ruggedness and their easy handling. Various interfaces and expandabilities make it easy to connect the belt scale with process control systems.

Weighing Frame

Rigid and rugged, the 10-20 weighing frames remain permanently aligned within the conveyor frame. This one-piece, drop-in style weighbridge is completely assembled at the factory and is quickly and easily installed and aligned properly on the conveyor. It is designed to provide additional stiffening and support to minimize conveyor deflection. Both the single and the dual-idler models offer three-point suspension and employ trunnion-type, frictionless pivots. These sealed units are impervious to vibration, moisture and product build-up, which eliminates problems commonly associated with knife edges and bearings.

10-20 Weighing Frame Advantages

- No moving or wearing parts lead to a longer life span and low maintenance costs.
- Precision strain-gauge load cell applied in tension to guarantee load cell alignment and accuracy.
- Total deflection of idler(s) less than 0.1 mm.
- Slim profile to minimize material build-up.
- Optional integrated calibration weights for quick check of weighing frame and accuracy.

Belt Speed Sensor

The Ramsey 60-12 digital belt speed sensor is one of the most reliable and accurate speed-sensing device ever developed for belt scale service. Direct-coupling the sensor to the conveyor tail pulley, snubbing roll, or a large diameter return roller ensures an accurate belt-travel readout. No wheels ride on the belt, which eliminates problems related to material build-up and slippage.

60-12 Belt Speed Sensor Advantages

- Rugged housing, suitable for outdoor installations.
- A/C pulse generator means no brushes to adjust or replace.

Performance Guarantee

On installations approved by EmWeA, we warrant that the Ramsey Series 20 process belt scale will weigh and totalize to a value within ±0.5% of the test load when calibrated to our specifications.
10-20 Single Idler Weighing Frame

10-20 Dual Idler Weighing Frame

*All idler spacings in scale area must be equal.
## Technical Specifications

### 10-20 Weighing Frame

- **No. of Weighing Idlers:** one or two
- **Clearance Requirements:** fits any standard conveyor; no space required above belt line
- **Belt Width:** from 400 mm (no upper limit)
- **Construction:** mechanical steel tubing (option: stainless steel)
- **Mounting:** four bolts to conveyor stringers

### Load Cells

- **Quantity:** one or two load cells in parallel
- **Enclosure:** environmentally-protected „S“ type cell, stainless steel, IP68
- **Mounting:** tension
- **Excitation:** 10 V DC ±5 %
- **Output:** 3 mV/V ±0.1 %
- **Accuracy:** ±0.02 % / 3000 d
- **Non-Linearity:** <0.03 % full span
- **Non-Repeatability:** <0.01 % full span
- **Hysteresis:** <0.02 % full span
- **Operating Temperature:** -20°C ... +65°C (standard); different temperatures on request
- **Temperature Sensitivity:** span: 0.0014 % full span / °K
  
  zero: 0.0027 % full span / °K
- **Safe Load:** 150 % full span
- **Ultimate Load:** 300 % full span
- **Sideload:** 50 % full span
- **Certificates (Standard):** CE
- **Certificates (Option):** ATEX, FM, PTB, OIML, MID

### 60-12 Belt Speed Sensor

- **Type:** digital, brushless
- **Mounting:** direct to stub shaft with M16 thread hole on tail pulley or bend pulley
- **Housing:** weatherproof, IP65
- **Mounting Hardware:** supplied with coupling, restraint arm and restraint spring
- **Certificates (Standard):** CE
- **Certificates (Option):** ATEX, FM, PTB, OIML, MID

### Control and Display Unit (Integrator)

Various control units for variant requirements are available. Choose a weatherproof field mount enclosure or a DIN panel mount housing. A wide range of optional interfaces and expandabilities (binary and analog inputs and outputs, RS232, RS485, Profinet DP, Ethernet, BCD, or USB make it easy to connect the belt scale with customer’s process control systems. We would be happy to prepare a specific quotation for you!
Belt Scale Ramsey Series 14

Precision Belt Scale, certifiable, for Bulk Material on Belt Conveyors

Accuracy ±0.25% (±0.125%)
MID and OIML Class 0.5 and 1

High-Precision Belt Scale

The Ramsey Series 14 precision belt scale is specifically designed for high accuracy or basis-of-payment applications requiring certification by government and regulatory agencies. This belt scale is extremely accurate to within ±0.25% (optional 0.125%) and is the most widely certified belt scale in the world.

The Ramsey Series 14 precision belt scale lets you monitor production output and inventory, or regulate product loadout, while providing vital information for the effective management and efficient operation of your business.

The Ramsey Series 14 precision belt scale incorporates the Ramsey 10-14 low-deflection, full-floating unitized weighing frame and the Ramsey 60-12C or 60-12CR belt speed sensor. It also utilizes the Ramsey Micro-Tech 9000 series or Micro-Tech 3000 series electronic integrator.

The Ramsey Series 14 precision belt scale represents the world standard of accuracy and performance for loadout, inventory monitoring and fee-holder type applications requiring certification.
System Components

The Ramsey Series 14 precision belt scale has four major components: control unit (integrator), weighing frame, load cells and belt speed sensor.

Control Unit (Integrator)

As control units, the modern Micro-Tech 9000 and Micro-Tech 3000 series integrators are used. These devices are characterized by their high accuracy, their ruggedness and their easy handling. Various interfaces and expandabilities make it easy to connect the belt scale with process control systems.

Weighing Frame

The 10-14 weighing frame is normally designed for four idler stations. For special applications, the weighing frame may be designed for two, three, six or more idler stations as well. All series 10-14 weighing frames are constructed of structural steel tubing and are factory pre-assembled with checkrods to facilitate fast and easy field installation. Only eight bolts are required to mount the unit to conveyor stringers. Four environmentally-sealed precision strain gauge load cell assemblies are applied in tension to support the weigh platform.

