

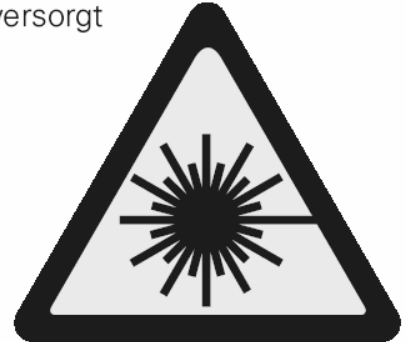
These mounting instructions are valid for the LIF 98W / 901W (Id. Nr. 535036-01 / 535184-01)

Warnings

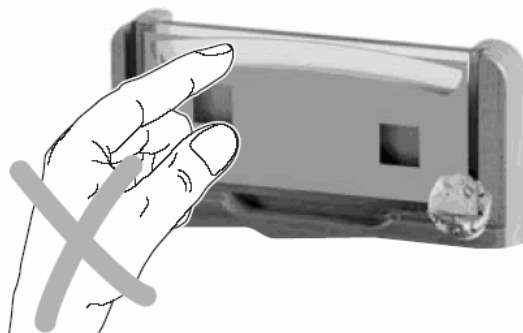
AK LIF 9xW

Klasse 3R: bei nicht angebauten AK LIF 9x W, mit Spannung versorgt
Class 3R: When AK 9x W is not mounted and is under power

Klasse 1: bei korrekten Anbau des AK LIF 9xW
Class 1: When the AK LIF 9x W is properly mounted

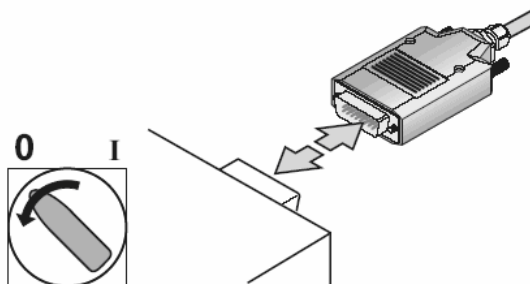


Invisible laser radiation
Avoid direct exposure to beam
Laser class 3R
SEE INSTRUCTION BELOW
IEC 60825-1:1993+A2:2001
P < 4mW $\lambda = 850 \text{ nm}$

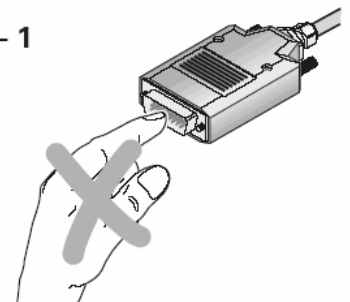
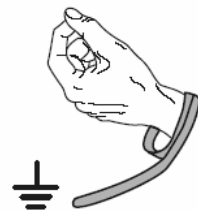


Teilung nicht berühren!
Do not touch the graduation!

Note the protection mark for ISO 16016!



DIN EN 100 015 – 1
CECC 00015 – 1



Edited on: **Erstausgabe**

	Release-No.	Created	Responsible	Released	Version	Rev.	Sheet	Page
	F91499	Kühler		Thielicke	D535424 - 00 - D - 01			1/
	Date	27.06.2006		01.08.2006	Document no.			11

Items supplied



Figure 1: LIF 98W scanning head (Id. Nr. 535 036-01)

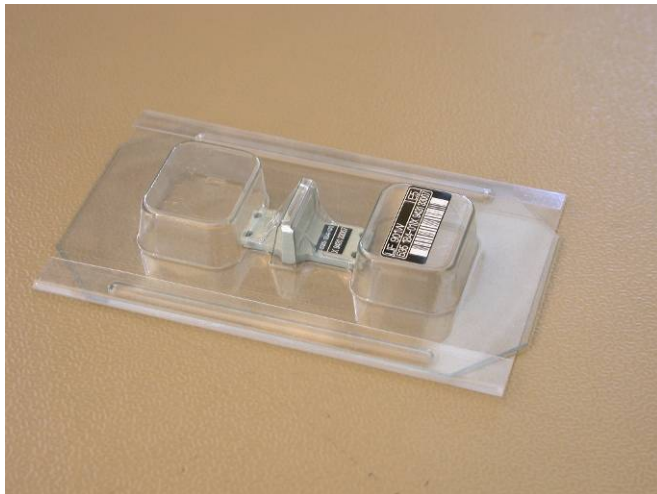


Figure 2: LIF 901W scale (Id. Nr. 535 184-01)

