CAMILLE BAUER

# KINAX 2W2
# Programmable transmitter for angular position

## For installation

KINAX 2W2 is a compact, programmable transmitter for angular position for installation in devices and apparatus. Due to its unique capacitive measuring principle, it acquires the angular position of a shaft without contact and virtually reactionless, and converts the same into an impressed direct current proportional to the measured value.

The easy assembly via synchronous flange or flange adapter, the variety of connection options and free parameterising offer the highest degree of quality and flexibility in application and installation.




## Your customer benefit

**LOW LIFE-CYCLE COSTS DUE TO:**

**TESTED TOP QUALITY**
- Capacitive Measuring principle

**SAFE, FREE OF MAINTENANCE**
- 4...20mA analog output signal with 2-wire connection
- Drive shaft without stops, rotating
- Low starting troque
- High immunity against magnetic fields

**EASY AND FAST COMMISSIONING**
- No wear, low annual maintenance
- Measuring range, sense of rotation, characteristic and switch point can be parameterised via programming software
- Measured value simulation already during installation is possible

## Technical data

### General

| | |
|---|---|
| Measured quantity: | Angle of rotation |
| Measuring principle: | Capacitive method |

### Measuring input

| | |
|---|---|
| Angle measuring range: | programmable 0 ... 50° or 0 ... 350° |
| Drive shaft diameter: | Ø 2 mm [0.078"], Ø 6 mm [0.236"] |
| Starting torque: | max. 0.001 Nm [0.141 in-oz] with shaft Ø 2 mm [0.078"]<br>max. 0.03 Nm [4.248 in-oz] with shaft Ø 6 mm [0.236"] |
| Sense of rotation: | clockwise or counter-clockwise (in view of drive shaft) |

### Measuring output

| | |
|---|---|
| Output variable $I_A$: | Load-independent DC current, proportional to the input angle |
| Zero point variation: | appox. ± 5 % |
| Final value variation: | approx. + 5 % |
| Current limitation: | $I_A$ max. 40 mA |
| Standard range: | 4...20 mA, 2-wire connection |

| | |
|---|---|
| Power supply: | Input voltage $U_i$: 12...33 V |
| Residual ripple in output current: | 0.3 % p.p. |
| Response time: | < 5 ms |
| External resistance: (load) | $R_{ext}$ max. [kΩ] = $\frac{H\ [V] - 12\ V}{I_A\ [mA]}$ |

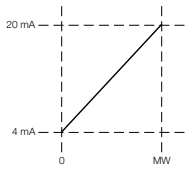
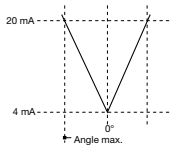
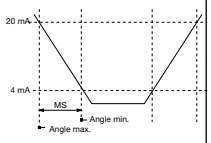
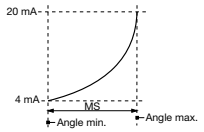
H = Power supply
$I_A$= Output signal end value

### Accuracy data

| | |
|---|---|
| Basic accuracy: | 0.5 % with characteristic linear |
| Adjustments | 350° version<br>measuring range > 50…350°<br>characteristic linear<br>50° version<br>measuring range ≥ 10…50°<br>characteristic linear |

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Additional errors (cumulative):

| Characteristic | Definition | Additional error |
|---|---|---|
| Linear   | Programmed<br>Angle max. = MW<br>Angle min. = 0°<br>$[f_{Add}]$=% | Device version 350°:<br>$f_{Add}=(\frac{0.18°}{MS}$ x100-0.05) |
| | | Device version 50°:<br>$f_{Add}=(\frac{0.05°}{MS}$ x100-0.05) |
| | ex. with MW=180°:<br>$f = f_{Add} + f_{Abs} = 0.05\% + 0.5\% = 0.55\%$ | |
| simple "V" characteristic   | Programmed<br>Angle max. = MW<br>Angle min. = 0°<br>$[f_{Add}]$=% | Device version 350°:<br>$f_{Add}=(\frac{0.18°}{MS}$ x100) |
| | | Device version 50°:<br>$f_{Add}=(\frac{0.05°}{MS}$ x100) |
| "V" characteristic with offset   | MS = (angle max.) – (angle min.)<br>Angle max. = ± final angle<br>Angle min. = > 0°<br>$[f_{Add}]$=% | Device version 350°:<br>$f_{Add}=(\frac{0.25°}{MS}$ x100) |
| | | Device version 50°:<br>$f_{Add}=(\frac{0.09°}{MS}$ x100) |
| any characteristic   | MS = (angle max.) – (angle min.)<br>$[f_{Add}]$=% | Device version 350°:<br>$f_{Add}=(\frac{0.25°}{MS}$ x100) |
| | | Device version 50°:<br>$f_{Add}=(\frac{0.09°}{MS}$ x100) |

