

SIEMENS WEIGHING TECHNOLOGY

Totally integrated weighing

Components and solutions for weighing, dosing and batching siemens.com/weighing

SIEMENS

So, what do you need **measured?**

Weighing and dosing processes are of great significance in many areas of industrial production.

Whether for filling food and beverage containers or preparing recipes for chemicals and pharmaceutical products: With our solutions, you can count on absolute reliability and highest precision.



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Seamless **integrated weighing** technology in the SIMATIC environment

1 SIMATIC PLC

The free standard example projects and function blocks offer full access to all parameter and data of the weighing electronics and allow a fast integration of the scales into existing automation programs and visualizations. In case of alarms, integrated hardware interrupts provide full transparency from the sensor to the controller. Following SIMATIC standards, a long term availability of all electronics and components is guaranteed.

Based on a continuous handling concept across all different weighing electronics, a quick and easy integration of new types of scales is ensured.

2 Userfriendly HMI

The HMI panel offers completely editable user interfaces. All relevant workflow processes, such as operating, monitoring and maintenance can be done directly from the central HMI, means there is no struggle with any additional black box on the machine.

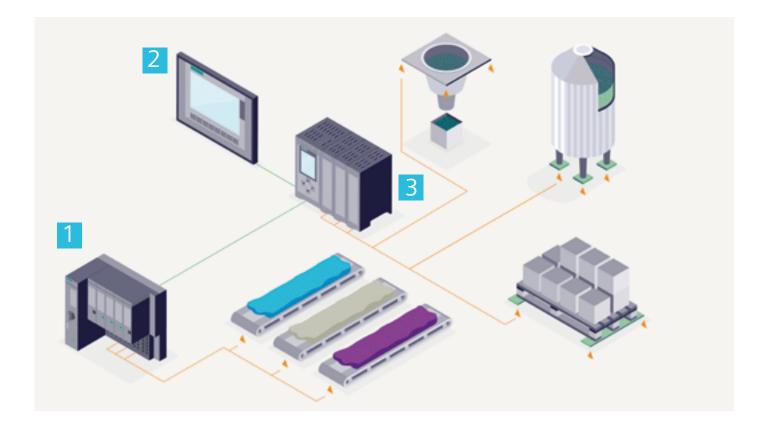
Besides that, the HMI offers a customer-friendly error handling: due to the detailed error message system, the errors will be shown in a clear text which leaves no questions unanswered. You need more than one language to be displayed? No problem, foreign languages can easily be added via simple EXCEL ex- and import. But the HMI does not only offer comfort regarding the handling during daily business.

The SIMATIC Comfort HMI, for instance can also be used as legal-for-trade main display.

3 Continuous hardware concept

The hardware concept considers the SIMATIC standards, which makes the wiring easy and guarantees a clear structure in the cabinet.

By using SIMATIC standard controllers and I/O cards, you will achieve highest flexibility and scalability in your weighing environment. Besides that you can decide whether to install your components centrally or as distributed system.





SIWAREX weighing modules – available for all requirements

Whether central or distributed: our electronic weighing systems set standards. We offer integrated solutions for seamless integration into the SIMATIC automation system under the name SIWAREX. The weighing system can be easily adapted to meet your individual requirements with the SIMATIC standard components. Moreover, standardized interfaces, integrated functions, and uniform tools allow for cost-effective configuration. Whatever your choice, you can count on a high degree of precision with SIWAREX and benefit from certifications according to OIML as well as a finely graded range of functions.

