



## AED ...

...digitalization and conditioning  
of measured signals





The new AED:  
compact IP65 housing with  
intelligent electronics



Easy access and service:  
The AED panel software for PC

## Proven system, new functionality – the versatile AED

The digital transducer electronics AED by HBM was developed further specifically to make process control and monitoring even easier, more direct and convenient for you.

In addition to the AED basic function, i.e. to produce from analog measured signals conditioned digital signals insensitive to interference, the electronics in the IP65 housing provide additional functions:

### Features of the new AED:

- large range of applications, suitable for static and dynamic measurements
- signal resolution to 1,000,000 numerical steps
- can be calibrated for up to 6,000 parts in scales class III
- easy installation due to bus capability
- fast start-up, as 100% controllable by computer
- storage of works and user specific parameters in the unit, protected against power failure
- compact IP65 housing enables for installation close to the application
- no further housings or switching cabinets are required
- bus operation, including "Select" commands
- fast diagnosis: LED display for Profibus status
- service-friendly: one step board change
- interfaces RS232, RS422, RS485, Profibus DP V1

### Digitalization and conditioning of the measured signals at the transducer location...

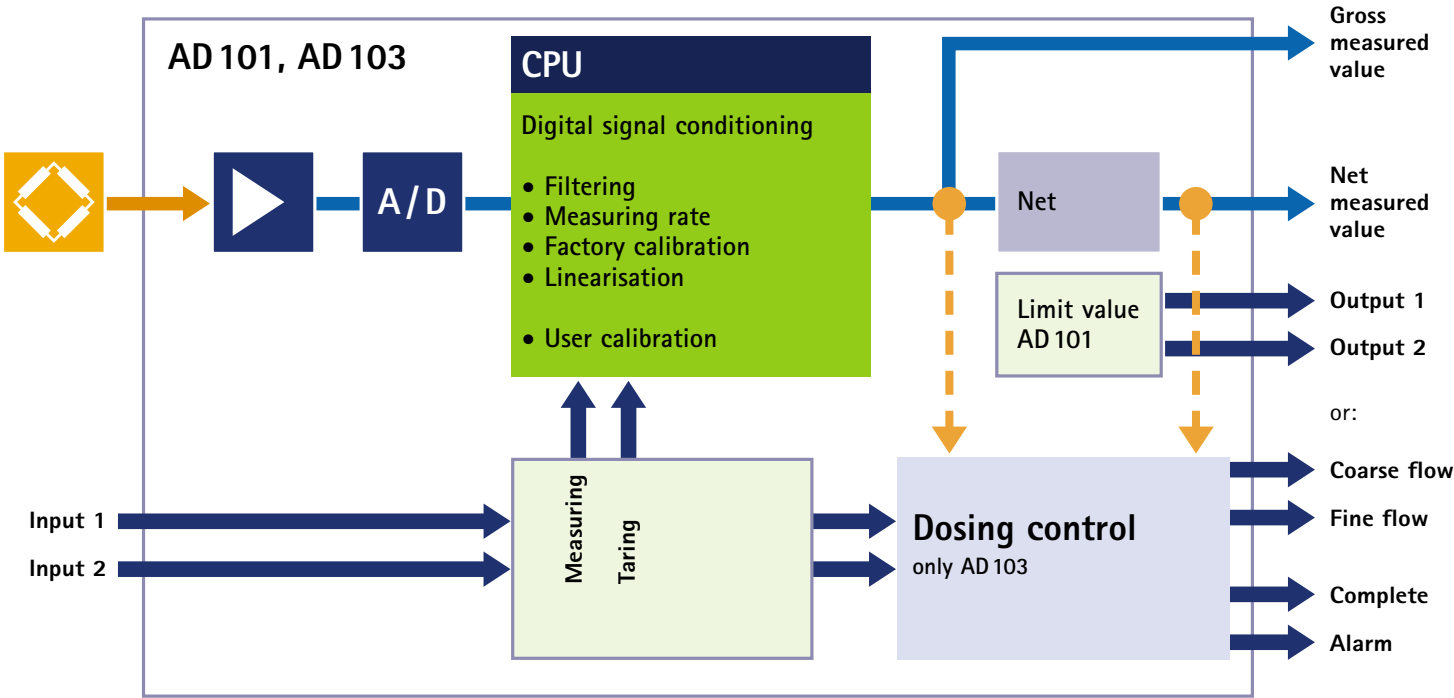
...is only the first part addressed by the AED concept. A further focus is provided by data pre-processing in order to relieve the superordinate systems in terms of a reduction in data. Thus, for example, only one final result will be transmitted.