10-14 Weighing Frame Advantages

- Rigid structural steel tubing construction with check rods maintains positive alignment.
- No moving or wearing parts lead to a longer life span and low maintenance costs.
- Factory pre-assembled and easily installed.
- Four strain gauge load cells applied in tension.
- Full-floating, pivotless weigh platform.

Belt Speed Sensor

The Ramsey 60-12 digital belt speed sensor is one of the most reliable and accurate speed-sensing device ever developed for belt scale service. Direct-coupling the sensor to the conveyor tail pulley, snubbing roll, or a large diameter return roller ensures an accurate belt-travel readout. No wheels ride on the belt, which eliminates problems related to material build-up and slippage.

60-12 Belt Speed Sensor Advantages

- Rugged housing, suitable for outdoor installations.
- A/C pulse generator means no brushes to adjust or replace.

Performance Guarantee

On installations approved by EmWeA, we warrant that the Ramsey Series 14 precision belt scale will weigh and totalize to a value within ±0.25% (optional ±0.125%) of the test load when calibrated to our specifications. Furthermore, we warrant that the scale system will repeat to within 0.1% of consecutively run, simulated calibration tests.
Of course significantly larger belt widths, different idler spacings etc. are available because the weighing frame will be designed exactly fitting to measure for your conveyor.

**Typical Dimensions (Examples)**

<table>
<thead>
<tr>
<th>BELT WIDTH</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<tr>
<td>457 mm</td>
<td>540</td>
<td>686</td>
<td>749</td>
<td>591</td>
<td>191</td>
<td>1.43 x 25.4</td>
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<tr>
<td>508 mm</td>
<td>591</td>
<td>737</td>
<td>800</td>
<td>641</td>
<td>191</td>
<td>1.43 x 25.4</td>
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<tr>
<td>610 mm</td>
<td>692</td>
<td>838</td>
<td>902</td>
<td>743</td>
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<td>1.43 x 25.4</td>
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<tr>
<td>762 mm</td>
<td>845</td>
<td>991</td>
<td>1054</td>
<td>895</td>
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<tr>
<td>914 mm</td>
<td>743</td>
<td>1143</td>
<td>1297</td>
<td>1048</td>
<td>191</td>
<td>1.43 x 25.4</td>
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<tr>
<td>1067 mm</td>
<td>1149</td>
<td>1295</td>
<td>1359</td>
<td>1200</td>
<td>254</td>
<td>2.06 x 25.4</td>
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<tr>
<td>1219 mm</td>
<td>1302</td>
<td>1448</td>
<td>1511</td>
<td>1353</td>
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<td>2.06 x 25.4</td>
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<td>1372 mm</td>
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<td>1664</td>
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<td>1524 mm</td>
<td>1607</td>
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<td>1816</td>
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<td>1829 mm</td>
<td>1911</td>
<td>2057</td>
<td>2121</td>
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<tr>
<td>2134 mm</td>
<td>2216</td>
<td>2362</td>
<td>2426</td>
<td>2267</td>
<td>254</td>
<td>2.06 x 25.4</td>
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<table>
<thead>
<tr>
<th>IDLER SPACING</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
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</thead>
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<tr>
<td>914 mm</td>
<td>3302</td>
<td>3099</td>
<td>1524</td>
<td>335</td>
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<tr>
<td>1067 mm</td>
<td>3734</td>
<td>3631</td>
<td>2438</td>
<td>886</td>
</tr>
<tr>
<td>1219 mm</td>
<td>4191</td>
<td>4013</td>
<td>2438</td>
<td>610</td>
</tr>
</tbody>
</table>
Technical Specifications

10-14 Weighing Frame

No. of Weighing Idlers: two, three, four (standard), six or more
Clearance Requirements: fits any standard conveyor; no space required above belt line
Belt Width: from 400 mm (no upper limit)
Construction: mechanical steel tubing (option: stainless steel)
Mounting: eight bolts (four per support beam) to conveyor stringers

Load Cells

Quantity: four load cells in parallel
Enclosure: environmentally-protected „S“ type cell, stainless steel, IP68
Mounting: tension
Excitation: 10 V DC ±5 %
Output: 3 mV/V ±0.1 %
Accuracy: ±0.02 % / 3000 d
Non-Linearity: <0.03 % full span
Non-Repeatability: <0.01 % full span
Hysteresis: <0.02 % full span
Operating Temperature: -20°C ... +65°C (standard); different temperatures on request
Temperature Sensitivity: span: 0.0014 % full span / °K
zero: 0.0027 % full span / °K
Safe Load: 150 % full span
Ultimate Load: 300 % full span
Sideload: 50 % full span
Certificates (Standard): CE
Certificates (Option): ATEX, FM, PTB, OIML, MID

60-12 Belt Speed Sensor

Type: digital, brushless
Mounting: direct to stub shaft with M16 thread hole on tail pulley or bend pulley
Housing: weatherproof, IP65
Mounting Hardware: supplied with coupling, restraint arm and restraint spring
Certificates (Standard): CE
Certificates (Option): ATEX, FM, PTB, OIML, MID

Control and Display Unit (Integrator)

Various control units for variant requirements are available. Choose a weatherproof field mount enclosure or a DIN panel mount housing. A wide range of optional interfaces and expandabilities (binary and analog inputs and outputs, RS232, RS485, Profibus DP, Ethernet, BCD, or USB make it easy to connect the belt scale with customer's process control systems. We would be happy to prepare a specific quotation for you!
the smart volume flow meter

for bulk materials on belt conveyors, vibratory conveyors or the like

Description:

The FLO-3D II Optical Belt Scale is a valuable, easy-to-install alternative to a belt scale or flow meter. This volume flow meter is perfect for e.g. internal control applications, gantry scraper’s control, large open-pit mine equipment’s control and much more.

The EmWeA FLO-3D II sensor has to be fixed above the conveyor. The integrated 3D camera continuously takes three-d pictures of the bulk material. The empty belt’s profile is „taught“ with the help of the semi-automatic zeroing function.

On the EmWeA FLO-3D II sensor’s display, the actual volume flow rate is shown in m³/h. It is even possible to display t/h if material’s bulk density is constant.

