

# Processes under Control ...

... Weighing and Batching  
with HBM Technology



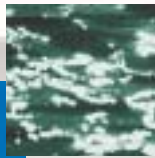
HBM ... Technical Weighing Solutions for Plant Engineering,  
Process Industries and Scale Manufacturers

# At Home in Many Sectors of Industry



## Chemical Industry

HBM components provide winning solutions especially in potentially explosive atmospheres



## Cosmetic Industry

Batching with HBM products for lifestyle, health, and beauty



## Pharmaceutical Industry

HBM components provide for a constant quality of the medicines produced

## **A**re you Looking for Optimal System Solutions for Tank Weighing, Level Measurement and Batching Processes?

Plant reliability, maximum product quality, and repeatability are important factors for the equipment of all tank and batching weighers. Whether in food production, building materials production, pharmaceutical, or medical engineering – in almost all areas where goods are produced, processed or controlled, HBM components meet the most stringent requirements.

In planning, development and production, customers have been relying for decades on HBM precision, reliability, and quality – for load cells, tank weighing modules, electronics, and software.

# – Worldwide



## Building Materials Industry

HBM load cells weigh tons of stocks in silos and batch e.g. additives for different types of concrete



## Synthetic Material Processing

HBM technology supports weighing and batching processes in the synthetic materials processing industry



## Food Industry

Our hermetically encapsulated load cells in stainless steel construction provide for a long service life with absolute weighing precision, even in wet corrosion-hazard areas



## Animal Feed Industry

We ensure that your animals receive as much as they need



## Steel Industry

HBM load cells provide reliable results even at high temperatures

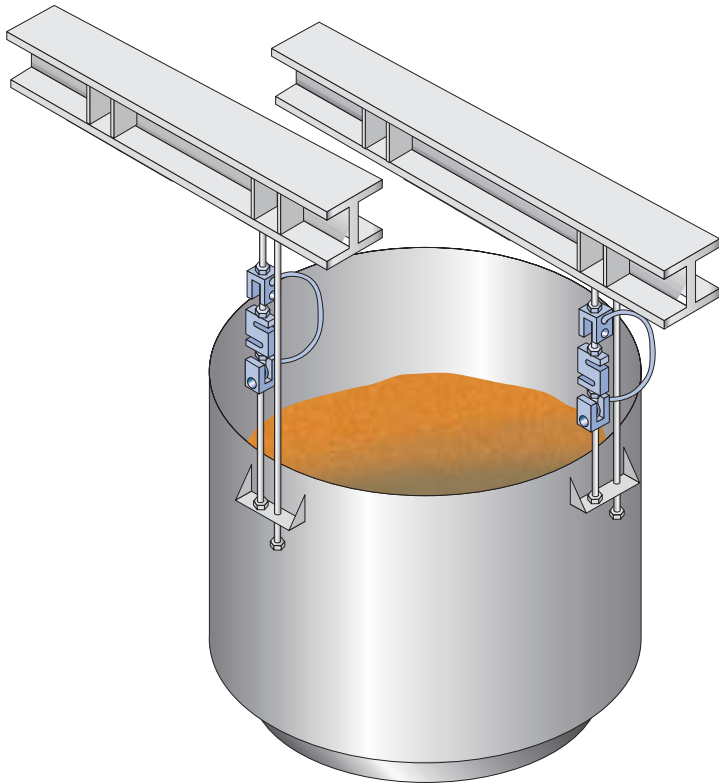
# Suspended Tank Weighing...

## ... with RSC Load Cells

Depending on capacity and mechanical design of the tanks, different mechanical connections for weighing purposes are utilized. For smaller tanks, e.g. for additives, RSC load cells are used. The tank is suspended from rods introducing load to the overhead support structure via tension load cells.



