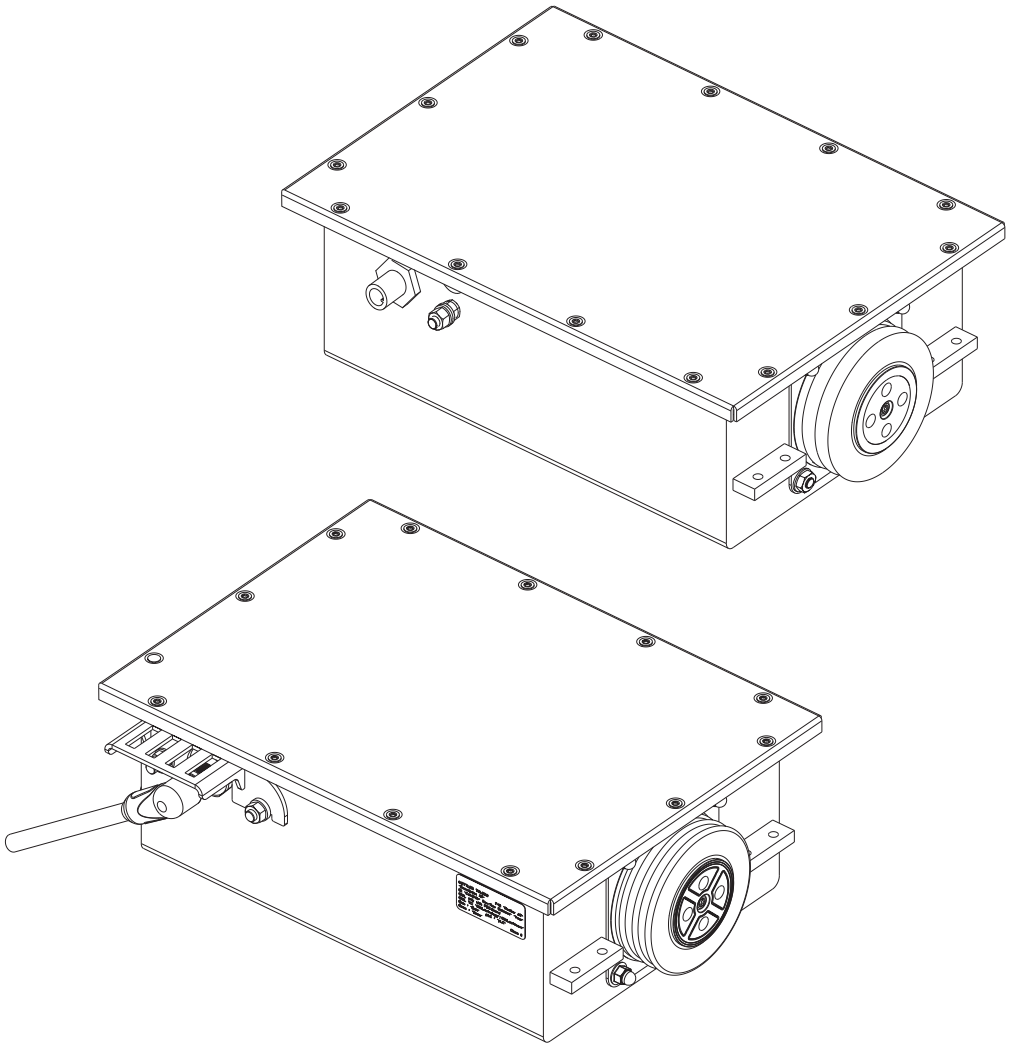
Installation Manual

SLF6-Series

High-precision load cells



METTLER TOLEDO

METTLER TOLEDO Service

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use of your new equipment according to this Manual and regular calibration and maintenance by our factory-trained service team ensures dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget. Further information is available at www.mt.com/service.

There are several important ways to ensure you maximize the performance of your investment:

1 **Register your product**: We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.

2 **Contact METTLER TOLEDO for service**: The value of a measurement is proportional to its accuracy – an out of specification scale can diminish quality, reduce profits and increase liability. Timely service from METTLER TOLEDO will ensure accuracy and optimize uptime and equipment life.

   ⇨ **Installation, Configuration, Integration and Training**: Our service representatives are factory-trained weighing equipment experts. We make certain that your weighing equipment is ready for production in a cost effective and timely fashion and that personnel are trained for success.

   ⇨ **Initial Calibration Documentation**: The installation environment and application requirements are unique for every industrial scale so performance must be tested and certified. Our calibration services and certificates document accuracy to ensure production quality and provide a quality system record of performance.

   ⇨ **Periodic Calibration Maintenance**: A Calibration Service Agreement provides on-going confidence in your weighing process and documentation of compliance with requirements. We offer a variety of service plans that are scheduled to meet your needs and designed to fit your budget.

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1 Safety Information

1.1 Definition of Signal Words and Warning Symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the load cell, malfunctions and false results.

Signal Words

CAUTION	Hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or minor or medium injuries if not avoided.
Attention	Important information about the product (no symbol)
Note	Useful information about the product (no symbol)

Warning Symbols

General hazard

Electrical shock

1.2 Product Specific Safety Notes

Your load cell meets the state of the art technology and complies with all recognized safety rules, however, certain hazards could arise. Do not open the load cell: It does not contain any parts which can be maintained, repaired or replaced by the user. If you ever have problems with your load cell, contact your authorized METTLER TOLEDO dealer or service representative.

Observe Instructions

Always operate and use your load cell only in accordance with the instructions contained in the product documentation. The instructions for setting up your load cell must be strictly observed.

If the load cell is not used according to the product manuals, protection of the load cell may be impaired and METTLER TOLEDO assumes no liability.

Staff Safety

In order to use the load cell, you must have read and understood the operating instructions. Keep the operating instructions for further reference.

Use only METTLER TOLEDO accessories and peripheral devices, these items are designed to work optimally with your load cell.

Safety Notes

CAUTION

- The load cell (standard and Category 3) may only be connected to DC power sources that meet the 12 to 24 volt nominal range (10 to 29 V DC) at all times.
- The APS768x power supply used for Category 2 may only be supplied with 120 V / 230 V +10 % / –15 %; 50 Hz; 160 mA.
- The power supply must be approved by the respective national test center of the country in which the load cell will be used.

The SLF6-Series load cells have the following approvals for operation in hazardous areas:

Hazardous area	Approval type	Approval
Category 2	ATEX	II 2 G Ex ib IIC T4 Gb II 2 D Ex ib IIIC T55°C Db $-10\ °C \leq T_{amb} \leq +40\ °C$
	IECEx	Ex ib IIC T4 Gb Ex ib IIIC T55°C Db $-10\ °C \leq T_{amb} \leq +40\ °C$
Category 3	ATEX	II 3G Ex nA IIC T6 Gc II 3D Ex tc IIIC T60°C Dc $-10\ °C \leq T_{amb} \leq +40\ °C$ BVS 10 ATEX E 131 X
	IECEx	Ex nA IIC T6 Gc Ex tc IIIC T60°C Dc $-10\ °C \leq T_{amb} \leq +40\ °C$ IECEx BVS16.0064X

Special care must be taken when using weighing systems in hazardous areas. The code of practice is oriented to the "Safe Distribution" concept drawn up by METTLER TOLEDO.

