

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 –

Are 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.



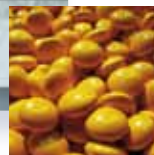
Chemical industry

HBM components provide winning solutions especially in potentially explosive atmospheres



Cosmetic industry

Batching with HBM products for lifestyle, health, and beauty



Pharmaceutical industry

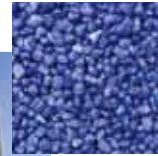
HBM components provide for a constant quality of the medicines produced

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



Animal feed industry

We ensure that your animals receive as much as they need



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



Steel industry

HBM load cells provide reliable results even at high temperatures





Suspended tank weighing ...

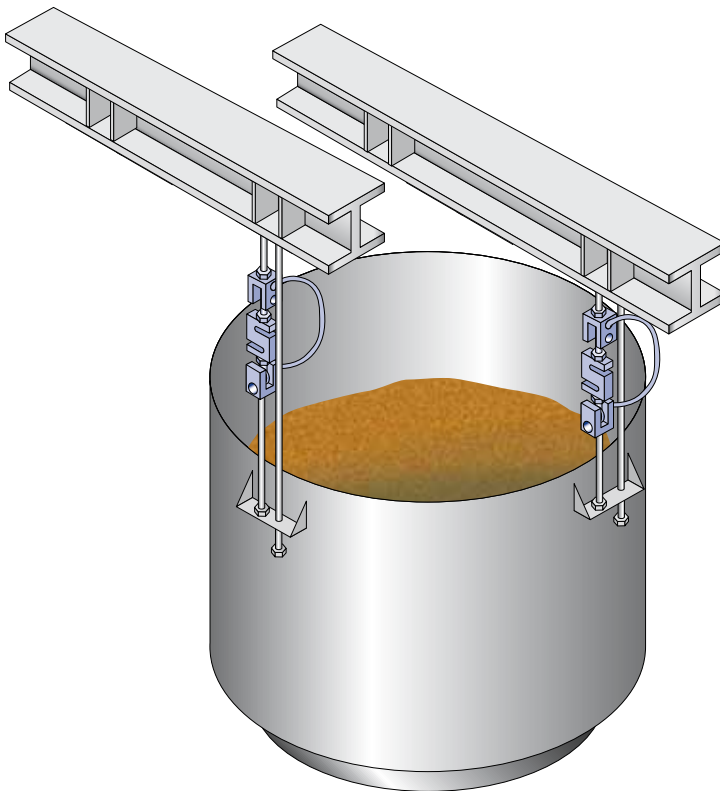
... with RSC load cells

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



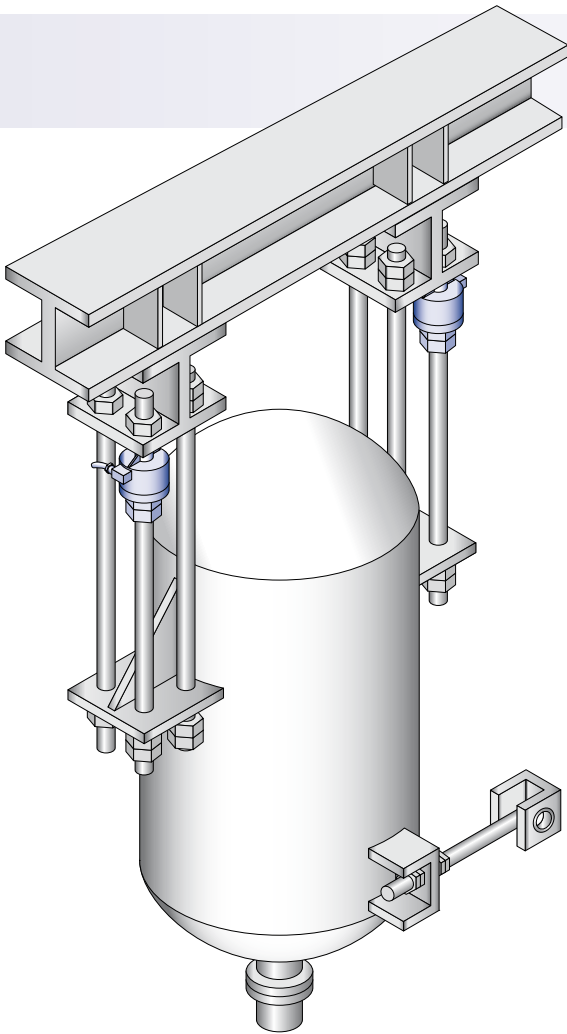
RSCB tension load cell

- ___ For nominal (rated) loads of 200 kg, 500 kg, 1 t, 2 t, and 5 t
- ___ Legal for trade in accordance with OIML R60 up to 3000 d and NTEP
- ___ Hermetically sealed
- ___ Stainless steel version
- ___ Main applications: suspended tank weighing but also band scales and metering/batching scales

Optional:

