

Ex MANUAL

**Explosion Protection
Intrinsic Safety IEC/EN50020**

**HOWDEN Position Sensor LPI
Linear Displacement Sensor
Type SA96DX-I/Ex**



cULus approved

Longstroke: SA96DX-I/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)

Declaration:

We HB Products A / S declares that Longstroke sensor SA96DX-I/xxx/Ex is designed for use in Ex area in accordance with the applicable certificate.

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.

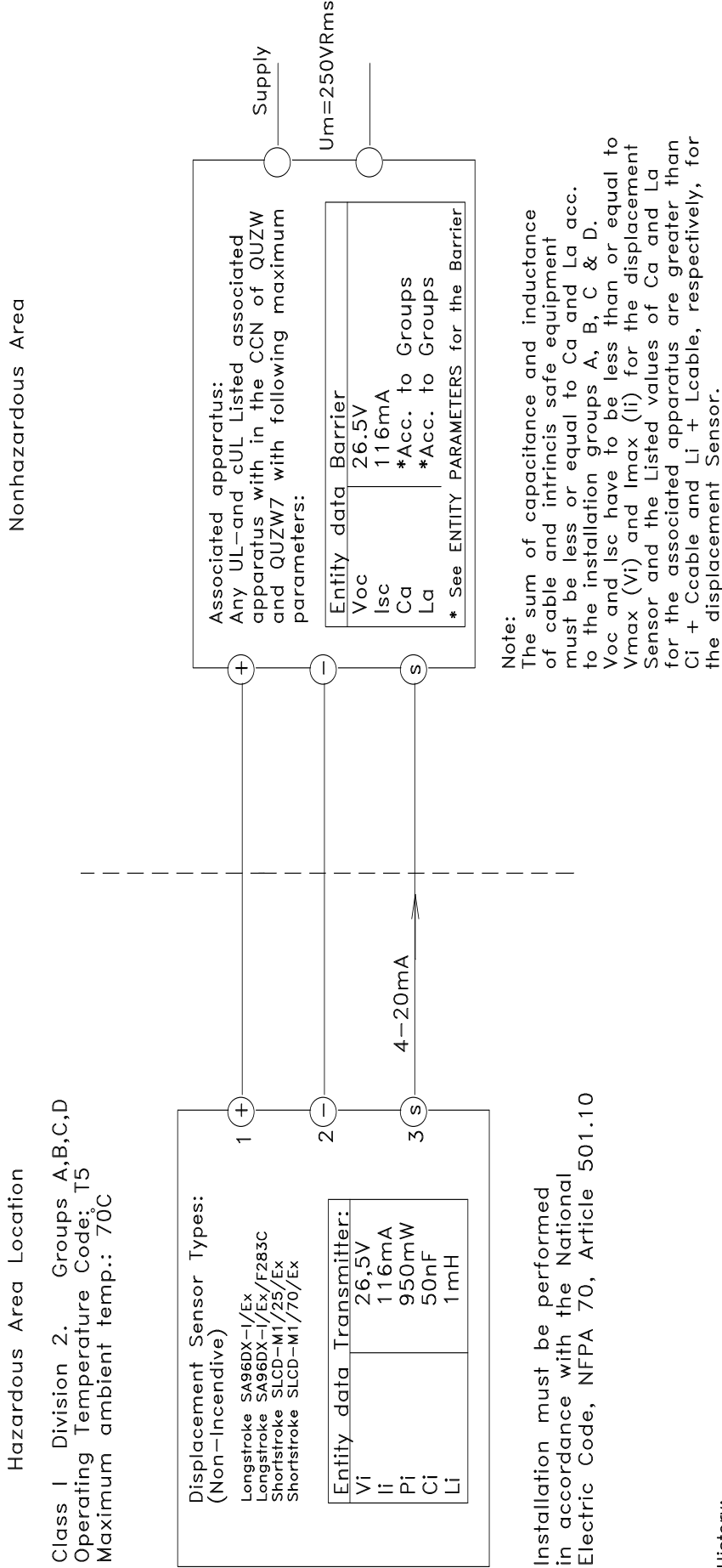
Look for the UL Listing Mark on the product