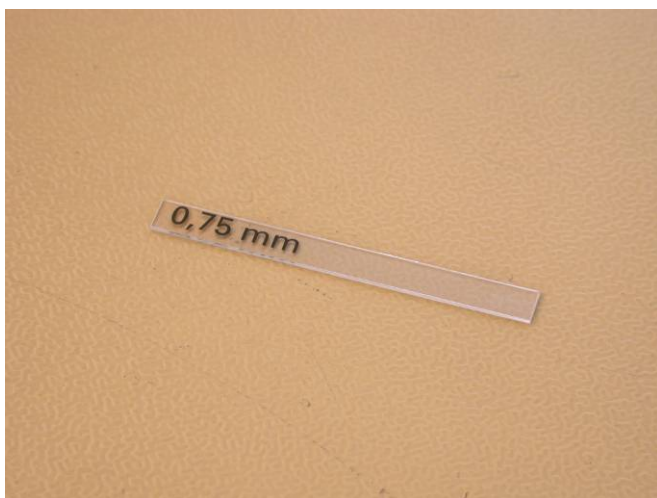



Figure 3: 0.75 mm spacer foil

Note the protection mark for ISO 16016!

	Release No.		Created	Responsible	Released		Version	Rev.	Sheet	Page
	F91499		Kühler		Thielicke	D535424 - 00 - D - 01				2/
		Date	27.06.2006		01.08.2006		Document no.			11

Mounting the Scale

Remove the scale from the packaging as shown in Figure 4.

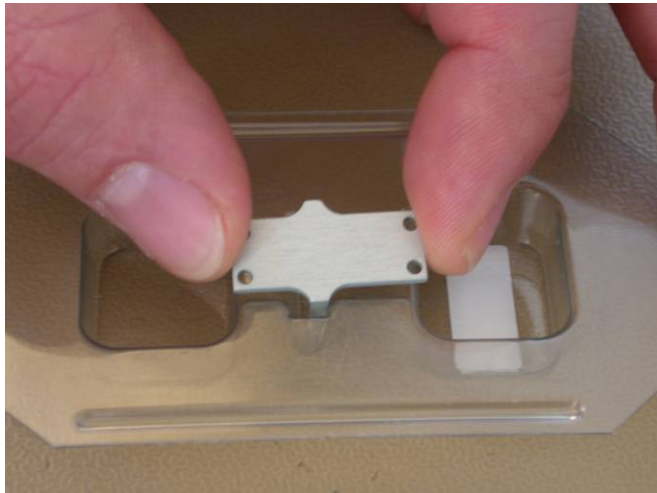


Figure 4: Removing the scale

Ensure that under no circumstances do your fingers touch the graduation (danger of contamination). Figure 5 shows excellent handling. You may want to wear lint-free protective gloves or finger cots.

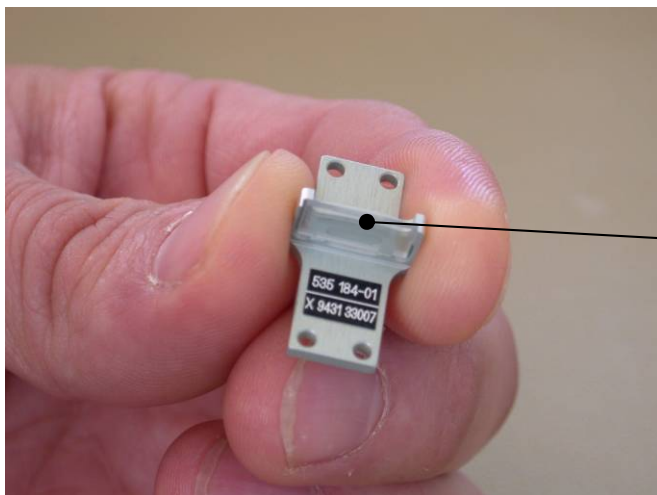


Figure 5: Handling the scale

In order to align the scale (Figures 6 and 7), the top surface and a side surface of the scale holder both serve as supports.