Our **SIWAREX weighing** electronics at a glance







| | SIWAREX WP351 | SIWAREX WP231 | SIWAREX WP241 | SIWAREX WP251 |
|-----------------|---|--|---|---|
| Article No. | 7MH4138-6BA00-0CU0 | 7MH4960-2AA01 | 7MH4960-4AA01 | 7MH4960-6AA01 |
| Туре | High feature automatic weighing module for dosing, batching, filling, totalizing and checking scale applications within SIMATIC ET 200SP | Non-automatic scale applications like fill level monitoring of silos, hopper scales, platform and crane scales within SIMATIC S7-1200 systems or stand-alone operation | Conveyor belt scale applications within SIMATIC S7-1200 systems or stand-alone operation. Control of weighfeeder applications can be easily realized via PID loop in S7-1200 PLC | Automatic weighing module for dosing, batching, filling, totaliz- ing and checking scale applica- tions within SIMATIC S7-1200 systems or stand-alone operation |
| Key features | Only 20 mm module width Seamless integration into SIMATIC ET 200SP 1000 Hz sampling rate und processing time Certified according to OIML R-51, R-61, R-76 and R-107 | Resolution of up to ± four million parts Four digital in- and outputs, one analog output on board Certified according to OIML R-76 Certified according to NTEP | Resolution of up to four million parts Four digital in- and outputs, one analog output on board | Resolution of up to ± four million parts Four digital in- and outputs, one analog output on board |
| | SIWAREX WP321 | SIWAREX WP521 ST/ SIWAREX WP522 ST | SIWAREX WT231 | SIWAREX WT241 |
| Article No. | 7MH4138-6AA00-0BA0 | 7MH4980-1AA01 7MH4980-2AA01 | 7MH4965-2AA01 | 7MH4965-4AA01 |
| Туре | Technology module for the distributed I/O system SIMATIC ET 200SP. Suitable for nonautomatic scales in level measurement in silos and bunkers and platform scales | Technology modules for the SIMATIC S7-1500 advanced controller family Optimally prepared for gravimetric level measurement of silos and hoppers as well as for platform scales | Weighing terminal for platform scales, silo and bunker weighing, scales in hazardous areas, force measurement Weighing terminal for conveyor belt scale applications | Weighing terminal for conveyor belt scale applications |
| Key features | Resolution of up to two million parts Compact design Ready for use sample application Scale internal control of freely definable limit values | Resolution of up to four million parts Integrated part of TIA portal Automatic impedance control of the load cells, process, and diagnostic alarms | Resolution of up to four million parts State Nodbus RTU digital inputs (floating) digital outputs (floating) and digital outputs (floating) and digital output (0/420 mA) | Resolution of up to four million parts RS485 Modbus RTU digital inputs (floating) digital outputs (floating) analog output (0/420 mA) |





previously possible. With SIWAREX DB, this level of

connectivity now also covers the individual analog load cell.

SIWAREX DB – your connection to the digital world

Analogue limitations are left behind with SIWAREX DB. Instead of doing a parallel connection of the analog load cells and having no information about the single load cell, digitalization of each load cell offers full transparency.

SIWAREX DB makes the digitalization of the proven, most common and cost-effective strain gauge technology possible. For direct connection to a SIMATIC S7 or PCS7 PLC the SIWAREX WP weighing electronics are ideal.

Seamless communication between SIWAREX and SIMATIC ensures less time and effort during commissioning. During operation the single channel monitoring, allowing wire break, impedance, and the current utilization of each load cell to be detected and corrected in the event of an error.

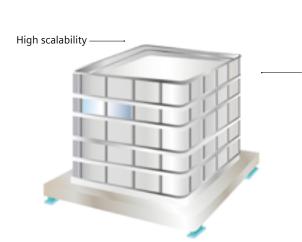
SIWAREX DB supplies diagnostics data that are fully integrated in the SIMATIC environment. Error messages are displayed centrally on the SIMATIC controller and the HMI.