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



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

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

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

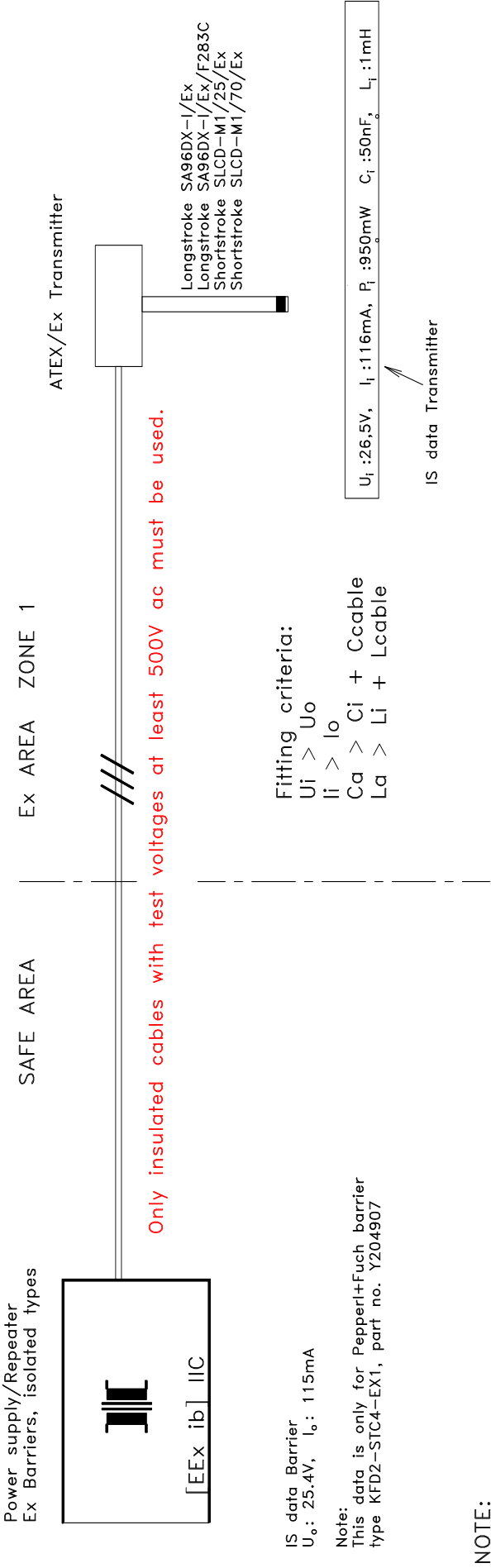
Page: 1

Date: 03-05-06
Rev. no: 01

Date: 30-04-09
Rev. no: 02

Date:

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.

