SAFETY FOR DRIVES

Incremental high-current HTL encoder certified for SIL2 and PLd

The most robust HCHTL encoder on the market, with high-current HTL signals, suitable for high-disturbance environments and long cable lengths, is certified for use in SIL2/PLd applications.

For several decades, encoders from Leine & Linde have been used in heavy industry, appreciated for their robustness and reliability. As the market for functional safety system solutions is growing, Leine & Linde has made sure to provide an excellent answer to the need for components with the right certifications.

FSI 800 for safe installations

FSI (Functional safety integrated) is the new product line for functionally safe encoders from Leine & Linde. Both the hollow shaft encoder FSI 862 and the solid shaft encoder FSI 850 are certified in accordance with EN ISO 13849-1, EN 61800-5-2, IEC 61508 and IEC 62061. As a result, the encoders can be used in functional safety applications up to risk level SIL2 and PLd, category 3.

HCHTL signal advantages

There are advantages with using only one incremental HCHTL encoder: the solution takes up less space, needs less cabling and lives up to high performance requirements.

Up till today, there has been no other choice than 1 Vpp encoders for this kind of safe application, where redundancy is required and met in a single unit. But the 1 Vpp signal is not suitable for all installations, especially not for those with need for long cables, or those that are subjected to electromagnetic disturbance, which is often the case in heavy industry. Here, the certified HCHTL encoder copes well.

Slip-free solution

As a guarantee for safe installation, the encoders are equipped with a key or a keyway, to be matched with a keyway coupling or a shaft with a key. By these slip-free solutions, the encoders are mechanically secured to the shaft, and will always detect even the smallest movements with certainty.

Safety for drives
By using FSI 850 or FSI 862, it will be possible to realize safe functions in accordance with 61800-5-2.

Safe switch-off
STO – Safe torque off
SBC – Safe brake control

Safe standstill
SS1 – Safe stop 1
SS2 – Safe stop 2
SOS – Safe operating stop

Safe motion
SLS – Safely-limited speed
SSR – Safe speed range
SDI – Safe direction
SLA – Safely-limited acceleration
SAR – Safe acceleration range

Safe monitoring
SSM– Safe speed monitor

Safe positioning
SLI – Safely-limited increment

LEINE LINDE

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Technical data

	FSI 862 – Hollow shaft	FSI 850 – Solid shaft
Shaft size	Ø12 mm with keyway Ø16 mm with dowel pin	Ø11 mm with keynut
Operating temperature	-40°C...+80°C	-20°C...+80°C
Ingress protection class [IEC 60529]	IP67 (IP66 at shaft inlet)	IP67 (IP66 at shaft inlet)
Vibration [IEC 60068-2-64]	≤ 20 g, 55-2000 Hz	≤ 20 g, 55-2000 Hz
Shock [IEC 60068-2-27]	≤ 400 g, 3.5 ms	≤ 400 g, 3.5 ms
Shaft load axial / radial	100 N / 300 N	100 N / 100 N
Rotational speed max	6000 rpm	6000 rpm
Resolution	500 to 5000 ppr	500 to 5000 ppr
Power supply	9-30 Vdc	9-30 Vdc
Connection type	Cable gland, connector or pre-mounted cable	Cable gland, connector or pre-mounted cable
Cable length max	350 m at 100 kHz	350 m at 100 kHz

Code keys

FSI 8 6 2 - _ _ _ 5 6 0 - _ _ _ _

Flange

0 = Standard
1 = Torque bracket 120°
2 = Torque bracket 330°

Shaft

7 = Ø12 mm with key way
8 = Ø16 mm with dowel pin

Connection

1 = Connector M23, 12 pin CW
2 = Connector M23, 12 pin CCW
4 = Cable gland M20 for Ø8-11 mm cables
5 = Cable gland M20 for Ø11-14 mm cables
9 = Pre-mounted cable XX m

Electronics

5 = HCHTL (supply 9-30 Vdc, output 9-30 Vdc)

Number of channels

6 = 6 channels

Resolution

500 - 5000 ppr

FSI 8 5 0 - 0 9 _ 5 6 0 - _ _ _ _

Flange

0 = Euro flange B10

Shaft

9 = Ø11 mm solid shaft with key nut

Connection

1 = Connector M23, 12 pin CW
2 = Connector M23, 12 pin CCW
4 = Cable gland M20 for Ø8-11 mm cables
5 = Cable gland M20 for Ø11-14 mm cables
9 = Pre-mounted cable XX m

Electronics

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