

KINAX WT707

Transmitter for angular position

For industrial applications in rough environments

KINAX WT707 is a very robust, absolute transmitter for angular position, which is particularly suited to applications in rough environments due to its unique capacitive measuring principle. It acquires the angular position of a shaft in a non-contact manner and converts it into an impressed direct current proportional to the measured value.



Your customer benefit

LOW LIFE-CYCLE COSTS DUE TO:

TESTED TOP QUALITY

- Capacitive Measuring principle
- Suitable for ocean-going vessels acc. GL
- Explosion protection acc. ATEX and IECEx intrinsic safety "ia" (gas)

SAFE, FREE OF MAINTENANCE

- Resistant to high mechanical stress due to its robust design and high-quality materials
- High immunity against magnetic fields

EASY AND FAST COMMISSIONING

- No wear, low annual maintenance
- Defined angle value

Technical data

General

Measured quantity: Angle of rotation
 Measuring principle: Capacitive method

Measuring input

Angle measuring range: 0... ≥ 5 to 0... $\leq 270^\circ$ (without gear)
 0... $\geq 10^\circ$ to 0...1600 turns (with gear)
 Preferred ranges
 0...10, 0...30, 0...60, 0...90,
 0...180 or 0...270°

Drive shaft diameter: $\varnothing 19$ mm [0.748"], $\varnothing 12$ mm [0.472"]

Starting torque: max. 0.25 Nm [35.402 in-oz]

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: approx. $\pm 5\%$

Final value variation: approx. $+5\%$ / -30% (see criterion of choice 9)

Current limitation: I_A max. 40 mA

Standard range:

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
 0...20 mA, 4-wire connection

Non standard:

0... >1 mA to 0... <20 mA, 3- or (4)-wire connection

Power supply:

DC and AC voltage:

| Nominal voltage U_N | Tolerance |
|-----------------------|------------------|
| 24...60 VDC/AC | DC -15 ... +33 % |
| 85...230 VDC/AC | AC $\pm 15\%$ |

(Non Ex, with electric isolation, with DC/AC power pack (DC / 45... 400 Hz))

DC voltage only

input voltage U_i : 12...33 V (Non Ex, without electric isolation)

Explosion protection intrinsic ia:

input voltage U_i : 12 ... 30 V

max. input current I_i : 160 mA

max. input power P_i : 1 W

max. internal capacitance C_i : 22 nF

max. internal inductance L_i : is negligible

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Residual ripple in output current: < 0.3 % p.p.
 Response time: < 5 ms
 External resistance: $R_{\text{ext max.}} [\text{k}\Omega] = \frac{12 \text{ V}}{I_A [\text{mA}]}$
 (load)

(for instruments with DC/AC power supply, with electric isolation)

$R_{\text{ext max.}} [\text{k}\Omega] = \frac{H [\text{V}] - 12 \text{ V}}{I_A [\text{mA}]}$

(for instruments with DC power supply, without electric isolation)
 H = Power supply
 I_A = Output signal end value

Accuracy data

Basic accuracy: $\leq 0.5 \%$ for ranges 0... $\leq 150^\circ$
 $\leq 1.5 \%$ for ranges from 0... $> 150^\circ$ to 0... 270°

Reproducibility: < 0.2 %

Influence of temperature output current (-40...+85 °C): $\pm 0.2 \%$ / 10 K
 [-40 ... +167 °F]

Installation data

Housing (main part): Steel (finish QPQ) standard
 High-grade steel 1.4462 sea-water

Rear (cover): Plastic (polyester), when plug-in cable or aluminium (silafont), when screwed cable gland

Connections: Plug connector plastic or screwed cable gland metal

The **plug-in connector** (1) consists of a socket and plug (1.2) on the end of the connecting cable (screw gland PG 11) and 7 screw terminals.