Please also observe the following rules for hazardous area:

Competence

- The weighing system may only be installed, maintained and repaired by authorized METTLER TOLEDO service personnel.
- The mains supply may only be installed by a specialist authorized by the owner/ operator.

Ex Approval

- No modifications may be made to the device and no repair work may be performed on the modules. Any weighing platforms or system modules that are used must comply with the specifications. Non-compliant equipment jeopardizes the intrinsic safety of the system, cancels the Ex approval and renders any warranty or product liability claims null and void.
- The safety of the weighing system is only guaranteed when the weighing system is operated, installed and maintained in accordance with the respective instructions.
- Also comply with the following:
  - the instructions for the system modules,
  - the relevant national regulations and standards,
  - the applicable statutory requirements for electrical equipment installed in hazardous areas in the respective country,
  - all instructions related to safety issued by the owner.
- The explosion-proof weighing system must be checked to ensure compliance with the safety requirements before being put into service for the first time, following any service work and at least every 3 years.

Operation

- Prevent the build-up of static electricity. Always wear suitable working clothes when operating or performing service work in hazardous areas.
- Do not use protective covers with the devices.
- Prevent damage to the system components.

Installation

- Only perform installation or maintenance work on the weighing system in the hazardous area if the following conditions are fulfilled:
  - the intrinsically safe characteristic values and zone approval of the individual components are in accord with one another,
  - the owner has issued a permit ("spark permit" or "fire permit"),
  - the area has been rendered safe and the owner's safety coordinator has confirmed that there is no danger,
  - the necessary tools and any required protective clothing are provided (danger of the build-up of static electricity).
- The certification papers (certificates, manufacturer's declarations) must be present.
- Lay cabling securely so that it does not move and effectively protect it against damage.
- Only route cables into the housing of the system modules via the suitable gland and ensure proper seating of the seals.

Special Conditions for Safe Use

- Connect the load cell with an equipotential bonding conductor to system safety ground if required by National Electrical Codes or National Installation Standards.
- Protect the membrane around the force transmission effectively against mechanical damage and direct sunlight radiation.
- Use only connection cables with specially tested M12 cable connectors (e.g. 30244447 for Category 3 or 30267190 for Category 2). Using any other M12 connector will invalidate IP rating and Ex approvals!
- Apply the specified tightening torque (1 to 1.2 Nm) to the female M12 cable connector.
- Do not separate the connection when the system is energized!
- Protect the M12 flange socket and the cable connector effectively against mechanical damage by using the assembled protective bracket.

2 Mechanical Design

Note

Mechanical design is a very important step in machine design because it has a direct influence on the weighing performance. A good mechanical design enables the load cell to perform at its best, whereas a poor mechanical design may cause troubles that can compromise weighing accuracy. Therefore, we recommend a very careful study of this section before beginning with the design.

⚠ CAUTION

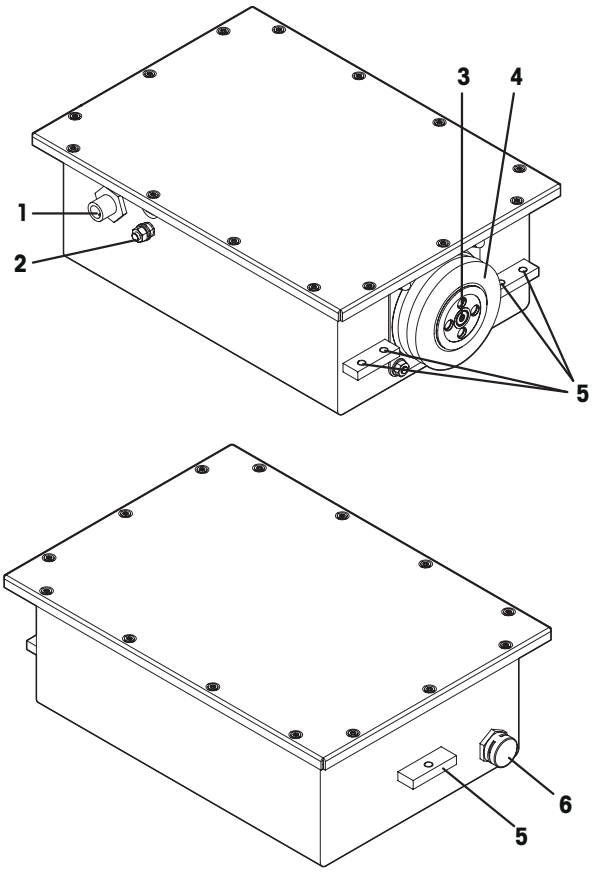
Damage to the membrane, the M12 flange socket and the cable connector

Protect the membrane around the force transmission effectively against mechanical damage and direct sunlight radiation.

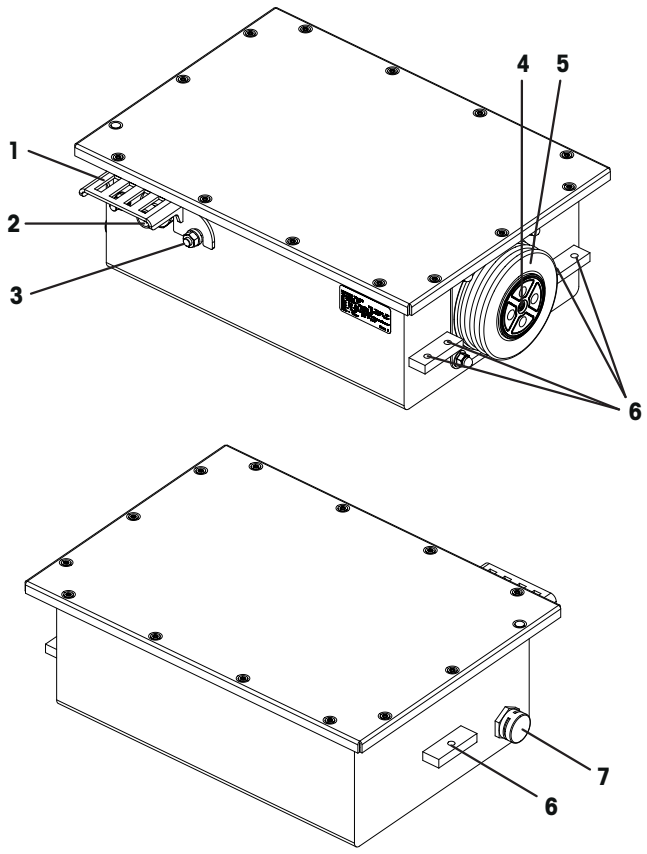
Protect the M12 flange socket and the cable connector effectively against mechanical damage by using the assembled protective bracket.

