8. Setting the beginning and end of the measuring range

The coarse adjustment of the beginning of the measuring range consists in aligning the zero of the measured device with the external zero mark on the transmitter. The procedure was described in Section “6. Mounting”. This Section concerns the **fine adjustment** not only of the beginning of the range (ZERO), but also of the end of the scale (SPAN).

Firstly, switch on the power supply to the transmitter.

Remove the ZERO/SPAN sealing plug (4) (Fig. 7, left). Place the measured device at its **zero position**, i.e. the position at which the KINAX 3W2 should produce 0 mA (3- or 4-wire connection) resp. 4 mA (2-wire connection) at its output.

Should the output current differ by more than 2% from its initial value, repeat the coarse zero setting procedure described in Section “6. Mounting”.

Then adjust the “ZERO” potentiometer (Fig. 7, right) using a watchmaker’s screwdriver (2.3 mm diam.) so that the desired output current flows.

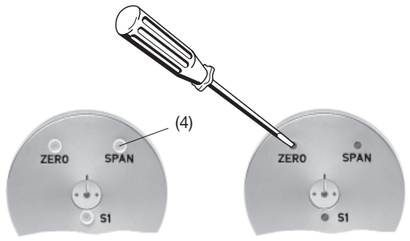


Fig. 7.
Adjustments «ZERO», «SPAN» and «S1».

Left:
Adjustments covered by the sealing plug (4)

Right:
Adjustments exposed.

Now rotate the measured device to its opposite limite position, i.e. the position at which the KINAX 3W2 should produce the prescribed full-scale output current (see rating plate).

Adjust the “SPAN” potentiometer with the screwdriver as before until precisely the prescribed full-scale output current is measured at the output.

Now recheck the zero value and readjust on the ZERO potentiometer and then recheck the full-scale value.

9. Adaptation from 2-wire connection to 3- or 4-wire connection and vice versa

Transmitters with the ordering code 708 – ...**D** (see Section “4. Specification and ordering information”) are designed for either a 2-wire connection with an output range of 4…20 mA or a 3- or 4-wire connection with an output range of 0…20 mA.

If, however, a transmitter be changed from one to the other (see wiring diagrams in Fig. 6), the beginning and end of the measuring range must be readjusted.

10. Reversing the rotation for instruments with measuring ranges > 150 ∢°

A switch is provided on angular transmitters with a measuring range > 150 ∢° for reversing the direction of rotation. It is marked S1 and can be operated through the opening in the rear part of the transmitter (Fig. 7).

To reverse the direction of rotation, remove the sealing plug (4) covering the switch S1. Change the position of the switch using a watchmaker’s screwdriver (2.3 mm diam.) and readjust the beginning and end of the measuring range.

11. Dimensional drawings

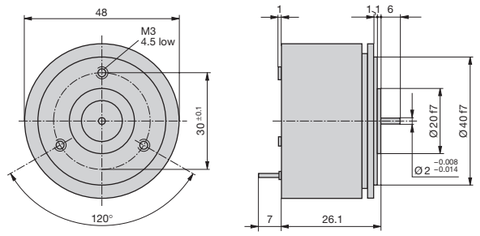


Fig. 8. KINAX 3W2 with standard drive shaft at front **only**, Ø 2 mm, length 6 mm.

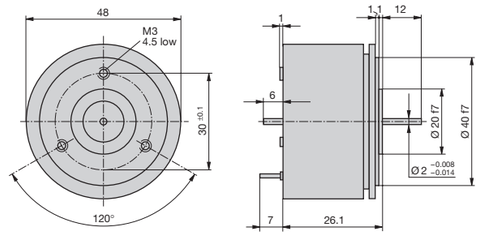


Fig. 9. KINAX 3W2 with special drive shaft at front **and** at rear. At front: Ø 2 mm, length 12 mm. At rear: Ø 2 mm, length 6 mm.

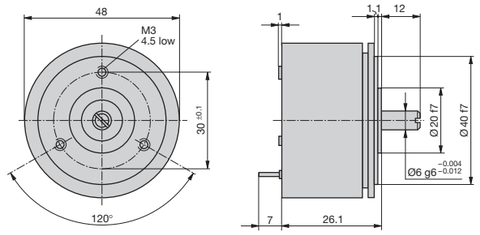


Fig. 10. KINAX 3W2 with special drive shaft at front **only**, ∅ 6 mm, length 12 mm.

