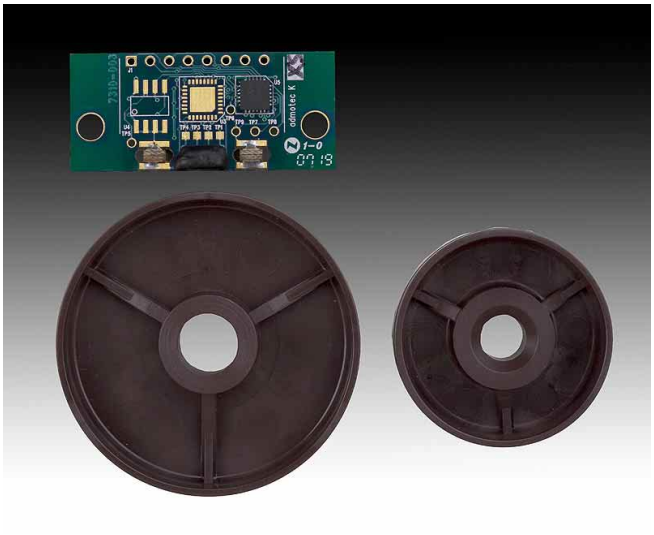

KX Magnetic Encoder

Interpolated Digital Output

High performance, cost-effective rotary magnetic encoders for harsh or difficult environments.

Admotec KX Series magnetic encoders provide high performance in measurement and feedback applications where optical encoders don't work or don't last. Perfect for industrial automation, medical, aerospace, and automotive applications, these encoders offer original equipment manufacturers cost-effective solutions at any quantity—from prototype units all the way up to high-volume production.

Series KXL encoders operate with a large (up to 3mm) airgap between wheel and sensor allowing easy, non-critical "plug and play" assembly to your machine or motor. Custom-configured versions (KXL2200) provide virtually any resolution (up to 10,000 CPR) on any wheel diameter (up to 250mm) ensuring perfect fit and function in your application.

Series KXS encoders offer enhanced performance with higher accuracy and resolution but operate with a smaller (0.3mm) airgap between wheel and sensor. A once-per-revolution index or Z (marker) output is also available. Common binary, angular, and decimal resolutions (up to 45,000 CPR) are available on a variety of wheel diameters (up to 229mm).

And if a standard Series KX encoder doesn't fit your needs, completely customized solutions can also be designed for your application.

Admotec—the leader in motion and position sensing for original equipment manufacturers.

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Typical Applications

- Industrial tachometer
- Motor feedback
- Angle measurement
- Position/speed display
- Machine synchronization
- Test and measurement
- High-speed spindles
- AC and DC servo motors
- Torque flanges
- Remote-controlled vehicles
- Health/mobility products
- Medical/Lab automation

Features & Benefits

Non-contact design	No wear or aging
Magnetic, not optical	Immune to dust, dirt, oil, water, condensation, etc.
Radial sensing	Tolerates high end-play
Large through-hole capability	Direct mounting on large diameter and hollow shafts
Rugged construction	Tolerates high vibration and shock
Integrated interpolator	Increased resolution
RoHS compliant	Worldwide application

General Specifications

Resolution	Up to 45,000 CPR
Maximum Speed	Up to 100,000 RPM
Channel Frequency	500 kHz maximum
Airgap	1.5mm or 0.3mm nominal
Angular Error	≤ 4 arc minutes (KXS)
	≤ 10 arc minutes (KXL)
Hysterisis	≤ 1 edge
Operating Temperature	–40 to 115 °C
Supply Voltage	5.0 ±0.25 Vdc
Supply Current	20 mA typical