2.1 SLF6-Series Overview

Non-Hazardous Area Load Cell

Components		
	**1**	M12 male connector, 12 pin
	2	Ground connector
	3	4 x M6 holes for mounting the load receptor to a weighing platform
	4	Rubber membrane
	5	5 x M5 holes for mounting the flange to a support platform
	6	Membrane vent for pressure equalization of the membrane

Hazardous Area Load Cell (Category 2/3, Ex Zone)

Components		
	**1**	Safety bracket
	2	M12 male connector, 12 pin
	3	Ground connector
	4	4 x M6 holes for mounting the load receptor to a weighing platform
	5	Rubber membrane
	6	5 x M6 holes for mounting the flange to a support platform
	7	Membrane vent for pressure equalization of the membrane

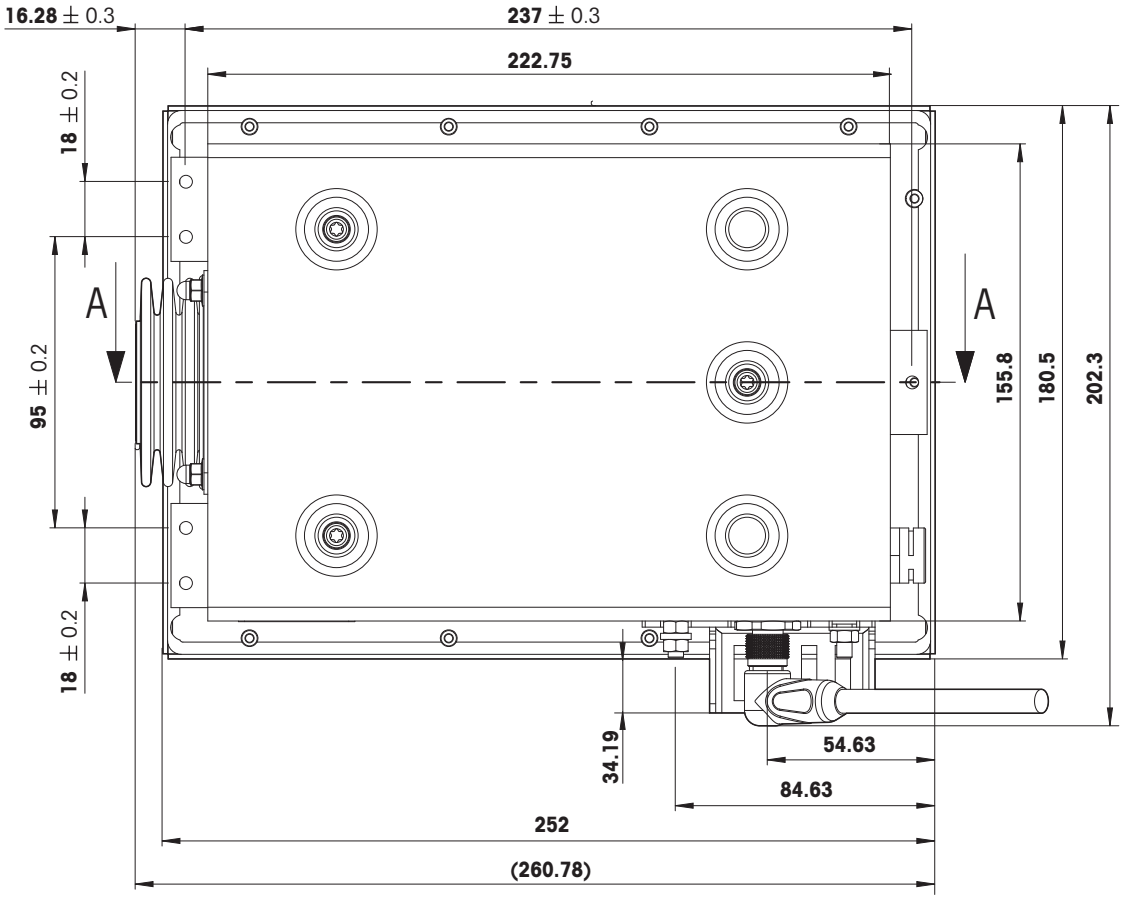
2.2 Dimensions

Compatibility of the load cell with the overall design is essential.

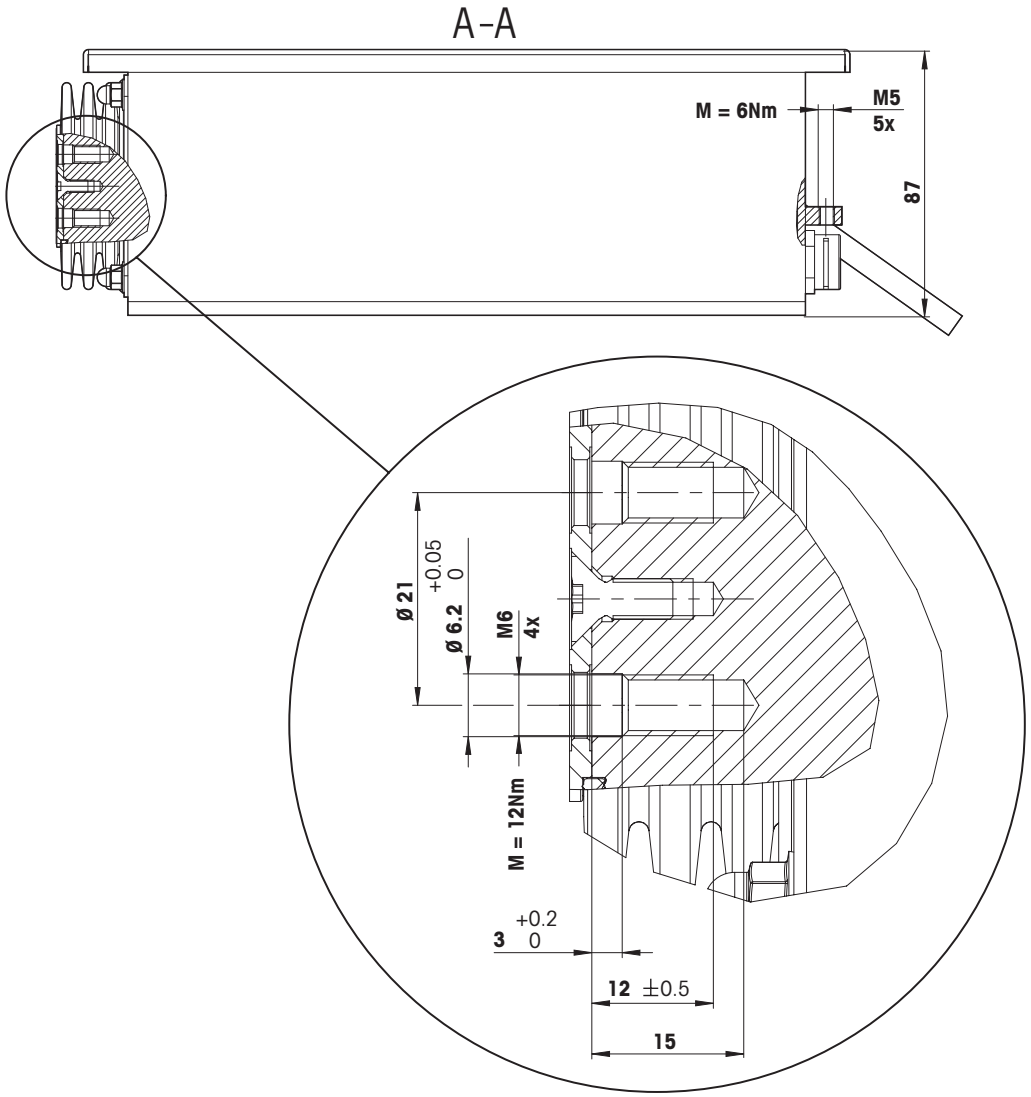
- A suitable mounting space must be provided for the load cell so that no unwanted forces may influence the load cell.
- Refer to the 2D mechanical drawings of the load cell below in order to integrate the load cell correctly into your design. All dimensions are given in mm.
- Any positive or negative overloads due to flawed mechanical integration can damage the load cell.