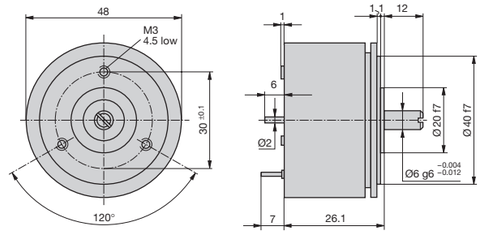


Fig. 11. KINAX 3W2 with special drive shaft at front **and** at rear. At front: ∅ 6 mm, length 12 mm. At rear: ∅ 2 mm, length 6 mm.

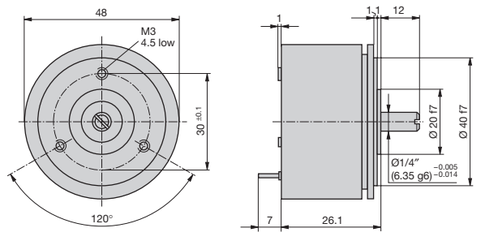


Fig. 12. KINAX 3W2 with special drive shaft at front **only**, ∅ 1/4″, length 12 mm.

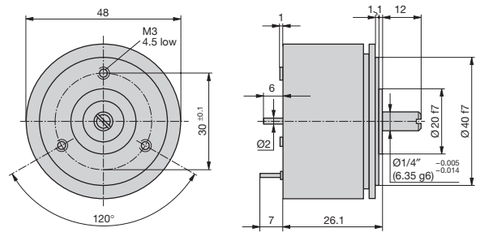


Fig. 13. KINAX 3W2 with special drive shaft at front **and** at rear. At front: ∅ 1/4″, length 12 mm. At rear: ∅ 2 mm, length 6 mm.

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Operating Instructions Transmitter for angular position KINAX 3W2



GOSSEN METRAWATT CAMILLE BAUER

57-3W2 Be 997223 3000-01.01

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Safety precautions to be strictly observed are marked with following symbols in the Operating Instructions:

1. Read first and then …

The proper and safe operation of the device assumes that the Operating Instructions are **read carefully** and the safety warnings given in the various Sections

6. Mounting

7. Electrical connections

are **observed.**

The device should only be handled by appropriately trained personnel who are familiar with it and authorised to work in control technique installations.

2. Brief description

The KINAX 3W2 transmitter converts the angular position of a shaft into a **load independent** direct current signal, proportional to the angular position.

Explosion-proof “**Intrinsically safe EEx ia IIC T6**” versions with I.S. measuring output rounds off this series of transmitters.

3. Scopy of supply

Transmitter, one of the six versions (Fig. 1)

3 clamps (Fig. 2)

1 ea. Operating Instructions (Fig. 3) in English, French, German

1 Ex approval (Fig. 3), only for Ex version devices

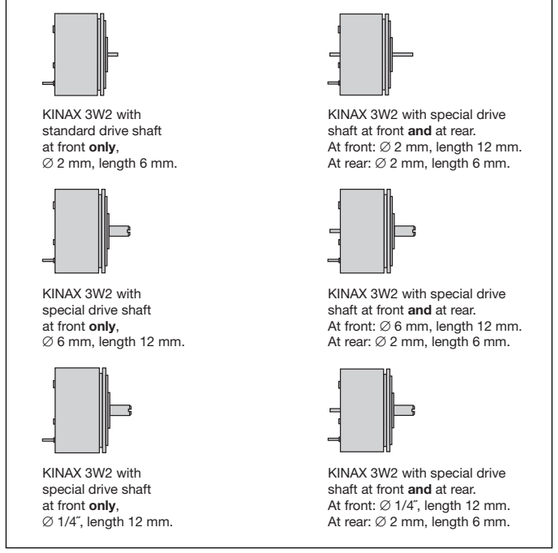


Fig. 1

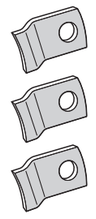


Fig. 2



Fig. 3

4. Specification and ordering information

Significance of the digits 1. to 4.

