1.1 Analytical instruments

Our analytical instruments include conductivity transmitters, that are highly accurate, PEEK and stainless steel devices that measure the ability of process liquids to carry electrical currents. Ideal for use in the brewery, food, beverage, and biopharm industries for example to measure separation in a tank or media in the piping of a CIP system.

Product leaflets
Conductivity Transmitter 1.1.5

Price lists
Conductivity Transmitter 1.1.7

Alfa Laval Conductivity Transmitter

The conductivity sensor for hygienic use

Application

- CIP: control concentrate dosing of chemicals, such as acid or caustic substances.
- CIP to control the CIP process steps efficiantly between cleaning with detergents and water. The fast temperature compensation and the fast and accurate communication to the PLC helps to optimize the CIP process and save water, product and chemicals.
- Product safety control to detect any contamination in the final product.

Features

The Alfa Laval conductivity transmitter is designed to fulfill the demands of conductivity transmitters in hygienic production. The main features are:

- Wetted parts in PEEK
- Compact, food compatible, hygienic design
- Process temperature -20 to 140°C
- 4 configurable measuring ranges
- Adjustable, active and very fast temperature compensation
- Insensitive to polarization, adhesion and solids
- Built-in graphical display and touch screen
- Compatible with Alfa Laval In-line instrumentation system
- 4-20 mA output for conductivity and temperature

TECHNICAL DATA

Conductivity

Messuring range: . . . . . 50 µS/cm to 1 S/cm
Accuracy:
0-500 µS/cm . . . . . ≤ 1.5 %
0-1/0-500 µS/cm . . . . . ≤ 1.0 %
0-1 µS/cm . . . . . ≤ 1.5 %

Temperature

Measuring range: . . . . . -20 to 140°C (150°C up to 1 hour)
Resolution: . . . . . 0.1°C
Accuracy: . . . . . < 0.4 %
Repeateability: . . . . . 0.2% of FS
Protection class: IP67
Max media pressure: . . . . . 10 bar

Electrical data

Power supply: . . . . . 15-35 Vdc
Power consumption max: . . . . 180 mA
Output conductivity: . . . . . 4-20 mA, max. load 500 Ohm,
Output temperature: . . . . . 4-20 mA, max. load 500 Ohm,
Connection: . . . . . M12 plug or M16 cable gland
Response time: . . . . . <3 ms

Ambient temperature

Without display . . . . . -40 - 85°C
With display . . . . . -30 - 80°C

CE

PHYSICAL DATA

Sensor lenght (L): . . . . . Short or Long
Housing (ø): . . . . . 80 mm

Materials

Wetted parts (Short): . . . . . PEEK
Wetted parts (Long): . . . . . PEEK
Fieldhouse: . . . . . AISI 304
Surface finish: . . . . . Ra < 0.8 µm

Operating temperature

Wetted parts: . . . . . -20 to 140°C (150°C < 1 hour)
Field house: . . . . . -20 to 80°C

Weight

Conductivity sensor: . . . . . Approx. 1500 gr.

Process connection

- Clamp DN38 (ISO2852)/clamp DN40 (DIN32676)
- Clamp DN50 (ISO2852)/clamp DN51 (DIN32676)
- G1" (ISO228)
- DN32 (DIN11851)
- DN40 (DIN11851)
- DN50 (DIN11851)

Certificates

-3.1 (Option) (FDA conformity declaration for Peek materials included)

-Calibration certificate (Option)

Conductivity resolution

Range		Resolution
0 to 0.5	mS/cm	0.001 mS/cm
0 to 1	mS/cm	0.001 mS/cm
0 to 2	mS/cm	0.010 mS/cm
0 to 3	mS/cm	0.010 mS/cm
0 to 5	mS/cm	0.010 mS/cm
0 to 10	mS/cm	0.100 mS/cm
0 to 20	mS/cm	0.100 mS/cm
0 to 30	mS/cm	0.100 mS/cm
0 to 50	mS/cm	0.100 mS/cm
0 to 100	mS/cm	1.000 mS/cm
0 to 200	mS/cm	1.000 mS/cm
0 to 300	mS/cm	1.000 mS/cm
0 to 500	mS/cm	1.000 mS/cm
0 to 999	mS/cm	1.000 mS/cm

Standard range

The Alfa Laval conductivity transmitter is a transmitter for inductive measurement of conductivity. Precise, configurable temperature compensation and remote setting of the four pre-configured measuring ranges make the Alfa Laval conductivity transmitter ideal for a wide range of conductivity measurements. The integrated graphical display and touch screen offers the user instant local supervision, which is an advantage e.g. in manually operated cleaning systems.

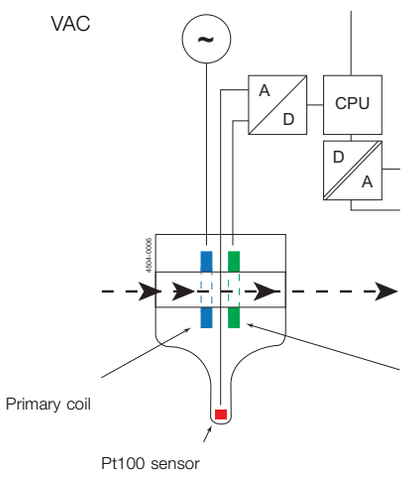
A high operating temperature limit is an advantage in SIP systems. The optimized flow geometry and the fast response time make the Alfa Laval conductivity sensor particularly suitable in applications for separation of medias and measurements of cleaning agents in CIP equipment. The accuracy is excellent even at very low conductivity and flow rates.

Working principle

Inductive conductivity measurement is based on the principle of a transformer. The primary side of the transformer is controlled by an AC voltage generator. The liquid flowing through the channel bore in the measuring head and forms a conductor loop, which links between the primary side of the transformer and the secondary side of the transformer .

The output current is proportional with the conductivity of the media. Signal conditioning, amplification and conversion provide a 4-20 mA signal output from the galvanically isolated D/A converter.

The fast-response temperature sensor in the tip compensates for the temperature in the liquid resulting in maximum accuracy and reliability.



Range setting input R1 and R2

Conductivity/Concentration
4...20 mA Output

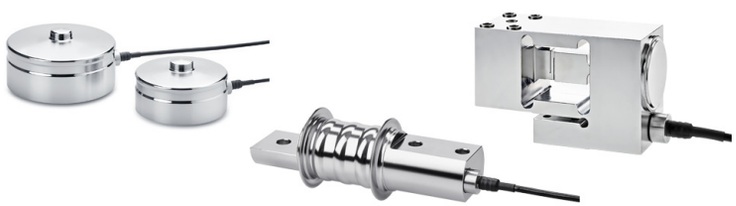
4...20 mA Output
Temperature

Media

Secondary coil

1.2 Weighing systems

The Alfa Laval weighing system offers a high precision and non-impact measurement of weight. The shockproof digital load cells are uniquly unaffected by overloads, side loads, shocks and welding voltages. The weighing system is ideal for mixing, dosing, level or batch measurement. Straightforward mechanical installation of the load cells can be done without expensive and complicated mounting kits and overload protection device.



Product leaflets
Non ATEX weighing systems
Weighing Systems UltraPure with compression load cells 1.2.13
Weighing Systems UltraPure with digital beam load cell 1.2.20
Weighing Systems UltraPure with single point load cell 1.2.26

Product leaflets
ATEX weighing systems
ATEX Weighing Systems UltraPure with compression load cells 1.2.32
ATEX Weighing Systems UltraPure with beam load cell 1.2.39

Price lists
Non ATEX weighing systems
Weighing Systems UltraPure with compression load cells 1.2.45
Weighing Systems UltraPure with digital beam load cells 1.2.51
Weighing Systems UltraPure with single point load cells 1.2.55

Price lists
ATEX weighing systems
ATEX Weighing Systems UltraPure with compression load cells 1.2.56
ATEX Weighing Systems UltraPure with digital beam load cells 1.2.62

Alfa Laval Weighing Systems UltraPure with compression load cells

Hygienic and reliable weighing solutions for your process

Application

The hygienic UltraPure load cells offer high precision and reliable weight measurement, ideal for mixing, dosing, batching or gravimetric level measurement for process tanks and vessels.

Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.025% of full scale and high resolution
- Load cells are produced in stainless steel and hermetically sealed to IP68
- EHEDG compliant hygienic design for sanitary installation
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation where level measurement, mixing, filling, dosing or batching is required.
The weighing solution is as standard delivered in four different accuracy ranges: 2%, 0.10%, 0.05% and 0.025% with a total measuring range from 0 to 100000 kg.
Each weighing system consists of 1 to 4 load cells and a weighing module. The weighing modules are available with both analog 4-20 mA output, and fieldbus interface (PROFINET, Profibus DP or EtherNet IP).
For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).

Alfa Laval offers an additional range of tank legs that fits to the load cells ensuring a robust and reliable connection between the tank and the load cells.

Capacitive measurement principle (patented)

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

Technical Data

Measuring range: . . . . . from 0 to 100000 kg depending on system selection.
Accuracy: 2%, 0.10%, 0.05%, 0.025%
Compensated temperature range: . . . -10 to 50 °C

Overload and sideload :

300% at 300 kg capacity systems and 100 % at 32000t capacity systems

Power:

Power supply: . . . . . 24 VDC ±10%, min. 2A

Mechanical data

Weight:

Load cell:

CL type . . . . . 1.8 kg
CM type . . . . . 3.6 kg
Weighing modules: . . . . . approx. 0.5 kg

Materials:

Load cells: . . . . . AISI 316 and 17-4 PH

Operating temperature range:

Load cells: . . . . . -50 to 70 °C (100 °C with teflon cable)
Weighing modules: . . . . . -10 to 50 °C

Protection class:

Load cells: IP68
Weighing modules: IP20

Certificates

CE marked
3.1B certificate
Calibration certificate (Option)

Specifications

Parameter	Unit	0.1%	0.05%	0.025%*
Rated capacity (Emax) per load cell	kg	CL: 50, 100, 150, 250, 500, 1000, 1500, 2000, 3000, 4000, 5000 CM: 6000, 8000, 10000, 15000, 20000, 25000		
Safe overload limit	% of E^{max}	200 to 500		
Safe sideload limit	% of E^{max}	300 to 1000		
Minimum dead load	% of E^{max}	0		
Accuracy	% of E^{max}	0.100	0.050	0.025
Repeatability	% of E^{max}	0.030	0.020	0.012
Hysteresis	% of E^{max}	0.055	0.040	0.020
Creep 30 min.	% of E^{max}	0.060	0.040	0.025
Temperature effect on zero	%/10 °C	0.060	0.045	0.030
Temperature effect on sensitivity	%/10 °C	0.060	0.045	0.030
Deflection at Emax	mm	max. 0.2		
Mesuring rate	Hz	500		
Supply	Vdc	24 Vdc ±10%		
Internal resolution	Bit	24		
Maximum cable length	m	100		
Output options		PROFINET, Profibus DP, DeviceNet, EtherNet/IP, RS485, 4-20 mA		
2% accuracy system includes active and dummy load cells				

* 0.025% accuracy is available up to 5000 kg.

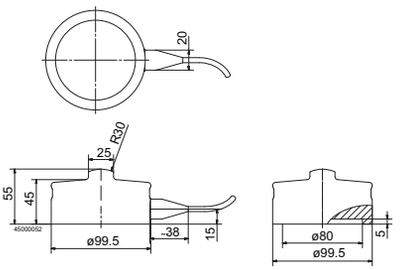
Options

Output:
4-20mA
PROFINET
EtherNet IP
Profibus DP
RS485

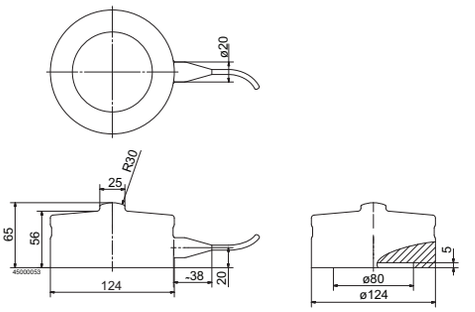
Local weighing display:
Alfa Laval weighing terminal

Load cell cable:
6m standard coaxial RG58 with BNC connector (option: 10, 20 or 50m)

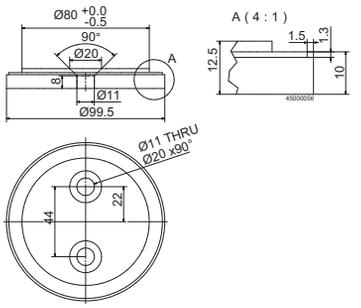
Dimensional drawings



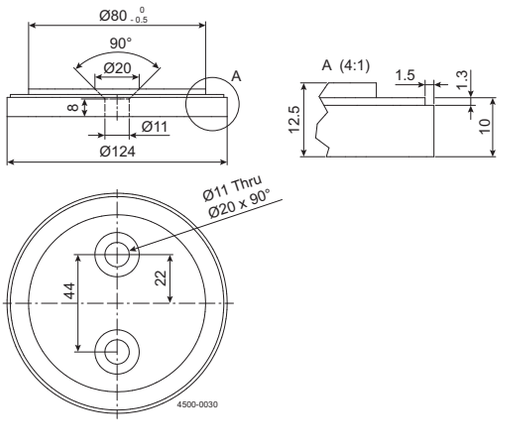
CL load cell (50-5000 kg)



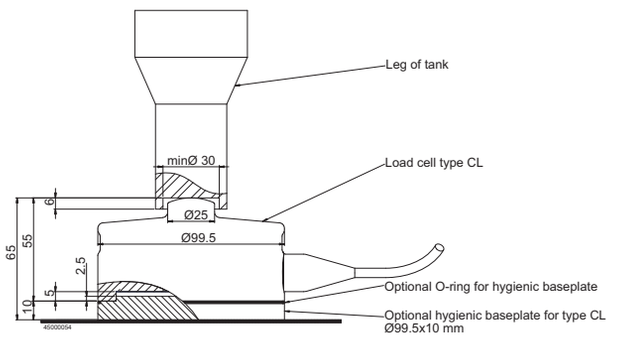
CM load cell (6000-25000kg)



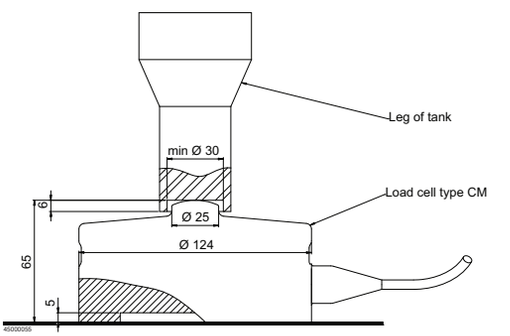
Hygienic Baseplate for CL load cell



Hygienic baseplate for CM load cell



CL load cell installation with tank leg



CM load cell installation with tank leg

Accessories
Tank legs to compression load cells

9614460901 tank feet M 30 for load cells below 11000 kg with short spindel

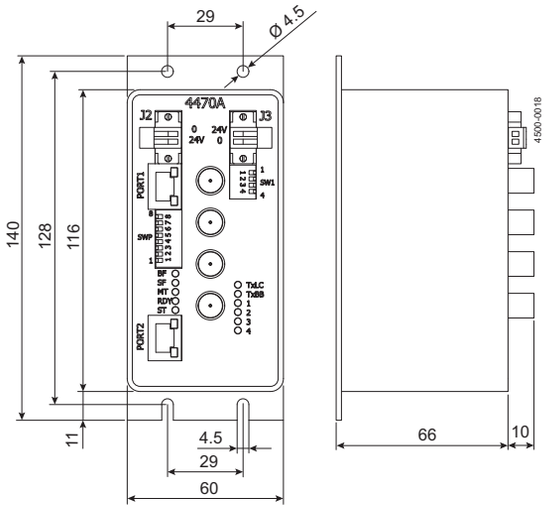
9614460905 tank feet M36 for load cells below 16000 kg with short spindel

9614460902 tank feet M42 for load cells below 21500 kg with short spindel

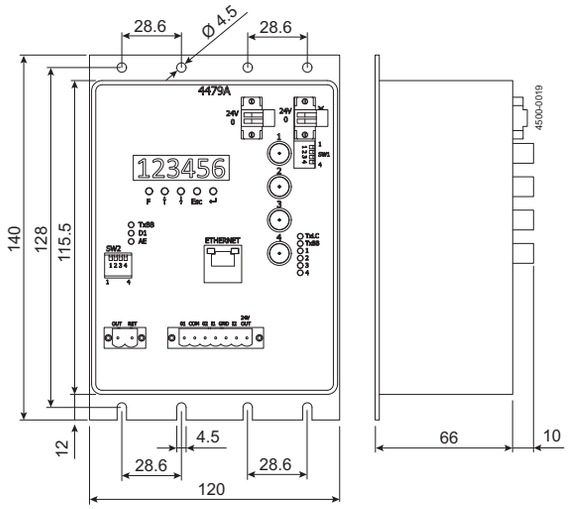
9614460903 tank feet M56 for load cells below 37000 kg with short spindel

Layout and electrical connection schematic of weighing modules:

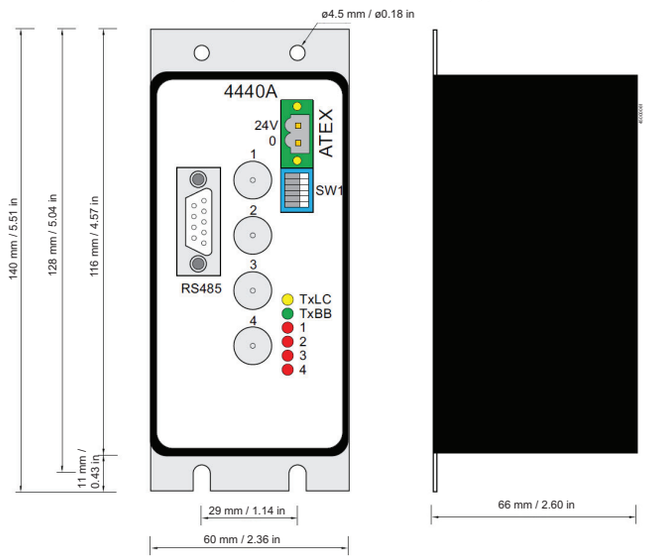
Profinet weighing module for 4 load cells
(external dimensions is the same for Profibus DP and Ethernet IP



4-20 mA output weighing module for 4 load cells

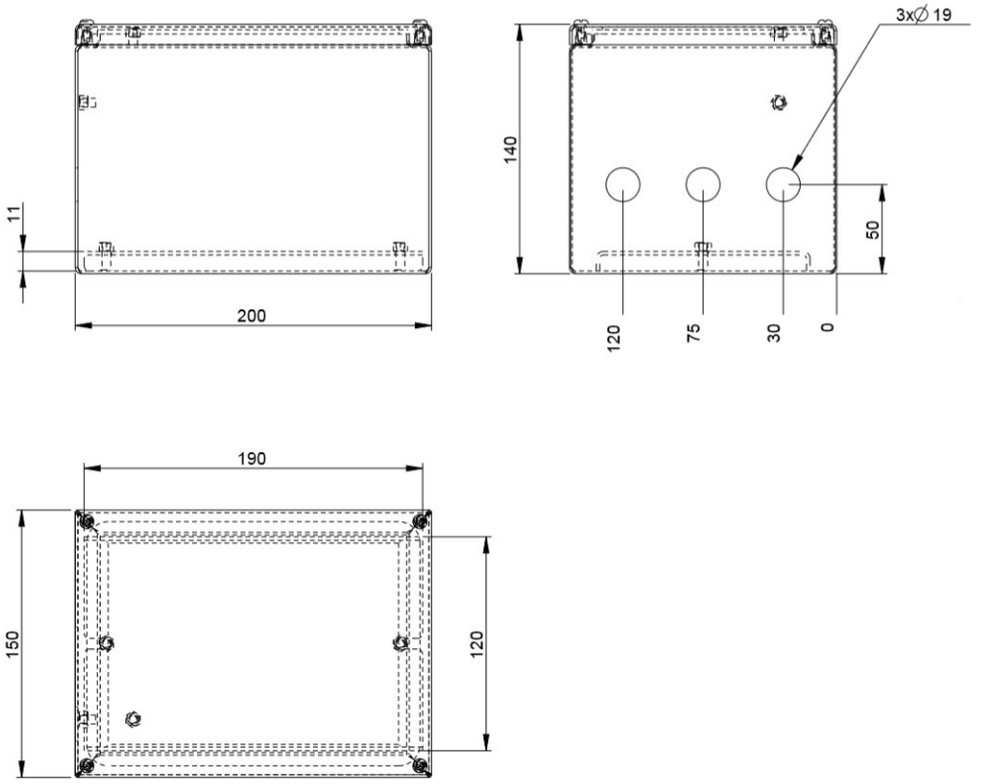


RS485 interface module (when ordered with display)

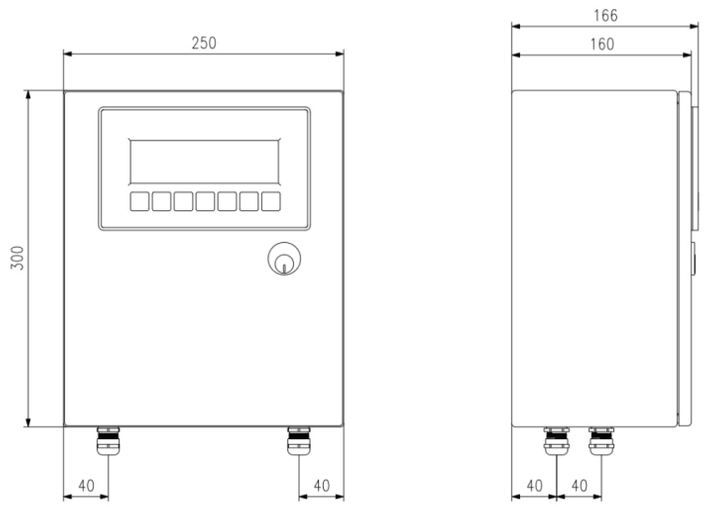


Stainless steel enclosure

Enclosure when ordered without display.



Enclosure with display



Selection guide

When configuring a weighing system, you need the following information:

- Number of tank legs or supporting points
- Total weight of tank incl. product in kg
- Required output and/or local display
- Required accuracy for the application (e.g. dosing, mixing, level measurement etc.)

With this information, you are able to find the configuration you need in the ordering leaflet or in the online configuration tool.

Step 1:
Calculate the total weight of the tank including the product in kg and round up to the nearest standard load cell system.