KXL

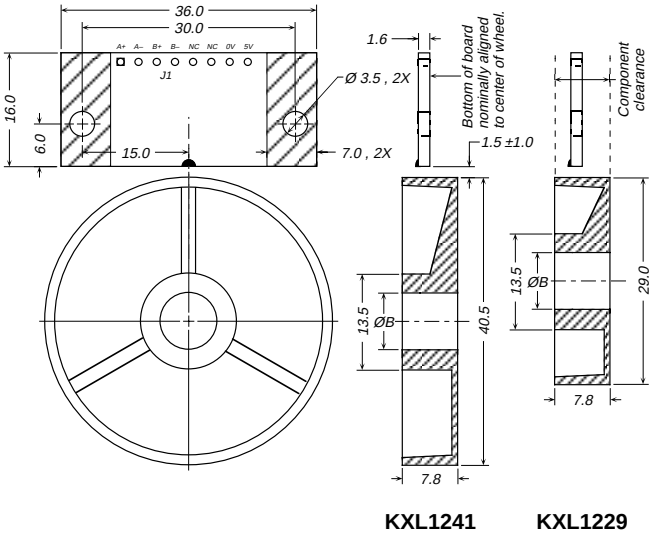
Large Gap Encoder

Series KXL1200 and KXL2200

Series KXL1200 is a basic two-channel incremental magnetic encoder optimized for operation at large arigaps. Fixed-diameter (29mm and 40.5mm) molded wheels with standard metric and English (inch) bores allow direct mounting to small shafts and motors. Common decimal, binary, and angular resolutions from 120 to 2048 cycles per revolution (CPR) and a large (1.5mm) airgap provide easy installation and economical shaft encoding for many applications.

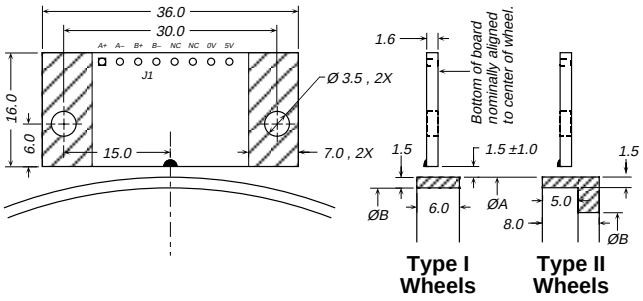
Series KXL2200 is a versatile two-channel incremental magnetic encoder optimized for operation at large arigaps using custom-configured wheels machined to the required size. Type I wheels offer large through-bore capability while Type II wheels offer an ID machined to your specifications. Resolutions from 4 to 20,000 cycles per revolution (CPR) on wheel diameters from 20mm to 250mm are available. Large (1.5mm) airgap allows easy assembly and maintenance.

KXL1200 Outline & Mounting Dimensions*

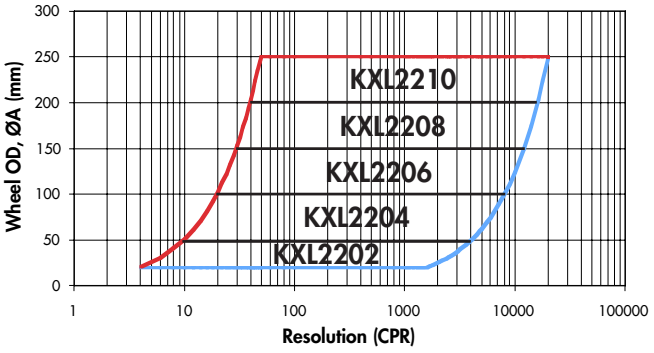


KXL1241 KXL1229

KXL2200 Outline & Mounting Dimensions*



KXL2200 Resolutions and Wheel Diameters



Minimum ID (ØB): Size Classes 02, 04: 2mm; Size Class 06: 98mm, Size Class 08: 140mm, Size Class 10: 198mm.

KXL1200 Ordering Information

KXL12 □ □ - □ □ □ □ - □ □

Wheel Size
29 = 29.0mm
41 = 40.5mm

Resolution (CPR)
120, 128, 200, 256, 360, 512, 600, 720, 1000, 1024, 1200, 1440, 1800, 2000, 2048
Binary resolutions have lowest jitter.
Other resolutions available.

Bore (ØB)
06 = 6mm
08 = 8mm
10 = 10mm
25 = ¼"
31 = 5⁄16"
38 = ⅜"

KXL2200 Ordering Information

KXL22 □ □ - □ □ □ □ □ - □ □ □ / □ □ □

Size Class (ØA)
02 = 20–50mm
04 = 51–100mm
06 = 101–150mm
08 = 151–200mm
10 = 201–250mm

Resolution (CPR)
100, 128, 200, 256, 360, 500, 512, 600, 720, 1000, 1024, 1200, 1440, 1800, 2000, 2048, 2500, 3600, 5000, 10000
Binary resolutions have lowest jitter.
Other resolutions available.