Load cells and accessories – an overview

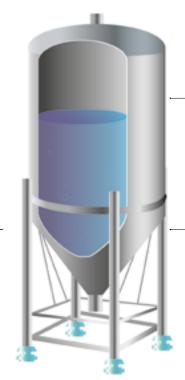


| SIWARE | SIWAREX load cells | | | | | | |
|-----------------|--|--|---|---|---|---|--|
| | SIWAREX WL230 BB | SIWAREX WL230 SB | SIWAREX WL250 | SIWAREX WL260 | SIWAREX WL270 | SIWAREX WL280 | SIWAREX WL290 |
| Article No. | 7MH5106 | 7MH5121 7MH5107 | 7MH5105 | 7MH5102/03/04/ 16/17/18/20/23 | 7MH5108/10/14 | 7MH5113 | 7MH5122 |
| Туре | Bending beam for platform and hopper scales | Shear beam load cell for platform and hopper scales, overhead track scales | S-type load cell for tension and pressure applica- tions, hanging and hopper scales, hybrid scales | Single point load cell for platform scales | Compression load cell for hopper scales, overhead truck scales, vehicle scales | Ring torsion load cell for platform and hopper scales, conveyor belt scales, roller table scales | Double shear beam load cell for big platform, hopper, and vehicle scales |
| Key features | Rated load from 10 kg to 500 kg C3 to OIML R60 IP68 | Rated load from 0.1 to 10 t C3,C4,C5 to OIML R60 IP67 | Rated load from 50 kg to 10 t C3 to OIML R60 IP67 | Rated load from 0.3 kg to 200 kg C3,C4MR to OIML R60 IP66, IP67, IP68, IP69K | • Rated load from 2.8 t to 500 t • C3 to OIML R60 • IP66/IP68 | Rated load from 60 kg to 60 t C3 to OIML R60 IP66/IP68 | • Rated load from 2.3 t to 113 t • C3 to OIML R60 • IP67 |
| and tl | he mounting uni | ts and junction b | ooxes | | | | |
| | SIWAREX WL230 SB | SIWAREX WL230 BB | SIWAREX WL270 | SIWAREX WL290 | SIWAREX WL280 RN | SIWAREX DB | SIWAREX JB |
| Article No. | 7MH5721 7MH5707 | 7MH4133 | 7MH5708 7MH5710 additional lines 7MH3115 7MH5714 | 7МН5722 | 7MH4130 7MH4125 7MH4115 additional line 7MH5713 | 7MH5001-0AD | 7MH5001-0AA |
| Туре | Compact mounting unit, base plate, elastomer bearing and load foot platform and hopper scales, roller table scales | Compact mounting unit, elastomer bearing for platform and hopper scales, roller table scales | Compact mounting unit for hopper scales | Mounting unit for platform and hopper scales and onboard weighing | Compact installation unit and arm, Elastomer bearings for platform and hopper scales, roller table scales | Digital junction box 4 channels for connection cells | Junction and extension boxes to connect several load cells to one SIWAREX weighing system |
| Key features | Rated load from 10 kg to 500 kg, 0.5 t to 5 t Material: stainless steel, nickel-plated steel and neoprene | Rated load from 10 kg to 500 kg Material: stainless steel and neoprene | Rated load from 2 t to 50 t, 100 t Material: stainless steel | Rated load from 2.3 kg to 113 t Material: nickel-plated steel | Rated load from 60 kg to 60 t Material: stainless steel and neoprene | Material housing aluminum or stainless steel IP66 | Material: aluminium or stainless steel IP66 |

Non-automatic weighing



Easy and seamless integration of all SIWAREX weighing modules into the SIMATIC environment – TIA Portal or PCS7



- Legal-for-trade according OIML R-76

The corresponding SIWAREX electronics provide extensive features and functions to fulfill all requirements of non-automatic scale applications

Non-automatic weighing

Platform scales: possible loads – a truck, a bin, a bucket or raw materia.

Hopper scales: for liquids, powders, solids and gases. Detection of precise levels of stored materials.

The optimal choice

SIWAREX WP231 (SIMATIC S7-1200/stand-alone) SIWAREX WP321 (SIMATIC ET 200SP) SIWAREX WP521/522 ST (S7-1500/ET 200MP) SIWAREX WT231 (stand-alone) SIWAREX DB digital junction box SIWAREX load cells and installation accessories



Weighing air cargo shipments reliably



Cargologic AG is a leader in air cargo handling and has been operating at Zurich Airport for more than 50 years. To weigh individual freight units and complete unit load devices (ULDs), a floor model of a platform scale is used. The solution was a combination comprised of four SIWAREX WL280 RN-S SA load cells and the SIWAREX WP231 weighing module.

