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Non impact level and load measurement for your tank

Alfa Laval Weighing Systems UltraPure

Application

The Alfa Laval weighing system offers an easy to install, high precision and non impact measurement of weight, which is ideal for mixing, dosing, level or batch tasks.

Standard UltraPure range

The weighing solution is as standard delivered in four different accuracy ranges: 2%, 0.1%, 0.05% and 0.025% with measuring ranges from 0-300 kg to a maximum measuring range of 0 to 100.000 kg. (220500 lb.) Each weighing system consists of a number of load cells including load cell modules and an electronic output module. The output modules are available with Profibus DP, DeviceNet or Ethernet IP interface or analog 4-20 mA or 0-10 Vdc output. The weighing system is tested and pre-calibrated in the factory, on-site calibration is not included in the package.

Working principle

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. The load cells are to a very high degree unaffected by overloads, sideloads, shocks and welding voltages. Therefore straightforward hygienic installation of the load cells can be done without expensive and complicated mounting kits and overload protection devices.

TECHNICAL DATA

Measuring range: Min. 0-300 kg
Max. 0-100.000 kg
(depending on system
selection)

Protection class

Load cells: IP68
Electronic modules: IP20

Electrical data

Power supply: 24 VDC (2A)
Output: 4-20 mA
Profibus DP (option)
DeviceNet (option)
Ethernet IP (option)

Cable from Load cell to
electronic module: 6 mtr standard RG58 with
BNC connector (option: 10,
20, or 50 mtr.)

Cable between electronic modules: . . . Ribbon cable

Certificates

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



PHYSICAL DATA

Materials

Load cell: AISI 316 and 17-4 PH

Operating temperature

Load cell range: -10 to 60°C
Electronics range: -40 to 50°C
Temperature compensated range: . . . -10 to 50°C

Weight

Type TE67JH, TE67JJ, TE67JK, TE67JN,
TE67JO, TE67JP, TE67JL, TE67JS,
TE67JT, TE67JU: 7 kg.
Other types: 2.1 kg.
Electronic modules: Approx. 500 gr.

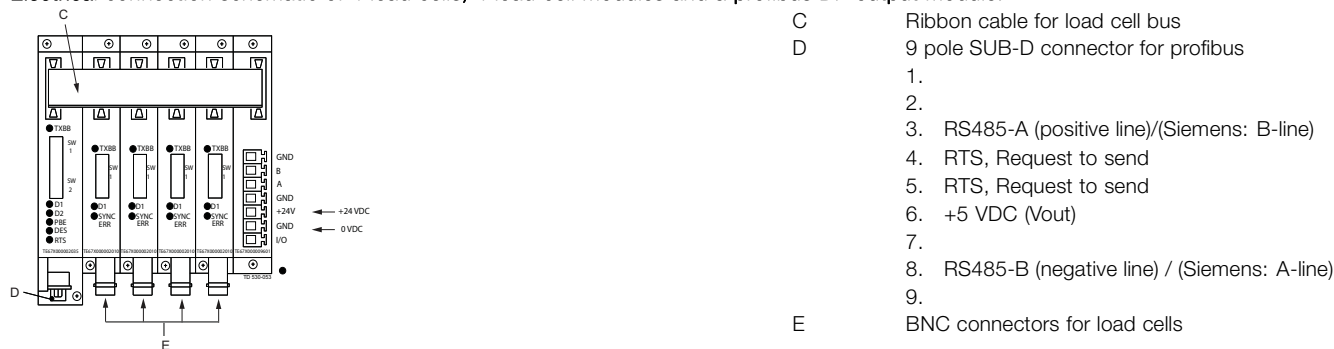


Rated accuracy in %	0.10%	0.05%	0.025%	0.10%	0.05%
Rated capacity (Emax) Kg	100 kg, 250 kg		6.000 kg		
	500 kg, 1000 kg		8000 kg		
	1500 kg, 2000 kg		10000 kg		
	3000 kg, 4000 kg		15000 kg		
	5.000 kg		20.000 kg		
Safe overload limit % of Emax	200 to 500		200 to 400		
Safe sideload limit % of Emax	300 to 1.000		200 to 500		
Minimum dead load % of Emax	0				
Accuracy % of Emax	0.1	0.05	0.025	0.1	0.05
Repeatability % of Emax	0.03	0.02	0.012	0.03	0.02
Hysteresis % of Emax	0.055	0.04	0.02	0.055	0.04
Creep 30 min. % of Emax	0.06	0.04	0.025	0.06	0.04
Temperature effect on zero % / 10 °C	0.06	0.045	0.03	0.06	0.045
Temperature effect on sensitivity % / 10 °C	0.06	0.045	0.03	0.06	0.045
Measuring rate	200 Hz				
Resolution	24 bit				