Wheel (ØA/ØB)
ØB = ØA – 3mm (Type I)
ØB < ØA – 3mm (Type II)
Fully customized wheels available.

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* All dimensions in mm.

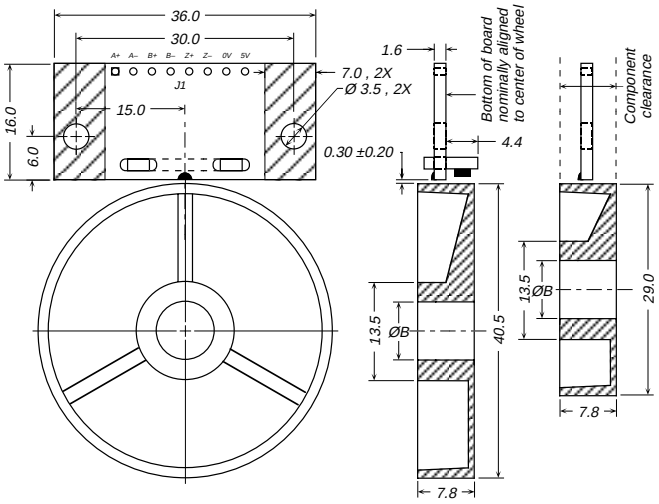
KXS

Small Gap Encoder

Series KXS1000 and KXS2000

Series KXS1000 is a basic high-accuracy two- or three-channel incremental magnetic encoder using fixed-diameter (29mm and 40.5mm) molded wheels and a 0.3mm airgap. Standard metric and English (inch) wheel bores allow direct and easy mounting to small shafts and motors. Common binary and angular resolutions from 128 to 8192 cycles per revolution (CPR) are available.

KXS1000 Outline & Mounting Dimensions*



KXS1341 KXS1229

KXS1000 Ordering Information

KXS1□ □ □ - □ □ □ □ - □ □

Channels
2 = A, B
3 = A, B, Z

Wheel Size
29 = 29.0mm
41 = 40.5mm

Resolution (CPR)
KXS1x29: 180, 360, 720, 1440, 1800, 2880, 3600
KXS1x41: 128, 256, 512, 1024, 2048, 4096, 8192
Other resolutions available.

Bore (ØB)
06 = 6mm
08 = 8mm
10 = 10mm
25 = ¼"
31 = 5⁄16"
38 = 3⁄8"

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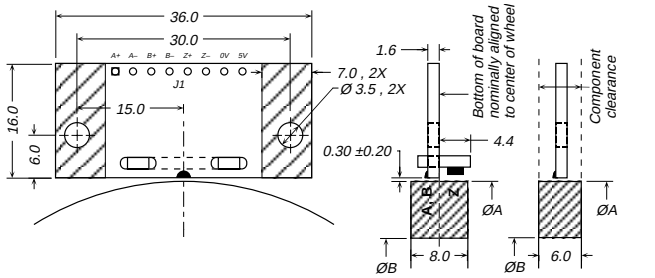
Series KXS2000 is a versatile high-accuracy two- or three-channel incremental magnetic encoder using custom-configured wheels machined to the required size. Standard decimal, binary, and angular resolutions from 100 to 10,000 cycles per revolution (CPR) on a variety of wheel diameters from 10mm to 250mm are available.

KXS2000 Outline & Mounting Dimensions*



KXS2300 KXS2200

KXS2000 Wheel Diameters and Resolutions

Wheel OD ØA (mm)	Resolution Types	Which are Multiples of	Size Class	Minimum ØB (mm)
12	Decimal, Angular	10 (≤2,500)	02	
20	Binary	16 (≤4,096)	02	
25	Decimal, Angular	20 (≤5,000)	02	
31	Decimal	25 (≤6,400)	02	
40	Binary	32 (≤8,192)	02	
63	Decimal	50 (≤12,500)	04	
79	Decimal	125 (≤16,000)	04	
81	Binary	64 (≤16,384)	04	
114	Angular	90 (≤22,500)	06	98
127	Decimal	100 (≤25,000)	06	98
152	Angular	120 (≤30,000)	08	140
159	Decimal	125 (≤32,000)	08	140
162	Binary	128 (≤32,768)	08	140
229	Angular	180 (≤45,000)	10	198

Additional wheel diameters available.

