

Ex MANUAL

**Explosion Protection
Intrinsic Safety IEC/EN50020**



**GEA Position Sensor LDS
Linear Displacement Sensor**

cULus



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

Contens

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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

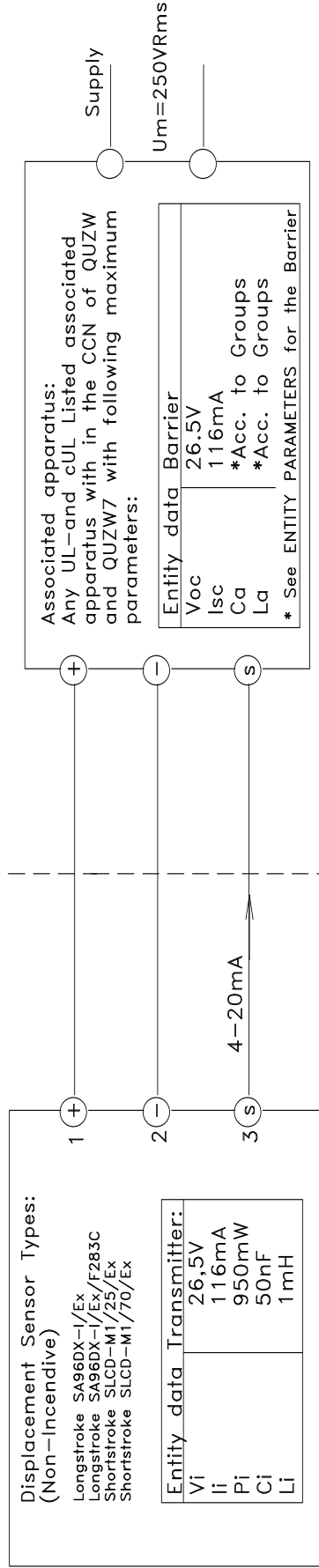
UL International Demko A/S

Control Drawing no. A038-CDcULus

Hazardous Area Location

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

Nonhazardous Area



Installation must be performed in accordance with the National Electric Code, NFPA 70, Article 501.10

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.

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 type "KFD2-STC4-EX1, part no. Y204907"

$$Ca > Ci + Ccable$$

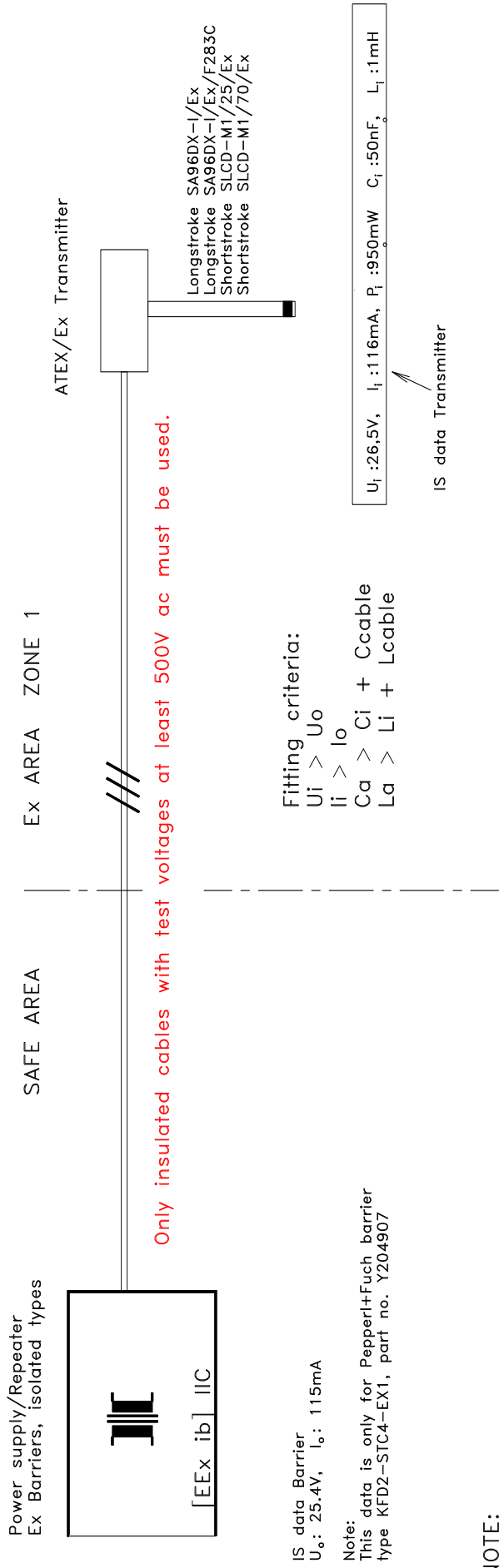
$$La > Li + Lcable$$

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

Manufacturer: HB Products A/S Bøgekildevej 21 DK-8361 Hasselager	CONTROL DRW.: SA96DX-1/xxx/Ex, SLCD-M1/xx/Ex Const: ME Drawing no. A038cULus Page: 1
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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.