*RSCA load cell in a building materials scale*



## RSC Tension & Compression Load Cell

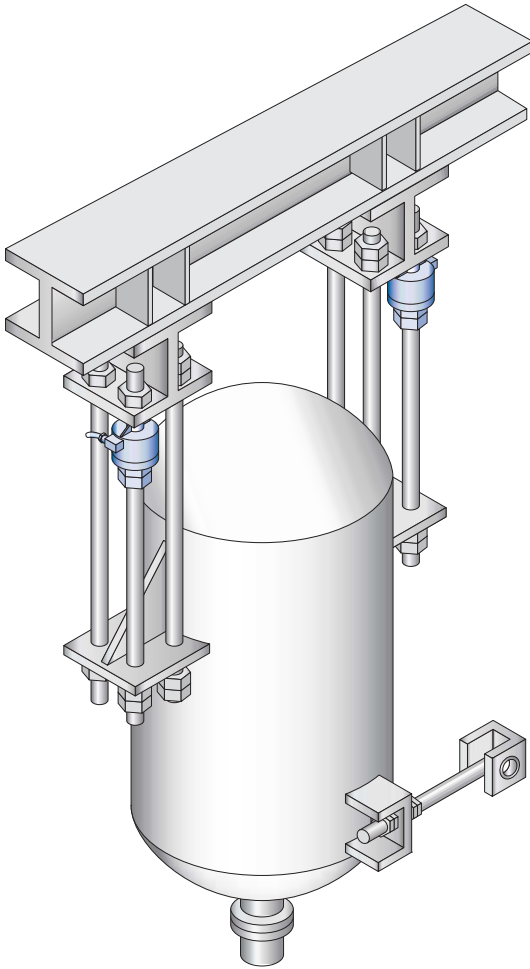
- For nominal loads of 50 Lbs to 10,000 Lbs
- Legal for trade in accordance with NTEP
- Hermetically sealed
- Stainless steel
- Main applications:
  - suspended tank weighing but also
  - band scales, metering/batching
  - scales and calibration tanks

### Optional:

- ATEX95 compliant
- explosion-proof version







## ... with U2A Load Cells

For medium to heavy weights, the U2A load cell is an excellent choice.

The extraordinarily robust load cell is preferably used therefore for the weighing of additives in the building materials industry.

### U2A Tension Load Cell

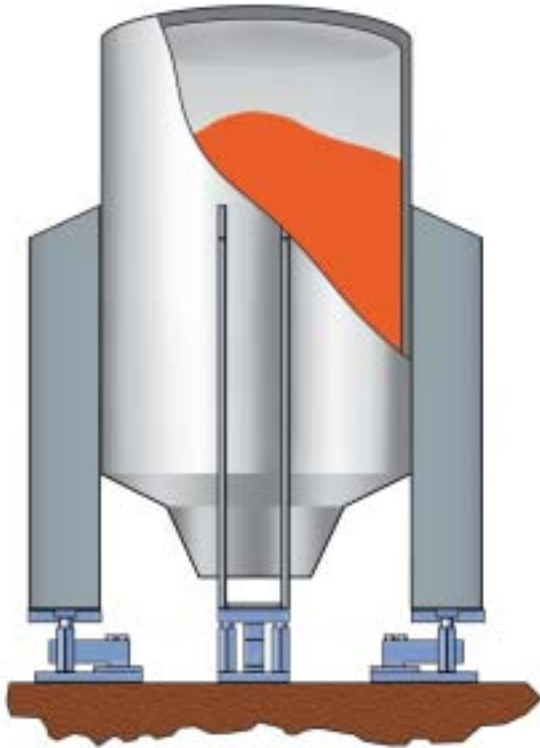
- \_\_\_ For nominal loads from 50 kg to 20 t
- \_\_\_ Legal for trade in accordance with OIML R60 and NTEP
- \_\_\_ Hermetically sealed
- \_\_\_ Low height of construction
- \_\_\_ Stainless steel
- \_\_\_ Main applications:  
suspended tank weighing but  
also band scales and metering /  
batching scales

#### Optional:

- \_\_\_ ATEX95 compliant explosion-proof version
- \_\_\_ Load cell: operating temperature range up to + 120° C (+ 248° F)  
(not available with ATEX)



# Weighing Silos, Tanks, and



## RTM Modules

The RTM weigh module is low in profile and hermetically sealed. Ideal for use in corrosive and washdown areas.