Step 2:
Decide on accuracy required by the application

- 2% accuracy systems are suitable for level measurement applications
- 0.10% accuracy systems are suitable for mixing applications
- 0.05% accuracy systems are suitable for dosing applications
- 0.025% accuracy systems are suitable for very precise dosing and batching applications

Step 3:
Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP

Step 4:
Decide if you want the display and/or weighing modules supplied mounted in a stainless steel enclosure

You have the following options:

- Without stainless steel enclosure
- Weighing module mounted in stainless steel enclosure (without display)
- Display mounted in stainless steel enclosure

Step 5:
Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

Step 6:
Decide on if you need calibration certificate

Theoretical statistical weighing system accuracy

Item nr	System range 3 legs	System range 4 legs	Number of loadcells and lc-type in system	System type 0.10%	System type 0.05%	System type 0.025%
TE67WC0xxxxxxxx	0- 300 kg.	.	(3*100 kg lc)	± 0.17 kg.	± 0.09 kg.	± 0.04 kg.
TE67WC1xxxxxxxx		0- 400 kg.	(4*100 kg lc)	± 0.20 kg.	± 0.10 kg.	± 0.05 kg.
TE67WC4xxxxxxxx	0- 750 kg.		(3*250 kg lc)	± 0.43 kg.	± 0.22 kg.	± 0.11 kg.
TE67WC5xxxxxxxx		0- 1000 kg.	(4*250 kg lc)	± 0.50 kg.	± 0.25 kg.	± 0.13 kg.
TE67WC6xxxxxxxx	0- 1500 kg.		(3*500 kg lc)	± 0.87 kg.	± 0.43 kg.	± 0.22 kg.
TE67WC7xxxxxxxx		0- 2000 kg.	(4*500 kg lc)	± 1.00 kg.	± 0.50 kg.	± 0.25 kg.
TE67WC8xxxxxxxx	0- 3000 kg.		(3*1 000 kg lc)	± 1.73 kg.	± 0.87 kg.	± 0.43 kg.
TE67WC9xxxxxxxx		0- 4000 kg.	(4*1 000 kg lc)	± 2.00 kg.	± 1.00 kg.	± 0.50 kg.
TE67WCBxxxxxxxx	0- 6000 kg.		(3*2000 kg lc)	± 3.46 kg.	± 1.73 kg.	± 0.87 kg.
TE67WCCxxxxxxxx		0- 8000 kg.	(4*2000 kg lc)	± 4.00 kg.	± 2.00 kg.	± 1.00 kg.
TE67WCDxxxxxxxx	0- 9000 kg.		(3*3000 kg lc)	± 5.20 kg.	± 2.60 kg.	± 1.30 kg.
TE67WCExxxxxxxx		0- 12000 kg.	(4*3000 kg lc)	± 6.00 kg.	± 3.00 kg.	± 1.50 kg.
TE67WCExxxxxxxx	0- 12000 kg.		(3*4000 kg lc)	± 6.93 kg.	± 3.46 kg.	± 1.73 kg.
TE67WCGxxxxxxxx		0- 16000 kg.	(4*4000 kg lc)	± 8.00 kg.	± 4.00 kg.	± 2.00 kg.
TE67WCFxxxxxxxx	0- 15000 kg.		(3*5000 kg lc)	± 8.66 kg.	± 4.33 kg.	± 2.17 kg.
TE67WCIxxxxxxxx		0- 20000 kg.	(4*5000 kg lc)	± 10.00 kg.	± 5.00 kg.	± 2.50 kg.
TE67WCHxxxxxxxx	0- 18000 kg.		(3*6000 kg lc)	± 10.39 kg.	± 5.20 kg.	N/A
TE67WCJxxxxxxx		0- 24000 kg.	(4*5000 kg lc)	± 12.00 kg.	± 6.00 kg.	N/A
TE67WCJxxxxxxx	0- 24000 kg.		(3*8000 kg lc)	± 13.86 kg.	± 6.93 kg.	N/A
TE67WCKxxxxxxx		0- 32000 kg.	(4*8000 kg lc)	± 16.00 kg.	± 8.00 kg.	N/A
TE67WCNxxxxxxx	0- 30000 kg.		(3*10000 kg lc)	± 17.32 kg.	± 8.66 kg.	N/A
TE67WCOxxxxxxx		0- 40000 kg.	(4*10000 kg lc)	± 20.00 kg.	± 10.00 kg.	N/A
TE67WCPxxxxxxx	0- 45000 kg.		(3*15000 kg lc)	± 25.98 kg.	± 12.99 kg.	N/A
TE67WCIxxxxxxx		0- 60000 kg.	(4*15000 kg lc)	± 30.00 kg.	± 15.00 kg.	N/A
TE67WCIxxxxxxx	0- 60000 kg.		(3*20000 kg lc)	± 34.64 kg.	± 17.32 kg.	N/A
TE67WCSxxxxxxx		0- 80000 kg.	(4*20000 kg lc)	± 40.00 kg.	± 20.00 kg.	N/A
TE67WCTxxxxxxx	0- 75000 kg.		(3*25000 kg lc)	± 43.30 kg.	± 21 .65 kg.	N/A
TE67WCUxxxxxxx		0- 100000 kg.	(4*25000 kg lc)	± 50.00 kg.	± 25.00 kg.	N/A

Alfa Laval Weighing Systems UltraPure with digital beam load cell

Reliable and accurate digital beam load cells for process weighing

Application

The Alfa Laval digital beam load cells offer reliable and accurate weighing. The main applications are belt scales, platform scales, small vessels, filling machines and process equipment.

Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.025% of full scale
- Load cells are produced in stainless steel and hermetically sealed to IP68
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation, where level measurement, mixing, filling, dosing or batching is required. The weighing solution is as standard delivered in three different accuracy ranges: 0.10%, 0.05% and 0.025% with a total measuring range from 0 to 4000 kg. Each weighing system consists of 1 to 4 load cells and a weighing module. The weighing modules are available with both analog 4-20 mA output and fieldbus interface (PROFINET, Profibus DP or EtherNet IP). For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).

Capacitive measurement principle (patented)

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive and complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

1.2

Technical data

Stainless steel enclsure IP68
Stainless steel enclosure with panel mounted display IP64
Measuring range: . . . . . from 0 to 4000 kg depending on system selection.
Accuracy: 0.10%, 0.05%, 0.025%
Compensated temperature range: . . . -10 to 50 °C
Overload and sideload : . . . . . 300% overload tolerance
Power supply: . . . . . 24 VDC, ±10% min. 2A

Certificates

- CE marked
- Calibration certificate (option)
- 3.1B certificate (option)

Mechanical data

Weight:
BL Load cell: . . . . . 2.3 kg
Weighing module: . . . . . approx. 0.5kg

Materials:
Load cells: . . . . . AISI 316 and 17-4 PH
Mounting kit: . . . . . AISI 304 / AISI 316 (welding cylinder)

Operating temperature range:
Load cells: . . . . . -50 to 70 (100 with teflon cable) °C
Weighing modules: . . . . . -10 to 50 °C
Cylindrical vibration damper . . . . . Rubber AD 4030 (Black)

Protection class:
Load cells: IP68
Weighing modules: IP20

Specification

Parameter	Unit	0.10%	0.05%	0.025%
Rated capacity (Emax) per load cell	kg	10, 20, 50, 100, 150, 250, 500, 1000		
Safe overload limit	% of E^{max}	300 to 1000		
Safe sideload limit	% of E^{max}	500 to 2000		
Minimum dead load	% of E^{max}	0		
Accuracy	% of E^{max}	0.100	0.050	0.025
Repeatability	% of E^{max}	0.018	0.015	0.010
Hysteresis	% of E^{max}	0.033	0.020	0.017
Creep 30 min.	% of E^{max}	0.035	0.025	0.017
Temperature effect on zero	%/10 °C	0.040	0.030	0.016
Temperature effect on sensitivity	%/10 °C	0.040	0.030	0.016
Deflection at Emax	mm	max. 0.10		
Mesuring rate	Hz	up to 1000		
Internal resolution	Bit	24		
Maximum cable length	m	100		

Options

OUTPUT:
4-20mA
PROFINET
EtherNet IP
Profibus DP
RS485

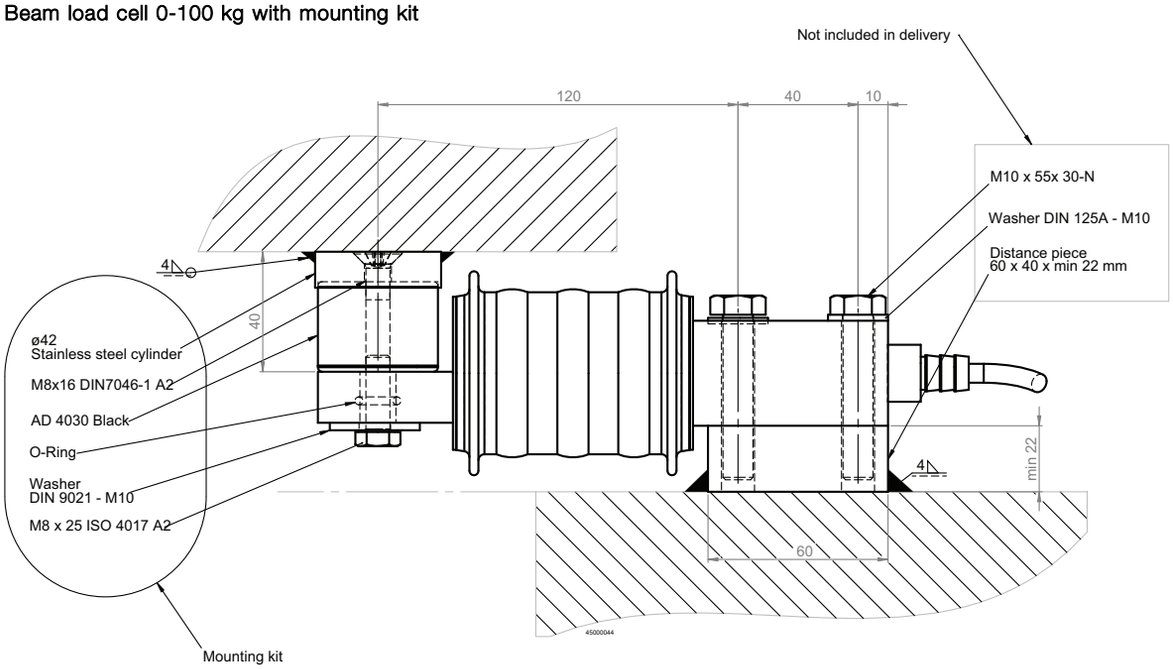
Local weighing display:
Alfa Laval weighing terminal (options)

Load cell cable:
6m standard coaxial RG58 with BNC connector (option: 10, 20 or 50m)

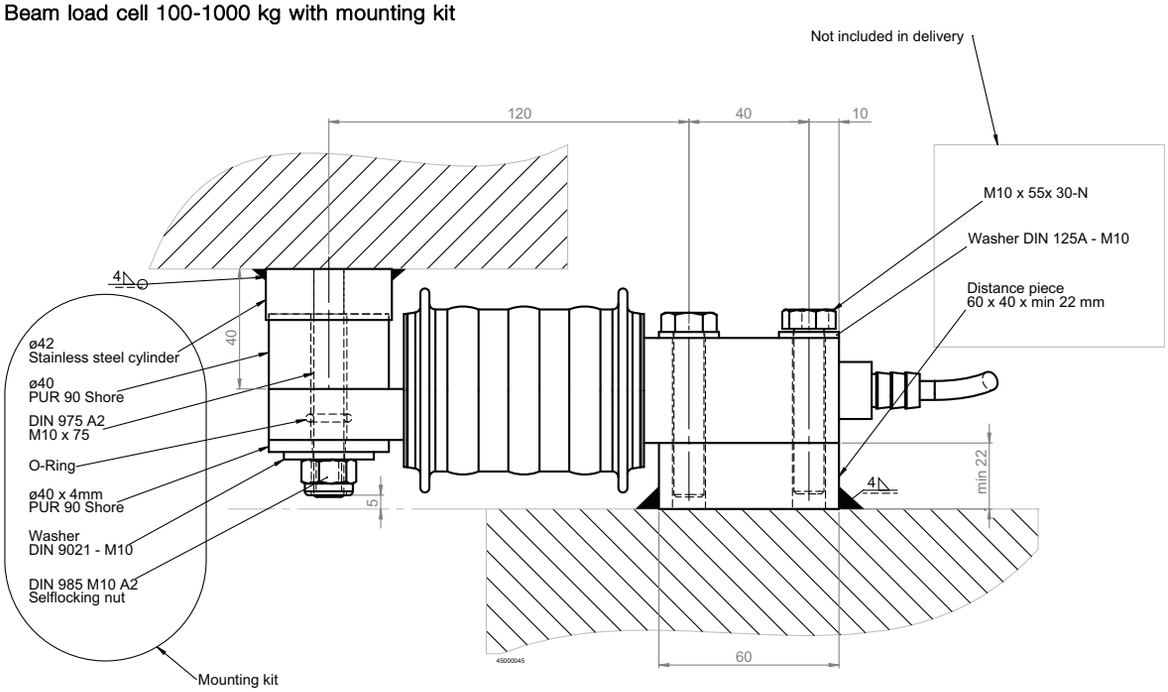
Mounting:
Mounting kit for BL beam load cell

Dimensional drawings

Beam load cell 0-100 kg with mounting kit



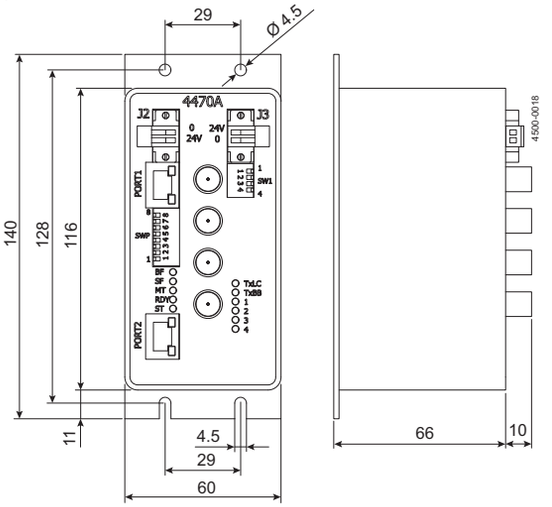
Beam load cell 100-1000 kg with mounting kit



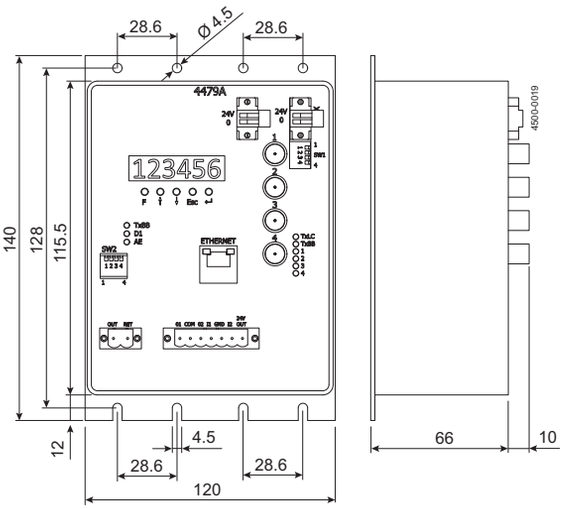
Layout and electrical connection schematic of weighing modules:

Profinet weighing module for 4 load cells

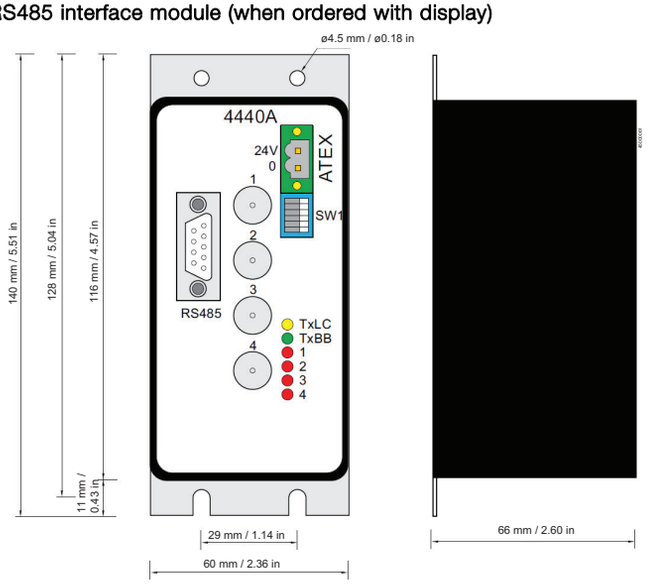
(external dimensions is the same for Profibus DP and Ethernet IP



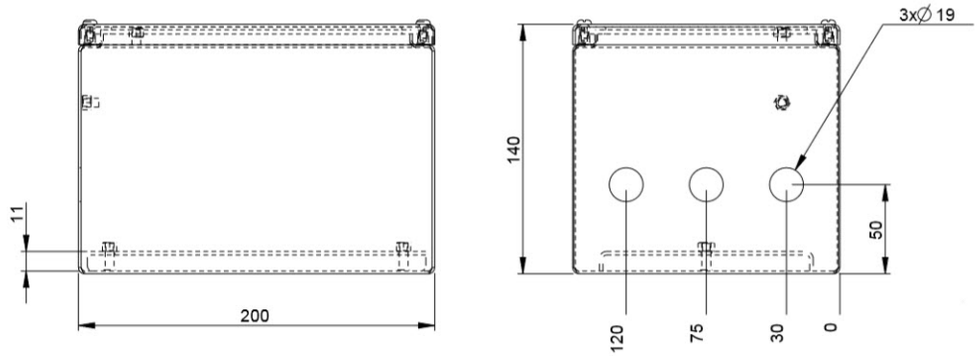
4-20 mA output weighing module for 4 load cells

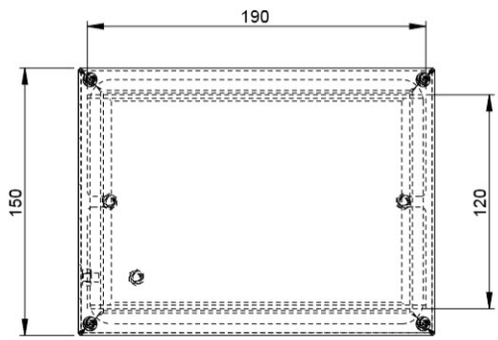


RS485 interface module (when ordered with display)

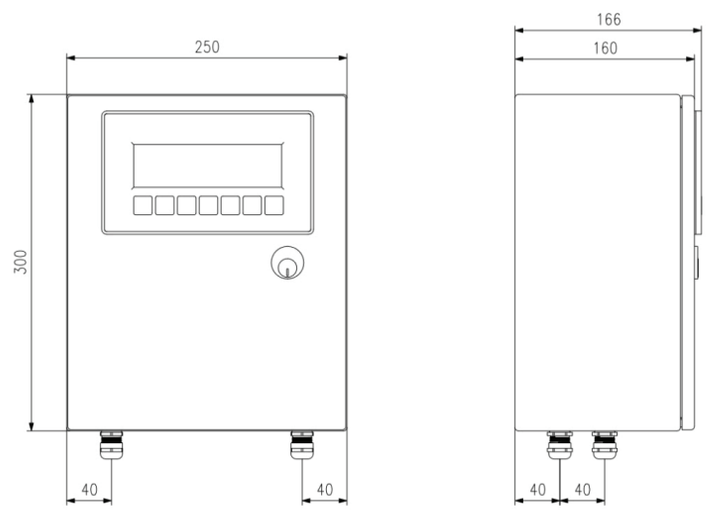


Stainless steel enclosure
Enclosure when ordered without display.





Enclosure with display



Selection guide

When configuring a weighing system, you need the following information:

- Number of tank legs or supporting points
- Total weight of tank incl. product in kg
- Required output and/or local display
- Required accuracy for the application (e.g. dosing, mixing, level measurement etc.)

With this information, you are able to find the configuration you need in the pricelist or in the online configuration tool:

Step 1:
Calculate the total weight of the tank inclusive the product in kg and round up to the nearest standard load cell system.

Step 2:
Decide on accuracy required by the application

- 0.10% accuracy systems are suitable for mixing applications
- 0.05% accuracy systems are suitable for dosing applications
- 0.025% accuracy systems are suitable for very precise dosing and batching applications

Step 3:
Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP

Step 4:
Decide if you want the display and/or weighing modules supplied mounted in a stainless steel enclosure

You have the following options:

- Without stainless steel enclosure
- Weighing module mounted in stainless steel enclosure (without display)
- Display mounted in stainless steel enclosure

Step 5:
Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

Step 6:
Decide on if you need calibration certificate

Theoretical statistical weighing system accuracy

System range System range

Item no.	3 supporting points		4 supporting points		Number of loadcells and lc type in system	System type	0.10%	System type	0.05%	System type	0.025%
TE67WB9KXXXXXX	0- 60 kg.	(132 lb)			(3*20 kg. lc)	0.035 kg.	(0.076 lb)	0,017 kg	(0.038 lb)	0.009 kg.	(0.019 lb)
TE67WBBJXXXXXX			0- 80 kg.	(176 lb)	(4*20 kg. lc)	0.040 kg.	(0.088 lb)	0,020 kg.	(0.044 lb)	0.010 kg.	(0.022 lb)
TE67WBCKXXXXXX	0- 90 kg.	(198 lb)			(3*30 kg. lc)	0.052 kg.	(0.115 lb)	0,026 kg.	(0.057 lb)	0.013 kg.	(0.029 lb)
TE67WBEXXXXXX			0- 120 kg.	(265 lb)	(4*30 kg. lc)	0.060 kg.	(0.132 lb)	0.030 kg.	(0.066 lb)	0.015 kg.	(0.033 lb)
TE67WBFKXXXXXX	0- 150 kg.	(331 lb)			(3*50 kg. lc)	0.087 kg.	(0.191 lb)	0.043 kg.	(0.095 lb)	0.022 kg.	(0.048 lb)
TE67WBGKXXXXXX			0- 200 kg.	(441 lb)	(4*50 kg. lc)	0.100 kg.	(0.220 lb)	0.050 kg.	(0.110 lb)	0.025 kg.	(0.055 lb)
TE67WBIXXXXXXX	0- 300 kg.	(661 lb)			(3*100 kg. lc)	0.173 kg.	(0.382 lb)	0.087 kg.	(0.191 lb)	0.043 kg.	(0.095 lb)
TE67WBJXXXXXXX			0- 400 kg.	(882 lb)	(14*100 kg. lc)	0.200 kg.	(0.441 lb)	0.100 kg.	(0.220 lb)	0.050 kg.	(0.110 lb)
TE67WBNKXXXXXX	0- 450 kg.	(992 lb)			(3*150 kg. lc)	0.260 kg.	(0.573 lb)	0.130 kg.	(0.211 lb)	0,065 kg.	(0.143 lb)
TE67WBOXXXXXX			0- 600 kg.	(1323 lb)	(4*150 kg lc)	0.300 kg.	(0.661 lb)	0.150 kg.	(0.331 lb)	0.075 kg.	(0.165 lb)
TE67WBPXXXXXX	0- 750 kg.	(1653 lb)			(3*250 kg lc)	0.433 kg.	(0.955 lb)	0.217 kg.	(0.477 lb)	0.108 kg.	(0.239 lb)
TE67WBLXXXXXX			0- 1000 kg.	(2205 lb)	(4*250 kg lc)	0.500 kg.	(1.102 lb)	0.250 kg.	(0.551 lb)	0.125 kg.	(0.276 lb)
TE67WBSXXXXXX	0- 1500 kg.	(3307 lb)			(3*500 kg. lc)	0.866 kg.	(1.909 lb)	0.433 kg.	(0.955 lb)	0,217 kg.	(0.477 lb)
TE67WBTXXXXXX			0- 2000 kg.	(4409 lb)	(4*500 kg. lc)	1.000 kg.	(2.205 lb)	0.500 kg.	(1.102 lb)	0.250 kg.	(0.551 lb)
TE67WBUKXXXXX	0- 3000 kg.	(6614 lb)			(3*1000 kg.lc)	1.732 kg.	(3.819 lb)	0.866 kg.	(1.909 lb)	N/A	
TE67WBVXXXXXX			0- 4000 kg.	(8818 lb)	(4*1000 kg. lc)	2.000 kg.	(4,409 lb)	1.000 kg.	(2.205 lb)	N/A	

Note: All calculations are the theoretical worst case accuracy that can be obtained with the Alfa laval weighing system solutions. The presented data It is solely for Informational purpose, all real life accuracies is highly dependable of proper weighing system installation

Alfa Laval Weighing Systems UltraPure with single point load cell

High accuracy digital load cells for precise process weighing

Application

The Alfa Laval digital single point load cells offer high accuracy and resolution for reliable and precise weighing. The load cells are produced in stainless steel and hermetically sealed to IP68. The main applications are graders, multihead weighers, checkweighers, filling machines, belt scales, platform scales, bench scales etc.

Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.015% of full scale and high resolution
- Load cells are produced in stainless steel and hermetically sealed to IP68
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation where level measurement, mixing, filling, dosing or batching is required. The weighing solution is as standard delivered in two different accuracy ranges: 0.025% and 0.015% with a total measuring range from 0 to 150 kg.
Each weighing system consists of a digital single point load cell and a weighing module. The weighing modules are available with both analog 4-20 mA output, and fieldbus interface (PROFINET, Profibus DP or EtherNet IP).
For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).

Capacitive measurement principle (patented)

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive and complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

Technical data

Stainless steel enclsure IP68
Stainless steel enclosure with panel mounted display IP64
Measuring range: . . . . . from 0 to 150 kg depending on system selection.
Accuracy: 0.025%, 0.015%
Compensated temperature range: . . . -10 to 50 °C
Overload and sideload : . . . . . 300% overload tolerance
Power supply: . . . . . 24 VDC ±10%, min. 2A

Certificates

CE marked
3.1B certificate
Calibration certificate (Option)

Mechanical data

Weight:
Load cell:
Type TE67WS . . . . . SPSX 2.5 kg
Weighing modules: . . . . . approx. 0.5kg
Materials:
Load cells: . . . . . AISI 316 and 17-4 PH
Operating temperature range:
Load cells: . . . . . -50 to 70 °C (100 °C with teflon cable)
Weighing modules: . . . . . -10 to 50 °C
Protection class:
Load cells: IP68
Weighing modules: IP20

Specifications

Parameter	Unit	0.025%	0.015%
Rated capacity (Emax) per load cell	kg	5, 10, 20, 50, 100, 150	
Safe overload limit	% of E^{max}	300 to 1000	
Safe sideload limit	% of E^{max}	500 to 2000	
Minimum dead load	% of E^{max}	0	
Accuracy	% of E^{max}	0.025	0.015
Repeatability	% of E^{max}	0.008	0.005
Hysteresis	% of E^{max}	0.010	0.005
Creep 30 min.	% of E^{max}	0.015	0.010
Temperature effect on zero	%/10 °C	0.030	0.020
Temperature effect on sensitivity	%/10 °C	0.030	0.020
Deflection at Emax	mm	max. 0.10	
Mesuring rate	Hz	up to 1000	
Internal resolution	Bit	24	

Options

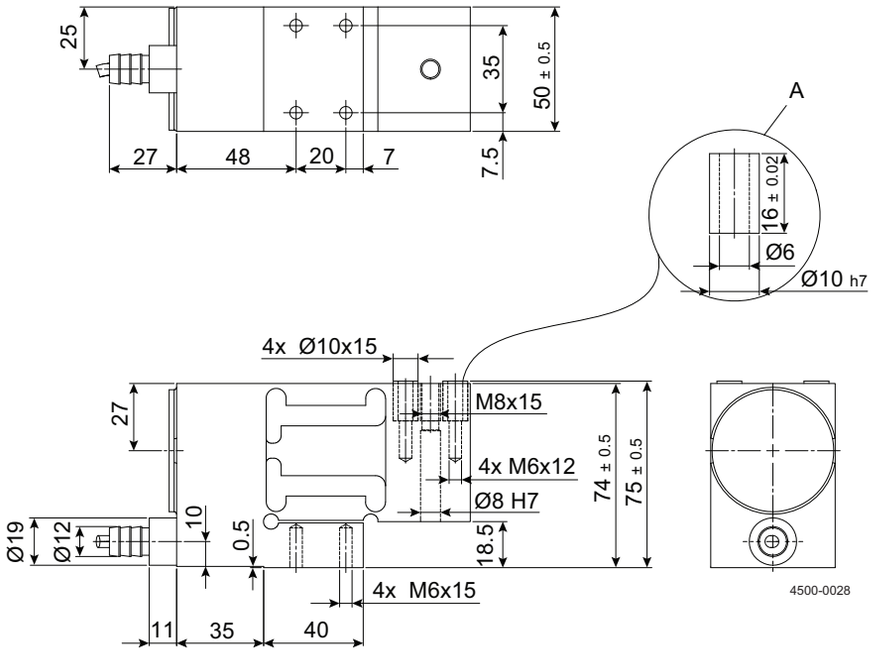
Output:
4-20mA
PROFINET
EtherNet IP
Profibus DP
RS485

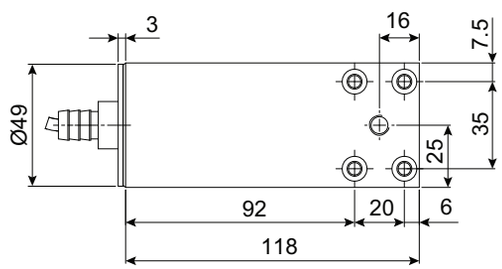
Local weighing display:
Alfa Laval weighing display

Load cell cable:
6m standard coaxial RG58 with BNC connector (option: 10, 20 or 50m)

Dimensional drawings

Single point load cell, type SPSX

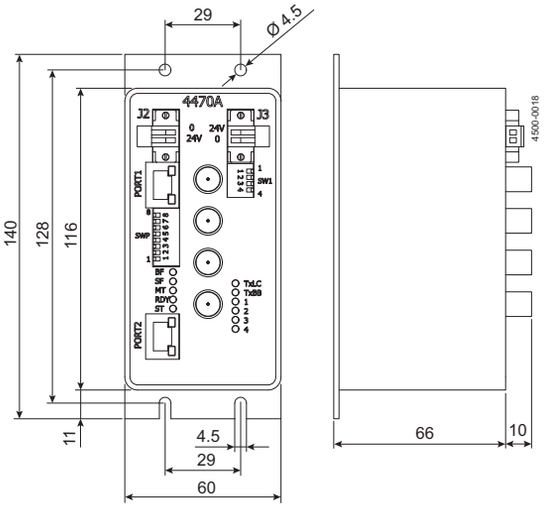




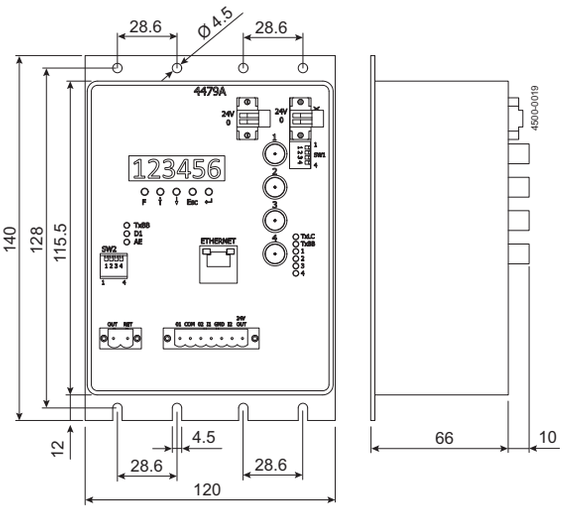
Layout and electrical connection schematic of weighing modules:

Profinet weighing module for 4 load cells

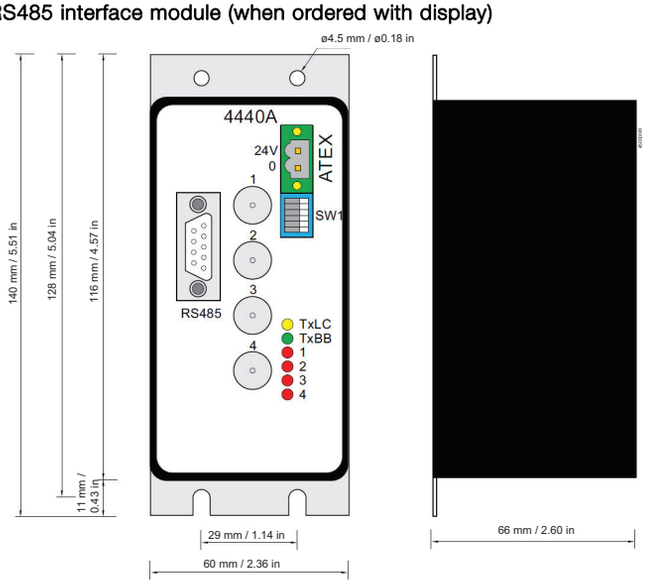
(external dimensions is the same for Profibus DP and Ethernet IP



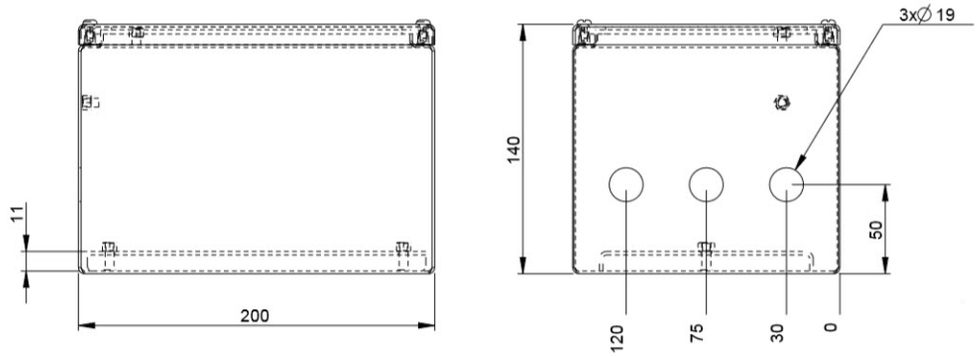
4-20 mA output weighing module for 4 load cells

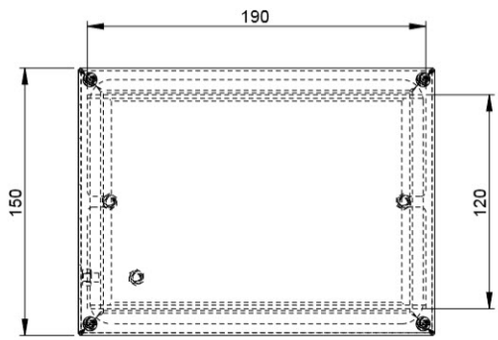


RS485 interface module (when ordered with display)

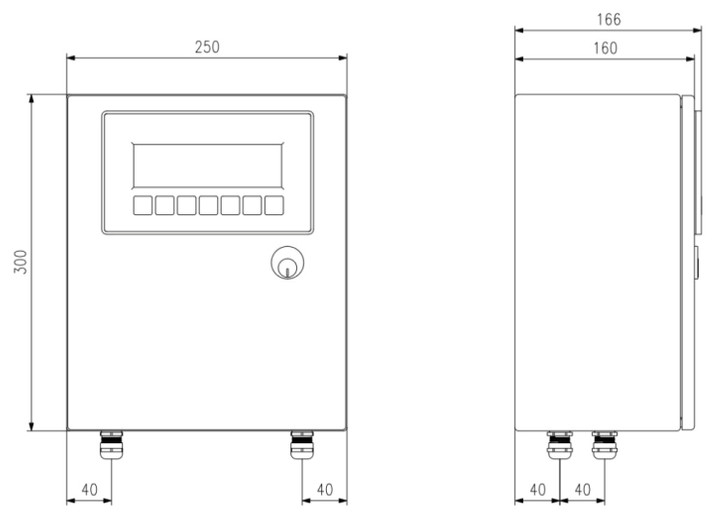


Stainless steel enclosure
Enclosure when ordered without display.





Enclosure with display



1.2

Selection guide

When configuring a weighing system, you need the following information:

- Total weight of vessel incl. product in kg
- Required output and/or local display
- Required accuracy for the application (0.025% or 0.015%)

With this information, yoy are able to find the configuration you need in the price list or in the online configuration tool:

Step 1:
Calculate the total weight of the tank inclusive the product in kg and round up to the nearest standard load cell system.

Step 2:
Decide on accuracy required by the application

- 0.025% accuracy systems are suitable for dosing applications
- 0.015% accuracy systems are suitable for very precise dosing and batching applications

Step 3:
Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP
- RS485

Step 4:
Decide if you want the display and/or weighing modules supplied mounted in a stainless steel enclosure

You have the following options:

- Without stainless steel enclosure
- Weighing module mounted in stainless steel enclosure (without display)
- Display mounted in stainless steel enclosure

Step 5:
Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

Step 6:
Decide on if you need Calibration certificate

Alfa Laval ATEX Weighing Systems UltraPure with compression load cells

Hygienic and reliable weighing solutions for your process

Application

The hygienic UltraPure load cells offer high precision and reliable weight measurement, ideal for mixing, dosing, batching or gravimetric level measurement for process tanks and vessels.

Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.025% of full scale and high resolution
- Load cells are produced in stainless steel and hermetically sealed to IP68
- EHEDG compliant hygienic design for sanitary installation
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation where level measurement, mixing, filling, dosing or batching is required.
The weighing solution is as standard delivered in four different accuracy ranges: 2%, 0.10%, 0.05% and 0.025% with a total measuring range from 0 to 100000 kg.
Each weighing system consists of 1 to 4 load cells and a weighing module. The weighing modules are available with both analog 4-20 mA output, and fieldbus interface (PROFINET, Profibus DP or EtherNet IP).
For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).

Alfa Laval offers an additional range of tank legs that fits to the load cells ensuring a robust and reliable connection between the tank and the load cells.

Capacitive measurement principle (patented)

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

Technical Data

Measuring range: . . . . . from 0 to 100000 kg depending on system selection.
Accuracy: 2%, 0.10%, 0.05%, 0.025%
Compensated temperature range: . . . -10 to 50 °C

Overload and sideload :

300% at 300 kg capacity systems and 100 % at 32000t capacity systems

Power:

Power supply: . . . . . 24 VDC ±10%, min. 2A

Mechanical data

Weight:

Load cell:

CL-EX type . . . . . 1.8 kg
CM-EX type . . . . . 3.6 kg
Weighing modules: . . . . . approx. 0.5 kg

Materials:

Load cells: . . . . . AISI 316 and 17-4 PH

Operating temperature range:

ATEX Load cells CL-EX, CM-EX: . . . . -40 to 50 °C
Weighing modules: . . . . . -10 to 50 °C

Protection class:

Load cells: IP68
Weighing modules: IP20

Certificates

CE marked
3.1B certificate
Calibration certificate (Option)

Specifications

Parameter	Unit	0.1%	0.05%	0.025%*
Rated capacity (Emax) per load cell	kg	CL-EX: 50, 100, 150, 250, 500, 1000, 1500, 2000, 3000, 4000, 5000 CM-EX: 6000, 8000, 10000, 15000, 20000, 25000		
Safe overload limit	% of E^{max}	200 to 500		
Safe sideload limit	% of E^{max}	300 to 1000		
Minimum dead load	% of E^{max}	0		
Accuracy	% of E^{max}	0.100	0.050	0.025
Repeatability	% of E^{max}	0.030	0.020	0.012
Hysteresis	% of E^{max}	0.055	0.040	0.020
Creep 30 min.	% of E^{max}	0.060	0.040	0.025
Temperature effect on zero	%/10 °C	0.060	0.045	0.030
Temperature effect on sensitivity	%/10 °C	0.060	0.045	0.030
Deflection at Emax	mm	max. 0.2		
Mesuring rate	Hz	500		
Supply	Vdc	24 Vdc ±10%		
Internal resolution	Bit	24		
Maximum cable length	m	100		
Output options		PROFINET, Profibus DP, DeviceNet, EtherNet/IP, RS485, 4-20 mA		
2% accuracy system includes active and dummy load cells				

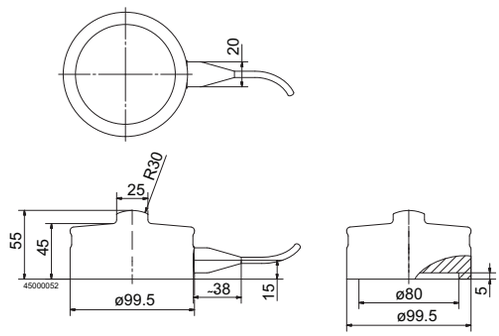
* 0.025% accuracy is available up to 5000 kg.

Options

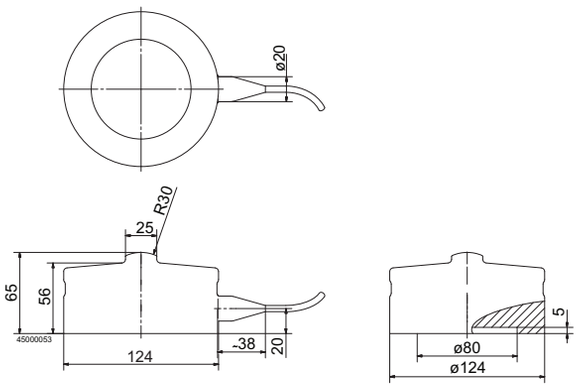
Output:
4-20mA
PROFINET
EtherNet IP
Profibus DP
RS485

Load cell cable:
6m ATEX coaxial RG58 with BNC connector (option: 10, 20 or 50m)

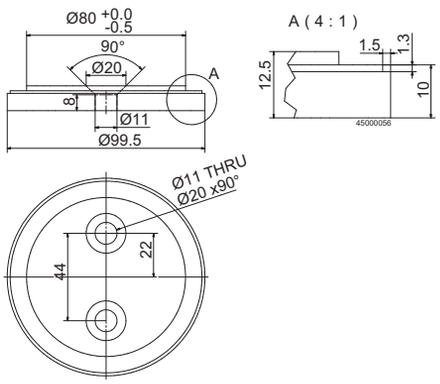
Dimensional drawings



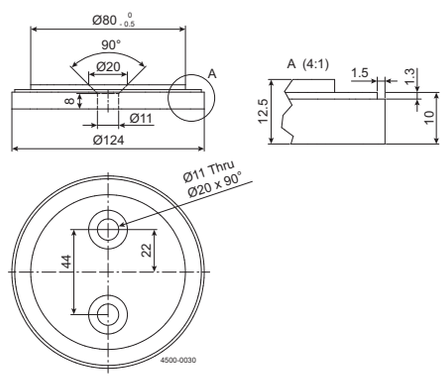
CL-EX load cell (50-5000 kg)



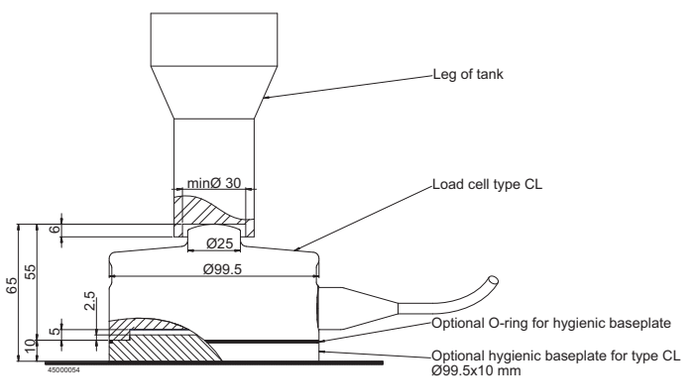
CM-EX load cell (6000-25000kg)



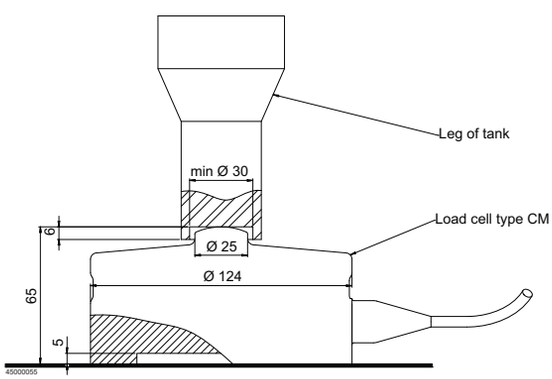
Hygienic Baseplate for CL-EX load cell



Hygienic baseplate for CM-EX load cell



CL-EX load cell installation with tank leg



CM-EX load cell installation with tank leg

Accessories

Tank legs to compression load cells

9614460901 tank feet M 30 for load cells below 11000 kg with short spindel

9614460905 tank feet M36 for load cells below 16000 kg with short spindel

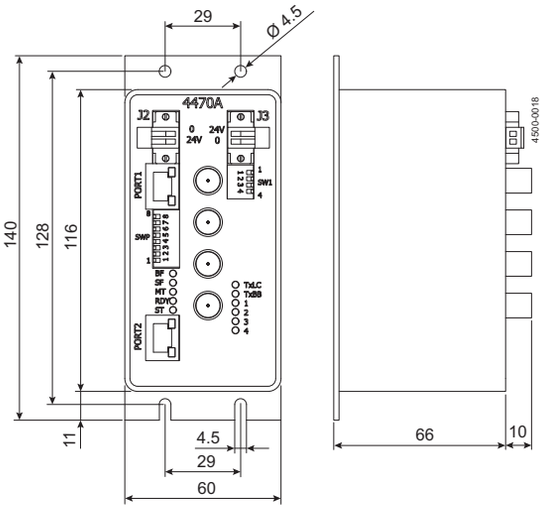
9614460902 tank feet M42 for load cells below 21500 kg with short spindel

