CAMILLE BAUER

KINAX HW730
Absolute hollow-shaft transmitter for angular position

For industrial applications in rough environments

KINAX HW730 is a very robust, absolute hollow-shaft 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.

The high mechanical capacity, the robust design, easy assembly, the variety of connection options and free parametrization as well as the large diameter hollow-shaft (up to 30 mm) 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
- With maritime execution (formely GL, Germanischer Lloyd)
- Explosion protection acc. ATEX and IECEx intrinsic safety "ia" (gas and dust) and protection by housing "tb" (dust)

SAFE, FREE OF MAINTENANCE
- High accuracy (± 0.1 %)
- 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
- Hollow-shaft up to 30 mm
- Reliable clamp flange
- 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°
Hollow-shaft diameter:	Ø 30 mm [1.181"] Reduction of the hollow-shaft-Ø by adapter sleeves
Starting torque:	max. 0.5 Nm [4.248 in-oz]
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 NEx: 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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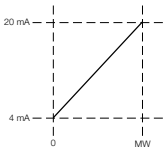
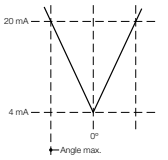
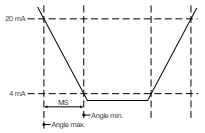
Accuracy data

Basic accuracy: ± 0.1% at 360°

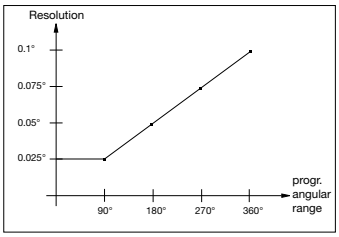
Accuracy cut lower angle ranges:

90°	60°	30°
± 0.22%	± 0.29%	± 0.53%

Additional errors (cumulative):

Output characteristic	Definition	Additional error
Linear 	Programmed Angle max. = MW Angle min. = 0°	$f_{Add}=(\frac{0.14°}{MW}\ x100\text{-}0.04)$ $[f_{Add}]=\%$
	ex. at 90°: $f=f_{Add}+f_{Abs}=0.12\%+0.1\%=0.22\%$	
simple "V" characteristic 	Programmed Angle max. = MW Angle min. = 0°	$f_{Add}=(\frac{0.14°}{MW}\ x100\text{-}0.04)$ $[f_{Add}]=\%$
"V" characteristic with offset 	MS = (angle max.) - (angle min.) angle max. = ± final angle angle min. = > 0°	$f_{Add}=(\frac{0.14°}{MW}x100\text{-}0.04)$ $[f_{Add}]=\%$

Resolution: ± 0.1° at 360°



Reproducibility: < 0.1°

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

Installation data

Material: Aluminium AW-6023 T6 anodized

Mounting position: Any

Connections: 2-pin spring-type terminal block or sensor plug connector metal (M12 x 1 / 4 poles / only for NEx version

Weight: Approx. 820 g

Regulations

Spurious radiation: EN 61000-6-3

Immunity: EN 61000-6-2

Degree of pollution: 2

Admissible common-mode voltage: 100 V AC, CAT II

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

Housing protection: IP 67 acc. to EN 60 529
IP 69k acc. to EN 40 050-9

Environmental conditions

Climatic rating: Standard (NEx):
Temperature –40 … +85 °C
[–40 ... +185°F]
Rel. humidity ≤ 95 % non-condensing

Explosion protection:
Temperature –40 … +75 °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 60079-0:2009
EN 60079-11:2007

IECEx:
IEC 60079-0:2011
IEC 60079-11:2011-06

Type of protection: ia

Temperature class: T4

Group according to EN60079-01:2009: II

Dust explosion prevention:

Labeling: Ex ia IIIC T80°C Db
or Ex tb IIIC T80°C Db

Conform to standard:
ATEX:
EN 60079-0:2009
EN 60079-11:2007
EN 61241-31:2009

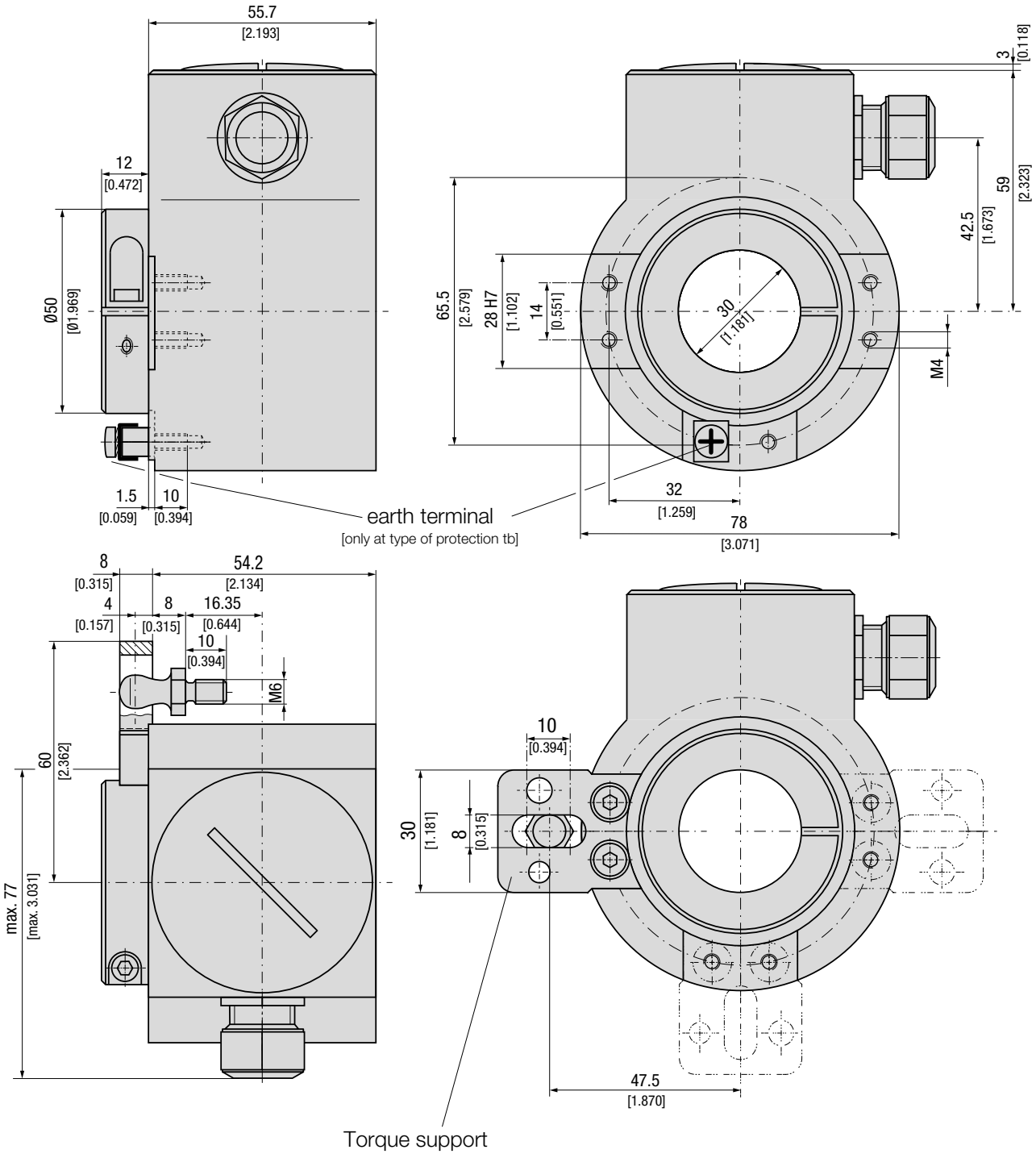
IECEx:
IEC 60079-0:2011
IEC 60079-11:2011-06
IEC 61241-31:2008

Type of protection: ia
or tb (Protection by enclosure)

max. surface temperature: 80°C

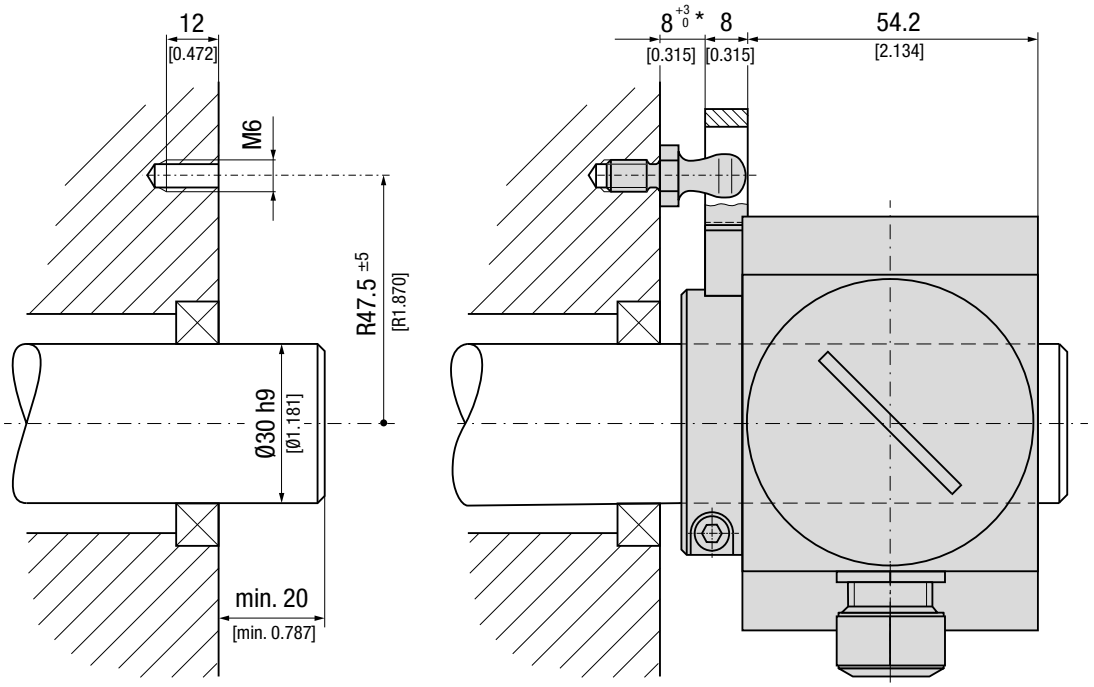
Group according to EN60079-01:2009: III

Dimensional drawing



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Programming
Mounting example



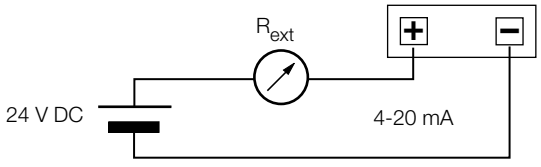
* Can be increased with spacer bolts.