Check weighing



Dosing, batching and bagging scale

A predefined set-point is completely automatically batched by the SIWAREX electronic – typically by coarse and fine flow control.

Dosing, batching and high-speed bagging (bagging machines, multi component batching)

The optimal choice

SIWAREX WP351 (SIMATIC ET 200SP)
SIWAREX WP251 (SIMATIC S7-1200/stand-alone)
SIWAREX FTA (SIMATIC S7-300/400/ET 200M)
SIWAREX load cells and installation accessories

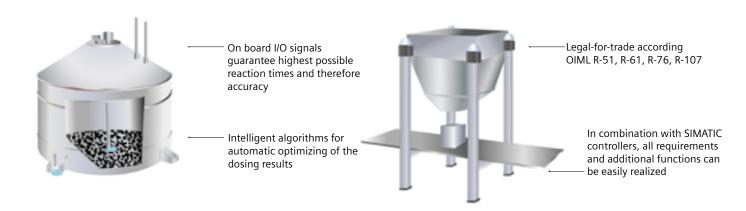


Exact weighing for fruit and vegetable packaging



The end customer of the plant builder RMA techniek was not able to conduct final check weighing at the end of the packaging process. A custom weighing solution in an integrated control environment had to change all that. The core element of the solution is the SIWAREX S7-1215C controller.

Dosing, filling and batching applications



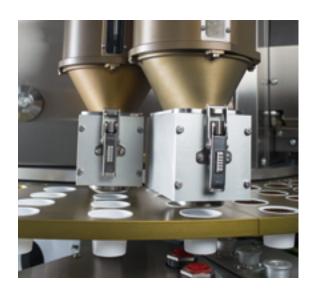
Dosing, batching and bagging scale

A predefined set-point is completely automatically batched by the SIWAREX electronic – typically by coarse and fine flow control.

Dosing, batching and high-speed bagging (bagging machines, multi component batching)

The optimal choice

SIWAREX WP351 (SIMATIC ET 200SP)
SIWAREX WP251 (SIMATIC S7-1200/stand-alone)
SIWAREX load cells and installation accessories
SIWAREX DB



Accurate weighing at smallest place



Gima SpA, Bologna, Italy, specializes in automated packaging solutions for tea, coffee, beverages, foods such as dairy and convenience products. A new machine for filling coffee capsules shall be projected and put in operation.

Loss-in-weight applications

Very competitive for retrofit of old systems



___ Complex tasks easily solved with SIWAREX and SIMATIC

 The only loss-in-weight system fully integrated in SIMATIC format

Loss-in-weight scales

A loss-in-weight feeder regulates the mass flow rate (quantity per time).

A loss-in-weight system helps to achieve the needed level of accuracy in continuous dosing applications.

Feeding extruders and adding additives into continuous processes

The optimal choice

SIWAREX FTC (SIMATIC S7-300/400/ET 200M)
SIWAREX load cells and installation accessories

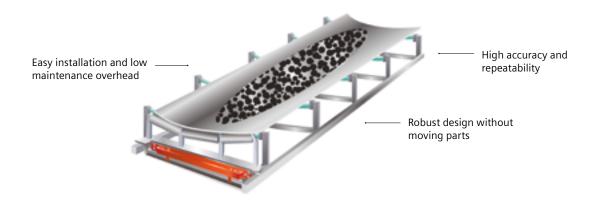


Filling processes in washing powder production



Mifa AG is Switzerland's largest detergent and cooking oil manufacturer and also produces detergents and household-cleaning products in liquid and powder form. A solution with Siemens weighing products has been found for the company's outdated washing powder filling system that has done more than just positively affect productivity.

