

Ex MANUAL

**Explosion Protection
Intrinsic Safety acc. To UL**

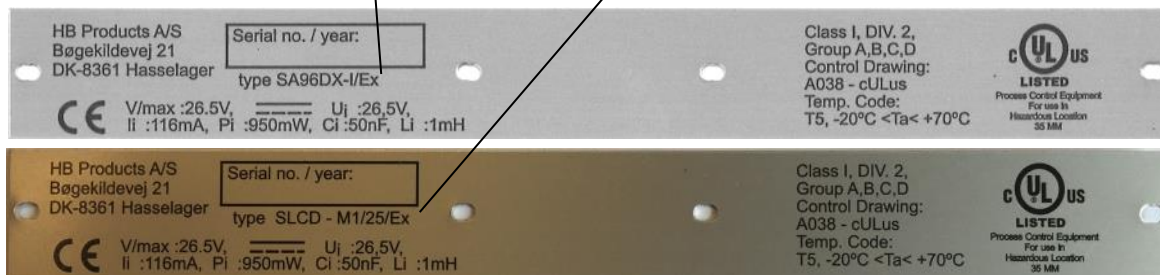
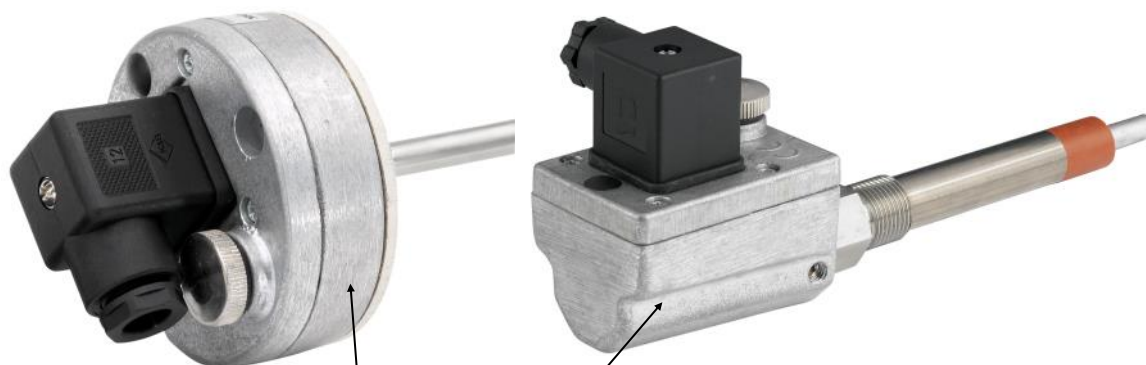
**Long & Shortstroke Position Sensor
Type SA96DX-I/Ex & SLCD-M1/_Ex**



cULus approved

Longstroke: SA96DX-I/Ex

Shortstroke: SLCD-M1/_Ex



Combined Temp. plate for cULus

Important information:

Keep updated by reading our "Index of history" (last page of this manual)

ISO 9001 : 2000



HB

Products

POSITION & LEVEL SENSORS

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Note:

Keep updated by reading our “Index of history” (last page of this manual)

Certificate of Compliance

Certificate Number 160506 - E303865
Report Reference E303865, April 7th, 2006
Issue Date 2006 May 16

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Issued to: **HB PRODUCTS AS**
JEGSTRUPVEJ 34
8361 HASSELAGER DENMARK

This is to certify that representative samples of

Class I, Division 2 Group ABCD Hazardous
Longstroke type SA96DX-I/xxx/Ex and Shortstroke type SLCD-M1/xx/Ex for use in Class I, Division 2 Group ABCD Hazardous Locations when installed in accordance with control drawing No. A038cULus.

Have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: **ANSI/ISA-12.12.01-2000 - Nonincendive Electrical Equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2, Hazardous (Classified) Locations**
CSA C22.2 n.213 - Non-incendive Electrical Equipment for use in Class I, Division, Hazardous Locations

Additional Information: **RATINGS:**
For all covered Longstroke and Shortstroke versions of position transmitters
Vi: 26.5V - Ii: 116mA
Pi: 950mW - Ci: 50nF
Li: 1mH

Only those products bearing the UL Listing Mark for the US and Canada should be considered as being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US and Canada.