Advantages:

- ruggedly constructed
- easy installation and start-up
- valuable price
- low-maintenance
- optional dust protection housing
Optical Belt Scale FLO-3D II

- FLO-3D Sensor II for volume flow measurement as an optical belt scale (type of protection: IP 67)
- Mounting kit for easy clamp cylinder mounting on a 14 mm round bar
- 10 m cable to connect with junction box
- 10 m ethernet cable to connect with junction box
- Junction box 100 ... 240 V AC including power supply, terminal block for inputs and outputs, ethernet jack (type of protection: IP 65)
- 2 m ethernet cable to connect the junction box to PC for start-up and setup (for normal operation, no PC is necessary)
- Operating software and documentation

Technical Specifications:

Display:
- 4 LED, yellow
- 4 LED, green
- Four-digit numeric display

Supply Voltage:
- 100 ... 240 V AC ±10 %
- Optional 24 V DC ±10 %

Ambient Temperature:
- -10 °C ... +50 °C
- Optional 0 °C ... +70 °C

Material:
- Sensor housing: die-cast aluminium
- Front window: PMMA
- Display window: PC
- Junction box: PC

Sensor Connections:
- M12 plug-in connector IP 67

Junction Box Connections:
- Terminal blocks, RJ45

Type of Protection:
- Sensor: IP 67
- Junction box: IP 65

Inputs:
- 2 binary (24 V PNP) for belt stop and product change

Outputs:
- 2 binary (24 V PNP) or 1 binary (24 V PNP) and 1 analog (4-20 mA or 0-10 V)

Binary Output Functions:
- Counting pulses
- Min. threshold
- Max. threshold

Analog Output Functions:
- Volume flow rate (m³/h)
- Mass flow rate (t/h, at constant bulk density)

Ethernet Port:
- PC operating software
- Data transfer
Optical Belt Scale EHS

Optical Belt Scale EHS

Volume Flow Meter

dedicated to mobile Equipment

Sensor

The optical belt scale’s sensor is mounted above the drive pulley. It has no bulk material contact, and as a consequence it is no subject to wear. Belt speed is determined by a transducer directly mounted near the drive pulley. The system is insensitive to dust and vibrations. The optical belt scale does its job at any conveyor angle even if it varies during measurement. The sensor has no display or operating option, just a signal lamp is indicating the operational status. All measured values are stored up to one year. The included smart phone is used for operation, as well as for displaying measuring values and counter readings.

Smart Phone and mobile Printer

- Android smart phone, shock-proof, water-proof IP 67
- SensorManager Android app
- Customer - Date / time
- Operator - Location
- Material - Measurement data printout / e-mail
- Wireless Bluetooth communication
- USB connection to office PC
- USB cable and 110 / 230 V AC charger
- Mobile thermoprinter
Technical Specifications (Sensor)

Operating Voltage:
- 24 V DC ±20%; 5 A
- Different voltages optional

Ambient Temperature:
- -45 °C ... +70 °C

Sample Rate:
- 200 measurements per second

Storage Capacity:
- More than one year

Interface:
- Bluetooth Class I (standard)
- Analog output 4-20 mA (option)
- Serial interface RS 422 (option)

Laser:
- Class 3B according to IEC 60825-1 : 2001
- Pulse power 60 mW
- Pulse width 400 µs
- Wavelength 785 nm
- Pulse frequency 200 Hz

Optical Belt Scale EHS

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Solids Flow Detector

Solids Flow Detector FLOW NO FLOW

Bulk Solids Flow Detection in closed Pipes

Solids Flow Detectors

Solids flow detectors detect if bulk material is flowing in a pipe or not. EmWeA flow detectors are using the last microwave technologies to insure the best accuracy, independent of the process or product variations.

Solids Flow Detector FLOW NO FLOW

The FLOW NO FLOW solids flow detector is a microwave sensor, specifically developed to detect solids flow in pneumatic pipes or free fall. This solids flow detector allows bulk industries to detect their product flows in real time, with accuracy and reliability.
FLOW NO FLOW Solids Flow Detectors’ Advantages

Choose any desired threshold between 0% and 100% of maximum flow rate - the FLOW NO FLOW bulk solids flow detector activates its relais output whenever that threshold is undercut or exceeded.

The FLOW NO FLOW solids flow detector operates much more stable and precise than conventional microwave doppler detectors. With the help of FLOW NO FLOW bulk solids flow detector you will avoid issues with:

- Temperature variations
- Vibrations
- Granulometry variations
- Side wall fouling

FLOW NO FLOW Software

For easy and accurate calibration of the solids flow detector, FLOW NO FLOW Software is included.

FLOW NO FLOW Solids Flow Detector - Technical Specifications

Housing: Stainless steel or aluminium (subject to model version)
Type of protection: IP 66
Supply voltage: 17 ... 30 V DC
Pressure resistance: 80 bars (optional 300 bars)
Storage temperature: -25 °C ... +75 °C
Ambient temperature: -20 °C ... +60 °C
Product temperature: -20 °C ... +70 °C (optional -20 °C ... +450 °C)
Relais output: 30 V AC / DC; 0.1 ... 3 A (subject to model version)
Certifications: CE; ATEX (optional)

Measuring Principle

A microwave frequency is issued in the pipe, perpendicular to the flow.

According to the product quantity, the signal is more or less reduced, putting a variation. Then, this variation is analyzed by the sensor.

FLOW NO FLOW Software

For easy and accurate calibration of the solids flow detector, FLOW NO FLOW Software is included.

FLOW NO FLOW Solids Flow Detector - Technical Specifications

Housing: Stainless steel or aluminium (subject to model version)
Type of protection: IP 66
Supply voltage: 17 ... 30 V DC
Pressure resistance: 80 bars (optional 300 bars)
Storage temperature: -25 °C ... +75 °C
Ambient temperature: -20 °C ... +60 °C
Product temperature: -20 °C ... +70 °C (optional -20 °C ... +450 °C)
Relais output: 30 V AC / DC; 0.1 ... 3 A (subject to model version)
Certifications: CE; ATEX (optional)

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Solids Flow Meter DYNAMIC FLOW

Bulk Solids Flow Measurement in closed Pipes

Solids Flow Meters

A solids flow meter measures the bulk flow rate in the pipe. EmWeA flow meters are using the last microwave technologies to insure the best accuracy, independent of the process or product variations.