- \_\_\_ For nominal loads of 500 to 5,000 Lbs
- \_\_\_ Stainless steel construction
- \_\_\_ Hermetically sealed, ideal for washdown conditions
- \_\_\_ Overload and overlift protection
- \_\_\_ Rocker pin loading, self-restoring
- \_\_\_ Ideal for tank, bin & hopper weighing

## ... Using the Z6, RTM, TWM, and C16 Tank Weighing Modules

Because of the integration of load cells into tank weighing modules virtually any tank can be converted into a weighing machine.

Irrespective of the actual tank contents, we achieve high precision weighing results.



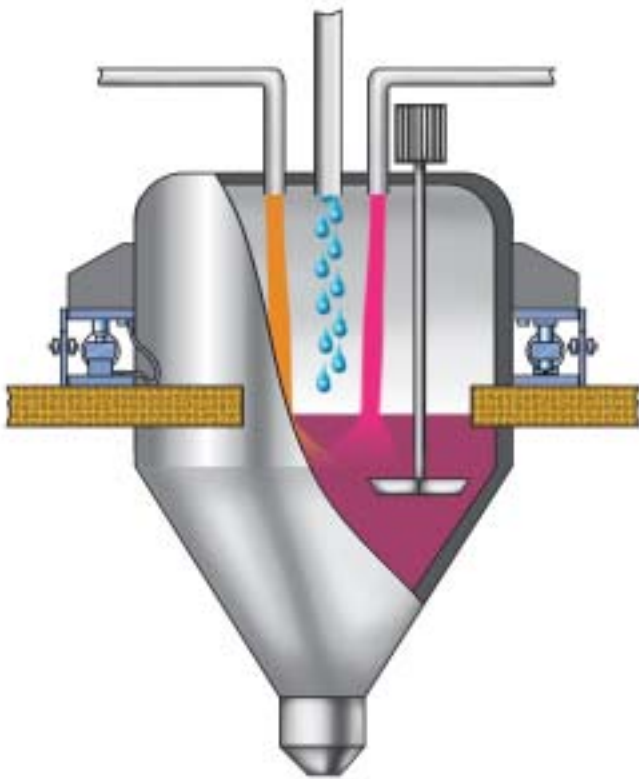
## TWM Modules

A self-restoring weigh module that is low in profile and ruggedly constructed for use in outdoor weighing applications without use of stay rods.

- \_\_\_ For nominal loads of 20,000-100,000 Lbs
- \_\_\_ Overlift and anti-tilt protection
- \_\_\_ Self-restoring, integral lateral stops
- \_\_\_ Factory assembled, low profile
- \_\_\_ Robust steel construction, environmentally sealed
- \_\_\_ Ideal for tank, bin & hopper weighing



# Mixers...



## ... Using the Z6, RTN and C16 Tank Weighing Modules

HBM load cells are especially fit for weighing tasks such as batching. Extract batching is an essential part of process flows. With modern weighing systems, HBM provides an optimum solution.

Reproducible product quality, yield, and process safety are ensured at all times.



### Z6 Modules

- \_\_\_ For nominal loads of  
50 kg, 100 kg, 200 kg, 500 kg
- \_\_\_ With overload stop and stay rod
- \_\_\_ Maintenance free
- \_\_\_ Load cell optionally in class C3  
according to OIMLR 60 and NTEP
- \_\_\_ Self-centering due to pendulum bearing
- \_\_\_ Easy mounting
- \_\_\_ Galvanized or stainless steel components

### Optional:

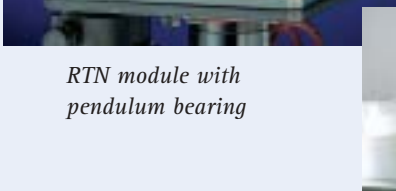
- \_\_\_ ATEX95 compliant explosion-proof version