The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and "US" identifiers:  the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product

Issued by: *Ole Olsen*
Ole Olsen, Project Engineer

UL International Demko A/S
Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc.
For questions in Denmark, you may call +45 44856565.

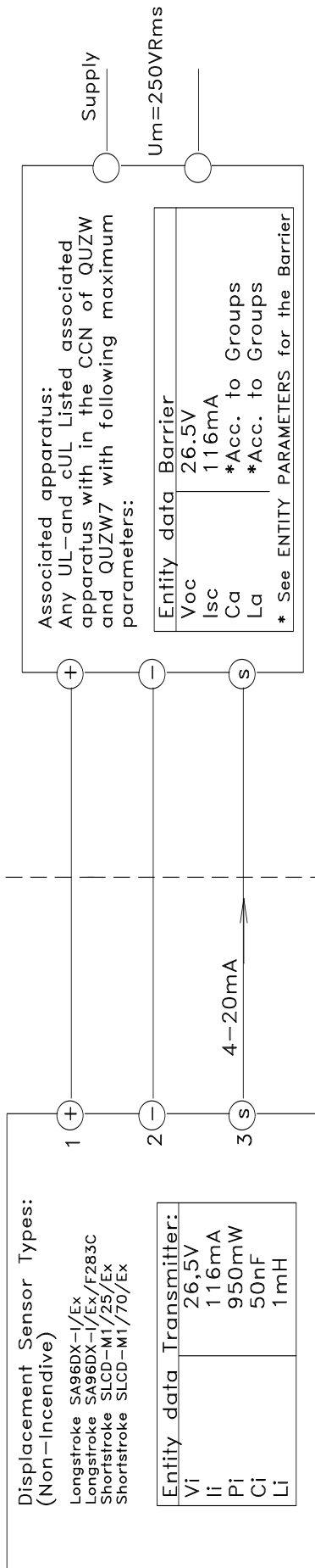
Reviewed by: *Klaus M. Hansen*
Klaus M. Hansen, Project Engineer
UL International Demko A/S

Control Drawing no. A038-CDcULus

Hazardous Area Location

Nonhazardous Area

Class I Division 2. Groups A,B,C,D
Operating Temperature Code: T5
Maximum ambient temp.: 70C



Note:
The sum of capacitance and inductance of cable and intrinsic safe equipment must be less or equal to Ca and La acc. to the installation groups A, B, C & D.
Voc and Isc have to be less than or equal to Vmax (Vi) and Imax (Ii) for the displacement Sensor and the Listed values of Ca and La for the associated apparatus are greater than Ci + Ccable and Li + Lcable, respectively, for the displacement Sensor.

Date:	03-05-06	Rev.no:	01
Rev. Date:	30-04-09		02
Rev. Date:			

Ca > Ci + Ccable
La > Li + Lcable

History:
30-04-09, change of PEPPERL+FUCHS Barrier
Old type is KFD2-CR-CX1.30300
New type is Any UL-and cUL Listed associated Barrier

Note:
HB Products have tested and recommend PEPPERL+FUCHS Barrier

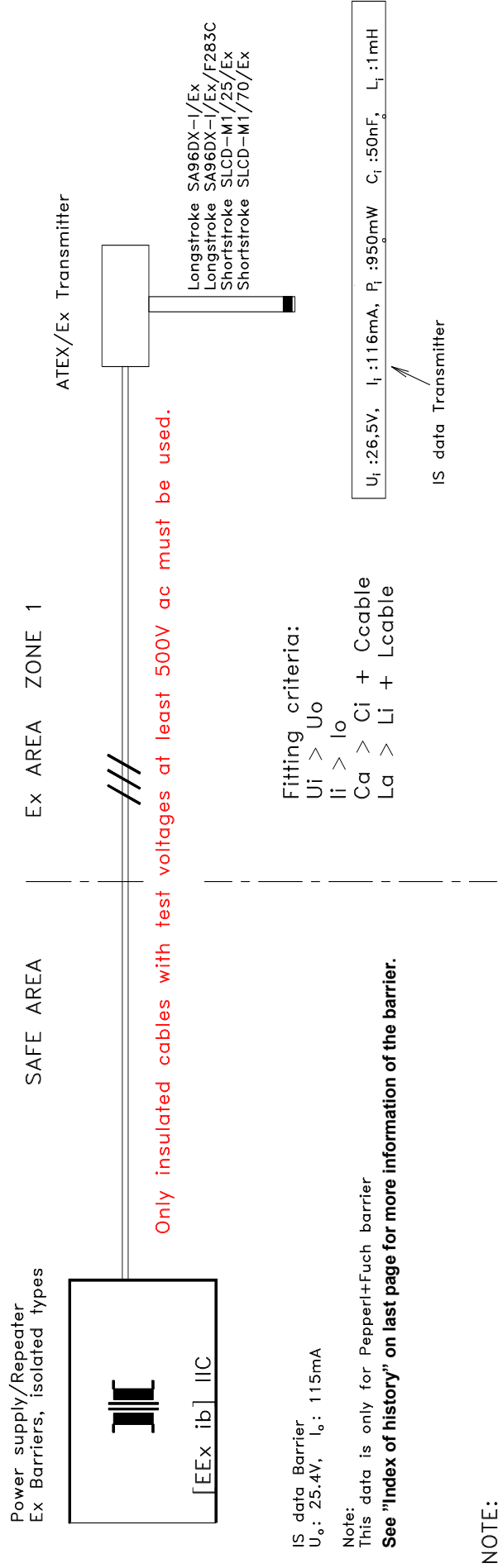
See "Index of history" on last page for more information of the barrier.