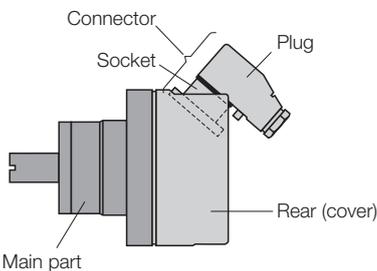


Fig. 1. Cable outlets towards the back

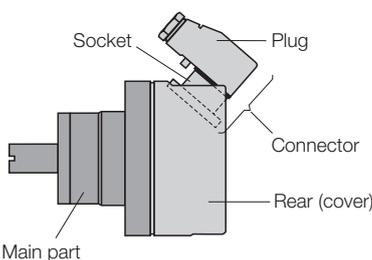


Fig. 2. Cable outlets towards the front

On units with **screw terminals** and **cable glands PG 11** (see Fig. 3) there are 4 screw terminals and a grounding terminal in the rear cover. The screw terminals accept gauges up to 1,5 mm² and are accessible after removing the cover.

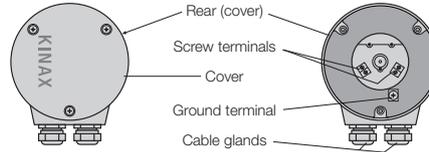


Fig. 3. Screw terminals / screwed cable gland

Mounting position: Any

Fastening types: Immediate fastening
 (Device without foot, without flange)
 Fastening with foot or flange

Weight: Approx. 2.9 kg (without additional gear)
 Approx 3.9 kg (with additional gear)
 every 0.5 kg for foot or flange

Regulations

Spurious radiation: EN 61000-6-3

Immunity: EN 61000-6-2

Test voltage: 2.2 kV_{eff}, 50 Hz, 1 min.
 between power supply and housing or power supply and measuring output (DC/AC power supply, with electrical isolation)
 500 V_{eff}, 50 Hz, 1 min.
 All connections against housing (DC power supply, without electrical isolation)

Admissible common-mode voltage: 100 VAC, 50 Hz, CAT II

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

Housing protection: IP 66 acc. to EN 60 529

Environmental conditions

Climatic rating: Standard (NEx):
 Temperature -25 ... +70 °C
 [-13 ... +158 °F]
 Rel. humidity $\leq 90 \%$ non-condensing

Version with improved climatic rating
 Temperature -40 to +70 °C
 [-40...158 °F]
 Annual mean relative humidity $\leq 95\%$

Ex version
 Temperature -40 to +55 °C
 [-40...131 °F] at T6
 resp. -40 to +70 °C
 [-40...158 °F] at T5
 resp. -40 to +75 °C
 [-40...167 °F] at T4

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| | |
|--|---|
| Permissible vibration: (without addit. gear): | 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 3 axes |
| Permissible static load on the shaft: | Max. 1000 N (radial) Max. 500 N (axial) If subjected to vibration the shaft load should be as low as possible to ensure optimum life of the bearing |
| Transportation and storage temperature: | -40 ... +80 °C [-40 ... +176 °F] |

Operation in potentially explosive environments:

| | |
|--------------------------------------|---|
| Gas explosion prevention: | Labeling: Ex ia IIC T6 Gb |
| | Conform to standard: ATEX: EN 60079-0:2012 EN 60079-11:2012 |
| | IECEx: IEC 60079-0:2011 IEC 60079-11:2011-06 |
| Type of protection: | ia |
| Temperature class: | T6 |
| Group according to EN 60079-00:2012: | II |

Dimensional drawing

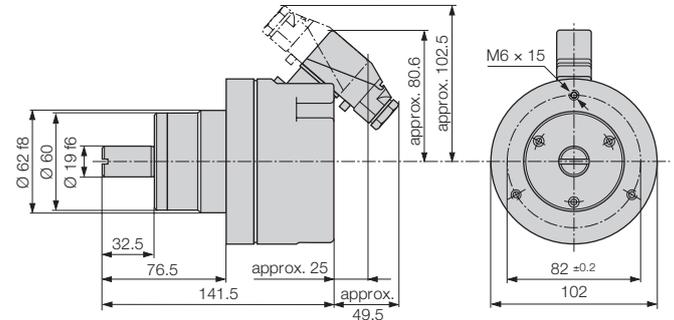


Fig. 4. KINAX WT 707 with plug connector.

