Alfa Laval Conductivity Sensor

TE67Kxxxxxxxxx

Safety instructions

This instrument is built and tested according to the current EU-directives and packed in technically safe condition. In order to maintain this condition and to ensure safe operation, the user must follow the hints and warnings given in this instruction.

During the installation the valid national rules have to be observed. Ignoring the warnings may lead to severe personal injury or substantial damage to property.

The product must be operated by trained staff. Correct and safe operation of this equipment is dependent on proper transport, storage, installation and operation.

All electrical wiring must conform to local standards. In order to prevent stray electrical radiation, we recommend twisted and shielded input cables, as also to keep power supply cables separated from the input cables. The connection must be made according to the connecting diagrams.

Before switching off the supply voltage check the possible effects on other equipment and the processing system. Ensure that the supply voltage and the conditions in the environment comply with the specification of the device.

This instruction manual is part of the device, must be kept nearest its location, always accessible to all employees. This instruction manual is copyrighted. The contents of this instruction manual reflect the version available at the time of printing. It has been issued to our best knowledge. However, errors may have occurred. Alfa Laval Tank Equipment A/S is not liable for any incorrect statements and their effects.
– Technical modifications reserved –

Limitation of liability

By non-observance of the instruction manual, inappropriate use, modification or damage, no liability is assumed and warranty claims will be excluded.

Intended use

The Alfa Laval Conductivity Transmitter TE67Kxxxxxxxxx have, according to the type, been developed for applications where conductivity and temperature are to be measured.

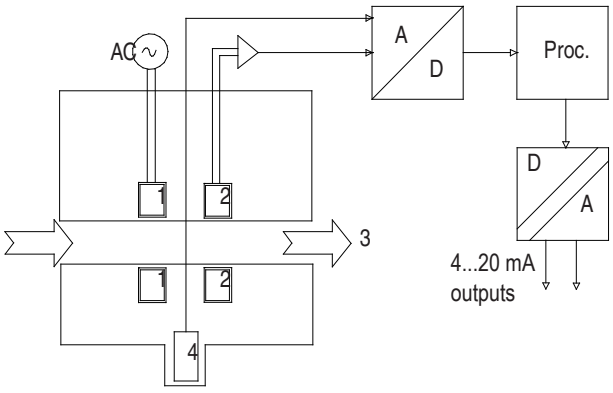
It is the operator's responsibility to check and verify the suitability of the device for the intended application. If any doubts remain, please contact our local Alfa Laval Company in order to ensure proper usage. Alfa Laval Tank Equipment A/S is not liable for any incorrect selections and their effects.

– The technical data listed in the current data sheet are engaging and must be complied with. If the data sheet is not available, please order or download it from our homepage (http://www.alfalaval.com)
* WARNING! Danger through improper usage.

Package contents

Please verify that all listed parts are undamaged included in the delivery and check for consistency specified in our order:
– Conductivity transmitter
– Mounting instructions

Functional Principle



Inductive conductivity measurement is based on the principle of two series-connected toroidal-core transformers (1) and (2).
The primary side of the transformer 1 is controlled by an AC voltage generator.
The liquid flowing through the channel bore (3) in the measuring head form a conductor loop, which links between the secondary side of the transformer (1) and the primary side of the transformer (2). The output current is proportional with the conductivity of the media. Signal conditioning, amplification and conversion provides a 4...20 mA signal output from the galvanically isolated D/A converter.
The measured conductivity is highly dependable of the media temperature. Therefore the fast-response temperature sensor in the tip (4) compensates for the temperature in the media.
The special processing unit offers maximum accuracy and reliability. The very low resolution of 1µS/cm together with a fast response time gives a high sensivity. This ensures reliable detection of media even with minor differences in conductivity, such as different kinds of beer.

Mechanical Installation

Cautions

Use only the authorised special designed accessories.
The product warranty is void when installed with other adapters.

Mount the hole at the sensor tip in the direction of the media flow.

It is not possible to turn the display relative to the channel bore.