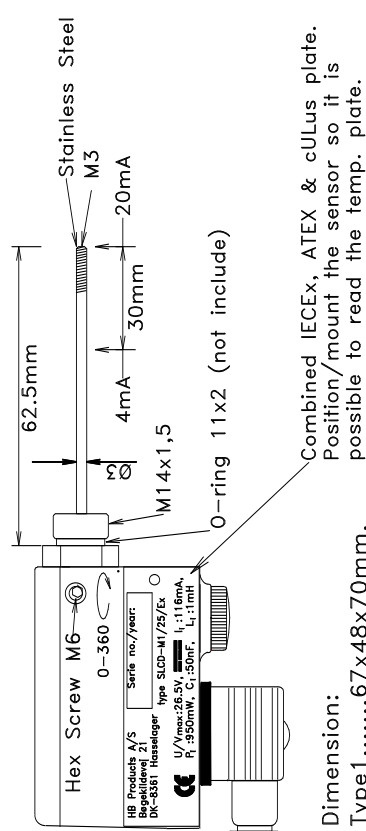
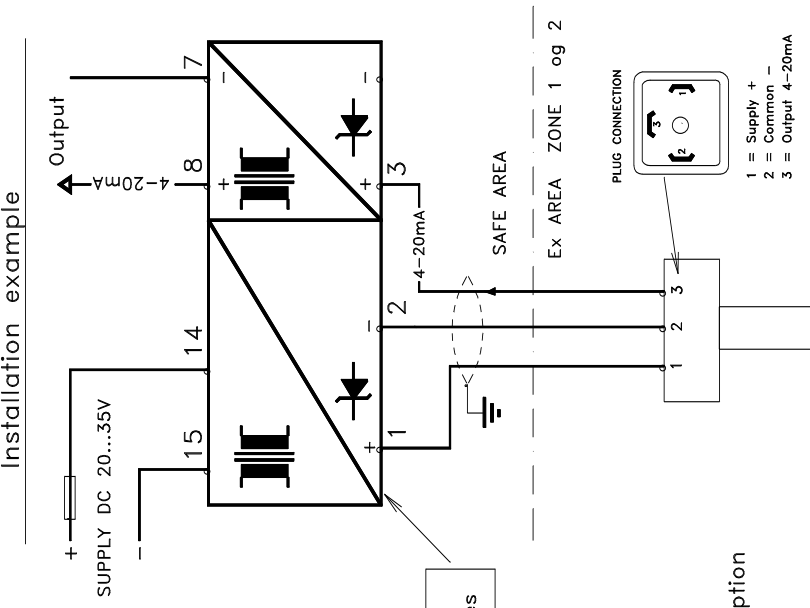
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

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} (V_i) and I_{max} (I_i) 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:
 26-02-07, IP rating change from IP20 to IP65.
 21-04-08, Company address change to Bøgekildevej 21.
 01-09-08, Change of PEPPERL+FUCH Barrier
 Old type is KFD2-CR-CX1.30300
 New type is KFD2-STC4-EX1, part no. Y204907

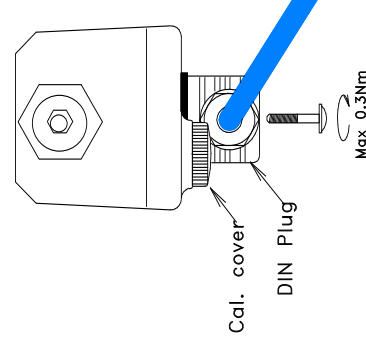
ATEX log: SA96DX-I		HB Products A/S Bøgekildevej 21 DK-8361 Hasselager		INSTALLATION: SA96DX-I/F283C/SLCD-M1___/Ex	
No. A002	page 2	Const: ME	Drawing no. SA96EX02	Page: 2 of 2	
Date:	26-02-07	Rev. no.	1.0		
Rev. date:	21-04-08	Rev. no.	1.1		
Rev. date:	01-09-08	Rev. no.	1.1		
				Approved by: UL-Demko	

Installation example



Power supply/Repeater
Ex Barriers, isolated types

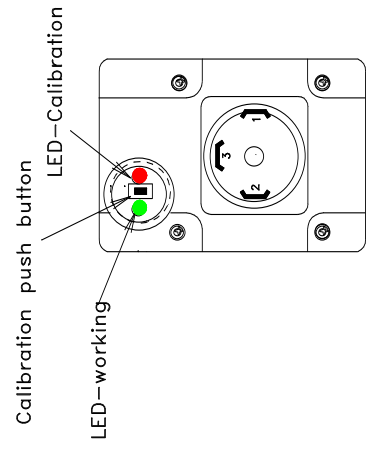
HELUKABEL, 3x0.75 Blue
EN/IEC 60079-14, DIN VDE 0165.



Included delivery:
20m cable
mounted with a DIN plug.

Note:
Calibration instruction/description
is on next page.