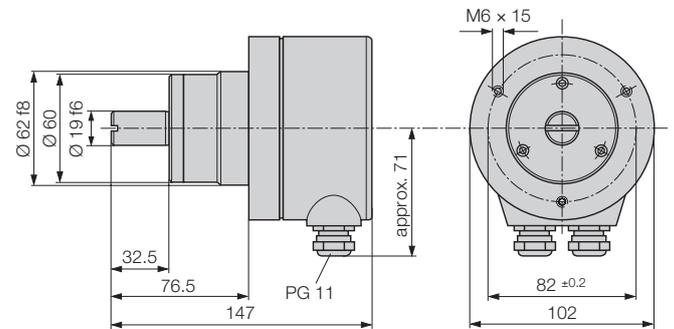


Fig. 5. KINAX WT 707 with screw terminals and cable glands.

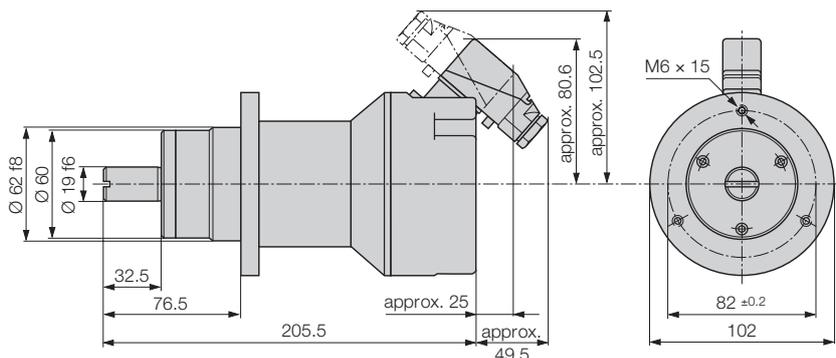


Fig. 6. KINAX WT 707 with additional gear and plug connector.

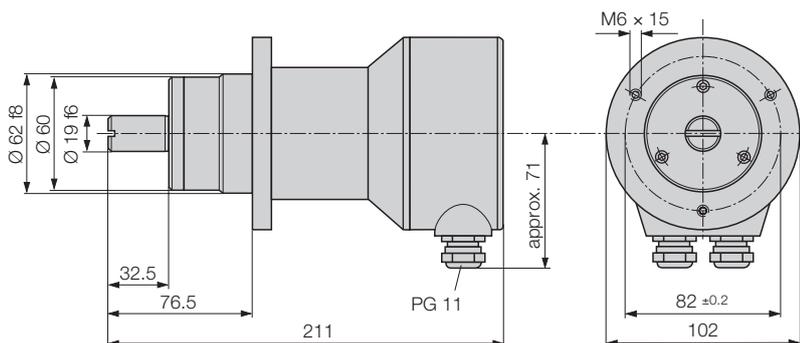


Fig. 7. KINAX WT 707 with additional gear, screw terminals and cable glands.

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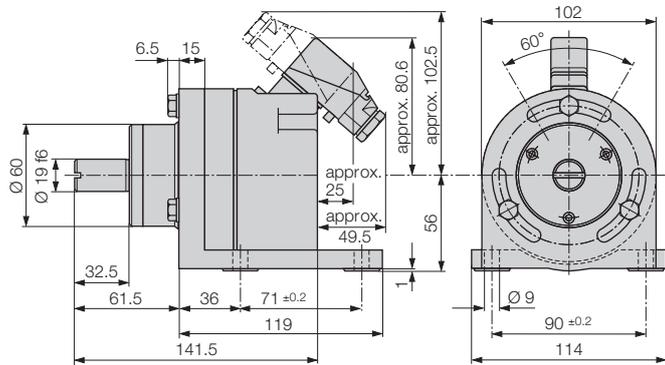


Fig. 8. KINAX WT 707 with plug connector and foot.