Reproducibility: < 0.2 %

Influence of temperature output current (-25 … +75 °C): [–13 ... +167 °F]: ± 0.2 % / 10 K

## Installation data

Housing: Aluminium, surface alodine 400

Mounting position: Any

Connections: Soldering terminals resp. screw terminals
Protection class IP 00 acc. to IEC 60 529

Admissible static loading of shaft:

| Direction | Drive shaft Ø | |
|---|---|---|
| | 2 mm | 6 mm |
| radial max. | 16 N | 83 N |
| axial max. | 25 N | 130 N |

Bearing play influence: ± 0.1 %

Weight: Approx. 0.1 kg

## Regulations

Spurious radiation: EN 61000-6-3

Immunity: EN 61000-6-2

Test voltage: 750 V DC, 50 Hz, 1 min.
All connections against housing

Admissible common-mode voltage: 100 V AC, 50 Hz

Impulse voltage withstand: 1 kV, 1.2/50 µs, 0.5 Ws, CAT II

Housing protection: IP 50 acc. to EN 60 529

## Environmental conditions

Climatic rating: Temperature –25 … +75 °C
[–13 ... +167 °F]
Rel. humidity ≤ 90 % non-condensing

Permissible vibration: 0…200 Hz,
10 g continuous, 15 g for 2 h
200…500 Hz,
5 g continuous, 10 g for 2 h

Shock: 3 × 50 g every 10 impulses
in all axes

Transportation and storage temperature: –40 ... +80 °C [–40 ... +176 °F]

## Dimensional drawing

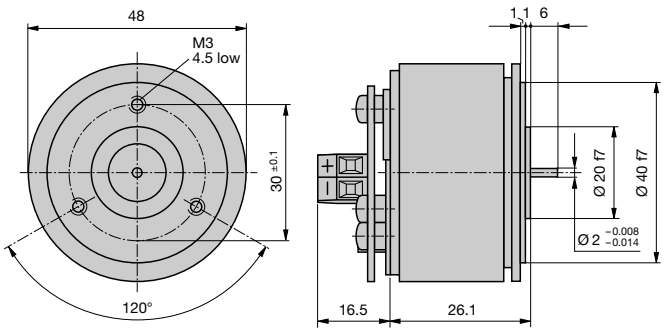



*Fig. 1. KINAX 2W2 with standard drive shaft at front **only**, dia. 2 mm, length 6 mm, screw terminal versions*

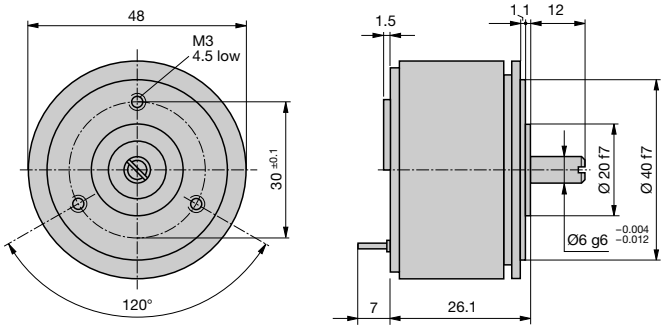
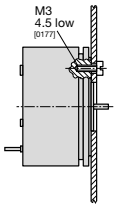
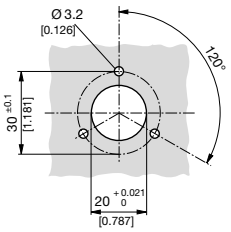
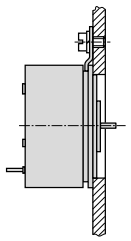
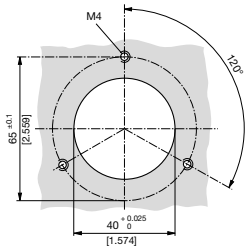


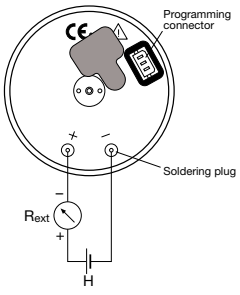
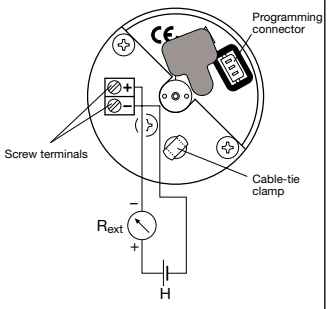

*Fig. 2. KINAX 2W2 with special drive shaft at front **only**, dia. 6 mm, length 12 mm.*

## Montage

All versions of the transmitter can be mounted either directly or by means of 3 mounting clips to the item being measured. The screws are not supplied, because the required length varies according to the thickness of the mounting surface. Both methods of mounting and the relevant drilling and cut-out plans can be seen from Table:

| Mounting versions[2] | | Drilling and cut-out diagrams for mounting transmitters) | |
|---|---|---|---|
| directly |  |  |
| with 3 clamps |  |  |

### Electrical connections

| Connection to soldering plugs | Connection to screw terminals |
|---|---|
|  |  |
| $R_{ext}$ = External resistance | H = power supply 12 … 33 V DC |

## Programming

A PC, the programming cable PK 610 plus ancillary cable and the configuration software 2W2 are required to program the transmitter. (Details of the programming cable and the software are to be found in the separate data sheet: PK 610 Le.)