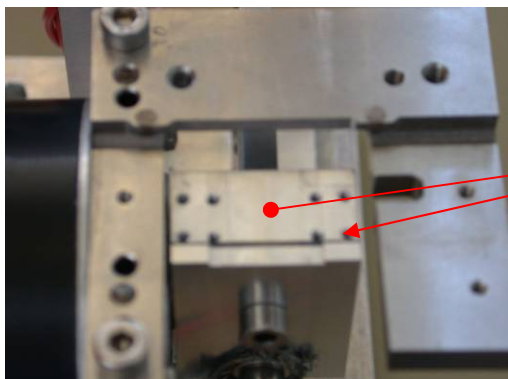
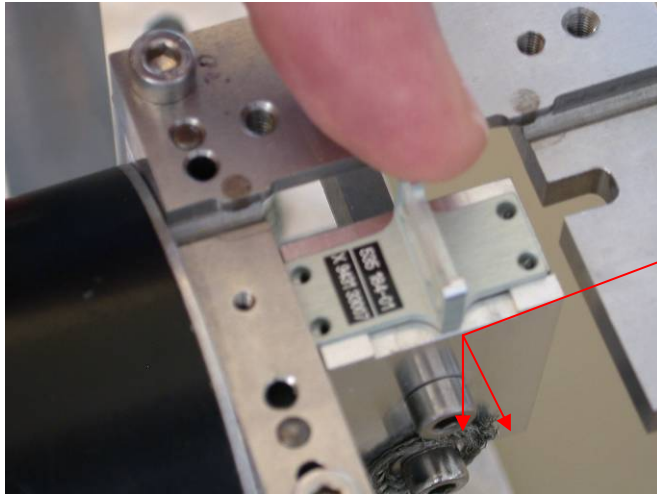


Figure 6: Support surfaces for the scale



Release No.	Created	Responsible	Released	Version	Rev.	Sheet	Page
F91499	Kühler		Thielicke	D535424 - 00 - D - 01			3/
Date	27.06.2006		01.08.2006	Document no.			11



Alignments for the scale

Figure 7: Aligning the scale

Four screws (DIN EN ISO 4762 M1.6 x 5) are recommended for securing the scale. (Maximum tightening torque: 0.15 Nm).

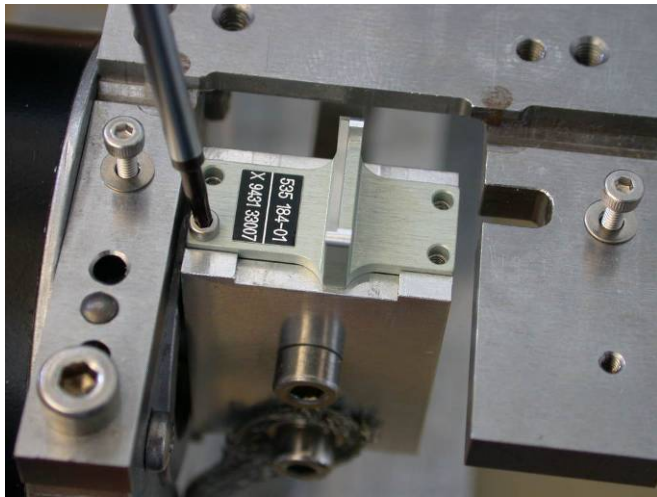


Figure 8: Securing the scale

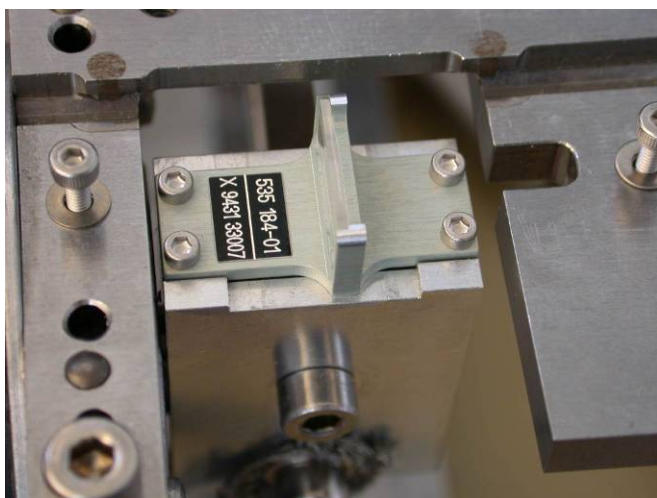


Figure 9: Fully mounted scale

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Release No.		Created	Responsible	Released		Version	Rev.	Sheet	Page
F91499	Name	Kühler		Thielicke	D535424 - 00 - D - 01			4/	
	Date	27.06.2006		01.08.2006	Document no.			11	