All dimensions in [mm]:

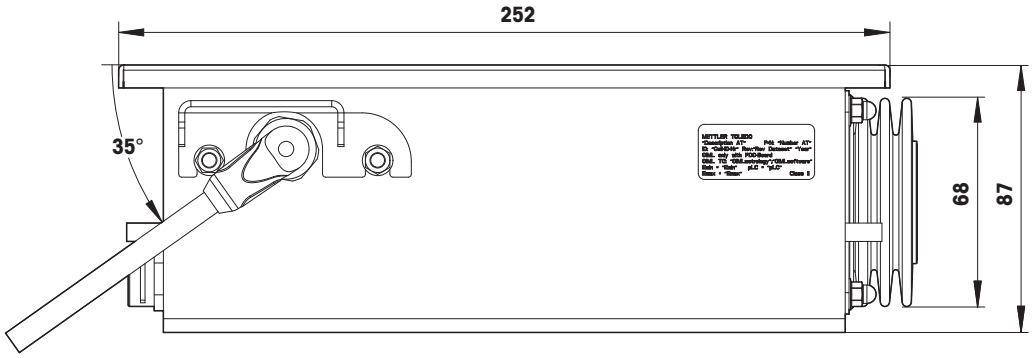
Bottom view



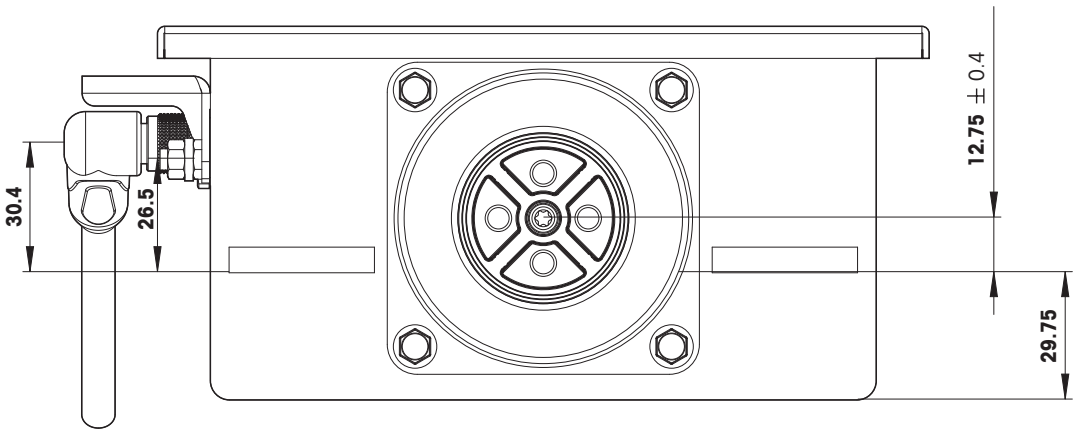
Side view (left)



Side view (right)



Front view



2.3 Support Interface (Support Surface)

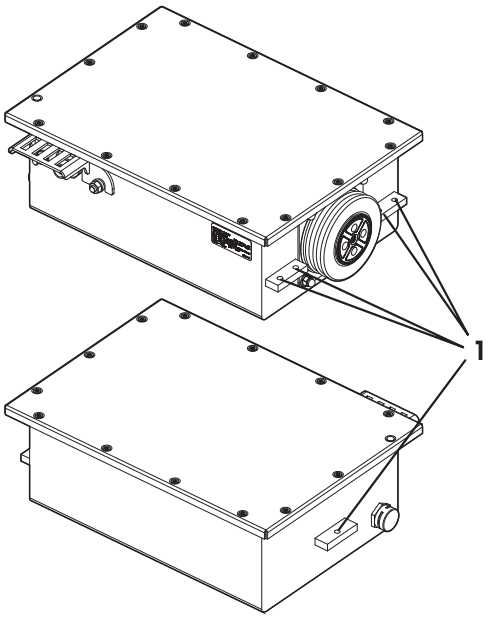
Wherever possible, provide a vibration-free support surface for the load cell that is isolated from unwanted forces in the system.

- Determine the floor properties in the location where the system is to be set up. Make sure that no building oscillations are transferred to the support surface via the floor. Use mechanical damping elements between the system and the support surface if building oscillations cannot be mechanically isolated.
- The support surface has to be stiff because a stable mechanical base is mandatory for precise and fast weighing results.
- The support surface must be absolutely level. A maximum slope of 0.5 % must not be exceeded.
- Take care that no vibrations are transmitted via the connecting cable.

Mounting the Load Cell on the Support Surface

Note the following when mounting the load cell on the support surface:

- Use the 5 mounting holes (M5 threaded holes) of the flanges (1) for mounting the flanges to a support platform.
- Do not exceed the maximum permissible tightening torque of **6 Nm**.
- Use high strength bolts only for mounting the flanges to a support platform.
- The unevenness of the mounting points must be within **0.3 %**.



2.4 Weighing Interface (Weighing Platform)

When building a custom weighing platform, the following needs to be considered in order to achieve the best weighing performance.

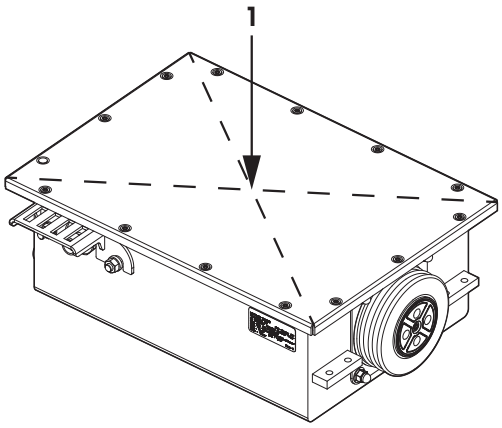
Material of the Weighing Platform

- The material has to be selected from electrically conductive material in order to prevent the accumulation of electrostatic charges.
- Electrostatic charges can exert an electrostatic force and compromise the weighing accuracy. Therefore, non-conductive materials like plastics or acrylic glass should **not** be used as weighing platform material.

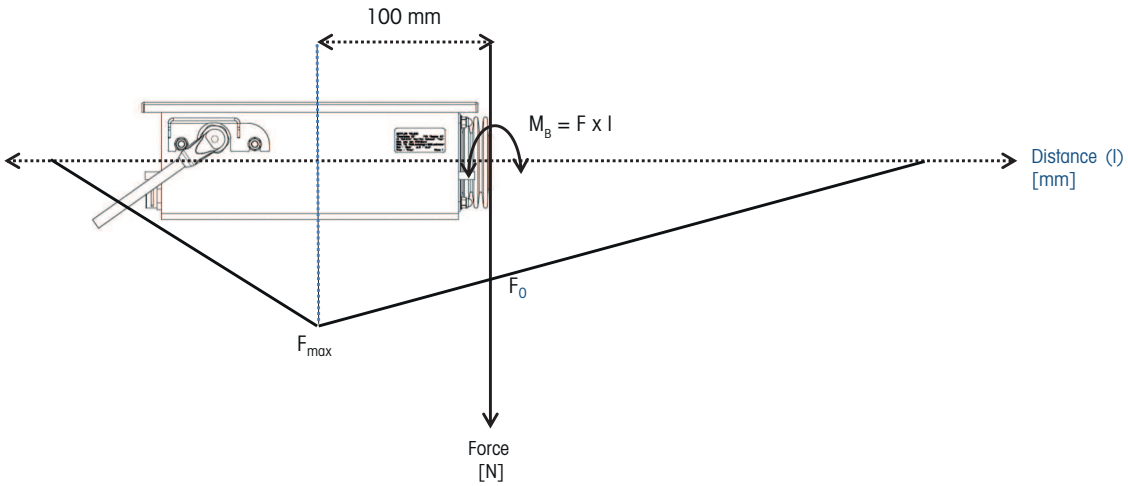
The load cell is not fully protected against eccentric load application. The maximum permissible bending moment (M_B), torsion moment (M_T) and the maximum vertical force (F_{max}) are given below:

Eccentricity

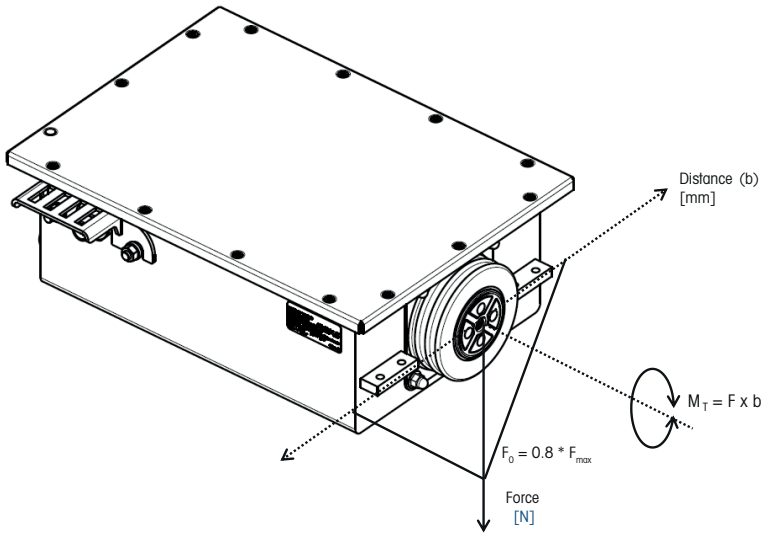
- It is recommended to design the custom weighing platform with its center of gravity pointing towards the geometric center of the load cell (1).
- An eccentric design must be implemented by considering the following limit values for bending and torsion moments.



Bending moment limit values



Torsion moment limit values



Overload Protection

SLF6-Series load cells have a built-in overload protection, which can withstand concentric, vertical and static overloads (F_{max}) up to the limits given below:

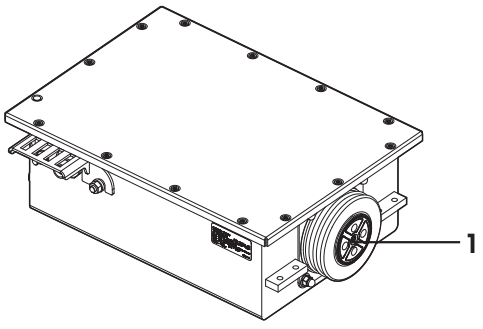
	SLF606 SLF606x SLF606xx	SLF615 SLF615x SLF615xx	SLF630 SLF630x SLF630xx	SLF660 SLF660x SLF660xx
M_B	20 Nm	50 Nm	50 Nm	80 Nm
M_T	20 Nm	50 Nm	50 Nm	80 Nm
F_{max}	200 N	500 N	500 N	800 N

Please note that these are limit values for mechanical deformation. Limit values for weighing can be found in chapter [Technical Data ▸ Page 24].

Installation

Note the following when mounting the load cell on the support surface:

- Use the 4 x M6 holes (2) for mounting the load receptor to a weighing platform.
- Do not exceed the maximum permissible tightening torque of **12 Nm**.
- Use high strength bolts only for mounting the load receptor to a weighing platform.



3 Electrical Installation

⚠ DANGER

Electrical shock and damage to the device

Use only connection cables with specially tested M12 cable connectors (e.g. 30244447 for Category 3 or 30267190 for Category 2). Using any other M12 connector will invalidate IP rating and Ex approvals!

Apply the specified tightening torque (1 to 1.2 Nm) to the female M12 cable connector.

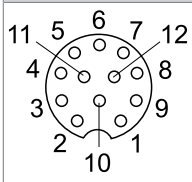
Do not separate the connection when the system is energized!

Connect the load cell with an equipotential bonding conductor to system safety ground if required by National Electrical Codes or National Installation Standards.

3.1 Pin Assignment of the M12 Connector

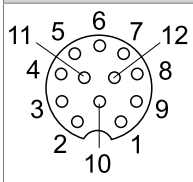
The M12 connector of the SLF6-Series load cells comprises a service interface (RS232) and a bus-capable interface (RS422/RS485).

Non-Hazardous Area Load Cell

Connector M12	Pin	Signal		Cable color *
	1	V DC in		White
	2	GND in		Brown
	3	GND in		Green
	4	TXD (RS232)		Yellow
	5	RTS (RS232)		Gray
	6	RXD (RS232)		Pink
	7	CTS (RS232)		Blue
	8	GND (RS232)		Red
	9	TX+ (RS422)	B+ (RS485)	Orange
	10	TX– (RS422)	A– (RS485)	Purple
	11	RX+ (RS422)	B+ (RS485)	Black
	12	RX– (RS422)	A– (RS485)	Violet
	Shield			Braid

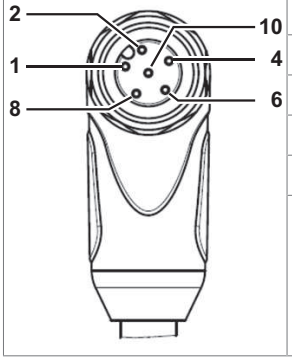
* Cable color of the METTLER TOLEDO standard cables.

Hazardous Area Load Cell (Category 3 / Division 2, Ex Zone)

Connector M12	Pin	Signal		Cable color *
	1	V DC in		White
	2	GND in		Brown
	3	GND in		Green
	4	TXD (RS232)		Yellow
	5	RTS (RS232)		Gray
	6	RXD (RS232)		Pink
	7	CTS (RS232)		Blue
	8	GND (RS232)		Red
	9	TX+ (RS422)	B+ (RS485)	Black
	10	TX– (RS422)	A– (RS485)	Gray/Pink
	11	RX+ (RS422)	B+ (RS485)	Red/Blue
	12	RX– (RS422)	A– (RS485)	Violet
	Shield			Braid

* Cable color of the METTLER TOLEDO standard cables.