Belt scales



High performance for all industries

Weighing and controlling the rate of materials on a conveyor belt is one of the most common procedures in process automation. Siemens has more than 35 years of experience weighing bulk materials on conveyors. You will find our reliable equipment in almost any industry.

Milltronics belt scales from Siemens combine simple drop-in installation and low maintenance (no moving parts) with repeatable high accuracy for productive operation. With various hazardous and trade approvals, Milltronics belt scales can be used in almost any industrial environment or application.



Accurate measuring for a Russian phosphate mine



Apatit Mining in Russia is the world's largest producer of high grade phosphate ore which is used as a raw material base for the production of phosphate-based fertilizers. The company was looking to modernize and expand production and needed an accurate and reliable system to weigh the ore to determine the mine's production rates. The picture shows MSI belt scale with MWL calibration system.

Product overview





| | Milltronics MMI | Milltronics MSI |
|-----------------|--|--|
| Article No. | 7MH7122 | 7MH7122 |
| Туре | High accuracy and dem | anding applications |
| Key features | ±0.25% accuracy over a 5:1 rate range (MMI-2) ±0.125% accuracy over a 5:1 rate range (MMI-3) Industry leading performance | ±0.5% accuracy over a 5:1 rate range Triple beam load cells |

| Milltronics MLC | Milltronics WD600 | Milltronics MUS | Milltronics MCS | |
|---|---|--|--|--|
| 7MH7126 | 7MH7185 | 7MH7123 | 7MH7125 | |
| Chemical, recycling, ar with light loading | nd food applications | Modular belt scales for general purpose non-critical applications | | |
| ±0.5 to 1% accuracy over a 4:1 rate range Precision idler for maximum resolution Triple beam load cells | ±0.5 to 1% accuracy over a 4:1 rate range Compact load cell design | ±0.5 to 1% accuracy over a 4:1 rate range Modular design Standard and heavy duty option | ±0.5 to 1% accuracy over a 4:1 rate range Triple beam load cells for optimum performance Low profile for easy conveyor integration | |

| | Milltronics MWL weight lifter | Milltronics test chains |
|-----------------|---|--|
| Article No. | 7MH7218 | 7MH7161 |
| Туре | Belt scale calibration de | evices |
| Key features | Calibration weight lifter for use with belt scales. MWL safely applies and stores calibration test weights for belt loading simulation. Secured test weights for reliable verification Safety lock for storage during conveying | Calibration test chains for dynamic belt loading simulation for Milltronics belt scales. Precision machined for optimum accuracy over calibration Dynamic loading simulation High test loading |

| Milltronics TASS | Milltronics RBSS | SITRANS WS300 | Bend pullies |
|--------------------------------|--|--|--|
| 7MH7131 | 7MH7134 | 7MH7177 | 7MH7170/1, 7MH7187/8 |
| Wheel driven speed se mounting | nsors for return belt | Shaft driven speed sensor for tail or bend pulley | Frame mounted bend pulley to take WS300 speed sensor |
| Compact low profile design | Heavy duty design and wheel assembly for harsh conditions Protected sensor and targets from falling debris High resolution speed sensing | Compact, rugged design for shaft mounting Low to high resolution options Aluminum and stainless steel construction options options | Pre-drilled mounting for SITRANS WS300 speed sensor Creates installation room for belt scale |

Solids flowmeters

Flowguide sizes to fit any ASME or DIN flange

Measuring accuracy is not affected by product buildup on the sensing plate



Dust-tight enclosure to prevent contamination or spilling

 Quick-release latches for maintenance and sampling

| | SITRANS WF100 | SITRANS WF200 | SITRANS WF330 | SITRANS WF340 | SITRANS WF250 | SITRANS WF350 |
|-----------------|---|---|--|--|--|--|
| Article No. | 7MH7186 | 7MH7115 | 7MH7102 | 7MH7104 | 7MH7115 | 7MH7106 |
| Type | Load cell based compact design | Load cell based for higher flowrates | LVDT based versatile | LVDT based low height | Air slide applications | |
| Key features | Capacity up to 90 m³/h Dust-tight enclosure | Capacity up to 500 m³/h Dust-tight enclosure Large particle sizes | Capacity up to 290 m³/h Dust-tight enclosure High temp materials | Capacity up to 230 m³/h Dust-tight enclosure High temp materials | Capacity up to 600 m³/h Dust-tight enclosure Unique solution | Capacity up to 550 m³/h Dust-tight enclosure Unique solution |



