SIEMENS

Weighing systems

Load cells
SIWAREX WL200

Operating Instructions

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7MH5118 / 7MH5120 / 7MH5121 / 7MH5122

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction 1

1.1 Purpose of this documentation

These instructions contain all information required to commission and use the device. Read the instructions carefully prior to installation and commissioning. In order to use the device correctly, first review its principle of operation.

The instructions are aimed at persons mechanically installing the device, connecting it electronically, configuring the parameters and commissioning it, as well as service and maintenance engineers.

1.2 Document history

The following versions of this documentation have been released to date. The changes apply to the previous version:

Edition	Notes
12/2021	Section Nameplate layout (Page 19) revised Section Certificates and approvals for explosion protection (Page 71) revised
04/2021	Section "Certificates and approvals for explosion protection (Page 71)" revised

1.3 Checking the consignment

1. Check the packaging and the delivered items for visible damages.
2. Report any claims for damages immediately to the shipping company.
3. Retain damaged parts for clarification.
4. Check the scope of delivery by comparing your order to the shipping documents for correctness and completeness.

⚠ WARNING

Using a damaged or incomplete device

Risk of explosion in hazardous areas.

- Do not use damaged or incomplete devices.

1.4 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/industrialsecurity.

1.5 Transportation and storage

To guarantee sufficient protection during transport and storage, observe the following:

- Keep the original packaging for subsequent transportation.
- Devices/replacement parts should be returned in their original packaging.
- If the original packaging is no longer available, ensure that all shipments are properly packaged to provide sufficient protection during transport. Siemens cannot assume liability for any costs associated with transportation damages.

NOTICE
Insufficient protection during storage The packaging only provides limited protection against moisture and infiltration. • Provide additional packaging as necessary.

Special conditions for storage and transportation of the device are listed in Technical data (Page 49).

1.6 Notes on warranty

The contents of this manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. The sales contract contains all obligations on the part of Siemens as well as the complete and solely applicable warranty conditions. Any statements regarding device versions described in the manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of publishing. Siemens reserves the right to make technical changes in the course of further development.

Safety instructions

2

2.1 Prerequisites for safe use

This device left the factory in good working condition. In order to maintain this status and to ensure safe operation of the device, observe these instructions and all the specifications relevant to safety.

Observe the information and symbols on the device. Do not remove any information or symbols from the device. Always keep the information and symbols in a completely legible state.

Symbol	Explanation
	Consult operating instructions

2.1.1 Laws and directives

Observe the safety rules, provisions and laws applicable in your country during connection, assembly and operation. These include, for example:

- National Electrical Code (NEC - NFPA 70) (USA)
- Canadian Electrical Code (CEC) (Canada)

Further provisions for hazardous area applications are for example:

- IEC 60079-14 (international)
- EN 60079-14 (EU)

2.1.2 Conformity with European directives

The CE mark on the device is a sign of conformity with the following European directives:

Electromagnetic compatibility EMC 2014/30/EU	Directive of the European Parliament and of the Council on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC.
Atmosphère explosible ATEX 2014/34/EU	Directive of the European Parliament and the Council on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.

The standards applied can be found in the EU declaration of conformity for the device.

2.2 Improper device modifications

⚠ WARNING

Improper device modifications

Risk to personnel, system and environment can result from modifications to the device, particularly in hazardous areas.

- Only carry out modifications that are described in the instructions for the device. Failure to observe this requirement cancels the manufacturer's warranty and the product approvals.

2.3 Requirements for special applications

Due to the large number of possible applications, each detail of the described device versions for each possible scenario during commissioning, operation, maintenance or operation in systems cannot be considered in the instructions. If you need additional information not covered by these instructions, contact your local Siemens office or company representative.

Note

Operation under special ambient conditions

We highly recommend that you contact your Siemens representative or our application department before you operate the device under special ambient conditions as can be encountered in nuclear power plants or when the device is used for research and development purposes.

2.4 Use in hazardous areas

Qualified personnel for hazardous area applications

Persons who install, connect, commission, operate, and service the device in a hazardous area must have the following specific qualifications:

- They are authorized, trained or instructed in operating and maintaining devices and systems according to the safety regulations for electrical circuits, high pressures, aggressive, and hazardous media.
- They are authorized, trained, or instructed in carrying out work on electrical circuits for hazardous systems.
- They are trained or instructed in maintenance and use of appropriate safety equipment according to the pertinent safety regulations.

WARNING

Use in hazardous area

Risk of explosion.

- Only use equipment that is approved for use in the intended hazardous area and labeled accordingly.
- Do not use devices that have been operated outside the conditions specified for hazardous areas. If you have used the device outside the conditions for hazardous areas, make all Ex markings unrecognizable on the nameplate.

WARNING

Loss of the safety of the device with type of protection "Intrinsic safety Ex i" or "Energy limited Ex nL"

If the device has already been operated in non-intrinsically safe circuits or the information on the electrical specifications has been ignored, the safety of the device is no longer ensured for use in hazardous areas. There is a danger of explosion.

- Connect the device in type of protection **Intrinsic safety** solely to an intrinsically safe circuit.
- Connect the device in type of protection **Energy limited** to an energy limited or intrinsically safe circuit of category 3G.
- Observe the electrical data specified on the certificate and/or in section Technical data (Page 49).

WARNING

TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING.

Pour éviter l'inflammation de gaz inflammables ou inflammables, couper l'alimentation avant l'entretien.

WARNING

POTENTIAL ELECTROSTATIC CHARGING HAZARD-SEE INSTRUCTIONS.

Risque potentiel de charge électrostatique - voir instructions.

2.5 Damage to load cells, measurement errors

NOTICE
Damage to load cells, measurement errors
Dirt must not be allowed to accumulate in the vicinity of a load cell.
Do not subject cable glands and seals to the jet from a pressure washer.

2.6 Specific conditions of use

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.

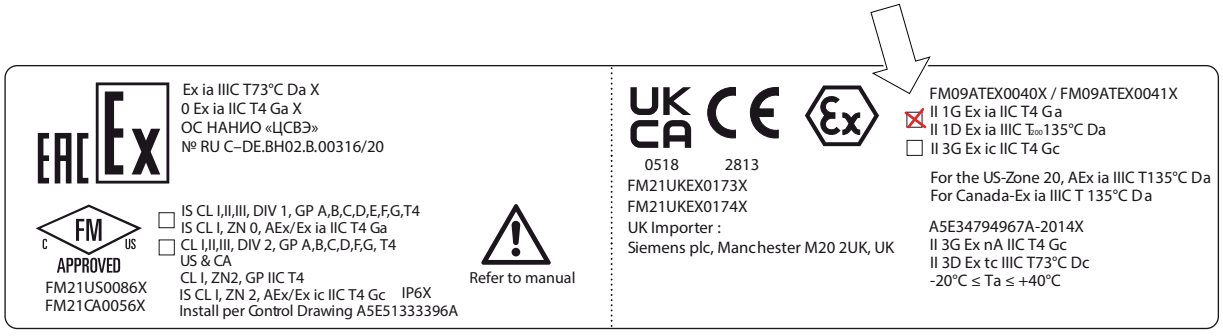


Figure 2-1 Nameplate example with box

2. The load cells do not have an earth ground terminal or conductor. The load cells shall be earth grounded as part of the final installation.
3. The non-metallic surfaces on the Load Cell's enclosure may cause risk from electrostatic discharge. Avoid installation that could cause electrostatic build-up, and only clean with a damp cloth.

Note

The resistance between all safety ground connections and the system grounding electrode shall not exceed 1 ohm.

Note

The associated apparatus shall be a single entity-Approved/Certified associated apparatus device with outputs that are Approved/Certified for parallel connection of field wiring within the applicable hazardouslocation / explosive atmosphere Within the United States,the voltage and current parameters of such associated apparatus are commonly identified using the parameters Vt (voltage, total) and It (current, total) The use of multiple associated apparatus that are not Approved/Certified for use in combination with one another as a system is only permitted as specified below.

Note

The use of multiple entity-Approved/Certified associated apparatus / barriers which have not been

Approved/Certified in combination with one another is restricted to the following conditions:

- The associated apparatus /barriers shall all have DC outputs of the same polarity.
- The associated apparatus /barriers shall have an open-circuit voltage (Voc, Vt or Uo) not exceeding Ui.
- The sum of the output current (Isc, It or Io) of all of the associated apparatus/barriers shall not exceed Ii.
- The sum of the available power (Po) of all of the associated apparatus / barriers shall not exceed Pi.
- Ci (incl. load cell cable) + C of additional cable (total) shall not exceed the lowest Ca or Co for the associated apparatus / barriers.
- Li (incl. load cell cable) + L of additional cable (total) shall not exceed the lowest La or Lo for the associated apparatus / barriers.
- The outputs of all associated apparatus/barriers shall be linear. If necessary, contact barrier manufacturer for confirmation of linearity.

See chapter Energy limitation parameters (Page 70).

Description

3

3.1 Range of application

SIWAREX load cells are used for measuring forces and weights statically and dynamically. You can use SIWAREX load cells for almost all applications in industrial weighing technology. Examples include:

- Container weighers, hopper scales or platform scales,
- Roller table, conveyor or crane scales,
- Plants for bottling/packing, dosing and mixing,
- for checking levels and completeness,
- Equipment for monitoring pressing or stretching processes,
- Dynamic scales

All applications can be implemented in equipment requiring official calibration or in areas subject to explosion hazards.

3.2 Design and principle of operation

Design

SIWAREX load cells are based on strain gauges. Strain-gauge load cells are transducers which convert mechanical forces into electrical signals. The principle of operation is the same regardless of variations in design.

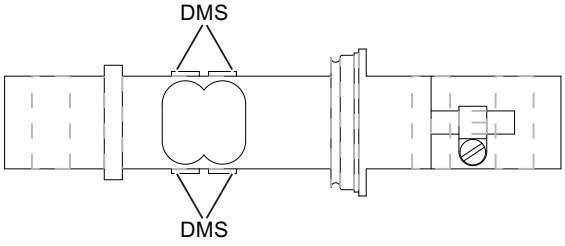


Figure 3-1 Design, based on the example of an unloaded bending beam load cell

Principle of operation

The basic component in each case is a special type of spring body. The application of force elastically deforms the spring body. The ohmic resistance of the strain gauges changes as a result.

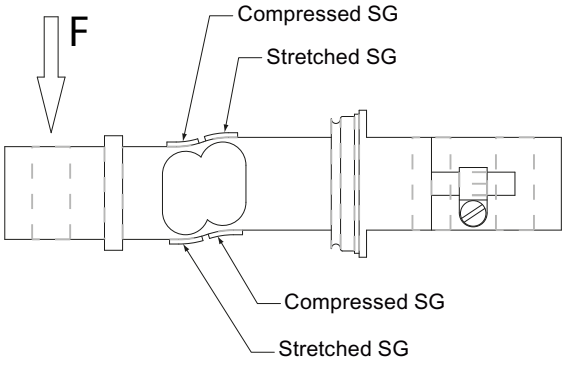


Figure 3-2 Principle of operation, based on the example of a loaded bending beam load cell

For each load cell, at least four strain gauges are connected together as a complete Wheatstone bridge. The stretched or compressed strain gauges are connected in such a manner that the positive or negative resistance changes are summed to produce an overall imbalance of the bridge.

The supply voltage is applied across one diagonal of the bridge and, in the case of the six-wire connection method, also the sensor voltage SENSE. The measured voltage is tapped across the other diagonal.

For a constant supply voltage EXC, therefore, the measured voltage SIG changes proportionally to the introduced load. In practice, load cells contain additional resistors for temperature compensation and for zero-signal and characteristic-value compensation. Depending on their type and the requirements, these resistors can be arranged at the input or output of the load cell.

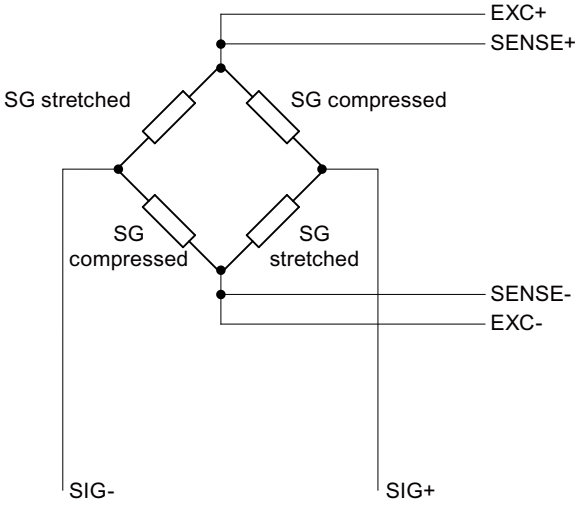
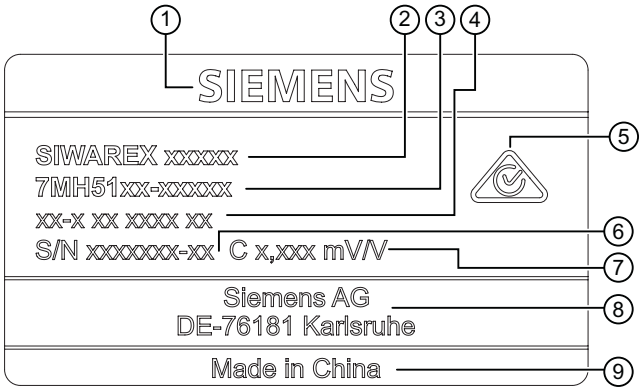


Figure 3-3 The principle of a Wheatstone bridge

3.3 Nameplate layout

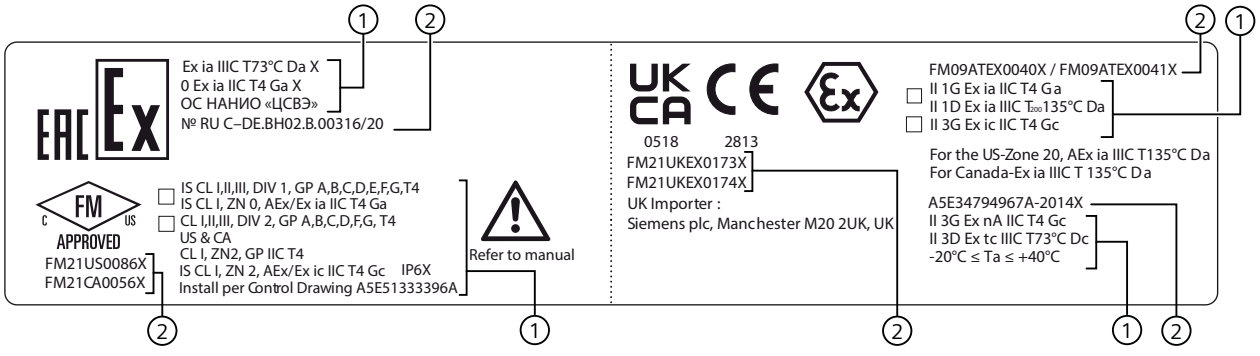
Nameplate layout with general information



① Company logo
② Product group designation
③ Order number
④ Product designation
⑤ RCM
⑥ Serial number
⑦ Rated characteristic value Cn of load cell
⑧ Manufacturer's address
⑨ Country of origin

Figure 3-4 Example of **nameplate layout with general information**

Nameplate layout with approval information



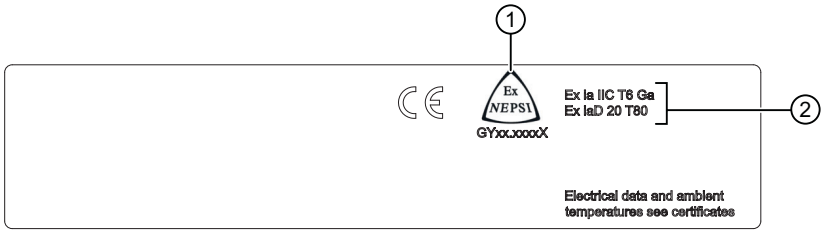
① Markings
② Certificate numbers

Figure 3-5 Example of nameplate layout with approval information

See also

Adjustment and initial commissioning (Page 37)

Design of nameplate with NEPSI approval



① Ex marking (NEPSI)
② Types of protection according to NEPSI

Figure 3-6 NEPSI nameplate

Installing

4

4.1 Basic safety instructions

Load cells are precision components and must therefore be handled carefully. Particular care must be taken during transport and installation.

⚠ DANGER

Danger to life from falling loads

- Load cells are not machine components which have been constructed with the normal safety factors. For this reason, appropriate protection against falling and catastrophes must be implemented in accordance with the potential risks.
- Use suitable hoisting equipment to lift the load carrier. Observe the appropriate safety regulations.

NOTICE

Damage to load cells through incorrect handling

- SIWAREX load cells are only permitted to be mounted and connected by qualified personnel.
- Mechanical shocks or falls can irreparably damage the load cell.
- When mounting the load cell, ensure that you do not damage or cut the cables of the load cell. Load cells must not be carried by their connecting cables.
- Protect the load cells from shocks and welding currents. Replace the load cells with dummies until the installation work on the scale structure is completed.

NOTICE

Damage to load cells through high currents

- If welding is undertaken after the load cells have been installed, ensure that the welding current is not diverted through the load cells.
  - You can do this by attaching the grounding clamp of the welding unit making reliable contact close to the weld.
  - Bridge the load cells with a grounding cable.
  - Disconnect the individual load cells.
- Undesirable electrical currents can arise during lightning. To protect the load cells against such currents, bridge the load cells using highly flexible grounding cables.

NOTICE

Damage to load cells through incorrect mounting

- Provide indented claws or crane eyebolts on the load bearer to ensure that hoisting gear can be used safely.
- Load cells must never be overloaded. Put the load carrier down slowly for this reason. With load cells of smaller rated loads in particular, there is a risk of stretching the load cell bodies when attaching force transfer devices, e.g. when tightening locknuts.
- Adjust the existing overload protection to ensure that it can still reliably sense transfer of the required load. The overload protection must permit a rise in weight unhindered until the setpoint weight is reached.
- Protect the gap between the load cell and overload protection from the build up of dirt or ice.
- The load must be introduced in the measuring direction of the load cell. Torsional and bending moments, eccentric loads and lateral forces are disturbances. These disturbances falsify the measured result and can damage the load cell if the permissible limits of the load cell and mounting components are exceeded.
  The mounting components normally allow so much room for movement that heat expansion will not result in lateral loading.
- Protect the load cell against higher impact energy levels by using Siemens mounting accessories.

NOTICE

Destruction of load cells

Proceed carefully with installation. The load cells can be destroyed if they are installed incorrectly.

4.2 Procedure for mounting the device

Procedure for mounting the device

1. Observe the installation guidelines for the mounting components.
   - You can find dimension drawings of installation elements under Dimension drawings (Page 73).
   - Lay the cables for the load cells through cable glands in the form of a vertical downwards loop to discourage the penetration of water.
2. Check that the load cells and mounting components are installed correctly, e.g. by checking the mounting dimensions and oscillation distances.

See also

Nameplate layout (Page 19)

4.3 Dismantling

For dismantling the load cells, the same safety rules apply as for installation.

1. Disconnect all the supply voltages and auxiliary voltages.
2. Secure the load carrier against falling.
3. Use appropriate hoisting gear and tools.
4. Take the load off the load cell.
5. Carefully remove the load cell without using force. Do not pull on the cable of the load cell.
6. If you intend to reinstall the load cell or send it for repair, do not cut the load cell cable.
7. Do not carry the load cell by the cable.

Connecting 5

5.1 Basic safety instructions

⚠ WARNING

Insufficient isolation of intrinsically safe and non-intrinsically safe circuits

Risk of explosion in hazardous areas.

- When connecting intrinsically safe and non-intrinsically safe circuits ensure that isolation is carried out properly in accordance with local regulations for example IEC 60079-14.
- Ensure that you observe the device approvals applicable in your country.

⚠ WARNING

Incorrect selection of type of protection

Risk of explosion in areas subject to explosion hazard.

This device is approved for several types of protection.

1. Decide in favor of one type of protection.
2. Connect the device in accordance with the selected type of protection.
3. In order to avoid incorrect use at a later point, make the types of protection that are not used permanently unrecognizable on the nameplate.

⚠ WARNING

Improper power supply

Risk of explosion in hazardous areas as result of incorrect power supply.

