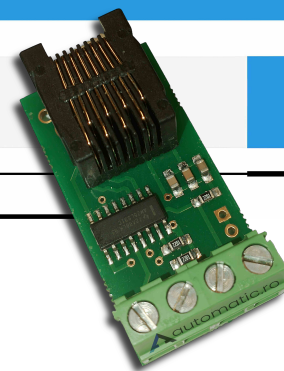
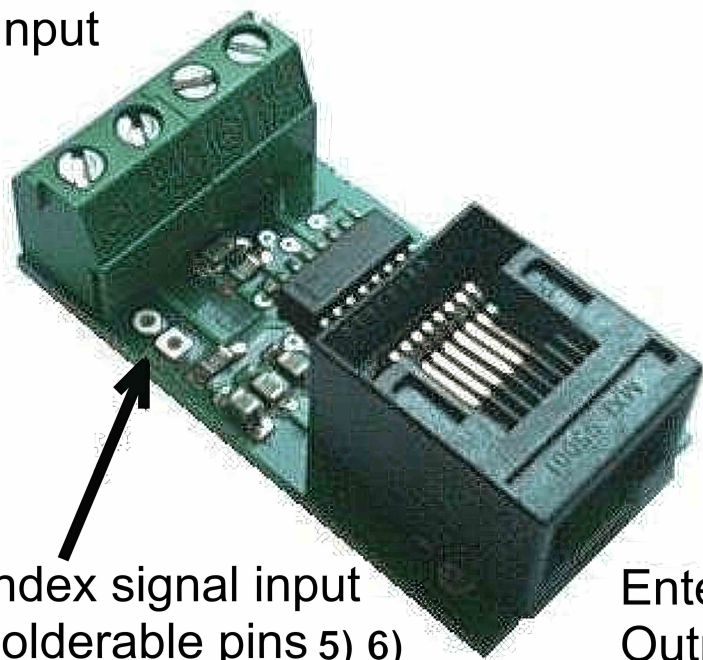


Driver de linie diferențială



Pin 1.

Input



Index signal input
solderable pins 5) 6)

Ethernet
Output

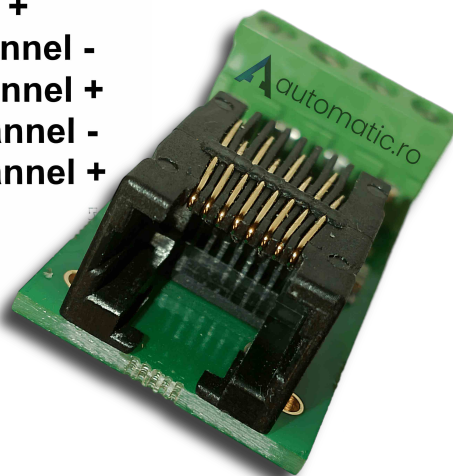
Pin 1.

Input side pinout:

- 1) GND
- 2) A channel
- 3) 5 Volt
- 4) B channel
- 5) Index signal -
- 6) Index signal +

Output side pinout:

- 1) GND
- 2) 5 Volt
- 3) Index -
- 4) Index +
- 5) A channel -
- 6) A channel +
- 7) B channel -
- 8) B channel +



Driverul de linie diferențială este utilizat la encoderele care țin cont de un increment și poate fi utilizat pentru a converti semnalele. Acceptă doar intrări de codificator diferențial, prin urmare semnale în mod comune se convertesc în semnale diferențiale înainte de a le conecta la servodrive.

Specificatii tehnice:

- Convertește liniile de canal A, B și Index de mod comun în linii diferențiale A, _A, B, _B, Index, _Index.
- Intrare terminal cu șurub.
- Ieșire conector RJ45 pentru o conexiune ușoară cu cablul. Patch standard.
- Imunitate ridicată la zgomot a liniilor de ieșire.
- Ieșirea este rutabilă până la 100 de metri lungime.
- Conexiuni Push-Lock pentru toate terminalele.