*RTN module with  
elastomer bearing*



*RTN load cell with  
elastomer bearing  
below a tank bracket*



*RTN module with  
pendulum bearing*



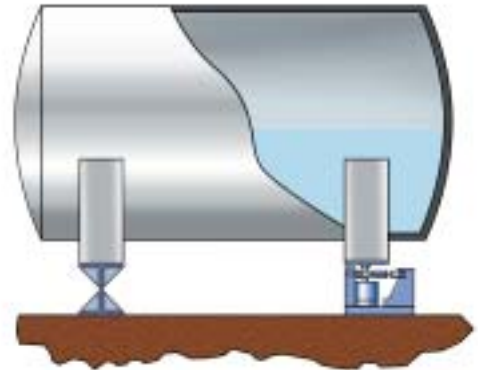


# Weighing Horizontal Tanks

## ... Using the Z6, RTM, TWM, and C16 Tank Weighing Modules

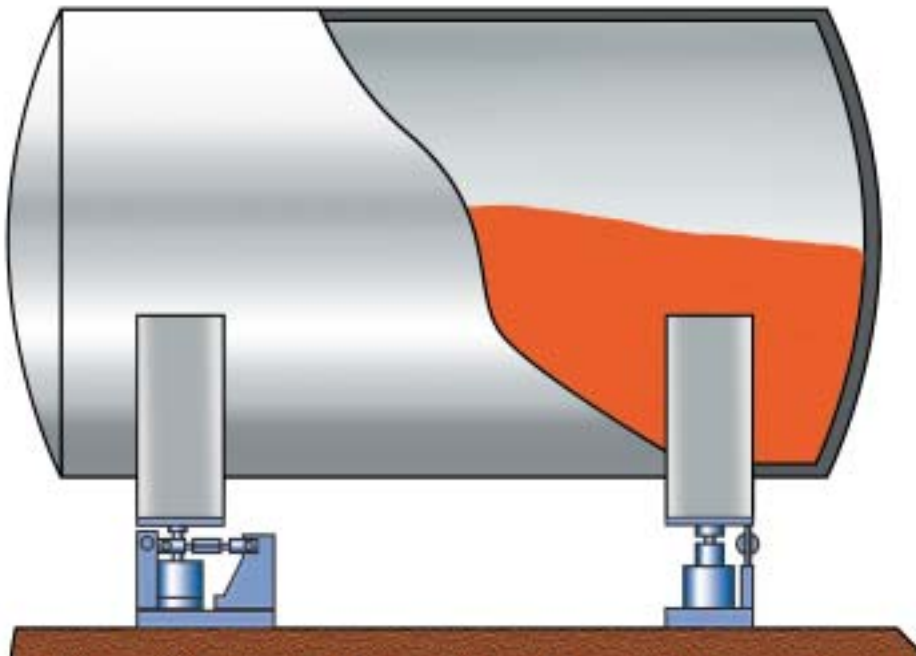
### Horizontal tanks for liquids

For scales with relatively low accuracy requirements (such as those used for level measurements) and where a four-point tank support is used, it is sufficient to mount only two tank weighing modules and two fixed bearings instead of four tank weighing modules. In this case, a uniform load distribution on the tank supporting points is required.



### Horizontal tanks for solids

When weighing solids in horizontal tanks, four tank weighing modules should be used for the exact determination of the actual weight.



*Fixed bearings as attractively priced additions to weighing systems for level measurement*





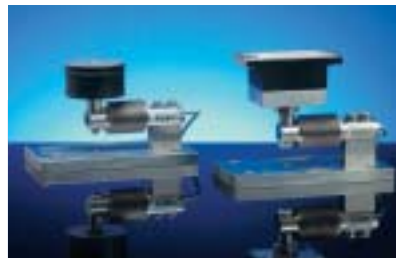


## C16 Modules

- \_\_\_ Nominal loads of 20 t, 30 t, 40 t, 60 t, 100 t, 200 t,
- \_\_\_ Equipped with C16A self-centering pendulum load cell
- \_\_\_ Stay rod for taking up horizontal forces
- \_\_\_ Optional: lift-off securing device
- \_\_\_ Easy mounting
- \_\_\_ Galvanized or stainless steel components

### Optional:

- \_\_\_ Explosion-proof version
- \_\_\_ Lightning protection



## Z6 load cell with elastomer bearing for ...

### ... longer life:

The absorbing effect of the elastomer bearing has proven to be advantageous in particular for shock loads, oscillations, as well as other external vibrations.