**AED signal processing:**

- purely digital signal processing, no analog calibration elements
- complete AD conversion from noise to rated signal
- produces digital signal insensitive against interference, suitable for large distances
- data pre-processing to relieve superordinate systems

**AED signal processing:**

- purely digital signal processing, no analog calibration elements
- all functions can be controlled conveniently from a computer
- easy documentation of application settings via panel software
- password protection



Schematic diagram AD 101, AD 103

# Measurement amplifier board...

## AED – the entire bandwidth

The application range of the AED components comprises all strain gage sensor applications. From A as in agricultural applications to S as in scale applications.

### AD101B

### AD103

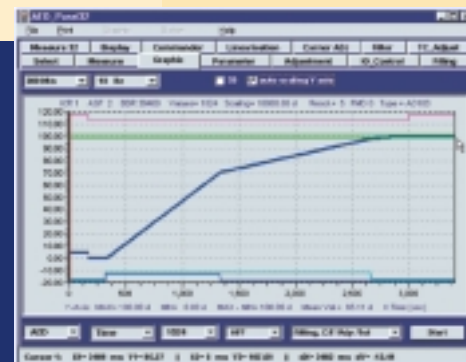


Amplifier motherboard	•	•
Complete unit (basic unit and amplifier motherboard)	–	–
Additional function	–	–
Control inputs/outputs	–	–
Interfaces		
RS232	•	•
RS422/485	–	–
Profibus DP V1	–	–
Degree of protection	–	–
EMC protection, CE symbol	–	–
Operating voltage range	5... 10V	5... 10V

## Accessories

### Comfortable operation using the AED panel software for PC:

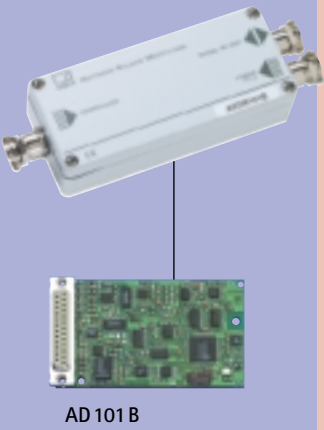
- \_\_\_ graphical user interface (GUI) based on Windows®
- \_\_\_ bus addressing, baud rate setting
- \_\_\_ parameter selection
- \_\_\_ calibration
- \_\_\_ measuring/adjustment of indication
- \_\_\_ setting inputs/outputs
- \_\_\_ graphical representation of measured and control signals
- \_\_\_ store parameter sets
- \_\_\_ test single commands



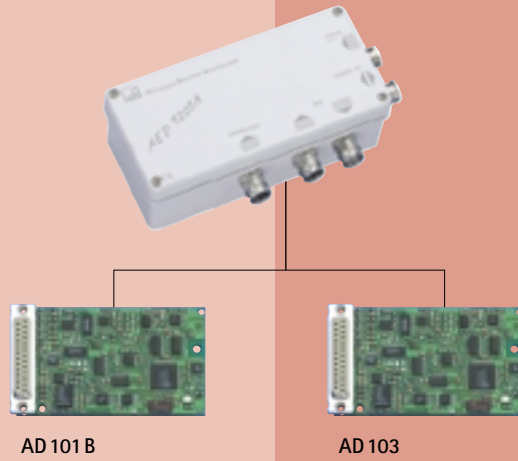
Panel software:  
Typical parameters for filling and dosing processes