9614460903tank feet M56 for load cells below 37000 kg with short spindel

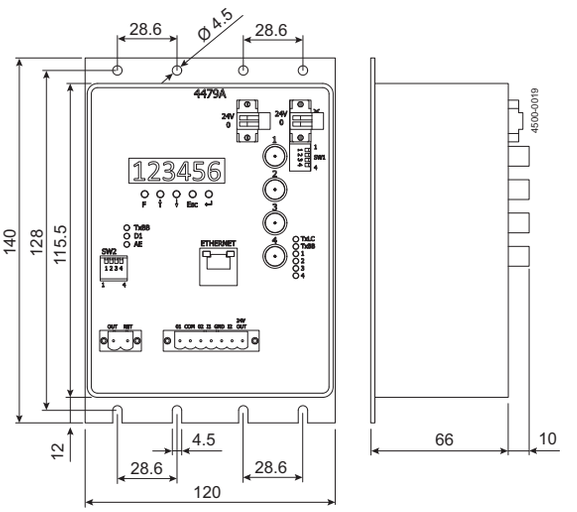
Layout and electrical connection schematic of weighing modules:

Profinet weighing module for 4 load cells (4XXXA)

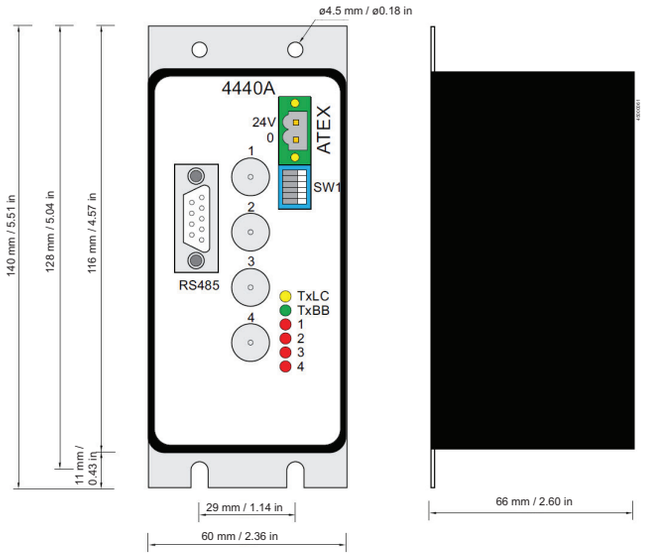
(external dimensions is the same for Profilbus DP and Ethernet IP



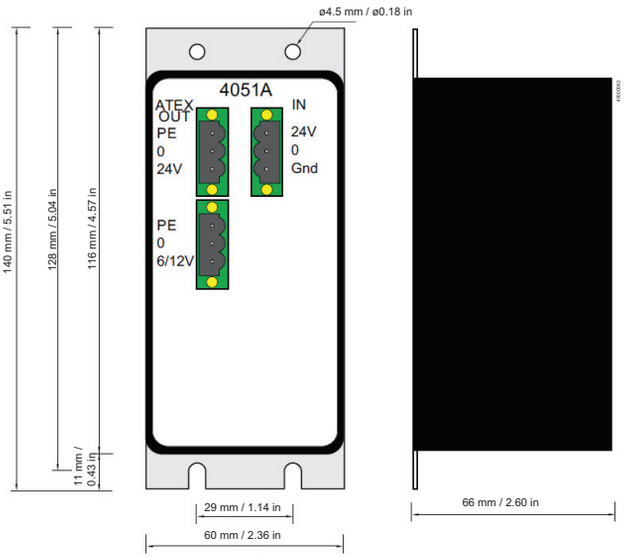
4-20 mA output weighing module for 4 load cells (4X79A)



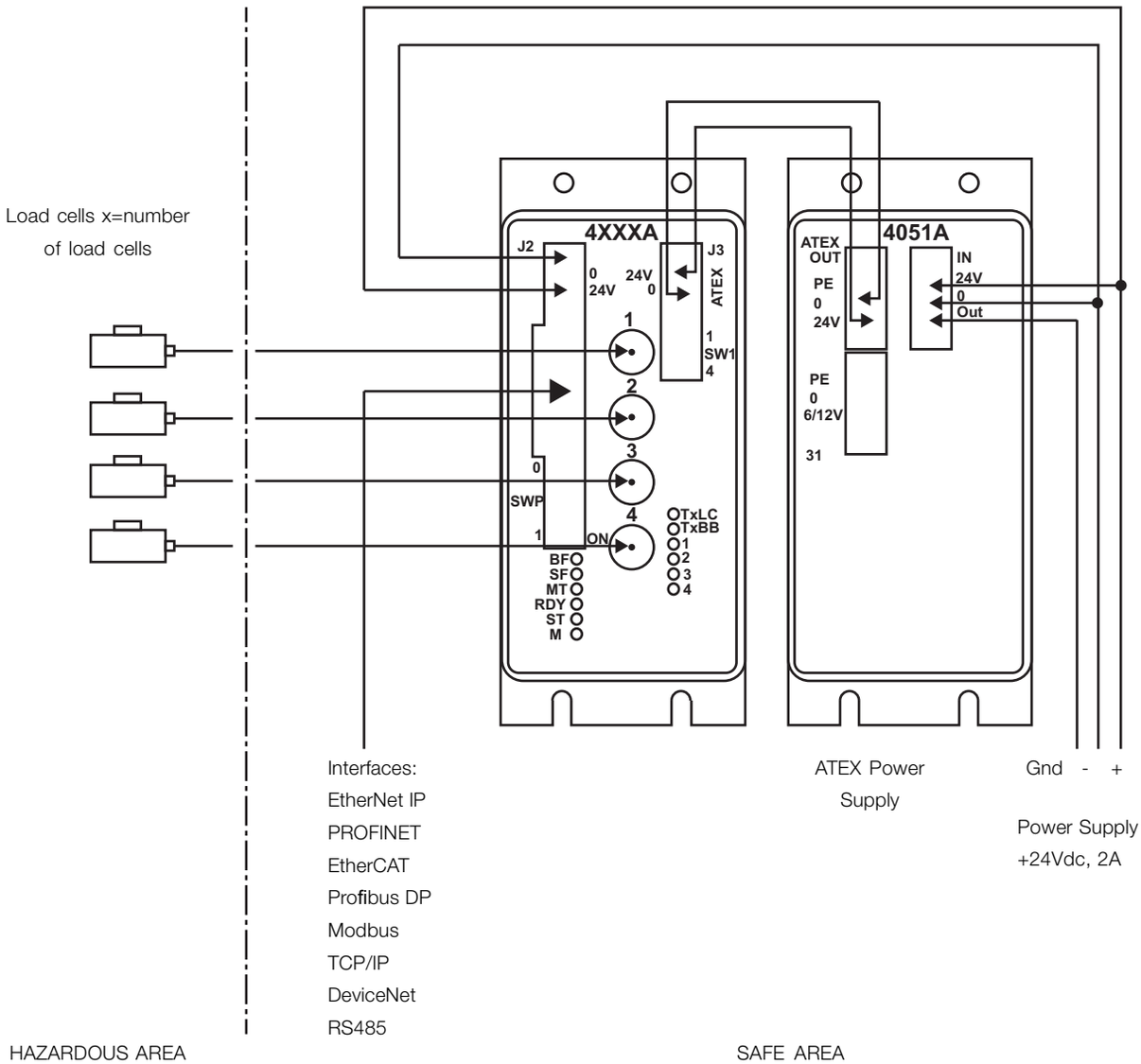
RS485 interface module (when ordered with display) (4X40A)



ATEX power supply (4051A)



Installation in ATEX zones



1.2

Selection guide

When configuring a weighing system, you need the following information:

- ATEX application
- Number of tank legs or supporting points
- Total weight of tank incl. product in kg
- Required output and/or local display
- Required accuracy for the application (e.g. dosing, mixing, level measurement etc.)

With this information, you are able to find the configuration you need in the ordering leaflet or in the online configuration tool on E-business.

Step 1:
Is the weighing system used in ATEX zone 1, 2, 21, 22 classified operation

Step 2:
Calculate the total weight of the tank including the product in kg and round up to the nearest standard load cell system.

Step 3:
Decide on accuracy required by the application

- 2% accuracy systems are suitable for level measurement applications
- 0.10% accuracy systems are suitable for mixing applications
- 0.05% accuracy systems are suitable for dosing applications
- 0.025% accuracy systems are suitable for very precise dosing and batching applications

Step 4:
Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP

Step 5:
Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

Step 6:
Decide on if you need calibration certificate

Theoretical statistical weighing system accuracy

Item nr	System range 3 legs	System range 4 legs	Number of loadcells and lc-type in system	System type 0.10%	System type 0.05%	System type 0.025%
TE67WC0xxxxxxxx	0- 300 kg.	.	(3*100 kg lc)	± 0.17 kg.	± 0.09 kg.	± 0.04 kg.
TE67WC1xxxxxxxx		0- 400 kg.	(4*100 kg lc)	± 0.20 kg.	± 0.10 kg.	± 0.05 kg.
TE67WC4xxxxxxxx	0- 750 kg.		(3*250 kg lc)	± 0.43 kg.	± 0.22 kg.	± 0.11 kg.
TE67WC5xxxxxxxx		0- 1000 kg.	(4*250 kg lc)	± 0.50 kg.	± 0.25 kg.	± 0.13 kg.
TE67WC6xxxxxxxx	0- 1500 kg.		(3*500 kg lc)	± 0.87 kg.	± 0.43 kg.	± 0.22 kg.
TE67WC7xxxxxxxx		0- 2000 kg.	(4*500 kg lc)	± 1.00 kg.	± 0.50 kg.	± 0.25 kg.
TE67WC8xxxxxxxx	0- 3000 kg.		(3*1 000 kg lc)	± 1.73 kg.	± 0.87 kg.	± 0.43 kg.
TE67WC9xxxxxxxx		0- 4000 kg.	(4*1 000 kg lc)	± 2.00 kg.	± 1.00 kg.	± 0.50 kg.
TE67WCBxxxxxxxx	0- 6000 kg.		(3*2000 kg lc)	± 3.46 kg.	± 1.73 kg.	± 0.87 kg.
TE67WCCxxxxxxxx		0- 8000 kg.	(4*2000 kg lc)	± 4.00 kg.	± 2.00 kg.	± 1.00 kg.
TE67WCDxxxxxxxx	0- 9000 kg.		(3*3000 kg lc)	± 5.20 kg.	± 2.60 kg.	± 1.30 kg.
TE67WCExxxxxxxx		0- 12000 kg.	(4*3000 kg lc)	± 6.00 kg.	± 3.00 kg.	± 1.50 kg.
TE67WCExxxxxxxx	0- 12000 kg.		(3*4000 kg lc)	± 6.93 kg.	± 3.46 kg.	± 1.73 kg.
TE67WCGxxxxxxxx		0- 16000 kg.	(4*4000 kg lc)	± 8.00 kg.	± 4.00 kg.	± 2.00 kg.
TE67WCFxxxxxxxx	0- 15000 kg.		(3*5000 kg lc)	± 8.66 kg.	± 4.33 kg.	± 2.17 kg.
TE67WCIxxxxxxxx		0- 20000 kg.	(4*5000 kg lc)	± 10.00 kg.	± 5.00 kg.	± 2.50 kg.
TE67WCHxxxxxxxx	0- 18000 kg.		(3*6000 kg lc)	± 10.39 kg.	± 5.20 kg.	N/A
TE67WCJxxxxxxx		0- 24000 kg.	(4*5000 kg lc)	± 12.00 kg.	± 6.00 kg.	N/A
TE67WCJxxxxxxx	0- 24000 kg.		(3*8000 kg lc)	± 13.86 kg.	± 6.93 kg.	N/A
TE67WCKxxxxxxx		0- 32000 kg.	(4*8000 kg lc)	± 16.00 kg.	± 8.00 kg.	N/A
TE67WCNxxxxxxx	0- 30000 kg.		(3*10000 kg lc)	± 17.32 kg.	± 8.66 kg.	N/A
TE67WCOxxxxxxx		0- 40000 kg.	(4*10000 kg lc)	± 20.00 kg.	± 10.00 kg.	N/A
TE67WCPxxxxxxx	0- 45000 kg.		(3*15000 kg lc)	± 25.98 kg.	± 12.99 kg.	N/A
TE67WCIxxxxxxx		0- 60000 kg.	(4*15000 kg lc)	± 30.00 kg.	± 15.00 kg.	N/A
TE67WCIxxxxxxx	0- 60000 kg.		(3*20000 kg lc)	± 34.64 kg.	± 17.32 kg.	N/A
TE67WCSxxxxxxx		0- 80000 kg.	(4*20000 kg lc)	± 40.00 kg.	± 20.00 kg.	N/A
TE67WCTxxxxxxx	0- 75000 kg.		(3*25000 kg lc)	± 43.30 kg.	± 21 .65 kg.	N/A
TE67WCUxxxxxxx		0- 100000 kg.	(4*25000 kg lc)	± 50.00 kg.	± 25.00 kg.	N/A

Alfa Laval ATEX Weighing Systems UltraPure with beam load cell

Reliable and accurate digital beam load cells for process weighing

Application

The Alfa Laval ATEX digital beam load cells offer reliable and accurate weighing. The main applications are belt scales, platform scales, small vessels, filling machines and process equipment.

Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.025% of full scale
- Load cells are produced in stainless steel and hermetically sealed to IP68
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation, where level measurement, mixing, filling, dosing or batching is required. The weighing solution is as standard delivered in three different accuracy ranges: 0.10%, 0.05% and 0.025% with a total measuring range from 0 to 4000 kg. Each weighing system consists of 1 to 4 load cells and a weighing module. The weighing modules are available with both analog 4-20 mA output and fieldbus interface (PROFINET, Profibus DP or EtherNet IP). For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).

Capacitive measurement principle (patented)

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive and complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

Technical data

Stainless steel enclsure IP68
Stainless steel enclosure with panel mounted display IP64
Measuring range: . . . . . from 0 to 4000 kg depending on system selection.
Accuracy: 0.10%, 0.05%, 0.025%
Compensated temperature range: . . . -10 to 50 °C
Overload and sideload : . . . . . 300% overload tolerance
Power supply: . . . . . 24 VDC, ±10% min. 2A

Certificates

- CE marked
- Calibration certificate (option)
- 3.1B certificate (option)

Mechanical data

Weight:

BL-EX Load cell: . . . . . 2.3 kg
Weighing module: . . . . . approx. 0.5kg

Materials:

Load cells: . . . . . AISI 316 and 17-4 PH
Mounting kit: . . . . . AISI 304 / AISI 316 (welding cylinder)

Operating temperature range:

BL-EX Load cells: . . . . . -40 to 50°C
Weighing modules: . . . . . -10 to 50 °C

Protection class:

Load cells: IP68
Weighing modules: IP20

Specification

Parameter	Unit	0.10%	0.05%	0.025%
Rated capacity (Emax) per load cell	kg	10, 20, 50, 100, 150, 250, 500, 1000		
Safe overload limit	% of E^{max}	300 to 1000		
Safe sideload limit	% of E^{max}	500 to 2000		
Minimum dead load	% of E^{max}	0		
Accuracy	% of E^{max}	0.100	0.050	0.025
Repeatability	% of E^{max}	0.018	0.015	0.010
Hysteresis	% of E^{max}	0.033	0.020	0.017
Creep 30 min.	% of E^{max}	0.035	0.025	0.017
Temperature effect on zero	%/10 °C	0.040	0.030	0.016
Temperature effect on sensitivity	%/10 °C	0.040	0.030	0.016
Deflection at Emax	mm	max. 0.10		
Mesuring rate	Hz	up to 1000		
Internal resolution	Bit	24		
Maximum cable length	m	100		

Options

OUTPUT:
4-20mA
PROFINET
EtherNet IP
Profibus DP
RS485

Local weighing display:

Alfa Laval weighing terminal (options)

Load cell cable:

6m ATEX coaxial RG58 with BNC connector (option: 10, 20 or 50m)

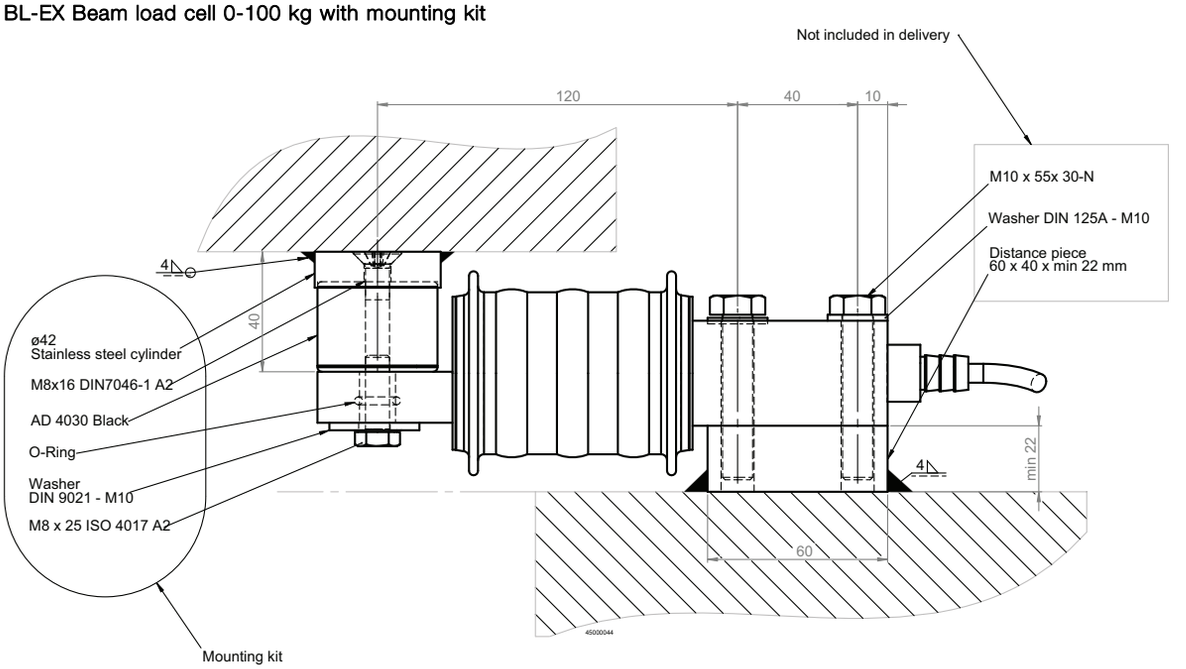
Mounting:

Mounting kit for BL-EX beam load cell

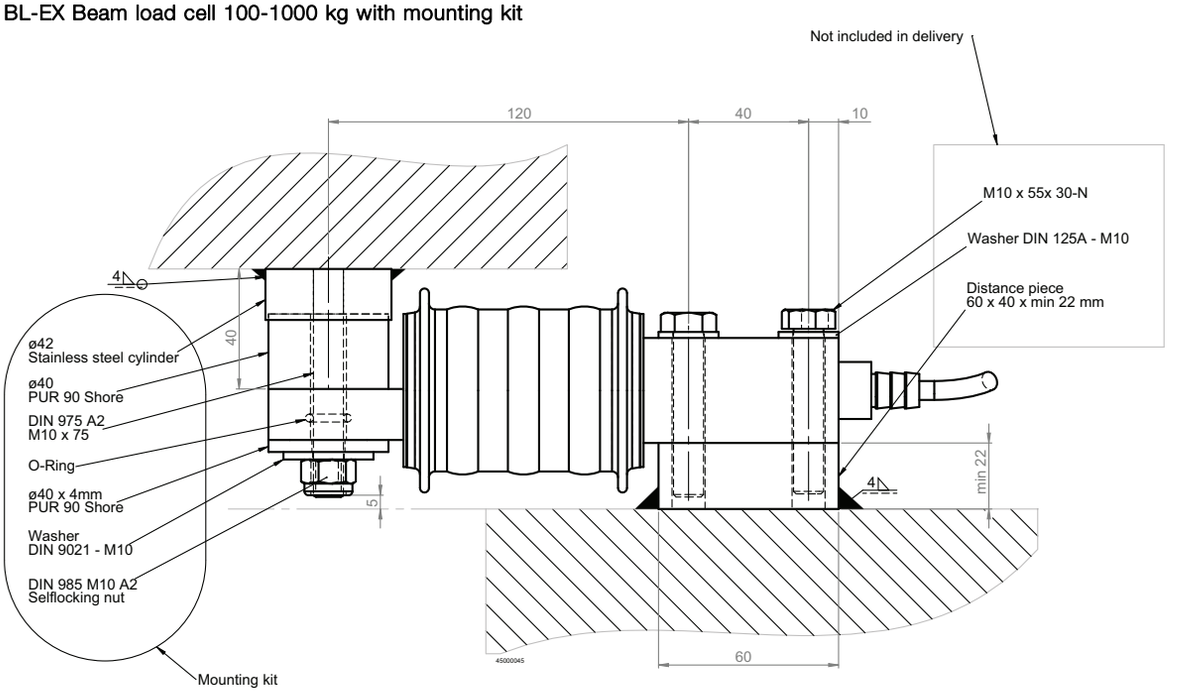
1.2

Dimensional drawings

BL-EX Beam load cell 0-100 kg with mounting kit



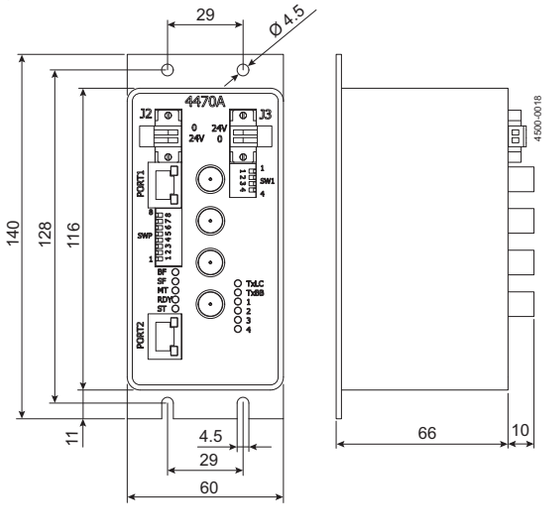
BL-EX Beam load cell 100-1000 kg with mounting kit