### ... increased reliability:

In addition, elastomer bearings have a heat-insulating effect because of their construction. Their layer structure minimizes heat conductance between tank and load cell.

## RTM Weigh Modules

- \_\_\_ Nominal loads of 500-5,000 Lbs
- \_\_\_ Stainless steel construction
- \_\_\_ Overload and overlift protection
- \_\_\_ Rocker pin, self-restoring
- \_\_\_ Hermetically sealed
- \_\_\_ Integral lateral stops

## TWM Weigh Modules

- \_\_\_ Nominal loads of 20,000-100,000 Lbs
- \_\_\_ Robust steel construction
- \_\_\_ Overlift and anti-tilt protection
- \_\_\_ Corrosive resistant paint
- \_\_\_ Environmentally sealed
- \_\_\_ Integral lateral stops



*Automatic mixer loading system in bulk processing*



# Gravimetric Level Measurement

## ... Using Complete Solutions from HBM:

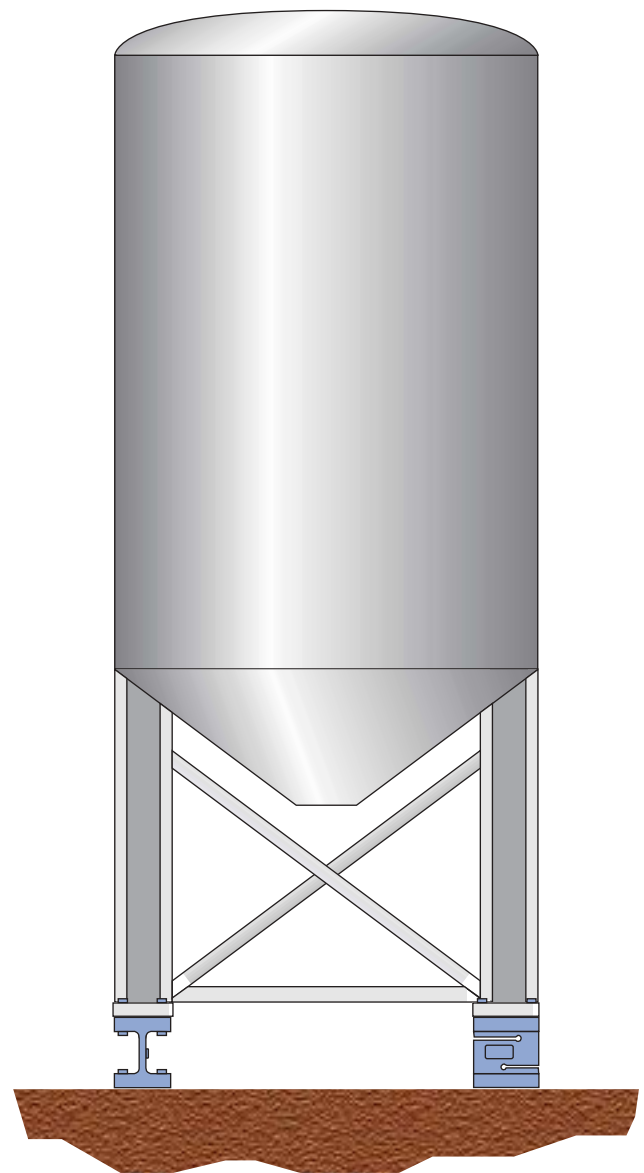
For silo level measurements HBM offers a range of products complying with different situations.

### Load cells prevent measurement errors caused by...

- \_\_\_ Phase transitions, vaporization, formation of foam or bubbles during filling
- \_\_\_ Differences in humidity of the fill material
- \_\_\_ Fill material adhering to the wall
- \_\_\_ Asymmetric tanks
- \_\_\_ Wrong grain size of fill material

### Additional benefits of measurements using load cells...

- \_\_\_ Easy expansion
- \_\_\_ Flexible measuring ranges
- \_\_\_ Multipurpose application
- \_\_\_ No media contact, etc. ...



ent...