- ___ ATEX 95 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

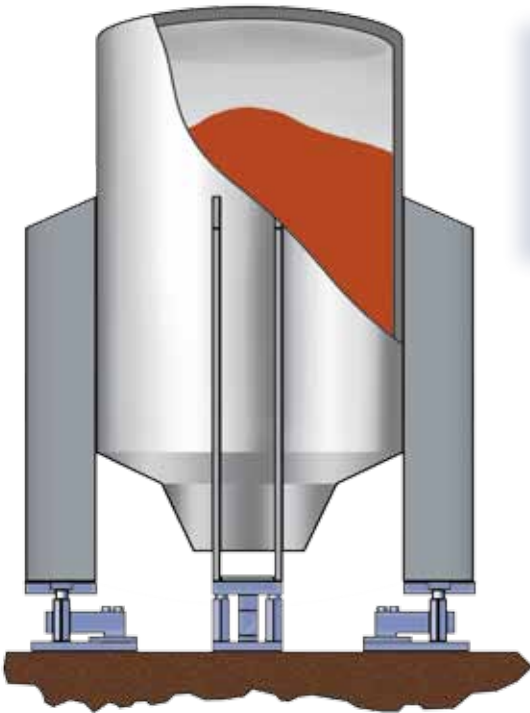
- ___ For nominal (rated) loads from 50 kg to 20 t
- ___ Legal for trade in accordance with OIML R 60 up to 1000 d
- ___ Hermetically sealed
- ___ Low height of construction
- ___ Stainless steel version
- ___ Main applications: suspended tank weighing but also band scales and metering / batching scales

Optional:

- ___ ATEX 95 compliant explosion-proof version
 - ___ Load cell: operating temperature range up to +120°C (+ 248°F)
- (not available with ATEX)



Weighing silos, tanks, and mixers ...



HLC modules

HLC tank weighing modules provide for an optimal point force application via a self-centering pendulum. In combination with load cells from the HLC product series, HLC modules thus are an ideal combination for use in silo and tank weighing as well as in process monitoring.

- ___ For nominal (rated) loads of 220 kg to 4.4 t
- ___ Low height of construction
- ___ Integral lift-off securing device
- ___ Galvanized or stainless steel components
- ___ Easy mounting

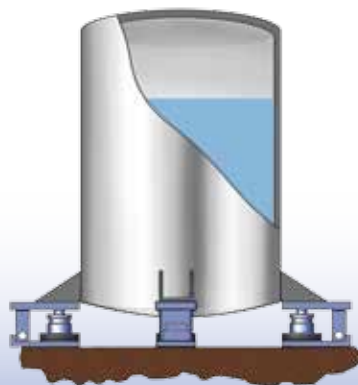
Optional:

- ___ ATEX 95 compliant explosion-proof version

... using the Z6, HLC, RTN, C16 and ESM 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.