Solids Flow Meter DYNAMIC FLOW

The DYNAMIC FLOW solids flow meter is a microwave sensor, dedicated to flow measurement, specially developed to measure solids flow in pneumatic pipes or free fall. This solids flow meter allows bulk industries to measure their product flow, in real time, with accuracy and reliability. Furthermore, DYNAMIC FLOW is eminently suitable for homogeneous distribution e.g. of coal dust in power plants.
DYNAMIC FLOW Solids Flow Meter's Advantages

The FLOW NO FLOW solids flow detector operates much more stable and precise than conventional bulk flow meters.

The innovative DYNAMIC FLOW system is measuring the particle speed with the help of Doppler effect. In addition, it counts the particles taking account of their size, using its integrated particle counter function. **With the help of FLOW NO FLOW bulk solids flow detector you will avoid issues with:**

- Variations in material concentration
- Speed variations
- Particle size variations
- Temperature variations

Measuring Principle

A microwave frequency is issued in the pipe, perpendicular to the flow.

According to the product quantity, the signal is more or less reduced, putting a variation. Then, this variation is analyzed by the sensor.

DYNAMIC FLOW Software

For easy and accurate calibration of the solids flow meter, as well as for visualization and data archiving, DYNAMIC FLOW Software is included.

DYNAMIC FLOW Solids Flow Meter - Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Stainless steel or aluminium (subject to model version)</td>
</tr>
<tr>
<td>Type of protection</td>
<td>IP 66 (optional IP 67)</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 V DC ± 4 V; max. 0.4 A</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>8 bars (optional 200 bars)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25 °C ... +75 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-20 °C ... +60 °C</td>
</tr>
<tr>
<td>Product temperature</td>
<td>-20 °C ... +110 °C (optional -20 °C ... +200 °C)</td>
</tr>
<tr>
<td>Interface</td>
<td>2 analog outputs 4-20 mA or 2-10 V; Modbus (optional)</td>
</tr>
<tr>
<td>Relais output</td>
<td>30 V AC / DC; 0.1 A; for counter pulses</td>
</tr>
<tr>
<td>Certifications</td>
<td>CE; ATEX (optional)</td>
</tr>
</tbody>
</table>

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IRPC Moisture Meter / Analyzer

The IRPC moisture meter and analyzer has been specially designed for the measurement of product moisture and other product contents or characteristics (fat, protein, collagen, sugar, salt, caffeine, alcohol, coating thickness...)

- for continuous and discontinuous processes
- for bulk materials and fluids
- bulk materials of varying grain size
- varying material height
- varying product colors
- temperature variations
- continuous measurement
- online, contact-free
- reliable and highly accurate
IRPC Analyzer Advantages

The functional parts of the IRPC analyzer, e.g.:

- interferential filters
- halogen lamp
- PBS sensor (Product Breakdown Structure)
- optical lenses
- sight pipe
- housing and mechanical parts

have been specially designed to challenge infrared functional limits and allow a stable and accurate measurement - even on very variable processes.

Measuring Principle

The IRPC analyzer and moisture meter is equipped with interferential filters that select several wavelengths corresponding to certain molecules absorption NIR peaks. A continuous light source with wide spectral band irradiates the measuring point. A part of this radiation is backscattered and concentrated by a spherical mirror on the sensor. The component of interest absorbs parts of this radiation. These data are processed by the sensor, and stored calibrations are used to determine the current moisture, protein content, or the like.

Technical Specifications of IRPC Analyzer / Moisture Meter

- Measuring range: 0.2 ... 98% moisture, fat, protein, collagen, sugar, salt, caffeine, alcohol, coating thickness...
- Power: 24 V DC
- Response time: 100 ms
- Resolution: 0.01%
- Outputs: Analog output, serial interface
- Operating temperature: max. 50°C
- Type of protection: IP 65 (optional IP 66)
- Certifications: CE; ATEX (optional)
- Optional equipment: Air cooling, water cooling, scavenging air

Infrasoftware

The IRPC analyzer / moisture meter comes with Infrasoftware. Working under Windows®, this modular software allows sensor calibration storage, and the exploitation of measurement.

- Calibration by sampling
- Measurement display
- Product selection
- Setup
- Traceability and production monitoring

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Continuous Level Measurement
for Bins and Vessels
Accuracy from ±2%

Continuous Level Indicator

The Ramsey C-Level continuous level indicator’s unique precision strain gauge sensors are press-fit into a vessel’s support structure, so there is no concern for failure or maintenance issues caused by difficult materials or harsh process environments. This ensures that your process operates at its optimum level of performance. Using the Ramsey C-Level continuous level indicator will minimize the maintenance required.

The Ramsey C-Level continuous level indicator is ideally suited for inventory monitoring and process control during the load-out or filling of bins and vessels containing bulk solids or liquids. Because its unique precision strain gauge sensors are press-fit into the vessel’s support structure, the system can operate without concern for failure or maintenance issues caused by the monitored material or process environment. This distinctive design also compensates for temperature changes that can affect the accuracy of other types of sensors.

Accurate to within ±2% depending on the application, the Ramsey C-Level indicator is unaffected by corrosive or abrasive materials, uneven material discharge, build-up on sidewalls, bridging, rat-holing or dusting. This makes it a real alternative to conventional level measuring methods.