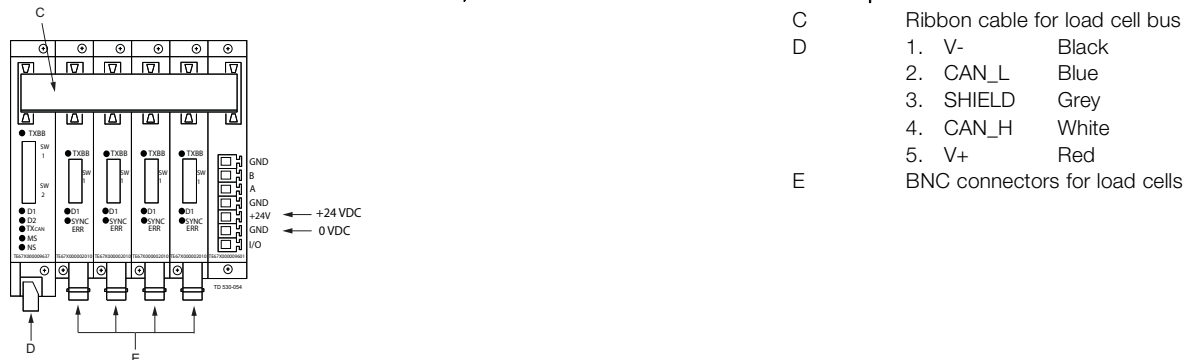
Electrical connection schematic of 4 load cells, 4 load cell modules and a 4-20 mA output module:



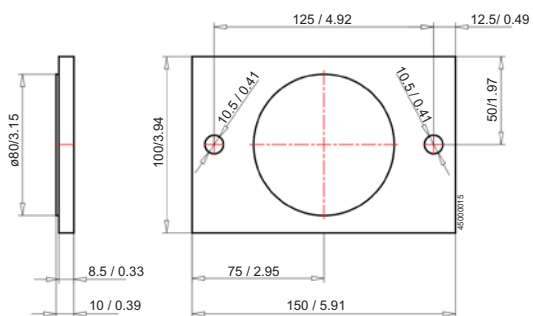
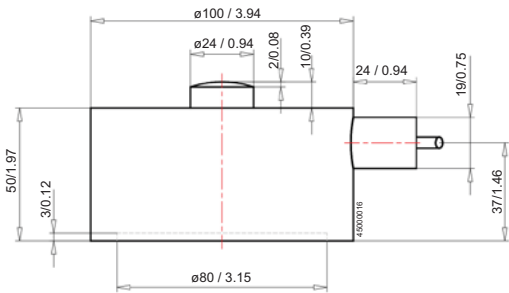
Electrical connection schematic of 4 load cells, 4 load cell modules and a profibus DP output module:



Electrical connection schematic of 4 load cells, 4 load cell modules and a Devicenet output module:

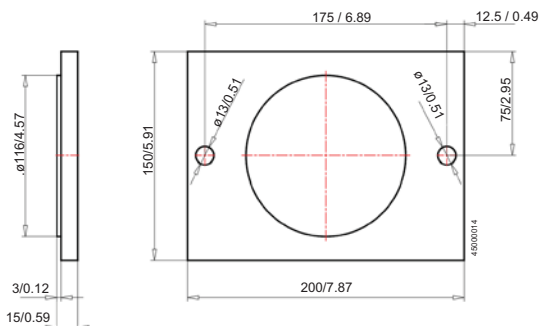
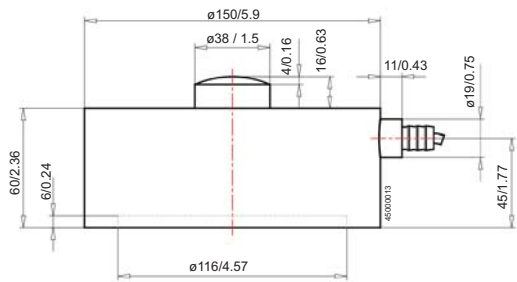