- Connect the device in accordance with the specified power supply and signal circuits. The relevant specifications can be found in the certificates, in Technical data (Page 49) or on the nameplate.

Note

Electromagnetic compatibility (EMC)

You can use this device in industrial environments, households and small businesses.

For metal housings there is an increased electromagnetic compatibility compared to high-frequency radiation. This protection can be increased by grounding the housing, see Connecting (Page 25).

5.2 Connecting principle

Load cells can be equipped with connecting cables with four or six cores.

⚠ WARNING

Risk of explosion

Please observe that in the case of shielded cables of intrinsically safe circuits in hazardous areas only one grounding is permissible.

If grounding is to be on both sides an equipotential bonding conductor with at least 4 mm² must be connected.

Load cells with four-wire system

Do not shorten or length connecting cables in the four-wire system, because the cable resistance is temperature compensated. When the length of the connecting cable is altered, the input and output resistances change. This change can be corrected by adjusting the scale, but temperature-dependent resistance changes are not compensated for the missing or additional length of cable.

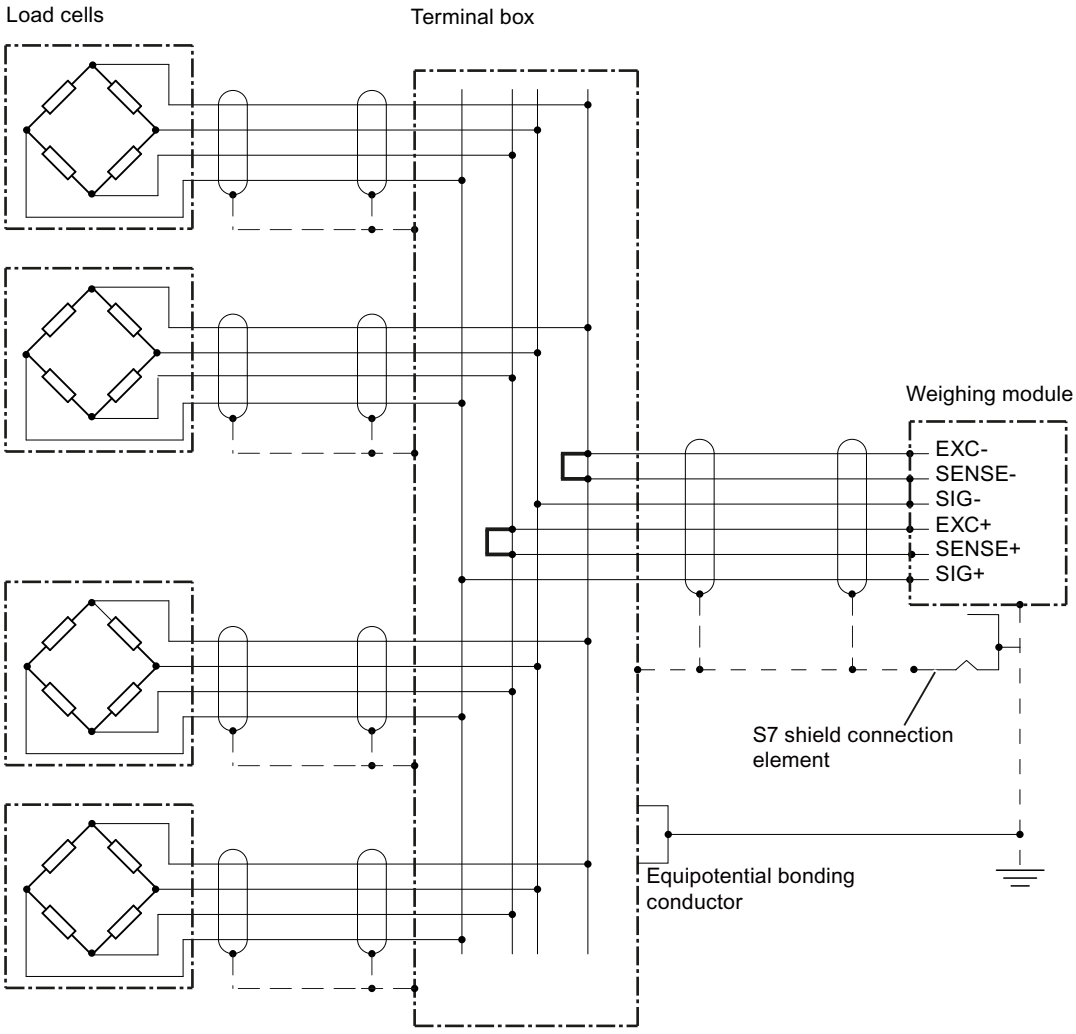


Figure 5-1 Connecting principle for load cells with four-wire system

Note

No calibration approval

In scales requiring official calibration, the connecting cables for load cells in a four-wire system must not be shortened or lengthened.

Load cells with six-wire system

For connecting cables in the six-wire system, the supply voltage is fed back to the weighing module as the reference voltage. Shortening or lengthening has no effect on the measuring result.

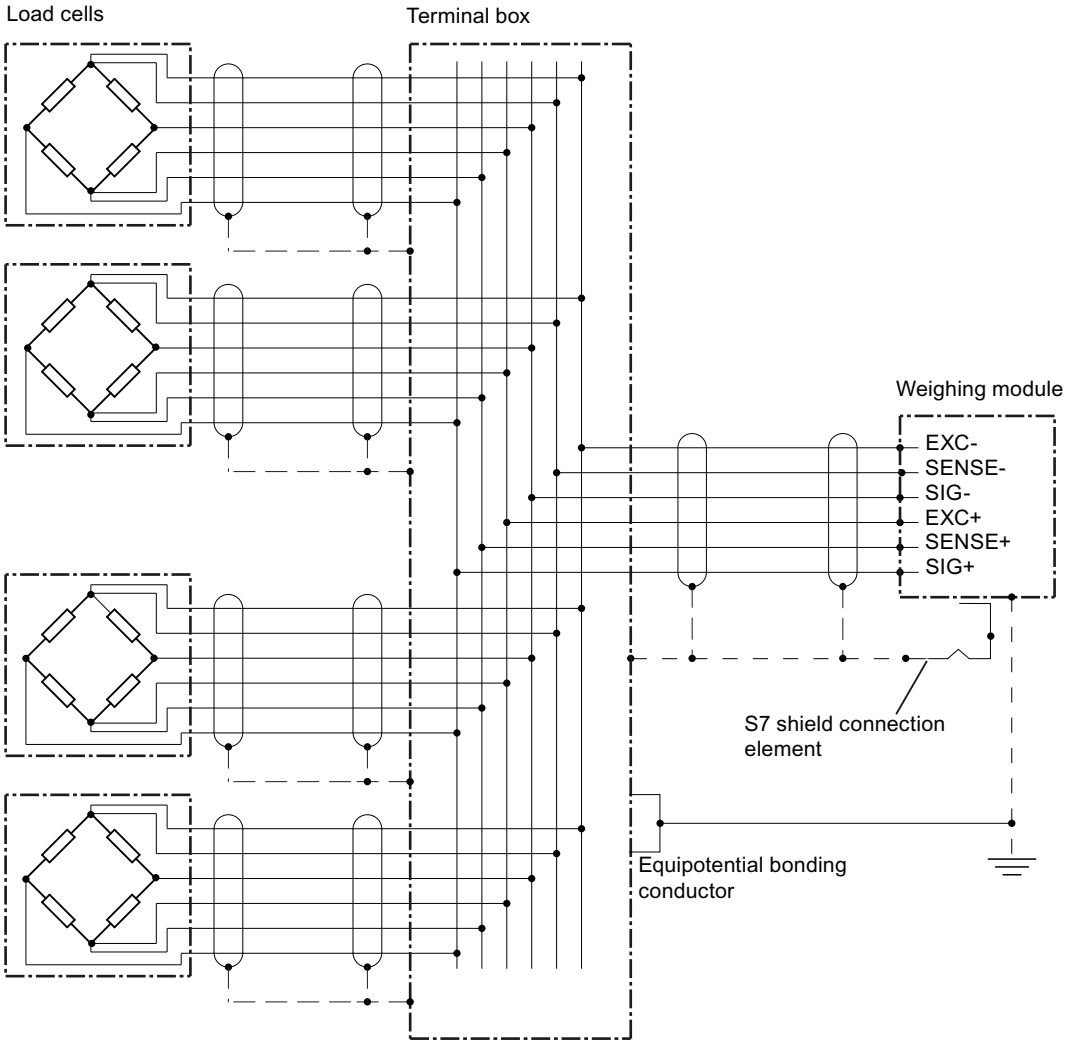


Figure 5-2 Connecting principle for load cells with six-wire system

5.3 Connecting up

Signal assignment for the load cell connecting cables

Identifying colors and signal assignment for the connecting cables of load cells not listed: See the data sheet for the appropriate load cell.

Table 5-1 Signal assignment for the load cell connecting cables

Load cell	Function/color of connecting cable						
	EXC+	EXC-	SIG+	SIG-	Sense+	Sense-	Shield not connected to the load cell body
SIWAREX WL260 SP-S AA	Red	Black	Green	White	Blue	Brown	Transparent
SIWAREX WL260 SP-S AB	Red	Black	Green	White	Blue	Brown	Transparent
SIWAREX WL260 SP-S AE	Red	Black	Green	White	n.a.	n.a.	Transparent
SIWAREX WL260 SP-S CA	Red	Black	Blue	White	Brown	Yellow	Transparent
SIWAREX WL260 SP-S SA	Green	Black	White	Red	Blue	Yellow	Transparent
SIWAREX WL260 SP-S SB	Green	Black	White	Red	Yellow	Blue	Transparent
SIWAREX WL260 SP-S SC 10 ... 50 kg	Red	Black	Green	White	Blue	Yellow	Transparent
SIWAREX WL260 SP-S SC 100 ... 200 kg	Red	Black	Green	White	n.a.	n.a.	Transparent
SIWAREX WL250 ST-S SA	Red	Black	Green	White	n.a.	n.a.	Transparent
SIWAREX WL230 BB-S SA	Green	Black	White	Red	n.a.	n.a.	Transparent
SIWAREX WL230 SB-S SA	Green	Black	White	Red	n.a.	n.a.	Transparent
SIWAREX WL230 SB-S CA	Red	Black	Green	White	n.a.	n.a.	Transparent
SIWAREX WL270 CP-S SA	Red	Black	Green	White	n.a.	n.a.	Transparent
SIWAREX WL270 CP-S SB	Green	Black	White	Red	n.a.	n.a.	Transparent
SIWAREX WL270 CP-S SC	Green	Black	White	Red	n.a.	n.a.	Transparent
SIWAREX WL270 K-S CA	Red	White	Black	Blue	n.a.	n.a.	Transparent

Load cell	Function/color of connecting cable						
	EXC+	**EXC-**	**SIG+**	**SIG-**	**Sense+**	**Sense-**	**Shield not connected to the load cell body**
SIWAREX WL280 RN-S SA	Pink	Gray	Brown	White	n.a.	n.a.	Trans-parent
SIWAREX WL290 DB-S CA	Red	Black	Green	White	n.a.	n.a.	Trans-parent

Procedure

Note

Measurement errors

Observe the warnings concerning extending or shortening the connecting cables in section → Lengthening and shortening the connecting cable (Page 35).

If at all possible, do not shorten the connecting cables in a four-wire system.

Note

No calibration approval

In scales requiring official calibration, the connecting cables for load cells in a four-wire system must not be shortened or lengthened.

1. Connect the recommended grounding cables: → Planning (Page 31)
2. Connect the load cells in accordance with the connection principle and with reference to the specified signal assignments: → Connecting principle (Page 26)
3. For load cells with a four-wire system, position the wire jumpers in the junction box as follows:

Table 5-2 Wire jumpers for load cells with four-wire system

Wire jumper	From terminal	To terminal
1	EXC-	SENSE-
2	EXC+	SENSE+

Note

Malfunction

If the wire jumpers are missing, the SIWAREX weighing module signals a wire break.

Commissioning 6

6.1 Basic safety instructions

⚠ WARNING

Improper commissioning in hazardous areas

Device failure or risk of explosion in hazardous areas.

- Do not commission the device until it has been mounted completely and connected in accordance with the information in Technical data (Page 49).
- Before commissioning take the effect on other devices in the system into account.

6.2 Application planning

6.2.1 Planning

⚠ WARNING

Danger to life from falling loads

Load cells are not machine components which have been constructed with the normal safety factors. For this reason, appropriate protection against falling and catastrophes must be implemented in accordance with the potential risks.

Version

SIWAREX load cells are usually manufactured from stainless steel and hermetically sealed. This provides a high degree of corrosion resistance and a high degree of protection.

Most type series are approved for use in scales requiring official calibration of Class III to DIN EN 45501 and comply with the accuracy class OIML R60 C3.

If necessary, load cells can be supplied with ATEX approval.

SIWAREX load cells are current-calibrated as standard. This means that, for example, when a platform scale is commissioned, corner load adjustment is not necessary. A load cell can therefore be replaced without recalibration of the scale.

This may not apply to load cells that are available outside the standardized delivery spectrum. For these load cell types, the relevant technical specifications apply.

Parallel connection of load cells

In weighing systems, one or more load cells are connected to a weighing module for evaluation of the measured signal. Several load cells of a scale are connected in parallel to a junction box to supply a joint output signal.

NOTICE
Overloading of load cells When more than one load cell is connected to a scale, if the load distribution is uneven, it cannot be established whether individual load cells are overloaded.

Note

Measurement errors

Load cells are only permitted to be connected in parallel when they have the same characteristic value, the same rated load and the same internal resistance.

The total resistance of load cells connected in parallel must not undershoot the minimum resistance from the technical data of the weighing module to which it should be connected.

The maximum number of load cells that can be connected to a weighing module depends on the total resistance of the load cells connected in parallel. This must lie within the load resistance limits specified for the weighing module.

The maximum length of the cables and the specifications for other components, e.g. Ex i interface, must also be complied with. For details, see section Lengthening and shortening the connecting cable (Page 35)

Environmental requirements at the mounting location

The foundations must be unyielding when the expected loads are applied. The maximum roughness permitted for the mounting surface is 1.6 µm.

The values specified in the technical data for the ambient conditions must be complied with.

Note

Measurement errors

The load cell must be protected against direct solar radiation. Otherwise, the permissible operating temperature may be exceeded. One-sided heating will result in less accurate measurements or even measurement errors.

Grounding protection

NOTICE
Damaging of load cells Undesirable electrical currents can arise during welding or lightning. To protect the load cells against such currents, bridge the load cells using highly flexible grounding cables.

6.2.2 Transverse forces and overload protection

Overloading of load cells

NOTICE
Risk of overloading If you connect more than one load cell to a scale, if the load distribution is uneven, it cannot be established whether individual load cells are overloaded.

NOTICE
Damage to load cells through overloading In the case of load cells with small rated loads, overload protection must be implemented to protect the cells against damage. If load cells are used beyond the maximum working load or the maximum lateral load, this can cause irreparable errors and even fracturing of the load cell. When mounting components are fitted, the load cells must not be overloaded, e.g. by overtightening bolts.

Note

Error message on overload

If load cells are loaded beyond their rated load, this can result in an error message in the weighing module.

Overloading can occur as a result of:

- Uneven load distribution due to mounted components or cones of bulk material
- Rolling/pushing up the load on platform or roller table scales
- Forceful application of the load
- Application of the load in free fall
- Persons supporting themselves on or climbing onto the scale
- Wind against the leeward side of a silo

Dimensioning for overload

When step changes in load cannot be excluded during measuring, for example, due to application of a load in free fall, you must take appropriate precautions to avoid damage to the load cell, e.g. by using elastomer bearings or load cells dimensioned for higher rated loads.

When dimensioning load cells, include a safety margin to guard against overloading:

- Use a safety margin of 20% in the case of three support points.
- If more than three support points are used in a statically indeterminate manner, the safety margin must be a minimum of 50% if it is not possible to rule out a situation in which the load rests on two diagonally opposite load cells only. Reasons for this include sinking of the foundations or incorrect mounting.
- When calculating the safety margin, include unintentional overloads or overloading caused by the course of the process, or use overload protection.

Lifting protection

Overloads can also occur in the lifting direction when the force introducer is attached to the load cell.

If there is a risk of the load bearing being lifted or toppled, lifting protection may be necessary. This is required in the case of lightweight containers and tall, outdoor silos.

Mounting components and guide elements to counteract lateral forces, torsional and bending moments

The load must be introduced in the measuring direction of the load cell. Torsional and bending moments, eccentric loads and lateral forces are disturbances that on the one hand falsify the measured result and on the other hand can damage the load cell if the permissible limits are exceeded. Load cells must therefore be fitted with specially adapted mounting components, e.g. with SIWAREX mounting parts. This largely prevents the above-mentioned sources of error. The mounting components allow so much room for movement that heat expansion will not result in lateral loading.

Lateral forces which are generated by wind, acceleration or conveyor friction can be diverted by guide elements or stops.

Guide elements must be installed perpendicular to the measuring direction to ensure that no force components are generated in the measuring direction. The guide elements must be installed such that they do not stretch if, for example, the mounting points spread apart. This is easily achieved by arranging the guide elements in the same direction of rotation.

Ensure that the selected guide elements comply with the principles applicable to weighing technology.

Force bypasses must not arise due to filling and emptying devices or supply lines.

6.2.3 Lengthening and shortening the connecting cable

Load cells can be equipped with connecting cables with four or six cores.

Note

Measurement errors

Connecting cables are only permitted to be extended using electro-magnetically compatible housings, such as the SIWAREX JB junction box.

Single load cells

If a scale is equipped with a single load cell, the scale can be directly connected to the weighing module if space permits. To bridge longer distances, the connecting cable can be extended using a junction box.

Several load cells are connected in parallel in a junction box.

Connecting cable in four-wire system

Note

No calibration approval

In scales requiring official calibration, the connecting cables for load cells in a four-wire system must not be shortened or lengthened.

When the length of the connecting cable is altered, the input and output resistance changes. This change can be corrected by adjusting the scale, but temperature-dependent resistance changes are not compensated for the missing or additional length of cable.

The value of the residual temperature error is presented in the diagram below. The investigation was based on the SIWAREX measurement cable 7MH4702-8AG / -8AF. The supply cables are connected in parallel (double).

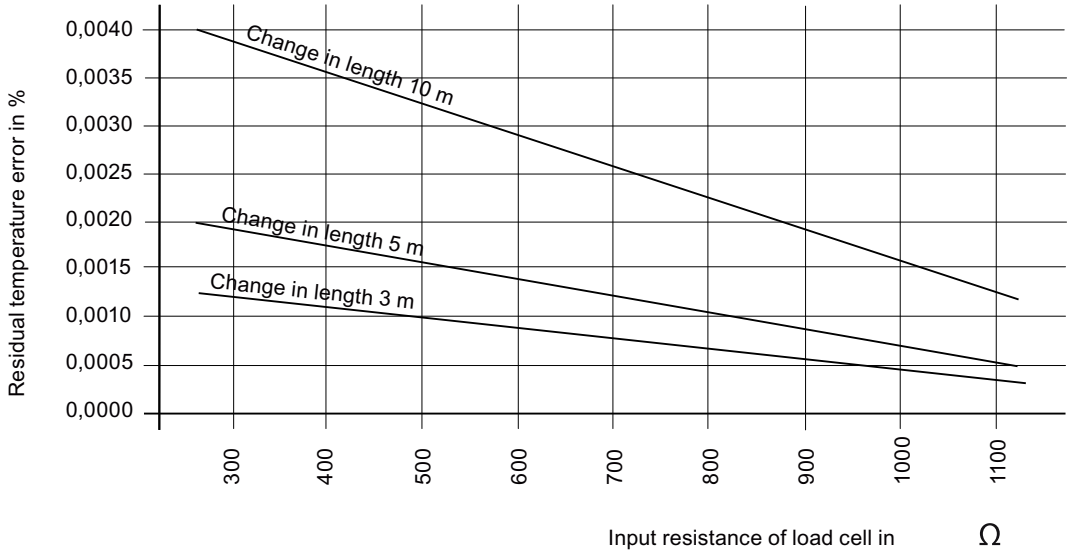


Figure 6-1 Residual temperature error for a load cell per 10 K temperature change when shortening or lengthening the connecting cable

If three or four load cells are operated in parallel and the cable for a cell is lengthened, the additional error is approximately one third or one quarter. This assumes that the load is distributed evenly across the load cells.