Manufacturer: HB Products A/S Bøgekildevej 21 DK-8361 Hasselager

CONTROL DRW.: SA96DX-I/xxx/Ex, SLCD-M1/xx/Ex		
Const: ME	Drawing no. A038cULus	Page: 1



Installation example in Ex area zone 1



NOTE:

POWER SUPPLY/AMPLIFIER HAS TO MEET FOLLOWING DATA:

SUPPLY VOLTAGE : 12-26.5V DC

SHORT-CIRCUIT CURRENT : min. 50mA

TRANSFORMER TYPE: Isolated

APPROVAL: ATEX

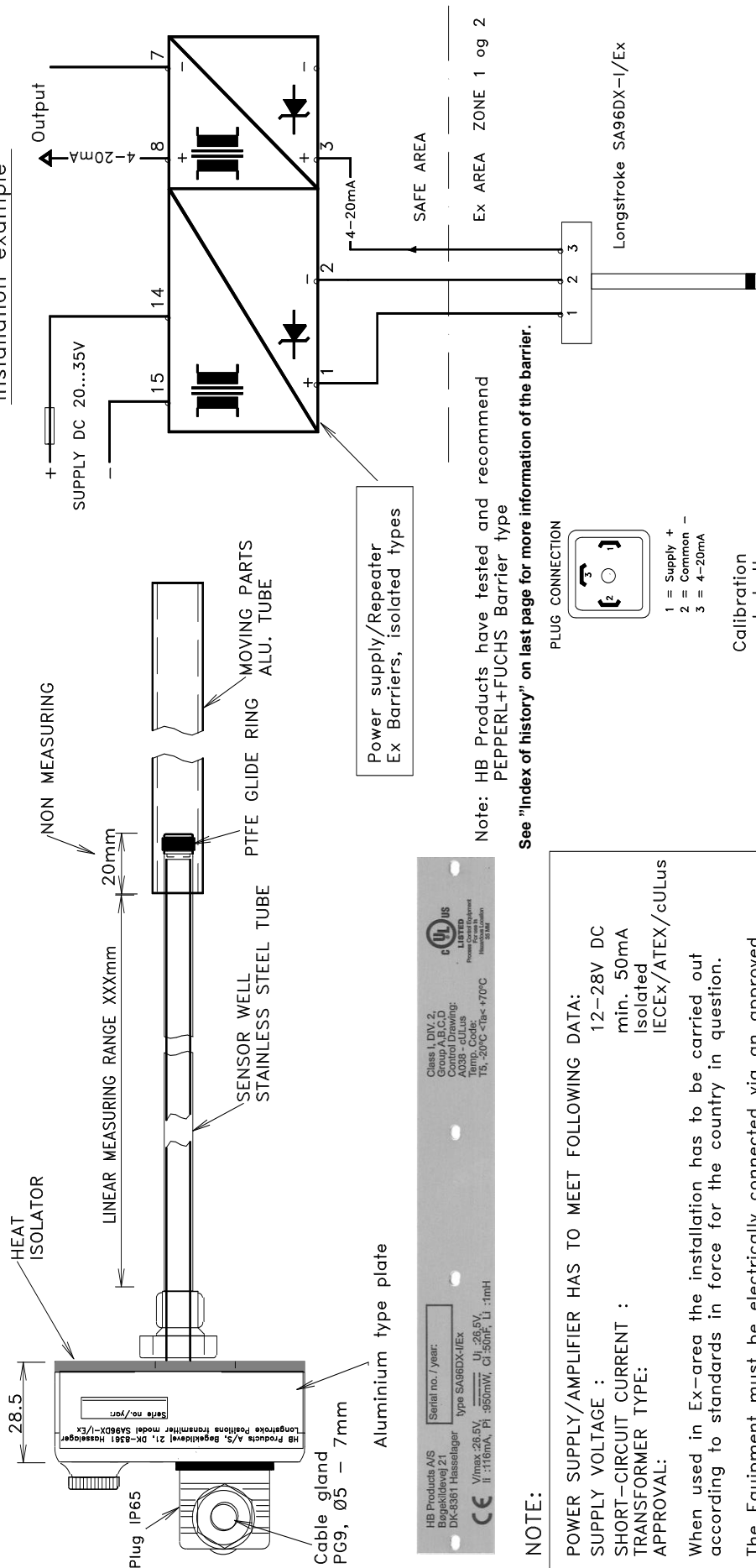
When used in Ex-area the installation has to be carried out according to standards in force for the country in question.