Dimensions (mm/inch)



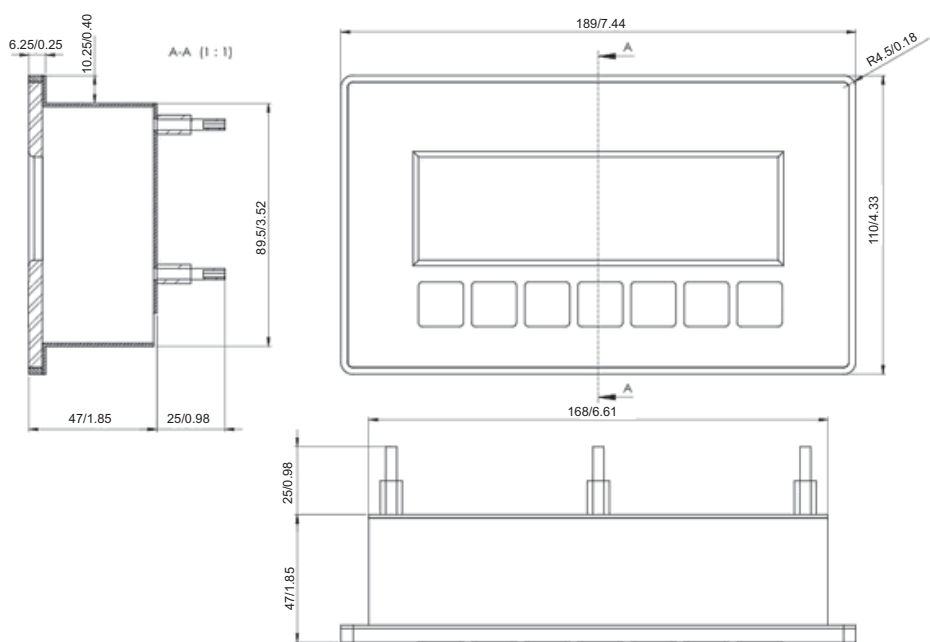
Load cells TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67JF, TE67JG, TE67JI

TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67JF, TE67JG, TE67JI

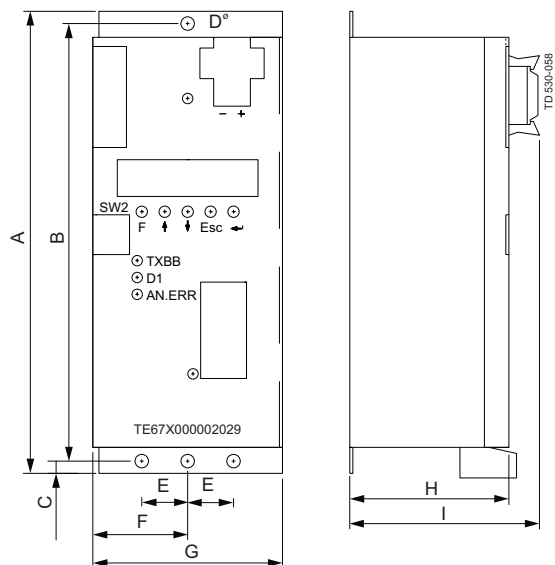


Load cells type TE67JH, TE67JJ, TE67JK, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU

Base plate to TE67JH, TE67JJ, TE67JK, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU

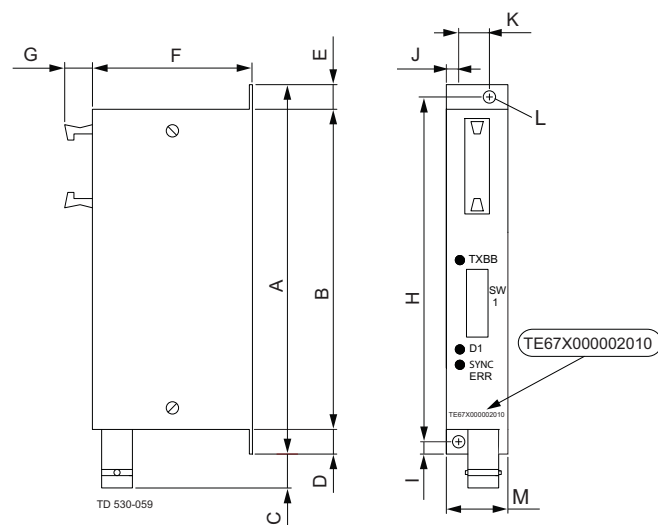


Electronic output module 4-20 mA (TE67X000002029)

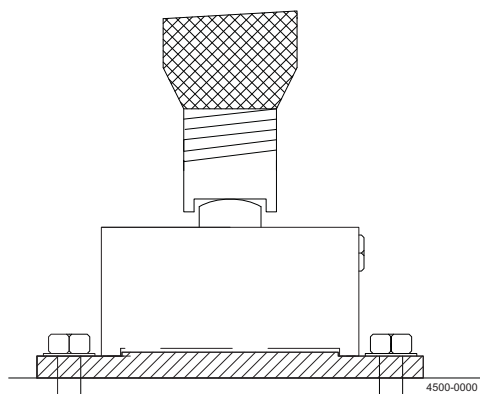


A	B	C	D	E	F	G	H	I
151	143	4	Ø4.3	15	31	62	52	62

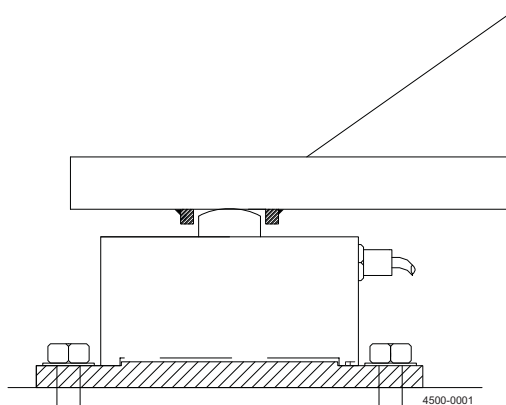
Control module for load cell (TE67X000002010)



A	B	C	D	E	F	G	H	I	J	K	L
120	103.2	10	8.4	52	10	112	4	6	9.5	4.5	21.5



Example: Installation of load cell integrated with tank leg



Example: Installation of load cell with bracket lugs

Selection guide

When configuring a weighing system you need the following information:

- Number of tank legs
- Total weight of tank incl. product in kg
- Signal output
- Application (eg. dosing weighing, level measurement)

With this information the below steps will guide you to the right solution.

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 process task.

- 2% accuracy systems are suitable for level measurement tasks
- 0.1% accuracy systems are suitable for mixing tasks
- 0.05% accuracy systems are suitable for dosing tasks
- 0.025% accuracy systems are suitable for very precise dosing and batch tasks

Step 3:

Decide on the output signal type:

- Profibus DP
- DeviceNet
- Ethernet IP
- 4-20 mA

Step 4:

Decide on the electric module storage in stainless steel box and display.

You have the following options:

- Without stainless steel box
- In stainless steel box without display
- In stainless steel box with display

Step 5:

Select the surface finish required on the non-wetted part

- $Ra < [0.8\mu m]$
- $Ra < [0.4\mu m]$

Step 6:

Decide on the length of the cable (the length of the cable is interchangeable without need for recalibration)

- 6 m
- 10 m
- 20 m
- 50 m

Step 7:

Decide on certificates

- Calibration certificate
- 3.1 certificate

Step 8:

From ordering leaflet item number is found Selection example:

Question: what system is needed for a tank with 3 legs and a total weight of 4000 kg inclusive product?