Connecting cable in six-wire system

For connecting cables in the six-wire system, the supply voltage is fed back to the weighing module as the reference voltage. Shortening or lengthening has no effect on the measuring result.

Additional connecting cables

The maximum permissible cable length between the load cell and the weighing module is stated in the technical specifications for the weighing module. In Ex applications, you must also take into account the specifications of the Ex i interface.

For connecting the junction box to the weighing module, to extend a load cell connecting cable or for cross-connection of two junction boxes, a shielded, six-core cable must be used, e.g. Li2Y2x0.75St+2x(2x0.34St)-CY Siemens Order No.: 7MH4 702-8AG or, for intrinsically safe Ex applications, 7MH4 702-8AF.

6.3 Adjustment and initial commissioning

⚠ WARNING

Missing type of protection and loss of approval

If the load cell is not operated with an intrinsically safe power supply, the type of protection - intrinsically safe is no longer guaranteed and the intrinsically safe approval may be revoked.

Permanently erase, therefore, the irrelevant types of protection on the rating plate before commissioning, so that erroneous deployment can be avoided.

6.3.1 Height compensation

6.3.1.1 When is height compensation necessary?

If you are using up to three load cells, all the load cells will always be under load. Height compensation is not necessary in this case.

When an elastic base or elastic foundations are used, the height from the base or foundations is compensated. Height compensation is not necessary in this case.

For more than three load cells or support points, the load bearing is statically indeterminate. When the foundation and the base are rigid, the total weight can load two diagonally mounted load cells and cause overloading of the load cells. Height compensation is necessary in this case.

6.3.1.2 Procedure for height compensation

Determining the load on the load cells

1. Bring the force transfer points to the same height.
   The output signals for all load cells should be approximately identical when the load is evenly distributed; and they will indicate the load distribution in the case of uneven distribution.
2. Measure the loading on the load cells as follows:
   - Disconnect the load cell cables SIG+ and SIG-.
   - Connect the supply voltage, e.g. 10.2 V, to the load cells.
   - Measure the output voltages between SIG+ and SIG- for the individual load cells.
3. Determine which load cell has the lowest output voltage.

Height compensation of the load cells

1. Insert as many distance plates underneath the load cell with the lowest value as necessary to equalize the output voltages.

6.3.2 Initial commissioning

1. Align the load cell site horizontally and level over the complete area.
2. Clean the load cell site and load cell base until both are absolutely clean.
3. Grease the contact surfaces of the force transfer elements with bearing grease.
4. Adjust the overload protection, if used, to ensure that it can still reliably sense transfer of the required load. The overload protection must permit a rise in weight unhindered until the setpoint weight is reached.
5. Ensure dirt and ice cannot build up on the overload protection.

6.3.3 Corner load adjustment

6.3.3.1 When is corner load adjustment necessary?

General

SIWAREX load cells, with the exception of the WL250 and WL260 series, are current-calibrated as standard. Corner load adjustment is not necessary in the case of current-calibrated load cells. Corner load adjustment is only necessary in the case of load cells that are not current-calibrated or load cells that are not synchronized.

This may not apply to load cells that are available outside the standardized delivery spectrum. For these load cell types, the relevant technical specifications apply.

Recommendation

Note

Carrying out a corner load adjustment

If you can apply the mass center of the product at different positions, it is possible that different weights are displayed in each case. This reaction can occur in particular with the following types of scale:

- Platform scales
- Hopper scales where the filling with solid matter forms cones

We recommend that you carry out a corner load adjustment in such cases.

6.3.3.2 General procedure for corner load adjustment

The load cells are passive sensors: You should therefore follow the instructions in the manual for the weighing module primarily. When they are installed in hazardous areas, the instructions for the Ex i interface or for the Ex barrier must also be followed.

When the corner load for a scale has to be checked, impermissibly large deviations in the weight indication can occur in the case of load cells that are not current-calibrated.

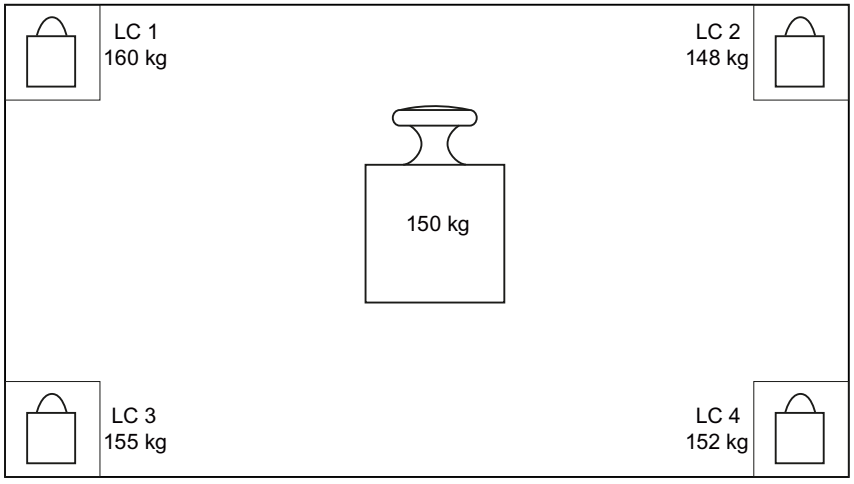
The corner load errors can be electrically compensated. This is done by matching the individual measured values to the smallest measured value by connecting additional resistors. For details of how to do this see section Example for corner load adjustment (Page 39)

The resistors are connected in series with the load cell measuring signal. The appropriate resistor will reduce the measuring voltage until it is equal to the smallest voltage. The temperature coefficient must be suitably small, due to connection of the resistors in the measuring circuit: 0.25 ppm/K to 10 ppm/K.

6.3.3.3 Example for corner load adjustment

Example data for corner load adjustment

The corner load adjustment described below as an example is based on the following data:



Scale	Version	Platform scale with 4 load cells
	Rated load E_{max}	500 kg
	Rated characteristic value C_{Rated}	2.0 mV/V
LC 1 ... LC4	Load cells	
Test weight	150 kg	

Figure 6-2 Test process / scale

Procedure

1. Measure the output resistances R_o of the load cells LC. Alternatively: Use the values from the corresponding data sheet. Example:

Load cells	Example values
LC 1:	1004.52 Ω
LC 2:	1003.64 Ω
LC 3:	1010.70 Ω
LC 4:	1028.12 Ω

2. Place the test weight on all four corners: Note the measured values

Load cells	Example values
LC 1:	160 kg
LC 2:	148 kg
LC 3:	155 kg
LC 4:	152 kg

3. Determine the differences from the smallest value:

Load cells			Example values
Weights		**Difference**	**Result**
LC 1:	160 kg	LC 1 - LC 2	12 kg
LC 2:	148 kg	- [1)]	-
LC 3:	155 kg	LC 3 - LC 2	7 kg
LC 4:	152 kg	LC 4 - LC 2	4 kg

[1)] Smallest value

4. Calculate the compensating resistance:
   Use the following formula:

$$R_{korr} = R_a \times \frac{L_{fehl}}{L_{prüf}} \times \frac{4}{NLC}$$

R_{comp} Determined compensation resistance, to be connected in the signal cable SIG+

R_o Output resistance of the load cells; can also be measured under load

L_{err} Weight error: Differential value from the lowest weight value

L_{test} Test load; placed on all four corners

N Number of load cells in the scale
LC

Figure 6-3 Formula for corner load adjustment

Example calculation:

Load cells		**Example values**
	Calculation	**Results for R_{comp}**
LC 1:	R_{comp} = R1 = 1004.52 Ω x 12 kg / 150 kg	approx. 80 Ω
LC 2:	- [1]	- [1]
LC 3:	R_{comp} = R3 = 1010.70 Ω x 7 kg / 150 kg	approx. 47 Ω
LC 4:	R_{comp} = R4 = 1028.12 Ω x 4 kg / 150 kg	approx. 27 Ω

[1] Smallest value: No resistance necessary

5. Install the calculated resistances:

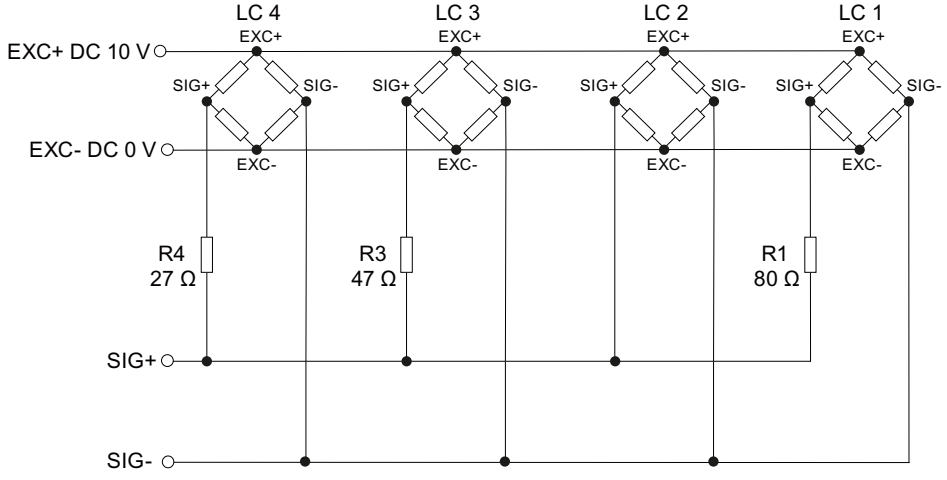


Figure 6-4 Circuit diagram for corner load adjustment

6. Repeat the test.

Service and maintenance 7

7.1 Basic safety instructions

Servicing and maintenance of the load cells

The load cells are in general maintenance free. Regular inspection and checking of the mechanisms for force transfer, oscillation limitation, lifting and overloading will however improve their reliability. The inspections should also be performed after serious environmental events such as storms, floods or earthquakes.

If signs of corrosion appear, we recommend a suitable protective coating.

NOTICE
Damage to load cells, measurement errors • Dirt must not be allowed to accumulate in the vicinity of a load cell. • Do not subject cable glands and seals to the jet from a high-pressure hose.

Regular maintenance of overload protection

Overload protection mechanisms must be protected against deposits of dirt and ice.

The correct operation of overload protection must be tested during periodic maintenance work.

7.2 Cleaning

Cleaning the enclosure

- Clean the outside of the enclosure with the inscriptions and the display window using a cloth moistened with water or a mild detergent.
- Do not use any aggressive cleansing agents or solvents, e.g. acetone. Plastic parts or the painted surface could be damaged. The inscriptions could become unreadable.

7.3 Return procedure

Enclose the bill of lading, return document and decontamination certificate in a clear plastic pouch and attach it firmly to the outside of the packaging.

Required forms

- Delivery note
- Return document (http://www.siemens.com/processinstrumentation/returngoodsnote) with the following information:
  - Product (item description)
  - Number of returned devices/replacement parts
  - Reason for returning the item(s)
- Decontamination declaration (http://www.siemens.com/sc/declarationofdecontamination) With this declaration you warrant "that the device/replacement part has been carefully cleaned and is free of residues. The device/replacement part does not pose a hazard for humans and the environment."
  If the returned device/replacement part has come into contact with poisonous, corrosive, flammable or water-contaminating substances, you must thoroughly clean and decontaminate the device/replacement part before returning it in order to ensure that all hollow areas are free from hazardous substances. Check the item after it has been cleaned. Any devices/replacement parts returned without a decontamination declaration will be cleaned at your expense before further processing.

7.4 Disposal

Note

Special disposal required

The device includes components that require special disposal.

- Dispose of the device properly and environmentally through a local waste disposal contractor.

Error messages and troubleshooting 8

8.1 Repair

Note

Unnecessary costs for repairs

Please only return faulty load cells to our repair center accompanied by an accurate description of the fault. This simplifies the diagnostics.

8.2 Error messages

Rated load exceeded

If load cells are loaded beyond their rated load, this can result in an error message in the weighing module.

When step changes in load cannot be excluded during measuring, for example, due to application of a load in free fall, appropriate precautions to avoid damage to the load cell must be made, e.g. by using elastomer bearings or load cells dimensioned for higher rated loads.

Wire break

The weighing module reports a wire break if the jumpers are not installed in load cells with four-wire technology. For details, see section Connecting up (Page 29).

8.3 Checking the mechanical and electrical configuration

In the case of faulty measurements, check the following:

- Do any force bypasses exist, e.g. due to cables, pipes or guides, that generate forces in the measuring direction?
- Are there any other disturbances due to soiling or thermal expansion?
- Have all load cells been correctly aligned horizontally and at the same height?
- Has moisture penetrated the junction box?
- Are the cables connected correctly?
- Are the cables damaged?

8.4 Checking the load cells

NOTICE
Damaging of load cells
Do not use an Ohmmeter to measure resistances that feeds a higher voltage into the load cell than is permitted in the specifications.

Locate and check faulty load cells

1. Locate the possibly faulty load cell by checking the individual load cells under load, corner load or by disconnecting the individual load cells.
2. To check a load cell for a defect, you must measure the following values:
   - Zero signal
   - Insulation resistance
   - Input and output resistance

   The procedure for measuring the individual values is described below.

Measure the zero signal

1. Completely remove the load from the load cell to be checked.
2. Disconnect all the load cells.
3. Supply the load cell to be checked with approximately 10 V DC. Use the weighing module or an external power supply for this purpose.
4. Measure the voltage between SIG+ and SIG-.
5. Divide the measured voltage by the supply voltage.

The result must correspond to the value in the data sheet.

Measure the insulation resistance

1. Disconnect the load cell.
2. Connect all cables together.
3. Measure the insulation resistance between the cables and the load cell housing.
4. Measure the insulation resistance between the cables and the cable shield.
5. The following measurement is only possible when the shield is not connected to the load cell housing.
   Measure the insulation resistance between the cable shield and the load cell housing.

The insulation resistance must correspond to the value specified in the specifications.

Measure the input and output resistance

1. Disconnect the load cell.
2. Measure the input voltage between EXC+ and EXC-.
3. Measure the output voltage between SIG+ and SIG-.

The resistances must correspond to the values specified in the data sheet or in the specifications.

8.5 Measures in the event of overloaded load cells

A frequent fault that can result in failure of load cells is overloading due to

- dynamic overload
- transverse forces

When you establish that the cause of the fault was overloading, further measures are necessary.

Dynamic overload

Example:

Unintentional falling of a relatively low weight onto the load carrier from a great height.

Possible measure:

- Install shock-absorbing components, e.g. elastomer bearings
- Overdimension the load cells

Transverse forces

Example:

Accelerating or braking loads onto a platform.

Possible measures:

- Install guide elements
- Install oscillation limitation or set it to a lower value.

Technical data

9

9.1 Functional data

9.1.1 SIWAREX WL260 SP-S AA

Table 9-1 Technical specifications **SIWAREX WL260 SP-S AA**

Variable	Value
Type series	WL260
Designation	SP-S AA
Construction type	Single-point load cell
Possible applications	Platform scales, small conveyor scales
Rated load E_{max}	3; 5; 10; 20; 50; 100 kg
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 12000
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.017% C_n
Creep error F_{cr} 30 min	 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n at E_{max}	≤ 0.6 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ± 2.0% C_n
Input resistance R_i	409 ± 6 Ω
Output resistance R_o	350 ± 3 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 to + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 to + 65 °C
Sensor material	Aluminum

Variable	Value
Degree of protection according to EN 60 529	IP65
Maximum tightening torque of the fixing screws	15 ... 20 Nm
Cable connection	Six-core, shielded PVC cable 3 m

9.1.2 SIWAREX WL260 SP-S AB

Table 9-2 Technical data SIWAREX WL260 SP-S AB

Variable	Value
Type series	WL260
Designation	SP-S AB
Construction type	Single-point load cell
Possible applications	Platform scales, small conveyor scales
Rated load E_{max}	50; 100; 200; 500 kg
Accuracy class according to OIML R60	C3 [1)]
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 10000
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.017% C_n
Creep error F_{cr} 30 min	 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n at E_{max}	≤ 1.22 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ± 2.0% C_n
Input resistance R_i	409 ± 6 Ω
Output resistance R_o	350 ± 3 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_t	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Aluminum
Degree of protection according to EN 60 529	IP65

Variable	Value
Maximum tightening torque of the fixing screws	35 ... 40 Nm
Cable connection	Six-core, shielded PVC cable 3 m

[1] SIWAREX WL260 SP-S AB is not approved for legal-for-trade operation.

9.1.3 SIWAREX WL260 SP-S CA

Table 9-3 Technical specifications SIWAREX WL260 SP-S CA

Variable	Value
Type series	WL260
Designation	SP-S CA
Construction type	Single-point load cell
Possible applications	Platform scales and belt scales
Rated load E_{max}	150, 250, 500, 1000 kg
Maximum platform size	600 x 800 mm
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 10000
Combined error F_{comb}	±0.02% C_n
Creep error F_{cr} 30 min	 ≤ ±0.016% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 ≤ ±0.011% C_n / 10 K ≤ ±0.015% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	200% E_{max}
Rated measuring path h_n at E_{max}	0.13 mm
Recommended supply voltage	5 ... 12 V DC
Maximum supply voltage	18 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ±1.5% C_n
Input resistance R_i	400 ± 20 Ω
Output resistance R_o	350 ± 3.5 Ω
Insulation resistance R_{is}	≥ 5000 MΩ at 50 V DC
Rated temperature range B_{tn}	-10 to +40 °C
Operating temperature range B_t	-35 to +65 °C
Storage temperature range B_{ts}	-35 to +65 °C
Sensor material	Alloyed steel

Variable	Value
Degree of protection according to EN 60 529	IP67
Maximum tightening torque of the fixing screws	166 Nm
Cable connection	Six-core, shielded PVC cable 3 m

9.1.4 SIWAREX WL260 SP-S AE

Table 9-4 Technical data SIWAREX WL260 SP-S AE

Variable	Value
Type series	WL260
Designation	SP-S AE
Construction type	Single-point load cell
Possible applications	Small platform scales and small conveyor scales
Rated load E_{max}	0.3; 0.6; 1; 1.2; 1.5; 3.0 kg
Accuracy class	0.015%
Combined error F_{comb}	± 0.015% C_n
Deviation F_V	± 0.017% C_n
Creep error F_{cr} 30 min	 ≤ ± 0.015% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 ≤ ±0.03% C_n / 10 K ≤ ±0.03% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	120% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	250% E_{max}
Rated measuring path h_n For E_{max} = 0.3; 0.6 kg: For E_{max} = 1.2; 1.5; 3 kg:	 0.25 mm 0.22 mm
Recommended supply voltage	5 ... 12 V DC
Rated characteristic value C_{Rated}	0.9 ± 0.1 mV/V
Tolerance of zero signal D_o	< ± 2.0% C_n
Input resistance R_i	406 ± 6 Ω
Output resistance R_o	350 ± 3 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	-10 to +40 °C
Operating temperature range B_t	-20 to +50 °C
Storage temperature range B_{ts}	-20 to +20 °C
Sensor material	Aluminum
Degree of protection according to EN 60 529	IP65

Variable	Value
Maximum tightening torque of the fixing screws	1.3 Nm
Cable connection	Four-core, shielded PVC cable 0.4 m

9.1.5 SIWAREX WL260 SP-S SA

Table 9-5 Technical data SIWAREX WL260 SP-S SA

Variable	Value
Type series	WL260
Designation	SP-S SA
Construction type	Single-point load cell
Possible applications	Platform scales, conveyor scales
Rated load E_{max}	5; 10; 20; 50; 100; 200 kg
Accuracy class according to OIML R60	C3 [1)]
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 7500
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.017% C_n
Creep error F_{cr} 30 min	 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n at E_{max}	0.27 ± 0.05 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	383 ± 4 Ω
Output resistance R_o	351 ± 2 Ω
Insulation resistance R_{is}	5000 MΩ at V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 40 ... + 70 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP67

Variable	Value
Maximum tightening torque of the fixing screws	
for E_{max} = 5; 10; 20; 50; 100 kg for E_{max} = 200 kg	14 Nm 16 Nm
Cable connection	Six-core, shielded PU cable 1 m

