CAMILLE BAUER

KINAX WT720
absolute, programmable angular postion transmitter

For industrial applications in rough environments

KINAX WT720 is a robust, absolute angular position transmitter, 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.

The high mechanical capacity, the robust design, 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
- Waterproof and dustproof IP67/IP69K
- Suitable for ocean-going vessels acc. GL
- Explosion protection acc. ATEX and IECEx intrinsic safety "ia" (gas and dust) and protection by housing "tb" (dust)

SAFE, FREE OF MAINTENANCE
- Compact industrial housing
- Resistant to high mechanical stress due to its robust design and high-quality materials
- High immunity against magnetic fields
- Safe electrical connection and reliability due to spring-type push terminal and reverse voltage protection

EASY AND FAST COMMISSIONING
- Any installation position
- Standard synchronous flange and flange-adapter
- 2-wire connection with cable gland or M12 sensor plug
- Free on-site parameterising

Technical data

General

Measured quantity:	Angle of rotation
Measuring principle:	Capacitive method

Measuring input

Angle measuring range:	Programmable between 0 ... 360°
Drive shaft diameter:	Ø 10 mm [0.394"] Ø 19 mm [0.748"] with flange adapter
Starting torque:	max. 0.03 Nm [4.248 in-oz] max. 0.04 Nm [5.664 in-oz] with flange adapter
Sense of rotation:	Adjustable

Measuring output

Output variable I_A:	Load-independent DC current, proportional to the input angle
Standard range:	4 ... 20 mA, 2-wire protected against wrong polarity
Power supply:	Standard non Ex: nominal voltage 24 VDC $^{+30\%}_{-50\%}$

Explosion protection intrinsic ia:

input voltage U_i:	12 ... 30VDC
max. input current I_i:	160mA
max. input power P_i:	1W
max. internal capacitance C_i:	22nF
max. internal inductance L_i:	7.3 µH

Explosion prevention (Protection by enclosure) tb:
nominal voltage 24 VDC $^{+30\%}_{-50\%}$

Response time:	< 3.5 ms
External resistance: (load)	$R_{ext\ max.}\ [k\Omega] = \frac{H\ [V]-12V}{I_A\ [mA]}$

H = Power supply

I_A= Output signal end value

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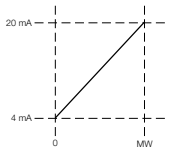
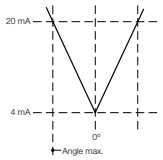
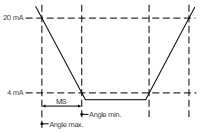
Accuracy data

Absolute precision: ± 0,5% at 360°

Precision with errors:

90°	60°	30°
± 0,65%	± 0,75%	± 1,05%

Additional errors (cumulative):

Output characte-ristic	Definition	Additional error
Linear 	Programmed Angle max. = MW Angle min. = 0°	$f_{Add}=(\frac{0,18°}{MW}$ x100-0,05) $[f_{Add}]$=%
	e.g. at MW=90°: $f = f_{Add} + f_{Abs} = 0,15\% + 0,5\% = 0,65\%$	
simple "V" characteristic 	Programmed Angle max. = MW Angle min. = 0°	$f_{Add}=(\frac{0,18°}{MW}$ x100) $[f_{Add}]$=%
"V" characteristic with offset 	MS = (angle max.) - (angle min.) angle max. = ± final angle angle min. = > 0°	$f_{Add}=(\frac{0,25°}{MS}$ x100) $[f_{Add}]$=%

Resolution: ± 0,1°

Reproducibility: < 0,1°

Influence of temperature output current (-40…+85°C): [–40 … +185°F]: ± 0.04% / 10K

Installation data

Material: Front: aluminium (AW-6023)
Back: aluminium (AW-6023) anodized
Shaft: rust-proof, (1.4035 hardened steel)

Mounting position: Any

Connections: 3-pin spring-type terminal block or sensor plug connector metal (M12 x 1, 4 poles / only for non Ex version

Weight: Approx. 360 g

Admissible static loading of shaft:

WT720 Standard	WT720 with adapter flange
80 N (radial)	120 N (radial)
40 N (axial)	40 N (axial)

Clearance influence: ± 0.1%

Regulations

Spurious radiation: EN 61000-6-3

Immunity: EN 61000-6-2

Degree of pollution: 2

Admissible common-mode voltage: 100 V AC, CATII

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

Housing protection: IP 67 acc. to EN 60529
IP 69k acc. to EN 40050-9

Environmental conditions

Climatic rating: Standard (Not Ex):
Temperature –40 … +85 °C
[–40 ... +185°F]
Rel. humidity ≤ 95 % non-condensing