## VKK & JBX

### Junction Boxes...

- \_\_\_ For connecting load cells in parallel without error
- \_\_\_ Corner adjustment via integral resistor network
- \_\_\_ IP65/NEMA4 protection
- \_\_\_ Explosion-proof versions available

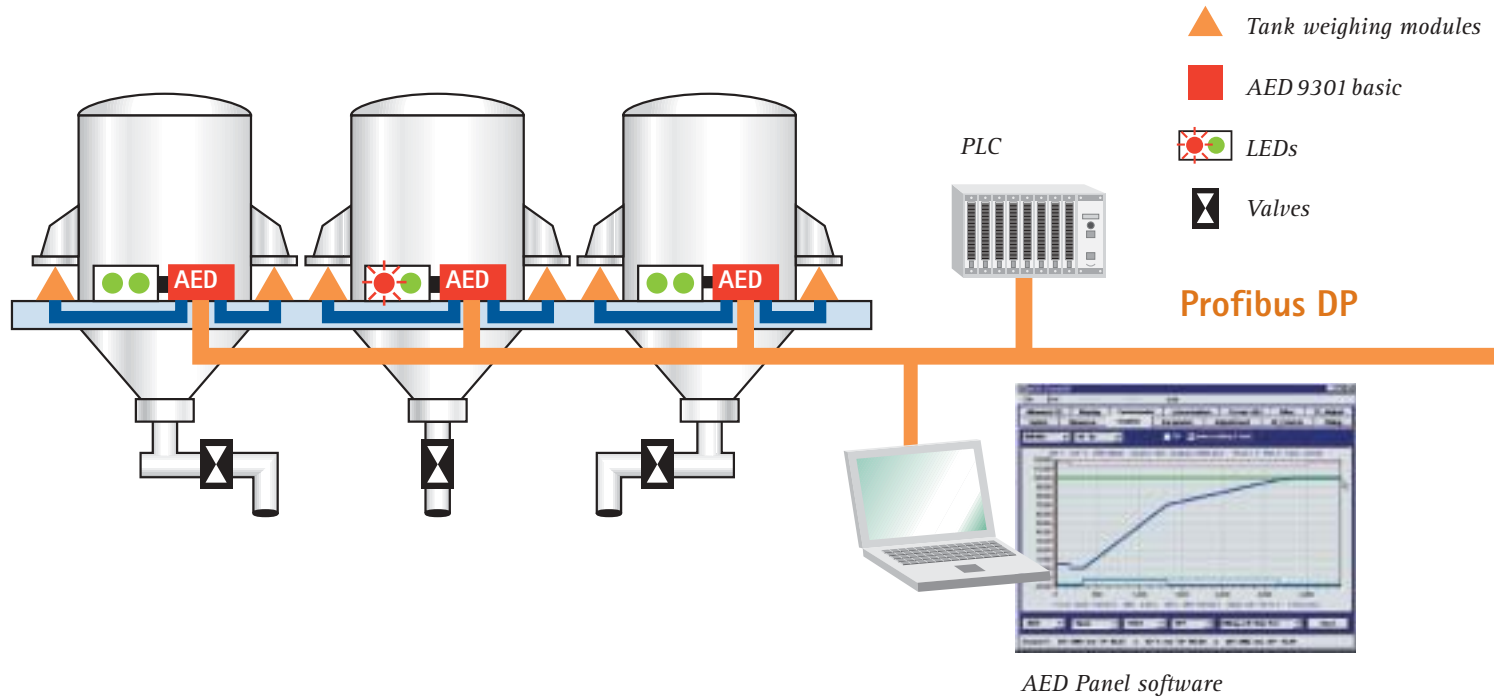
## WE2110 & WE3210

### Digital Weighing Indicators

- \_\_\_ For up to eight 350Ω load cells
- \_\_\_ Panel and bench mount units
- \_\_\_ OIML and NTEP approvals
- \_\_\_ Wide variety of analog and digital outputs
- \_\_\_ AC, DC, and battery-powered versions



# Complete Solutions from HBM...



## ...Using Tank Weighing Modules from HBM and the AED Digital Transducer Electronics for Profibus:

### Task ...

Gravimetric monitoring and filling of tanks.

