

LEINE LINDE

Encoders for Extreme Environments



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Product Family

300 Miniature



The model 300 series consists of robust and extremely reliable miniature encoders, 30 mm in diameter and designed for installation in applications where limited space is at a premium.

500 Robust



"Versatile" and "modular" are catchwords that differentiate the incremental encoders in the model 500 series.

600 Industrial



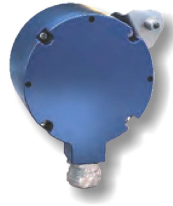
Fieldbus interfaces based on Ethernet, PROFIBUS or DeviceNet are examples of communication protocols used in automation. These interfaces are available on the 600 series of absolute coded encoders.

700 Compact



The 700 series is a robust encoder with a compact design. With its short length, it is designed for filling the need for heavy duty encoders even in installations where space is limited.

800 Heavy Duty



When the most robust, maintenance-free and cost-effective encoder solution is required, the model 800 series is the first choice of most engineers. The optional ADS (Advanced Diagnostic System) is a built-in system tailored to support condition-based maintenance, guaranteeing the reliability of the application.

900 Premium



Machines are becoming more and more advanced in classic industrial applications. More complex motions need to be absolutely monitored in order to achieve full process control. The 900 series meets these increasing demands.

1000 Extreme



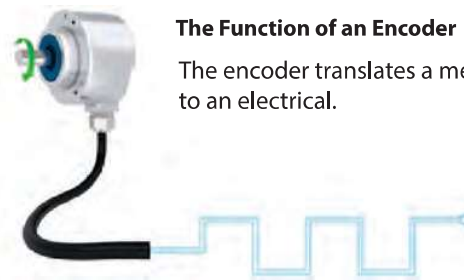
There are many examples of extreme environments within the steel industry in the terms of temperature, mechanical forces, vibrations and shocks. The 1000 series is designed with exceptional durability, suited to an exposed environment. This due to the high encapsulation level which keeps the internal parts protected from dust and liquids.

The Best of Both Worlds



An encoder operates on the threshold between mechanics and electronics, and these two worlds require completely different qualities of the encoder. On the electrical side, an encoder must offer the highest level of reliability, precision and accuracy. On the mechanical side, it must withstand powerful forces, vibrations and extreme temperatures.

In a drive system, the encoder provides the link between motor and frequency converter. This document outlines the criteria to be considered when choosing a solution optimized for both worlds.



The Function of an Encoder

The encoder translates a mechanical movement to an electrical.

The Principle Behind a Drive System

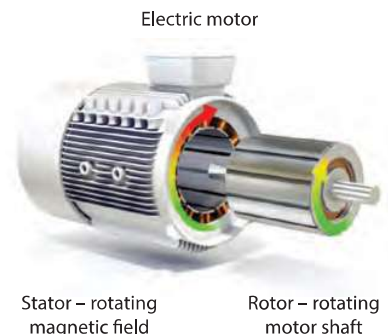
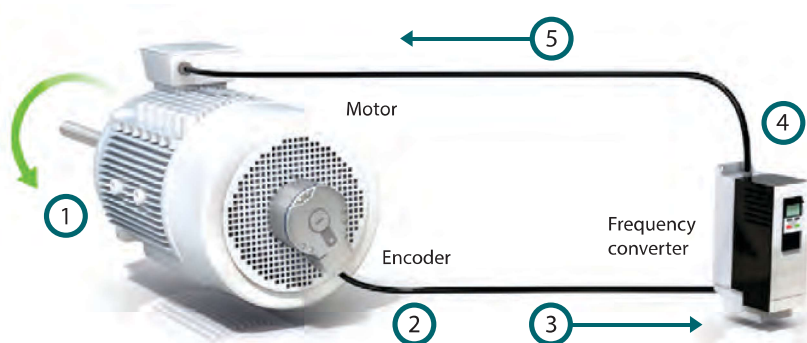
1. The motor shaft drives a load at a certain torque. Intentional speed adjustments may be required during operation; but also, unintentional changes in speed can occur, as the speed is affected by a number of factors, for instance, a variation in the load and by slip.
2. The encoder is mounted directly on the rotor and measures the real speed of the motor shaft.
3. The encoder sends a constant stream of feedback of the speed to the frequency converter.
4. The frequency converter interprets the encoder signals and calculates the necessary compensation for the speed.
5. The frequency converter regulates frequency and voltage, which control the speed of the stator's rotating magnetic field.