The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

Note:
The sum of capacitance and inductance of cable and intrinsic safe equipment must be less or equal to C_a and L_a acc. to the installation groups.
 V_{oc} and I_{sc} have to be less than or equal to V_{max} (Vi) and I_{max} (Ii) for the displacement Sensor and the Listed values of C_a and L_a for the associated apparatus are greater than $C_i + C_{cable}$ and $L_i + L_{cable}$, respectively, for the displacement Sensor.

History: See "Index of history" on last page for more information.	Date:	26-02-07	Rev. no.	1.0
	Rev. date:	21-04-08		1.1
	Rev. date:	01-09-08		1.1
	Rev. date:			
ATEX log: SA96DX-I No. A002 page 2	INSTALLATION: SA96DX-I/F283C/SLCD-M1___/Ex			Approved by: UL-Demko
	Const: ME	Drawing no. SA96EX02	Page: 2 of 2	

Installation example



Power supply/Repeater
Ex Barriers, isolated types

Note: HB Products have tested and recommend
PEPPERL+FUCHS Barrier type

See "Index of history" on last page for more information of the barrier.

NOTE:

POWER SUPPLY/AMPLIFIER HAS TO MEET FOLLOWING DATA:

SUPPLY VOLTAGE : 12-28V DC

SHORT-CIRCUIT CURRENT : min. 50mA

TRANSFORMER TYPE: Isolated

APPROVAL: IECEx/ATEX/cULus

When used in Ex-area the installation has to be carried out according to standards in force for the country in question.