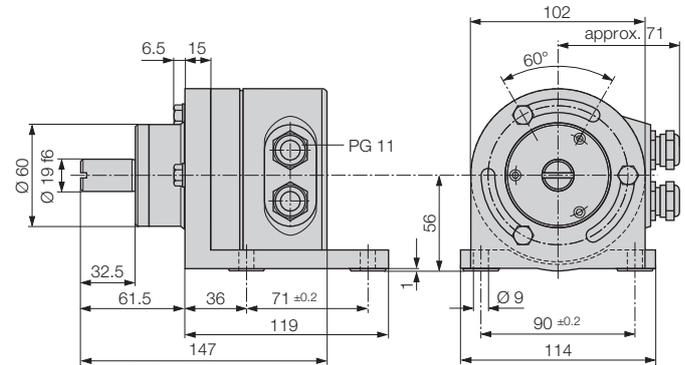


Fig. 9. KINAX WT 707 with screw terminals, cable glands and foot.

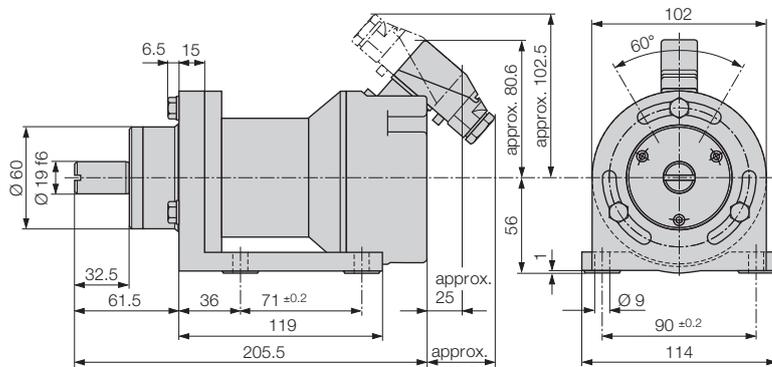


Fig. 10. KINAX WT 707 with additional gear, plug connector and foot.

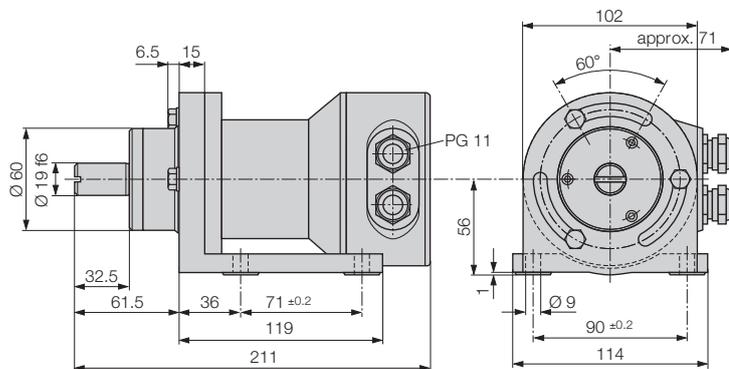


Fig. 11. KINAX WT 707 with additional gear, screw terminals, cable glands and foot.

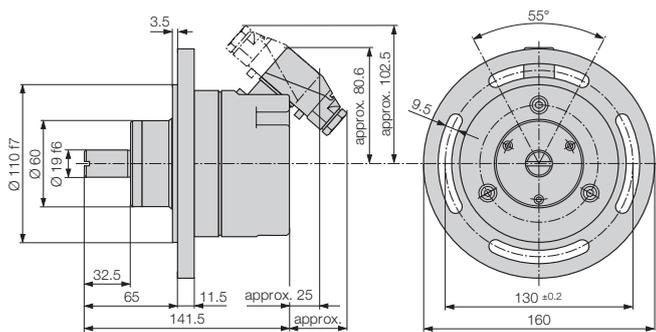


Fig. 12. KINAX WT 707 with plug connector and flange.