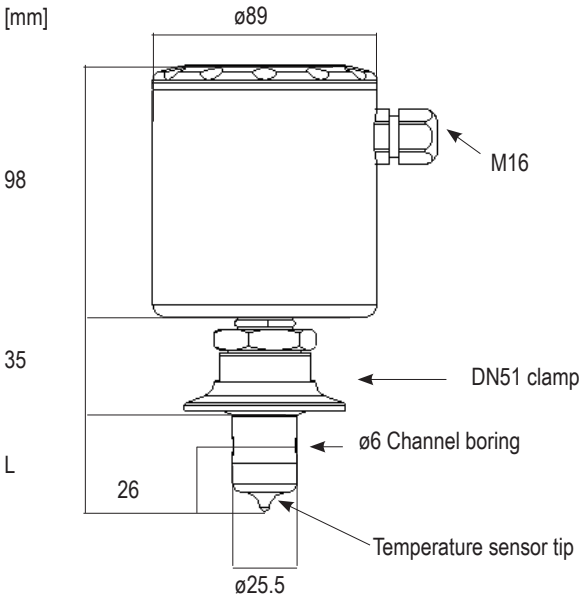
After Installation and Configuration

Check the leak tightness of the sleeve.

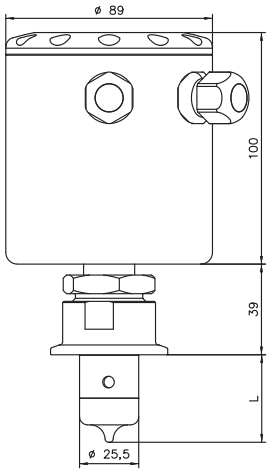
Check the tightness of glands or M12 plugs.

Check the tightness of the cover.

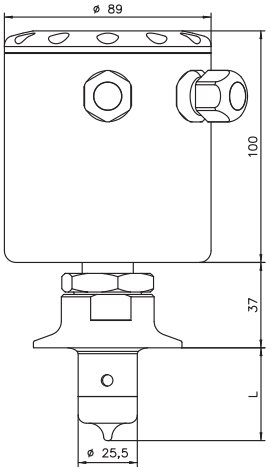
Dimensional Drawing



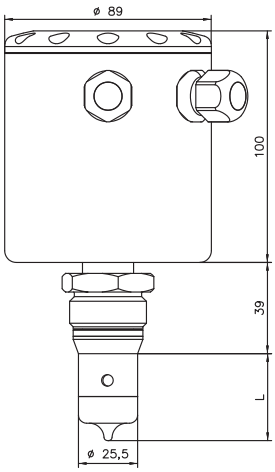
Insert length L = 40: Standard sensor shaft
Insert length L = 87: Extended sensor shaft



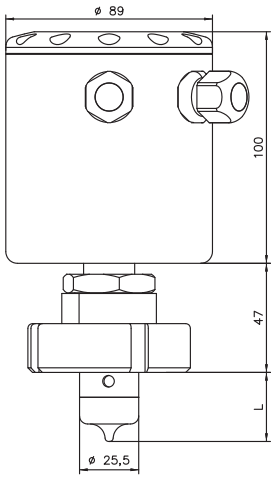
Clamp 1 1/2 (ISO2852/DIN32676)
TEK67K1311111xx/TE67K1211111xx



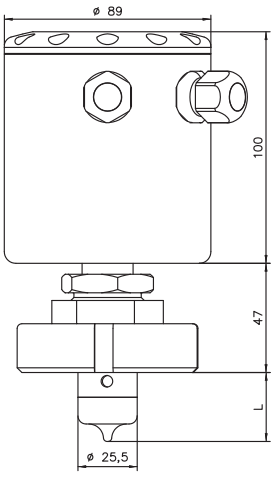
Clamp 2" (ISO2852/DIN32676)
TEK67K1711111xx/TE67K1811111xx