Shortstroke type 1, 25mm: SLCD-M1/25/Ex/GEA



NOTE:

POWER SUPPLY/AMPLIFIER HAS TO MEET FOLLOWING DATA:

SUPPLY VOLTAGE : 12-26,5V DC

SHORT-CIRCUIT CURRENT : min. 50mA

TRANSFORMER TYPE: Isolated

APPROVALS: ATEX/IECEX/cULus

Explosion Protection: Intrinsic Safety "ib"

ATEX/IECEX: EEx ib IIC T5.

cULus: Class 1, div 2, Group A,B,C,D Temp. code T5.

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

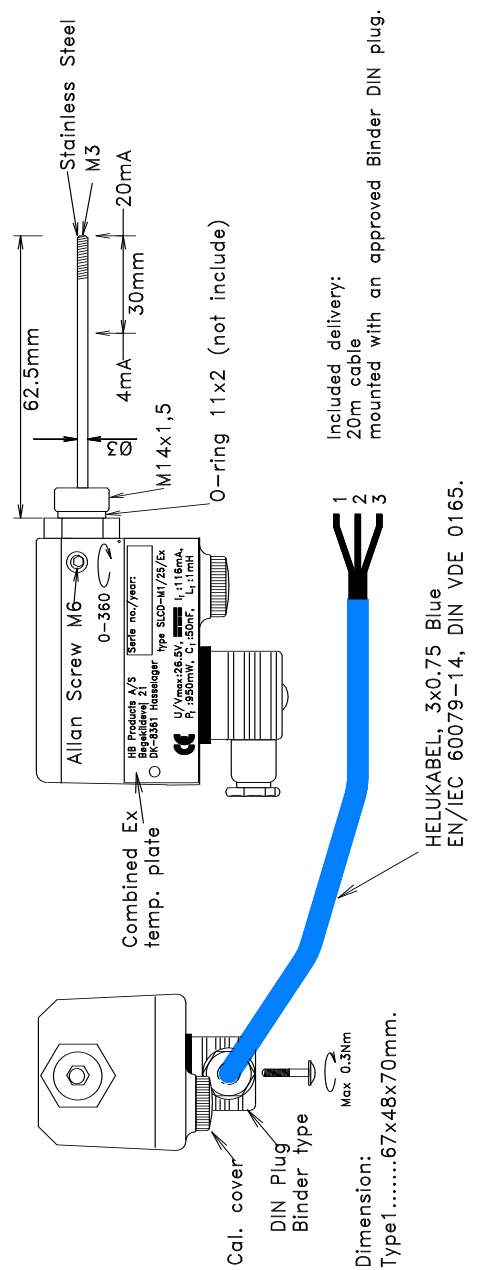
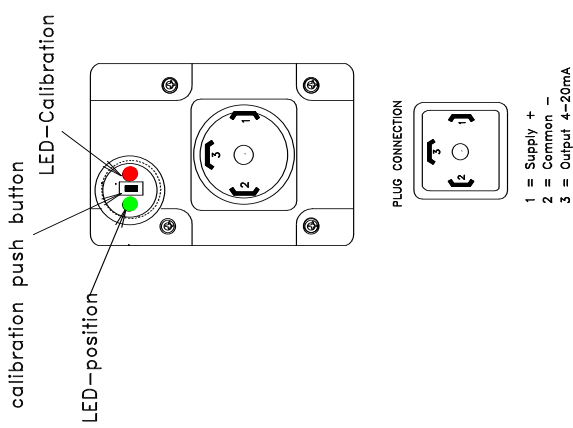
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

Date:	18-01-11	Ver. no.	1.0
Rev. date:	06-02-13		

Approved by:		UL-Demko	
Const:	ME	Drawing no.	GEAEX01
		Page:	1

log:	GEA	HB Products A/S	INSTALLATION SLCD-M1/25/Ex/GEA
No.	001	Bøgekildevej 21	
		DK-8361 Hasselager	

Calibrating Instruction for GEA Ex position sensor



History:
Rev. 7.0, no lock function on the mA output.
Rev. 7.1, with lock function on the mA output, min. 3.9mA and max 20.1mA +/-0.05mA.

IECEX, ATEX, cULus and standard 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 LDS 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 on for a further 2 to 4 minutes, once the red and green LED's go out refit calibration cover and turn the LDS by loosening the 2 Allen screws so that the DIN plug is at the 6 O'clock position. Then tighten the 2 securing Allen screws.

Production code: _____

Rev. no. _____ Day _____ Month _____ Year _____

Ex plate

HB Products A/S	Serie no./year:	
Bøgekildevej 21	71 ddmmYY	
DK-8361 Hasselager	type	SLCD-M1/25/Ex
CE	U/V _{max} :26.5V, I ₁ :116mA, P ₁ :950mW, C ₁ :50nF, L ₁ :11mH	

Sensor type	GEA/Grasso ID Ordering no.
Position sensor	627500016

Index of history

History:

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"

13-03-2017, New order number for sensor used for only cULus.

27-11-2018, Declaration is removed.

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.