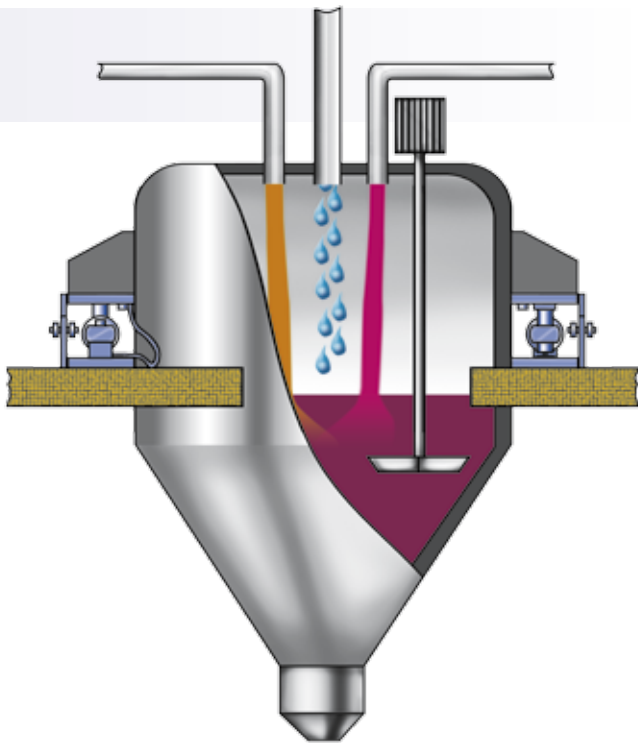
RTN modules

A self-restoring rubber/metal bearing which compensates for horizontal movements is used as a load application element.

- ___ For nominal (rated) loads of 1 t to 4.7 t; 10 t to 22 t and 33 t
- ___ Integral lift-off securing device as well as horizontal stops
- ___ Shock-free fitting
- ___ Galvanized or stainless steel components

Optional:

- ___ ATEX 95 compliant explosion-proof version
 - ___ Load cell: operating temperature range up to +110 °C (+ 230 °F)
- (not available with ATEX)

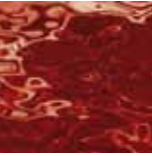


... using the Z6, RTN and C16 tank weighing modules

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.

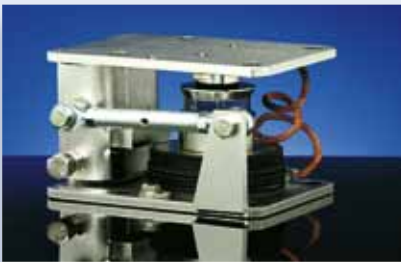


Z6 modules

- ___ For nominal (rated) 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 OIML R 60 and NTEP
- ___ Self-centering due to pendulum bearing
- ___ Easy mounting
- ___ Galvanized or stainless steel components

Optional:

- ___ ATEX 95 compliant explosion-proof version



RTN module with elastomer bearing



RTN module with pendulum bearing



RTN load cell with elastomer bearing below a tank bracket



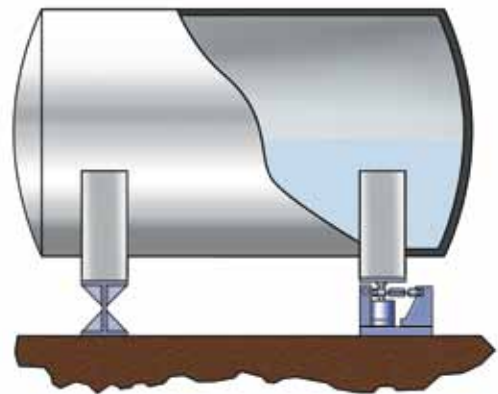


Weighing horizontal tanks...