9.1.6 SIWAREX WL260 SP-S SB

Table 9-6 Technical data SIWAREX WL260 SP-S SB

Variable	Value
Type series	WL260
Designation	SP-S SB
Construction type	Single-point load cell
Possible applications	Single-point scales, conveyor scales
Rated load E_{max}	6; 12; 30; 60 kg
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 15000
Combined error F_{comb}	≤ ± 0.02% C_n
Deviation F_V	± 0.02% C_n
Creep error F_{cr} 30 min	 ≤ ± 0.0245% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.0090% C_n / 10 K 0.0094% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n	
For E_{max} = 6 kg:	0.24 ± 0.02 mm
For E_{max} = 12 kg:	0.19 ± 0.01 mm
For E_{max} = 30 kg:	0.15 ± 0.01 mm
For E_{max} = 60 kg:	0.22 ± 0.03 mm
Recommended supply voltage	5 to 12 V DC
Maximum supply voltage	18 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ± 1.5% C_n
Input resistance R_i	400 ± 20 Ω
Output resistance R_o	350 ± 3.5 Ω
Insulation resistance R_{is}	≥ 5000 MΩ at 50 V DC

Variable	Value
Rated temperature range B_{tn}	- 10 to + 40 °C
Operating temperature range B_{tu}	- 35 to + 65 °C
Storage temperature range B_{ts}	- 35 to + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Cable connection	Six-core, shielded PU cable 6 m
Maximum tightening torque of the fixing screws	10 Nm

9.1.7 SIWAREX WL260 SP-S SC

Table 9-7 Technical data SIWAREX WL260 SP-S SC

Variable	Value	
Type series	WL260	
Designation	SP-S SC	
Construction type	Single-point load cell	
Possible applications	Single-point scales, conveyor scales	
Rated load E_{max}	10, 20, 50, 100, 200, 300, 400, 500 kg	10, 20, 50 kg
Accuracy class according to OIML R60	C3	C4
Max. scale interval n_{LC}	3000	4000
Min. scale interval V_{min}	E_{max} / 10000[1)]	E_{max} / 40000
Combined error F_{comb}	≤ ± 0.02% C_n	≤ ± 0.014% Cn
Deviation F_V	± 0.02% C_n	
Creep error F_{cr} 30 min	≤ ± 0.0245%	≤ ± 0.0184%
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 ≤ ± 0.0100% ≤ ± 0.0140%	 ≤ ± 0.0080% ≤ ± 0.0035%
Min. initial loading E_{min}	0 kg	0 kg
Maximum working load L_u	150% E_{max}	150% E_{max}
Break load L_d	300% E_{max}	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}	100% E_{max}

Variable	Value
Rated measuring path h_n	
For E_{max} = 10 kg:	≤ 0.03 mm
For E_{max} = 20 kg:	≤ 0.08 mm
For E_{max} = 50 kg:	≤ 0.15 mm
For E_{max} = 100 kg:	≤ 0.12 mm
For E_{max} = 200 kg:	≤ 0.15 mm
For E_{max} = 300 kg:	≤ 0.18 mm
For E_{max} = 400 kg:	≤ 0.17 mm
For E_{max} = 500 kg:	≤ 0.19 mm
Recommended supply voltage	5 to 12 V DC
Maximum supply voltage	18 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.2 mV/V
Tolerance of zero signal D_o	< ± 2.0% C_n
Input resistance R_i	
for E_{max} 10, 20, 50	380 ± 15 Ω
for E_{max} 100, 200, 300, 400, 500	350 ± 3.5 Ω
Insulation resistance R_{is}	≥ 5000 MΩ (at 50 V DC)
Rated temperature range B_{tn}	- 10 to + 40 °C
Operating temperature range B_{tu}	- 35 to + 65 °C
Storage temperature range B_{ts}	- 35 to + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68, IP69K
Cable connection	Shielded PU cable, 3 m
Maximum tightening torque of the fixing screws	
for Emax = 10 to 50 kg	10 Nm
for Emax = 100 to 500 kg	20 Nm

[1] also available with E_{max} / 20000

9.1.8 SIWAREX WL250 ST-S SA

Table 9-8 Technical data SIWAREX WL250 ST-S SA

Variable	Value
Type series	WL250
Designation	ST-S SA
Construction type	S type load cell

Variable	Value
Possible applications	Tension and compression applications, suspended scales, hybrid scales, container scales
Rated load E_{max}	50; 100; 250; 500 kg 1; 2.5; 5; 10 t
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	
for E_{max} = 50; 100 kg	E_{max} / 7000
for E_{max} = 250; 500 kg; 1; 2.5 t	E_{max} / 10000
for E_{max} = 5; 10 t	E_{max} / 12000
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.02% C_n
Creep error F_{cr} 30 min	 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n	
For E_{max} = 50; 100 kg:	0.18 mm
For E_{max} = 250; 500 kg:	0.24 mm
For E_{max} = 1 t:	0.37 mm
For E_{max} = 2.5; 5 t:	0.8 mm
For E_{max} = 10 t:	0.57 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	3.0 ± 0.008 mV/V
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	430 ± 60 Ω
Output resistance R_o	350 ± 3.5 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP67
Cable connection	Four-core, shielded PU cable 6 m

9.1.9 SIWAREX WL230 BB-S SA

Table 9-9 Technical data SIWAREX WL230 BB-S SA

Variable	Value
Type series	WL230
Designation	BB-S SA
Construction type	Bending beam
Possible applications	Platform scales, overhead rail scales, container weighers, conveyor scales
Rated load E_{max}	10; 20; 50; 100; 200; 500 kg
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 15000
Combined error F_{comb}	≤ 0.02% C_n
Deviation F_V	0.017% C_n
Creep error F_{cr} 30 min	 0.02 C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n at E_{max}	0.3 mm
Recommended supply voltage	5 to 10 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.02 mV/V *
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	460 ± 50 Ω
Output resistance R_o	350 ± 3.5 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Maximum tightening torque for the fixing bolts: for E_{max} = 10; 20; 50; 100; 200 kg for E_{max} = 500 kg	 23 Nm 70 Nm
Cable connection	Four-core, shielded PU cable, 3 m

* Output is current-calibrated

9.1.10 SIWAREX WL230 SB-S CA

Table 9-10 Technical data SIWAREX WL230 SB-S CA

Variable	Value
Type series	WL230
Designation	SB-S CA
Construction type	Shear beam
Possible applications	Platform scales, overhead rail scales, container scales, conveyor scales
Rated load E_{max}	100; 250; 500 kg 1; 2; 3; 5; 10 t
Accuracy class according to OIML R60	C3; C4; C5
Max. scale interval n_{LC}	3000; 4000; 5000
Min. scale interval V_{min}	
For E_{max} = 100; 250; 500 kg; 1; 2 t	E_{max} / 10000; 15000; 20000
For E_{max} = 3; 5; 10 t	E_{max} / 10000; 15000; 18000
Combined error F_{comb}	± 0.015% C_n
Creep error F_{cr} 30 min	± 0.015% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.03 % C_n / 10 K 0.03 % C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150 % E_{max}
Break load L_d	300 % E_{max}
Maximum lateral load L_{lq}	100% E_{max}
Rated measuring path h_n	
For E_{max} = 100 kg:	0.17 mm
For E_{max} = 250 kg:	0.15 mm
For E_{max} = 500 kg:	0.32 mm
For E_{max} = 1 t:	0.63 mm
For E_{max} = 2 t:	1.2 mm
For E_{max} = 3 t:	0.9 mm
For E_{max} = 5 t:	0.6 mm
For E_{max} = 10 t:	0.8 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	3.0 ± 0.003 mV/V [1)]
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	350 ± 3.5 Ω
Output resistance R_o	350 ± 3.5 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	-10 to +40 °C

Variable	Value
Operating temperature range B_{tu}	-35 to +65 °C
Storage temperature range B_{ts}	-40 to +80 °C
Sensor material	Steel, nickel-plated
Degree of protection according to EN 60 529	IP67
Maximum tightening torque for the fixing bolts for E_{max} = 100; 250; 500 kg, 1 t, 2 t for E_{max} = 3; 5 t for E_{max} = 10 t	 75 Nm 500 Nm 750 Nm
Cable connection for E_{max} = 100; 250; 500 kg, 1 t, 2 t for E_{max} = 3; 5; 10 t	Four-core, shielded PU cable 4 m 6 m

1) Output is current-calibrated

9.1.11 SIWAREX WL230 SB-S SA

Table 9-11 Technical data SIWAREX WL230 SB-S SA

Variable	Value
Type series	WL230
Designation	SB-S SA
Construction type	Shear beam
Possible applications	Platform scales, overhead rail scales, container weighers, conveyor scales
Rated load E_{max}	500 kg 1; 2; 5 t
Accuracy class according to OIML R60	C3 1)
Max. scale interval n_{LC}	3000
Min. scale interval V_{min} for E_{max} = 500 kg for E_{max} = 1; 2; 5 t 1)	 E_{max} / 10000 E_{max} / 15000
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.02% C_n
Creep error F_{cr} 30 min	 ± 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.017% C_n / 10 K 0.023% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	100% E_{max}

Variable	Value
Rated measuring path h_n	
For E_{max} = 500 kg:	0.13 mm
For E_{max} = 1 t:	0.21 mm
For E_{max} = 2 t:	0.29 mm
For E_{max} = 5 t:	0.38 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.002 mV/V [1]
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	1000 ± 10 Ω
Output resistance R_o	1004 ± 5 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Maximum tightening torque for the fixing bolts for E_{max} = 500 kg, 1 t, 2 t for E_{max} = 5 t	 150 Nm 550 Nm
Cable connection for E_{max} = 500 kg, 1 t for E_{max} = 2 t, 5 t	Four-core, shielded PU cable 3 m 6 m

[1] Output is current-calibrated

9.1.12 SIWAREX WL270 CP-S SA

Table 9-12 Technical data SIWAREX WL270 CP-S SA

Variable	Value
Type series	WL270
Designation	CP-S SA
Construction type	Compression load cell
Possible applications	Vehicle scales, platform scales, container weighers
Rated load E_{max}	0.5; 1; 2; 5; 10; 20; 30; 50 t
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 10000
Combined error F_{comb}	± 0.02% C_n
Creep error F_{cr} 30 min	 ± 0.023% C_n

Variable	Value
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.017% C_n / 10 K 0.023% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	75% E_{max}
Rated measuring path h_n at E_{max}	0.5 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.02 mV/V *
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	700 ± 7 Ω
Output resistance R_o	700 ± 7 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Cable connection	Four-core, shielded PU cable 15 m

* Output is current-calibrated

9.1.13 SIWAREX WL270 CP-S SB

Table 9-13 Technical data SIWAREX WL270 CP-S SB

Variable	Value
Type series	WL270
Designation	CP-S SB
Construction type	Compression load cell
Possible applications	Container weighers
Rated load E_{max}	100 t
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Min. scale interval V_{min}	E_{max} / 9000
Combined error F_{comb}	± 0.02% C_n
Deviation F_V	± 0.02% C_n
Creep error F_{cr} 30 min	 0.023% C_n

Variable	Value
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.017% C_n / 10 K 0.023% C_n / 10 K
Min. initial loading E_{min}	0 kg
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	10% E_{max}
Rated measuring path h_n at E_{max}	0.36 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.02 mV/V *
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	700 ± 7 Ω
Output resistance R_o	700 ± 7 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Cable connection	Six-core, shielded 20 m

* Output is current-calibrated

9.1.14 SIWAREX WL270 CP-S SC

Table 9-14 Technical data SIWAREX WL270 CP-S SC

Variable	Value
Type series	WL270
Designation	CP-S SC
Construction type	Compression load cell
Possible applications	Container weighers
Rated load E_{max}	200 t
Accuracy class according to OIML R60	0.1%
Combined error F_{comb}	0.1% C_n
Deviation F_V	± 0.017% C_n
Creep error F_{cr} 30 min	 0.02% C_n
Temperature coefficient Characteristic value T_{Kc} Zero signal T_{Ko}	 0.014% C_n / 10 K 0.017% C_n / 10 K
Min. initial loading E_{min}	0 kg

Variable	Value
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Maximum lateral load L_{lq}	10% E_{max}
Rated measuring path h_n at E_{max}	0.36 mm
Recommended supply voltage	5 to 12 V DC
Rated characteristic value C_{Rated}	2.0 ± 0.02 mV/V *
Tolerance of zero signal D_o	< ± 1.0% C_n
Input resistance R_i	450 ± 5 Ω
Output resistance R_o	480 ± 5 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 65 °C
Storage temperature range B_{ts}	- 35 ... + 65 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection according to EN 60 529	IP68
Cable connection	Four-core, shielded PU cable 20 m

* Output is current-calibrated

9.1.15 SIWAREX WL270 K-S CA

Low temperature range (≤ 130 °C)

Table 9-15 Technical data SIWAREX WL270 K-S CA low temperature range

Variable		Values	
Type series		WL270	
Designation		K-S CA	
Construction type		Compression load cell	
Possible applications		Container and bin scales	
Rated load E_{max}		2.8; 6; 13; 28; 60; 130; 280 t	350 t, 500 t
• Accuracy class		0.1%	0.2 %
• Combined error F_{comb}		≤ ± 0.10% C_n	≤ ± 0.20% C_n
• Hysteresis		≤ ± 0.05% C_n	≤ ± 0.10% C_n
• Dead load output return		≤ ± 0.05% C_n	≤ ± 0.07% C_n
• Creep error F_{cr}	30 min	≤ ± 0.0600% C_n	≤ ± 0.0800% C_n
	20 to 30 min	≤ ± 0.0150% C_n	≤ ± 0.0200% Cn
• Temperature coefficient	Characteristic value T_{Kc}	≤ ± 0.25% C_n / 5 °C	≤ ± 0.25% Cn / 5 °C
	Zero signal T_{Ko}	≤ ± 0.25% C_n / 5 °C	≤ ± 0.25% Cn / 5 °C
• Min. initial loading E_{min}		0 t	0 t

Variable		Values
Maximum working load L_u		120% E_{max}
Break load L_d		300% E_{max}
Maximum lateral load L_{lq}		10% E_{max}
Rated measuring path h_n at E_{max}		0.23 to 3.11 mm
Supply voltage	Recommended	5 to 12 V DC
	Maximum	15 V
Rated characteristic value C_{Rated}		1.5 ± 0.008 mV/V
Tolerance of zero signal D_o		< ± 1.5% C_n
Input resistance R_i	2.8 to 280 t	275 ± 50 Ω
	350 t, 500 t	840 Ω ± 30 Ω
Output resistance R_o	2.8 to 280 t	245 Ω ± 0.2 Ω
	350 t, 500 t	703 Ω ± 5 Ω
Insulation resistance R_{is}		≥ 5000 MΩ at 50 V DC
Rated temperature range B_{tn}		- 10 to + 40 °C
Operating temperature range B_{tu}		- 20 to + 70 °C
Storage temperature range B_{ts}		-30 ...+70 °C
Sensor material		Steel, painted
Degree of protection according to EN 60 529		IP66
Cable connection: Four-core, shielded	E_{max} = 2.8 t, 6 t	6 m
	E_{max} = 13 t, 28 t, 60 t	15 m
	E_{max} = 130 t, 280 t, 350 t, 500 t	20 m

* Output is current-calibrated

Option: High temperature range (to max. 250 °C)

Table 9-16 Technical data SIWAREX WL270 K-S CA HT high temperature range

Variable	Values		
Type series	WL270		
Designation	K-S CA HT		
Construction type	Compression load cell		
Possible applications	Container and bin scales		
Rated load E_{max}	2.8; 6; 13; 28; 60; 130; 280 t, 350 t, 500 t		
Temperature ranges	**Temperature range 1**	**Temperature range 2**	**Temperature range 3**
	-30 ... +150 °C	+150 ... +180 °C	+180 ... +250 °C
Rated characteristic value C_{Rated}	1.5 ± 0.02 mV/V	1.5 ± 0.1 mV/V	1.5 ± 0.1 mV/V
Rated characteristic value C_n 28 t	1.9 ± 0.02 mV/V	1.9 ± 0.2 mV/V	1.9 ± 0.2 mV/V
Rated characteristic value C_n 60 t	1.8 ± 0.02 mV/V	1.8 ± 0.2 mV/V	1.8 ± 0.2 mV/V
Combined error F_{comb}	≤ ± 0.300% C_n	≤ ± 0.500 % C_n	≤ ± 5.000% C_n

Variable		Values		
Min. initial loading E_{min}			0 t	
Hysteresis		≤ ± 0.300% C_n	≤ ± 0.500 % C_n	≤ ± 2.000% C_n
Creep error F_{cr}	30 min	≤ ± 0.300% C_n	≤ ± 0.400 % C_n	≤ ± 4.000% C_n
Temperature coefficient	Characteristic value T_{Kc}	≤ ± 0.250% C_n/ 5 °C	≤ ± 0.250% C_n/ 5 °C	≤ ± 0.500% C_n/ 5 °C
	Zero signal T_{Ko}	≤ ± 0.250% C_n/ 5 °C	≤ ± 0.500% C_n/ 5 °C	≤ ± 0.500% C_n/ 5 °C
Maximum working load L_u			120% E_{max}	
Break load L_d			300% E_{max}	
Maximum lateral load L_{lq}			10% E_{max}	
Tolerance of zero signal D_0		≤ ± 1.0% C_n	≤ ± 1.5 % C_n	≤ ± 3.0% C_n
Supply voltage	Recommended		5 ... 12 V DC	
	Maximum		15 V	
Input resistance R_i	2.8 to 280 t	275 ± 7 Ω	275 ± 15 Ω	
	350 t, 500 t	450 ± 4.5 Ω	450 ± 10 Ω	
Output resistance R_o	2.8 to 280 t	275 ± 0.5 Ω	275 ± 1.0 Ω	
	350 t, 500 t	480 ± 4.8 Ω	480 ± 10 Ω	
Insulation resistance R_{is}			≥ 5000 MΩ at 50 V DC	
Rated temperature range B_{tn}			-10 ... +150 °C	
Operating temperature range B_{tu}		-30 ... +180 °C		-30 ... +250 °C
Storage temperature range B_{ts}		-30 ... +180 °C		-30 ... +250 °C
Sensor material			Steel, nickel-plated	
Degree of protection according to EN 60 529			IP66	
Cable connection: Four-core, shielded	E_{max} = 2.8 t, 6 t		6 m	
	E_{max} = 13 t, 28 t, 60 t		15 m	
	E_{max} = 130 t, 280 t, 350 t, 500 t		20 m	

Option: Double bridge

The load cells are equipped with a second strain gauge bridge. The technical specifications correspond to the previously mentioned options. Metrologically, there are two independent measurement circuits that are connected to two different transmitters. Mechanically, they are treated and installed as a load cell.