Hazardous Area Load Cell (Category 2 / Division 1, Ex Zone)

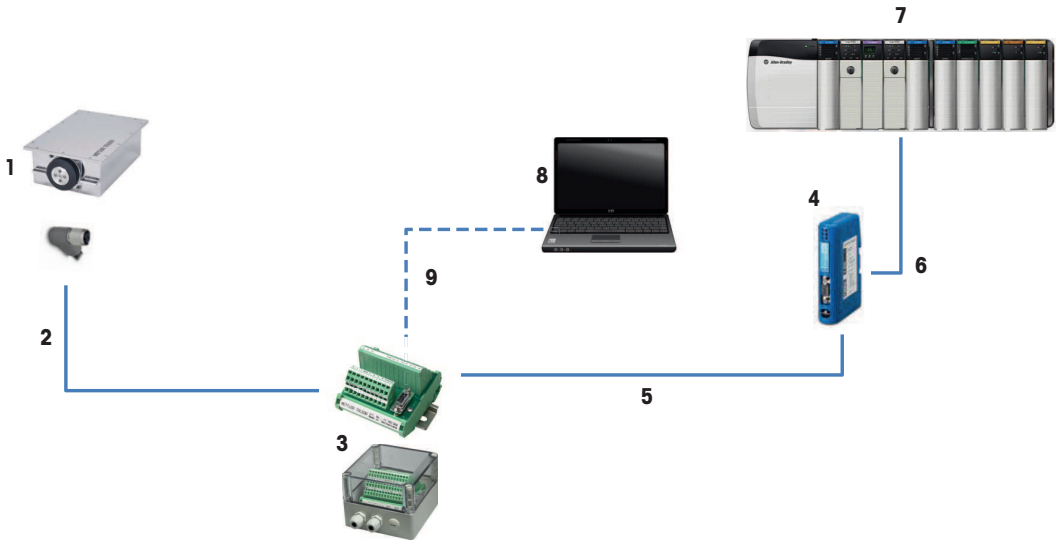
Connector M12	Pin	Signal	Cable color *
	1	U1	Pink
	2	U2	Gray
	4	TX-LC	White
	6	GND	Brown
	8	RX-LC	Green
	10	GND	Yellow

* Cable color of the METTLER TOLEDO standard cables.

3.2 Typical System Configurations

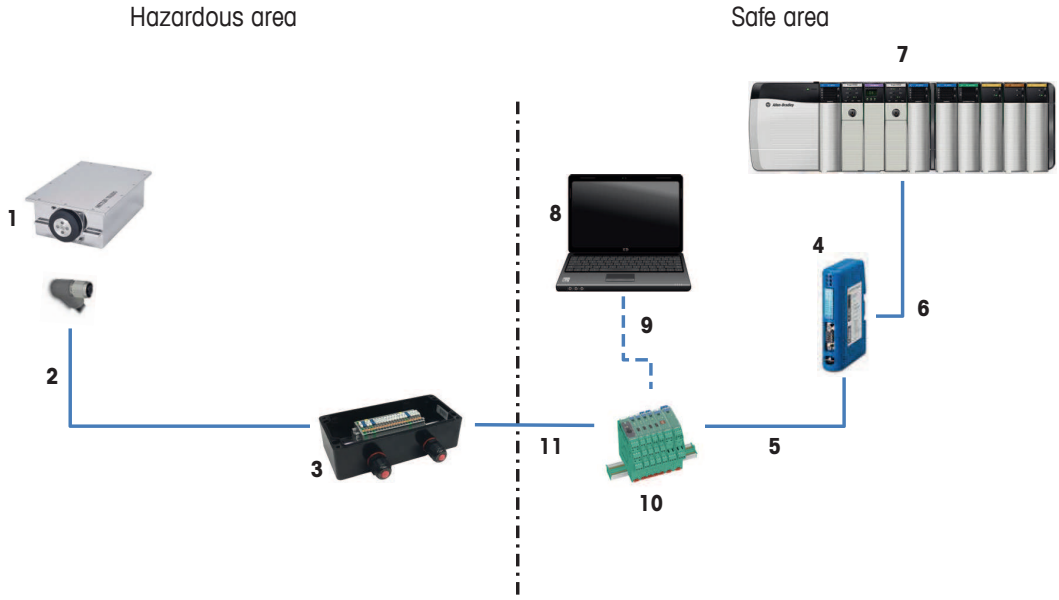
To make wiring easier, the METTLER TOLEDO ConBlock can be used.

Non-Hazardous Area Load Cell



Pos.	Item	Item number(s)
1	SLF6-Series load cell for non-hazardous areas	See order information in the Technical Data Sheet
2	Connection cable	[Accessories ▸ Page 19]
3	ConBlock or ConBlock IP66	
4	Fieldbus module	
5	Fieldbus connection cable	
6	Fieldbus cable to PLC	3rd party product
7	PLC	
8	PC (for configuration and service purpose)	
9	Standard RS232 cable	

Hazardous Area Load Cell (Category 3 / Division 2, Ex Zone)

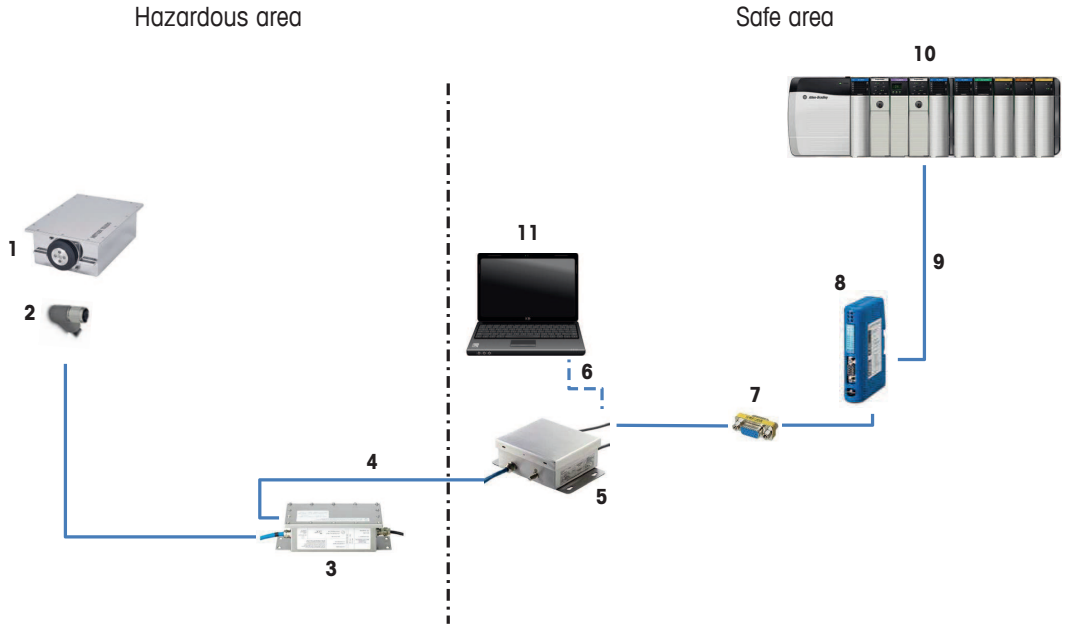


Pos.	Item	Item number(s)
1	SLF6-Series load cell for hazardous areas (Category 3 / Division 2, Ex zone)	See order information in the Technical Data Sheet
2	Connection cable	[Accessories ▸ Page 19]
3	ConBlock-X	
4	Fieldbus module	
5	Fieldbus connection cable	
6	Fieldbus cable to PLC	3rd party product
7	PLC	
8	PC (for configuration and service purpose)	
9	Standard RS232 cable	
10	Safety barrier / isolator *	
11	Data cable (RS232 or RS422/RS485)	

* Safety barrier / isolator is necessary only if limitations for the electrical parameters given in [Additional Technical Data for Category 3 ▸ Page 22] cannot be held by the system design.

