Resolver Sensor Module

Specifications

Type	Resolver Sensor Module
Order code	See below.
Range	1X - 360° (single speed) 3X - 120° (triple speed)
Accuracy	+-0.067° (12,5 bits) for 1X +-0.028° (13,5 bits) for 3X , no temperature sensitivity
Resolution	0.01° for both models (adjustable via CAN)
Repeatability	+/- 0.005 degrees (15 bits)
Noise in Position Output	+/- 0.0025 degress (16 bits)
Delay Between Mechanical Rotation & Sensor Output	Less than 28 mSec.
Current Consumption	70 mA @ 24V
Resolver Interface	The resolver element is integrated in module. P/N: AXRES-CO-V2: 1X: LTN R58WURE151B24-031-07HA 3X: LTN R58WURE153B24-031-07HA P/N: AXRES-CO-1X-SL (Slim design): LTN RE-10 Other manufacturer's part numbers on request.
Communication Interfaces	CAN (CANopen®) – Encoder Profile CiA 406 V3.1 and DS301 V4.1 (communication profile) Other CAN protocols are available on request. RS-232: Baud rates up to 115200 kbits/sec, TTL level in AXRES-CO-V2TTL Level RS232 - Access via external connector (on request for AXRES-CO-V2)
Main processor	DSP (Motorolla 56F8323)
CAN bus transceiver	Philips TJA1050
Operating voltage	9 to 35 VDC for AXRES-CO-V2-1X-x 9 to 54 VDC AXRES-CO-1X-S
Operating temperature range	-40...+85°C (-40…+185°F) at speeds <10 rev/sec. -20 to +85°C (-4 to 185°F) at faster speeds
Dimensions	Aluminum enclosure including resolver, excluding connectors and mounting brackets P/N: AXRES-CO-V2: 70 x 86 mm or 2.75 x 3.38 inches (ØD x H) P/N: AXRES-CO-1X-SL : • 32 x 151 mm or 0.125 x 0.59 inches (ØD x L) Other form factors are available on request.
Connections	P/N: AXRES-CO-V2: Two M12 5-pin connectors Male (Power, Shield, CAN High, CAN Low) Female (Power, Shield, CAN High, CAN Low) (OEM specific connectors are available on request.) Mounting brackets are provided. P/N: AXRES-CO-1X-SL: • 1x M12 connector (5 -pin) male
Weight	AXRES-CO-V2: 540 g (housed model) AXRES-CO-1X-SL : 230g
Protection Class	IP65, closed type housings. IP00, open type housing
EMC Compliance	Fulfills the requirements of the industrial and mobile environments. The product bears a CE mark. Emissions: EN61000-6-4:2001 Immunity: EN61000-6-2:1999
Accessories	EDS file

AXRES-CO-V2-1X-H (Closed Type Housing)

The resolver sensor module features a signal conditioning circuit with an integrated resolver element in a rugged housing. It is a robust alternative for an optical encoder.   It can also be used as a resolver control module in cases where there is already a resolver element in the application but no control or interface electronics. A typical application is boom end positioning in cranes and drilling machines. OEM versions are available.

Applications
A robust optical encoder replacement in applications for boom angle measurement or shaft rotation angle measurements such as:
- mobile equipment, vehicles, work machines, mining equipment, military equipment
- factory automation, servo and robotic systems, electric motors, material handling machines

Product description

Three different form factors provide a suitable solution for a variety of applications. The type *AXRES-1X-SL* (shown below) provides very slim design (diameter 32mm) allowing the resolver to be mounted even inside a hollow pin!

The resolver sensor module measures angular displacement and speed over 360°. In addition, it tracks the position as whole revolutions. Good accuracy, short measurement delay and angular speed counted inside the module are all useful features in accurate servo and robotic systems. The module features a signal conditioning circuit with an integrated resolver element in a rugged packaging suitable for many mobile equipment applications. It can operate as a component in a CANopen® control system or be integrated with the Axiomatic MVDM586 display unit to provide a complete CAN networked closed loop control system.

Power supply for the module can be in the range of 9 - 36V or 9-54V for the new slim design model. The module is protected against reverse battery connection, overvoltage, and load-dump situations. The measurement data (angular position, angular speed, position as whole revolutions) is available on the CAN bus, which utilizes the CANopen® protocol. The module implements the CIA standards DS301 V4.1 (communication profile) and the DS406 V 3.01 (encoder profile). The CAN bus node ID and baudrate is changed through the CANopen® (LSS protocol). For example, the user can set up the following features using the CAN interface: angular offset (zero point); speed calculation (on/off); polarity of the resolver (turning direction); and angular resolution (number of digits shown in CAN message). AXRES provides 12.5 ... 13.5 bits accuracy per one electrical revolution. Resolution is software configurable. The maximum resolution is 22 bits. Resolved based sensors are not sensitive for vibrations so they provide long service life without any maintenance even in very harsh environments. Insensitivity to temperature variations and aging means that the full accuracy is always achieved.

AX*RES-CO-V2-1X-U*
(Open Type Housing)

The module is designed to be attached to the application mechanics with two spring type mounting brackets and an axes adapter. The type of the axis adapter depends on the type of the housing. For V2 type the internal diameter of the axes adapter is 10mm. Locking to the axes is secured with three locking screws.

Order Codes

AXRES-CO-V2-1X-H (360 degree, Closed Housing)
AXRES-CO-V2-1X-O (360 degree, Open Housing)
AXRES-CO-V2-3X-H (120 degree, Closed Housing)
AXRES-CO-V2-3X-O (120 degree, Open Housing)

AXRES-CO-1X-SL (360 degree, slim form factor)

AXRES	-	CO	-	V2	-	1X	-	H	(-	x)
		CAN protocol				Sensor element		Housing		Customer specific
		CO = CANopen				1X		H = closed type housing		optional
						3X		U = open type housing		
								SL = slim design		

Note: CANopen® is a registered community trade mark of CAN in Automation e.V.

Specifications are indicative and subject to change. Actual performance will vary depending on the application and operating conditions. Users should satisfy themselves that the product is suitable for use in the intended application. All our products carry a limited warranty against defects in material and workmanship. Please refer to our Warranty, Application Approvals/Limitations and Return Materials Process as described on www.axiomatic.com/service.html.