9.1.16 SIWAREX WL280 RN-S SA

Table 9-17 Technical data SIWAREX WL280 RN-S SA

Variable	Value
Type series	WL280
Designation	RN-S SA
Construction type	Ring torsion load cell
Possible applications	Container weighers, conveyor scales, platform scales, roller table scales
Rated load E_{max}	0.06; 0.13; 0.28; 0.5; 1; 2; 3.5; 5; 10; 13; 28; 60 t
Accuracy class according to OIML R60	C3
Max. scale interval n_{LC}	3000
Minimum scale interval V_{min} for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10; 13; 28; 60 t	 E_{max} / 16000 E_{max} / 17500
Combined error F_{comb}	≤ ± 0.02% C_n
Min. initial loading E_{min}	0 kg
Maximum working load L_u for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10; 13; 28; 60 t	 200% E_{max} 150% E_{max}
Break load L_d for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10; 13; 28; 60 t	 500% E_{max} 300% E_{max}
Maximum lateral load L_{lq} for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10 t for E_{max} = 13; 28; 60 t	 75% E_{max} 100% E_{max} 75% E_{max}
Rated measuring path h_n For E_{max} = 60; 130; 280 kg: For E_{max} = 0.5; 1; 2; 3.5; 5; 10 t: For E_{max} = 13; 28; 60 t:	 0.07 mm 0.1 ± 0.02 mm 0.11 to 0.2 mm
Supply voltage U_{SR} for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10 t for E_{max} = 13; 28; 60 t	 15 V 10 V 15 V
Rated characteristic value C_n for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10; 13; 28; 60 t	 1 mV/V 2 mV/V
Tolerance of zero signal D_o	≤ ± 1.0% C_n

Variable	Value
Input resistance R_e for E_{max} = 0.06; 0.13 t for E_{max} = 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10 t for E_{max} = 13 t for E_{max} = 28 t for E_{max} = 60 t	 1260 Ω ± 100 Ω 1260 Ω ± 250 Ω 1100 Ω ± 100 Ω 1200 Ω ± 100 Ω 1075 Ω ± 100 Ω 1350 Ω ± 200 Ω
Output resistance R_a for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10 t for E_{max} = 13 t for E_{max} = 28 t for E_{max} = 60 t	 1020 Ω ± 0.5 Ω 1025 Ω ± 25 Ω 1000 Ω ± 0.5 Ω 930 Ω ± 0.5 Ω 1175 Ω ± 0.5 Ω
Insulation resistance R_{is} for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5; 10 t for E_{max} = 13; 28; 60 t	 ≥ 20 MΩ ≥ 5000 MΩ ≥ 20 MΩ
Rated temperature range B_{tn}	- 10 ... + 40 °C
Operating temperature range B_{tu}	- 35 ... + 70 °C
Storage temperature range B_{ts}	- 50 ... + 90 °C
Sensor material	Stainless steel, mat. no. 1.4542
Degree of protection acc. to EN 60 529, IEC 60529	IP66 and IP68
Maximum tightening torque for fixing screws for E_{max} = 0.06; 0.13; 0.28 t for E_{max} = 0.5; 1; 2; 3.5; 5 t for E_{max} = 10 t for E_{max} = 13; 28; 60 t	 8 Nm 14 Nm 10 Nm -
Cable connection for E_{max} = 0.06 t, 0.13 t, 0.28 t, 0.5 t, 1 t for E_{max} = 2 t, 3.5 t, 5 t for E_{max} = 10 t; 13 t; 28 t; 60 t	Four-core, shielded PU cable 3 m 6 m 15 m

9.1.17 SIWAREX WL290 DB-S CA

Table 9-18 Technical specifications SIWAREX WL290 DB-S CA

Variable	Value
Type series	WL290
Designation	DB-S CA
Construction type	Double cutter
Possible applications	Container scales on vehicles, platform scales and silo scales
Rated load E_{max}	2.3; 4.5; 9.1; 13.6; 18; 23; 27; 34; 45; 68; 91; 113 t
Accuracy class according to OIML R60	C3 for 2.3; 4.5; 9.1; 13.6; 18; 23; 27; 34; 45; 68; 91; 113 t C4 for 2.3; 4.5; 9.1 t

Variable	Value
Max. scale interval n_{LC}	3000/4000
Minimum scale interval V_{min} For E_{max} = 2.3; 4.5; 9.1 t For E_{max} = 13.6; 18; 23; 27; 34; 45; 68; 91;113 t	 E_{max} / 10000; 15000 E_{max} / 10000
Combined error F_{comb}	≤± 0.0230 % Cn for C3 ≤± 0.0175 % Cn for C4
Min. initial loading E_{min}	0 kg
Maximum lateral load L_{lq}	100% E_{max}
Maximum working load L_u	150% E_{max}
Break load L_d	300% E_{max}
Rated measuring path h_n	
For E_{max} = 2.3 t:	0.5 mm
For E_{max} = 4.5 t:	0.6 mm
For E_{max} = 9.1 t:	1.1 mm
For E_{max} = 13.6 t:	0.5 mm
For E_{max} = 18 t:	0.5 mm
For E_{max} = 23 t:	0.5 mm
For E_{max} = 27 t:	0.6 mm
For E_{max} = 34 t:	0.5 mm
For E_{max} = 45 t:	0.5 mm
For E_{max} = 68 t:	0.5 mm
For E_{max} = 91 t:	0.9 mm
For E_{max} = 113 t:	0.9 mm
Supply voltage U_{SR} Maximum supply voltage 18 V DC	5 ... 12 V DC
Rated characteristic value C_{Rated}	3.0 ± 0.008 mV/V
Tolerance of zero signal D_o	≤ ± 1.0% C_n
Input resistance R_i	700 ± 7 Ω
Output resistance R_o	703 ± 4 Ω
Insulation resistance R_{is}	5000 MΩ at 50 V DC
Rated temperature range B_{tn}	-10 to +40 °C
Operating temperature range B_{tu}	-35 to +65 °C
Storage temperature range B_{ts}	-40 to +80 °C
Sensor material	Steel, nickel-plated
Degree of protection according to EN 60 529	IP67
Cable connection cable length	Four-core, shielded PU cable 9 m

9.2 Energy limitation parameters

Load cell type	Type of protection		
	ia and ic	**tc[1)]**	**nA[1)]**
WL230 BB-S SA WL230 SB-S SA WL230 SB-S CA WL250 ST-S SA WL260 SP-S SA WL260 SP-S SB WL260 SP-S SC WL270 CP-S SA WL270 CP-S SB WL290 DB-S CA	U_i = 20 V DC I_i = 420 mA P_i = 4.2 W L_i[2)] = 40 µH C_i[2)] = 12 nF -20 °C ≤ T_a ≤ +40 °C Load cell connected by a single associated apparatus: U_i = DC 16 V I_i = 420 mA P_i = 4.2 W	U_n = 20 V DC -20 °C ≤ T_a ≤ +40 °C	U_n = 20 V DC -20 °C ≤ T_a ≤ +40 °C
WL270 CP-S SC WL270 K-S CA	-	U_n = 20 V DC -20 °C ≤ T_a ≤ +40 °C	U_n = 20 V DC -20 °C ≤ T_a ≤ +40 °C
WL280 RN-S SA[1)]	P_i = **1.3 W** -30 °C ≤ T_a ≤ +40 °C P_i = **1.25 W** -30 °C ≤ T_a ≤ +50 °C P_i = **1.2 W** -30 °C ≤ T_a ≤ +60 °C U_i = 19.1 V DC i_i = 200 mA L_i = 2.7 µH + 1.3 µH/m Load cell cable C_i = 0.0001 nF + 0.057 nF/m Load cell cable	P_{rated} = 0.25 W U_n = 15 V DC -30 °C ≤ T_a ≤ +60 °C	U_n = 15 V DC -30 °C ≤ T_a ≤ +60 °C

1) Take measures to ensure that the supply voltage (including transients) does not rise above 140% of the rated voltage.

2) With a load cell cable length of 200 feet / 60.96 m

See also

Basic safety instructions (Page 25)

Basic safety instructions (Page 21)

9.3 Approval to OIML R60

Most SIWAREX load cells are approved for use in scales requiring official calibration of Class III, EN 45501.

This is determined by the specifications of the respective type.

The above statements do not apply to load cells outside the standard product range.

Descriptions of load cell variants that are not included in the standard product range can be found on the appropriate data sheet.

9.4 Electromagnetic compatibility

To maintain the electromagnetic compatibility:

- Ensure that the cables are routed with electromagnetic compatibility, even within cabinets
- Lay the signal cable segregated from cables with voltages > 60 V or high currents
- Avoid sites neighboring large electrical systems
- Use a shielded cable
- Ensure proper grounding

9.5 Certificates and approvals for explosion protection

In hazardous areas, it is only permitted to use load cells and components with the appropriate ATEX approval.

When connecting up the load cells in hazardous areas, the appropriate EC-type examination certificates and any supplements must be observed.

Explosion protection			
SIWAREX WL230 BB-S SA **SIWAREX WL230 SB-S SA** **SIWAREX WL250 ST-S SA** **SIWAREX WL260 SP-S SA** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC**	**SIWAREX WL280 RN-S SA**	**SIWAREX WL230 BB-S SA** **SIWAREX WL230 SB-S SA** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC** **SIWAREX WL260 SP-S SA** **SIWAREX WL260 SP-S SB** **SIWAREX WL260 SP-S SC** **SIWAREX WL250 ST-S SA** **SIWAREX WL270 K-S CA** **SIWAREX WL280 RN-S SA** **SIWAREX WL230 SB-S CA** **SIWAREX WL290 DB-S CA**	**SIWAREX WL230 BB-S SA** **SIWAREX WL230 SB-S SA** **SIWAREX WL230 SB-S CA** **SIWAREX WL250 ST-S SA** **SIWAREX WL260 SP-S SA** **SIWAREX WL260 SP-S SB** **SIWAREX WL260 SP-S SC** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC** **SIWAREX WL290 DB-S CA**
Only the technical specifications listed in the EC type examination certificates FM09ATEX0040X, FM09ATEX0041X, DEKRA 16ATEX0134X, and the manufacturer declaration A5E34794967A-2014X apply for applications in hazardous areas.			
FM09ATEX0040X FM09ATEX0041X	IECEx DEK 16.0074X DEKRA 16ATEX0134X	A5E34794967A-2014X	FM21US0086X FM21CA0056X
"Intrinsic safety" type of protection			

Explosion protection			
SIWAREX WL230 BB-S SA **SIWAREX WL230 SB-S SA** **SIWAREX WL250 ST-S SA** **SIWAREX WL260 SP-S SA** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC**	**SIWAREX WL280 RN-S SA**	**SIWAREX WL230 BB-S SA** **SIWAREX WL230 SB-S SA** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC** **SIWAREX WL260 SP-S SA** **SIWAREX WL260 SP-S SB** **SIWAREX WL260 SP-S SC** **SIWAREX WL250 ST-S SA** **SIWAREX WL270 K-S CA** **SIWAREX WL280 RN-S SA** **SIWAREX WL230 SB-S CA** **SIWAREX WL290 DB-S CA**	**SIWAREX WL230 BB-S SA** **SIWAREX WL230 SB-S SA** **SIWAREX WL230 SB-S CA** **SIWAREX WL250 ST-S SA** **SIWAREX WL260 SP-S SA** **SIWAREX WL260 SP-S SB** **SIWAREX WL260 SP-S SC** **SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC** **SIWAREX WL290 DB-S CA**
II 1G Ex ia IIC T4 Ga II 3G Ex ic IIC T4 Gc II 1D Ex ia IIIC T_{200}135°C Da	II 1 G Ex ia IIC T4 Ga II 1 D Ex ia IIIC T73 °C Da II 3 G Ex ic IIC T4 Gc		IS CL I,II,III, DIV 1, GP A,B,C,D,E,F,G,T4 IS CL I, ZN 0, AEx/Ex ia IIC T4 Ga CL I,II,III, DIV 2, GP A,B,C,D,F,G, T4 US & CA CL I, ZN2, GP IIC T4 IS CL I, ZN 2, AEx/Ex ic IIC T4 Gc IP6X Degree of protection according to EN 60 529 see section Technical specifications (Page 49).
"Non-sparking equipment" type of protection			
	II 3 G Ex nA IIC T4 Gc	II 3 G Ex nA IIC T4 Gc	
"Protection by enclosure" type of protection			
	II 3 D Ex tc IIIC T63 °C Dc	II 3 D Ex tc IIIC T73°C Dc	

Explosion protection			
SIWAREX WL260 SP-S CA **SIWAREX WL260 SP-S SA** **SIWAREX WL260 SP-S SB** **SIWAREX WL260 SP-S SC**	**SIWAREX WL230 BB-S SA**	**SIWAREX WL270 CP-S SA** **SIWAREX WL270 CP-S SB** **SIWAREX WL270 CP-S SC**	**SIWAREX WL230 SB-S SA** **SIWAREX WL230 SB-S CA**
NEPSI GYJ17.1473	NEPSI GYJ18.1229	NEPSI GYJ18.1230	NEPSI GYJ18.1228
"Intrinsic safety" type of protection			
Ex ia IIC T6 Ga Ex iaD 20 T80			

Dimension drawings

10

The dimensions in the dimension drawings are in mm.

10.1 SIWAREX WL260 SP-S AA

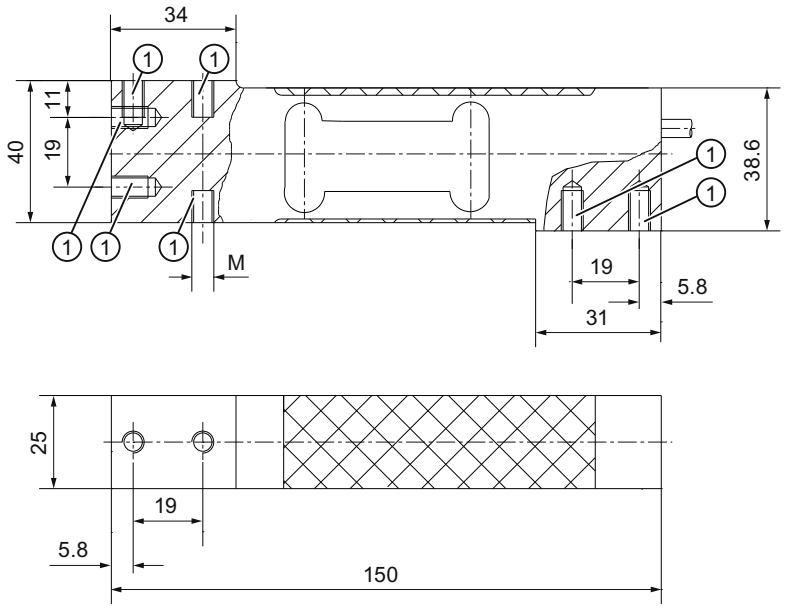


Figure 10-1 SIWAREX WL260 SP-S AA dimension drawing

Threaded holes		
Designation	**Thread**	**Thread depth**
①	M6	15 mm

10.2 SIWAREX WL260 SP-S AB

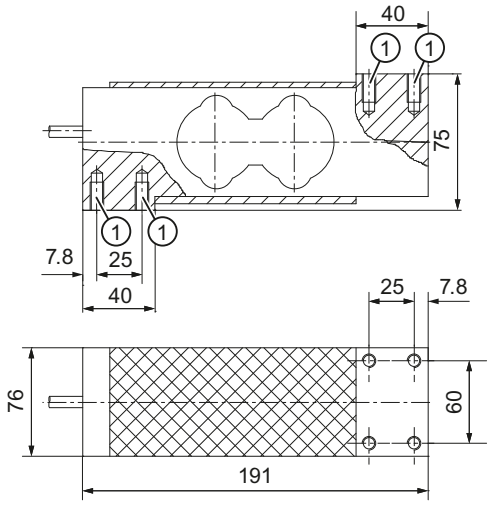


Figure 10-2 SIWAREX WL260 SP-S AB dimension drawing

8 threaded holes		
Designation	**Thread**	**Thread depth**
①	M8	15 mm

10.3 SIWAREX WL260 SP-S AE

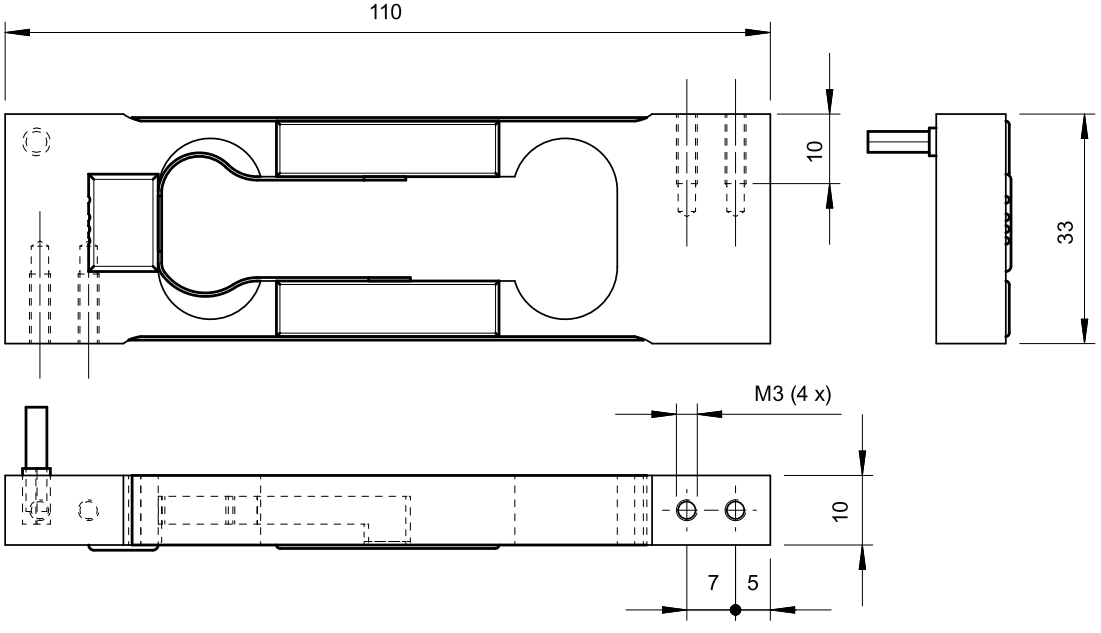
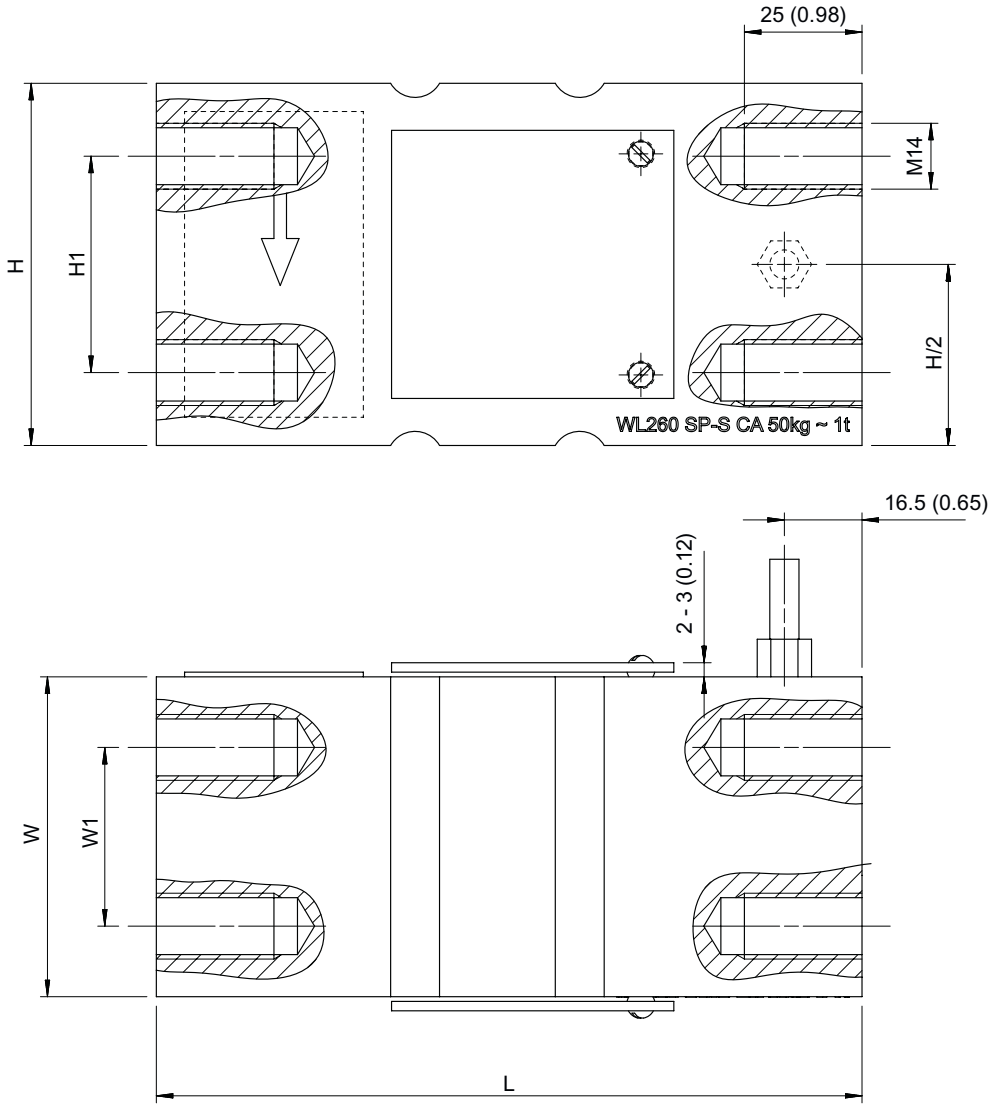