KXS2000 Ordering Information

KXS2□ □ □ - □ □ □ □ □ - □ □ □ / □ □ □

Channels
2 = A, B
3 = A, B, Z

Size Class (ØA)
02 = 8–50mm
04 = 51–100mm
06 = 101–150mm
08 = 151–200mm
10 = 201–250mm

Resolution (CPR)
100, 128, 200, 256, 360, 500, 512, 600, 720, 1000, 1024, 1200, 1440, 1800, 2000, 2048, 2500, 3600, 4096, 5000, 6000, 8192, 10000
Other resolutions available.

Wheel (ØA/ØB)
Fully customized wheels available.

* All dimensions in mm.

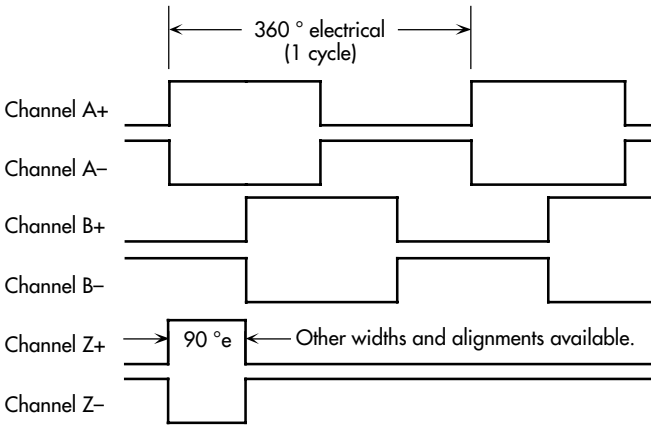
KX MAGNETIC ENCODER

INTERPOLATED DIGITAL OUTPUT

OUTPUT SIGNAL FORMAT

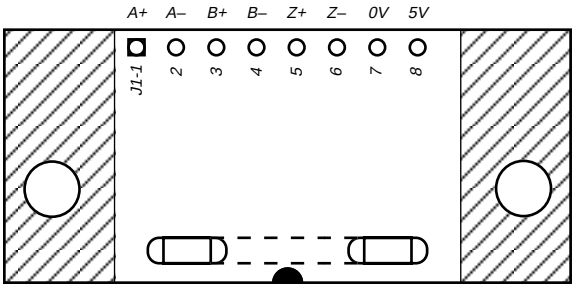
KX Series incremental outputs (A and B channels) are differential quadrature, RS-422 compatible, TTL-level signals as shown below. Outputs can source or sink 6 mA each.

KXS1300 and KXS2300 models add a marker or index channel (Z) qualified with the incremental signals as shown (A high, B low).



ELECTRICAL CONNECTIONS

KX Series encoders are connected using wires soldered into the 8 holes on 2.54mm (0.1″) centers labeled J1 along the back edge of the board. The pinout of J1 is shown below. Recommended cable is 28AWG flat ribbon cable for short (<1m) runs and Belden 9504 or equivalent for long (>1m) runs.



CUSTOM OPTIONS

In addition to the standard products, KX Series magnetic encoders may be fully customized to your needs. Available optional features include (but are not limited to) those shown below. Contact the factory for more information on these and other options.

- Additional resolutions and wheel diameters
- Larger nominal airgap—up to 3mm (KXL only)
- Custom wheel features
  - Flanges
  - Bolt hole circles
  - Chamfers
  - Aluminum or steel hubs
- Alternate output signal formats
  - Reversed counting direction
  - Count Up / Count Down
  - Count / Direction
  - UVW for Commutation
- Alternate marker configurations (KXS only)
  - Larger pulse width
  - Different alignment to incremental channels
  - Multiple markers
- Increased hysterisis or no hysterisis
- Input filtering for reduced bandwidth
- Low voltage (3.3Vdc) operation
- Axial instead of radial airgap
- Custom PC board size and shape

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