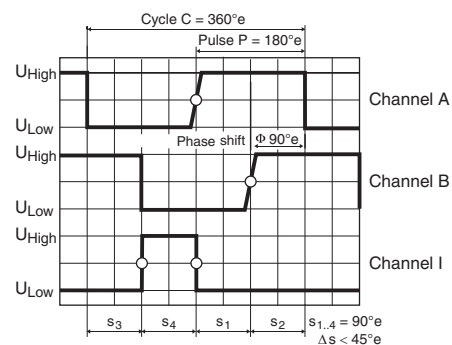
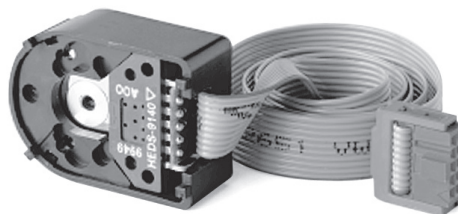
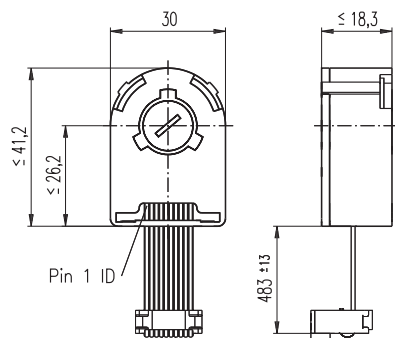


# Encoder HEDL 5540 500 CPT, 3 Channels, with Line Driver RS 422



Direction of rotation cw (definition cw p. 48)

- Stock program
- Standard program
- Special program (on request)

## Article Numbers

| 110512 | 110514 | 110516 | 110518 |
|--------|--------|--------|--------|
|--------|--------|--------|--------|

| Type                           |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|
| Counts per turn                | 500   | 500   | 500   | 500   |
| Number of channels             | 3     | 3     | 3     | 3     |
| Max. operating frequency (kHz) | 100   | 100   | 100   | 100   |
| Max. speed (rpm)               | 12000 | 12000 | 12000 | 12000 |
| Shaft diameter (mm)            | 3     | 4     | 6     | 8     |



## maxon Modular System

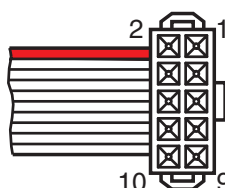
| + Motor          | Page | + Gearhead           | Page    | + Brake | Page | Overall length [mm] / • see Gearhead |
|------------------|------|----------------------|---------|---------|------|--------------------------------------|
| RE 50, 200 W     | 83   |                      |         |         |      | 128.7                                |
| RE 50, 200 W     | 83   | GP 52, 4 - 30 Nm     | 246     |         |      | •                                    |
| RE 50, 200 W     | 83   | GP 62, 8 - 50 Nm     | 247     |         |      | •                                    |
| RE 65, 250 W     | 84   |                      |         |         |      | 157.3                                |
| RE 65, 250 W     | 84   | GP 81, 20 - 120 Nm   | 248     |         |      | •                                    |
| EC 32, 80 W      | 156  |                      |         |         |      | 78.4                                 |
| EC 32, 80 W      | 156  | GP 32, 0.75 - 4.5 Nm | 234     |         |      | •                                    |
| EC 32, 80 W      | 156  | GP 32, 0.75 - 6.0 Nm | 236/238 |         |      | •                                    |
| EC 32, 80 W      | 156  | GP 32 S              | 255-257 |         |      | •                                    |
| EC 40, 170 W     | 157  |                      |         |         |      | 103.3                                |
| EC 40, 170 W     | 157  | GP 42, 3.0 - 15 Nm   | 242     |         |      | •                                    |
| EC 40, 170 W     | 157  | GP 52, 4.0 - 30 Nm   | 245     |         |      | •                                    |
| EC-max 30, 40 W  | 168  |                      |         |         |      | 62.6                                 |
| EC-max 30, 40 W  | 168  | GP 32, 1 - 6 Nm      | 238     |         |      | •                                    |
| EC-max 30, 40 W  | 168  |                      |         | AB 20   | 328  | 101.7                                |
| EC-max 30, 40 W  | 168  | GP 32, 1 - 6 Nm      | 238     | AB 20   | 328  | •                                    |
| EC-max 30, 40 W  | 168  | GP 32 S              |         |         |      | •                                    |
| EC-max 30, 40 W  | 168  | GP 32, 4.0 - 8.0 Nm  | 239     |         |      |                                      |
| EC-max 30, 60 W  | 169  |                      |         |         |      | 84.6                                 |
| EC-max 30, 60 W  | 169  | GP 32, 4.0 - 8.0 Nm  | 239     |         |      |                                      |
| EC-max 30, 60 W  | 169  | GP 42, 3 - 15 Nm     | 243     |         |      | •                                    |
| EC-max 30, 60 W  | 169  |                      |         | AB 20   | 328  | 120.4                                |
| EC-max 30, 60 W  | 169  | GP 42, 3 - 15 Nm     | 243     | AB 20   | 328  | •                                    |
| EC-max 40, 70 W  | 170  |                      |         |         |      | 81.4                                 |
| EC-max 40, 70 W  | 170  | GP 42, 3 - 15 Nm     | 243     |         |      | •                                    |
| EC-max 40, 70 W  | 170  |                      |         | AB 28   | 329  | 121.4                                |
| EC-max 40, 70 W  | 170  | GP 42, 3 - 15 Nm     | 243     | AB 28   | 329  | •                                    |
| EC-max 40, 120 W | 171  |                      |         |         |      | 111.4                                |
| EC-max 40, 120 W | 171  | GP 52, 4 - 30 Nm     | 246     |         |      | •                                    |
| EC-max 40, 120 W | 171  |                      |         | AB 28   | 329  | 140.8                                |
| EC-max 40, 120 W | 171  | GP 52, 4 - 30 Nm     | 246     | AB 28   | 329  | •                                    |