Mounting the Scanning Head

Remove the protective cover from the scanning head

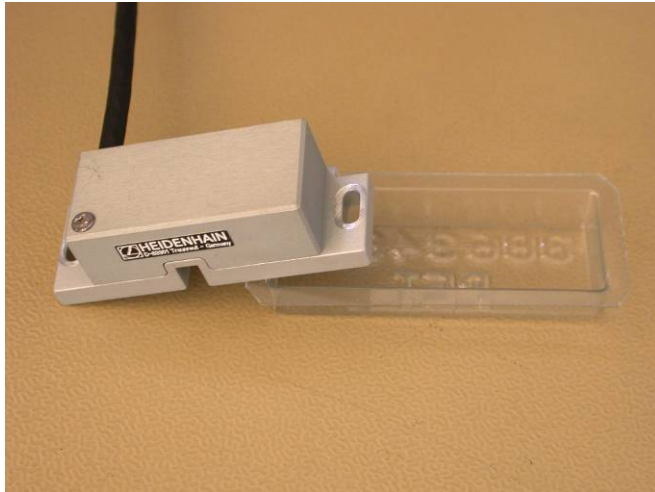
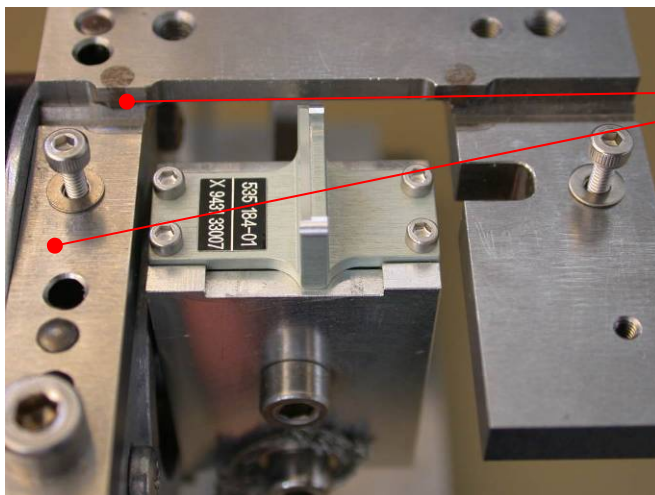


Figure 10: Scanning head with protective cover

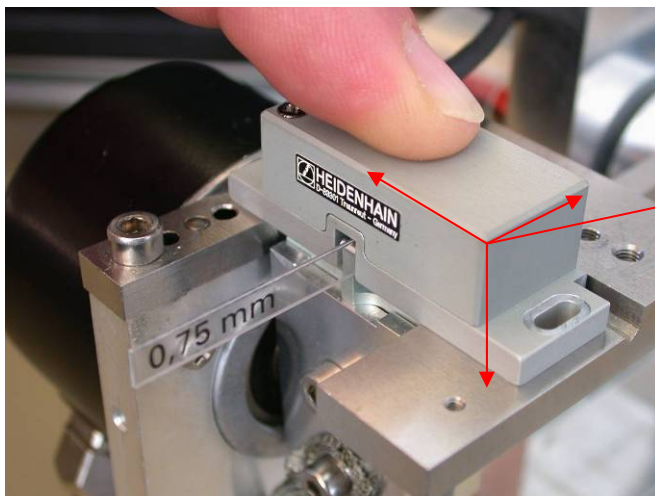
Align the scanning head with the support surfaces



Support surfaces

Figure 11: Support surfaces for the scanning head

Set the scanning gap of 0.75 mm with the spacer foil. Ensure that the spacer foil is positioned correctly (Figures 13 and 14).



Support alignments for the scanning head

Figure 12: Setting the scanning gap

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Release No.

F91499

Created	Responsible	Released	Version	Rev.	Sheet	Page
Kühler		Thielicke	D535424 - 00 - D - 01			5/
27.06.2006		01.08.2006	Document no.			11



Figure 13: Correct position of the spacer foil



Figure 14: Incorrect position of the spacer foil

Two screws (DIN EN ISO 4762 M2 x 8) and two washers (DIN EN ISO 7092 2.0) are recommended for securing the scanning head. (Maximum tightening torque: 0.32 Nm).



Figure 15: Securing the scanning head

It must be easy to remove the spacer foil from the scanning gap after the scanning head has been mounted.