Answer:

1. The total weight of tank inclusive product is 4000 kg. Round up to the nearest standard load cell system for 3 legged tanks is the system with range 0-6000kg is chosen.
2. Decide on accuracy 2%, 0,1%, 0,05% or 0,025%. In this case we choose the high accuracy of 0,05%.
3. Decide on output signal. In this case we choose Profibus DP output.
4. Decide on the electric module storage in stainless steel box and display. In this case we choose the stainless steel box with display.
5. Select the surface finish required on the non-wetted part. We choose $Ra < 0.8\mu m$.
6. Decide on the length of the cable. In this case we choose 20 m.
7. Decide on certificates. In this case we choose both 3.1 and calibration certificates.
8. From the ordering leaflet item number is found: TE67JB12312225

Theoretical statistical weighing system accuracy

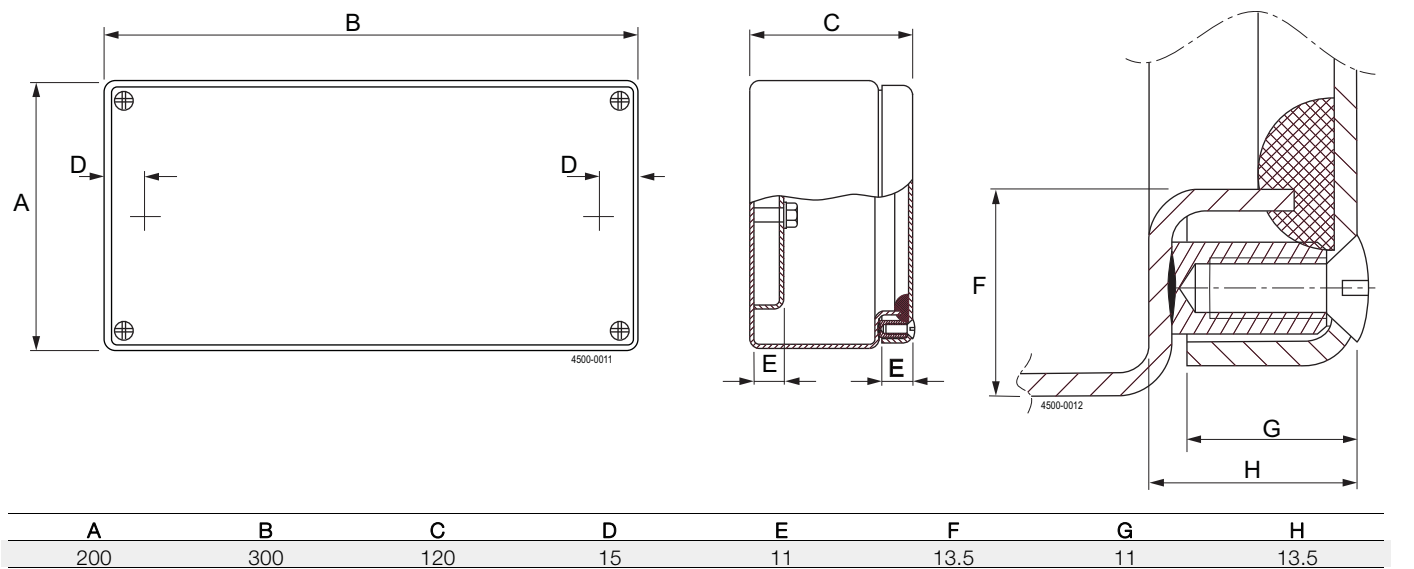
Item nr	System range		System range		Number of	System type		System type		System type	
	3 legs		4 legs		loadcells and lc-type in system	0.10%		0.05%		0.025%	
TE67J0xxxxxxxx	0- 300	kg			(3*100 kg lc)	± 0.17	kg.	± 0.09	kg.	± 0.04	kg.
TE67J1xxxxxxxx			0- 400	kg	(4*100 kg lc)	± 0.20	kg.	± 0.10	kg.	± 0.05	kg.
TE67J4xxxxxxxx	0- 750	kg			(3*250 kg lc)	± 0.43	kg.	± 0.22	kg.	± 0.11	kg.
TE67J5xxxxxxxx			0- 1000	kg	(4*250 kg lc)	± 0.50	kg.	± 0.25	kg.	± 0.13	kg.
TE67J6xxxxxxxx	0- 1500	kg			(3*500 kg lc)	± 0.87	kg.	± 0.43	kg.	± 0.22	kg.
TE67J7xxxxxxxx			0- 2000	kg	(4*500 kg lc)	± 1.00	kg.	± 0.50	kg.	± 0.25	kg.
TE67J8xxxxxxxx	0- 3000	kg			(3*1000 kg lc)	± 1.73	kg.	± 0.87	kg.	± 0.43	kg.
TE67J9xxxxxxxx			0- 4000	kg	(4*1000 kg lc)	± 2.00	kg.	± 1.00	kg.	± 0.50	kg.
TE67JBxxxxxxxx	0- 6000	kg			(3*2000 kg lc)	± 3.46	kg.	± 1.73	kg.	± 0.87	kg.
TE67JCxxxxxxxx			0- 8000	kg	(4*2000 kg lc)	± 4.00	kg.	± 2.00	kg.	± 1.00	kg.
TE67JDxxxxxxxx	0- 9000	kg			(3*3000 kg lc)	± 5.20	kg.	± 2.60	kg.	± 1.30	kg.
TE67JExxxxxxxx			0- 12000	kg	(4*3000 kg lc)	± 6.00	kg.	± 3.00	kg.	± 1.50	kg.