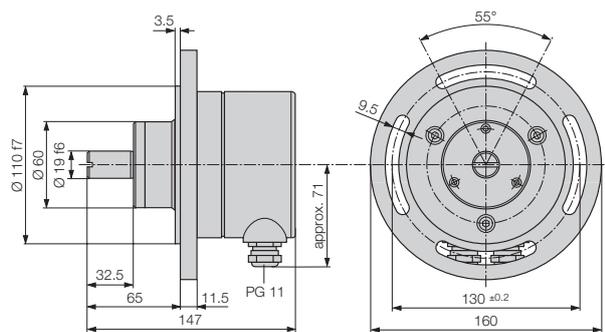


Fig. 13. KINAX WT 707 with screw terminals, cable glands and flange.

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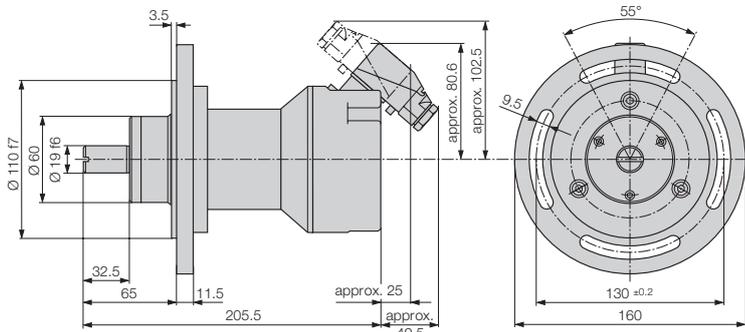


Fig. 14. KINAX WT 707 with additional gear, plug connector and flange.

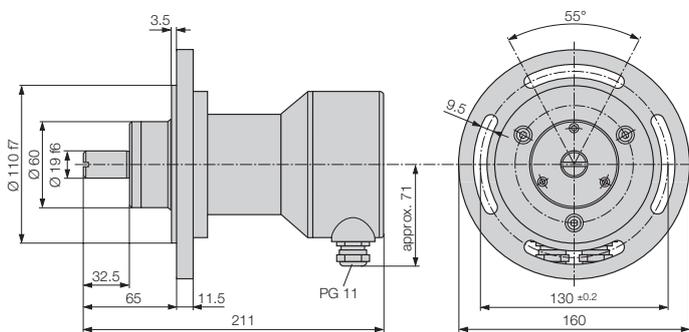
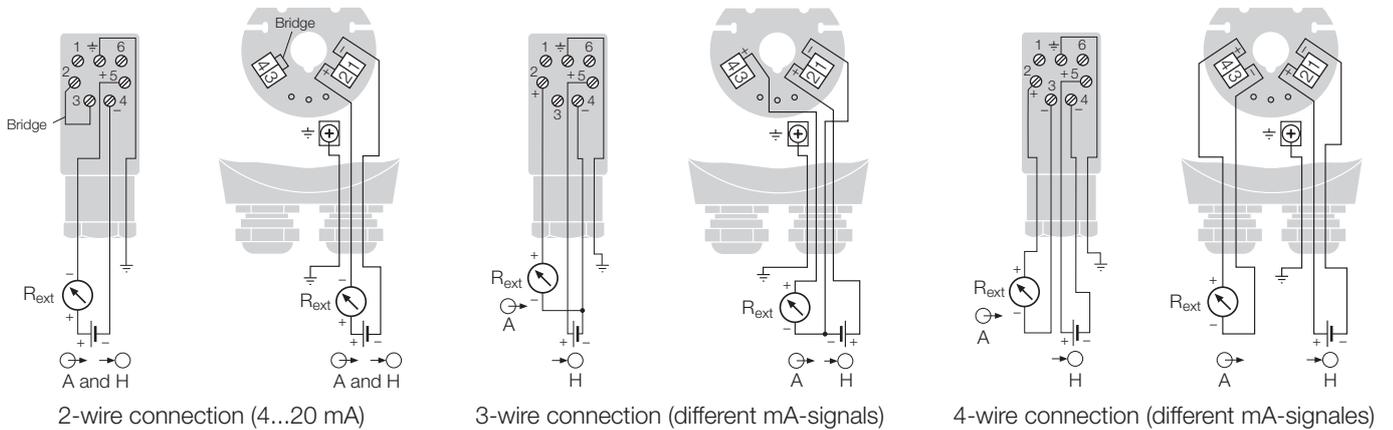