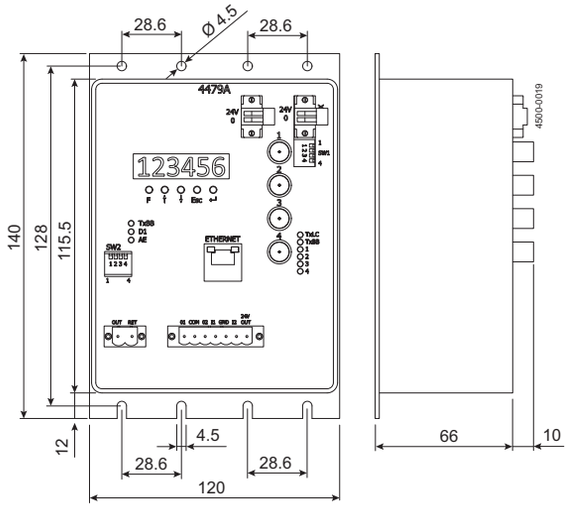
Layout and electrical connection schematic of weighing modules:

Profinet weighing module for 4 load cells (4XXXA)

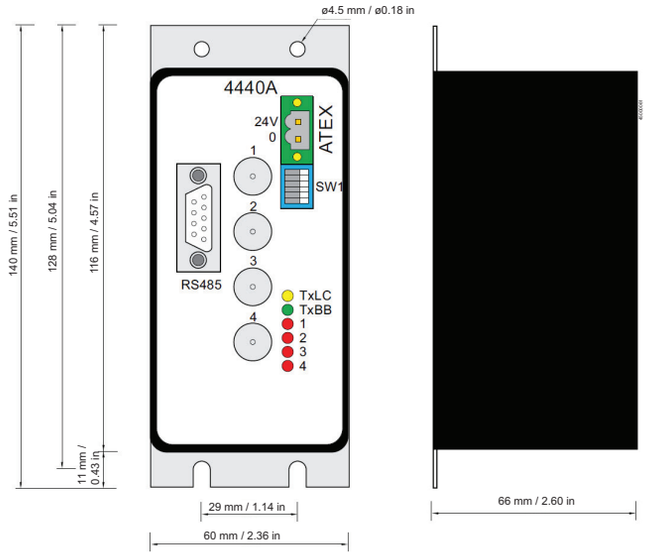
(external dimensions is the same for Profilbus DP and Ethernet IP



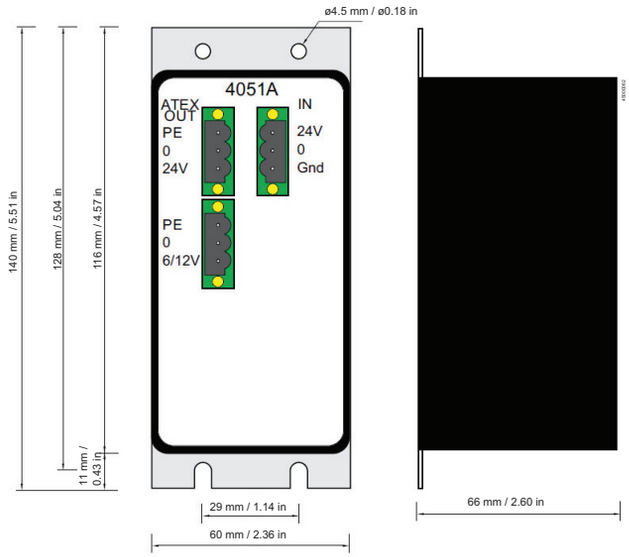
4-20 mA output weighing module for 4 load cells (4X79A)



RS485 interface module (when ordered with display (4X40A)

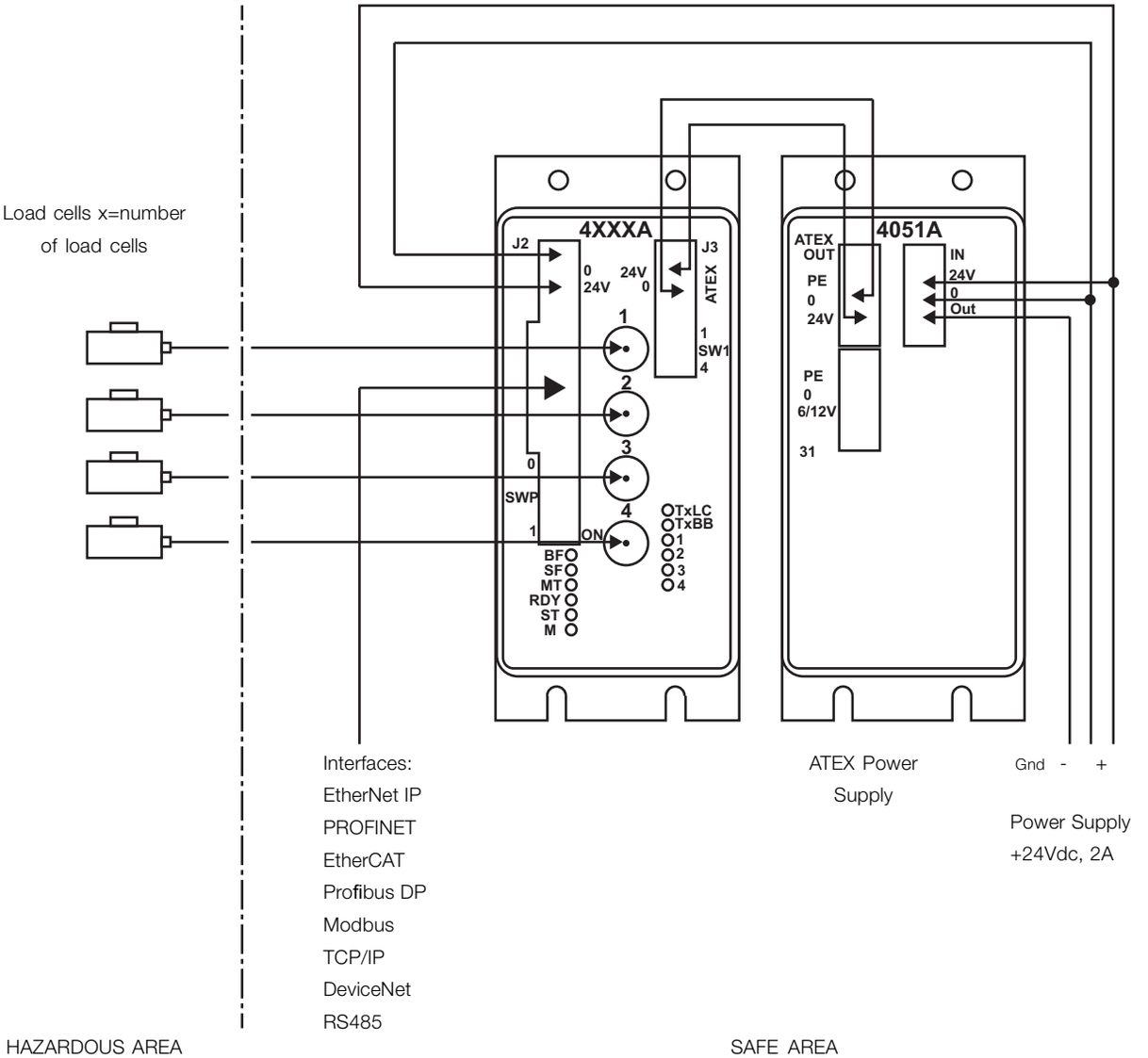


ATEX POWER SUPPLY (4051A)



1.2

Installation in ATEX zones



Selection guide

When configuring a weighing system, you need the following information:

- ATEX application
- Number of tank legs or supporting points
- Total weight of tank incl. product in kg
- Required output and/or local display
- Required accuracy for the application (e.g. dosing, mixing, level measurement etc.)

With this information, you are able to find the configuration you need in the pricelist or in the online configuration tool:

Step 1:
Is the weighing system used in ATEX zone 1, 2, 21, 22 classified operation.

Step 2:
Calculate the total weight of the tank inclusive the product in kg and round up to the nearest standard load cell system.

Step 3:
Decide on accuracy required by the application

- 0.10% accuracy systems are suitable for mixing applications
- 0.05% accuracy systems are suitable for dosing applications
- 0.025% accuracy systems are suitable for very precise dosing and batching applications

Step 4:
Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP

Step 5:
Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

Step 6:
Decide on if you need calibration certificate

Theoretical statistical weighing system accuracy

System range System range

Item no.	3 supporting points		4 supporting points		Number of loadcells and lc type in system	System type	0.10%	System type	0.05%	System type	0.025%
TE67WB9KXXXXXX	0- 60 kg.	(132 lb)			(3*20 kg. lc)	0.035 kg.	(0.076 lb)	0,017 kg	(0.038 lb)	0.009 kg.	(0.019 lb)
TE67WBBJXXXXXX			0- 80 kg.	(176 lb)	(4*20 kg. lc)	0.040 kg.	(0.088 lb)	0,020 kg.	(0.044 lb)	0.010 kg.	(0.022 lb)
TE67WBCKXXXXXX	0- 90 kg.	(198 lb)			(3*30 kg. lc)	0.052 kg.	(0.115 lb)	0,026 kg.	(0.057 lb)	0.013 kg.	(0.029 lb)
TE67WBEXXXXXX			0- 120 kg.	(265 lb)	(4*30 kg. lc)	0.060 kg.	(0.132 lb)	0.030 kg.	(0.066 lb)	0.015 kg.	(0.033 lb)
TE67WBFKXXXXXX	0- 150 kg.	(331 lb)			(3*50 kg. lc)	0.087 kg.	(0.191 lb)	0.043 kg.	(0.095 lb)	0.022 kg.	(0.048 lb)
TE67WBGKXXXXXX			0- 200 kg.	(441 lb)	(4*50 kg. lc)	0.100 kg.	(0.220 lb)	0.050 kg.	(0.110 lb)	0.025 kg.	(0.055 lb)
TE67WBIXXXXXXX	0- 300 kg.	(661 lb)			(3*100 kg. lc)	0.173 kg.	(0.382 lb)	0.087 kg.	(0.191 lb)	0.043 kg.	(0.095 lb)
TE67WBJXXXXXXX			0- 400 kg.	(882 lb)	(14*100 kg. lc)	0.200 kg.	(0.441 lb)	0.100 kg.	(0.220 lb)	0.050 kg.	(0.110 lb)
TE67WBNKXXXXXX	0- 450 kg.	(992 lb)			(3*150 kg. lc)	0.260 kg.	(0.573 lb)	0.130 kg.	(0.211 lb)	0,065 kg.	(0.143 lb)
TE67WBOXXXXXX			0- 600 kg.	(1323 lb)	(4*150 kg lc)	0.300 kg.	(0.661 lb)	0.150 kg.	(0.331 lb)	0.075 kg.	(0.165 lb)
TE67WBPXXXXXX	0- 750 kg.	(1653 lb)			(3*250 kg lc)	0.433 kg.	(0.955 lb)	0.217 kg.	(0.477 lb)	0.108 kg.	(0.239 lb)
TE67WBLXXXXXX			0- 1000 kg.	(2205 lb)	(4*250 kg lc)	0.500 kg.	(1.102 lb)	0.250 kg.	(0.551 lb)	0.125 kg.	(0.276 lb)
TE67WBSXXXXXX	0- 1500 kg.	(3307 lb)			(3*500 kg. lc)	0.866 kg.	(1.909 lb)	0.433 kg.	(0.955 lb)	0,217 kg.	(0.477 lb)
TE67WBTXXXXXX			0- 2000 kg.	(4409 lb)	(4*500 kg. lc)	1.000 kg.	(2.205 lb)	0.500 kg.	(1.102 lb)	0.250 kg.	(0.551 lb)
TE67WBUKXXXXXX	0- 3000 kg.	(6614 lb)			(3*1000 kg.lc)	1.732 kg.	(3.819 lb)	0.866 kg.	(1.909 lb)	N/A	
TE67WBVXXXXXX			0- 4000 kg.	(8818 lb)	(4*1000 kg. lc)	2.000 kg.	(4,409 lb)	1.000 kg.	(2.205 lb)	N/A	

Note: All calculations are the theoretical worst case accuracy that can be obtained with the Alfa laval weighing system solutions. The presented data It is solely for Informational purpose, all real life accuracies is highly dependable of proper weighing system installation

1.3 Level instruments

The hygienic level switch provide accurate and reliable remote liquid level indication and unaffected by diffcult media, such as foam and sticky materials. Our potentiometric level transmitter provides an accurate level measurement in the tank and is designed specifically for smaller tanks containing highly viscous and pasty products, such as ketchup, honey and toothpaste.

Product leaflets

Level Switch 1.3.67
Pneumatic Level Transmitter 1.3.69
Potentiometric Level Transmitter 1.3.71

Price lists

Level Switch 1.3.73
Pneumatic Level Transmitter 1.3.75
Potentiometric Level Transmitter 1.3.76

Alfa Laval Level Switch

The level switch for hygienic use

Application
Foam and liquid overflow protection. Pump dry run protection. Empty tank detection.

Features
The Alfa Laval level switch is designed to fulfill the demands for precise level indication in the hygienic and pharmaceutical production. The main features are:

- Wetted parts in AISI 316L, stainless steel and PEEK
- Compact, and hygienic design
- Process temperature -40 to 200°C
- LED indicator integrated into the field housing
- Not influenced by foam
- Ideal for media registration through registration of changes in product dielectricity
- Quick teach-in option for difficult medias
- Maintenance free

Working principle
The Alfa Laval level switch uses a high frequency signal sweep which is radiated from the sensor tip into the tank. The media will act as a virtual capacitor which, together with a coil in the sensor head, will form a circuit creating the switch point signal. This virtual capacity will depend on the di-electric value of the media which is well defined for most medias.

TECHNICAL DATA

Accuracy repeatability: . . . . . ±1 mm
Hysteresis: . . . . . ±1 mm
Measures values w. dielectric values: . >1.5
Protection class: IP67
Max media pressure: . . . . . 40 bar

Electrical data
Power supply: . . . . . 18-36 Vdc
Power consumption max: . . . . . 70 mA
Output: . . . . . Logic, PNP or NPN output
Max output current: . . . . . 50 mA
Electrical connection: . . . . . M12 plug or M16 cable gland
Response time: . . . . . <0.1 sec.

Standard range
The Alfa Laval level switch is ideal for measurements in liquids as well as viscous, sticky fluids, such as honey, yoghurt and toothpaste. Even dry medias can be measured, eg. sugar or flour. The integrated electronics provide a digital logic signal and has incorporated automatic compensation of foam, bubbles, condensate as well as sticky media. Due to the high temperature limit the Alfa Laval level switch is also suitable for CIP and SIP processes. The hygienic installation is guaranteed by using one of the hygienic welding adapters offering a full flush able connection in the tank.

PHYSICAL DATA

Materials
Surface roughness . . . . . Ra < 0.8 µm
Wetted parts . . . . . (Ra < 0.4 µm as an option)
Wetted parts: . . . . . AISI 316L and PEEK
Fieldhousing: . . . . . AISI 304

Operating temperature
Wetted parts: . . . . . -40 to 85°C (140°C < 1 hour)
With sliding connection: . . . . . -40 to 200°C
Field house: . . . . . -40 to 115°C.

Weight
Sensor: . . . . . Approx. 500 gr.

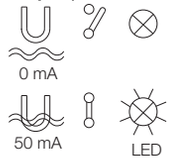
Process connection
- Clamp DN38 (ISO2852)/Clamp DN40 (DIN32676)
- G1/2"
- G1/2" sliding connection 100 mm
- G1/2" sliding connection 250 mm
- DN25 (DIN11851)
- DN40 (DIN11851)
- DN50 (DIN11851)
- Unique Flexbody type N and F

Certificate:

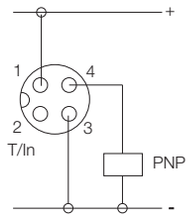
3.1 (Option) (FDA conformity declaration for Peek materials included)

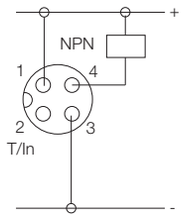
Electrical connections

Normally Open

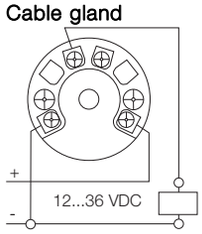


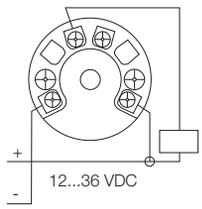
M12 plug



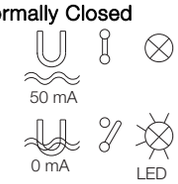


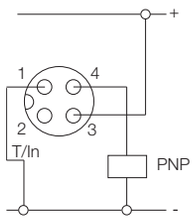
Cable gland

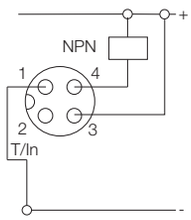


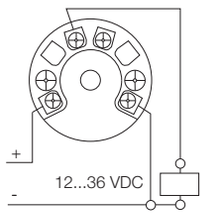


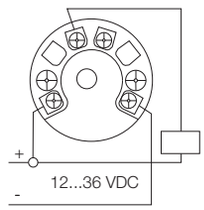
Normally Closed











M12 plug:
1: Brown
2: White
3: Blue
4: Black

Alfa Laval Pneumatic Level Transmitter

Auxiliary Membrane Filtration Equipment

The level transmitter is a pneumatic transmitter, and is designed to control the valves for both liquid supply and discharge to and from open vessels. The output air signal directly governs the valve actuator, thus eliminating the need for additional controllers.

The cover and all product wetted parts are made of stainless steel (AISI 316L). The product wetted diaphragm is made of Viton®. It is possible to change elevation range on site.

Options

- Reverse action type, increasing signal output at falling level (standard version)
- Direct action type, decreasing signal output at falling level

TECHNICAL DATA

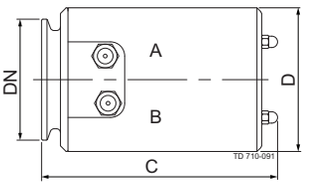
P-Band:	0-200 mm W.G.
Accuracy:	± 10%
Elevation:	Min. 200 mm, max. 3200 mm
Air supply:	1.4 bar
Air signal, reverse acting type:	1-0.2 bar
Air signal, direct acting type:	0.2-1 bar

PHYSICAL DATA

Weight: . . . . . 1.8 kg

Process connections

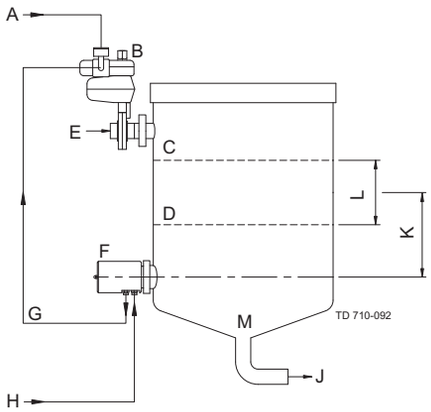
Product (DN):	Clamp, 51 mm (2" ISO 2852)
Air supply (IN):	6 mm air hose or 1/8" BSP female
Air signal (OUT):	6 mm air hose or 1/8" BSP female



A = out B = in

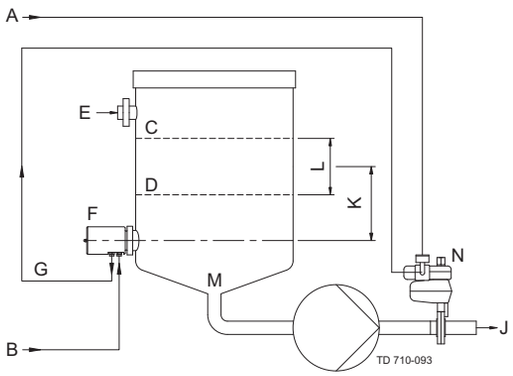
C	D
125	ø76

Reverse action type
Increasing output signal at falling level
Code No. 106179



A Air supply	B Control valve	C Closed valve	D Open valve	E Inlet	F Level transmit-ter	G Air signal	H Air supply	J Outlet	K Elevation	L P-Band	M Tank
5.6 bar	-	0.2 bar	1.0 bar	-	-	1.0-0-2 bar	1.4 bar	-	200-3200	200	-

Direct action type
Decreasing output signal at falling level
Code No. 513934



A Air supply	B Air supply	C Open valve	D Closed valve	E Inlet	F Level transmit-ter	G Air signal	J Outlet	K Elevation	L P-Band	M Tank	N Control valve
5.6 bar	1.4 bar	1.0 bar	0.2 bar	-	-	0.2-1.0 bar	-	200-3200	200	-	-

Alfa Laval Potentiometric Level Transmitter

The Level Transmitter for hygienic use in smaller tanks

Application
Fast continuous level control, to maintain level regulation in tanks, where levels can change quickly.

Features
The Alfa Laval potentiometric level transmitter is designed to fulfil the demands in hygienic and pharmaceutical production. The main features are:

- Wetted parts in AISI316L, stainless steel and PEEK
- Compact, and hygienic design
- Process temperature -20 to 140°C
- Defined empty registration
- Local Led monitor in fieldhousing
- Insensitive to adhesive media
- Analogue output 4-20 mA

Standard range
The Alfa Laval potentiometric level transmitter is ideal for measurements in small vessels with tough, pasty or strong adhesive media, such as ketchup, honey, and toothpaste. The integrated electronics provide a 4-20 mA output signal and has incorporated automatic recognition of top or bottom mounting position, Even angled installation is possible. Due to the high temperature limit the Alfa Laval potentiometric level transmitter is well suitable for CIP and SIP processes.

TECHNICAL DATA

Accuracy:	±0.5% of FS
Resolution, input:	15 bit
Repeatability:	0.1% of FS
Media conductivity:	Min 50 µS/cm
Protection class:	IP67
Max media pressure:	16 bar

Electical data

Power supply:	18-36 Vdc
Power consumption max:	200 mA
Output:	4-20 mA, max. 500 Ohm,
Connection:	M12 plug or M16 cable gland
Response time:	10 ms

Important
Please observe that a non-linear conductivity in the media will affect the accuracy of the measurement. If mounted in a non-conductive tank such as a plastic tank a reference rod must be installed.