Solids flowmeters in a fertilizer plant

In a fertilizer plant, crushed dolomite and crushed limestone are mixed in a reactor, whereby the mixing ratio of 1:3 must be maintained. The materials are conveyed from silos via screw conveyors into the solids flowmeters and brought together in a bucket elevator for conveying into the reactor. The exact mixing ratio is ensured by the speed of the screw conveyors, which is controlled by a PLC, on the basis of the respective throughput rates of the solids flowmeters.

Weighfeeder



| | SITRANS WW100 | SITRANS WW200 |
|-----------------|--|---|
| Article No. | 7MH7180 | 7MH730x |
| Туре | Compact style | Various design options |
| Key features | High accuracy for low flowrates Capacity up to 30 m³/h CL inlet to discharge only 838 mm Large range due to Servodrive Short delivery time | Designed for food industry Easy cleaning due to slider bars for belt transport Capacity up to 120 m³/h Up to 1200 mm belt width Various options and designs available |



Reliable pleasure thanks to Siemens weighing technology



The cigar manufacturer J. Cortès has two production sites in Belgium and about 3600 employees around the world. At its site in Handzame, the company was looking for a fail-proof weighing system to maintain the necessary balance in terms of flavor. Based in Torhout, the industrial weighing expert Bascules Robbe therefore turned to Siemens. Together, they offered a complete and customized solution.

Integrators – stand-alone



 Communication such as ProfiBus DP, Modbus or Ethernet



Analogue interfaces



Stand-alone integrators

Our integrators display primary speed and load values, as well as derived values of rates as analog mA output, alarm relay, or remote totalizer or through several industrial communications protocols.

| | Milltronics BW500 /BW500L | Milltronics SF500 | SIWAREX WP241 | SIWAREX WT241 |
|-----------------|--|---|---|---|
| Article No. | 7MH7152 | 7MH7156 | 7MH4960-4AA01 | 7MH4965-4AA01 |
| Туре | Full feature belt scale and weighfeeder applications | Full solids flowmeter applications | Belt scales | Weighing terminal for conveyor belt scale applications |
| Key features | 7 different languages supported 7 different industrial communications available 2 analog inputs, 3 analog outputs PID control and batching functions 5 programmable relays | 7 different languages supported 7 different industrial communications available 5 programmable relays Multispan calibration | Can be used stand-alone Resolution of one million digits Simulation mode for belt load and/or belt speed Usable in hazardous applications ATEX zone 2 | Resolution of up to ± four million parts RS485 Modbus RTU 4 digital inputs (floating) 4 digital outputs (floating) 1 analog output (0/420 mA) |

Integrators – SIMATIC-integrated

| Belt scale modules for S7-300, | |
|--------------------------------|--|
| S7- and via ET200M to S7-400 | |
| or PCS7-1200 | |

Analogue interfaces like stand-alone



SIMATIC-integrated integrators

Beltscale electronics for seamless integration into the SIMATIC S7-1200 automation system. Flowrate, belt speed, load and status info are easily adapted into PLC system. Parametrization and calibration can be done by PLC, HMI or SIWATOOL software for Notebooks.

| | SIWAREX WP241 |
|-----------------|--|
| Article No. | 7MH4960-4AA01 |
| Туре | Belt scales |
| Key features | Can be used stand-alone Resolution of one million digits Simulation mode for belt load and/or belt speed Usable in ATEX zone 2 |

Process protection





An insurance policy for your plant, exept better

Non-contacting motion sensors detect changes in motion and speed of conveying, reciprocating, and rotating machinery. Motion sensors can warn of equipment malfunction and shut down machinery in case of slowdown or failure.