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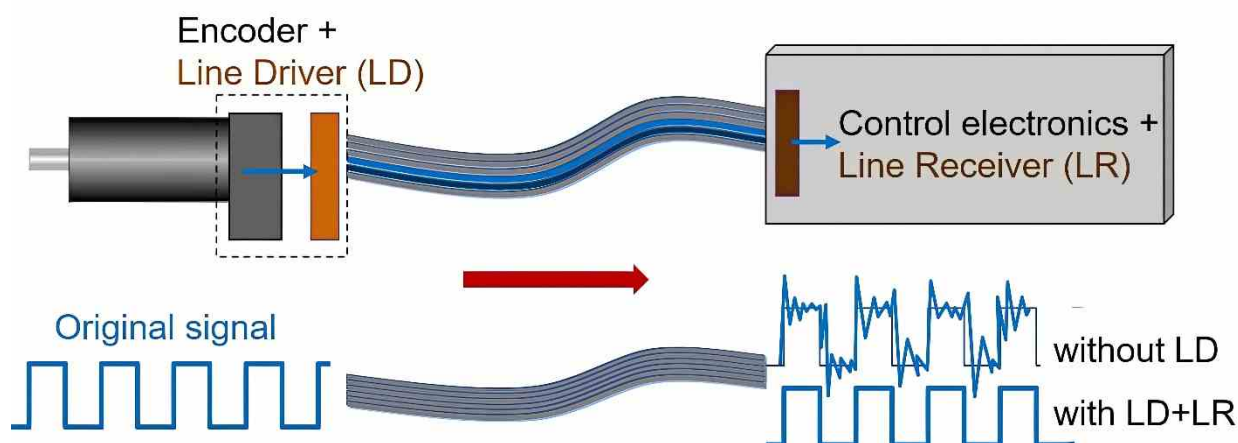


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Reasons to use an encoder with Line Driver

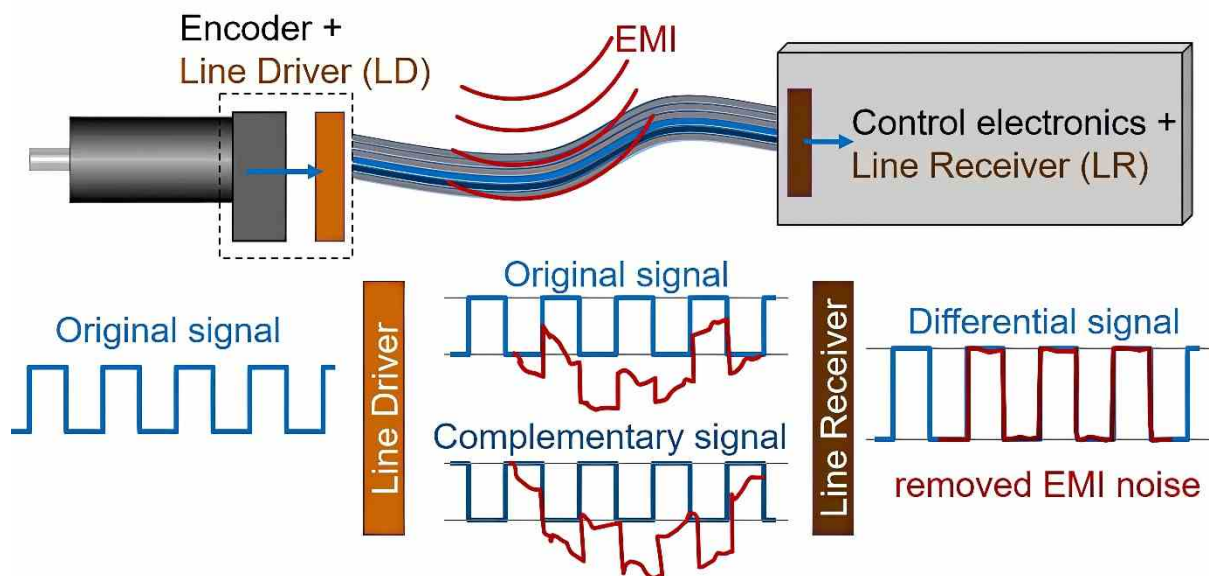
Driver for long distances

- Longer signal lines are possible
- Often amplification of the signal current
- Steeper signal edges (higher frequencies and better use of signals possible)
- Less overshoot at signal edges