Order Code **708 –** ☐☐☐☐

1. Version of the transmitter
(with standard drive shaft at front **only**, ∅ 2 mm, length 6 mm, see "Note")

Standard, Measuring output non intrinsically safe		1
EEx ia IIC T6, Measuring output intrinsically safe	ATEX,	2
Customized, Measuring output intrinsically safe	(Japan), (on request)	5
Ex ia IIC T6, Measuring output intrinsically safe	FTZU (Czech republic),	6
EEx ia IIC T6, Measuring output intrinsically safe	BKI (Hungary)	7

2. Sense of rotation

Calibrated for sense of rotation clockwise	1
Calibrated for sense of rotation counterclockwise	2
V characteristic	3
Calibrated for both senses of rotation and marked	4

3. Measuring range (measuring input) ⊖►

0 … 10 ∢°	1
0 … 30 ∢°	2
0 … 60 ∢°	3
0 … 90 ∢°	4
0 … 180 ∢°	5
0 … 270 ∢°	6
Non-standard 0 … ≥ 5 to 0 … < 270 ∢°	9
V characteristic	A

4. Output signal (measuring output) ⊖► **/ connection mode**
(Power supply 12…33 V DC resp. 12…**30 V** DC with **Ex** version)

0 … 1 mA / 3- or 4-wire connection	A
0 … 5 mA / 3- or 4-wire connection	B
0 … 10 mA / 3- or 4-wire connection	C
4 … 20 mA / 2-wire connection or 0 … 20 mA / 3- or 4-wire connection	D
4 … 20 mA / 3- or 4-wire connection	E
Non-standard / 3- or 4-wire connection 0 … > 1.00 to 0 … < 20 mA	Z

Note
The remaining order code digits concern special features, e.g. the drive shaft special, see Fig. 1.

5. Technical data

Measuring input ⊖►

Measuring ranges: 0…≥ 5 to 0… ≤ 270 ∢°
Preferred ranges 0…10, 0…30, 0…60, 0…90, 0…180 or 0…270 ∢°

Measuring output ⊖►

Output variable I_A: Load-independent DC current, proportional to the input angle

Standard ranges:
0…1 mA, 3- or 4-wire connection
0…5 mA, 3- or 4-wire connection
0…10 mA, 3- or 4-wire connection
4…20 mA, 2-wire connection
or
0…20 mA, 3- or 4-wire connection adjustable with potentiometer
4…20 mA, 3- or 4-wire connection

Non-standard ranges: 0…> 1.00 to 0…< 20 mA
3- or 4-wire connection

External resistance: (load)
$R_{ext.}$ max. [kΩ] = $\frac{H\ [V] - 12\ V}{I_A\ [mA]}$
H = Power supply
I_A = Output signal end value

Accuracy

Reference value: Measuring range

Basic accuracy: Limit of error ≤ 0.5% for ranges 0…≤ 150 ∢°
Limit of error ≤ 1.5% for ranges from 0…> 150 to 0…270 ∢°

Power supply H ⊸○

DC voltage[1]: 12…33 V
(possible with standard version, non Ex)
12…**30 V**
(necessary with **Ex** version, type of protection "Intrinsic safety" EEx ia IIC T6)

Max. residual ripple: 10% p.p.

Max. current consumption: Approx. 5 mA + I_A

Material

Housing (main part): Metal (aluminium)
Surface chromated

Mechanical withstand

Permissible vibrations: 5 g every 2 h in 3 directions
f ≤ 200 Hz

Shock: 3 × 50 g
10 shocks each in 3 directions

Admissible static loading of shaft:

Sense	Drive shafts dia.	
	2 mm	6 mm resp. 1/4″
radial max.	16 N	83 N
axial max.	25 N	130 N

Mounting position: Any

Regulations

Test voltage: 500 Veff, 50 Hz, 1 min.
all electrical connections against housing

Housing protection: IP 50 acc. to EN 60 529

Environmental conditions

Climatic rating: **Standard version**
Temperature – 25 to + 70 °C
Annual mean relative humidity ≤ 90%
or
Version with improved climatic rating
Temperature – 40 to + 70 °C
Annual mean relative humidity ≤ 95%
Ex version
Temperature – 40 to + 60 °C at T6
resp. – 40 to + 75 °C at T5

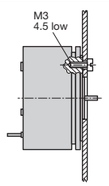
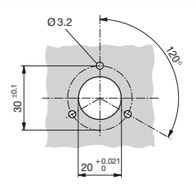
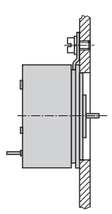
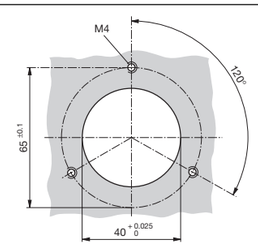
Transportation and storage temperature: – 40 to 80 °C

[1] Polarity reversal protection. The voltage must not fall below 12 V.