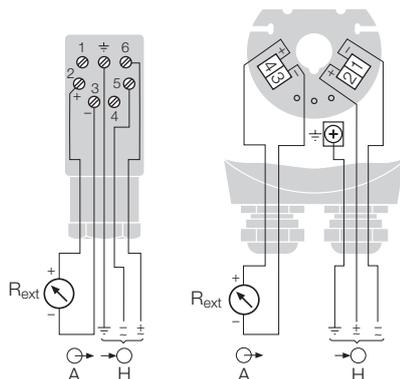
Fig. 15. KINAX WT 707 with additional gear, screw terminals, cable glands and flange.

Electrical connections

2-, 3- or 4-wire connection without electrical isolation



4-wire connection with electrical isolation (different mA-signals)



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

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Einstell-Elemente

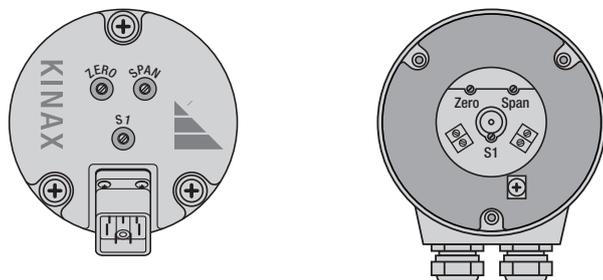


Fig 16. Position of settings

ZERO = Potentiometer for zero point

SPAN = Potentiometer for measuring range end value

S1 = Switch for reversing direction of rotation for $\angle > 150^\circ$.

Transmitters with the ordering code 707 – ...D (see “Table 3: 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 “Electrical connections”), the beginning and end of the measuring range, ZERO and SPAN must be readjusted.

A switch is provided on angular transmitters with a measuring range $> 150^\circ$ for reversing the direction of rotation. It is marked S1.

Specification and ordering information

| Desription | Blocking code | No-go with blocking code | Order-Code |
|---|---|--------------------------|-------------|
| KINAX WT707 | Order-Code 707 - xxxx xxxx xxxx xx | | 707- |
| 1. Version of the transmitter | | | |
| Standard | A | | 1 |
| ATEX EX II 2G Ex ia IIC T6 Gb | B | | 2 |
| Sea water version | N | | 3 |
| Sea water version with gear | O | | 4 |
| ATEX EX II 2G Ex ia IIC T6 Gb, sea water version | BN | | 7 |
| ATEX EX II 2G Ex ia IIC T6 Gb, sea water version with gear | BO | | 8 |
| IECEX Ex ia IIC T6 Gb | B | | A |
| IECEX Ex ia IIC T6 Gb, sea water version | BN | | B |
| IECEX Ex ia IIC T6 Gb, sea water version with gear | BO | | C |
| 2. Sense of rotation | | | |
| Calibrated for sense of rotation clockwise | D | | 1 |
| Calibrated for sense of rotation counter-clockwise | D | | 2 |
| For V-characteristic (not possible for instruments with additional gear). | E | | 3 |
| Calibrated for both senses of rotation (for measuring ranges $\leq 90^\circ$ only) | M | | 4 |
| Lines 1 and 2: Instruments with ranges $0 \dots \geq 5$ to $0 \dots \leq 150^\circ$ are usable in both senses of rotation. Instruments with ranges $0 \dots > 150^\circ$ to $0 \dots \leq 270^\circ$ can be changed to the other direction (Beginning and end of the measuring range must be readjusted). Sense of rotation for transmitters with additional gear see “Feature 13 and 14”. | | | |
| 3. Measuring range (measuring input) | | | |
| 0...10° angle | | | 1 |
| 0...30° angle | | | 2 |
| 0...60° angle | | | 3 |
| 0...90° angle | | | 4 |
| 0...180° angle | | | 5 |
| 0...270° angle | | | 6 |
| Non-standard (0 to $\geq 5^\circ$ to 0 to $< 270^\circ$) [angle] | | | 9 |
| V-characteristic [\pm angle] | | | A |