Explosion protection:
Temperature –40 … +70 °C
[–40 … +158°F]
Rel. humidity ≤ 95% non-condensing

Vibration resistance: ≤ 100 m/s² / 10 ... 500 Hz
according to EN 60068-2-6

Shock resistance: 1000 m/s² / 11 ms
according to EN 60068-2-27

Transportation and storage temperature: –40 ... +85 °C [–40° ... +185°F]

Operation in potentially explosive environments:

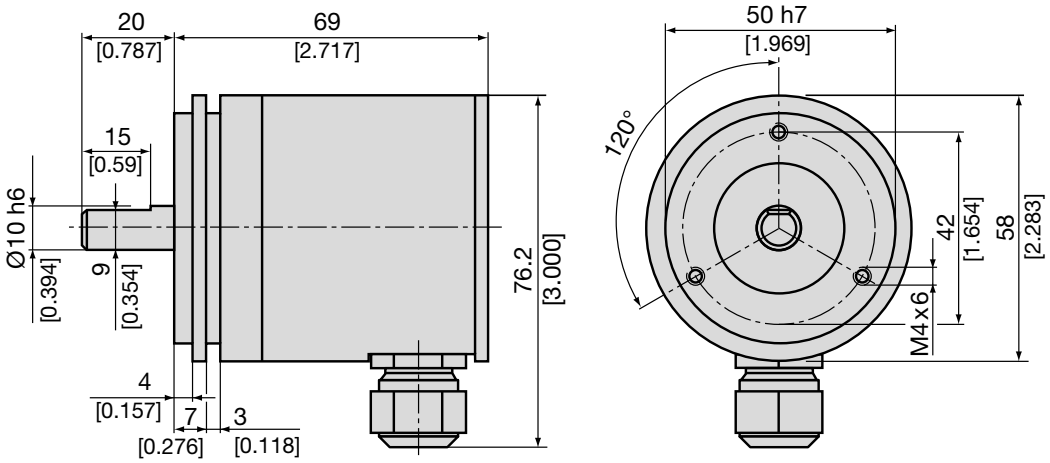
Gas explosion prevention:
- Labeling: Ex ia IIC T4 Gb
- Conform to standard: ATEX:
  EN 60079-0:2012
  EN 60079-11:2012
  IECEx:
  IEC 60079-0:2011
  IEC 60079-11:2011-06
- Type of protection: ia
- Temperature class: T4
- Group according to EN60079-0:2012: II

Dust explosion prevention:
- Labeling: Ex ia IIIC T80°C Db
  or Ex tb IIIC T80°C Db
- Conform tostandard: ATEX:
  EN 60079-0:2012
  EN 60079-11:2012
  EN 60079-31:2009
  IECEx:
  IEC 60079-0:2011
  IEC 60079-11:2011-06
  IEC 60079-31:2008
- Type of protection: ia
  or tb (Protection by enclosure)
- max. surface temperature: 80°C