... using the Z6, HLC, RTN and C16 tank weighing modules

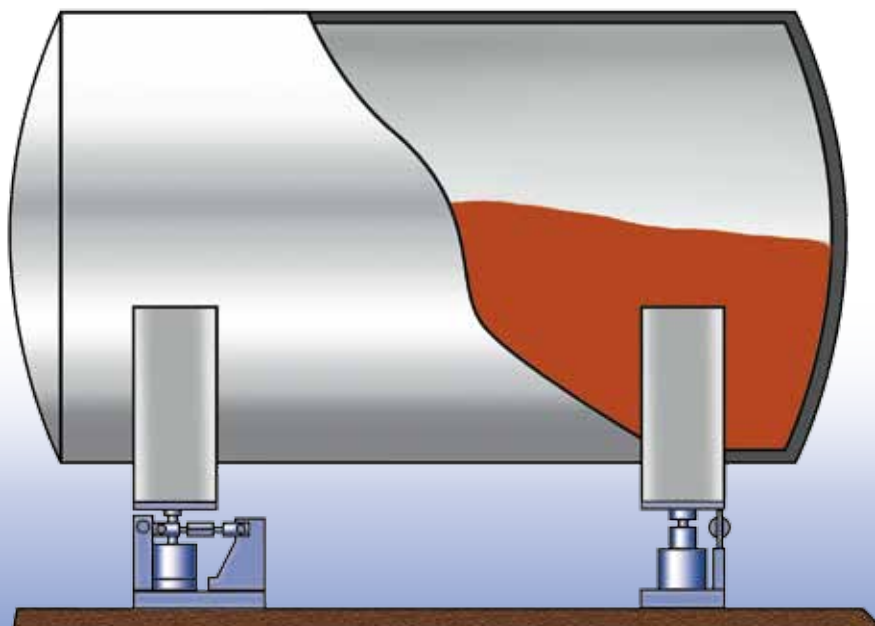
Horizontal tanks for liquids

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 (rated) loads of 20 t, 30 t, 40 t, 60 t, 100 t, 200 t
- ___ Equipped with C16 A self-centering pendulum load cell
- ___ Stay rod for taking up horizontal forces
- ___ Easy mounting
- ___ Galvanized or stainless steel components

Optional:

- ___ Lift-off securing device
- ___ ATEX 95 compliant explosion-proof version
- ___ Lightning protection



HLC load cells with "easy top" module

The attractively priced force application option for tanks from 50 kg to 5 t in plant engineering. The "easy top" provides several advantages:

- ___ **Adjustable height:** for compensating tank manufacturing tolerances
- ___ **Integral elastomer bearing:** for absorbing shock loads and oscillations, as well as for absorbing external vibrations
- ___ **Ideal point force application** of the semi-pendulum: for an optimum application of force into the load cell



Z6 and HLC load cells 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 conduction between tank and load cell.



Automatic mixer loading system in bulk processing





Gravimetric level measurement ...

... using complete solutions from HBM:

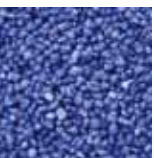
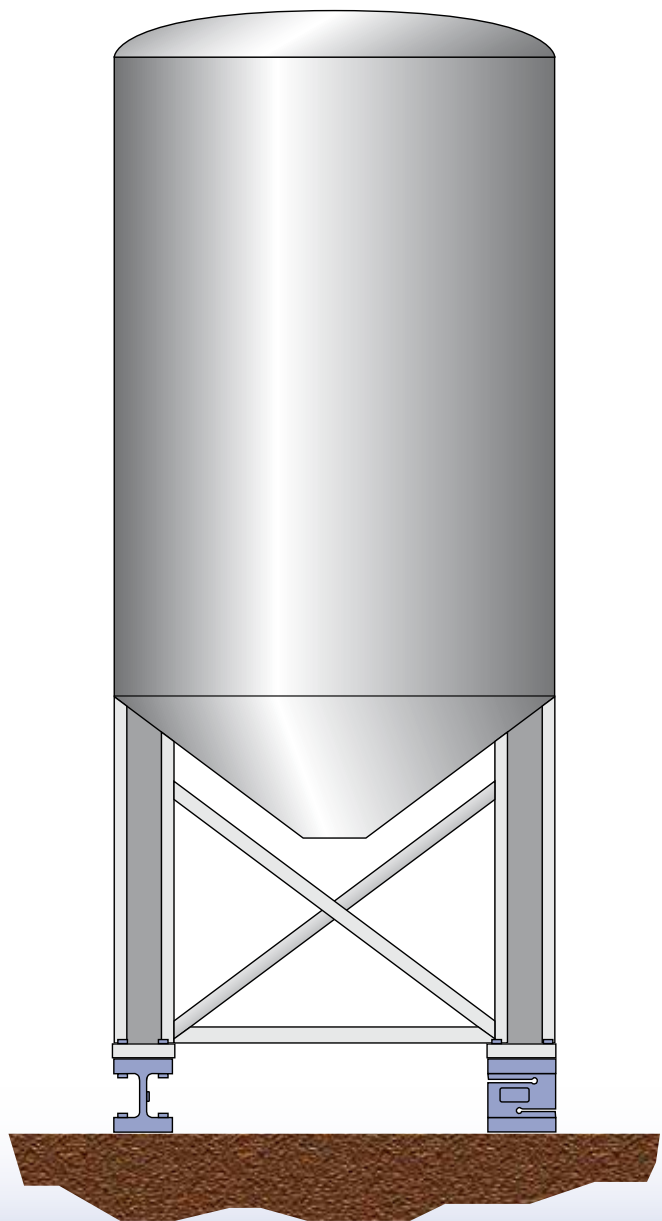
For silo level measurements HBM offers a range of products complying with different situations.