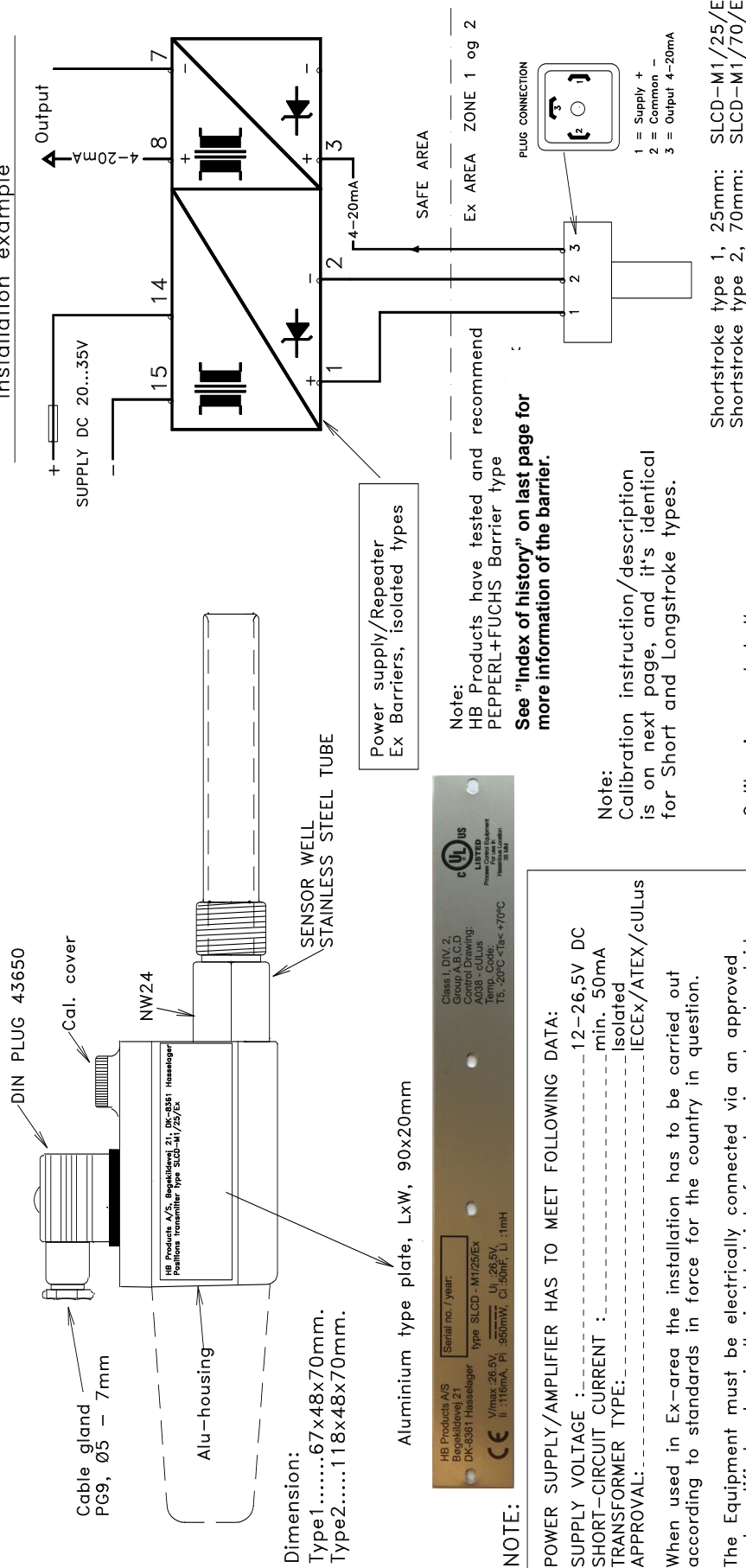
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

History:

See "Index of history" on last page for more information.

Date:	01-09-08	Ver. no.	01
Ver. date:	04-02-10		01
Ver. date:	16-09-10		01
Ver. date:	24-04-12		01
Ver. date:	18-10-12		01
Approved by:	UL-Demko		

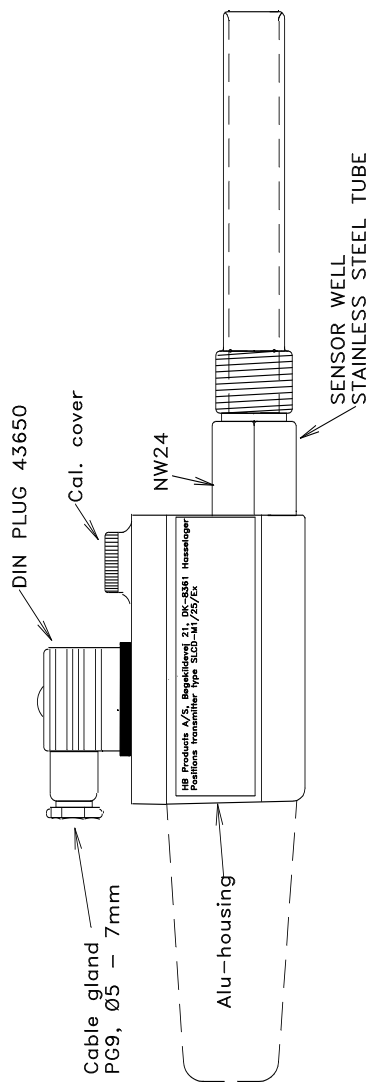
ATEX log: SA96DX-I	INSTALLATION SA96DX-I/Ex	
	Const: ME	Drawing no. SA96DXEX
No. A 002	HB Products A/S Bøgekildevej 21 DK-8361 Hasselager	
	Page:	