Complementary signals

- For differential signal transmission
- In combination with a line receiver that is located in the control electronics, the signal transmission better protected against electromagnetic interference (EMI)
- Particular important for positioning applications



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Possible combinations of encoder and Line Driver/Receiver

Encoder with Line Driver and controller with Line Receiver

Advantages:

- Signal lines protected against electromagnetic interferences
- Long signal lines possible
- Sufficiently high driver currents
- Steep signal edges

Disadvantages:

- Possible higher costs: need of Line Driver and Line Receiver

Encoder with Line Driver and controller without Line Receiver

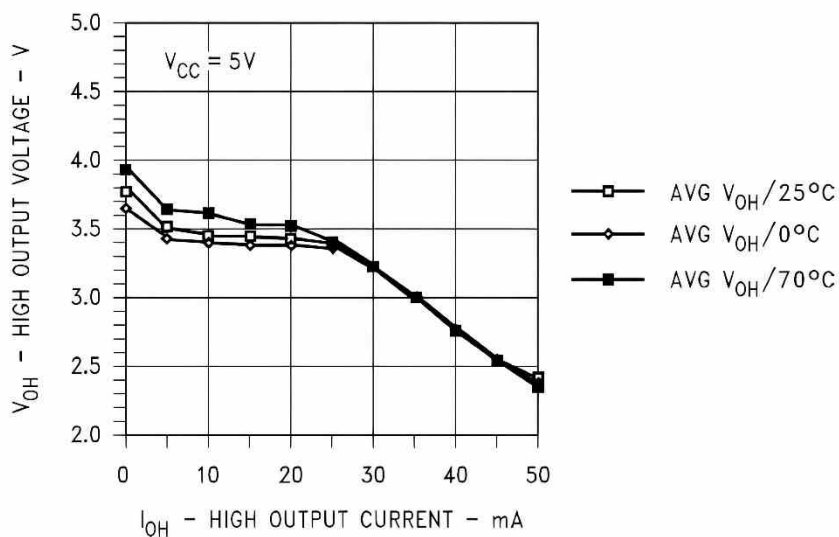
Advantages:

- Better signal, steeper signal edges, better defined signal levels

Disadvantages:

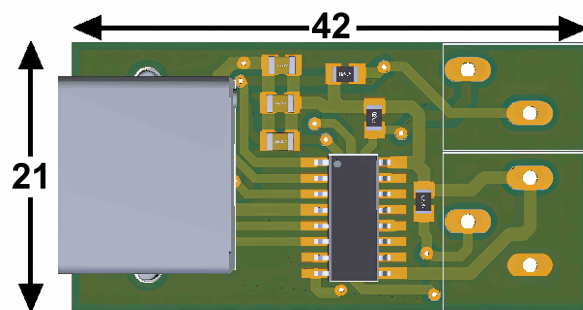
- Encoder signals not protected against EMI
- Maximum signal levels in the range of 3.5V to 4.0V (see below Line driver chart)

DS26LS31CN V_{OH} vs I_{OH} vs T_A



DS005778-9

DIMENSIONS



Encoder without Line Driver and controller without Line Receiver

Advantages:

- Lower costs
- Less cables

Disadvantages:

- Encoder signals not protected against EMI (loss of position information)
- For shorter lines only
- Flatter signal edges



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Encoder: channels A and B, phase shift and direction of rotation