Inside an Encoder

The internal structure of an encoder is based on a rotating disc with a large number of measurement points around its circumference.



With a pulse rate of 1,024 ppr, one revolution will provide 4,096 measurement points. This means that the encoder can detect a movement of 0.1 mechanical degrees and that an updated speed can be calculated 4,096 times during each revolution. This enables immediate compensation for deviations, so that the preferred speed can be maintained.



Absolute Position Encoders

Absolute position encoders are offered with serial interfaces such as SSI and EnDat or with integrated fieldbus communication of various kinds, ready for installation in an existing fieldbus system.

- Available in the 1000, 600 and 500 series



CANopen



DRIVE-CLiQ

DRIVE-CLiQ is a registered trademark of Siemens.

Increased Function and Safety

Dual Solutions

Two separate encoders can be integrated into one and the same cover. This solution provides added safety in the form of true redundancy, something required in critical applications where the risk of component faults must be avoided. The two outputs can also be connected to two separate systems with different functions, and there are solutions for combining an incremental and an absolute output in one and the same product.

- Available in the 1000, 800 and 500 series



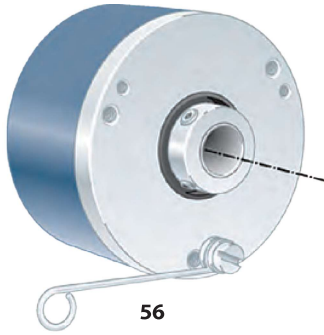
ADS Online

ADS Online is an Advanced Diagnostic System that continuously monitors the encoder function. If the encoder is nearing the end of its life, a warning is transmitted, enabling action to be taken in good time before problems arise. This system is integrated into the encoder and is used in applications with high demands for reliability, for example, in motors for continuous operation at a paper mill.

- Available in the 800 series

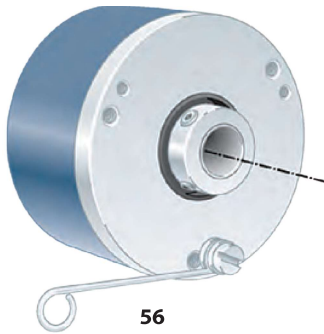


Incremental Encoders - Industrial Duty - 500 Series



Industrial Blind-Hollow Shaft Encoders with 9-30 Vdc Operation and 1,5 m Radial Cable Outlet

| Part No. | Description |
|-----------|--|
| 392911-04 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 500 ppr |
| 392911-12 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 1000 ppr |
| 392911-07 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 1024 ppr |
| 392911-52 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 2000 ppr |
| 392911-08 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 2048 ppr |
| 392911-18 | RHI 503 56, HS Ø12 mm 9-30 Vdc HTL Cable Radial 1,5 m 2500 ppr |



Industrial Blind-Hollow Shaft Encoders with 5 Vdc Operation and 1,5 m Radial Cable Outlet

| Part No. | Description |
|-----------|---|
| 518540-17 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 500 ppr |
| 518540-08 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 1000 ppr |
| 518540-01 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 1024 ppr |
| 518540-11 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 2000 ppr |
| 518540-07 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 2048 ppr |
| 518540-14 | RHI 503 56, HS Ø12 mm 5 Vdc TTL Cable Radial 1,5 m 2500 ppr |



Industrial Shaft Encoders with 9-30 Vdc Operation with 1,5 m Radial Cable Outlet

| Part No. | Description |
|-----------|--|
| 515398-20 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 500 ppr |
| 515398-06 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 1000 ppr |
| 515398-50 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 1024 ppr |
| 515398-11 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 2000 ppr |
| 515398-29 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 2048 ppr |
| 515398-28 | RSI 503 63, Synchro Ø6 mm 9-30 Vdc HTL Cable Radial 1,5 m 2500 ppr |



Industrial Shaft Encoders with 5 Vdc Operation with 1,5 m Radial Cable Outlet

| Part No. | Description |
|-----------|---|
| 513678-04 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 500 ppr |
| 513678-14 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 1000 ppr |
| 513678-07 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 1024 ppr |
| 513678-19 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 2000 ppr |
| 513678-06 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 2048 ppr |
| 513678-13 | RSI 503 63, Synchro Ø6 mm 5 Vdc TTL Cable Radial 1,5 m 2500 ppr |