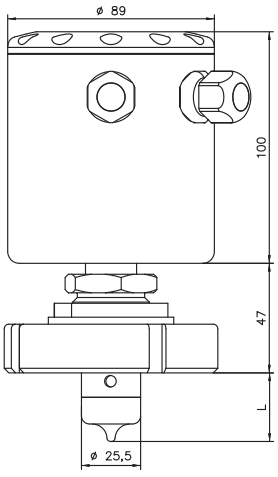
G1"
TEK67K1511111xx/TE67K1611111xx



DN 32 (DIN11851)
TEK67K1511111xx/TE67K1611111xx

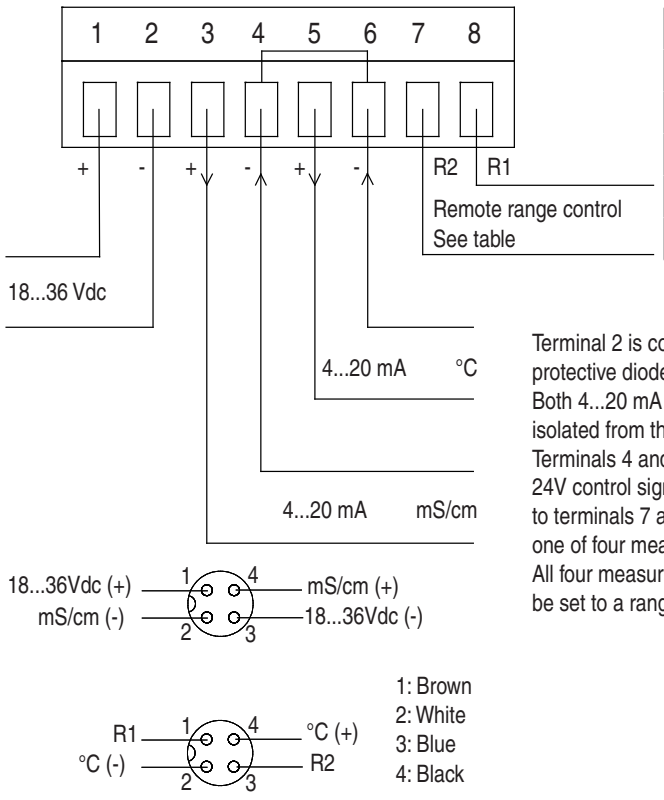


DN 40 (DIN11851)
TEK67K1B11111xx/TE67K1E11111xx



DN 50 (DIN11851)
TEK67K1B11111xx/TE67K1E11111xx

Electrical Installation



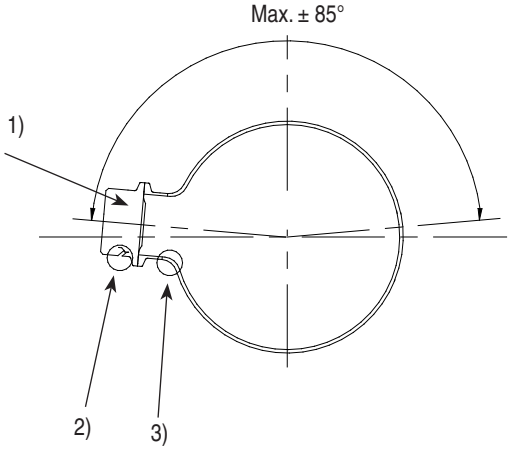
Range	R1	R2
	Volt	Volt
1	0/open	0/open
2	24	0
3	0	24
4	24	24

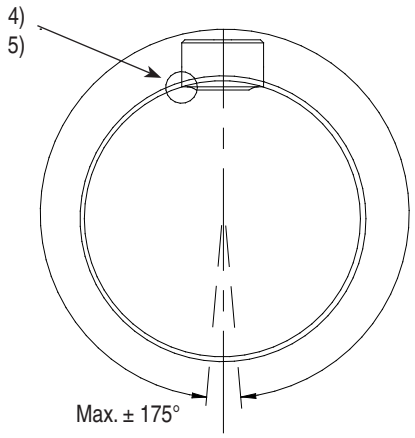
Terminal 2 is connected to the housing via a protective diode.
Both 4...20 mA outputs are galvanically isolated from the power supply.
Terminals 4 and 6 are internally connected.
24V control signals (pnp) can be connected to terminals 7 and 8 for remote selection of one of four measuring ranges.
All four measuring ranges can individually be set to a range according to the table.

Jog shuttle range	Resolution for display
mS/cm	mS/cm
0...0.5	0.001
0...1	0.001
0...2	0.01
0...3	0.01
0...5	0.01
0...10	0.1
0...20	0.1
0...30	0.1
0...50	0.1
0....100	1.0
0...200	1.0
0...300	1.0
0...500	1.0
0...999	1.0

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

Mounting of 3-A Mounted Products





Installation of 3-A mounted products:

1) Use only a 3-A mounted counter part.

2) The inspection hole should be visible and drained.

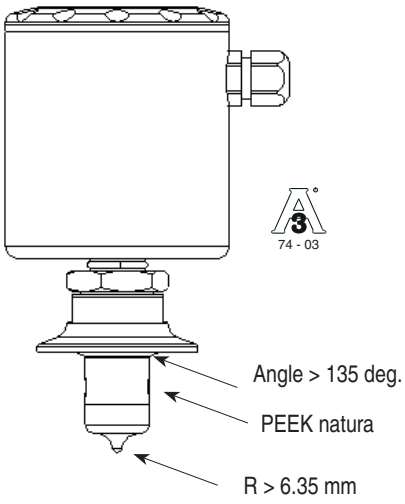
3) Mount the instrument in a self drained position.

4) Level the inner surface of the pipe with the counter part.