6. Mounting

All six versions of the transmitter (Fig. 1) which differ in appearance by the type of shaft can be mounted either **directly** or by means of **3 mounting clips** to the item being measured. Both methods of mounting and the relevant drilling and cut-out plans can be seen from Table 1.

Table 1:

Mounting versions[1]	Drilling and cut-out diagrams for mounting transmitters
directly 	
with 3 clamps 	

[1] For the example of KINAX 3W2 with standard drive shaft at front only, ∅ 2 mm, length 6 mm.

Three **M3** screws are needed for the **"directly"** mounted versions and three **M4** screws for those **"with clamps"**. The screws are not supplied, because the required length varies according to the thickness of the mounting surface.

When deciding where to install the transmitter (measuring location), take care that the **"Ambient conditions"** given in Section "5. Technical data" are **not exceeded**.

Make the cut-out and drill the holes in the item onto which the transmitter is to be mounted according to the **corresponding** drilling and cut-out diagram given in Table 1 and then fit the transmitter.

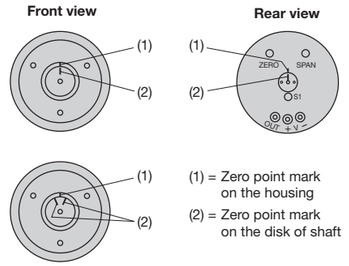
Pay attention when aligning and tightening the transmitter that the **transmitter zero** and the **zero** of the item being measured **coincide**.

Alignment is achieved by rotating the transmitter.

To facilitate alignment in the case of **"direct"** mounting, it is recommended to elongate the 3 mounting holes (diam. 3.2 mm).

When using **mounting clips,** the clips permit the transmitter to be rotated to the correct position.

The **electrical zero** of angular transmitters with measuring ranges **0 to …** ∢° is marked on both the front and the back (see upper illustration). It is only marked on the front, however, in the case of angular transmitters with ranges having a **V characteristic** and at instruments with both senses of rotation, see lower illustration.



7. Electrical connections

There are 3 soldering posts (3) on the back of the transmitter for attaching the electrical connections (see Fig. 4). The soldering posts suffice Protection Class IP 00 according to EN 60 529.

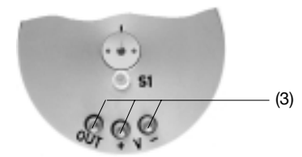


Fig. 4

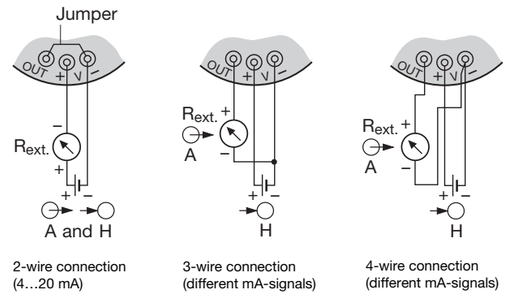
Note that, …
… the data required to carry out the prescribed measurement must correspond to those marked on the nameplate of the KINAX 3W2 (Range, Output, Supply voltage)!
… the total loop resistance connected to the output (receiver plus leads) **does not** exceed the maximum permissible value $R_{ext.}$! See **"Measuring output"** in Section "5. Technical data" for the maximum values of $R_{ext.}$
… twisted cores must be use for the measured variable input and output leads and routed as far away as possible from power cables!
In all other respects, observe all local regulations when selecting the type of electrical cable and installing them!
In the case of **"Intrinsically safe"** explosion-proof versions with I.S. measuring output, the supplementary information given on the Ex approval and also local regulations applicable to electrical installations in explosion hazard areas must be taken into account!

KINAX 3W2	Supply	Range: 0…30°	Camille Bauer AG Aargauerstr. 7 CH-5610 Wohlen Switzerland
Type: 708-112D 0	Voltage	Output: 0/4…20 mA	
Ord: 999/888888/776/997	12…33V	Rotation Sense CW/CCW: >>	

Fig. 5. Example of a nameplate.

Solder the connections as shown in the corresponding wiring diagram (Fig. 6).

Do not **excessively heat** the soldering posts (3)!
Solder using a **small** pencil bit soldering iron!



A = Measuring output …
… as 2-wire connection (4…20 mA, signal in output/powering circuit)
… as 3- or 4-wire connection (different mA-signals)
H = **DC** power supply H = 12…33 V
resp. H = 12…**30** V with **Ex** version
$R_{ext.}$ = External resistance

Fig. 6. Connection diagrams for 2-, 3- or 4-wire connection.