Features and Benefits

- Precision electronic and hermetically-sealed stainless steel strain sensor.
- Sensor mounted externally to the bin, which eliminates contamination or corrosion that can result from contact with the monitored product.
- Incorporation of the sensor as an integral part of the support member cancels temperature effects common to so-called „bolt-on“ sensors.
GZ Level Strain Sensor

Filling any vessel or bin supported by metal members causes the supports to deform due to the addition of material weight. Although this deformation is so slight that it cannot be seen, it can be accurately measured by the GZ sensor. When installed, this stainless steel sensor actually becomes part of the support structure. Its unique shape and its kind of installation cancel most of the effects caused by temperature changes. Once the sensor is electrically excited, a change in the strain of a support member will result in a proportional change to the output signal of the sensor. The sensor has been successfully applied to I-beam, angle, pipe and skirted silo supports in a vast number of installations. A special installation tool for easy installation is available.

CL-100A Control Unit

Simple operation and ease of calibration have made the CL-100 control a favorite with users worldwide. The microprocessor-based control uses inputs from up to eight sensors to calculate and display the material level on an easy-to-read LED bar graph. The system is easily calibrated using the keypad on the front panel. Two different material levels are used to calibrate the system: one high point and one low point. The microprocessor does the rest. It automatically averages the outputs from the sensors and indicates the material level from 0-100%. High and low alarm set-points are also adjustable from the keypad. There’s even a fixed set-point at 102% of bin capacity to indicate overflow conditions. All of the set-up and calibration information is retained in a non-volatile EEPROM.

Technical Specifications

<table>
<thead>
<tr>
<th>GZ Level Strain Sensor</th>
<th>CL-100A Control Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type: hermetically-sealed stainless steel sensor with 300 mm or 100 mm cable</td>
<td>Enclosure: polystyrene plastic; IP64 weather-tight</td>
</tr>
<tr>
<td>Operating Temperature: -40 °C to +65 °C</td>
<td>Operating Temperature: -10 °C to +50 °C (temperatures down to -40°C will not damage unit)</td>
</tr>
<tr>
<td>Output: 1 mV/V</td>
<td>Power Requirements: 120 / 240 V AC +10 % / -15 %, 48 to 62 Hz, &lt; 10 VA</td>
</tr>
<tr>
<td></td>
<td>Binary Outputs: 3 SPDT dry contacts rated 5 A at 250 VAC</td>
</tr>
<tr>
<td></td>
<td>Analog Output: 0/4-20 mA output proportional to level indication (optional)</td>
</tr>
<tr>
<td></td>
<td>Display: 50-segment LED bar graph changes in 2% increments</td>
</tr>
</tbody>
</table>

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Website: www.emwea.de

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Mercury-Free Tilt Switches (Tilt Sensors)

The mercury-free tilt sensors use advanced technology inside the tilt probe to replicate the same performance found in traditional mercury-based tilt switches. A combination of opto-electronics and solid state circuitry inside the probe prevents jitter and provides stability not found in the typical non-mercury options.

Reliable and precise Bulk Monitoring

The precision machined tilt switches (tilt sensors) provide sensing of a 15 degree inclination in a full 360 degrees of direction. Multiple models of the tilt switch (tilt sensor) are available for a wide variety of applications.
Control Units:

One system consists of a control unit and a tilt sensor. Due to the nature of the stabilizing electronics, mercury-free tilt switches cannot be used without a controller.

Tilt Switches | Tilt Sensors:

20-59-NM | 21-59-NM
Cast Ductile Iron, Nickel Plated
Standard

20-55-NM-P
Plastic
Light-Weighted

20-54-NM-SS | 21-54-NM-SS
Stainless Steel
Standard

20-52-NM | 21-52-NM
Steel
Heavy-Weighted
Dimensions of Tilt Switches (Tilt Sensors):

Typical Applications for Tilt Switches (Tilt Sensors):

- High Level
- High Pile
- Low Level
- Plugged Chute
- Material Flow
## Technical Specifications:

### Tilt Switches (Tilt Sensors):

- **Operating temperature**: -40 °C ... +50 °C
- **Protection**: IP 67 / NEMA 4X
- **Mounting hardware**: Hanger and two S-hooks included
- **Certifications**: CE, cCSAus
- **Certifications**: ATEX Zone 20 / 21; cCSAus Class I, Div 1 & 2, Groups A, B, C & D; cCSAus Class II, Div 1 & 2, Group E, F & G; CE

### Control Units:

- **Input power**: 115 / 230 V AC, 50 / 60 Hz
- **Alarm contact**: (20-35-NM-DIN) (1) NO, 2 A at 115 / 230 V AC, 3 A at 24 V DC, non-inductive
  - (All other models) (2) SPDT, 6 A at 115 / 230 V AC, 6 A at 30 V DC, non-inductive
- **Fault contact**: (All models) (1) NO, 2 A at 115 / 230 V AC, 2 A at 24 V DC, non-inductive
- **Time delay**: 1, 2, 4, or 6 seconds, selectable
- **Operating temperature**: -40 °C ... +50 °C
- **Protection**: IP 65 / NEMA 4
  - (20-35-NM-F-4X) IP 65 / NEMA 4X
  - (20-35-NM-DIN) IP 20 / NEMA 1
- **Certifications**: CE, cCSAus
  - (21-35-NM-F-ATEX) CE, ATEX Zone 22

### Dimensions of 20-35-NM-DIN Control Unit:

![Dimensions Diagram](image)

### Dimensions of 20-35-NM-F, 20-35-NM-F-4X, and 21-35-NM-F-ATEX Control Units:

![Dimensions Diagram](image)
Tramp Metal Detector
Ramsey Oretronic III
for all metals

Reliable Protection of your Equipment

Tramp metal can stop your operation, and the damage it causes to equipment can be expensive. The Ramsey Oretronic III tramp metal detector provides an economical and reliable means to protect expensive crushers, conveyors and other process equipment from damage by tramp metal. The Ramsey Oretronic III tramp metal detector is designed especially for belt conveyors moving coal, iron pellets, minerals, aggregates and other bulk materials. It can detect all types of metallic scrap, including bucket teeth, manganese steel mantles, bore crowns, bar scrap, chains and tools. It can even detect tramp metal when buried in wet conductive materials. And, because it is insensitive to materials with high magnetic permeability and electrical conductivity, this tramp metal detector can be used in applications where conventional metal detectors produce an unacceptable false alarm rate.