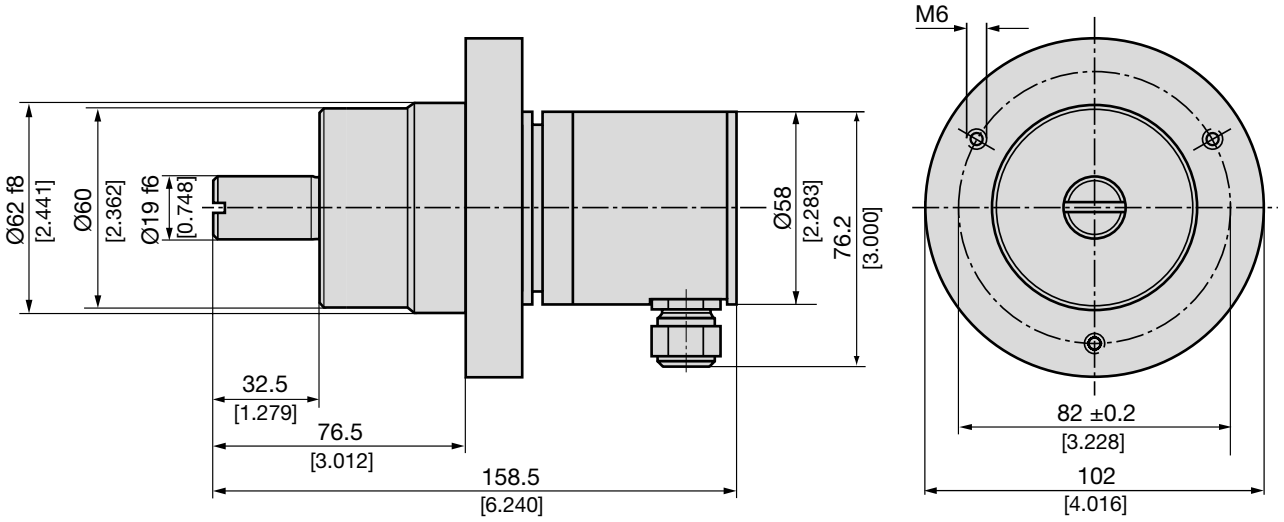
Group according to
EN60079-0:2012: III

Dimensional drawing

WT720 Standard



WT720 with Flange



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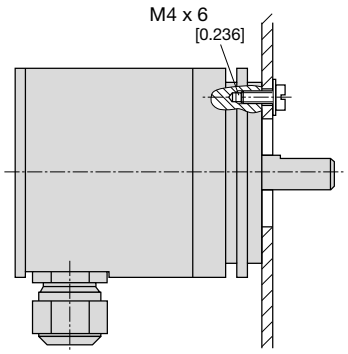
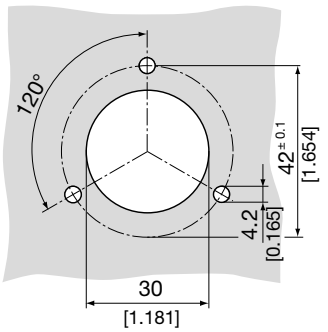
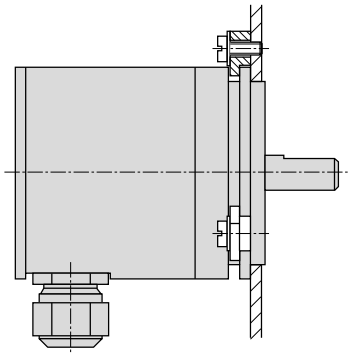
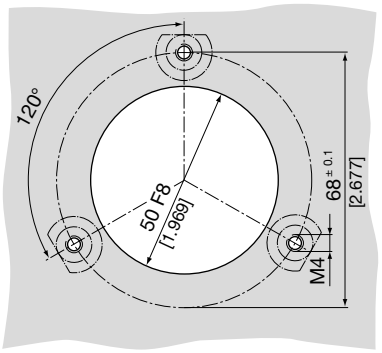
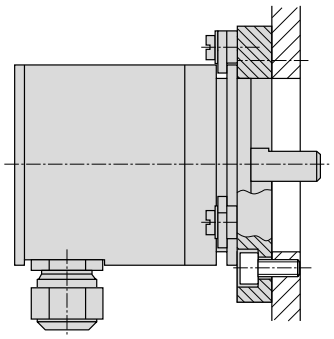
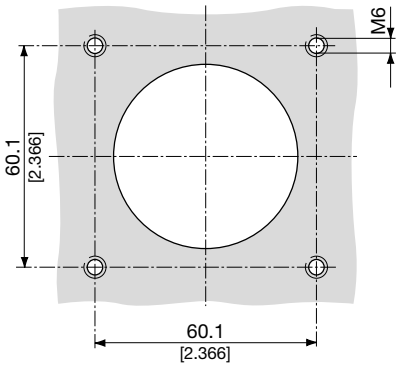
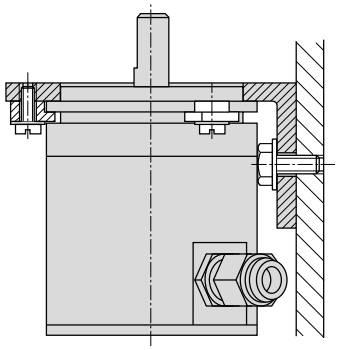
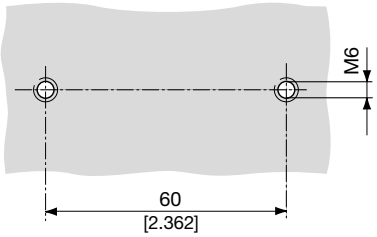
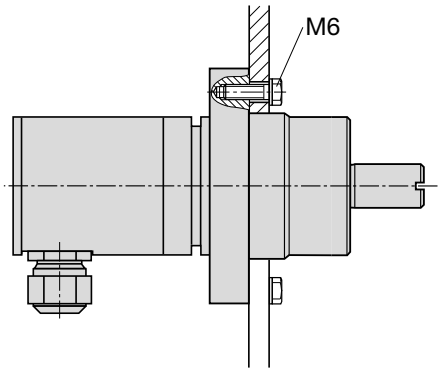
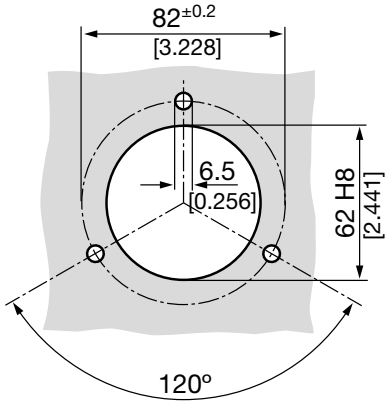
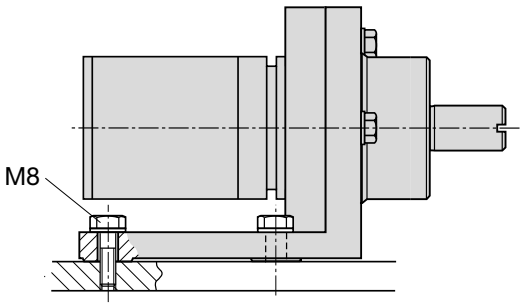
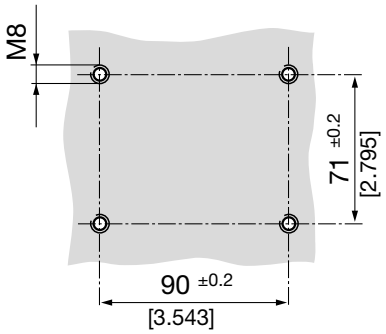
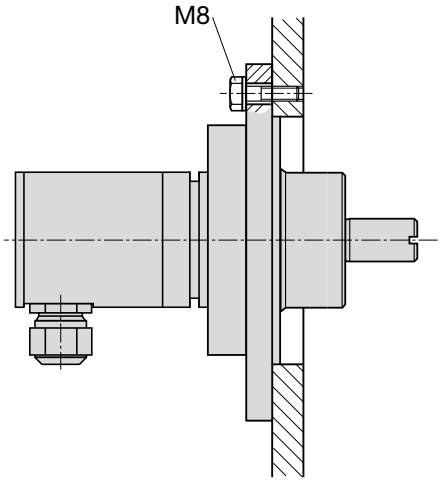
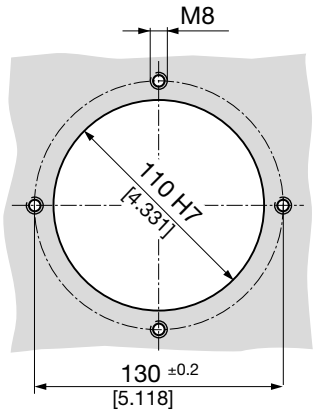
Mounting