TE67JExxxxxxxx	0- 12000	kg			(3*4000 kg lc)	± 6.93	kg.	± 3.46	kg.	± 1.73	kg.
TE67JGxxxxxxxx			0- 16000	kg	(4*4000 kg lc)	± 8.00	kg.	± 4.00	kg.	± 2.00	kg.
TE67JFxxxxxxxx	0- 15000	kg			(3*5000 kg lc)	± 8.66	kg.	± 4.33	kg.	± 2.17	kg.
TE67Jlxxxxxxxx			0- 20000	kg	(4*5000 kg lc)	± 10.00	kg.	± 5.00	kg.	± 2.50	kg.
TE67JHxxxxxxxx	0- 18000	kg			(3*6000 kg lc)	± 10.39	kg.	± 5.20	kg.		N/A
TE67JJxxxxxxxx			0- 24000	kg	(4*6000 kg lc)	± 12.00	kg.	± 6.00	kg.		N/A
TE67JJxxxxxxxx	0- 24000	kg			(3*8000 kg lc)	± 13.86	kg.	± 6.93	kg.		N/A
TE67JKxxxxxxxx			0- 32000	kg	(4*8000 kg lc)	± 16.00	kg.	± 8.00	kg.		N/A
TE67JNxxxxxxxx	0- 30000	kg			(3*10000 kg lc)	± 17.32	kg.	± 8.66	kg.		N/A
TE67JOxxxxxxxx			0- 40000	kg	(4*10000 kg lc)	± 20.00	kg.	± 10.00	kg.		N/A
TE67JPxxxxxxxx	0- 45000	kg			(3*15000 kg lc)	± 25.98	kg.	± 12.99	kg.		N/A
TE67JLxxxxxxxx			0- 60000	kg	(4*15000 kg lc)	± 30.00	kg.	± 15.00	kg.		N/A
TE67JLxxxxxxxx	0- 60000	kg			(3*20000 kg lc)	± 34.64	kg.	± 17.32	kg.		N/A
TE67JSxxxxxxxx			0- 80000	kg	(4*20000 kg lc)	± 40.00	kg.	± 20.00	kg.		N/A
TE67JTxxxxxxxx	0- 75000	kg			(3*25000 kg lc)	± 43.30	kg.	± 21.65	kg.		N/A
TE67JUxxxxxxxx			0- 100000	kg	(4*25000 kg lc)	± 50.00	kg.	± 25.00	kg.		N/A

Stainless Steel Box with display



Range	H: 200 mm B: 300 mm D: 120 mm	Lid screws	DIN 966S - stainless steel. Srews are mounted with lock washers.
Material	1.5 mm stainless steel AISI 304.	Accessories	Mounting Plates 2,0 mm galvanised plate. Available for KLM 202012 and upwards. Mounting brackets for DIN-rails: 2 rows of DIN-rails or a cable duct can be mounted on the bracket. Available for KLM 151510 and upwards. Order no. TLB 2950 Link for accessories
Surface	Polished 4N		
Imperviousness	IP 69k		
Mounting	The junction box is fitted inside with 2 pcs. M5 x 15 welding bolts for mounting of DIN-rail.		
Earth	All enclosed parts are earthed.	Stock status	This product can be supplied from stock.

Dimensions (mm)





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