Certificates
3.1 certificate (option)

CE

PHYSICAL DATA

Sensor length (L):	0 to 300 cm

Materials

Surface roughness	Ra < 0.8 µm
Wetted parts	(Ra < 0.4 µm as an option)
Wetted parts:	AISI 316L
Fieldhouse:	AISI 304

Operating temperature

Wetted parts:	-20 to 140°C
Fieldhousing:	-20 to 60 °C

Weight

Sensor:	Approx. 1500 gr.

Process connection
- Clamp DN50 (ISO2852) / Clamp DN51 (DIN32676)
- G1" (ISO228)
- DN32 (DIN11851)
- DN40 (DIN11851)
- DN50 (DIN11851)
- Unique Flexbody type N

Working principle

The Alfa Laval potentiometric level transmitter utilizes the potentiometric measurement principle and can be used in all medias that have a minimum conductivity of 50 µS/cm. From the low resistive measuring rod a high frequent current is fed through the medium to the tank wall. The voltage between the rod and the tank wall is measured. This output voltage is proportional to the tank filling level. The measurement is unaffected by temperature and adhesive media.

Layout of LED´s and push buttons in fieldhousing

Push buttons > 3 sec.
To set 0 %

Set point
100 %, 20 mA

Set point
0 %, 4 mA

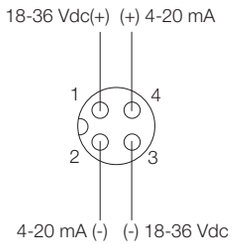
LED Buttons

Electrical data

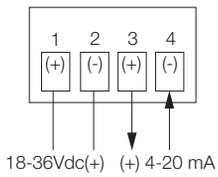
The integrated electronics features as standard automatic top or bottom mounting recognition, and LED´s for local readout of level. Adjustment of measuring range is done via two push buttons and LED's in field housing.

Electrical connections

M12 plug

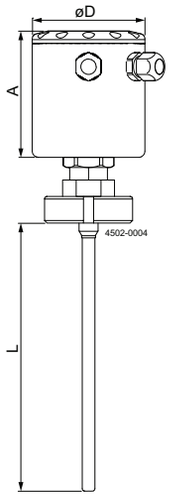


1: Brown
2: White
3: Blue
4: Black

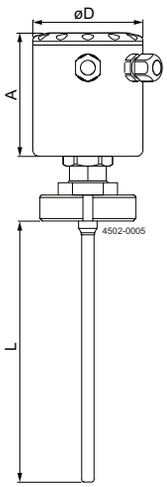


Electrical connection M16 cable gland

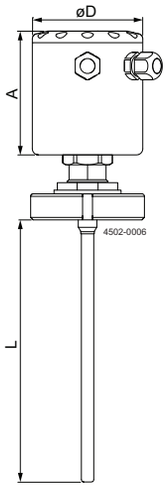
Dimension (mm)



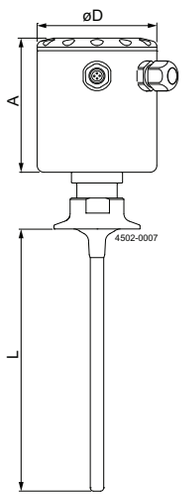
TE67HxAxxxxxxx
DN32 (DIN11851)



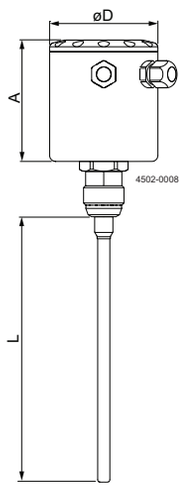
TE67HxBxxxxxxx
DN40 (DIN11851)



TE67HxCxxxxxxx
DN50 (DIN11851)



TE67Hx2xxxxxxx
Clamp DN50 (ISO2852) /
Clamp DN51 (DIN32676)



TE67Hx6xxxxxxx
G1" (ISO228)

A	D
100	89

1.4 Temperature instruments

Our temperature instruments provide accurate and reliable temperature measurements in hygienic and pharmaceutical production. Our thermometers are mechanical temperature gauges for use in dairy, food and beverage, personal care and biopharm production processes that require precise local indications of temperature.

Product leaflets

Thermometer 1.4.81
Temperature Transmitter 1.4.83

Price lists

Thermometer 1.4.86
Temperature Transmitter 1.4.87

1.4

Alfa Laval Thermometer

Thermometers for hygienic use

Application

The Alfa Laval thermometer is designed to fulfil the demands of local temperature indication in hygienic and pharmaceutical production. Main features are: Hygenic connection and robust design, high resistance to corrosion, damp, vibrations and wear. Accurate and long term measurement stability with quick response time. Due to their first class accuracy and long term measurement stability, no yearly calibration is needed. Available in two sizes.

Standard range

Our standard range comes with a liquid-filled housing. It includes an 80 or 100 mm diameter dial and built-in temperature compensator. The housing is made of stainless steel (AISI 304) and the clamp connection and sensor tube is made of stainless steel (AISI 316). As an option, it can be delivered electropolished and with 3A, 3.1 or calibration certificate.

TECHNICAL DATA

Accuracy: . . . . . .Class 1.0
Dial size: . . . . . .80 mm, 100 mm

Measuring ranges

0 to 60°C
0 to 100°C
0 to 120°C
0 to 160°C
0 to 200°C
-20 to 120°C

Working principle

The function is based on expansion of the filling medium in the closed sensor. The change of pressure actuates the spiral spring driving the dial movement. A built-in bimetallic coil compensates automatically for the effect on the reading caused by change of the ambient temperature. The filling media is an inert gas which is 100% neutral to the environment. This makes the thermometer ideal for use in food and pharmaceutical industries.

Certificates

- FDA conformity declaration (option)
- Calibration certificate (option)
- 3.1 certificate (option)

PHYSICAL DATA

Sensor length (L): . . . . . From 50 mm to 300 mm

Materials

Wetted parts: . . . . . AISI 316
Casing: . . . . . AISI 304
Glass: . . . . . 4 mm thick glass

Filling

Sensor tube: . . . . . Inert FDA approved gas
Housing: . . . . . FDA approved silicone oil

Weight

Thermometer with diaphragm: . . . . . Approx. 1.5 kg

Process connections

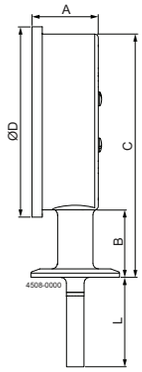
Clamp DN38 (ISO2852) / Clamp DN40 (DIN32676)
Clamp DN50 (ISO2852) / Clamp DN51 (DIN32676)

Operating temperature

Wetted parts: . . . . . up to 250°C
Casing: . . . . . -40 to 100°C

CE

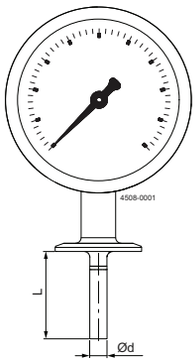
Dimensions (mm)



Clamp DN38 (ISO2852) /

Clamp DN40 (DIN32676)

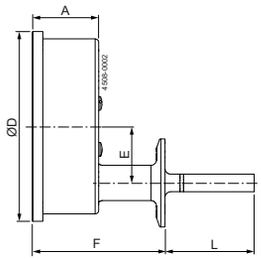
TE67Fx1xxx1xxx



Clamp DN38 (ISO2852) /

Clamp DN40 (DIN32676)

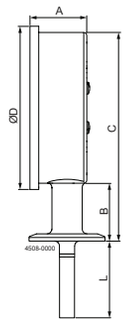
TE67Fx1xxx1xxx



Clamp DN38 (ISO 2852) /

Clamp DN40 (DIN32676)

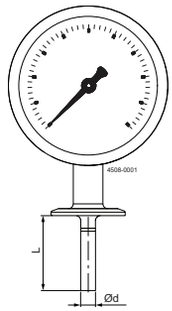
TE67Fx1xxx2xxx



Clamp DN38 (ISO2852) /

Clamp DN40 (DIN32676)

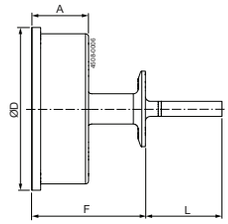
TE67Fx1xxx1xxx



Clamp DN38 (ISO2852) /

Clamp DN40 (DIN32676)

TE67Fx1xxx1xxx



Clamp DN38 (ISO 2852) /

Clamp DN40 (DIN32676)

TE67Fx1xxx2xxx

	A	B	C	øD	ød	E	F
100 mm	38	38	137	108	10	32	76
80 mm	41	37.5	115.5	86	10	0	60

1.4

Alfa Laval Temperature Transmitter

The temperature transmitter that fits in your hygienic process

Application
Temperature monitoring and control in tank, heat exchanger, filtration inlet and CIP return pipe

Features
The Alfa Laval temperature transmitter is designed to fulfil the demands in hygienic and pharmaceutical production. The main features are:

- Wetted parts in AISI316L stainless steel
- Compact and hygienic design (3A / FDA and EHEDG compliant)
- Measuring range: -20 to 150°C
- Configurable touch display
- High accuracy < 0.1 °C
- Sample time: 0,7 s

Standard range
The Alfa Laval temperature transmitter features as standard a stainless steel field housing in excellent finish, suitable for hygienic applications. All process connections are as standard hygienic connections with high cleanability and bacteria tightness, as an option wetted parts can be electropolished down to Ra <0.4µm. The design of the sensor tip ensures low response times and accurate measurements. The output can be supplied either as a standard 4-20 mA, 4-20 mA/HART® output or Profi bus® PA interface.

TECHNICAL DATA

Temperature Transmitter accuracy

0	to	100 °C	< ±	0.39	°C
0	to	150 °C	< ±	0.48	°C
-10	to	100 °C	< ±	0.39	°C
-20	to	150 °C	< ±	0.48	°C

Measuring ranges

0	to	100	°C
0	to	150	°C
-10	to	100	°C
-20	to	150	°C

Resolution: . . . . . 12 bit
Protection class: . . . . . IP 67
with cable gland IP69K with M12 connector
Max media pressure: . . . . . 100 bar

Electrical data
Power supply: . . . . . 8 to 35 Vdc
Output temperature: Pt100
4-20 mA,
Relay: . . . . . 2 galvanic insulated relays included in the display (60V/70 mA)

Certificates
- 3.1 certificate (option)
- Calibration certificate, 5 point calibration (option)

PHYSICAL DATA
Sensor length (L): . . . . . From 50 mm to 300 mm

Materials
Wetted parts: . . . . . AISI 316L
Fieldhouse: . . . . . AISI 304 and PEEK
Surface roughnes:
Hygienic and non-hygienic versions: . . Ra ≤ 0.8 µm

Weight
Sensor: . . . . . Approx. 500 gr.

Operating temperature
Wetted parts: . . . . . -50 to 250°C

Ambient temperature

P_t output:	-40 - 160 °C
Transmitter without display:	-40 - 85 °C
Transmitter with display:	-30 - 80 °C
Elctropolished (option):	Ra ≤ 0.4 µm

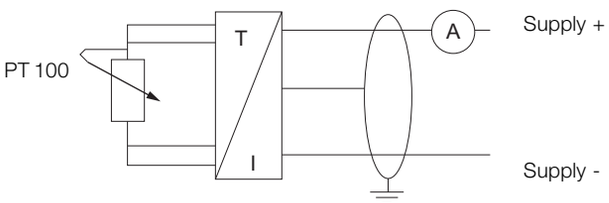
CE

Electrical connection:
- M12, 5 pin (4-20 mA output only)
- M12, 8 pin (4-20 mA + relay output)
- M16 or M20 cable gland

Process connections
- Clamp DN38 (ISO2852) / Clamp DN40 (DIN32676)
- Clamp DN50 (ISO2852) / Clamp DN51 (DIN32676)
- G1/2”
- CFF (Clamp front flush)
- DN25 (DIN11851)
- DN40 (DIN11851)
- DN50 (DIN11851)

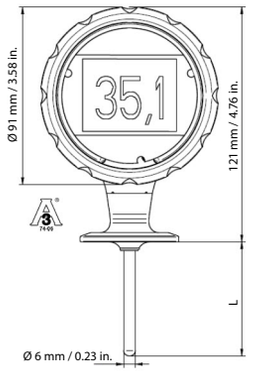
Response time (measured in water)
Sensor tip ø6 mm: . . . . . 6.1sec.
Sensor tip ø4 mm: . . . . . 1.5sec.

Working principle
The Alfa Laval temperature transmitter relies on a fast response Pt100 sensor tip. The sensor element is as standard a DIN A sensor element which is connected with 4 wires to the build in transmitter.
This ensures full resistance compensation and enables reliable and accurate measurements of process temperatures with a standard analogue output of 4-20 mA.

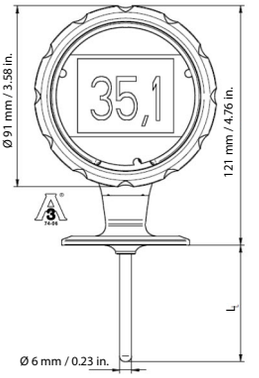


Dimensions (mm)

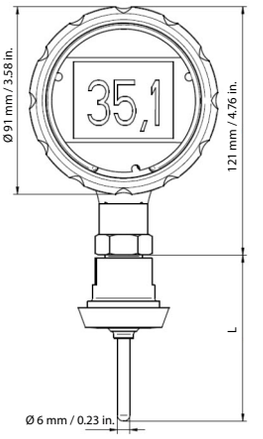
1.4



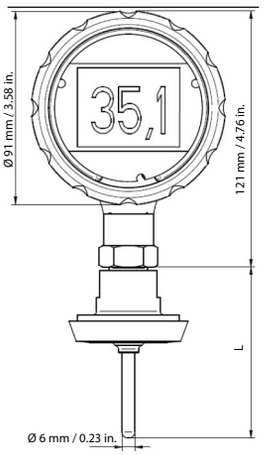
Clamp DN38 (ISO2858/DIN32676)
TE67GX1XXXXXXX



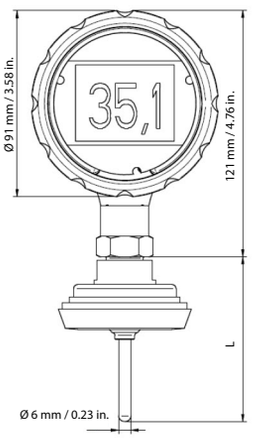
Clamp DN51



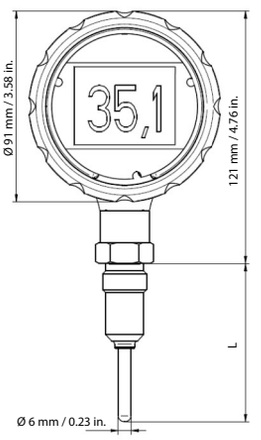
DN32 (DIN11851)
TE67GXAXXXXXXX



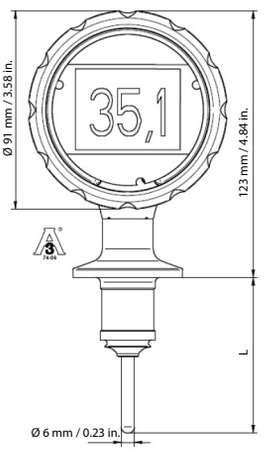
DN40 (DIN11851)
TE67GXBXXXXXXX



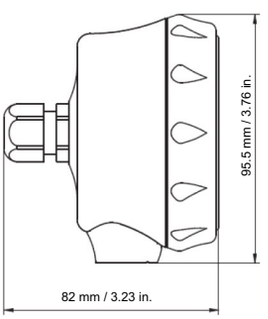
DN50 (DIN11851)
TE67GXCXXXXXXX



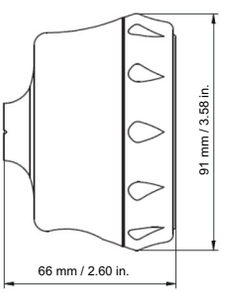
G½A (ISO282)
TE67GX4XXXXXXX



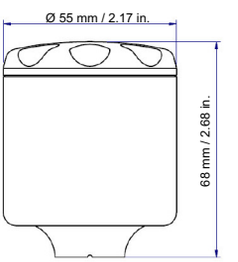
CFF
TE67GXDXXXXXXX



Bottom connection
TE67GxxxxxAxxx
TE67GxxxxxCxxx
TE67GxxxxxExxx
TE67GxxxxxGxxx



Rear connections
TE67GxxxxxBxxx
TE67GxxxxxDxxx
TE67GxxxxxFxxx
TE67GxxxxxHxxx



ø55 housing with no display
TE67Gxxxxx1xxx
TE67Gxxxxx2xxx
TE67Gxxxxx3xxx
TE67Gxxxxx4xxx

1.5 Flow instruments

Our flow instruments are hygienic flow measuring instruments that enable accurate measurement of flow and batch. Flow measurement with the Alfa Laval flow transmitter is unaffected by flow profile, viscosity or particles. -+0.2% accuracy in 90% of measuring range with a flow speed of 0.5 to 5 m/s ensuring gentle treatment of measured product.

Product leaflets

Flow Meters 1.5.91
Flow Transmitter 1.5.93

Price lists

Flow Meter 1.5.96
Flow Transmitter 1.5.97

1.5

Alfa Laval Flow Meters

Auxiliary Membrane Filtration Equipment

Application

Flow meters are ideal for measuring feed, permeate, retentate, and diawater flows in membrane filtration modules and plants. The flow meters are made in a hygienic design. All materials comply with FDA regulations, and all product wetted parts are made of stainless steel (AISI 316L) and polysulphone. For float materials, please refer to the table overleaf.

Working principle

A float is elevated in the tapered glass metering tube in proportion to the fluid flow. Readings are taken from the scale on the metering tube. The scale shows the flow as a percentage of maximum flow (100% = max. flow). Different floats can be used with the same flow meter, thus making it possible to use it for a number of flow ranges.

Options

Flow meters for higher flow.

Technical data

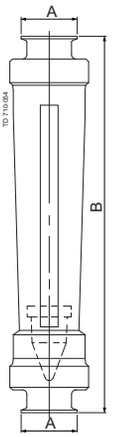
Temperature range: . . . . . 0-100°C
Max. pressure: . . . . . 1.6 MPa (16 bar)

CE

PHYSICAL DATA

Measurements

Code no.	Connection (A) Clamp diam.(mm)	Length (B) (mm)	Weight (kg)
103408	38	430	1.20
517112	38	430	1.50
103412	38	430	2.25
103415	38	430	3.00
103410	51	430	2.20
103414	51	430	3.15



Flow meter tube			Float			
Code number	Connection (A) (mm)	Nominal size	Code number	Measuring range (water) (l/h)	Material	Weight (g)
103408	38	DN25	103474	60 – 640	Polypropylene, black	45.8
			103477	40 – 600	PVC	48.2
517112	38	DN32	103478	150 – 1,600	Polypropylene, white	126
			103479	200 – 2,500	Stainless steel	259.9
531655*	51	DN50	*	200 – 2,500	Polypropylene, white	255
538602*	38					
103410	51	DN50	103481	400 – 4,000	Polypropylene, white	454
103412	38		103482	600 – 6,300	Stainless steel	936
103414	51	DN65	103484	1,000 – 13,000	Polypropylene, white	820
103415	38		103473	2,000 – 20,000	Stainless steel	1,714.00

*) Code numbers 531655 and 538602 include flow meter tube and float

1.5

Alfa Laval Flow Transmitter

High Precision Flow Transmitter

Application

The Alfa Laval Flow Transmitter is designed to fulfill the demands of hygienic and pharmaceutical production. Amongst others it is suitable for flow measurement in Food, Beverage, Dairy and Biopharm industries. The main features are:

- Constructed to be independent of variations in flow profile, the presence of solids and even changes in product viscosity.
- Suitable for Hygienic applications
- No internal pressure drop.
- Robust and compact design. Temperature tolerant up to 115°C. Easy to mount, even in difficult applications.
- Optimized for high accuracy and linearity.
- Pre set-up from factory, ready for installation.
- Bidirectional, (can measure in booth flow directions).
- No moving parts - no maintenance.

TECHNICAL DATA

Accuracy: . . . . . ±0.02 % of FS (testbench) <±0.2 % of FS (working conditions)
Repeatability accuracy: . . . . . Max 0.5* accuracy
Media conductivity: . . . . . Min 5 µS/cm

Resolution output signal

TE67A1XXXXXXXX: . . . . . 0.01 litre/pulse
TE67A2XXXXXXXX: . . . . . 0.01 litre/pulse
TE67A3XXXXXXXX: . . . . . 0.10 litre/pulse
TE67A4XXXXXXXX: . . . . . 0.10 litre/pulse
TE67A5XXXXXXXX: . . . . . 0.10 litre/pulse
TE67A6XXXXXXXX: . . . . . 0.10 litre/pulse

Protection class: IP67
Max media pressure: . . . . . 10 bar

Electrical data

Power supply: . . . . . 24 V AC/DC (0.25A)
Electrical connection: . . . . . Pg11 cable gland

Response time

Puls output: . . . . . 0.2 sec.
4-20 mA: . . . . . 1 sec.

Output

Puls output: . . . . . (0 to 1000Hz) , 4-20 mA (option), Profibus DP (option)

CE

PHYSICAL DATA

Materials

Wetted parts: . . . . . AISI 316 and PFA
Housing: . . . . . Noryl

Operating temperature

Wetted parts: . . . . . -30 to 115°C
Electronics range: . . . . . -10 to 50°C

Weight

Flow transmitter: . . . . . 5 kg. (type TE67A6: 10 kg.)

Measuring ranges

0 to 8 m^3/h (2113 GPH), ... (connection: DN25 (ISO2852))
0 to 20 m^3/h (5284 GPH), ... (connection: DN38 (ISO2852))
0 to 40 m^3/h (10568 GPH), . . . (connection: DN51 (ISO2852))
0 to 80 m^3/h (21136 GPH), . . . (connection: DN63 (ISO2852))
0 to 120 m^3/h (31704 GPH), . . (connection: DN76 (ISO2852))
0 to 200 m^3/h (52840 GPH), . . (connection: DN102 (ISO2852))

Process connections

TE67A1XXXXXXXX: connection: . . . . . clamp DN25 (ISO2852)
TE67A2XXXXXXXX: connection: . . . . . clamp DN38 (ISO2852)
TE67A3XXXXXXXX: connection: . . . . . clamp DN51 (ISO2852)
TE67A4XXXXXXXX: connection: . . . . . clamp DN63 (ISO2852)
TE67A5XXXXXXXX: connection: . . . . . clamp DN76 (ISO2852)
TE67A6XXXXXXXX: connection: . . . . . clamp DN102 (ISO2852)

Certificates
- Calibration certificate (option)
- 3.1 certificate (option)

Electrical data
The Alfa Laval Flow Transmitter is pre-setup from factory ready for installation and has as standard integrated automatic zero point adjustment. As an option The Alfa Laval Flow Transmitter can be delivered with display giving access to advanced features such as integrated temperature compensation through external pt100 sensor, PI regulator and for low flows a linearization function further optimizing the accuracy at low flows.