Figure 10-3 Dimension drawing of SIWAREX WL260 SP-S AE

10.4 SIWAREX WL260 SP-S CA



	50 kg ~ 1 t	**1.5 t ~ 2 t**
L	150 (5.91)	150 (5.91)
H	77 (3.03)	88 (3.46)
H1	46 (1.81)	55 (2.17)
W	68 (2.68)	76 (2.99)
W1	38 (1.50)	42 (1.65)

Figure 10-4 Dimension drawing SP-S CA, dimensions in mm (inch)

10.5 SIWAREX WL260 SP-S SA

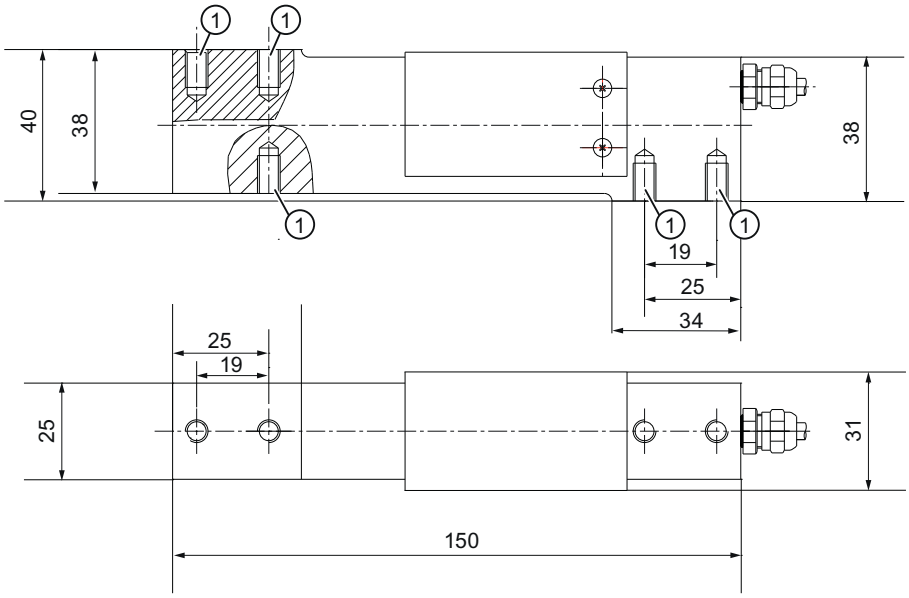


Figure 10-5 SIWAREX WL260 SP-S SA dimension drawing

Threaded holes			
Designation	**Thread**	**Thread depth**	**Hole depth**
①	M6	15 mm	18 mm

10.6 SIWAREX WL260 SP-S SB

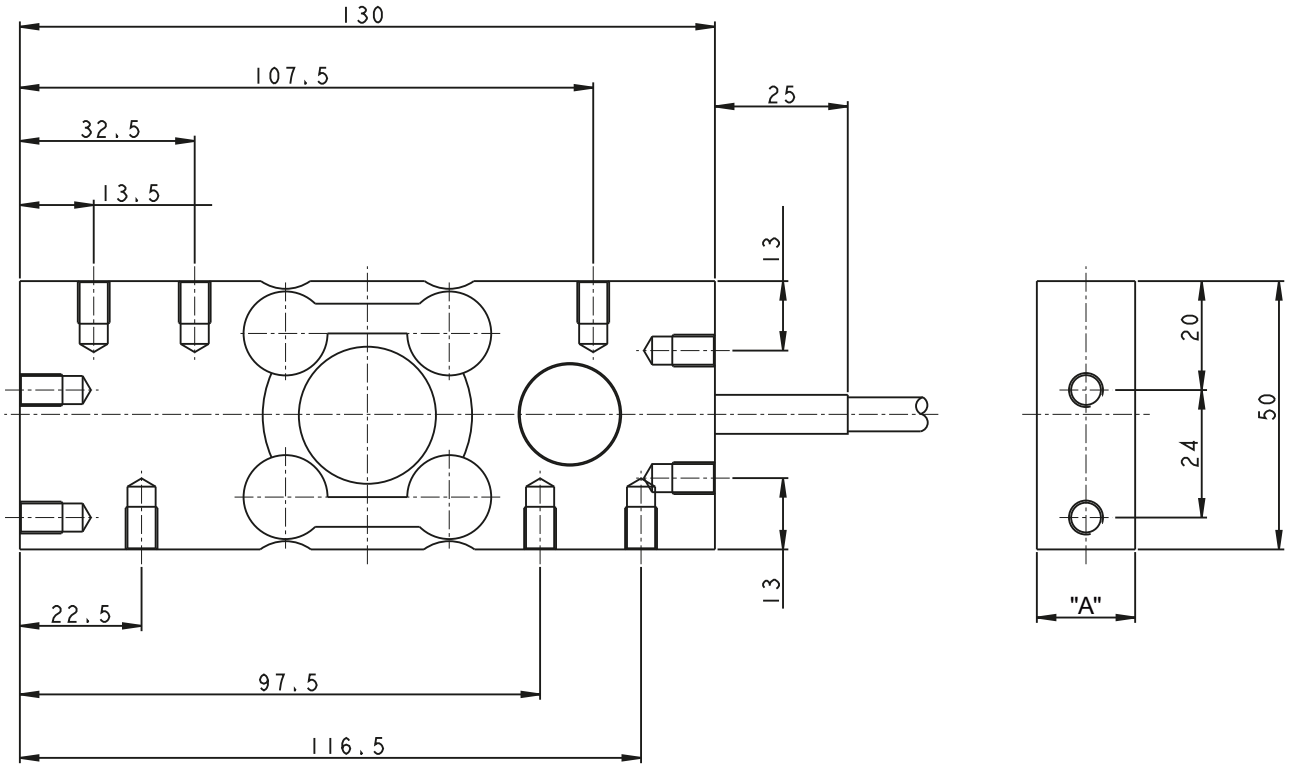


Figure 10-6 Dimensional drawing SIWAREX WL260 SP-S SB

Rated load in kg	6	12	30	60
A in mm	18.5	18.5	18.5	23.5
Threaded holes M6x1, 8 mm deep				

10.7 SIWAREX WL260 SP-S SC

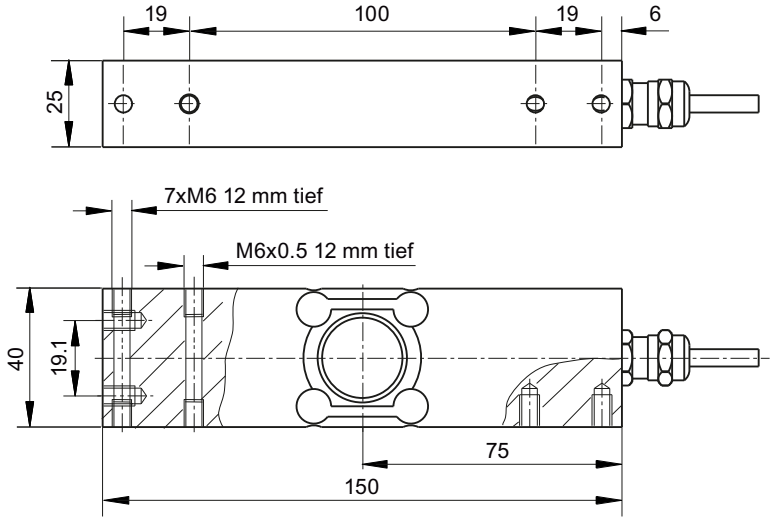


Figure 10-7 Dimension drawing SIWAREX WL260 SP-S SC 10 ... 50 kg

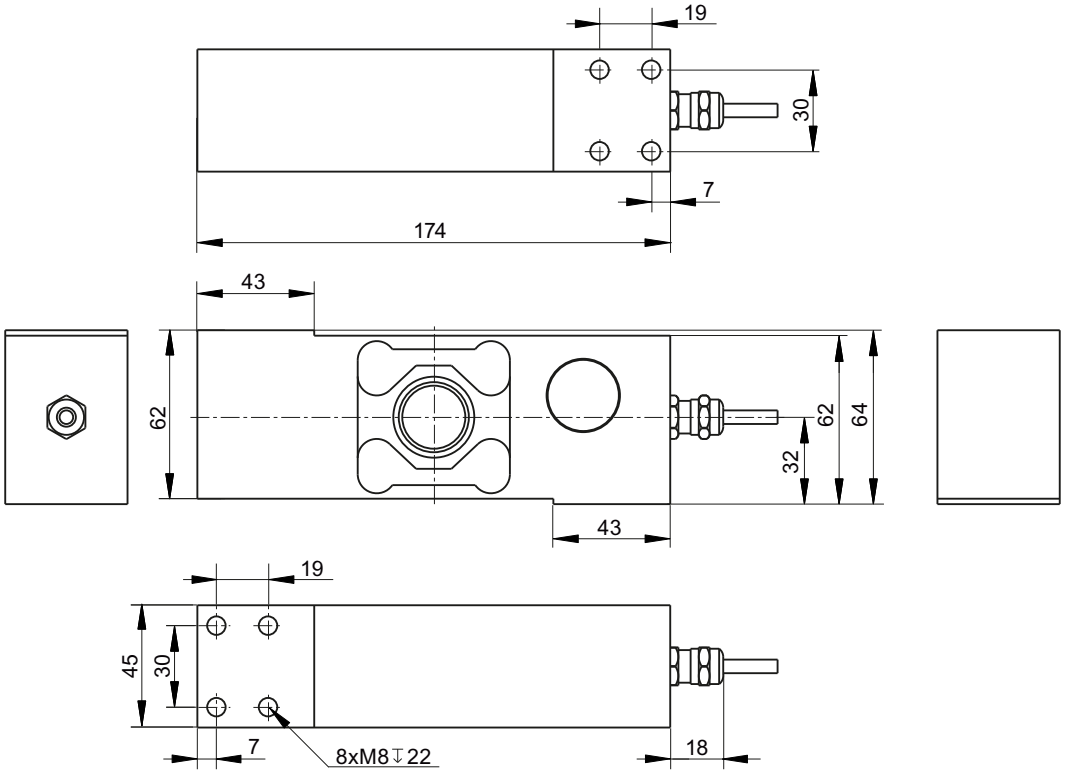


Figure 10-8 Dimension drawing SIWAREX WL260 SP-S SC 100 ... 500 kg

10.8 SIWAREX WL250 ST-S SA

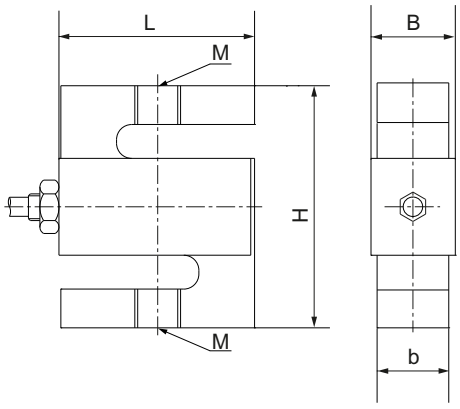


Figure 10-9 SIWAREX WL250 ST-S SA dimension drawing

Rated load	Dimensions in mm				
	L	**H**	**b**	**B**	**M**
50 kg, 100 kg	50.8	61.0	11.7	15.1	M8
250 kg, 500 kg	50.8	61.0	18.0	21.4	M12
1 t	50.8	61.0	24.4	27.8	M12
2.5 t	76.2	99.1	24.4	27.8	M20x1.5
5.0 t	74.7	99.1	30.7	34.1	M20x1.5
10 t	112.8	177.8	42.9	46.3	M30x2

10.9 SIWAREX WL230 BB-S SA

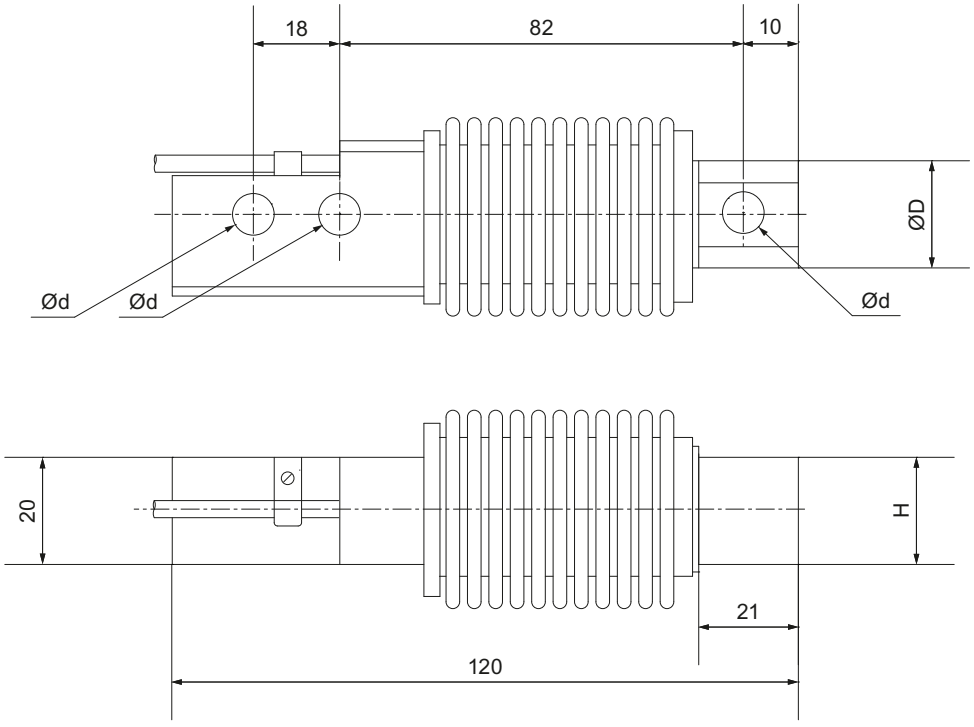


Figure 10-10 SIWAREX WL230 BB-S SA dimension drawing

Rated load	d in mm	D in mm	H in mm
10; 20; 50; 100; 200 kg	8,2	23	20
500 kg	10,3	24	19

10.10 SIWAREX WL230 SB-S CA

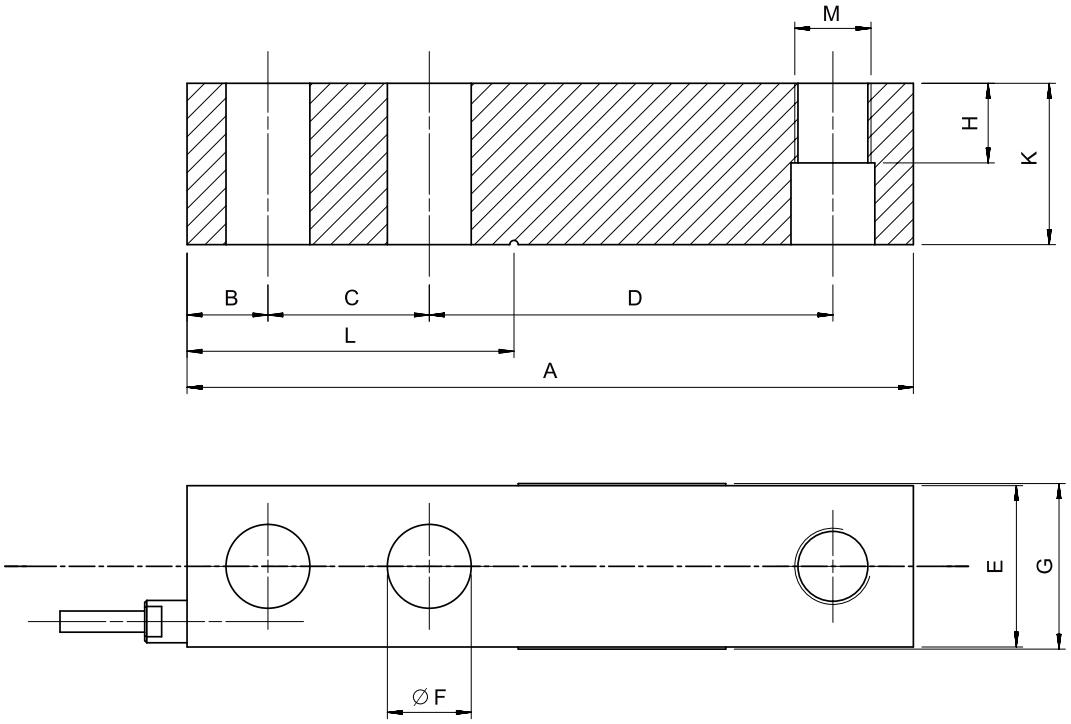


Figure 10-11 Dimensional drawing SIWAREX WL230 SB-S CA

Rated load	Dimensions in mm										
	A	**B**	**C**	**D**	**E**	**Ø F**	**G**	**H**	**K**	**L**	**M**
0.1 t ... 2.0 t	130	15.8	25.4	76.2	31.8	13.5	34	15.8	31.8	54.2	M12
3.0 t to 5.0 t	171.5	19.1	38.1	95.3	38.1	19.8	40	18.8	38.1	77.2	M18
10.0 t	222.3	25.4	50.8	120.7	50.8	26	52.4	25.4	50.8	101.6	M24

10.11 SIWAREX WL230 SB-S SA

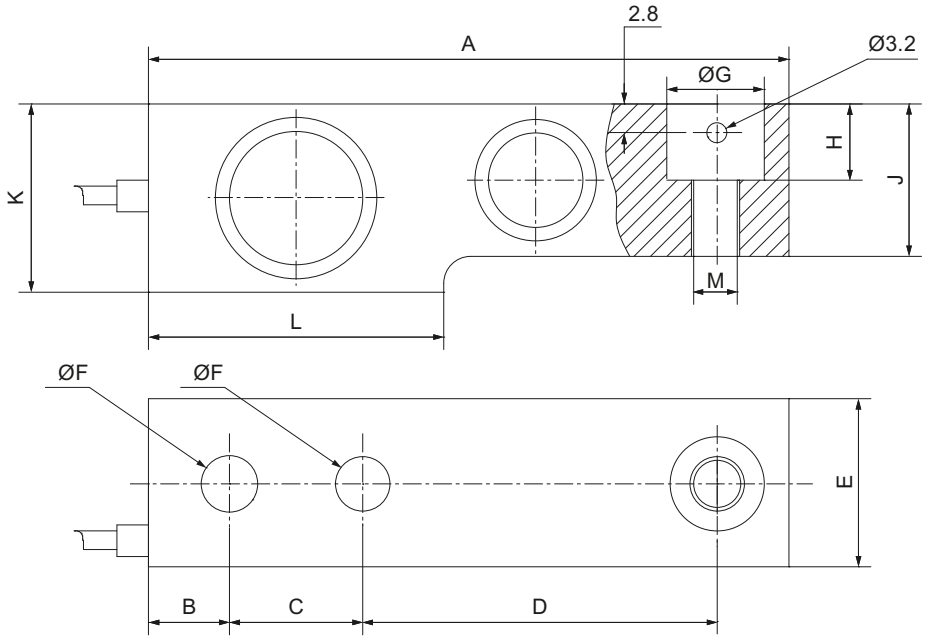


Figure 10-12 SIWAREX WL230 SB-S SA dimension drawing

Rated load	Dimensions in mm											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**K**	**L**	**M**
500 kg	130	16	25,4	76	32	13	20,5	14	26	32	57	M12
1.0 t	130	16	25,4	76	32	13	20,5	14	28	32	57	M12
2.0 t	130	16	25,4	76	32	13	20,5	14	32	36	57	M12
5.0 t	172	19	38,1	95	38	20,5	30,2	20	40	44	76	M20