If these limitations can be held by the system design, there is no need for a safety barrier / isolator.

Hazardous Area Load Cell (Category 2 / Division 1, Ex Zone)



Pos.	Item	Item number(s)
1	SLF6-Series load cell for hazardous areas (Category 2 / Division 1, Ex zone)	See order information in the Technical Data Sheet
2	Ex-i cable for Cat. 2, M12, 6 pin, 10 m	[Accessories ▸ Page 19]
3	APS768x CL/CL power supply unit	
4	Ex-i cable for Cat. 2, 4 pin, 10 m (incl. in the scope of delivery ACM200)	
5	ACM200 Interface converter for the safe area	
6	Data cable – RS232: fix connected to ACM200, 10 m – RS422/RS485: to be defined by the customer	
7	Gender changer M-to-M	3rd party product
8	Fieldbus module	[Accessories ▸ Page 19]
9	Fieldbus cable to PLC	3rd party product
10	PLC	
11	PC (for configuration and service purpose)	

3.3 Connections with the Peripheral Units

Non-Hazardous Area Load Cell

ConBlock provides the following terminals:

- System connection side: 10 terminals
- Weighing platform connection side: 2 x 10 terminals
- RS232 interface (DSub 9) for configuration and servicing

The corresponding terminals of the ConBlock are identified by the wire color and the respective pin designation:

Pin	J	D	H	T	F	K	G	E	A	O	
Color	–	–	–	–	–	–	–	–	White	Brown	Green
Signal	–	–	–	–	–	–	–	–	V DC	GND	GND

Pin	L	U	P	C	R	B	S	N	M	Shield
Color	Orange	Black	Purple	Violet	Blue	Red	Grey	Pink	Yellow	Braid
Signal	TX+	RX+	TX–	RX–	CTS	GND INT	RTS	RXD	TXD	Shield

The connection terminal strip is grouped according to the following functions: RS232 and RS422/RS485 interfaces, input voltages and digital inputs and outputs

RS232		RS422 (in)		RS422 (through)		Power	–	–	–
RXD	RTS	RX+	TX+	RX+	TX+	V DC	–	–	–
TXD	CTS	RX–	TX–	RX–	TX–	GND	–	–	–
GND INT	Shield	Shield		Shield		PE	–	–	–

The **RS422** interface is directly available via the connection terminals.

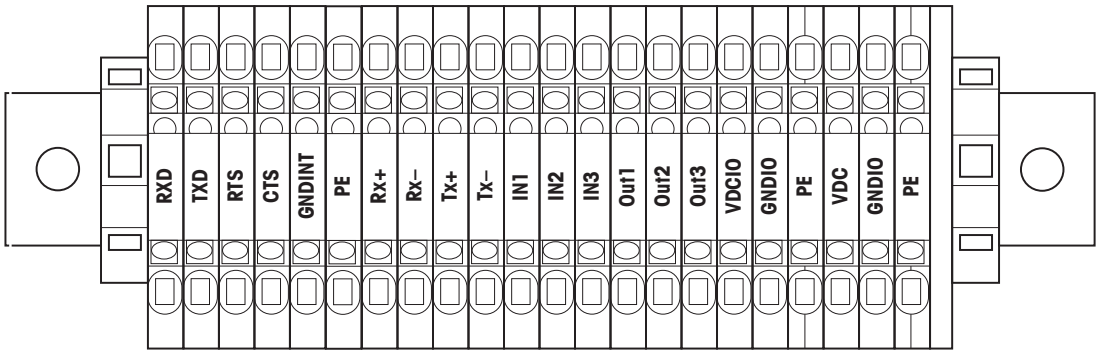
For the **RS485** configuration, the following signals must be connected:

A–: TX– and RX–

B+: TX+ and RX+

Hazardous Area Load Cell (Category 3, Ex Zone)

Drawing of the ConBlock-X:



Hazardous Area Load Cell (Category 2, Ex Zone)

For the connections between the load cell and the APS768x power supply and further peripheral units (ACM200 ...), refer to the APS768x installation manual with control drawing ME-22006397, sheet 3/5. The PBK9-/PFK9-series cat2/DIV1 weighing platforms have the SLF6 load cell integrated inside. Therefore the connections are the same.

3.4 Accessories

Order number	Designation	Description
Standard & Category 3		
30244446	Cable M12, 12 pins, open leads, 10 m	Cable for safe area
30244447	Cable M12, 12 pins, open leads, 10 m	Cable for hazardous area (Category 3)
11152000	ConBlock	Connection module
30092965	ConBlock IP66	Connection module with IP66 housing
30374066	ConBlock-X	Connection module for Category 3 IP rating: IP66 ATEX approval: II 2G Ex eb IIC T6 Gb II 2D Ex tb IIIC T85°C Db
42102809	Profibus module	Including connection cable for configuration
42102859	Profinet module	
42102810	DeviceNet module	
41102860	Ethernet IP module	
30038775	CC-Link module	
11141979	Fieldbus connection cable	1 m D-Sub 9 male, open leads
Category 2		
30267190	Cable M12, 6 pins, 10 m Ex1	Cable for hazardous area Category 2
30337109	Cable M12, 6 pins, 20 m Ex1	For connection between load cell and APS768x
22026724	APS768x power supply (120 V AC)	Power supply unit for hazardous areas
22026728	APS768x power supply (230 V AC)	
22026695	AC supply / RS232	ACM200 interface converter (CL to serial) for safe areas
22026696	AC supply / RS422, RS485	
22026692	DC supply / RS232	
22026693	DC supply / RS422, RS485	
22016791	Longer Ex-i cable, 4 pin , up to 100 m, for Category 2	For connection between APS768x and ACM200

3.5 Interface Specifications

Parameter	RS232	RS422	RS485
Interface type	EIA RS-232C/DIN 66020 (CCITT V.24/V.28)	RS422 standard (CCITT V.11, DIN 66259 Part 3)	ANSI/TIA/EIA-485-A-1998
Max. cable length	15 m	1,200 m	1,200 m
Signal level inputs	+3 V ... +25 V –3 V ... +25 V	±3 V	–7 V ... +12 V
Signal level outputs	+5 V ... +15 V (RL = 3 ... 7 kOhm) –5 V ... –15 V (RL = 3 ... 7 kOhm)	±6 V	–7 V ... +12 V
Type of operation	Full duplex	Full duplex	Half duplex
Type of transmission	Bit serial, asynchoronous		
Transmission code	ASCII string		
Baud rates	600, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400		
Bits/parity	7 Bit/Even, 7 Bit/Odd, 7 Bit/None, 8 Bit/None		
Stop bits	1 stop bit		
Handshake	Non, XON/XOFF, RTS/CTS		
Line break	<CR><LF>		

3.6 Installation Tips

Equipotential Bonding

Wiring must be carried out by an electrician authorized by the company using the module. All equipment in a facility must be equipotentially bonded in accordance with the relevant national regulations and standards. It is important to ensure such bonding is carried out correctly. Relevant information is to be found in the installation manual for each item of equipment.

This work must ensure that:

- All equipment housings are at the same potential,
- The cable shield is correctly connected,
- No equalizing current is flowing in the shields of the cables for intrinsically safe circuits,
- The neutral point for equipotential bonding is as close to the load cell as possible.