Standard range
The Alfa Laval Flow Transmitter is an electromagnetic precision meter for volumetric measurement of liquids that are electrically conductive. The transmitter can be used in applications where a hygienic design is required and the rugged construction of the transmitter makes it suitable for installations where solid particles are present in the liquid.

The standard version is delivered pre-setup making installation quick and easy. The output signal is as standard a pulse-signal (0 to 1000 Hz) with a resolution of either 0.01 or 0.1 ltr/pulse. As an option the Flow Transmitter can be delivered with analogue 4-20 mA output or profibus DP. A display can be attached enabling advanced features, such as scaling and changing of resolution.

The metering tube is coated with PFA on the inside and is fitted with clamp connections. The sensitive electronic is completely embedded and consequently hermetically sealed. The flow transmitter is water proof with protection class IP 67. The terminals for electrical connection are marked with both number and function and cable access is done through 3 PG-11 cable glands.

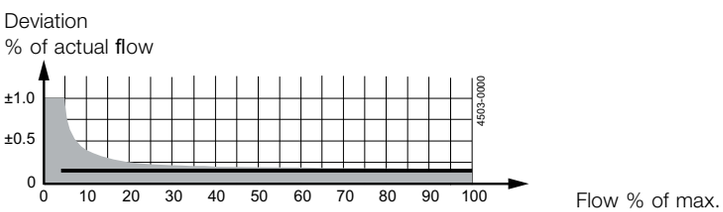
Working principle
The Alfa Laval FlowTransmitter consists of a metering pipe and two magnetic coils. When a current is applied to the coils a magnetic field is produced at right angles to the metering pipe.

With a conductive liquid flowing through the metering pipe an electrical voltage is induced and measured by two electrodes mounted in the metering pipe. This voltage is proportional to the average velocity of flow and therefore to the volume flowing.

The Alfa Laval Flow Transmitter utilizes a square measurement chamber. The shape of the measurement chamber significantly reduces the influence of viscosity, type of liquid, and flow profiles and eliminates any need for recalibration when changing product for instance from milk to water.

The microprocessor in the transmitter controls the current generator keeping the magnetic field constant. The voltage across the electrodes is amplified and converted to a digital value from which the microprocessor calculates the liquid flow.

Accuracy graph



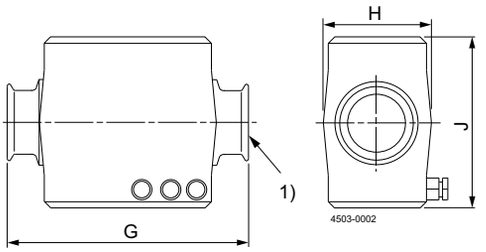
Max. error vs. actual flow rate
Flow velocity: 100% of max. equals 5.4 (m/s)

Expected performance with linearizing function enabled (typical data at reference test conditions).

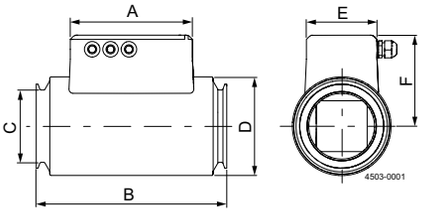
Real life performance including the effects of variations in liquid type/temperature, ambient temperature and power supply voltage.

1.5

Dimensions (mm)

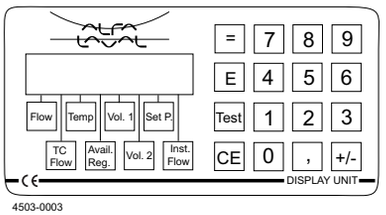


Dimensional drawing of Alfa Laval Flow Transmitter
TE67A1XXXXXXXX to TE67A5XXXXXXXX



Dimensional drawing of Alfa Laval Flow Transmitter
TE67A6XXXXXXXX

A	B	C	D	E	F	G	H	J
175	270	102	140	105	130	250	110	178



Display for Flow Transmiter
TE67X000000284

Selection guide

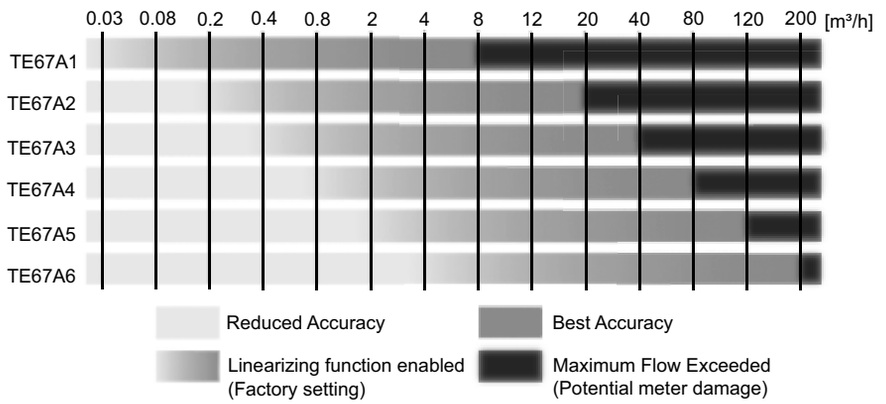
When selecting a Flow Transmitter the two following rules should be followed:

1. The Flow Transmitter with a pipe dimension equal to the rest of the piping system should be selected.
2. If optimum measurement accuracy is of primary concern, the smallest possible transmitter should be chosen, while still observing that the maximum flow rate must never be exceeded.

The below table can assist in selection.

Selection example

Problem: The flow to be measured is between 4 and 12 m³/h and the piping installation is 38 mm (1”). Solution: according to the selection guide model TE67A2xxxxxxxx and TE67A3xxxxxxxx can be used, both selections will give optimum accuracy. But following rule number TE67A2xxxxxxxx is selected as it has the same piping diameter as the installation and thereby minimizes pressure loss in the system.



1.6 Pressure instruments

Alfa Laval pressure pressure instruments provide accurate and reliable indication of internal pressure in filtration and pump systems, pressure vessels, valve matrices and suitable for hygienic, dairy, food, beverage and pharmaceutical inductries.

Product leaflets

Electronical Pressure Gauge 1.6.101
Pressure gauges 1.6.103
Pressure Transmitters 1.6.105
Electronic Pressure Transmitter 1.6.107

Price lists

Electronical Pressure Gauge 1.6.110
Pressure Gauge 1.6.111
Pressure Transmitter 1.6.112
Electronic Pressure Transmitter 1.6.114

Alfa Laval Electronical Pressure Gauge

Hygienic Pressure gauge with electrical outputs

1.6

Application

The Alfa Laval electronic pressure gauge (EPG) is designed to fulfil the demands of a hygienic pressure gauge with electrical output capabilities in the hygienic and pharmaceutical industry. Main features:

- Turnable scale in order to compensate for alternative mounting (350°)
- Adjustable pressure switch feature
- Analogue output (4-20 mA)
- Imbedded led indicator in scale
- Pressure-pulsation and -trend monitoring feature
- Integrated push buttons and digital display for easy setup

TECHNICAL DATA

Accuracy: . . . . . Class 0.5 (±0.5% of FS)
Protection class: IP67

Measuring ranges

-1 to 1.5 bar
0 to 2.5 bar
-1 to 3 bar
0 to 4 bar
0 to 6 bar
0 to 10 bar
0 to 16 bar
0 to 40 bar

Electrical data

The integrated electronics features short circuit, reverse polarity and overload protection.

Power supply: . . . . . 18-36 Vdc
Power consumption: . . . . . < 70 mA
Electrical connection: . . . . . 4 pin M12 plug

Digital output: . . . . . logic digital, PNP or NPN
Max output current: . . . . . 50 mA
Response time: . . . . . > 9 ms

Analogue output: . . . . . 4-20 mA, 3 wire
Response time: . . . . . > 28 ms

Certificates

- 3.1 certificate (option)
- FDA conformity declaration (option)
- Calibration Certificate, 4 points (option)

PHYSICAL DATA

Materials

Wetted parts: . . . . . AISI 316L
Fieldhousing: . . . . . AISI 316L
Glass: . . . . . Safety glass 4 mm
Filling: . . . . . FDA approved silicone oil

Operating temperature

Wetted parts: . . . . . -25 to 85°C (140°C < 1 hour)
Field housing: . . . . . -20 to 80°C
Compensated temp. range: . . 0 to 70°C

Weight: . . . . . Approx. 500 gr.

Process connection

Clamp DN38 (ISO2852) / Clamp DN40 (DIN32676)

Pressure

Messuring range			Max. over pressure
-1	to 1.5	bar	10 bar
0	to 2.5	bar	10 bar
-1	to 3	bar	30 bar
0	to 4	bar	30 bar
0	to 6	bar	50 bar
0	to 10	bar	50 bar
0	to 16	bar	80 bar
0	to 40	bar	80 bar

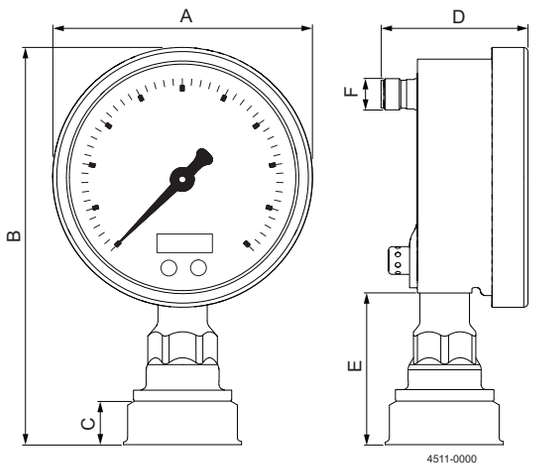
Standard range

The Alfa Laval EPG is as standard offered with a DN38 connection, a turnable scale and a digital display with two push buttons for easy setup. Setup is done through the two push buttons and the digital display, this offers the user the possibility to customize the digital and analogue output from the sensor making the EPG ideal for more than just simple pressure monitoring but also pressure switch and pump monitoring applications. Especially in these applications the unique led indication, imbedded in the outer circumference of the scale, offers the possibility to display pressure pulsation, pressure trends and actual set point of the pressure switch locally.

Working principle

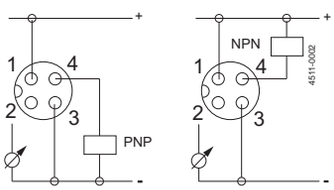
The Alfa Laval EPG is based on a internal ceramic pressure sensor which together with the metal diaphragm ensures a proper hygienic process connection. In order to offer the many advanced setup possibilities and the intelligent scale the EPG uses an advanced microprocessor. The Microprocessor controls the embedded led indication in the scale, the output signals and as well the movement of the physical dial. The turn able dial is approved for IP69K, which ensures maximum tightness between the dial and the housing, offering a life time tight closure.

Dimensions (mm)



A	B	C	D	E	F
100	181	20	57	87.5	M12 Plug

Electrical connections



PIN 1	Ub+
PIN 2	Ub-
PIN 4 (OUT1)	Binary switching output pressure moniting
PIN 2 (OUT2)	Analogue output for system pressure

Core colours of sockets:
1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)

Alfa Laval Pressure gauges

Pressure gauges for hygienic use

1.6

Application

The Alfa Laval pressure gauge is designed to fulfil the demands of pressure gauges in hygienic and pharmaceutical production. It is suitable as a local indicator in filtration systems, pump system pressure vessels etc. Available in two sizes.

Features: Wetted parts in acid-proof, stainless steel. Measuring range -1 to 60 bar. Process temperature up to 200°C.

Standard range

Our standard range is supplied with a liquid-filled housing. It includes an 80 mm / 100 mm diameter dial and a built-in volume compensator and relief plug. The housing is made of stainless steel (AISI 304) and the clamp connection and pressure sensor are made of stainless steel (AISI 316L).

As an option, it can be delivered electropolished and with 3.1 or calibration certificates

TECHNICAL DATA

Accuracy: . . . . . Class 1.0 (±1%)
Protection class: IP65

Measuring ranges

-1 to 1 bar
0 to 2.5 bar
0 to 4 bar
0 to 10 bar
0 to 16 bar
0 to 40 bar
0 to 60 bar

Working principle

The pressure gauge working principle is build on the Bourdon principle where pressure applied on the diaphragm is transmitted via silicone oil to a bourdon tube which is in mechanical contact with the dial, and thus indicates the pressure applied on the diaphragm.

Pressure overload on diaphragm: . . . . short time 130% of FS

Certificates

- FDA conformity declaration (option)
- Calibration Certificate (option)
- 3.1 Certificate (option)

Authorized to carry the 3A symbol

CE

PHYSICAL DATA

Materials

Wetted parts: . . . . . AISI 316L
Casing: AISI304
Glass: . . . . . Lexan 121R, polycarbonate
Filling bourdon tube: . . . . . FDA approved silicone oil
Filling housing: . . . . . Glycerine

Operating temperature

Wetted parts: . . . . . up to 200°C.
Casing: . . . . . -20 to 70°C.

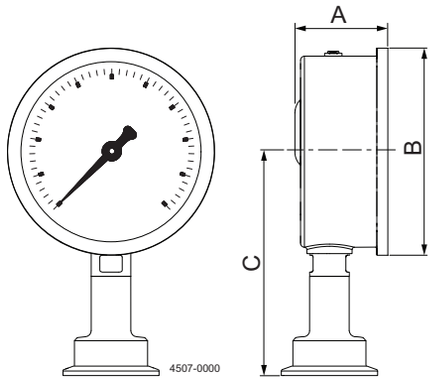
Weight

Pressure gauge with Diaphragm: . . . . Approx. 1 kg.

Process connection

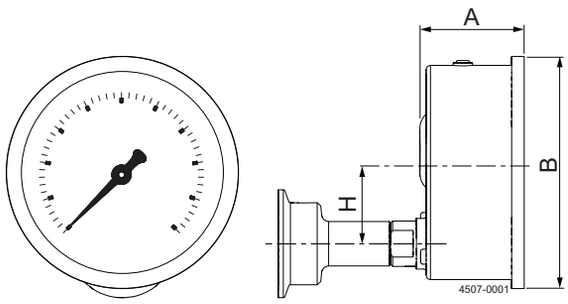
Clamp DN38 (ISO2852) / Clamp DN40 (DIN32676).
Clamp DN50 (ISO2857)/Clamp DN51 (DIN32676

Dimensions (mm)



TE67DXXXXXX4X

	A	B	C
100 mm	45	108	114
80 mm	41	86	101.5



TE67DXXXXXX5X

	A	B
100 mm	45	108
80 mm	41	86

Alfa Laval Pressure Transmitters

Hygienic Pressure Measurement

1.6

Application

The Alfa Laval pressure transmitter is designed to fulfil the demands of pressure measurement in hygienic and pharmaceutical production. It is suitable in filtration systems, pump systems, pressure vessels, valve matrixes etc. The main features are:

- Long Term stability
- High overload capacity
- Good accuracy, 0.35 % of FS
- 4-20 mA output (2 wire)

Standard range

The Alfa Laval pressure transmitter range can be used with all media that are compatible with stainless steel W 1.4435 (AISI 316L). For usage with high media temperature a cooling element can be added thus media temperatures up to 300° C can be achieved.
The flushable process connection is oil filled with FDA approved oil.

CE

TECHNICAL DATA

Accuracy: . . . . . 0.1% or 0.35% of FS

Measuring ranges

-1	to	0	bar
-1	to	2	bar
0	to	1	bar
0	to	1.6	bar
0	to	2.5	bar
0	to	4	bar
0	to	6	bar
0	to	10	bar
0	to	16	bar
0	to	25	bar
0	to	40	bar
0	to	60	bar

Protection class: IP67
Cable outlet: IP68/69K

Electrical data

Power supply: . . . . . 12-36 Vdc
Output: . . . . . 4-20 mA, 2 wire
Connection: . . . . . cable outlet, M12 plug or cable gland M20 (only with fieldhousing option)
Response time: . . . . . <10 ms

Certificates

- 5 point calibration certificate (option)
- 3.1 certificate (option)
- 3A certificate (option)
- FDA conformity declaration (option)

PHYSICAL DATA

Materials

Wetted parts: . . . . . AISI 316
Casing: . . . . . AISI 304
Fieldhousing: . . . . . AISI 303 (option)
Filling: . . . . . FDA approved silicone oil

Operating temperature

Wetted parts: . . . . . -25 to 125°C (150°C for 30 minutes with a max. ambient temperature of 50°C). -25 to 300°C (with cooling tower option). Note: Except: TE67E111111130 (-1 to 0 barg): 0- 70°C
Ambient temperature: . . . . . -25 to 85°C.
Compensated temp. range: . . 0 to 70°C

Weight

Pressure transmitter with diaphragm: . . . . . min. 500 gr.

Process connection

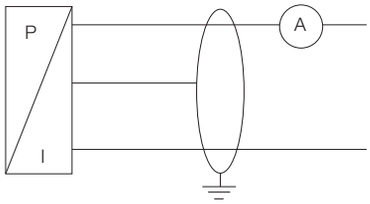
Clamp DN38 (ISO2852)/Clamp DN40 (DIN32676)
Clamp DN50 (ISO2852)/Clamp DN51 (DIN32676)
Flange DN40/PN40
1” (ISO228)
DN25 (DIN11851)
DN40 (DIN11851)
DN50 (DIN11851)

Hygienic tank connection HTC 1.5”

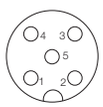
Pressure overload on diaphragm

Measuring Range		Permisible Overload	
-1 to 0	bar	3	bar
-1 to 2	bar	3	bar
0 to 1	bar	3	bar
0 to 1.6	bar	6	bar
0 to 2.5	bar	6	bar
0 to 4.0	bar	20	bar
0 to 6	bar	20	bar
0 to 10	bar	60	bar
0 to 16	bar	60	bar
0 to 25	bar	60	bar
0 to 40	bar	100	bar

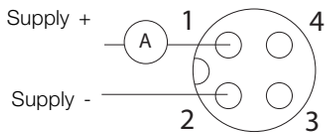
Electrical connections



2 wire system:

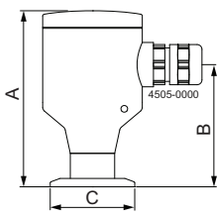


4-20 mA - Connector fieldhousing



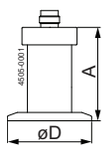
M 12 plug

Dimensions (mm)



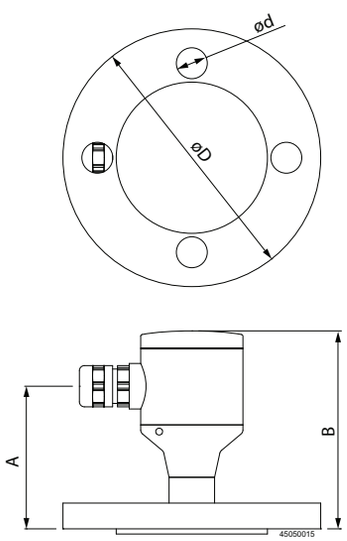
A	B	C
150	73	n50.5

TE67Ex2xxxxx2x
Pressure transmitter with fieldhousing



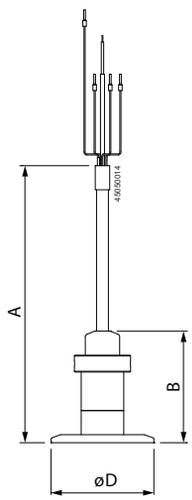
A	D
56	ø51.5

TE67Ex2xxxxx3x
Presseure transmitter with M12 plug connector



A	B	øD	ød
83	115	150	18

TE67Ex3xxxxx2x
Pressure transmitter with fieldhousing and flange



A	B	øD
172	69	64

TE67Ex2xxxxx40
Pressure transmitter with cable outlet

Alfa Laval Electronic Pressure Transmitter

Hygienic Pressure Measurement

1.6

Application

Level monitoring in tank indoors and outdoors. Hydrostatic level measurement with high accuracy. Transmembrane pressure control in filtration systems. Measuring pressure in the fluid flow before the separation or homogenizer. Measuring pressure in the discharge line of the homogenizer to scan quality of the homogenization

Features

The Alfa Laval electronic pressure transmitter is designed to fulfill the demands of pressure measurement in the hygienic industries. It is suitable in filtration systems, pump systems, measuring pressure and liquid level in vessels and tanks, valve matrices, etc.

The main features are:

- Touch display with preconfigured display modes
- Good accuracy (0,1 or 0,25% of FS)
- Quick response time (0,3s)

Working principle

The TE67L pressure transmitter is based on the piezoresistive pressure cell technology. The measuring cell is built into a small stainless steel housing, which is integrated into the process connection. The measuring cell is protected by ultra-thin stainless steel diaphragm and a small FDA approved oil filling is transferring the applied pressure from the front of the diaphragm to the measuring cell.