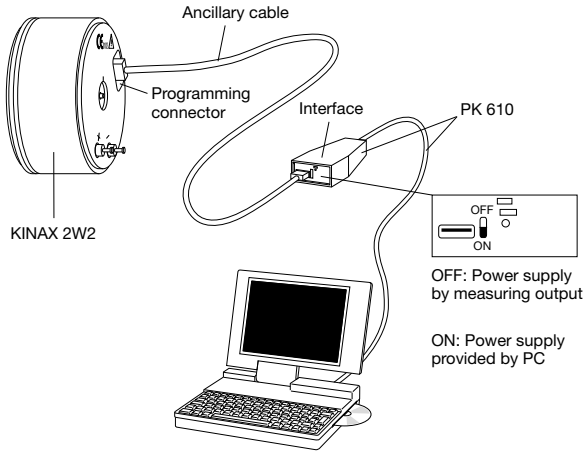



*Fig. 3. Example of the set-up for programming a KINAX 2W2 without the power supply. For this case the switch on the interface must be set to "ON".*

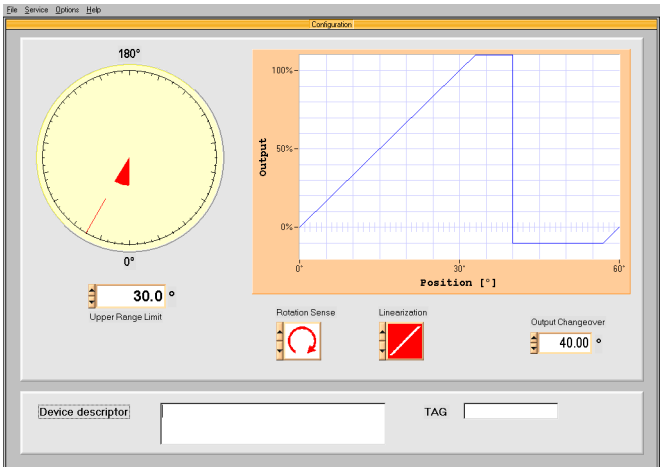



*Fig. 4. Print screen example of the menu-controlled programming software.*

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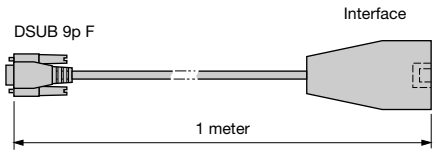
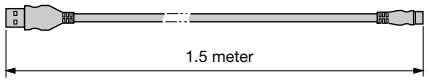
## Order code

| Version | Angle range mechanical | | Drive shaft | | Output signal | Electrical connection | Test certificate | Configuration | Sense of rotation | Measuring range end value | | Output characteristic | Climatic rating | Marine version | Article Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • Standard version | • Angle range up to 50° | – Angle range up to 350° | • Standard, 2mm, 6mm front | – 6mm, 12mm front | • Output 4...20 mA, 2-wire | • Connection on soldering pins | • Test certificate English | • Basic configuration programmed | • Clockwise | • Measuring range end value 50° | – Measuring range end value 350° | • Linear | • Standard | • Without maritime exec. (formerly Germ.Lloyd) | |
| • | • | – | – | • | • | • | • | • | • | • | – | • | • | • | 195889 |
| • | – | • | • | – | • | • | • | • | • | – | • | • | • | • | 195897 |
| • | – | • | – | • | • | • | • | • | • | – | • | • | • | • | 195905 |
| • | – | • | – | • | • | • | • | • | • | – | • | • | • | • | 195913 |

• Variant active / - variant inactive

# KINAX 2W2
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## Accessories

| Description | Order No. |
|---|---|
| Programming cable PK 610<br> | 137 887 |
| Ancillary cable<br> | 141 440 |
| Configuration software 2W2<br>Windows 95 or higher<br>**(download free of charge under**<br>www.mod-tronic.com) | – |
| Kit mounting clamp for 2W2 | 168 387 |
| Installation Kit as a Replacement for the KINAX WT711 | 177 354 |
| Kit for Connection Board with 2W2 Screw Terminals | 196 193 |
| Different bellow couplings | ** |
| Different helical and cross-slotted coupling | ** |
| Different spring washer coupling | ** |

** You can find our range of couplings in the “Position Sensors/ Accessories” section of our website.

## Scope of delivery

1 Transmitter for angular position KINAX 2W2
1 3 clamps
1 Safety instructions

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