### ... additional requirements:

- \_\_\_ Installation at the tank
- \_\_\_ Integration into Profibus network
- \_\_\_ LEDs on site to indicate when tank contents fall below the minimum level

### HBM's solution ...

- \_\_\_ AED with digital amplifier:  
for filtering and conditioning of the load cell strain gage (SG) signals
- \_\_\_ AED limit value function: LED control

### ... via Profibus DP:

- \_\_\_ Level data directly to PLC
- \_\_\_ Commissioning without an interruption of the process using AED Panel software in DP acyclic mode



# Load Cells & Electronics

## HBM Tank Weighing Modules...



### ...for High Accuracy and Process Safety

- \_\_\_ For nominal loads of 50 kg to 200 t (110 lb to 220 tn)
- \_\_\_ Legal for trade in accordance with NTEP
- \_\_\_ With overload stops and stay rods
- \_\_\_ Explosion-proof load cell models available
- \_\_\_ Maintenance free
- \_\_\_ Easy mounting



## AED

### On-site Digitization and Conditioning of the Measured Signals

The AED digital transducer electronics conditions analog measurement signals and generates digital signals that are immune from interference. The AED has been developed to make process control and monitoring easier, more direct and convenient for you.

- \_\_\_ Wide range of applications suitable for both static and dynamic measurements
- \_\_\_ Signal resolution of up to 1 million digits
- \_\_\_ Legal for trade up to 6000d in class III
- \_\_\_ Reduced installation cost due to bus option
- \_\_\_ Fast setup because of 100% computer control
- \_\_\_ Power failsafe storage of factory and user-specific parameters in the device
- \_\_\_ RS-232/-422/-485 and Profibus DP interfaces



RTM



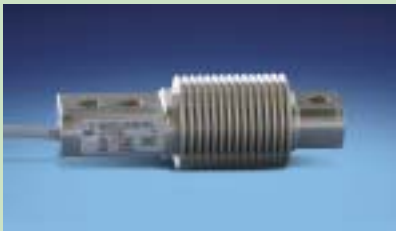
TWM



S35



Z6



PWS



























RTN



C16A



Type	Accuracy Class	Protection Class
RTM	N/A	IP 67
TWM	N/A	IP65
S35	N/A	IP 66
Z6	D1; C3; C4; C6	IP 68
PWS	N/A	IP65
RTN	0.05 % · C3	IP 68
C16A	D1; C3	IP 68

Nominal Load	Material	Approvals	EMC	
500-5,000 Lbs	Stainless steel			
20,000-100,000 Lbs	Robust steel construction; corrosive resistant paint			
50-20,000 Lbs	Stainless steel	 		
5 kg · 10 kg · 20 kg 50 kg · 100 kg 200 kg · 500 kg 1,000 kg	Stainless steel	   	tested	<p><i>The proven Z6 Bending Beam offers low profile with high performance accuracy.</i></p>   <p><i>Z6.../ZPU load cells with elastomer bearing provide heat insulation</i></p>
7 kg-150 kg	Stainless steel	 		
1...4.7 t · 10...22 t 33 t	Stainless steel	   	tested	  <p><i>RTN tank weighing module and fixed bearing – the attractively priced alternative for tank weighing and level measurement</i></p>
20 t · 30 t · 40 t 60 t · 100 t · 200 t	Stainless steel	   	tested	<p><i>C16 tank weighing modules (60 t and 200 t) for weighing heavy tanks</i></p>  