It has a microprocessor-based control unit that automates system setup and calibration. The operator interface provides easy-to-read indicators and has a touch panel keypad designed to simplify setup and system maintenance. All operations of the detector are accessible from the front panel. This tramp metal detector also features variable frequency to eliminate interference from other electrical equipment, password protection for security, and RS 485 serial communications.

Installation

The system’s coils are made of impact-resistant polyvinyl chloride and designed to withstand stresses of up to ten times the force of gravity. The generator coil and dual-wound receiver coils mount on a support made of non-conductive materials. The field generator coil is swing-mounted to protect the coil and support from being struck from oversized materials. A dual receiver coil is employed to counteract interference from external sources, such as electric motors, lightning and radio transmitters.
### Technical Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt Speed</td>
<td>0.025 m/s ... 6.1 m/s</td>
</tr>
<tr>
<td>Power</td>
<td>117 V AC (-15% ... +10%), 234 V AC (-15% ... +10%), switch selectable, 48 Hz ... 62 Hz, 30 VA</td>
</tr>
<tr>
<td>Display</td>
<td>7-segment upper display character; alpha-numeric lower display</td>
</tr>
<tr>
<td>Bargraph</td>
<td>20 LED</td>
</tr>
<tr>
<td>Alarm Outputs</td>
<td>delay contacts; NO and NC contacts provided, 5 A at 250 V AC</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 °C ... +50 °C (-40 °F ... +122 °F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55 °C ... +100 °C (-67 °F ... +212 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>max. 95%, non-condensing</td>
</tr>
<tr>
<td>Control Unit Enclosure</td>
<td>reinforced fiberglass, IP 65 / NEMA 4X, optional NEMA 4/9, 387 x 337 x 190 mm</td>
</tr>
<tr>
<td>Serial Interface</td>
<td>RS 485, MODBUS protocol</td>
</tr>
<tr>
<td>Coils</td>
<td>sealed in PVC</td>
</tr>
<tr>
<td>Coils Frame</td>
<td>FRP reinforced support assembly</td>
</tr>
<tr>
<td>Certificates</td>
<td>CE</td>
</tr>
</tbody>
</table>

### System Construction

![Metal Detector Oretronic III System](image)

- **Flag Drop Marker**: (optional)
- **Beacon and Horn**: (optional)
- **High Pile Detector**: (optional)
- **Generator Coil**:  
- **Liquid Spray Marker**: (optional)
- **Belt Clip Detector**: (optional)
- **Electronics**
- **Receiver Coils**
- **Belt Clip Detector**: (optional)

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Reliable Metal Detectors

The APEX 100, APEX 300, and APEX 500 metal detectors provide protection from many types of metal contaminants encountered in food production today. They offer innovative technologies developed for the high performance APEX 500 metal detector. Because of an effective selection from available sizes, EmWeA is able to offer a cost-efficient metal detector for the major industrial applications.

All APEX metal detectors meet food industry’s high requirements regarding reliability, eco-friendliness, and hygiene. These metal detectors have been designed in respect of food-safe materials (stainless steel enclosure, ABS control panel), operational reliability, IP 69K type of protection, and ATEX.

Several options are available for APEX metal detectors, i.e. AuditCheck performance verification, compression flanges, certified test specimens, reject confirmation sensor, bin full sensor, and a variety of individual transportation systems.

APEX 500
High Performance Metal Detector

Thanks to its innovative multi-coil technology, the APEX 500 high performance metal detector detects metal pieces with appr. 20% smaller diameter than conventional metal detectors.
### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>stainless steel enclosure, ABS control panel</td>
</tr>
<tr>
<td>Product Speed</td>
<td>0.008 mps ... 16 mps</td>
</tr>
<tr>
<td>Outputs</td>
<td>max. 6 relays outputs; 250 V AC max. 2 A; 50 V DC max. 1 A</td>
</tr>
<tr>
<td>Output Allocation</td>
<td>reject 1, reject 2, AuditCheck, fault, alarm, warning, QA lamp</td>
</tr>
<tr>
<td>Inputs</td>
<td>6 inputs; active 12 V DC; +12 V auxiliary supply for input sensors</td>
</tr>
<tr>
<td>Input Allocation</td>
<td>speed sensor, keylock, product select 1, product select 2, infeed PEC, reject confirmation 1, bin full, external suppression, external alarm, external reset</td>
</tr>
<tr>
<td>Electrical Supply</td>
<td>85 ... 260 V AC single phase; 47 ... 65 Hz; max. 100 W</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 °C ... +40 °C (+14 °F ... +104 °F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>20% ... 80%, non-condensing</td>
</tr>
<tr>
<td>Protection Ratings</td>
<td>IP69K, Type 3 enclosure</td>
</tr>
<tr>
<td>Certificates</td>
<td>CE, cCSAus, ATEX Zone 22</td>
</tr>
</tbody>
</table>

### Application Examples

- **Free Fall System / Pipe**
- **Combi Unit with Checkweigher**
The metal detector technology you’ve been waiting for

The Thermo Scientific™ Sentinel™ Multiscan Metal Detector utilizes an innovative new technology to overcome the limitation of fixed single or dual frequency metal detectors that can miss metal contaminants hidden in product signals.

Multiscan technology scans a combination of up to five user selectable frequencies from 50 to 1000 kHz. This enables users to identify contaminants that are up to 70 percent smaller in volume than previous technologies, thus reducing the probability of an escape to near zero. It is like having five metal detectors in one.