All of the transmitters of this series may be mounted on the object to be measured as shown in the drawings. Screws, clamps, mounting brackets and mounting plates are not part of the scope of delivery but are available as accessories.

WT720 Standard

	Mounting	Cut-out diagram for mounting
direct		
with 3 clamps		
with mounting plate		
with mounting angle		

WT720 with Flange

	Mounting	Cut-out diagram for mounting
direct		
with mounting foot		
with mounting flange		

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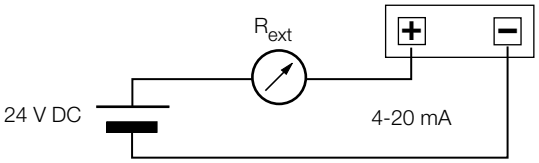
Electrical connections

The electrical wires are connected to the transmitter via an M12 x 1 / 4-pole plug connector (only in the non-Ex variant) or an M16 x 1.5 cable gland. The cable gland version is connected according to the connection diagram via a spring-type push terminal. The Ex variant may only be used with the threaded cable connection supplied.

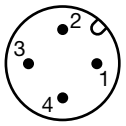
Permissible cable-Ø: NEx 6-10 mm
Ex 4-8 mm

max. conductor cross-section: 2,5 mm²

Connection allocation spring-type terminal block



Connection allocation plug (only for non Ex version)



Pin	Plug
1	+
2	–
3	not connected
4	⏚

Programming

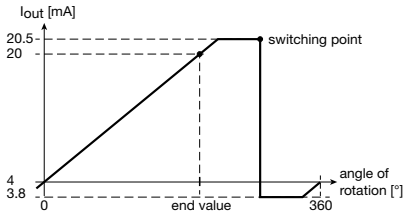
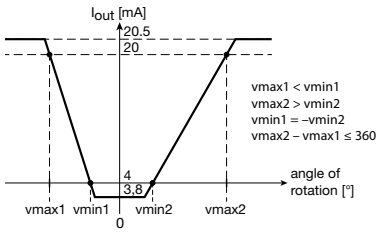
Parameters may be set by keys and DIP switches right at the device. Zero point, span and direction of rotation are set independently of each other. This facilitates the adjustment in commissioning considerably.