...and basic units

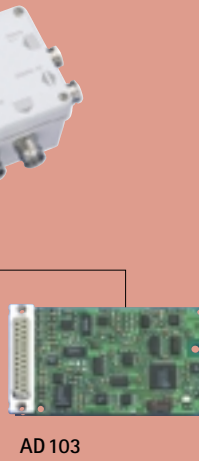
## AED9101 Basic



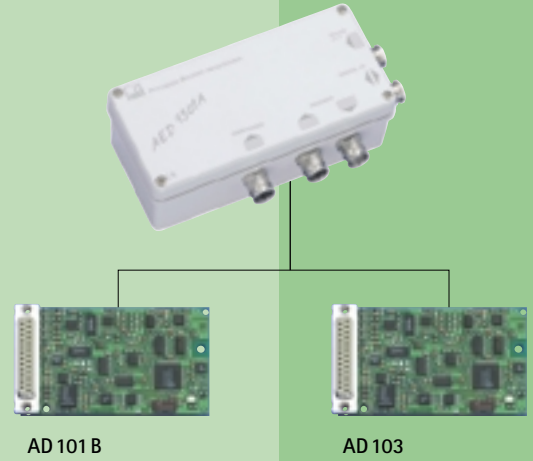
## AED9201 Basic



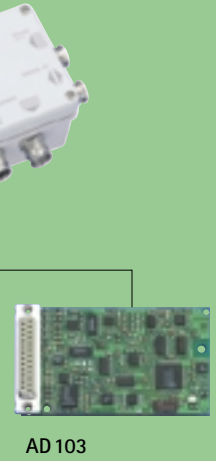
## AED9201 Plus





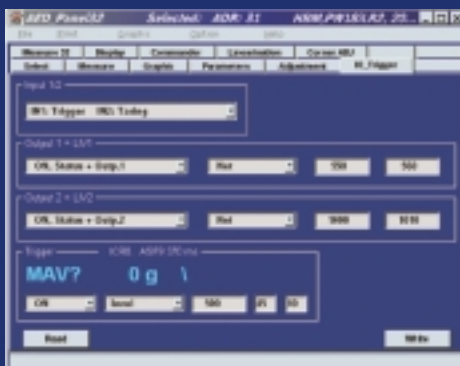
## AED9301 Basic



## AED9301 Plus



-	-	-	-	-
•	•	•	•	•
Trigger	Trigger, limit values	Dosing/filling	Trigger, limit values	Dosing/filling
1 input	2 inputs 2 outputs	2 inputs 6 outputs	2 inputs 2 outputs	2 inputs 4 outputs
•	•	•	-	-
•	•	•	-	-
-	-	-	•	•
IP 65	IP 65	IP 65	IP 65	IP 65
•	•	•	•	•
6...30V	18...30V	18...30V	18...30V	18...30V
				