Several options are available for Sentinel™ metal detectors, i.e. compression flanges, certified test specimens, reject confirmation sensor, bin full sensor, and a variety of individual transportation systems.
Technical Specifications

Frequency Range: 50 ... 1000 kHz, Multiscan runs up to five frequencies.
Sensitivity: Detects contaminants up to 70% smaller in volume than APEX 500 (subject to application testing).
Construction: Stainless steel 304 straightline finished case and front panel; HD option utilizes 316 stainless steel. Optional three aperture liner styles for harsh washdown and high temperature applications.
Product Speed: 0.5 m/min (1.7 ft/min) ... 80 m/min (262 ft/min). Encoder input highly recommended.
Outputs: 8 relay outputs: 250 V AC; 2 A; 50 V DC 1 A
Output Allocation: Reject 1, Reject 2, Fault, Alarm, Warning
Inputs: 8 Inputs; active 24 V DC; switch selectable as NPN or PNP
Input Allocation: Speed Sensor, Infeed Photo Eye, Reject Confirmation 1 and Bin Full, External Alarm, External Reset
USB Port: Watertight USB 2.0
Electrical Requirements: 100 ... 240 V AC; 50 ... 60 Hz; 0.6 ... 1.2 A
Ambient Temperature: -10°C ... +40°C (+14°F ... +104°F)
Product Temperature: Standard: -10°C ... +55°C (+14°F ... +131°F)
HD option: maximum 40°C (104°F)
PVDF option: maximum 120°C (248°F)
Max. Washdown Temperature: 55°C (131°F); HD option: 65°C
PVDF liner option cannot be washed down (dry applications only)
Relative Humidity: 20% ... 80%, non-condensing
Protection Ratings: IP69K; HD option includes thermal shock protection.

Application Example

Belt conveyor with light barrier and reject pusher
Test Pieces for Metal Detectors
and X-ray Detectors

With certificate.

Certified Test Pieces for Metal
Detectors and X-ray Detectors

Test pieces (test sticks, test cards etc.)
are used as checking aids for metal
detectors and X-ray detectors within the
context of quality assurance.

There is a certified sample (ball or wire)
made of metal, glass, ceramic, zirconia,
plastic, or rubber inside the test piece.
When checking a metal detector or an X-
ray detector, the test piece must be
transported through the detector. By
doing this, it is easy to check if this cer-
tain detector finds that sample without
fail.

A variety of different shapes, sizes and
sample materials are available to achieve
an optimal adaptation to your production
process.

All test pieces will be shipped with a
certificate, i.e. for presentation during
audit. Test pieces are available in your
favoured colour, too. It is even possible to
produce variant forms or dimensions
according to your wishes.
## Test Pieces for Metal Detectors:

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimensions</th>
<th>Material</th>
<th>Housing Colours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test stick</strong></td>
<td>50 x 10 x 10 mm</td>
<td>PMMA (Acrylic)</td>
<td>red, yellow, blue, green, glass-clear</td>
</tr>
<tr>
<td></td>
<td>50 x 20 x 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 x 30 x 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 x 10 x 10 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 x 20 x 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 x 30 x 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 10 x 10 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 20 x 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 30 x 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test stick</strong></td>
<td>50 x 11 x 11 mm</td>
<td>PTFE (Teflon®)</td>
<td>white with coloured writing</td>
</tr>
<tr>
<td></td>
<td>50 x 20 x 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 x 30 x 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 x 11 x 11 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 x 20 x 20 mm</td>
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<td></td>
<td>75 x 30 x 30 mm</td>
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<tr>
<td></td>
<td>100 x 11 x 11 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 20 x 20 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 30 x 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flexible test stick with one sample</strong></td>
<td>Ø 6 x 500 mm with 100 x 10 x 10 mm handle</td>
<td>PMMA (Acrylic) and PA (Nylon)</td>
<td>red, yellow, blue, green, glass-clear</td>
</tr>
<tr>
<td></td>
<td>Ø 10 x 500 mm with 100 x 20 x 20 mm handle</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flexible test stick with two samples</strong></td>
<td>2 x Ø 6 x 300 mm with 100 x 10 x 10 mm handle</td>
<td>PMMA (Acrylic) and PA (Nylon)</td>
<td>red, yellow, blue, green, glass-clear</td>
</tr>
<tr>
<td></td>
<td>2 x Ø 10 x 300 mm with 100 x 20 x 20 mm handle</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test pin</strong></td>
<td>150 x 11 x 11 mm</td>
<td>PTFE (Teflon®)</td>
<td>white with coloured writing</td>
</tr>
<tr>
<td><strong>Test ball</strong></td>
<td>Ø 35 mm</td>
<td>POM (Acetal)</td>
<td>red, yellow, blue, green</td>
</tr>
<tr>
<td></td>
<td>Ø 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø 25 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø 20 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Test Pieces for Metal Detectors:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimensions</th>
<th>Material</th>
<th>Housing Colours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test card</td>
<td>80 x 40 x 5 mm&lt;br&gt;80 x 40 x 10 mm&lt;br&gt;80 x 40 x 20 mm&lt;br&gt;80 x 40 x 30 mm</td>
<td>PMMA (Acrylic)</td>
<td>red&lt;br&gt;yellow&lt;br&gt;blue&lt;br&gt;green&lt;br&gt;glass-clear</td>
</tr>
<tr>
<td>Test card</td>
<td>80 x 40 x 5 mm&lt;br&gt;80 x 40 x 11 mm&lt;br&gt;80 x 40 x 20 mm</td>
<td>PTFE (Teflon®)</td>
<td>white with coloured writing</td>
</tr>
<tr>
<td>Test tag</td>
<td>50 x 30 x 5 mm&lt;br&gt;50 x 30 x 10 mm&lt;br&gt;50 x 30 x 20 mm</td>
<td>PMMA (Acrylic)</td>
<td>red&lt;br&gt;yellow&lt;br&gt;blue&lt;br&gt;green&lt;br&gt;glass-clear</td>
</tr>
<tr>
<td>Test disc</td>
<td>Ø 35 / 30 / 25 / 20 / 15 x 5 mm&lt;br&gt;Ø 35 / 30 / 25 / 20 / 15 x 10 mm&lt;br&gt;Ø 35 / 30 / 25 / 20 / 15 x 20 mm</td>
<td>PMMA (Acrylic)</td>
<td>red&lt;br&gt;yellow&lt;br&gt;blue&lt;br&gt;green&lt;br&gt;glass-clear</td>
</tr>
<tr>
<td>Test disc</td>
<td>Ø 35 / 30 / 25 / 20 / 15 x 5 mm&lt;br&gt;Ø 35 / 30 / 25 / 20 / 15 x 11 mm&lt;br&gt;Ø 35 / 30 / 25 / 20 / 15 x 20 mm</td>
<td>PTFE (Teflon®)</td>
<td>white with coloured writing</td>
</tr>
</tbody>
</table>
## Test Pieces for X-ray Detectors:

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimensions</th>
<th>Material</th>
<th>Housing Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible test card</td>
<td>96 x 38 mm</td>
<td>Plastics laminate</td>
<td>white with coloured writing</td>
</tr>
<tr>
<td>with one sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible test card</td>
<td>96 x 38 mm</td>
<td>Plastics laminate</td>
<td>white with coloured writing</td>
</tr>
<tr>
<td>with multiple samples</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test stick</td>
<td>50 x 10 x 5 mm</td>
<td>PMMA (Acrylic)</td>
<td>glass-clear with coloured writing</td>
</tr>
<tr>
<td></td>
<td>75 x 10 x 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 x 10 x 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test card</td>
<td>80 x 40 x 5 mm</td>
<td>PMMA (Acrylic)</td>
<td>glass-clear with coloured writing</td>
</tr>
<tr>
<td>Test tag</td>
<td>50 x 30 x 5 mm</td>
<td>PMMA (Acrylic)</td>
<td>glass-clear with coloured writing</td>
</tr>
<tr>
<td>Test disc</td>
<td>Ø 35 x 5 mm</td>
<td>PMMA (Acrylic)</td>
<td>glass-clear with coloured writing</td>
</tr>
<tr>
<td></td>
<td>Ø 30 x 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø 25 x 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø 20 x 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ø 15 x 5 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sample Materials (Metals):

<table>
<thead>
<tr>
<th>Category</th>
<th>Material</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous</td>
<td>Chrome steel 1.3505 AISI 52100</td>
<td>Sphere</td>
</tr>
<tr>
<td>Non-Ferrous</td>
<td>Brass</td>
<td>Sphere</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>Stainless steel 1.4401 AISI 316</td>
<td>Sphere, wire</td>
</tr>
<tr>
<td></td>
<td>Stainless steel 1.4301 AISI 304</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>Stainless steel 1.4034 AISI 420C</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>Stainless steel 1.4125 AISI 440C</td>
<td>Sphere</td>
</tr>
<tr>
<td>Aluminium</td>
<td>Aluminium</td>
<td>Sphere</td>
</tr>
<tr>
<td>Bronze</td>
<td>Phosphor bronze</td>
<td>Sphere</td>
</tr>
<tr>
<td>Titanium</td>
<td>Titanium</td>
<td>Sphere</td>
</tr>
<tr>
<td>Lead</td>
<td>Lead</td>
<td>Sphere</td>
</tr>
<tr>
<td>Copper</td>
<td>Copper</td>
<td>Wire</td>
</tr>
</tbody>
</table>
# Sample Materials (Nonmetals):

<table>
<thead>
<tr>
<th>Category</th>
<th>Material</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>Soda-lime glass</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>Fused quartz (Fused silica)</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>Borosilicate glass</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>Lead glass (Crystal glass)</td>
<td>Sphere</td>
</tr>
<tr>
<td>Ceramic</td>
<td>Ceramic</td>
<td>Sphere</td>
</tr>
<tr>
<td>Zirconia</td>
<td>Zirconia (Fianit)</td>
<td>Sphere</td>
</tr>
<tr>
<td>Plastic</td>
<td>PA (Polyamide, Nylon)</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>POM (Polyoxymethylene, Acetal)</td>
<td>Sphere</td>
</tr>
<tr>
<td></td>
<td>PTFE (Polytetrafluorethylene, Teflon®)</td>
<td>Sphere</td>
</tr>
<tr>
<td>Rubber</td>
<td>AB (Nitrile rubber)</td>
<td>Sphere</td>
</tr>
</tbody>
</table>
Crane Scales
with Remote Control

CE-M approved, ATEX

EmWeA crane scales are intended for easy weighing of suspended loads on cranes, chain blocks etc. Possible max. loads from 150 kg up to 55 t are available.

Use the following for easy operation (optional in some cases):
- Bluetooth port
- Radio transmission
- Wi-Fi
- Remote display
- Remote control, even with integrated printer
- PC software
- Android smart phone app

For weighing by way of legal transaction, CE-M approved crane scales are available, optional with integrated alibi memory. We offer versions with ATEX approval for the use in hazardous areas too.
Compact Multifunction Crane Scales
Compact and versatile crane scale fitted with protection transport case, remote control for teleoperation and rechargeable batteries with 40 hours operating time. Shock-proof painted steel housing. Backlit LCD display ensures high visibility under all conditions.

Industrial Stainless Steel Crane Scales
The best solution to weigh suspended loads in industrial environments. The enclosure is made of stainless steel 1.4301 (AISI 304), protecting the unit against shocks, dust, dirt and rain. The high-brightness LED display is well visible from far-off distance and any direction.

Reinforced Industrial Crane Scales
This crane scale, resistant to any mechanical stress and sources of heat, is suitable for use in foundries as well as in iron and steel industries. The special mechanical system allows a safe load handling in case of unfavourable weather conditions or accidental overloads. High-brightness LED display, protected by a thick Plexiglass panel.

Crane Scale Accessories
External displays and control units, even with integrated printer, for readout from far-off distance, to perform the functions of the crane scale, to printout receipts or labels, or to save data on a USB flash drive. Multicontrol units for bulky items, weighed by multiple crane scales. Extra hooks and shackles.

Software and Apps
- Software „Weigh Console“ for PC
- App „ScaleApp“ for smart phones and tablet computers