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. ...





VKK 1-4

Junction box...

- ___ For connecting load cells in parallel without error
- ___ Corner adjustment via integral resistor network
- ___ IP 65 protection
- ___ EMC tested acc. to EN 45 501



WE 2110

Digital weighing indicator

- ___ User friendly
- ___ Panel mounting with accessories
- ___ Four limit values
- ___ 4 to 20mA or -10 to +10 V_{DC} analog outputs
- ___ For eight 350Ω load cells



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:

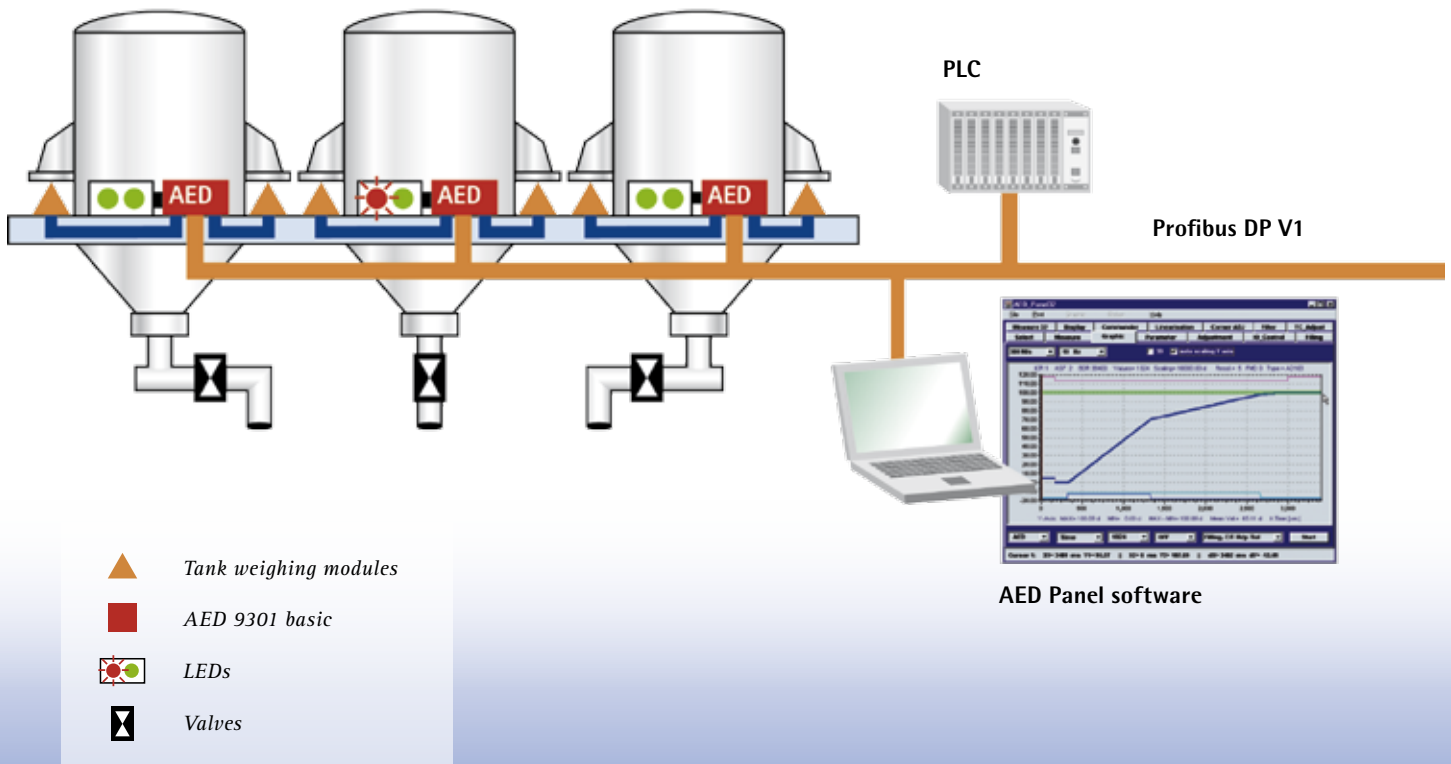
- ___ Installation at the tank
- ___ Integration into Profibus network
- ___ LEDs on site to indicate when tank contents fall below the minimum level