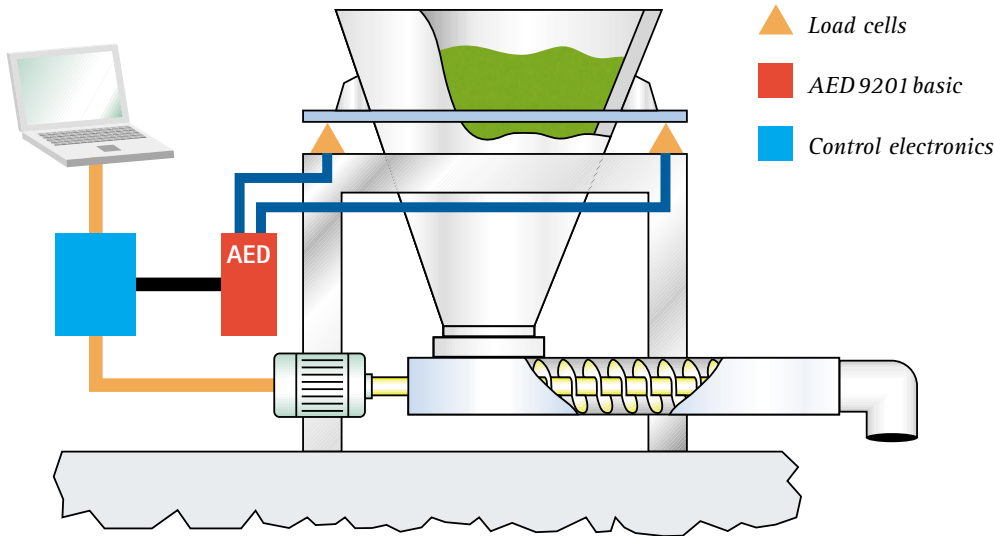





Panel software:  
Limit value function,  
trigger function



SC232/422A: interface  
converter set

Formula system



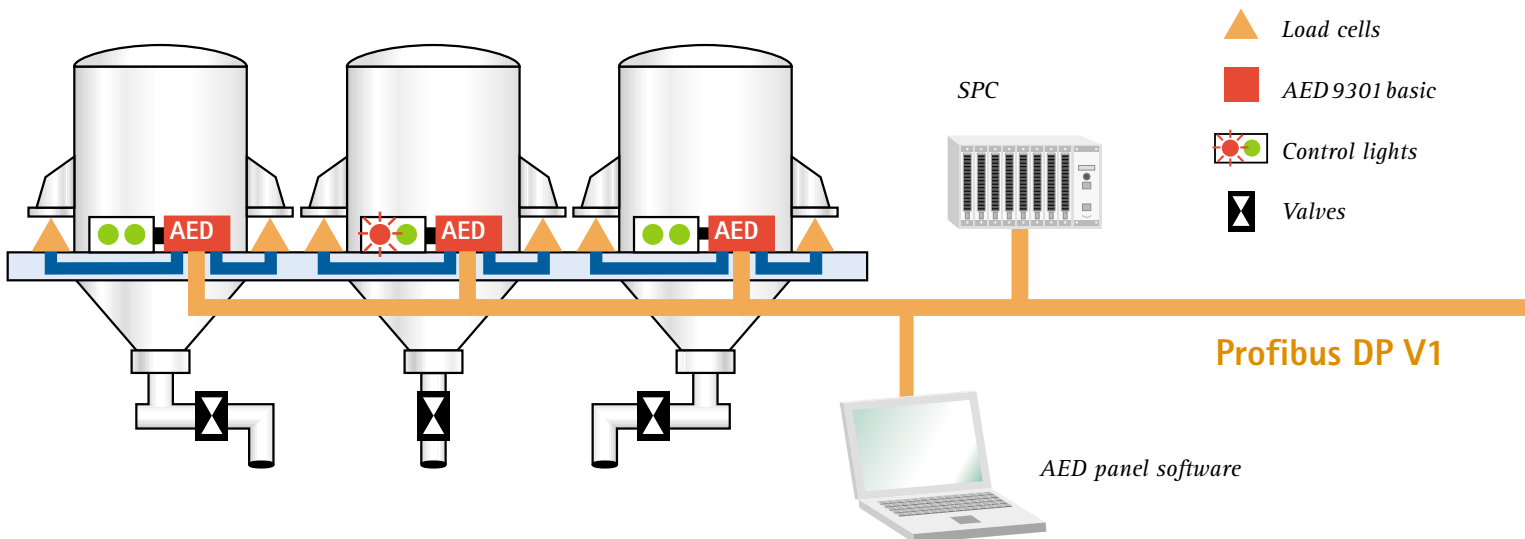
-  Load cells
-  AED 9201 basic
-  Control electronics

## AED 9201 basic Dosing small volumes

A powder-type medium is to be dosed gravimetrically. Additional requirements: long term stability, dosing time between 2 and 24 hours, complete installation on the machine.