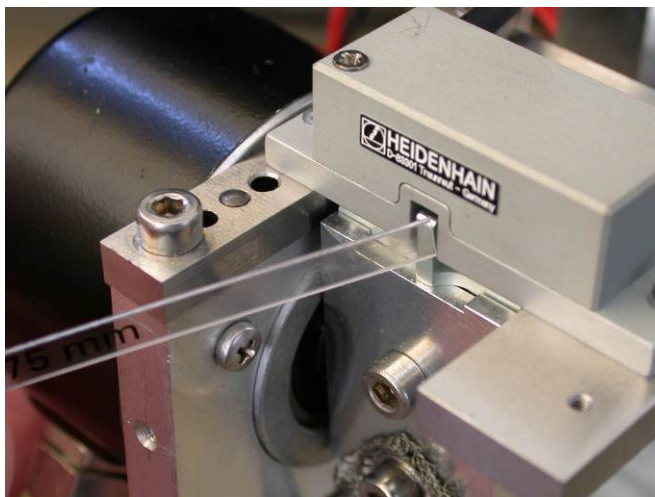


Figure 16: Removal of the spacer foil



Adjusting the Output Signals

A PWM8 phase-angle measuring unit from HEIDENHAIN (Id. Nr. 309 956-xx), for example, along with a connecting cable (Id. Nr. 331 693-xx) and oscilloscope, is suited for adjusting the output signals.

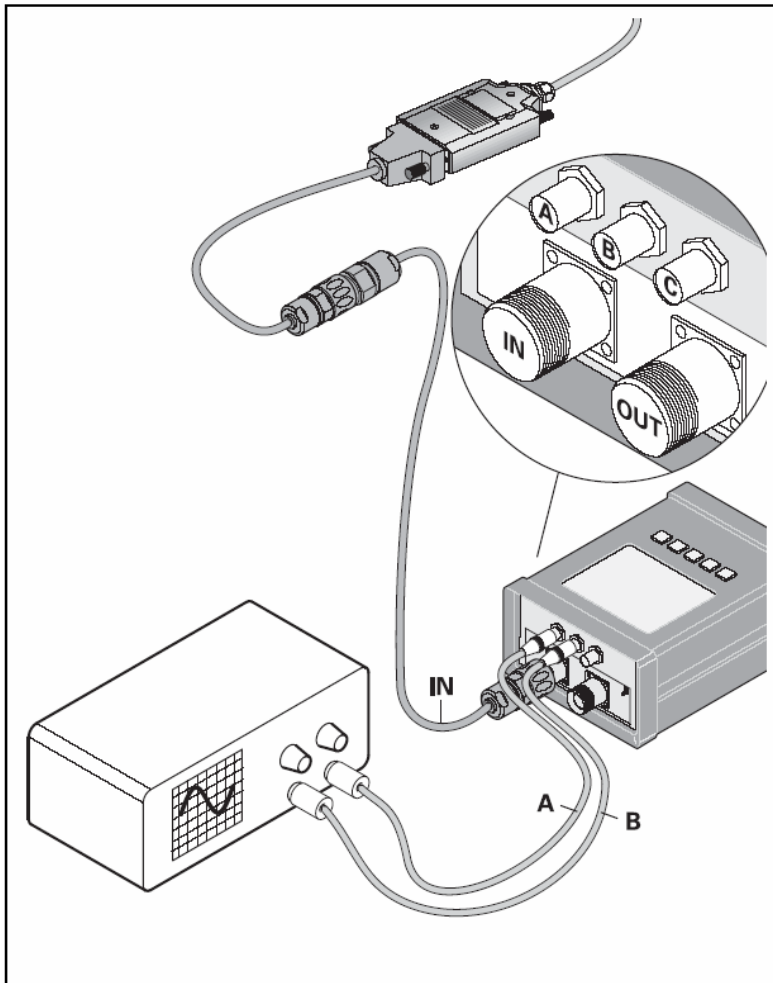


Figure 17: Accessories for adjustment

The PWM8 displays the signals as shown below.