For Tank Weighing,  
Level Measurement and  
Batching Processes

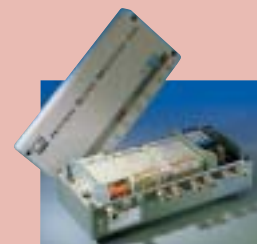
WE3200



WE3210



CLIP  
AE301



Accuracy class	0.025%	0.025%	0.1%
Legal for trade approvals	4000 d	4000 d	—
Display	•	•	—
Control inputs/outputs	•	•	Separate module GR 201 / TS 101
Interfaces			
RS-232	•	•	—
RS-422 / -485	—	—	—
Analog output	—	—	•
Profibus DP	—	—	—
CANbus	—	—	—
Interbus S	—	—	—
Enclosure classification	—	IP65	IP65
DeviceNet (direct output to a PLC)	—	—	—

Key: • = yes; — = n/a

## Accessories



433



WE2110



MVD 2555



4800



PME  
MP55DP



AED  
System



0.01%

0.015%

0.1%

0.1%

0.1%

0.01%

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IP40/IP65

IP40/IP51

NEMA4

IP20

IP65

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CABA:  
Cable reels, 6 wire cable,  
length: 20 m or 100 m



VKK 1-4:  
Junction box for the  
parallel connection of  
load cells



SC232/422 B:  
Interface converter set



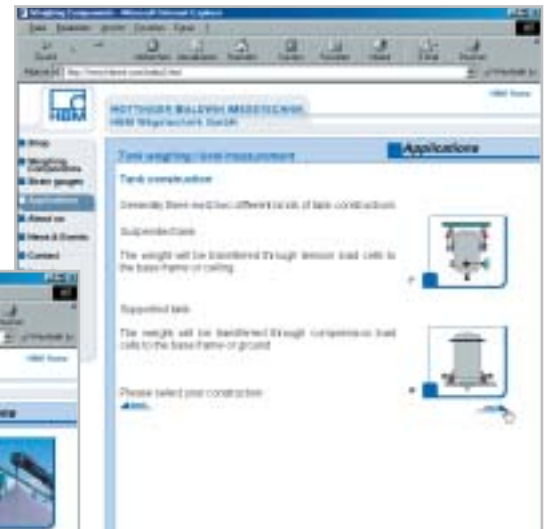
SB01 A:  
Safety barriers

# We are on Hand to Help you ...

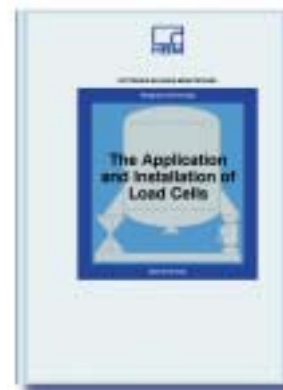
## Online Advice ...

For vessel, tank, and silo weighing as well as level measurement, HBM is the first company worldwide to provide an Internet-based application consultant.

This application consultant provides interactive support in the project planning of your application.



- Interactive project planning 24 hours a day
- Calculation of total load providing the most suitable load cell
- Wind load calculations for outside vessels, tanks, or silos
- Calculation of lift-off forces for the correct dimensioning of lift-off securing devices
- Material selection options for HBM weighing components
- Taking into account mixers inside tanks
- Online product suggestion



*Benefit from our many years of experience:*

*To order your copy of the book visit [www.hbm.com](http://www.hbm.com)*



# ... Complete

## ... with a Complete Range from Sensor to Software

For more than 50 years HBM has been a leading supplier of components for the industrial weighing technology worldwide.

An intensive cooperation with our customers in the fields of construction and design, as well as our wide range of application know-how, enables us to provide you with a mature and complete product range for all applications in weighing technology.

From load cells through tank weighing modules and accessories to bus-capable electronics and software.



# ... Worldwide

To ensure that your capital investment achieves maximum capacity as fast as possible, we provide – if desired – installation and start-up by our qualified service engineers.

Our specialists check the functions of all weighing components and make default settings. During and after start-up all measurement tasks in your plant will be optimized.

You can rely on us: our customer support center in our Marlborough headquarters is available for you.

## From Sensor to Software

We are dedicated to providing a strong partnership on which you can fully rely.

That is why we have created a range of products – from load cells to electronics – suited to solving your weighing tasks and controlling your batching processes.



## hbm ...

*innovations for the  
process industries*

[www.hbm.com](http://www.hbm.com)



measurement with confidence

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