They are rugged and perform even in harsh industrial conditions.

Non-invasive acoustic sensors detect high frequency acoustic emissions caused by materials in motion. They can detect conditions of flow/no flow or high/low flow to warn of blockages, product absence, or equipment failure. The sensors are located outside of the process, accurately detecting conditions without wear on the sensor.

| | Motion detection and flow detection as headline in the blue line | | | Flow detection | |
|-----------------|--|--|---|---|--|
| | SITRANS WM300 MFA | Milltronics MFA 4p | SITRANS WM100 | SITRANS AS100 | SITRANS CU02 |
| Article No. | 7MH7701-0AA00-0A | 7MH7144 | 7MH7158 | 7MH7560 | 7MH7562 |
| Туре | Highly sensitive dual setpoint motion sensor system, used with up to 2 MSP and XPP probes | Highly sensitive single setpoint motion sensor system used with MSP probes | Heavy-duty stand-alone zero-speed alarm switch | Acoustic sensor detects high frequency emissions from friction or the impact of dust, powders, and granules and solids in motion | Operates with the SITRANS A5100 to provide reliable continu- ous protection for bulk solids flow; two relays are fully programmable |
| Key features | Up to 100 mm (4 inch) gap between target and probe Setpoint adjustment range 2 to 5 000 Hz | 2 relays Rugged probe design Industry leading 4" (100 mm) sensor to target gap Several motion probes available, also for stand-alone operation | 1 relay Rugged probe design Industry leading 4" (100 mm) sensor to target gap | Non-invasive material detection Compact design Stainless steel construction for corrosion resistance | 2 programmable relays Compact design Local user programming and display |



Sales and support

Custom engineering

Siemens provides custom-engineered products to solve your special application needs. From material compatibility challenges to unique size requirements,

Siemens' custom engineering team can help.

Service around the world

Plants must function reliably at all times. Efficient and effective process instrumentation and analytics are an indispensable requirement to this end. You also need to be certain of fast and competent service from your supplier. Siemens is a global company that reacts locally. Whether you require consulting, quick delivery, or installation of new devices, the Siemens network of specialists is available to you around the world, wherever your location.

Service around the world

Our online support system offers rapid, comprehensive assistance regardless of time or location. From product support to service information, Siemens Industry online support is your first choice – around the clock, the fast way 365 days a year.

The fast way to your experts: hotline.siwarex@siemens.com +49 721 667-1200 siemens.com/automation/service&support

Siemens weighing trainings – on-site and online

The training center in Karlsruhe provides a wide range of industrial scales across nearly 200 square meters. From conveyor belt scales to dosing and bagging, a wide variety of SIWAREX application possibilities can be seen in action. Moreover, the training center has a spacious training room and numerous training models.

Individual training concept

The weighing trainings can either take place in the weighing technology center in Karlsruhe, but also directly on the customer's site.

In the standard training portfolio we offer trainings for

- basic trainings with the following content: mechanic and electronic,
 get to know the basic terms and applications regarding load cells, mounting
 units and SIWAREX electronics
- static applications, such as platform or hopper scales available in the levels basic, advance, expert
- mass dynamics applications regarding belt scales and weighfeeders available in the levels basic, advance, expert

Besides that you are also able to plan your training individually tailored to your needs in agreement with our training experts.







All trainings can be offered in different languages

A complete overiew of the training portfolio you find here:

 ${\bf English: sitrain-learning. siemens. com}$

In addition to our on-site trainings we also offer you various online trainings in English and German.

Please contact us, if you are interested: info@sitrain.com

Also have a look at our various online tutorials we offer you in Youtube.

Under the following playlist link, you will find a range of films concerning calibration, dosing, filter settings, integration in SIMATIC and much more.





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