10.12 SIWAREX WL270 CP-S SA

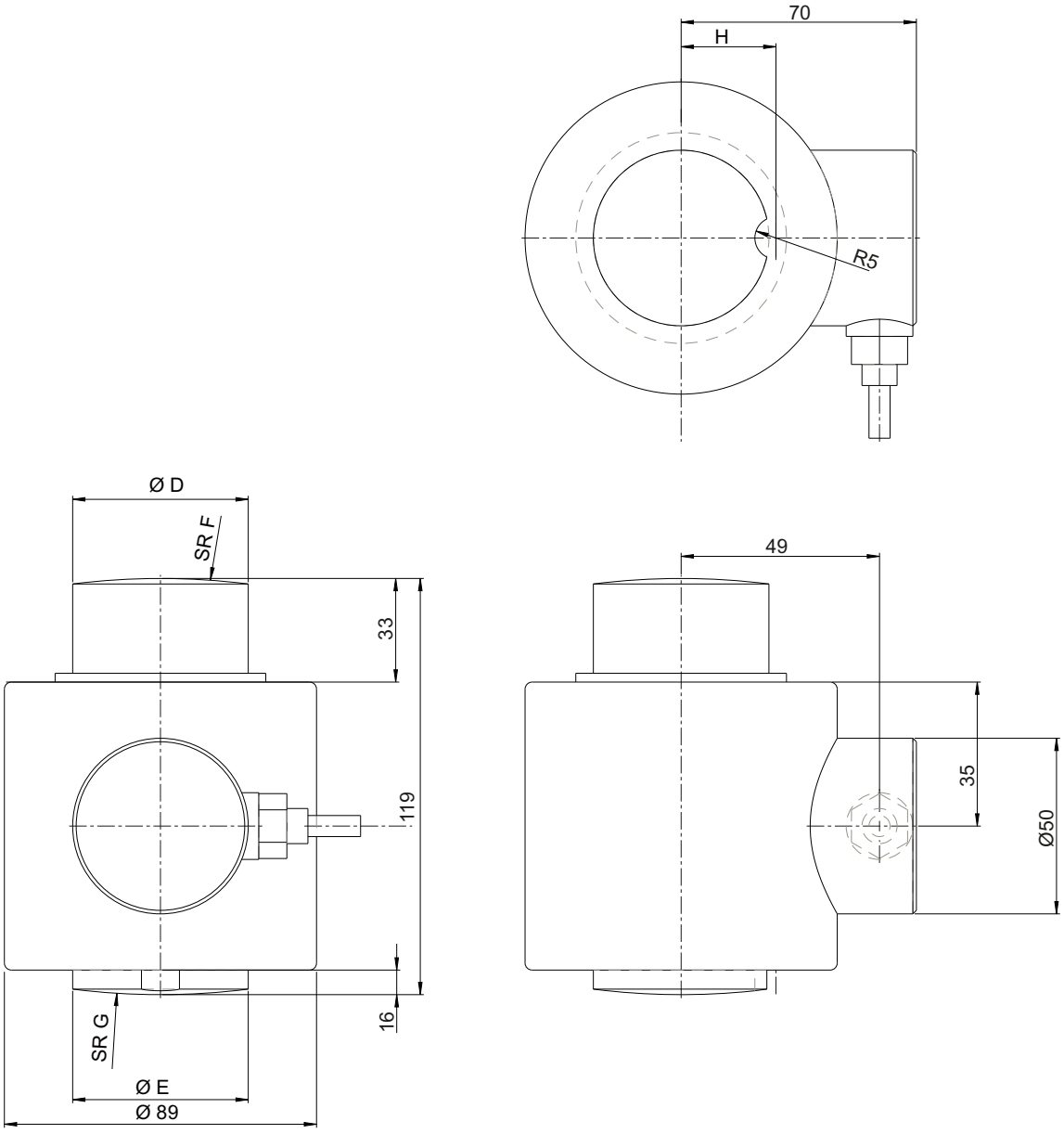


Figure 10-13 SIWAREX WL270 CP-S SA dimension drawing

Rated load	Dimensions in mm				
	D	E	F	G	H
0.5 t; 1 t; 2 t; 5 t; 10 t; 20 t; 30 t	40	40	38	150	22
50 t	50	50	200	200	27

10.13 SIWAREX WL270 CP-S SB

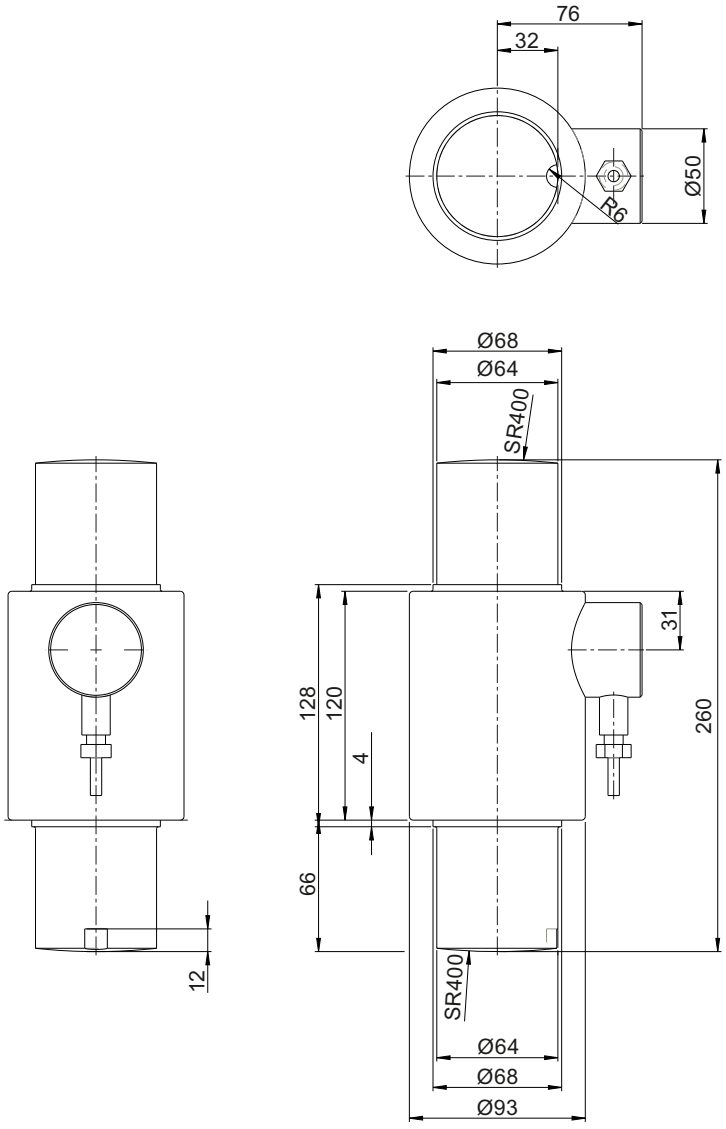


Figure 10-14 SIWAREX WL270 CP-S SB dimension drawing

10.14 SIWAREX WL270 CP-S SC

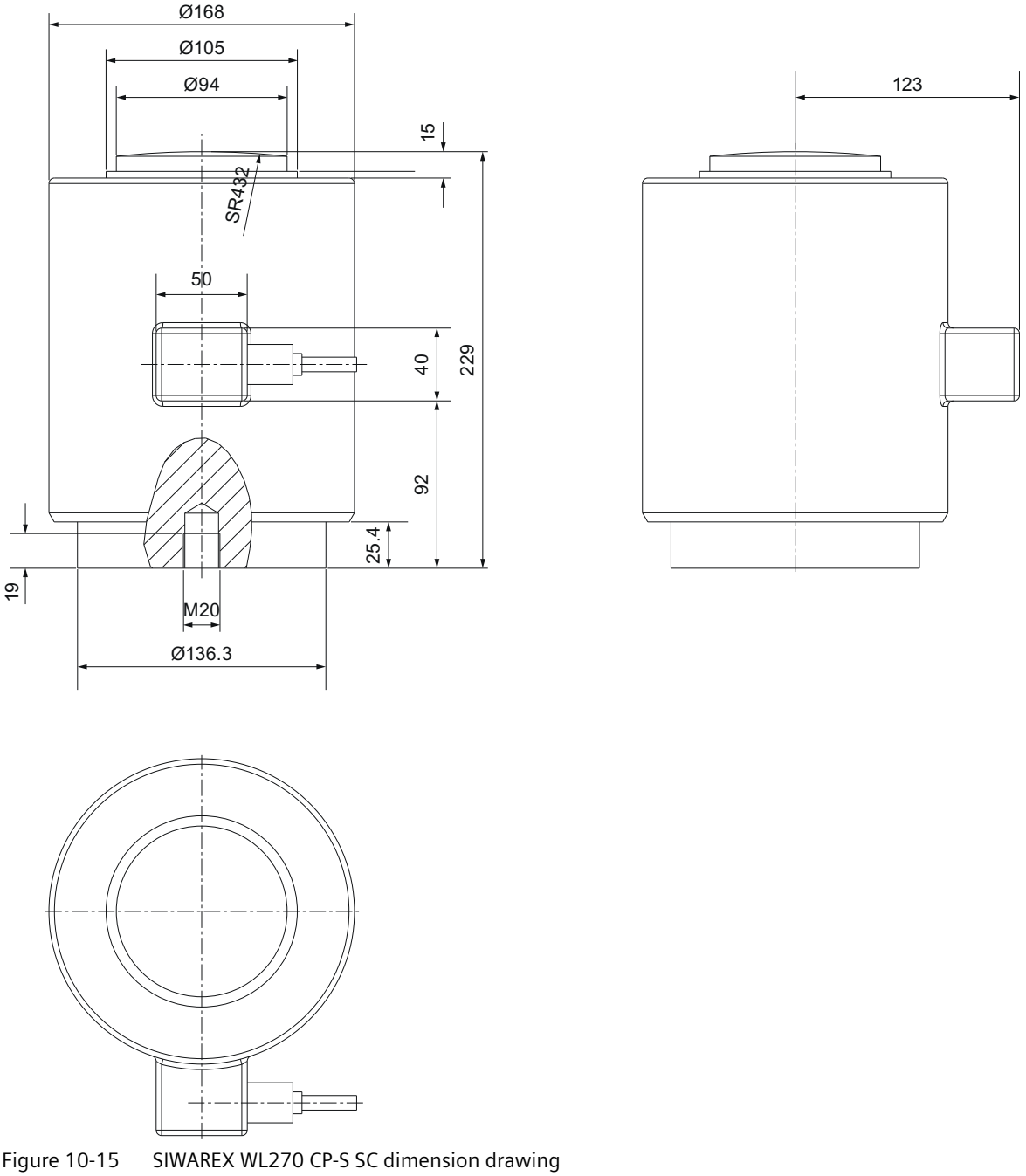


Figure 10-15 SIWAREX WL270 CP-S SC dimension drawing

10.15 SIWAREX WL270 K-S CA

Single

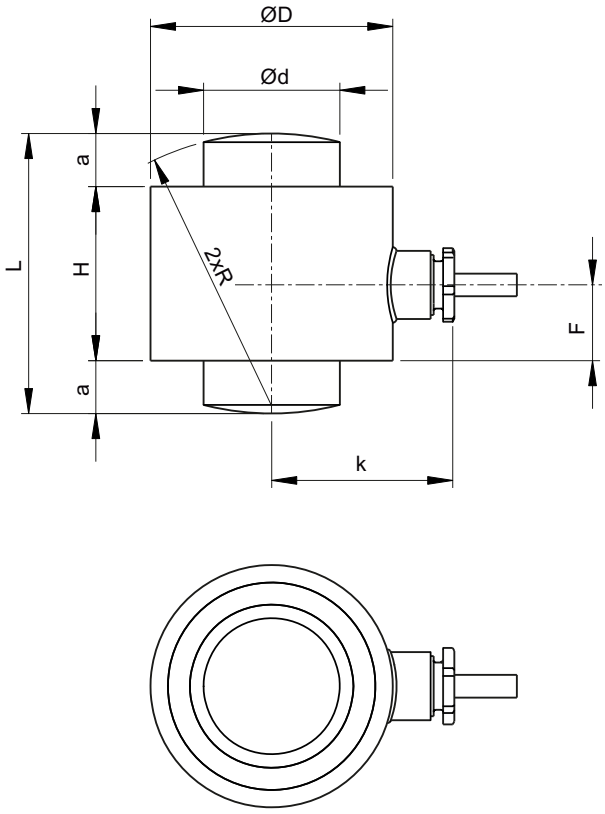


Figure 10-16 Dimension drawing for SIWAREX WL270 K-S CA

Rated load	Dimensions in mm							
	a	Ød	ØD	F	H	k	L	R
1.3 to 2.8 t, 6 t	8	16.7	45	20	40	40.5	56	50
13 t	12	24.5	55	20	44	45.5	68	66
28 t	14	36	64	20	46	48	74	72
60 t	20	52.7	90	20	50	63	90	100
130 t	26	77.5	121	20	64	78.5	116	125
280 t	45	114	165	20	80	100.5	170	183
350 t	40	132	202	50	160	127	240	325
500 t	47	155	236	50	181	144	275	450

With double bridge

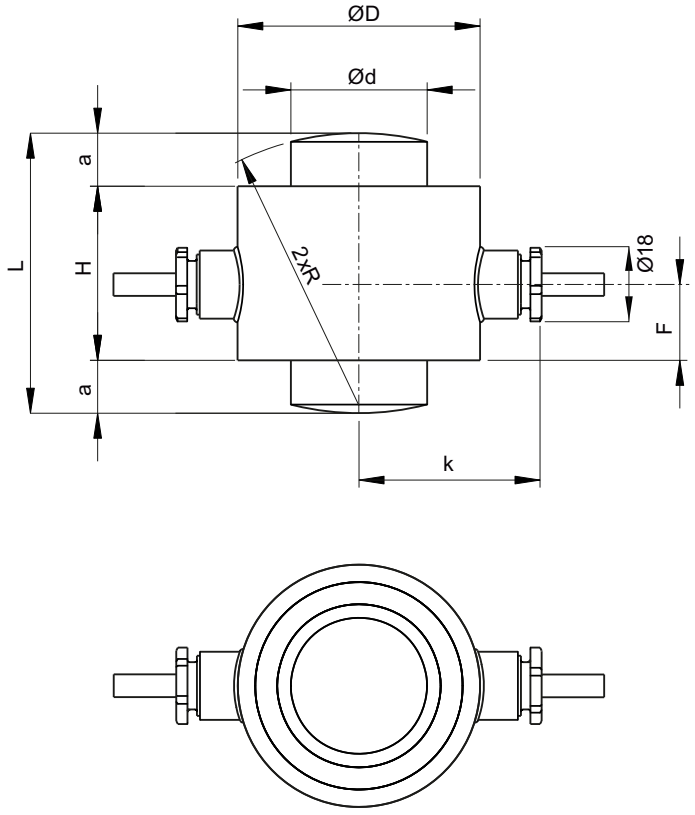


Figure 10-17 Dimension drawing SIWAREX WL270 K-S CA with double bridge

Rated load	Dimensions in mm							
	a	Ød	ØD	F	H	k	L	R
13 t	12	24.5	55	20	44	45.5	68	66
28 t	14	36	64	20	46	48	74	72
60 t	20	52.7	90	20	50	63	90	100
130 t	26	77.5	121	20	64	78.5	116	125
280 t	45	114	165	20	80	100.5	170	183
350 t	40	132	202	50	160	127	240	325
500 t	47	155	236	50	181	144	275	450

10.16 SIWAREX WL280 RN-S SA

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 60, 130, 280 kg

The dimension drawing also contains the dimensions of the pressure piece.

The pressure piece is included in the scope of delivery of the load cell.

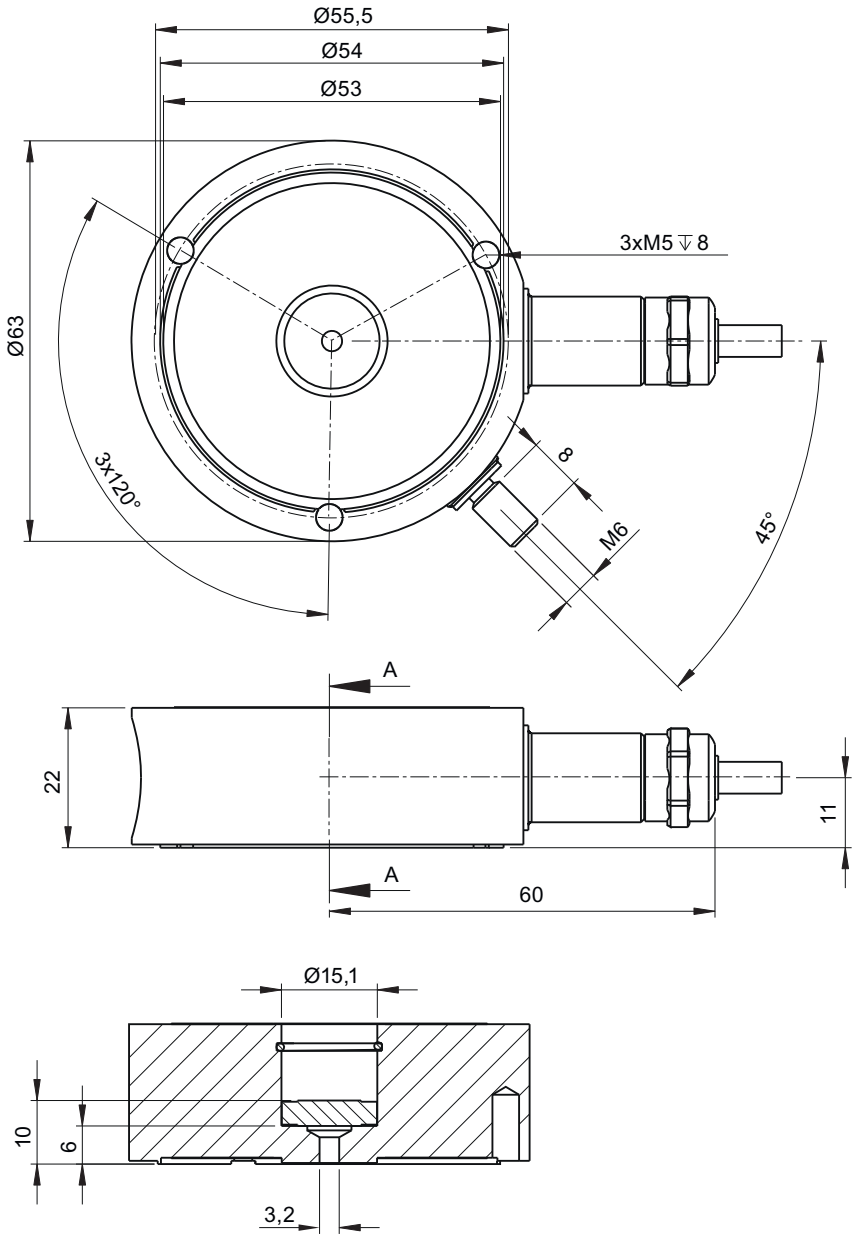


Figure 10-18 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 60 kg, 130 kg, 280 kg

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 0.5, 1 t

The dimension drawing also contains the dimensions of the pressure piece.

The pressure piece is included in the scope of delivery of the load cell.