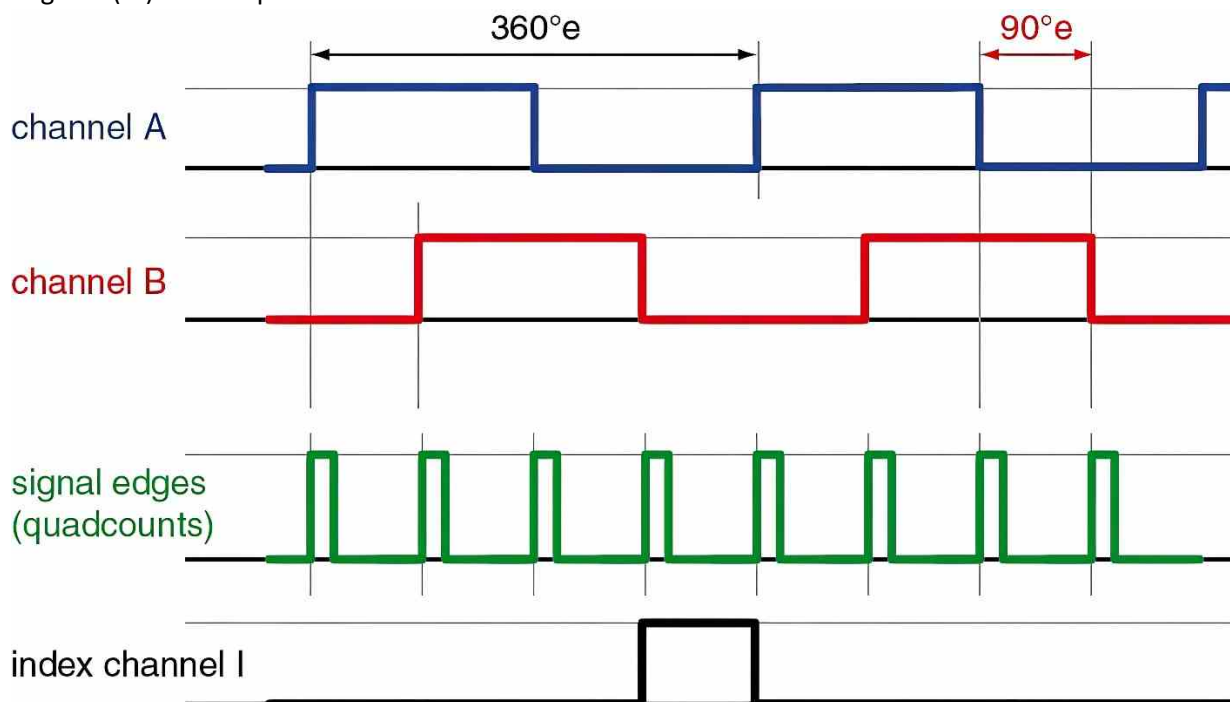
Incremental encoder do have two lines (channels A and B).

Why and what is the relative phase shift depending on the direction of rotation?

Incremental encoders produce a series of electrical high-low pulses. From these pulses the electronics gains information such as

- by **how much** (which angle) has the motor shaft rotated (counting the number of pulses)
- **how fast** is the motor shaft rotating (e.g. number of pulses per millisecond)

Unfortunately with one line only the signal looks the same if rotating clockwise (cw) or counter clockwise (ccw). Therefore, a **second line (channel B)** is needed having its signal shifted by 90 electrical degrees ($^{\circ}e$) with respect to channel A.



This phase shift is needed to determine the direction of rotation. Depending on direction of rotation the signal of channel A is preceding channel B or vice versa.

For encoder the following definition applies (if not specified otherwise):

- If the motor shaft rotates clockwise (CW), channel A leads channel B.
- If the motor shaft rotates counter clockwise (CCW), channel B leads channel A.

Definition of direction of rotation of motors

The same as the direction of the shaft seen from outside onto the mounting flange (load side) of the motor.

Quadcounts enhance resolution

Controller evaluate the signal edges of the encoder signals. This results in a four times higher positioning resolution relative to the counts per turn of the encoder. The technical term for this is quadcounts or states.



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