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 V1 acyclic mode



Load cells & electronics

HBM tank weighing modules ...



... for high accuracy and process safety

- ___ For nominal (rated) loads of 50 kg to 500 kg, 1 t to 4.7 t, 10 t to 33 t, 100 t to 200 t
- ___ Legal for trade according to OIML R60 up to 3000 d and NTEP
- ___ With overload stops and stay rods
- ___ Explosion-proof load cells complying with ATEX 95
- ___ 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 6000 d 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 V1 interfaces





RSCB

Accuracy class

Protection class

Nominal (rated) load

C1; C3

IP67

200 kg · 500 kg
1t · 2t · 5t

U2A



0.1%; 0.2%; D1

IP67

50 kg · 100 kg
200 kg · 500 kg
1t · 5t · 10t · 20t



Z6

D1; C3

IP68

5 kg · 10 kg
20 kg · 50 kg
100 kg · 200 kg
500 kg

HLC



D1; C3

IP68

220 kg · 550 kg
1.1t · 1.76t
2t · 2.2t · 4.4t



RTN

0.05%; C3

IP68

1...4.7t
10...22t
33t

C16A



D1; C3

IP68

20t · 30t · 40t
60t · 100t
200t

Material	Approvals	EMC
Stainless steel	Ex, OIML, FM	tested
Stainless steel	Ex, OIML	tested
Stainless steel	Ex, OIML, FM, NTEP	tested
Stainless steel	Ex, OIML, FM, NTEP	tested
Stainless steel	Ex, OIML, FM, NTEP	tested
Stainless steel	Ex, OIML, FM, NTEP	tested
Stainless steel	Ex, OIML, FM, NTEP	tested



RSCB with knuckle eyes for suspended tank weighing



U2A with knuckle eyes for suspended tank weighing at higher nominal (rated) loads



The proven Z6 tank weighing module with stay rod for weighing of smaller tanks



Z6.../ZPU load cells with elastomer bearing provide heat insulation



HLC load cell with "easy top": the attractively priced force application for tanks in plant manufacturing



HLC tank weighing module for weighing in tank and batching scales



HLC load cell with elastomer bearing for absorbing mechanical vibrations or shocks



RTN tank weighing module and fixed bearing - the attractively priced alternative for tank weighing and level measurement