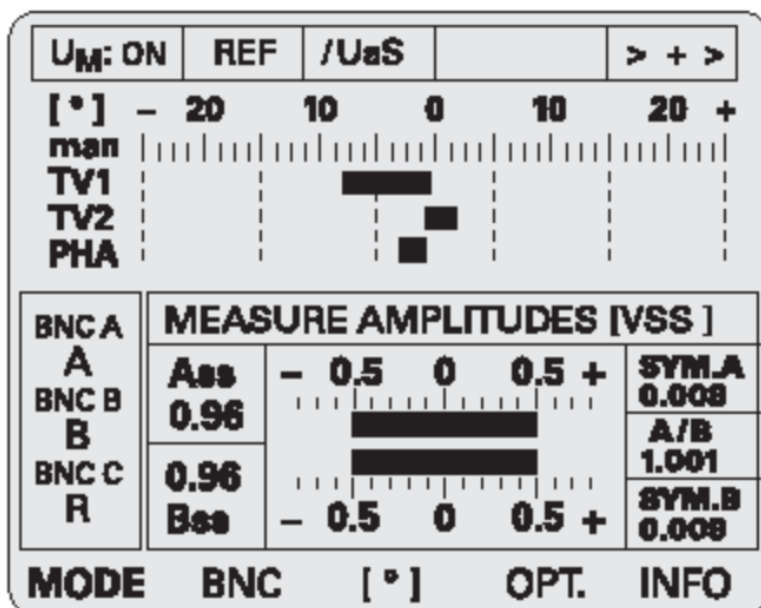


Figure 18: Display of the signals on the PWM8



The signals can also be displayed on the oscilloscope as follows:

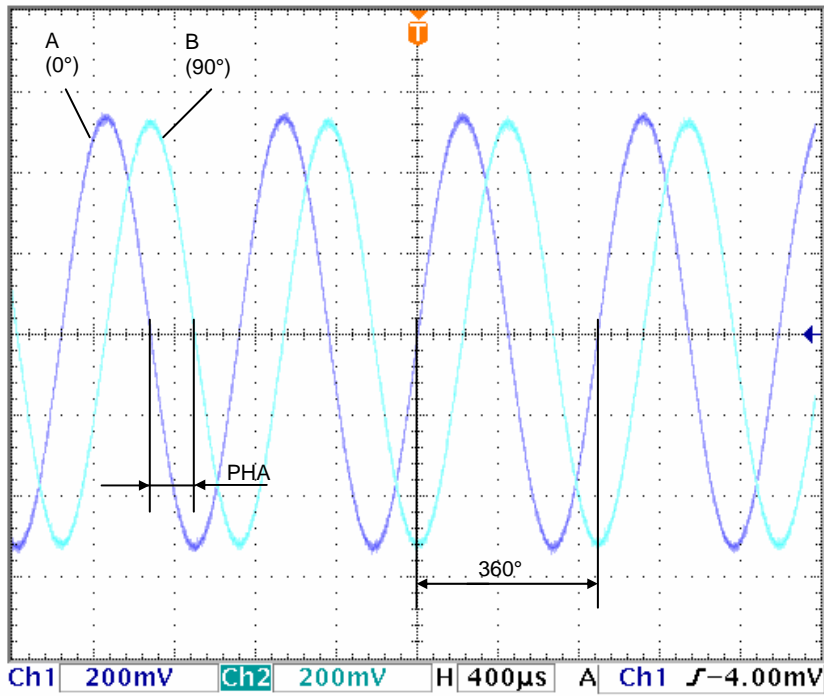


Figure 19: Signal display on the oscilloscope (y/t diagram)