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| Description | Blocking code | No-go with blocking code | Order-Code |
|--|---------------|--------------------------|-------------|
| KINAX WT707 Order-Code 707 - xxxx xxxx xxxx xx | | | 707- |
| Line 9: Non standard 0... ≥ 5 to 0... < 270 Calibrated for both senses of rotation, non standard range 0... ≥ 5 to 0... $< 90^\circ$ Line A: Specify start M_A and end M_E of measuring range! Observe the limits for ($M_A [\pm ^\circ] \geq 10$ and $M_E [\pm ^\circ] \leq 150$) and give both angles separated by an oblique stroke, e.g. $[\pm ^\circ] 15 / 90!$ | | | |
| 4. Output signal (measuring output) / Connection 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 (adjustable with potentiometer) | H | | D |
| 4...20 mA, 3- or (4)-wire connection | | | E |
| 0...20 mA, 4-wire connection (only possible with AC/DC-power supply (DC-, AC-power pack)) | L | | F |
| Non standard, 3- or (4)-wire connection 0... >1.00 mA to 0... <20 mA [mA] | | | Z |
| Lines A to Z: R_{ext} max. see Section "Technical data", 4-wire connection, with electric isolation only possible with DC/AC power supply (AC/DC power pack). 2-, 3- or 4-wire connection, without electric isolation only possible with DC power supply. | | | |
| 5. Power supply | | | |
| 24...60 VAC/DC, with electric isolation | F | BH | 1 |
| 85...230 VAC/DC, with electric isolation | F | BH | 2 |
| 12...30 VDC, without electric isolation | K | BL | A |
| 12...30 VDC (Ex), without electric isolation | K | AL | B |
| Lines 1 and 2: Not possible for DC/AC power supply at output signal "Feature 4, line D"! | | | |
| 6. Mounting mode | | | |
| Without foot/flange | | | 0 |
| With foot (mounted) | | | 1 |
| With flange (mounted) | | | 2 |
| 7. Material of transmitter rear cover / Routing of connection cable | | | |
| Plastic / connector less cable plug, socket mounted for cable routed to the rear | P | | 1 |
| Plastic / connector less cable plug, socket mounted for cable routed to the front | P | | 2 |
| Plastic / connector with cable plug, socket mounted for cable routed to the rear | P | | 3 |
| Plastic / connector with cable plug, socket mounted for cable routed to the front | P | | 4 |
| Metal / 2 glands PG11 Recommended for AC/DC power supply, 4-wire connection with electric isolation | | | 5 |
| 8. Special features | | | |
| Without (order code complete) | Y | | 0 |
| With | | | 1 |
| 9. Settings (span adjustment) | | | |
| Without extended setting range | | | 0 |
| Extended setting range + 5 % /-60 % | | Y | A |
| Restriction: for angle $\geq 60^\circ$, supplementary error 0.2 % also possible on versions with additional gear | | | |