C16 tank weighing modules (60t and 200t) for weighing heavy tanks



For tank weighing,
level measurement and
batching processes

RM 4220



CLIP
AE 301



WE 2108



Accuracy class	0.1 %	0.1 %	0.015 %
Legal for trade approvals	-	-	6000 d
Display	-	-	•
Control inputs/outputs	-	Seperate module GR 201 / TS 101	•
Interfaces			
RS-232	-	-	•
RS-422 / -485	-	-	•
Analog output	•	•	-
Profibus DP	-	-	-
CANbus	-	-	-
Interbus S	-	-	-

All electronics from HBM comply with industry standards

Accessories



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



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



SC232/422B:
Interface converter set

MVD 2510

WE 2110

MVD 2555

ME 30

PME
MP30 DP

AED
System



0.1 %	0.015%	0.1 %	0.01 %	0.03 %	0.01 %
-	6000 d	-	-	-	6000 d
•	•	•	-	•	-
•	optional	•	-	•	•
-	•	•	-	-	•
-	•	•	-	-	•
•	optional	•	•	optional	-
-	-	-	-	•	•
-	-	-	-	•	-
-	-	-	-	optional	-



SB01 A:
Safety barriers

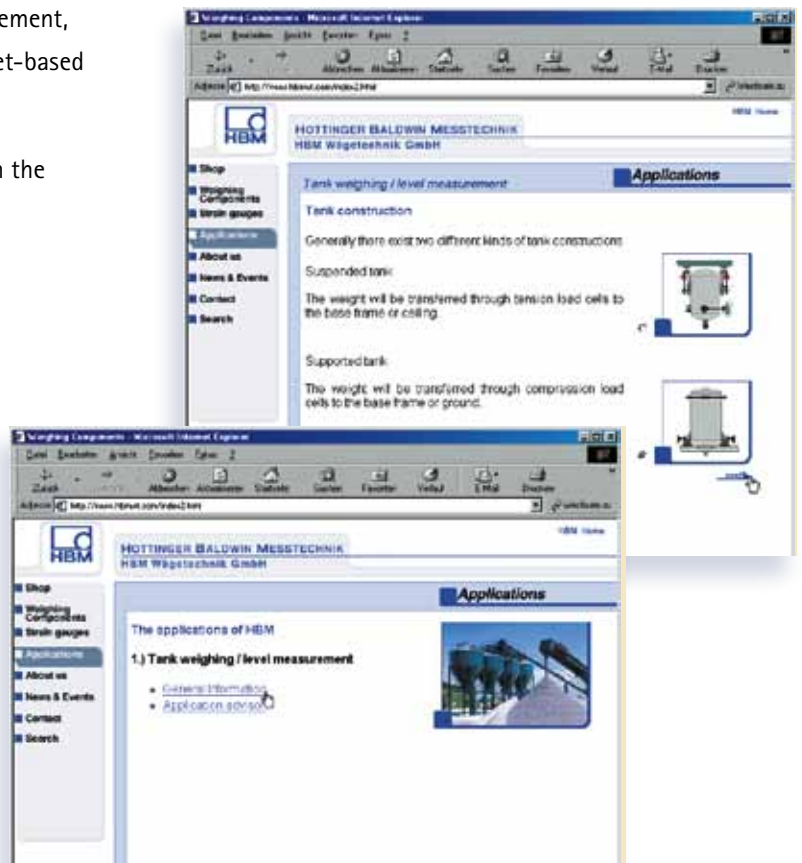


We are on hand to help you ...

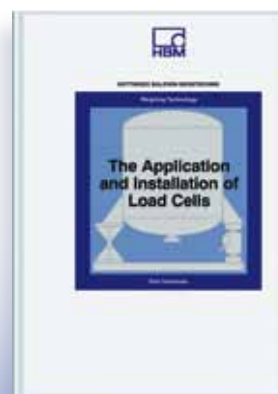
Online advice ...

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



... 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 Darmstadt headquarters is available for you.



Weighing and batching with HBM technology

Solutions 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.



More information at...

www.hbm.com

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measure and predict with confidence