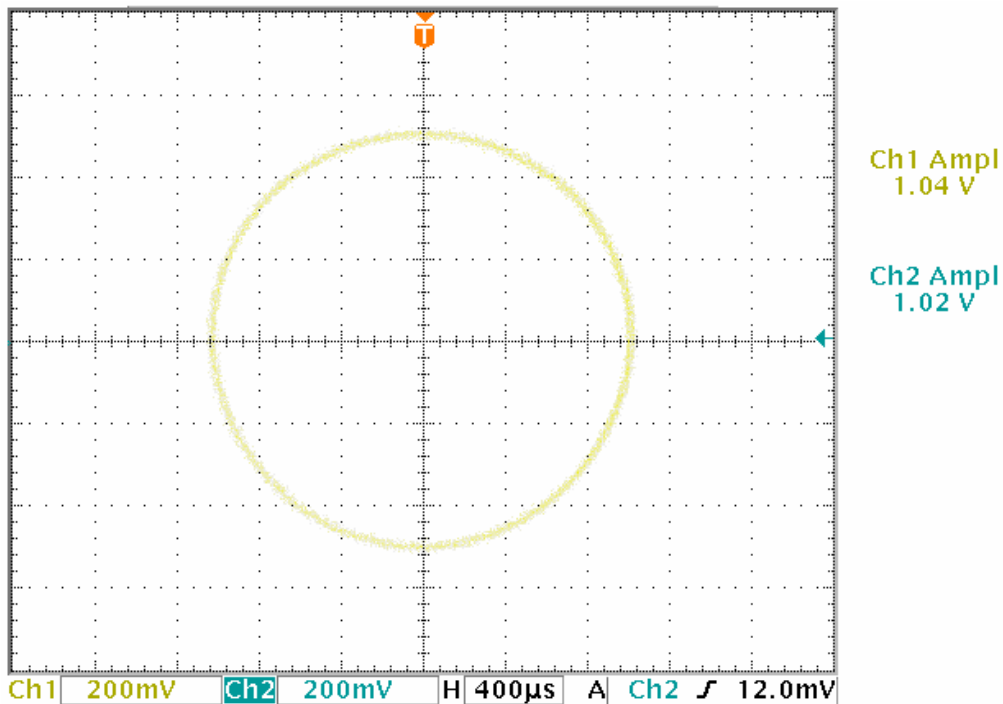


Figure 20: Signal display on the oscilloscope (x/y diagram)

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Release No.
F91499

Created	Responsible	Released
Kühler		Thielicke
27.06.2006		01.08.2006

Version	Rev.	Sheet	Page
D535424 - 00 - D - 01			8/
Document no.			11

Remove the cover of the adapter connector in order to access the potentiometers.

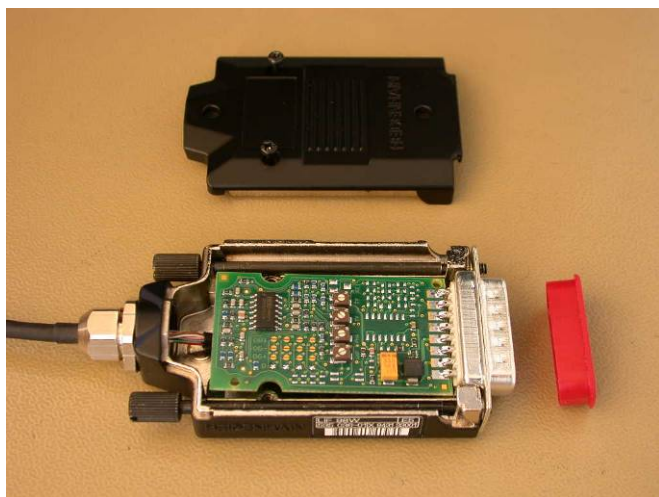


Figure 21: Opened adapter connector

Four potentiometers are available on the adapter connector for adjusting the signals.

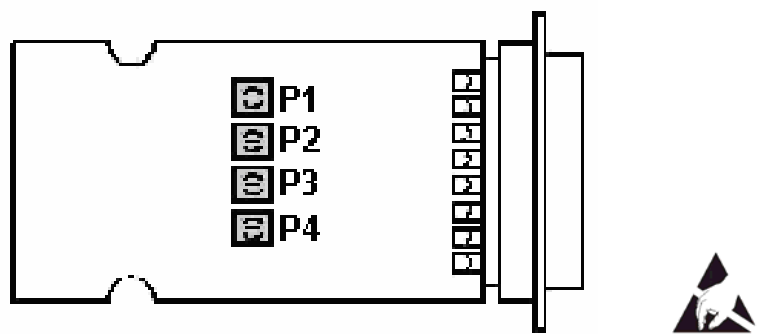


Figure 22: APE PCB with potentiometers

The following values are to be checked and/or set:

Signal values	Initial operation	Fine adjustment	Permissible	
Signal levels A, B (0° / 90°)	0.8 ... 1.2 V _{pp}	Not possible	0.6 ... 1.2 V _{pp}	-
Amplitude ratio A / B	0.8 ... 1.25	0.95 ... 1.05	0.8 ... 1.25	P4
Phase angle PHA	90° ± 10°	± 5°	90° ± 10°	P3
On-off ratio TV1 and TV2	0° ± 15 °	0° ± 5 °	0° ± 15 ° may change with temperature up to ± 20°	P1 / P2

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When reassembling the adapter connector, ensure that no cable wires are crimped.