### Solution:

- digital measuring amplifier AD 101 B: filtered and conditioned strain gages signals of the load cells
- specifying the dosing quantity by means of a formula system
- digitalized AED measured signal serves to control the dosing process



## AED 9301 basic with Profibus DP V1

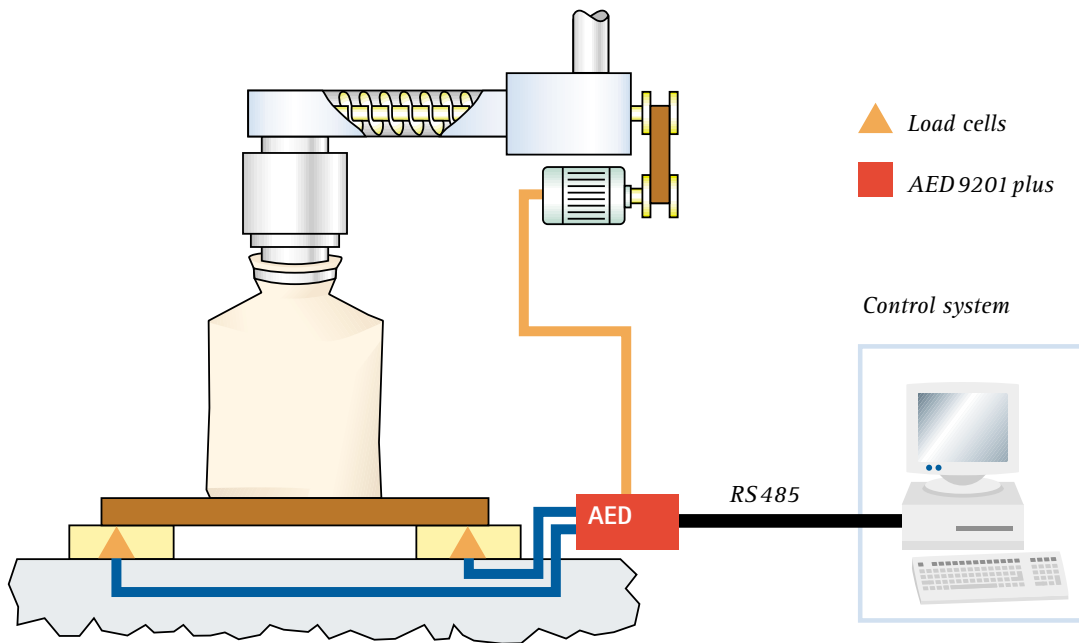
A container battery is to be monitored and filled gravimetrically. Additional requirements: installation on the container, integration in Profibus network, control lights on site before the actual level falls below the minimum level.