Date:		30-04-09	Ver. no.	1.0
Rev. date:		16-04-10	1.0	1.0
		16-09-10	1.0	1.0
		24-04-12	1.0	1.0
		18-10-12	1.0	1.0
Approved by:		UL-Demko		

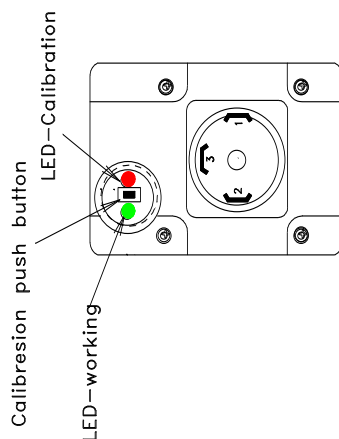
INSTALLATION SLCD-M1/xx/Ex		Page:	5
Const: ME	Drawing no. SLCDEX01		

ATEX log: SA96DX-1	HB Products A/S Bøgekildevej 21 DK-8361 Hasselager
No. A003	



IECEX, ATEX, cULus types:

To save power, the LED's switch OFF after 5min.
To activate the LED push once on the push button.



* Reverse on mA output is done automatically when you select/chose the 0% point (4mA).

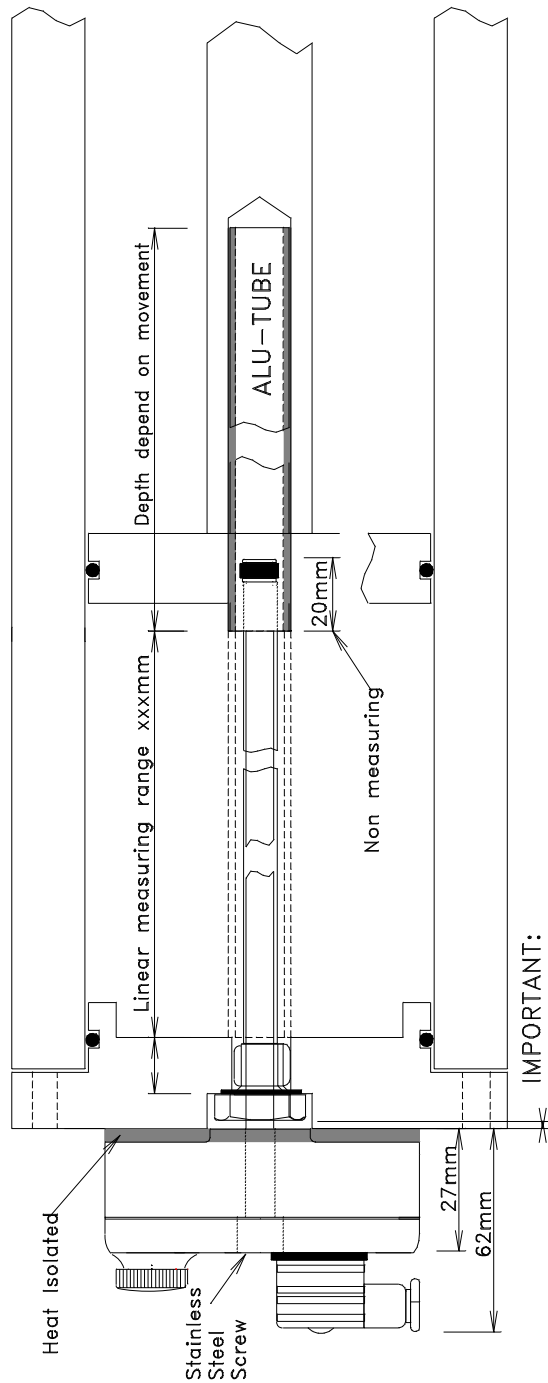
Calibration must be done before operation:

1. Before connecting voltage to the sensor, check wiring connections are correct on the plug as per connection drawing at top right of this page.
2. Apply supply voltage for a minimum of 1 minute before calibration.
3. Enable calibration mode by pressing the calibration button for 5 seconds.
4. Move slide valve to 0% position and push calibration button ONCE.
The red LED will light up constantly (ON) for some seconds. When the red LED flashes it will indicate that the unit is ready for 100% calibration.
5. Now move the slide valve to 100% position and push the calibration button TWICE. The red LED will flash rapidly.
When the red LED goes off the calibration procedure is complete.
6. The red and green LED's will remain working for a further 2 to 4 minutes, power safe mode will switch the LEDs off.