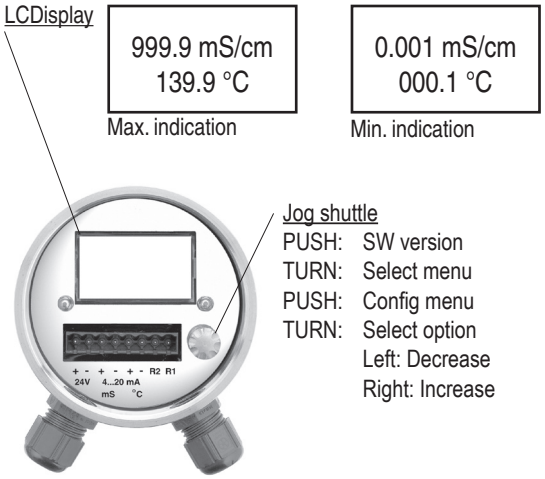
5) Weldings should be grinded to Ra= 0.4 / Ra= 0.8

The 3-A mark is valid only when the product is mounted in a 3-A marked counter part and installed according to the installation manual. Use also a 3-A marked O-ring or gasket if relevant. The 3-A marked products conforms to the 3-A Sanitary Standard criteria. Materials and surfaces fulfill the FDA demands and follow the EHEDG guidelines regarding design, materials and finishing.

EPDM gaskets supplied with 3-A marked products are conform to Sanitary Standard Class I (8% milk fat max.)



Operator Control



The back-lit display indicates the conductivity in mS/cm and the temperature in °C. The jog shuttle is used for simple configuration of the measuring range(s) and the temperature coefficient(s) as well as the temperature range.
Refer to the detailed description under “Configuring the Conductivity Sensor”.

Configuring the Alfa Laval Conductivity Sensor

				Jog-shuttle		
Step	Subject	Range	Display	Turn	Push	Note
1	Power on		starting ...			
2	Actual value	1	yyyyy mS zzzzz °C		Push	
3	SW version		Actual version		Push	
4	Actual value	1	yyyyy mS zzzzz °C	Right		
5	Set Range 1	1	4...20 mA Actual range, mS		Push	Note 1
6		1 ▲▼	4...20 mA Set range, mS	Left/Right	Push to set	Left: Decrease Right: Increase
7		1	4...20 mA New range, mS	Right		
8		1 1	Resolution Actual Coefficient		Push	Note 2
9		1 ▲▼	Resolution Set coefficient	Left/Right	Push to set	
10		1 1	Resolution New coefficient	Right		
11	Set Range 2	2	4...20 mA Actual range, mS		Push	
Repeat steps 5...10 for ranges 2...4.						
12	Set temperature range		4...20 mA °C Actual range		Push	
13	Set temperature range		4...20 mA °C Select range	Left/right	Push to set	Note 3

Calibration of the Conductivity Sensor

This procedure describes an easy procedure for determination of the temperature coefficient (TC) of a media.

1. Dip the measuring head in a sample media making sure that the channel bore is completely covered with media without bubbles.
2. Heat the media to 25.0°C
3. Ensure adequate circulation in the media.
4. Note the indicated conductivity.
5. Heat the media to min. 60°C
6. Set the TC in the setup menu to indicate exactly the same conductivity as it is at 25°C.

Warnings:

1. A higher TC value will result in a lower conductivity indication.
2. Do not use the TC value to adjust a measured value. The instrument has been calibrated from the factory.
3. Inadequate circulation in the media will cause a slight heating of the channel bore resulting in a false measurement.

Note1:

After 60 seconds without any action from the user the instrument switches back to normal mode indicating the actual measured values.

Note 2:

Each of the four measuring ranges is assigned its own setting for temperature compensation.

The compensation is adjustable in the range 0.00...4.98%/K.

The compensation is defined as being linear at 25°C.

Note 3:

Selectable temperature ranges:
0...150, -20....130, 0...100, -20...80, 0...50, -10...40, -20...150°C

Service/Repair

Return

Upon every return of the device, no matter if for recalibration, decalcification, modifications or repair, it is necessary to contact your local Alfa Laval office to guarantee a quick execution of your request.

Please inform us by sending an email to:
Alteq.PartsandService@alfalaval.com.

Include the number of devices sent and request a Return Number. Afterwards clean the device, pack it shatterproof and send it to Alfa Laval Tank Equipment A/S indicating the Return Number.

Warranty Conditions

The warranty conditions are subject to the legal warranty period of 12 months from the date of delivery. In case of improper use, modifications of or damages to the device, we do not accept warranty claims. Damaged diaphragms will also not be accepted. Furthermore, defects due to normal wear are not subject to warranty services.

Reservation and contact infomation

Note: The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify any unit specification on any product without prior notice or any obligation.