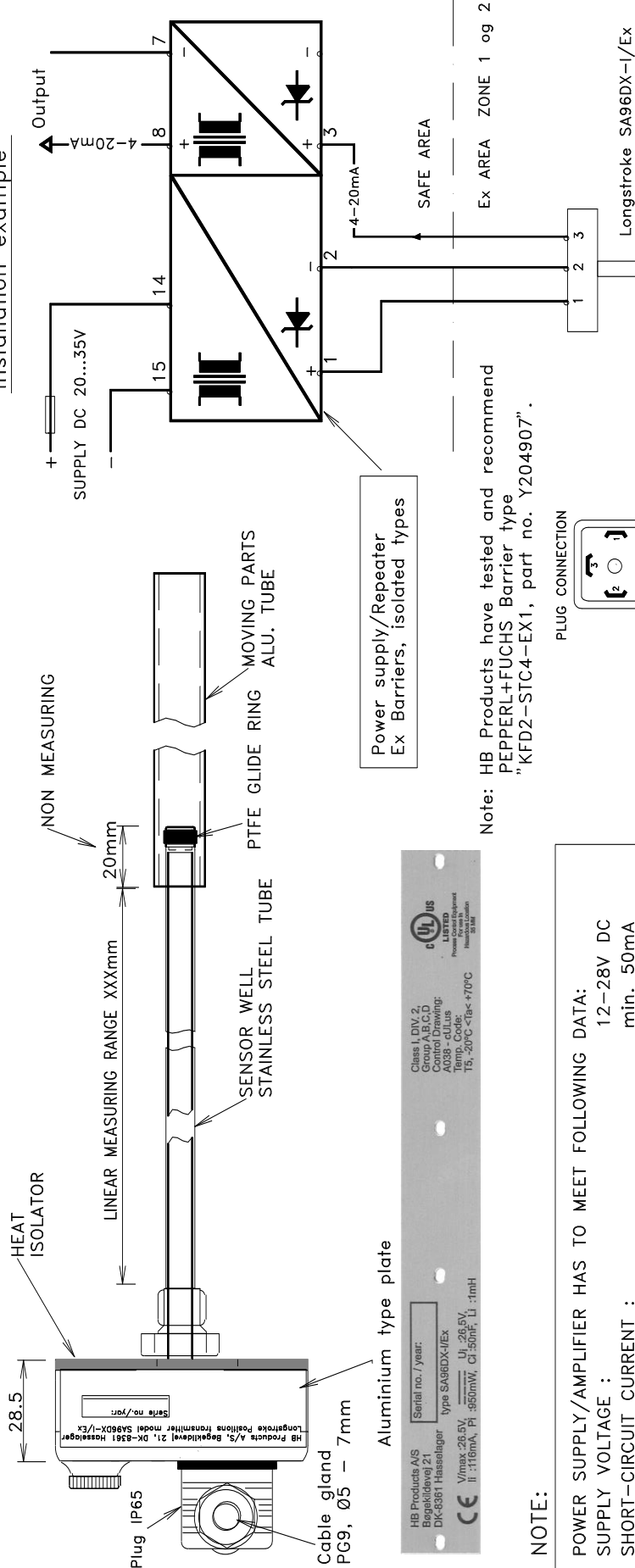
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

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

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.
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.

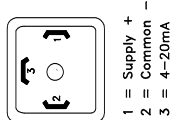
Date: 26-02-07		Rev. no. 1.0
Rev. date: 21-04-08		1.1
Rev. date: 01-09-08		1.1
Rev. date:		
Approved by:		UL-Demko
INSTALLATION: SA96DX-I/F283C/SLCD-M1___/Ex		
Const: ME	Drawing no. SA96EX02	Page: 2 of 2
ATEX log: SA96DX-I		HB Products A/S Bøgekildevej 21 DK-8361 Hasselager
No. A002	page 2	

Installation example

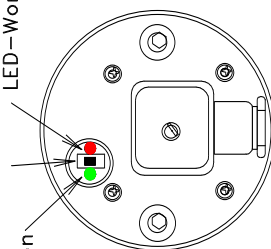


Note: HB Products have tested and recommend PEPPERL+FUCHS Barrier type "KFD2-STC4-EX1, part no. Y204907".

PLUG CONNECTION



Calibration push button LED-Position LED-Working



NOTE:

POWER SUPPLY/AMPLIFIER HAS TO MEET FOLLOWING DATA:

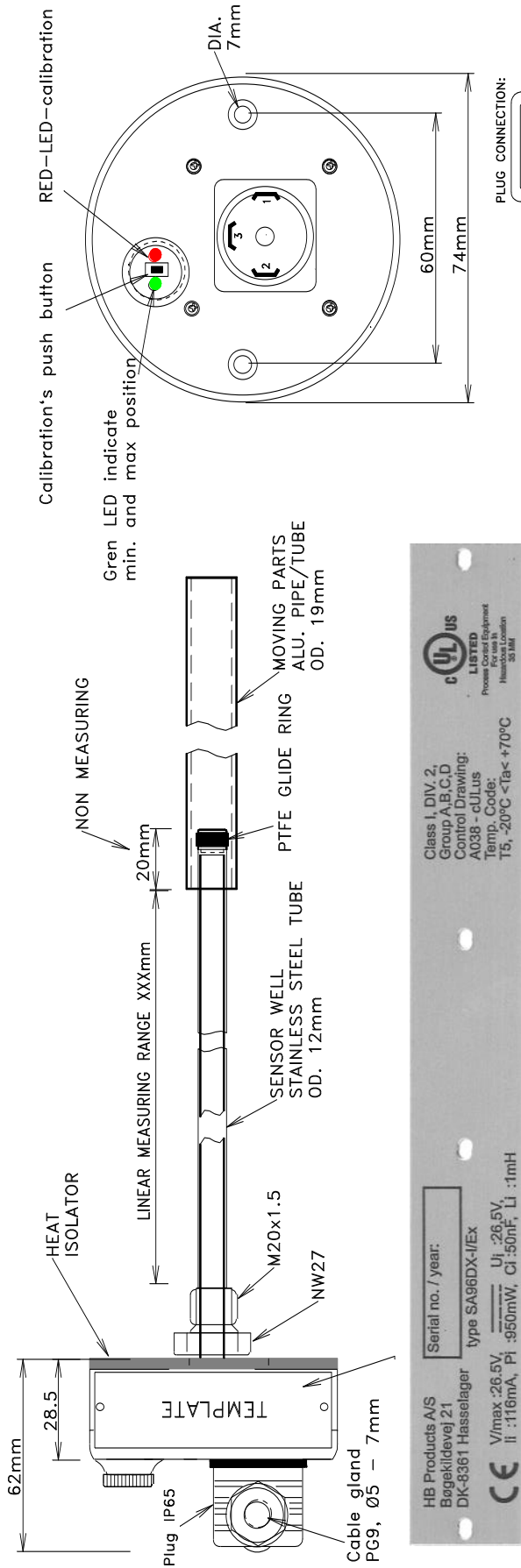
SUPPLY VOLTAGE : 12-28V DC
SHORT-CIRCUIT CURRENT : min. 50mA
TRANSFORMER TYPE: Isolated
APPROVAL: IECEx/ATEX/cULus

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

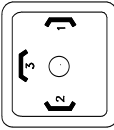
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

History:
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+FUCHS Barrier.
24-04-12, New type is KFD2-STC4-EX1, part no. Y204907.
18-10-12, Combined marking/temp. plate.
7-6-2019, New type is KFD2-STC4-EX1-Y2, part no. 231387.
change of PEPPERL+FUCHS Barrier, new type is "KFD2-STC4-EX1-Y2, part no. 283684".

ATEX log: SA96DX-I	INSTALLATION SA96DX-I/Ex	
	Const: ME	Drawing no. SA96DXEX
	Page:	
	Approved by: <i>UL-Demko</i>	
	Ver. no. 01	
No. A 002	Date: 01-09-08	Ver. no. 01
	Ver. date: 04-02-10	Ver. no. 01
	Ver. date: 16-09-10	Ver. no. 01
	Ver. date: 24-04-12	Ver. no. 01
	Ver. date: 18-10-12	Ver. no. 01



PLUG CONNECTION:



1 = SUPPLY +24V DC
2 = COMMON -
3 = OUT 4-20mA

History:
190307, Certificate is now comply with IP65 according to IEC60529 (tightness).
210212, Template is change to a universal Ex type

NOTE:

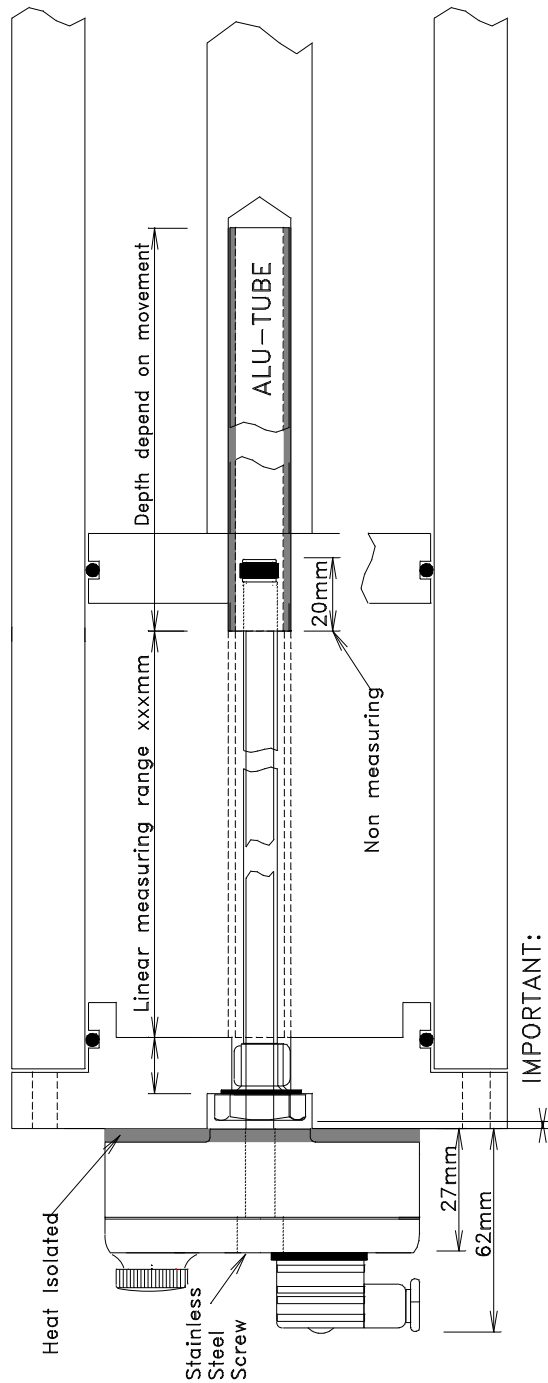
POWER SUPPLY/AMPLIFIER HAS TO MEET FOLLOWING DATA:
SUPPLY VOLTAGE : 12-26.5V DC min. 50mA
SHORT-CIRCUIT CURRENT : Isolated
TRANSFORMER TYPE: ATEX/cULus/IECEX
APPROVAL:
When used in Ex-area the installation has to be carried out according to standards in force for the country in question.
The Equipment must be electrically connected via an approved and certified galvanically isolated interface barrier placed outside the hazardous area.

COMPRESSOR TYPE/SIZE	LENGT SENSOR WELL IN mm	ASSEMBLY PART NO. Ex TYPE
XR1 127	165	XR12000-U
XR1 163/204	250	XR24000-U
WRV 163	180	M3001001-U
WRV 204	250	M3001002-U
WRVi 255 1.10	350	M3001003-U
WRVi 255 2.20	350	M3001006-U
WRVi 321 1.32	410	M3001004-U
WRVi 321 2.20	445	M3001005-U
WRVi 365	520	M3001007-U
WRV 510		

Date:	03-10-06	Ver. no.	1.0
Ver. date:	19-03-07		1.1
Ver. date:	21-02-12		1.2
Ver. date:			
Ver. date:			

Ex sensor types HOWDEN LPI	HB Products A/S Bøgekildevej 21 DK-8361 Hasselager	SA96DX-I/xxx/Ex	
		Const: ME	Drawing no. Ex-LPI_U Page: 1

Approved by:		UL
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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.

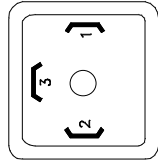
Calibration must be done before operation:

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.

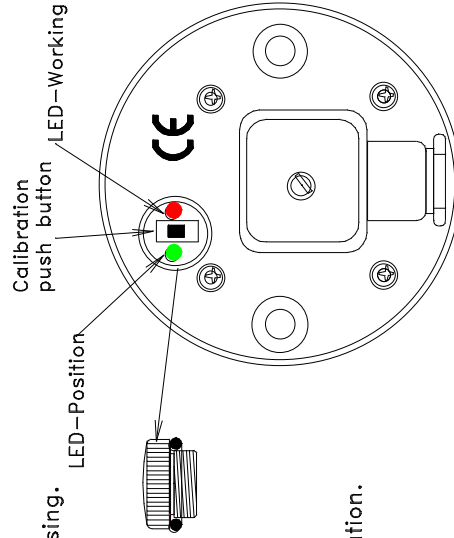
* The green LED indicate end position.

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

PLUG CONNECTION



- 1 = SUPPLY +
- 2 = COMMON -
- 3 = OUT 4-20mA



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”

01-01-2012, the identification plate now covers all three certificates named as Combined

“Temp. plate for ATEX...IECEEx...cULus”.

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”

7-6-2019, 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.