ATEX log: SLCDEX01 No. A003, page 2	HB Products A/S Bøgekildevej 21 DK-8361 Hasselager	INSTALLATION SLC-D-M1/xx/Ex			Approved by: UL-Demko
		Const: ME	Drawing no. SLCDEX02	Page: 2	
Date: 24-04-12					Ver. no. 1.0
Rev. date: 18-10-12					1.0

When the red LED goes off the calibration procedure is complete.

6. The red and green LED's will remain working for a further 2 to 4 minutes, power safe mode will switch the LEDs off.



NOTE:

Heat isolator should be mounted between kompressor and alu-housing, fixed with M6 stainless steel Head Cap Screw, to avoid heat transmission from the kompressor to the transmitter housing.

IECEX, ATEX and cULus types:

To save power on the EX type the LED's switch OFF after 5min.
To activate the LED push once on the push button.

Calibration must be done before operation:

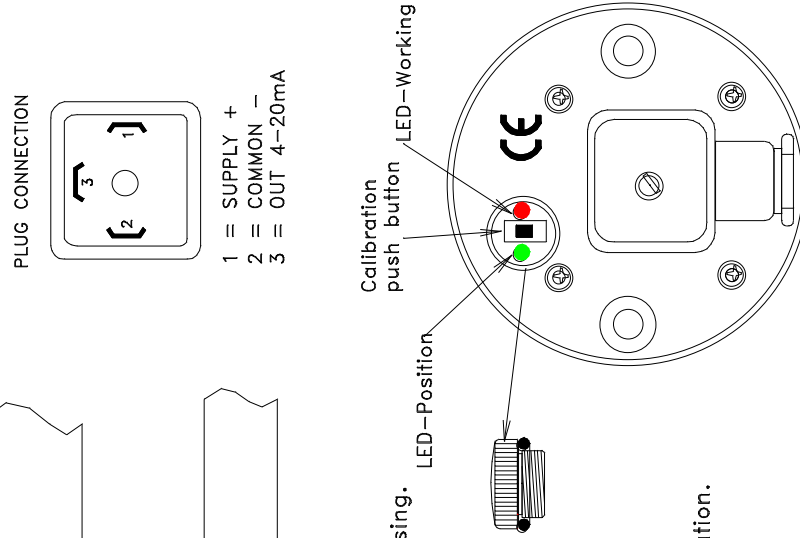
1. Apply Supply voltage min. 5 min. before Calibration.
2. Push the Cal. switch for 5 sek. to get the transmitter in Calibration mode the red LED change from normal flash to OFF.
3. Move the Slide valve to 0% position, and then push the calibration's button once, the red LED is now constantly ON, when the red LED switch OFF its ready for 100% calibration.
4. Now move the Slide valve to 100% position, and push the calibration button twice, the red LED flash quickly, when the red LED flash normally the calibration is done.

* The green LED indicate end position.

<1% = green LED flash.
>99% = green LED ON.

History:

16-04-10, Electrical connection is change to show only standard type.



Index of history

History:

26-02-2007, IP rating changes from IP20 to IP65.

21-04-2008, Company address changes to Bøgekildevej 21, DK-8361 Hasselager

01-09-2008, change of PEPPERL+FUCHS Barrier, new type is

“KFD2-STC4-EX1, part no. Y204907”

Old type, “KFD2-CR-CX1.30300”

18-10-2012, change of PEPPERL+FUCHS Barrier, new type is

“ KFD2-STC4-EX1-Y2, part no. 231387”.

Old type, “ KFD2-STC4-EX1, part no. Y204907”

6-6-2019, change of PEPPERL+FUCHS Barrier, new type is

“ KFD2-STC4-EX1-Y2, part no. 283684”.

Old type, “ KFD2-STC4-EX1-Y2, part no. 231387”

Note: This position sensor is tested to work with a PEPPERL+FUCHS

special barrier type KFD2-STC4-EX1, part no. Y204907 &

KFD2-STC4-EX1-Y2, part no. 231387 & KFD2-STC4-EX1-Y2, part no. 283684, all

types is exclusive made for HB Products A/S.

We recommend that you buy this barrier together with the Ex sensor.