How to contact Alfa Laval Tank Equipment A/S
For further information please feel free to contact:

Alfa Laval Tank Equipment A/S
Baldershoej 19
P.O. Box 1149
2635 Ishoej
Denmark

Phone no.: +45 43 55 86 00
Fax no.: +45 43 55 86 01
www.alfalaval.com

Contact details for all countries are continually updated on our websites.

Ordering key table

Alfa Laval Conductivity Sensor		Ver 2 _ 07_09_2010
Desription	**Option**	**Item nr. code**
Measuring range	0,01 to 999 mS/cm	TE67K1xxxxxxx
Process connection	Clamp DN 38 (ISO2852) / Clamp DN 40 (DIN32676) with sensor shaft lenght 37 mm	TE67Kx2xxxxxx
	Clamp DN 38 (ISO2852) / Clamp DN 40 (DIN32676) with sensor shaft lenght 84 mm	TE67Kx3xxxxxx
	G1“ (ISO228) L:84 mm	TE67Kx5xxxxxx
	G1“ (ISO228) L:37 mm	TE67Kx6xxxxxx
	Clamp DN 50 (ISO2852) / Clamp DN 51 (DIN32676) with sensor shaft lenght 37 mm	TE67Kx7xxxxxx
	Clamp DN 50 (ISO2852) / Clamp DN 51 (DIN32676) with sensor shaft lenght 84 mm	TE67Kx8xxxxxx
	DN 32 (Din11851) L=37mm	TE67KxAxxxxxx
	DN 40 (Din11851) L=37mm	TE67KxBxxxxxx
	DN 50 (Din11851) L=37mm	TE67KxCxxxxxx
	DN 32 (Din11851) L=84mm	TE67KxDxxxxxx
	DN 40 (Din11851) L=84mm	TE67KxExxxxxx
	DN 50 (Din11851) L=84mm	TE67KxFxxxxxx
Surface finish wetted parts	Ra<0,8µ	TE67Kxx1xxxxx
	Ra<0,4µ (Electropolished)	TE67Kxx2xxxxx
Wetted part materiale	AISI316L and PEEK	TE67Kxxx1xxxx
Powersupply	14-36 Vdc	TE67Kxxxx1xxx
Electrical output	4-20mA	TE67Kxxxxx1xx
Accuracy	± 1% FS	TE67Kxxxxxx1x
Others	electrical connection:M12 plug	TE67Kxxxxxxx3x
	Cable gland M16	TE67Kxxxxxxx4x
Certificates	3.1 Certificate	TE67Kxxxxxxxx2
	3.1. Certificate + 3A	TE67Kxxxxxxxx3
	3A	TE67Kxxxxxxxx4
	N/A	TE67Kxxxxxxxx0

INITIALLY ISSUED: 3/30/2010 AUTHORIZATION NUMBER: 1536

THIS IS TO CERTIFY THAT

Alfa Laval Inc.
Baldershoj 19, DK 2635 Ishoj, DENMARK

is hereby authorized to continue to apply the
3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Number: 74-03, Sensors and Sensor Fittings and Connections

set forth below

Conductivity Sensor: TE67K1711111x3 or 4; Level Switch: TE67O0211110x3, 4, 9, A, C, D, F, or G; Potentiometric Level Transmitter: TE67H021xxx3x3 or 4; Temperature Transmitter: TE67Gx11xxxxx3, 4, 5, or 7.

VALID THROUGH: **December 31, 2012**

Timothy R. Rugh
Executive Director, 3-A Sanitary Standards, Inc.

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standards designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in such cases in which evidence of nonconformance had been established.

NEXT TPV INSPECTION/REPORT DUE: **March 2015**

EC Declaration of Conformity

The designated company

Alfa Laval Tank Equipment A/S
Company name

Baldershoej 19, DK-2635 Ishoej, Denmark
Address

+45 43 55 86 00
Phone no.

hereby declare that

Alfa Laval Conductivity Transmitter	TE67Kxxxxxxxxx
Denomination	Type

is in conformity with the provisions of the Directive 89/336 EMC, amendment 92/31 and amendment 93/68 and with the national implementing legalization and EC regulation 1935/2004 relating to materials and articles intended to come into contact with food

and furthermore declares that the following (parts/clauses of) applicable directives have been used:

- EN 61000-6-2 (Immunity)
- EN 61000-6-3 (Emission)

The technical construction file for this instrument is retained at the above address.

R&D Manager	Henrik Falster Hansen	
Title	Name	Signature

January 23, 2012	Alfa Laval Tank Equipment A/S
Date	Company