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| Desription | Blocking code | No-go with blocking code | Order-Code |
|---|---|--------------------------|-------------|
| KINAX WT707 | Order-Code 707 - xxxx xxxx xxxx xx | | 707- |
| Transformation 24 : 1 | J | EGYN | H |
| Transformation 25 : 1 | J | EGYN | J |
| Transformation 30 : 1 | J | EGYN | K |
| Transformation 32 : 1 | J | EGYN | L |
| Transformation 36 : 1 | J | EGYN | M |
| Transformation 40 : 1 | J | EGYN | N |
| Transformation 50 : 1 | J | EGYN | O |
| Transformation 60 : 1 | J | EGYN | P |
| Transformation 64 : 1 | J | EGYN | Q |
| Transformation 72 : 1 | J | EGYN | R |
| Transformation 75 : 1 | J | EGYN | S |
| Transformation 80 : 1 | J | EGYN | T |
| Transformation 100 : 1 | J | EGYN | U |
| Transformation 120 : 1 | J | EGYN | V |
| Transformation 144 : 1 | J | EGYN | W |
| 14. Additional gear 150: 1 to 1600 : 1 | | | |
| Without gear 150 : 1 - 1600 : 1 | | | 0 |
| Transformation 150 : 1 | | EGJYN | 1 |
| Transformation 160 : 1 | | EGJYN | 2 |
| Transformation 180 : 1 | | EGJYN | 3 |
| Transformation 200 : 1 | | EGJYN | 4 |
| Transformation 240 : 1 | | EGJYN | A |
| Transformation 250 : 1 | | EGJYN | B |
| Transformation 300 : 1 | | EGJYN | C |
| Transformation 330 : 1 | | EGJYN | D |
| Transformation 360 : 1 | | EGJYN | E |
| Transformation 375 : 1 | | EGJYN | F |
| Transformation 400 : 1 | | EGJYN | G |
| Transformation 450 : 1 | | EGJYN | H |
| Transformation 480 : 1 | | EGJYN | J |
| Transformation 500 : 1 | | EGJYN | K |
| Transformation 550 : 1 | | EGJYN | L |
| Transformation 600 : 1 | | EGJYN | M |
| Transformation 660 : 1 | | EGJYN | N |
| Transformation 720 : 1 | | EGJYN | O |
| Transformation 750 : 1 | | EGJYN | P |
| Transformation 800 : 1 | | EGJYN | Q |
| Transformation 880 : 1 | | EGJYN | R |
| Transformation 900 : 1 | | EGJYN | S |
| Transformation 1000 : 1 | | EGJYN | T |
| Transformation 1024 : 1 | | EGJYN | U |
| Transformation 1200 : 1 | | EGJYN | V |
| Transformation 1600 : 1 | | EGJYN | W |
| 15. Test Protocole | | | |
| Without protocole | | | 0 |
| Protocole in German | | | D |
| Protocole in English | | | E |

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Accessories

| Article | Article-Nr. |
|--|-------------|
| Mounting foot | 997 182 |
| Mounting flange | 997 190 |
| Contact box (without plug) | 988 470 |
| Cap-Set (for back) | 997 207 |
| Different bellow couplings | xxx xxx |
| Different helical and cross-slotted coupling | xxx xxx |
| Different spring washer coupling | xxx xxx |

You find power supply units for KINAX WT707 in our process instrumentation product range.

SINEAX B812
1-channel power supply unit

SINEAX B811
1-channel power supply unit

to feed 2-wire transmitters



Approvals

| Approval | Identification |
|---|--------------------------|
|  Explosion protection according to IECEX | Ex ia IIC T6 Gb |
|  Explosion protection according to ATEX | Ex II 2G Ex ia IIC T6 Gb |
|  Germanischer Lloyd | D, H, EMC1 |

Scope of delivery

- 1 Transmitter for angular position KINAX WT707 (according to Order)
- 1 Operating instructions in German, French, English and Italian



CAMILLE BAUER

Rely on us.

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