Electrical connections

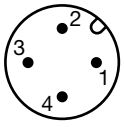
The electrical wires are connected to the transmitter via an M12 x 1 / 4-pole plug connector (only in the non-Ex variant) or an M16 x 1.5 cable gland. The cable gland version is connected according to the connection diagram via a spring-type push terminal. The Ex variant may only be used with the threaded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

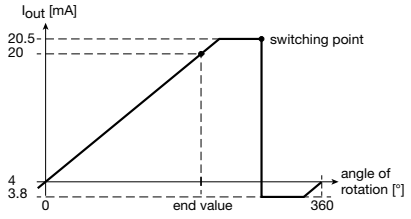
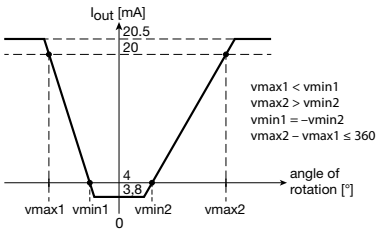
The factory setting can always be restored in case of maloperation.



Specification and ordering information

Description		Blocking code	No-go with blocking code	Article No./ Feature
KINAX WT720	**Order code 730 - xxxx xxxx xx**			730 –
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
3. Hollow-shaft diameter				
Hollow-shaft 10 mm [0.393“], electrically insulating				1
Hollow-shaft 12 mm [0.472“], electrically insulating				2
Hollow-shaft 16 mm [0.63“], electrically insulating				3
Hollow-shaft 20 mm [0.787“], electrically insulating				4
Hollow-shaft 30 mm [1.181“], electrically insulating				5
Hollow-shaft 18 mm [0.708“], electrically insulating				6
Hollow-shaft 1/2” (12.7 mm), electrically insulating				A
Hollow-shaft 5/8” (15.875 mm), electrically insulating				B
Hollow-shaft 3/4” (19.05 mm), electrically insulating				C
Hollow-shaft 7/8” (22.225 mm) electrically insulating				D
Hollow-shaft 1” (25.4 mm), electrically insulating				E
4. Torque support				
Standard				1
5. Output variable				
Current, 4...20 mA, two wire		B		1
Modbus/TCP with PoE -> in progress		C	A	2
6. Electrical connections				
Gland standard				1
Gland with increased strain relief				2
Sensor plug M12 / 4-pole			A, C	3
Sensor plug M12 / 4-pole d-coded			A, B	4
7. Test certificate				
Without test certificate				0
Test certificate in German				D
Test certificate in English				E
8. Direction of rotation				
Direction of rotation clockwise		J		0
Direction of rotation counter-clockwise		J, G		1
V-characteristic		K, G		2

KINAX HW730
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Description					Blocking code	No-go with blocking code	Article No./ Feature
KINAX WT720		**Order code 730 - xxxx xxxx xx**					730 –
9. Measuring range							
Basic configuration (linear, 0 … 360°)						K, G	0
[°angle], 0...end value:			Switching point:			K C	9
V-characteristic [± ° angle]	vmax1:		vmin1:			J, C	Z
	vmax2:		vmin2:				
 							
10. Climatic rating / Marine version							
Standard							0
Maritime execution (formely Germ. Lloyd)							G

Accessories

Article	Article-Nr.
Plug connector for M12 sensor plug, 5 poles	168 105
Torque support set HW730	169 749
Adapter sleeve HW730 ∅ 10mm	168 874
Adapter sleeve HW730 ∅ 12 mm	168 882
Adapter sleeve HW730 ∅ 16 mm	168 907
Adapter sleeve HW730 ∅ 18 mm	171 976
Adapter sleeve HW730 ∅ 20 mm	168 915
Adapter sleeve HW730 ∅ 1/2” (12.7 mm)	171 984
Adapter sleeve HW730 ∅ 5/8” (15.875 mm)	171 992
Adapter sleeve HW730 ∅ 3/4” (19.05 mm)	172 007
Adapter sleeve HW730 ∅ 7/8” (22.225 mm)	172 015
Adapter sleeve HW730 ∅ 1” (25.4 mm)	172 023

Scope of delivery

1 Hollow-shaft transmitter for angular position (according to Order)
1 Torque support set HW730 (169 749)
1 Operating Instruction german, english, french (157 835)

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

You find power supply units for KINAX HW730 in our process instrumentation product range.

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

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