⚠ CAUTION

Electrical shock

The load cell is equipotentially bonded via its housing. The unit must be connected to the equipotential bonding system via the mounting screws of the support interface.

Fabricating Cables

If necessary, connection cable of the load cell can be fabricated to the desired length in accordance with the requirements of the customer.

⚠ DANGER

Explosion hazard

Before starting with the fabrication of the cable, ensure that the weighing system is not energized.

Customer-specific connection cable must be fabricated as follows:

1 Cut the cable to length and strip the cable ends by 80 mm.
2 Shorten the shield on both sides to 10 mm.
3 Strip the wire ends.
4 Crimp the wire end ferrules onto the wire ends with a crimping tool.
5 For Category 2 only: Push the second rear section of the grounding cable gland onto the cable.
6 Push the sleeve over wires and shield. Fold over the cable shield.
7 For Category 2 only: Push on the front section of the cable gland and screw it onto the rear section.

Power Supply

- Use a stable power supply with no voltage fluctuations.
- If voltage fluctuations cannot be prevented, use a voltage regulator to deliver a constant voltage value to the load cell.

3.7 Additional Technical Data for Category 3

Electrical parameters	**Power supply**	• Connector pins: J100, Pins 1 & 2 against 3 (GND) • U_{nom}: 12…24 VDC +20% / -30% (+8.5…+28.8 VDC) • I_{nom} (during normal weighing): ≤ 120 mA • I_{max} (during calibration): ≤ 200 mA • P_{nom} (during normal weighing): ≤ 1.2 W • P_{max} (during calibration): ≤ 1.5 W	
	RS422/485	Receiver:	• Connector pins: J100, Pins 11 & 12 • Abs. max. input voltage range: -7…+12 V @ termination resistor switched off • Abs. max. differential input voltage range: ±6 V @ termination resistor switched on • Minimum receiver input resistance: 44 kΩ @ termination resistor switched off
		Transmitter:	• Connector pins: J100, Pins 9 & 10 • Abs. max. output voltage range: -7…+12 V @ termination resistor switched off • Nominal output voltage range: 3.3 V +/-5 % (VCC on Mainboard) @ termination resistor switched off • Maximum output short-circuit current: -250…+300 mA
	RS232	Receiving (RxD, CTS):	• Connector pins: J100, Pins 6 against 8 & 7 against 8 • Connector pins: J100, Pins 6 against 8 & 7 against 8 • Minimum receiver input resistance: 3 kΩ
		Transmitter:	• Connector pins: J100, Pins 4 against 8 & 5 against 8 • Abs. max. output voltage range: ±13.2 V • Maximum output short-circuit current: ±60 mA • Short-circuit duration: continuous
Thermal parameters	Permitted ambient temperature range: –10 °C…+40 °C Maximum surface temperature: +60 °C		
Ingress protection (IP rating)	IP66, 68 (according to EN/IEC60529)		

4 Operation

4.1 Applying/Removing Weighing Object

Excessive additional forces or vibrations affecting the weighing platform as a result of applying or removing the weighing object can impair the weighing duration and the result.

- Make sure that you keep additional forces and vibrations to a minimum when applying or removing the weighing object. The load cell is protected against vertical overload, but lateral impacts (side forces) should be avoided.
- The weighing object should come to rest on the weighing platform as quickly as possible once it has been applied.
- Make sure that the object or its center of gravity is as close as possible to the geometric center of the weighing platform during weighing and that it is always applied in a consistent manner.
- For more details on eccentricity, see [Weighing Interface (Weighing Platform) ▸ Page 11].

⚠ CAUTION

Damage to the load cell due to shock (dynamic) overloads

Avoid shock (dynamic) overloads when applying the weighing object.

Do not drop the weighing object on the weighing platform.

4.2 Cleaning

Dry cleaning

- Use a damp cloth to clean the housing of the load cell.

High Pressure Water Jets

- Due to the high IP rating (IP66/IP68) of the load cell, cleaning can be done with medium-pressure water jets (< 2 bar).

Chemical Cleaning Agents

- Due to the stainless steel housing (AISI 304), the load cells are resistant against the chemicals in the most widely used chemical cleaning agents.
- The chemical resistance of the housing material has to be checked against the used chemical agent before starting with the cleaning process.

Important Note for Cleaning

- Never touch, direct compressed air against or spray the rubber membrane of the load cell.

Important Steps after Cleaning

- Wait until the load cell cools down back to the operating temperature range, and then clean the surface with a dry cloth.
- Before starting with the weight measurements, check the weighing function of the load cell.

5 Technical Data

5.1 General Data

Parameter	SLF606 SLF606x SLF606xx	SLF615 SLF615x SLF615xx	SLF630 SLF630x SLF630xx	SLF660 SLF660x SLF660xx
Maximum capacity	6 kg	15 kg	30 kg	60 kg
Preload range	1.08 kg	2.7 kg	5.4 kg	10.8 kg
Readability	0.01 g	0.02 g	0.05 g	0.1 g
Max. permissible load (central, vertically downward)	20 kg	50 kg	50 kg	80 kg
External power supply	• Standard & Category 3: 12 to 24 V DC nominal (10 to 29 V DC) • Category 2: Via APS768x, 120 / 230 V AC, 160 mA			
Electrical connection	• Standard & Category 3: M12 connector,12 pins • Category 2: M12 connector, 6 pins			
Data interfaces *	• RS232, RS422/RS485 • MT-SICS command set • Fieldbus interfaces available as accessories (Profibus DP, DeviceNet, Ethernet/IP, Profinet IO and CC-Link)			
IP protection rating	IP66/IP68			
Interface protocol	MT-SICS			
Update rate	Up to 92 Hz			
Warm-up time	At least 30 minutes after power-up			
Operating temperature range	• Non-hazardous area load cell: –20 °C to +60 °C • Hazardous area load cell (Category 2/3, Ex zone): –10 °C to +40 °C			
Relative air humidity	20 % to 80 %, non-condensing			
Housing material	Stainless steel (AISI 304), brushed, e-polished			

Hazardous area	**Approval type**	**Approval**
Category 2	ATEX	II 2 G Ex ib IIC T4 Gb II 2 D Ex ib IIIC T55°C Db –10 °C ≤ T_{amb} ≤ +40 °C
	IECEx	Ex ib IIC T4 Gb Ex ib IIIC T55°C Db –10 °C ≤ T_{amb} ≤ +40 °C
Category 3	ATEX	II 3G Ex nA IIC T6 Gc II 3D Ex tc IIIC T60°C Dc –10 °C ≤ Ta ≤ +40 °C
	IECEx	Ex nA IIC T6 Gc Ex tc IIIC T60°C Dc –10°C ≤ Ta ≤ +40°C

* The load cell can be operated with either RS422 or RS485 interface. The interface can be selected via software command (MT-SICS).
For Category 2, either an RS232 or RS422/RS485 interface is available, based on the ordered option. For Category 2 it is not possible to operate both interfaces in parallel.

6 Appendix

6.1 Documentation

All product-related documentation can be downloaded from the webpage of METTLER TOLEDO at the following link:

Documentation SLF6 ▶ http://www.mt.com/ind-SLF6-support

The following documents are available:

- Technical Data Sheet
- User Manual
- MT-SICS Reference Manual
- Operating Instructions / Fieldbus Modules

6.2 Disposal

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

To protect your product's future:
METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

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