### Solution:

- digital measuring amplifier AD 101 B: filters and conditions strain gages signals from the load cells
- AED limit values function: proof of control lights

### Profibus DP:

- filling level data direct to the SPC
- start-up without interruption of the ongoing operation by the AED panel program in acyclical operating mode DP V1



## AED 9201 plus

### Filling with coarse and fine flow

A pasteous medium is to be filled gravimetrically. Additional requirements: automatic adaptation of the filling process, as changeable flow behaviour of the material. Installation directly on the machine. Transmission of the determined filling quantity to the control station.

#### Solution:

- digital measuring amplifier AD 103: filters and conditions strain gage signals from load cells
- filling quantity specification and start command via the control system
- time-optimised control of the filling process via the AED inputs/outputs
- the AED generates automatically optimized parameters for further filling processes
- data transmission via the RS485 interface

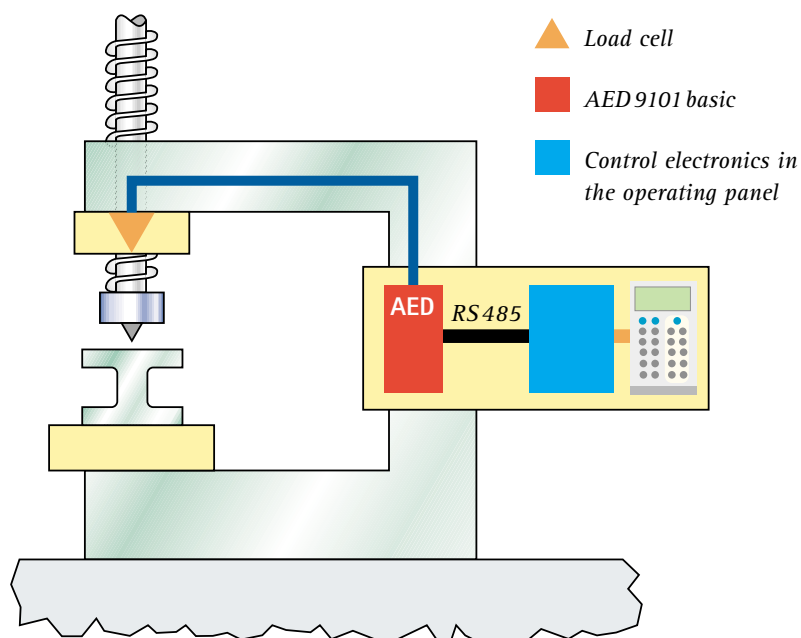
## AED 9101 basic

### Test machines... here testing hardness

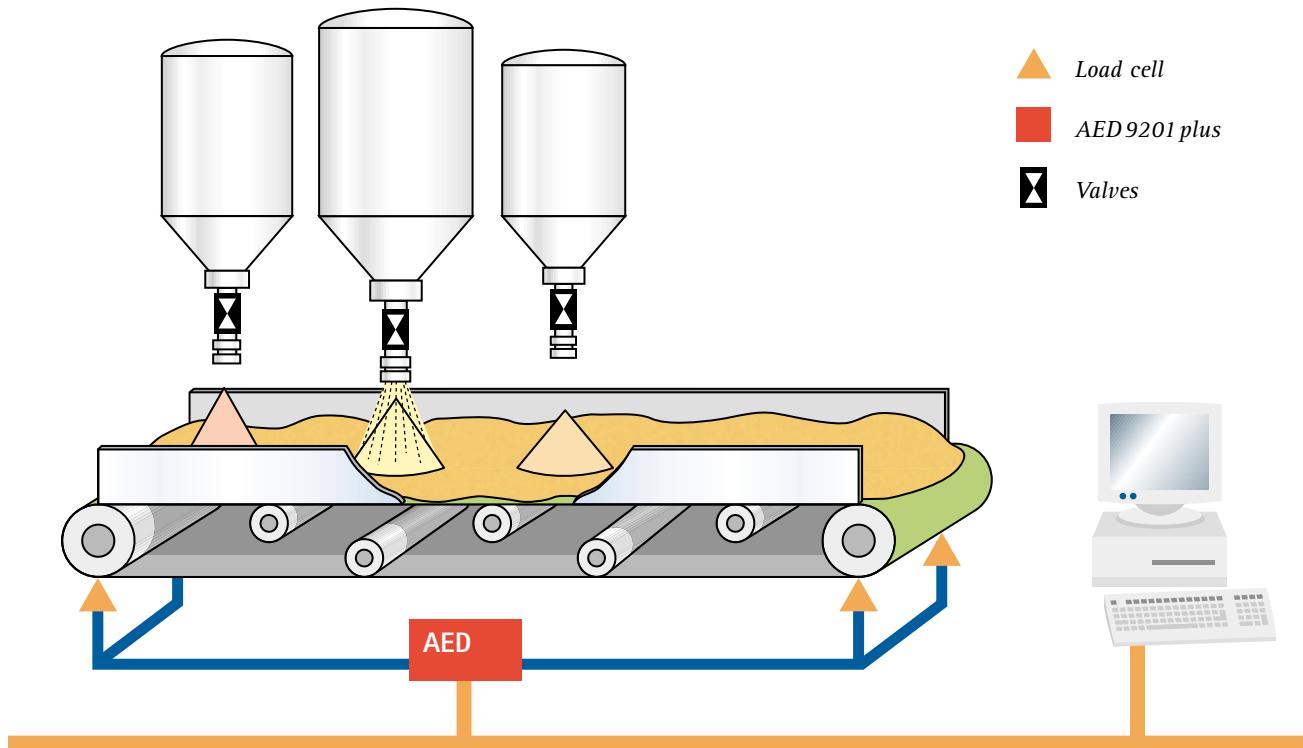
In a test machine many values have to be entered in a short time. Additional requirements: RS485 interface, real time transmission rate to enable the control system to stop the process before destroying the sample.

#### Solution:

- digital measurement amplifier AD 101 B: filters and conditions strain gage signals
- 600 measurements per second
- Control of drive unit and force is effected by the control system







## AED9201 plus

### Dosing with coarse flow and fine flow

Several pourable media are to be metered gravimetrically onto conveyor scales. Additional requirements: Automatic optimization of the batch/dosing process (necessary as the flow behaviour of the material changes over time); the optimisation parameters per metering line, once determined, are to be re-used later. Installation is to be effected directly on the machine.

#### Solution:

- digital measuring amplifier AD 103: filters and conditions strain gage signals from the load cells
- the control system specifies the filling quantity; using these specifications and the start command, the automatic batch is started
- the complete dosing process is controlled with time optimization via the AED
- only a single conveyor scale for different materials, conveying routes and quantities: Filling quantity with optimization parameters is transmitted to the control computer; the optimization parameters used most recently can be retrieved for the next batch with the same dosing quantity
- data transmission via RS485 interface





*Double FIT®  
Setting a trend: FIT® platform load cell  
New: PW18i platform load cell*

## **AED functionality packaged into other types of transducers – digital load cell technology by HBM**

Using the load cell series FIT® and PW18i, consisting of load cell and integrated electronics, two electronically-dampened types are available for your dynamic weighing applications – featuring a digital interface and a measuring rate of up to 600 measurements per second.

In contrast to the PW18i type series, FIT® load cells are encapsulated in a stainless steel housing and are thus excellently suited for use in the food industry and other hygienically sensitive areas.

Strain gages

Load cells

Sensors and transducers

Electronics

Software



measurement with confidence

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