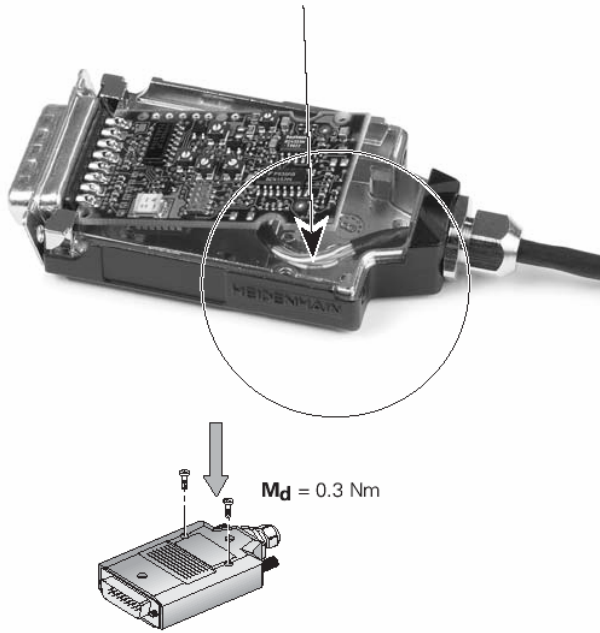


Figure 23: Assembly of the connector

Power supply

$U_p = 5\text{ V} \pm 5\%$
(max. 100 mA)

A: 0.6 ... 1.2 V_{SS}
B: 0.6 ... 1.2 V_{SS}

EN 50 178/4.98; 5.2.9.5
 IEC 364-4-41: 1992; 411(PELV/SELV)
 (siehe, see, voir, vedi, véase
 HEIDENHAIN D 231 929)

Electrical Connection

1	9	3	11	14	7	4	2	12	10	8	6	13	15
A		B		/		5 V U _p	0 V U _N	5 V sensor	0 V sensor	/	/	/	/
+	-	+	-	+	-								
braun brown brun marrone marrón	grün green vert verde verde	grau gray gris gris	rosa pink rose rosa rosa	rot red rouge rosso rojo	schwarz black noir nero negro	braun/grün brown/green brun/vert marrone/verde marron/verde	weiß/grün white/green blanc/vert bianco/verde blanco/verde	blau blue bleu azzurro azul	weiß white blanc bianco blanco	grün/schwarz green/black vert/noir verde/nero verde/negro	gelb/schwarz yellow/black jaune/noir giallo/nero amarillo/negro	violett violet violet viola violeta	gelb yellow jaune giallo amarillo



Release No. F91499	Created	Responsible	Released	Version	Rev.	Sheet	Page
	Name	Kühler		Thielicke	D535424 - 00 - D - 01		10/
	Date	27.06.2006		01.08.2006	Document no.		11

Cleaning

You must always ensure that the encoder is protected from contamination during both mounting and operation. If the encoder must be cleaned, the following must be kept in mind:

There are no optical components inside the scanning head that can be accessed from the outside. The graduated scale is exposed in its holder, meaning that it might become necessary to clean the scale. Dust particles should not be wiped off, but rather blown off with dry, oil-free pressurized air. An ultrasonic bath is recommended for removing organic contaminations (e.g., fingerprints). Good cleaning results can be achieved in a cleaning bath with demineralized water and dishwashing detergent available off the shelf, at approx. 40 °C (104 °F) and 35 kHz.



Figure 24: Ultrasonic cleaning bath

The parts should be placed in a basket and completely submerged in the cleaning liquid, as shown in figure below. The glass must not come into contact with other parts during cleaning, since it might become damaged.

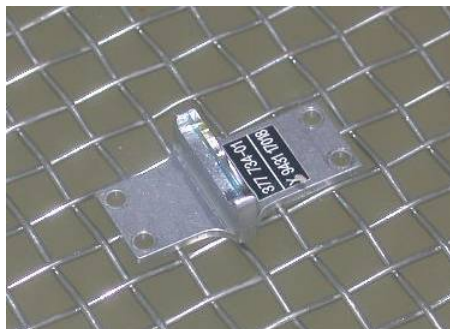


Figure 25: Scale in a basket in the ultrasonic cleaning bath

A treatment of approx. three minutes is recommended. The scale should then be rinsed with demineralized water and be blown dry with dry, oil-free pressurized air.