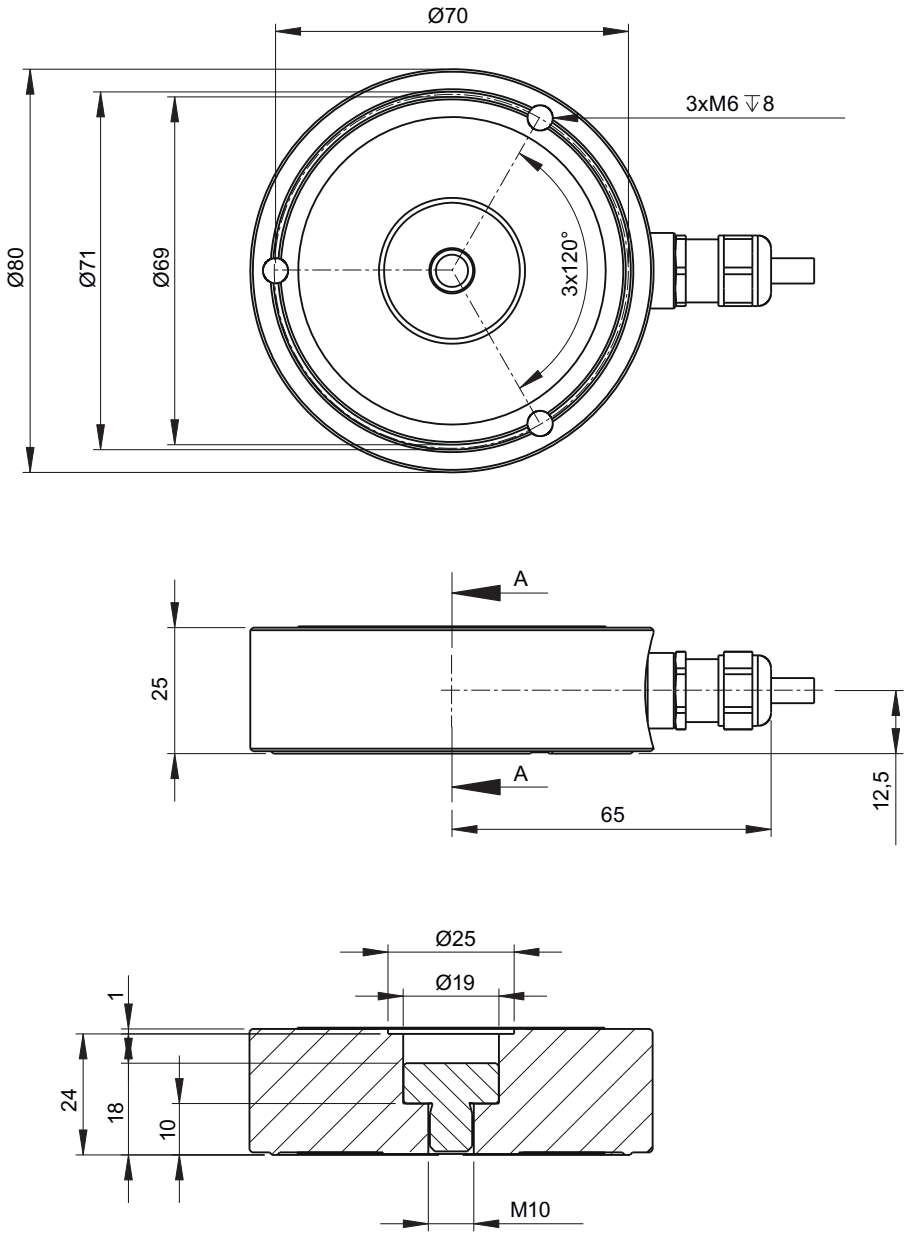


Figure 10-19 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 0.5 t, 1 t

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 2, 3, 5 t

The dimension drawing also contains the dimensions of the pressure piece.

The pressure piece is included in the scope of delivery of the load cell.

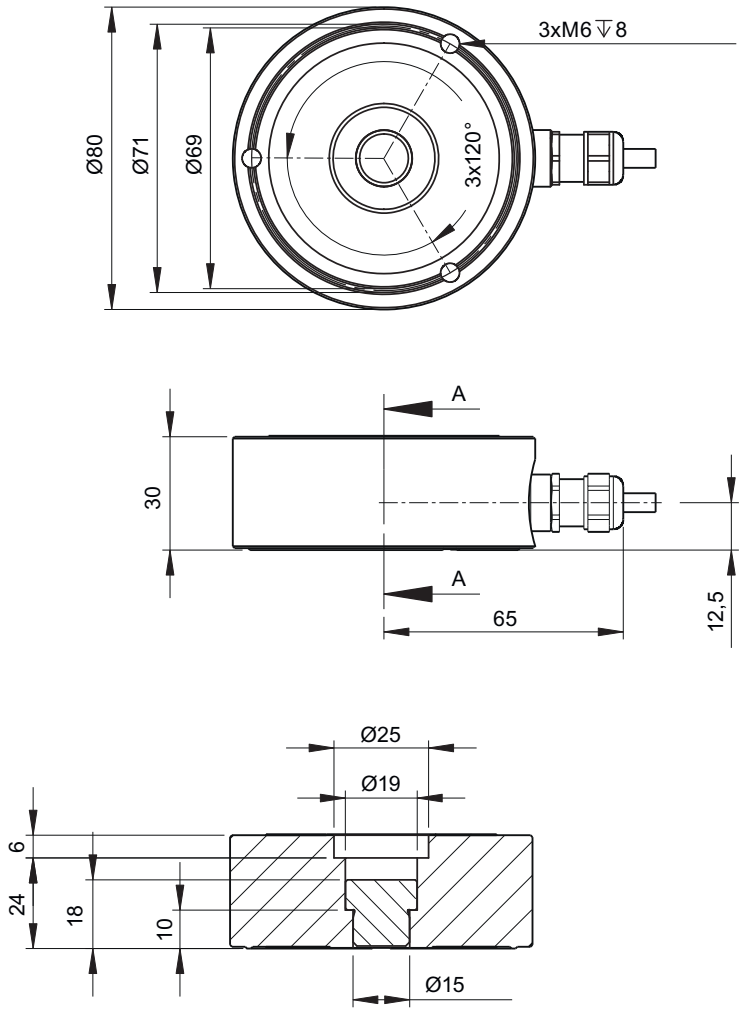


Figure 10-20 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 2 t, 3 t, 5 t

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 10 t

The dimension drawing also contains the dimensions of the pressure piece.

The pressure piece is included in the scope of delivery of the load cell.

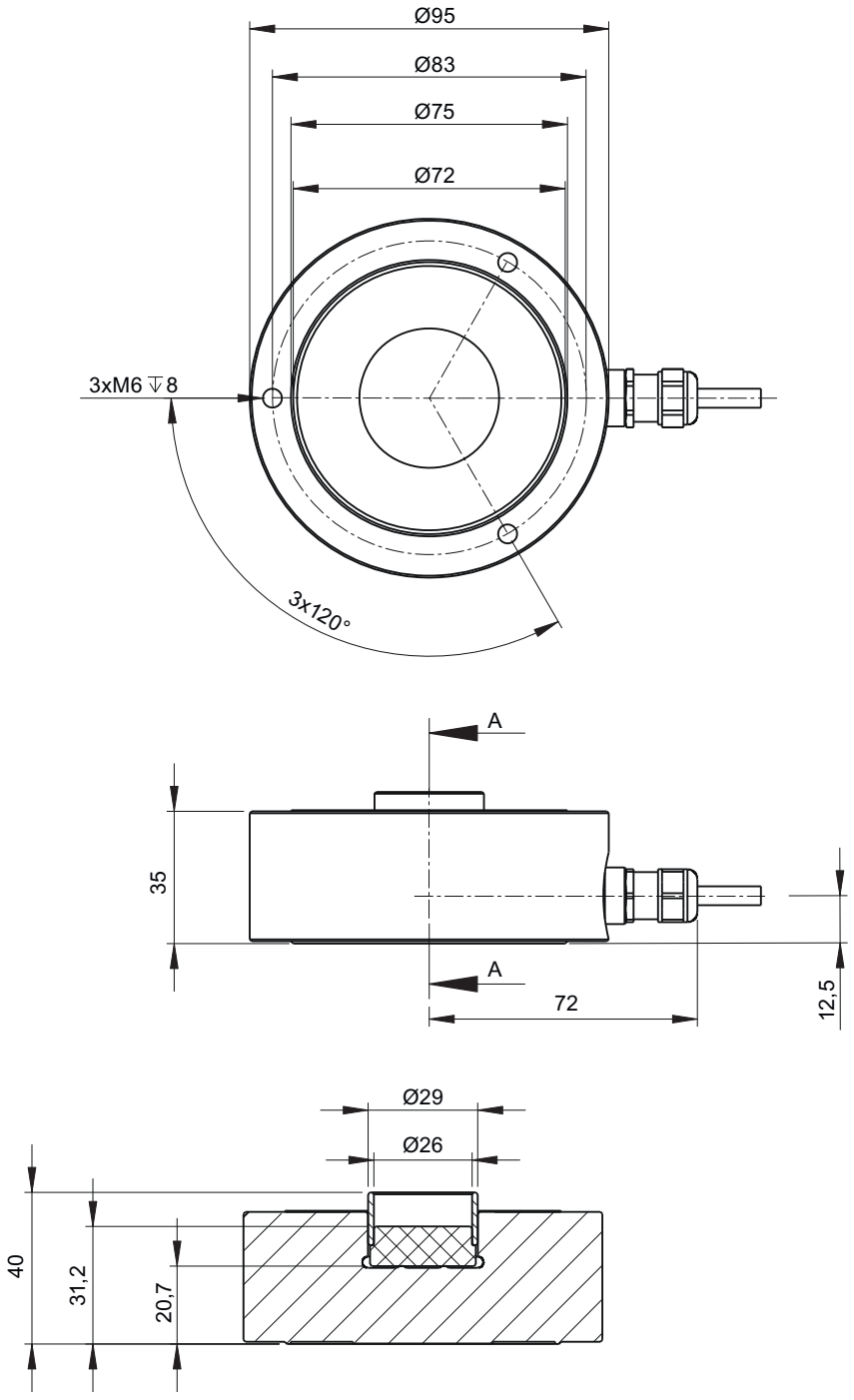


Figure 10-21 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 10 t

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 13 t

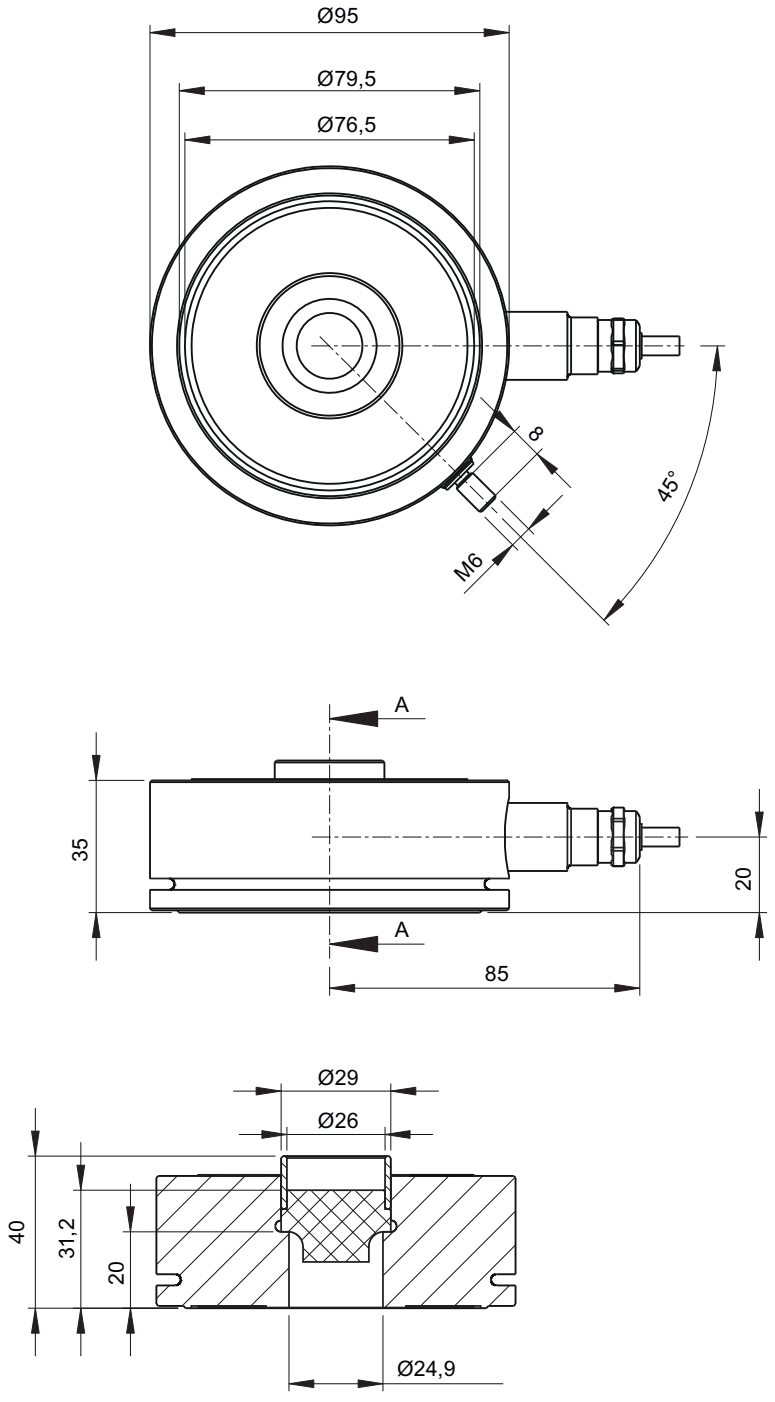


Figure 10-22 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 13 t

Dimension drawing for SIWAREX WL280 RN-S SA load cell for 28 t and 60 t

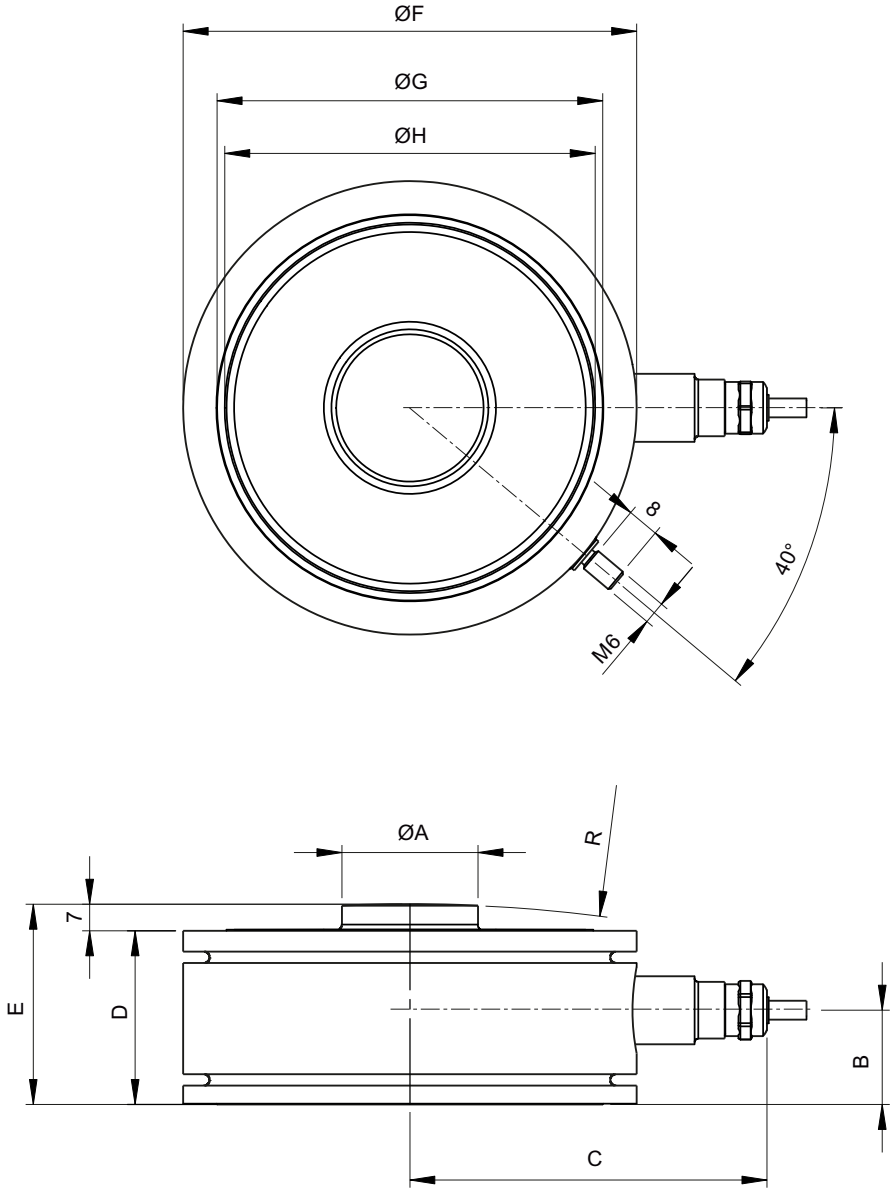


Figure 10-23 Dimension drawing for SIWAREX WL280 RN-S SA, rated load 28 t and 60 t

Rated load	Ø A in mm	B in mm	Ø C in mm	E in mm
28 t	120	46	35,9	25
60 t	140	62	47,9	34

10.17 SIWAREX WL290 DB-S CA

Dimension drawing of the load cell SIWAREX WL290 DB-S CA for 2.3; 4.5; 9.1; 13.6; 18; 23; 27; 34; 45; 68; 91; 113 t

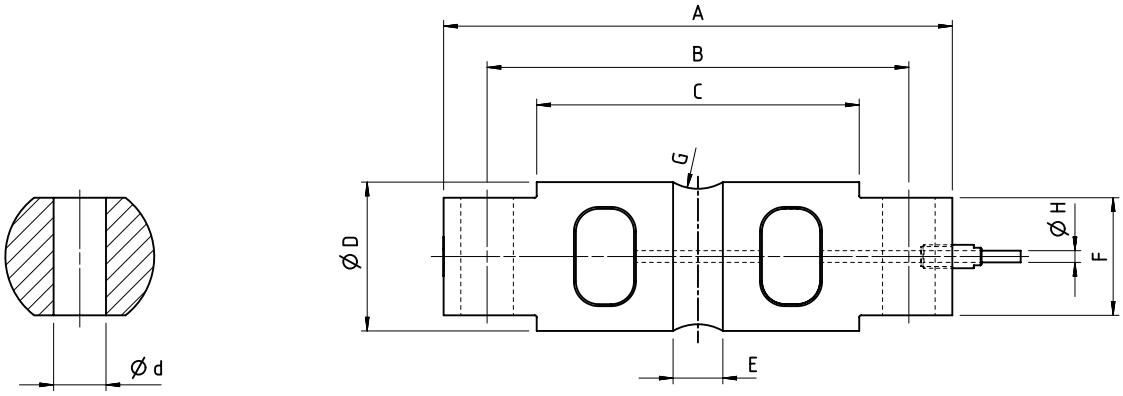


Figure 10-24 Dimension drawing of WL290 DB-S CA

Table 10-1 Dimensions WL290 DB-S CA

Rated load (t)	A (mm)	B (mm)	C (mm)	Ød (mm)	ØD (mm)	E (mm)	F (mm)	G (mm)	ØH (mm)
2.3, 4.5	206.2	174.6	133.1	16.7	43.2	15.7	28.4	R12.7	5
9.1	206.2	174.6	133.1	16.7	49.5	21.3	28.4	R12.7	5
13.6 ... 34	260.4	215.9	165.1	26.9	76.2	25.4	60.2	R25.4	8
45	285.8	241.3	190.2	26.9	88.9	31	63.5	R38.1	8
68	285.8	241.3	190.2	26.9	99.1	31	71.1	R38.1	8
91 to 113	408.9	330.3	254	39.6	136.6	31.7	116.8	R50.8	8

Product documentation and support

A

A.1 Product documentation

Product documentation for process instrumentation is available in the following formats:

- Certificates (http://www.siemens.com/processinstrumentation/certificates)
- Downloads (firmware, EDDs, software) (http://www.siemens.com/processinstrumentation/downloads)
- Catalogs and technical data sheets (http://www.siemens.com/processinstrumentation/catalogs)
- Manuals (http://www.siemens.com/processinstrumentation/documentation)
  You have the option to view, open, save or configure the manual.
  - "Display": The manual opens in HTML5 format.
  - "Configure": You can register and configure the specific documentation for your plant here.
  - "Download": The manual is opened or saved in PDF format.
  - "Download as html5, only PC": The manual is opened or saved in HTML5 view on your PC.

You can also find manuals at Industry Online Support (https://support.industry.siemens.com/cs/ww/de/sc/2067) using the mobile app. Download the app to your mobile device and scan the QR code.

See also

Generally applicable information/SIMATIC manual overview (https://support.industry.siemens.com/cs/ww/en/view/109742709)

A.2 Technical support

Technical support

If this documentation does not completely answer your technical questions, you can enter a Support Request (http://www.siemens.com/automation/support-request).

Additional information on our technical support can be found at Technical Support (http://www.siemens.com/automation/csi/service).

Service & support on the Internet

In addition to our technical support, Siemens offers comprehensive online services at Service & Support (http://www.siemens.com/automation/serviceandsupport).

Contact

If you have further questions about the device, contact your local Siemens representative at Personal Contact (http://www.automation.siemens.com/partner).

To find the contact for your product, go to "all products and branches" and select "Products & Services > Industrial automation > Process instrumentation".

Contact address for business unit:
Siemens AG
Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

SIWAREX support

- Email (mailto:hotline.siwarex@siemens.com)
- Phone: +49 (721) 667-1200 CET 8:00 to 17:00

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