In case of an order with a measuring range parameterised at the factory, the zero point may be set by a key while the defined span is preserved.

The factory setting can always be restored in case of maloperation.

Specification and ordering information

Description		Blocking code	No-go with blocking code	Article No./ Feature
KINAX WT720	**Order code 720 - xxxx xxxx xx**			720 –
1. Version				
Standard				1
ATEX EX	II 2G Ex ia IIC T4 Gb II 2D Ex ia IIIC T80°C Db	A		2
ATEX EX	II 2D Ex tb IIIC T80°C Db	A		3
IECEx	Ex ia IIC T4 Gb Ex ia IIIC T80°C Db	A		4
IECEx	Ex tb IIIC T80°C Db	A		5
2. Angle area mechanically				
Single-Turn (360°)				1

Description					Blocking code	No-go with blocking code	Article No./ Feature
KINAX WT720				**Order code 720 - xxxx xxxx xx**			720 –
3. Drive shaft							
Standard, shaft Ø 10 mm [0.393“]							1
Flange, shaft Ø 19 mm [0.748“]							2
4. Output variable							
Current, 4...20 mA, two-wire							1
5. Electrical connections							
Gland standard							1
Gland with increased strain relief							2
Sensor plug M12						A	3
6. Test protocole							
Without protocole							0
Protocol German							D
Protocol English							E
7. Interface							
Without a programmable interface							0
8. Direction of rotation							
Direction of rotation clockwise					J		0
Direction of rotation counter-clockwise					J, G		1
V-characteristic					K, G		2
9. Measuring range							
Basic configuration (linear, 0 … 360°)						K, G	0
[°angle], 0...end value:			Switching point:			K	9
V-characteristic [± ° angle]	vmax1:		vmin1:			J	Z
	vmax2:		vmin2:				
 							
10. Climatic rating / Marine version							
Normal climatic rating (rel. humidity annual average ≤ 90 %)							0
Increased climating rating (rel. humidity annual average ≤ 95 %)							1
Version GL (Germanischer Lloyd)							G

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Accessories

Article	Article-Nr.
Plug connector for M12 sensor plug, 5 poles	168 105
Kit mounting clamp	157 364
Mounting angle for WT720 Standard	168 204
Mounting plate WT720 Standard	168 212
Mounting foot for WT720 with Flange	997 182
Mounting flange for WT720 with Flange	997 190
Bellow coupling BKXK2429 ∅6/10mm	164 773
Bellow coupling BKXK3030 ∅10/8mm	164 799
Bellow coupling BKXK3030 ∅10/10mm	164 806
Bellow coupling BKXK3030 ∅10/12mm	164 814
Bellow coupling BKXK3030 ∅10/14mm	164 822
Bellow coupling BKXK3030 ∅10/16mm	164 830
Helical coupling WKAK2532 ∅ 6/10mm	164 898
Helical coupling WKAK2532 ∅ 10/8mm	164 913
Helical coupling WKAK2532 ∅ 10/10mm	164 921
Helical coupling WKAK2532 ∅ 10/12mm	164 939
Spring washer coupling FSKK3027 ∅ 6/10mm	165 002
Spring washer coupling FSKK3027 ∅10/10mm	165 010
Spring washer coupling FSKK3027 ∅ 6/12mm	165 028
Spring washer coupling FSXK3850 ∅ 10/10mm	165 052
Spring washer coupling FSXK3850 ∅ 10/12mm	165 060

You find power supply units for KINAX WT720 in our process instrumentation product range.

SINEAX B840	SINEAX B812	SINEAX B811
4-channel power supply unit	1-channel power supply unit	1-channel power supply unit
to feed 2-wire transmitters		

Scope of delivery

1 Absolute, programmable transmitter KINAX WT720 (according to Order)

1 Operating Instruction german, english, french (156796)

Approvals

Approval		Identification
IECEx	Explosion protection according to IECEx	Ex ia IIC T4 Gb Ex ia IIIC T80°C Db Ex tb IIIC T80°C Db
Ex	Explosion protection according to ATEX	Ex II 2G Ex ia IIC T4 Gb Ex II 2D Ex ia IIIC T80°C Db Ex II 2D Ex tb IIIC T80°C Db
GL	Germanischer Lloyd	D, H, EMC1

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