Standard range

TECHNICAL DATA

Accuracy: 0,10% or 0,25% of Full Scale (FS) at 20°C

Measuring ranges:

		Calculated Accuracy in mBar	
	Measuring	< 0.25% @	< 0.1% @
Type	Range	20 °C	20 °C
TE67L1xxxxxxxx	-1..0 Bar	<± 5 mBar	<± 2 mBar
TE67L2xxxxxxxx	-1..1 Bar	<± 5 mBar	<± 2 mBar
TE67L3xxxxxxxx	-1..5 Bar	<± 15 mBar	<± 6 mBar
TES7LAxxxxxxxx	0..345 mBar	<± 0.5 mBar	-
TES7LBxxxxxxxx	0..1 Bar	<± 5 mBar	<± 2 mBar
TES7LCxxxxxxxx	0..1.6 Bar	<± 15 mBar	<± 2 mBar
TES7LDxxxxxxxx	0..2.5 Bar	<± 15 mBar	<± 6 mBar
TE67LExxxxxxxx	0..4 Bar	<± 15 mBar	<± 6 mBar
TES7LFxxxxxxxx	0..6 Bar	<± 52 mBar	<± 21 mBar
TE67LGxxxxxxxx	0..10 Bar	<± 52 mBar	<± 21 mBar
TE67LHxxxxxxxx	0..16 Bar	<± 52 mBar	<± 21 mBar
TE67LIxxxxxxxx	0..25 Bar	<± 88 mBar	<± 35 mBar
TE67LJxxxxxxxx	0..40 Bar	<± 173 mBar	<± 69 mBar
TES7LKxxxxxxxx	0..60 Bar	<± 173 mBar	<± 69 mBar

Protection class:

IP67 with cable gland IP69K with M12 connector and IP69K approved cable and correct torque

PHYSICAL DATA

Surface Roughness

Non Hygienic versions (G1/2A, G1", DN32, DN40, DN50) Ra ≤ 0.8 µm
Clamp DN38, DN51 ISO2852 Ra ≤ 0.4 µm
Clamp Flush Flushable (CFF) Ra ≤ 0.8 µm

Unique Flexbody : . . . . . .Ra ≤ 0.8 µm

Wetted parts:

Process connection . . . . . .AISI 316L, 1.4404
Flush diaphragm . . . . . .AISI 316L, 1.4435

Non wetted parts:

Housing: . . . . . .AISI 304, 1.4301
Filling: . . . . . .FDA approved silicone oil

Electrical connections:

Cable Gland . . . . . .Polycarbonate or Stainless steel, AISI 304, 1.4404
M12 connector . . . . . .Stainless Steel, AISI 304, 1.4404

Display:

Housing Polycarbonate plastic

Operating temperature Wetted parts: . . . . . .-10 to 125 °C up to 150 °C. for < 60 minutes
Maximum temperature range: .200 °C. (with cooling neck)
Ambient temperature: . . . . . .-40..85 °C

Cable outlet:
Electrical data:

Power supply: . . . . . 10-35 VDC
Output:
Pressure: . . . . . 4-20 mA or 4-20 mA HART
Relay: . . . . . 2 galvanic insulated relays included in the display

Connection:
M12 plug, 5 pin (4-20 mA output only)
plug, 8 pin (4-20 mA + relay output)
M16 or M20 cable gland

Response time: ≤ 0.3 seconds

Certificates:

- 5 point calibration certificate (option)
- 3.1 certificate (option)

Operating temperature
Wetted parts: . . . . . -10 to 125 °C
up to 150 °C. for < 60 minutes
Maximum temperature range: . 200 °C. (with cooling neck)
Ambient temperature: . . . . . -40..85 °C Process connections

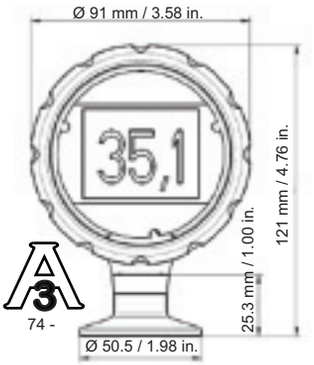
Clamp DN 38 (ISO2852) / Clamp DN 40 (DIN32676)
Clamp DN 51 (ISO2852) / Clamp DN 50 (DIN32676)
G½A DIN 3852
G1" Flush Cone
DN 32 (DIN11851)
DN 40 (DIN11851)
DN 50 (DIN11851)
Clamp front flushable (CFF)
Unique Flexbody type N and F

Measuring ranges and overpressure safety

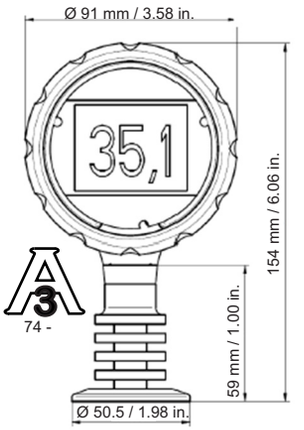
Meas. range	-1..0	-1..1	-1..5	0..0.345	0..1	0..1.6	0..2.5	0..4	0..6	0..10	0..16	0..25	0..40	0..68
Over pressure	3	3	15	1	3	15	15	15	60	60	60	70	135	135
Burst Pressure	6	6	30	2	6	30	30	30	120	120	120	170	270	270

1.6

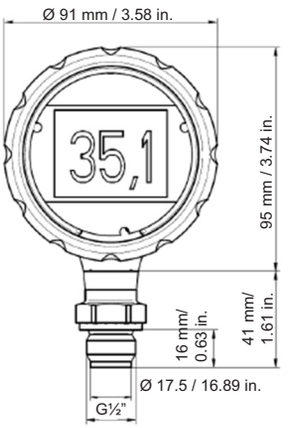
Dimensions



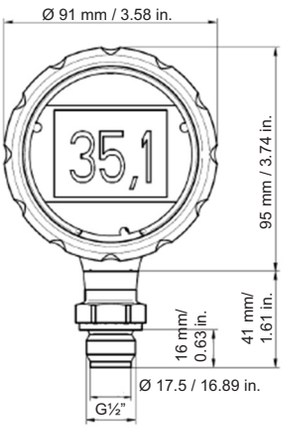
Clamp DN38 (ISO2852)
TE67Lx1xxxEx4x



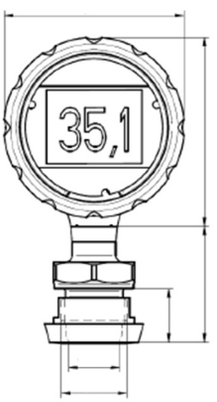
Clamp DN38
with cooling neck
TE67Lx1xxxEx4x



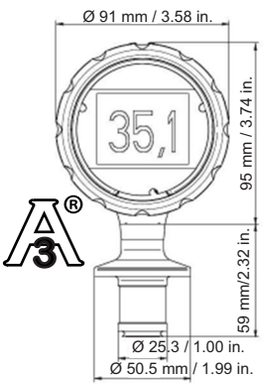
G1/2A DIN 3852
TE67Lx4xxxEx4x



G1" Flush Cone
TE67Lx6xxxEx4x



DN32 (DIN11851)
TE67LxAxxxEx4x



Clamp Flush Flushable
(CFF)
TE67LxDxxxEx4x

1.7 Cleaning validation instruments

The Alfa Laval Rotacheck is a best-in-class validation instrument that verifies the performance of Rotary Jet Head cleaning machines. Its built-in intelligence gives a real-time supervision of the cleaning process and enable a controlled and repeatable cleaning process. The patented Alfa Laval Hygenic Tank Connection (HTC) makes it very hygenic, easy to clean and drainable.

Product leaflets

Rotacheck Basic and Plus 1.7.117
TJ Rotacheck 1.7.119

Price lists

Rotacheck Basic and Plus 1.7.120
TJ Rotacheck 1.7.121

Alfa Laval Rotacheck Basic and Plus

The solution to validate the rotation pattern of Rotary Jet Heads

1.7

Application

The Alfa Laval Rotacheck is designed to fulfill the demands for a safe and validated Tank Cleaning verification in the brewery, dairy and pharmaceutical industry. The main features are:

- Build on the Alfa Laval patented teach-in and monitoring system offering easy installation and validated monitoring capability.
- Uses the patented Alfa Laval Hygienic Tank Connection (HTC) which ensures a full flushable process connection.
- 3A and EHEDG approved.
- Visual light indication integrated into the field housing, offering visual status feedback to operators and maintenance staff on the factory floor.
- Electrical outputs for PLC control system (HIT “Rotation OK”, Alarm, Idle).

TECHNICAL DATA

Protection class: . . . . . IP66 and IP67

Pressure

Pressure overload on diaphragm: . . . 15 bar
Max. working pressure in tank while performing monitoring: . . . . . 0.3 bar

Electrical data

The integrated electronics features short circuit and high temperature protection.

Power supply: . . . . . 24 Vdc +- 10%
Power consumption max: . . . . . 70 mA
Outputs (HIT “Rotation OK”, Alarm, Idle): . . . . . logic PNP
Max current per output: . . . . . 50 mA
Electrical connection: . . . . . M12 plug (8 poles) or M16 cable gland

Certificates

Q-doc (option)

Authorized to carry the 3A symbol

PHYSICAL DATA:

Materials:

Wetted parts: . . . . . AISI 316L
Fieldhousing: . . . . . Polymer PA12
Product wetted elastomer: . . . . . EPDM
Other elastomer: . . . . . NBR

Operating temperature

Wetted parts: . . . . . -40 to 125 °C. (<140°C in 1 hour)
Field house: . . . . . -10 to 60 °C.

Weight: . . . . . Approx. 600 gr.

Process connections

Alfa Laval Hygienic Tank Connection (HTC).

Standard Design

The Alfa Laval Rotacheck is ideal for validation of the cleaning process inside any hygienic tank cleaned with a rotary jet head. The integrated electronics provides 3 digital signals, hit (basic version), rotation ok (plus version) and one digital input signal used to activate the initial teach-in. The hygienic installation is guaranteed by using the new Alfa Laval full flushable connection, approved for 3A and EHEDG.
The Rotacheck is also offered in basic version (Rotacheck Basic) without the patented validation option, this product is ideal for retrofitting as it only outputs 3 pulses.

Working principle

The Alfa Laval Rotacheck plus sensor is based on a complete new Alfa Laval patent which features unique teach-in and monitoring functions. The patented teach-in function is used during the first validated/approved CIP run, during this first CIP run the Rotacheck plus stores time and pressure data from the cleaning process, these data are called the validated reference data.

In terms of water intensity on the tankwall (hits) and the time between the hits from the waterjet, the reference data represents a unique pattern for the specific installed cleaning head in the tank.

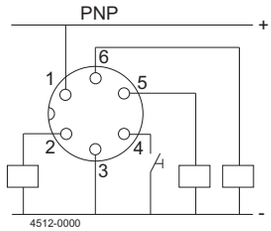
Based on the validated reference data the Rotacheck analyzes and automatically calculates an acceptance window in which the tank cleaning machine will perform within the boundaries of the validated reference data. Afterwards, during production, the analogue feedback from the integrated pressure transducer is online monitored and continuously compared to the stored acceptance window. The Rotacheck digitally outputs a validated feedback. This digital feedback clearly indicates the state that the cleaning processes are in. The system feedback has 3 different outputs.

Rotation OK output
(only plus version): on when cleaning is within acceptance window
ERROR output: on when cleaning is out off teached-in acceptance window
IDLE output: on when cleaning is not performed
Hit (only basic) on when sensor in hit by waterjet.

Electical connections

M12 Plug

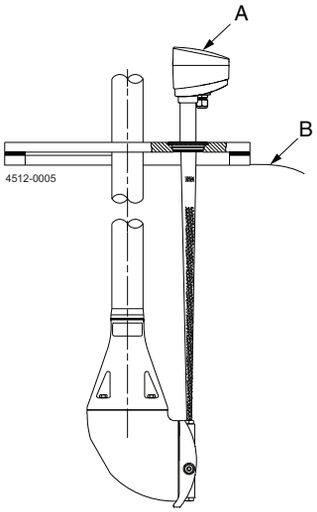
PIN 1:	+
PIN 2:	Output: Rotation OK/hit
PIN 3.	-
PIN 4.	Input: Teach-in
PIN 5:	Output: Idle
PIN 6.	Output: Alarm



M16 cable gland

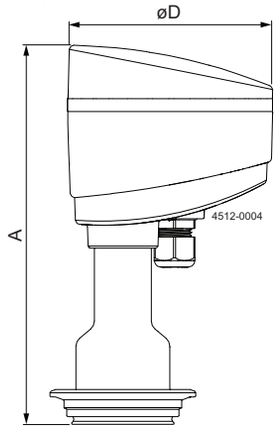
1	+
2	-
3	Output: Idle
4	Output: Rotation OK/hit
5	Output: Error
6	Input: Teach-in

Installation of Alfa Laval Rotacheck

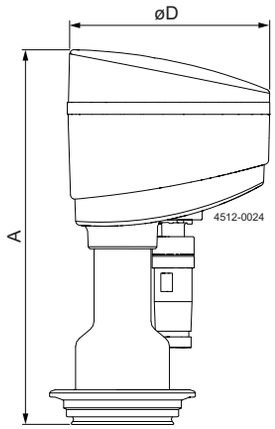


A = Rotacheck Sensor B = Tank Top

Dimensions (mm)



Rotacheck with M16 cable gland



Rotacheck with M12 plug

A	øD
178	96

Alfa Laval TJ Rotacheck

Increase Quality Assurance by Verifying Coverage

1.7

Application

Toftejorg Hygienic Rotacheck represents an important tool for increasing quality assurance in tank cleaning, since it provides an electronic means of validating the 360° impact coverage of the Toftejorg rotary jet head. The system is appropriate wherever rotary jet heads are employed in cleaning tanks and where the tank is pressurized during CIP. The signal generated by the system can be audible, visual or integrated into the customer's process control specification. Toftejorg Hygienic Rotacheck is particularly suited to industries where improved validation standards are required and the tanks are pressurized during CIP, e.g. the food, beverage, brewery and pharmaceutical industries.

Working principle

The Toftejorg Hygienic Rotacheck sensor is precisely installed to detect the sweep and impact of fluid jets released as the rotary jet head performs its cleaning cycle. From the geared operation of the cleaning device, and by reciving the impact force from the jets, the sensor provides vertification of hygienic operation. Any back pressure in the tanks is accounted for.

TECHNICAL DATA

Pressure

Pressure:	0.1 - 2 bar (1.5 - 29 psi)
Max. overload pressure:	15 bar (217 psi)

Electrical Data

Max. repetition frequency:	For sensor function 2 Hz
Duration of electrical pulse	Min. 1.0 sec.
Relay connection, electric:	2 m (6 ft) cable, Ø6 mm (0.24 inch), PVC, 2 x 0.75 mm^2
Electromagnetic Noise:	Tested and approved according to EU EMC directive

Temprature

Operating temprature:	-20 to 85°C (-4° to 185°F)
Temprature on diaphragm:	Max. medium 140°C (284°F)
Mounting:	By clamping into the welding adapter or clamped directly on the Toftejorg SaniJet 20
Enclosure:	IP 67

Certificate

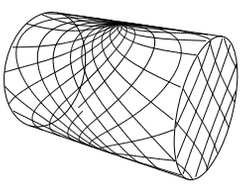
3.1 certificate

PHYSICAL DATA:

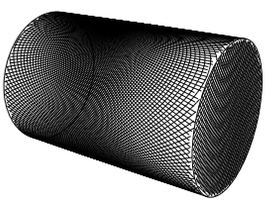
Materials

Sensor and diaphragm 1.4404 (316L).

Cleaning Pattern



First cycle



Full pattern

The above shows the cleaning pattern achieved by a Toftejorg rotary jet head. Toftehorg Hygienic Rotacheck enables the user to automatically confirm that this operation has taken place on individual tank cleaning cycles.

Standard Design

Welding adaptor for hygienic installation. 2 and 10 m (6 and 32 ft) cable for relay connection.
Rotacheck Sensor, ATEX approved, Category 1/2 for installation in zone 0/1 and 20/21.
Relay, ATEX approved, Categoty 2 for installation in zone 1/21.

1.8 Welding adapters

Product leaflets
Welding adapters 1.8.123

Price lists
Welding adapters 1.8.125

Welding adapters

Alfa Laval Welding adapters

Hygienic welding adapters for tank and pipe works

Application

The Alfa Laval welding adapters are designed to fulfil the demands of hygienic process connection for instrumentation into tanks and piping. The adapters fits into the dairy, brewery, beverage, food and pharma industry. The main features are:

- Hygienic tank connection (HTC)
- Full flushable tank connection
- Electropolished options
- Offered with or without thread connection

Standard range

The Alfa Laval welding adapter range offers as standard a full flushable process connection between the instrument and the tank wall. The CFF adapter and the Alfa Laval Hygienic Tank Connection offers an ultrapure connection without any threads.

TECHNICAL DATA

Certificates

- 3.1 certificate (option)

CE

PHYSICAL DATA

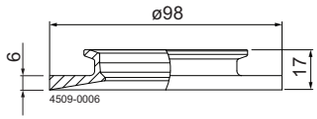
Materials

Stainless steel 316L

Surface roughness: . . . . . Standard: Ra: ≤ 0.8µm

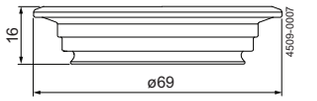
Electropolished: . . . . . Ra: ≤ 0.4µm

Welding adapters



74 -

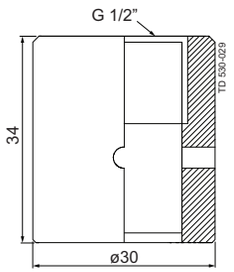
Alfa Laval HTC (hygienic Tank Connection) for tank installation.
9614070801 HTC (hygienic tank connection)
9614070890 HTC (hygienice tank connection) with Q-doc



74 -

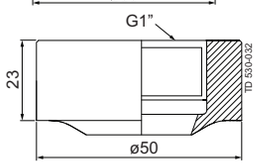
9614071001 Blind cap for Alfa Laval HTC (Hygienic Tank Connection).
9614071009 Blind cap for Alfa Laval HTC (Hygienic Tank Connection) with q-doc.

O-ring for Blind Cap and instruments with 1½" HTC connection:
Item number: 9614059422



74 -

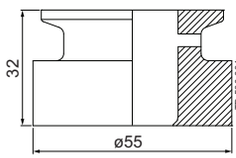
Hygienic welding adapter suitable for tank installation of:
TE67Ox4xxxxxxx (level switch) and TE67Gx4xxxxxxx (temperature transmitter)
Item number: TE67N000000006, TE67N000000013



74 -

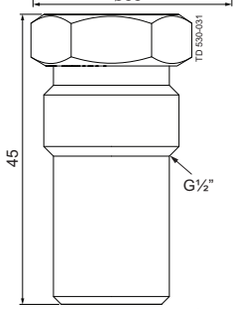
Hygienic welding adapter suitable for tank installation of:
TE67Hx6xxxxxxx (potentiometric level transmitter), TE67Kx5xxxxxxx and TE67Kx6xxxxxxx (conductivity transmitter),
Item number: TE67N000000010, TE67N000000017

O-ring for CFF welding adaptor:

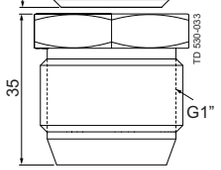


74 -

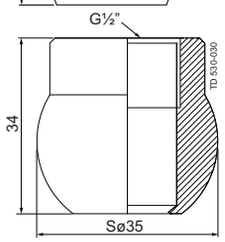
Ultra pure welding adapter CFF (Clamp Full Flushable) for tank installation of:
TE67OxDxxxxxxx and TE67GxDxxxxxxx
Item number: TE67N000000019, TE67N000000020
Clamp ring DN38 is suitable for this clamp process connection.



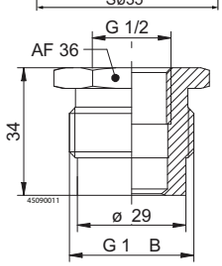
Plug for G 1/2"
Item number: TE67N000000008. TE67N000000015



Plug for G1"
Item number: TE67N000000011, TE67N000000018



Hygienic welding adapter suitable for pipe installation of:
TE67Ox4xxxxxxx and TE67Gx4xxxxxxx in pipe works
Item number: TE67N000000007, TE67N000000014



Adaptor for vibrating fork connection to use level switch
Item number: TE67N000000043

1.9 Instrumentation Accessories

Product leaflets
Alfa Laval Instrument Programmer 1.9.129

Price lists
Instrument Programmer 1.9.131

Alfa Laval Instrument Programmer

Customize your measurement

Application

The instrument programmer is the dedicated configuring tool for a wide range of Alfa Laval instruments:
Level switch (TE67O)
Pressure transmitter (TE67L)
Temperature transmitter (TE67G)
Conductivity transmitter (TE67K)
Potentiometric level transmitter (TE67H)

The programmer is operated and supplied from a standard PC with a USB connector.
A unique feature that the Instrument Programmer can be disconnected from the PC and brought to the remote site for monitoring and re-configuration of the Alfa Laval instrument. In this case the Instrument Programmer is powered by the internal battery. The integrated LC-display enables the user to monitor the actual configuration of an instrument for control purposes.

Working principle

The software is based on FDT-container technology where each instrument is having a DTM based software driver. The stand-alone all-in-one software package named Alfa Laval Instrument Programmer with integrated help menus is easily installed and operated. In case a customer prefers to use an FDT-container software all the DTM´s can be run by this software. The selected configuration can be stored under a file name determined by the user. A print facility is available for hard copy records.
The »measure« function in the Programmer makes it easy for the user to monitor events in a test circuit.

TECHNICAL DATA

Supply voltage
Internal battery . . NiMH 2.4V, 450mAh
External . . . . . Supply and battery charge from USB

Data transfer
Data input . . . . . USB
Firmware . . . . . Updated from home page

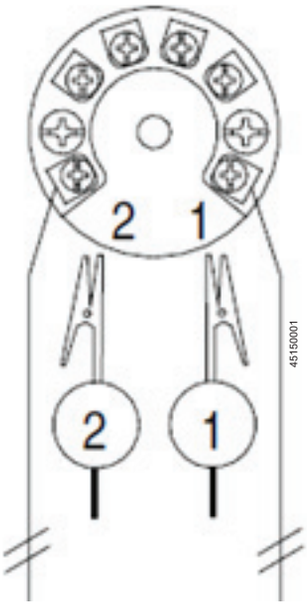
EMC data
Immunity EN61326
Emission EN61326

PHYSICAL DATA

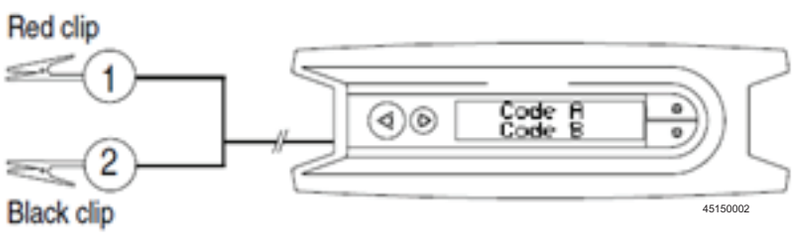
Environmental conditions
Operating temperature . . . . . 0...50°C
Humidity . . . . . <90% RH, non-condensing
Protection class . IP42
Approval . . . . . Configuration of Ex-products outside zone 0, 1 or 2
Conformity . . . . To EU-directives, RoHS, VEEE

Example of application

Disconnect loop supply before connecting the Instrument Programmer to the instrument



Reset Press ← and → simultaneously (the horizontal arrows) for 5 seconds to reset the programmer



Menu

Press and simultaneously (the vertical arrows) to enter the Instrument Programmer menu containing e.g. Teach-in and Autozero functionalities. Press ↑ or ↓ to browse the menu Press ← to access current menu point Press → to return to previous menu