## Technical Data

|                                                                                  |                                  |
|----------------------------------------------------------------------------------|----------------------------------|
| Supply voltage $V_{CC}$                                                          | 5 V $\pm$ 10%                    |
| Output signal                                                                    | EIA Standard RS 422              |
| driver used:                                                                     | DS26LS31                         |
| Phase shift $\Phi$                                                               | 90°e $\pm$ 45°e                  |
| Signal rise time<br>(typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 180 ns                           |
| Signal fall time<br>(typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 40 ns                            |
| Index pulse width                                                                | 90°e                             |
| Operating temperature range                                                      | -40...+100°C                     |
| Moment of inertia of code wheel                                                  | $\leq 0.6$ gcm <sup>2</sup>      |
| Max. angular acceleration                                                        | 250000 rad s <sup>-2</sup>       |
| Output current per channel                                                       | min. -20 mA, max. 20 mA          |
| Option                                                                           | 1000 Counts per turn, 2 Channels |

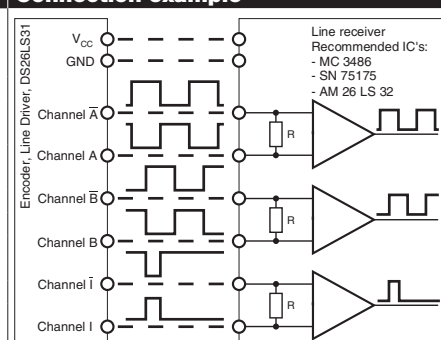
The index signal I is synchronised with channel A or B.

## Pin Allocation



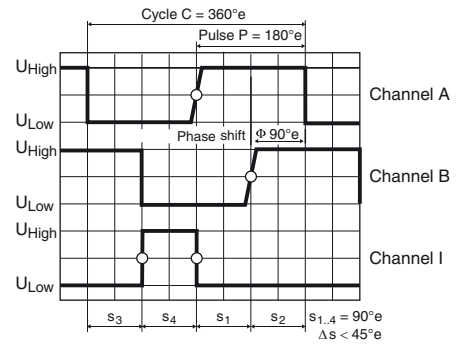
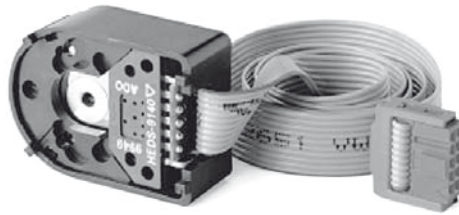
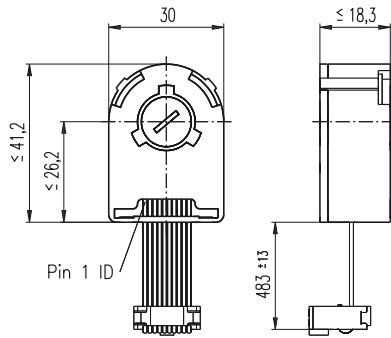
- 1 N.C.
  - 2  $V_{CC}$
  - 3 GND
  - 4 N.C.
  - 5 Channel A
  - 6 Channel A
  - 7 Channel B
  - 8 Channel B
  - 9 Channel I (Index)
  - 10 Channel I (Index)
- Pin type DIN 41651/  
EN 60603-13  
flat band cable AWG 28

## Connection example



Terminal resistance R = typical 120  $\Omega$

# Encoder HEDL 5540 500 CPT, 3 Channels, with Line Driver RS 422



Direction of rotation cw (definition cw p. 48)

- Stock program
- Standard program
- Special program (on request)

## Article Numbers

110512 110514 110516

| Type                           |       |       |       |
|--------------------------------|-------|-------|-------|
| Counts per turn                | 500   | 500   | 500   |
| Number of channels             | 3     | 3     | 3     |
| Max. operating frequency (kHz) | 100   | 100   | 100   |
| Max. speed (rpm)               | 12000 | 12000 | 12000 |
| Shaft diameter (mm)            | 3     | 4     | 6     |

## maxon Modular System

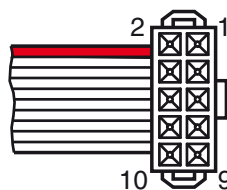
| + Motor      | Page    | + Gearhead           | Page    | + Brake | Page | Overall length [mm] / ● see Gearhead |
|--------------|---------|----------------------|---------|---------|------|--------------------------------------|
| RE 25        | 77/79   |                      |         |         |      | 75.3                                 |
| RE 25        | 77/79   | GP 26/GP 32          | 231/234 |         |      | ●                                    |
| RE 25        | 77/79   | KD 32, 1.0 - 4.5 Nm  | 240     |         |      | ●                                    |
| RE 25        | 77/79   | GP 32, 0.75 - 6.0 Nm | 235/237 |         |      | ●                                    |
| RE 25        | 77/79   | GP 32 S              | 255-257 |         |      | ●                                    |
| RE 25, 20 W  | 79      |                      |         | AB 28   | 330  | 105.8                                |
| RE 25, 20 W  | 79      | GP 26/GP 32          | 231/234 | AB 28   | 330  | ●                                    |
| RE 25, 20 W  | 79      | KD 32, 1.0 - 4.5 Nm  | 240     | AB 28   | 330  | ●                                    |
| RE 25, 20 W  | 79      | GP 32, 0.75 - 6.0 Nm | 235/237 | AB 28   | 330  | ●                                    |
| RE 25, 20 W  | 79      | GP 32 S              | 255-257 | AB 28   | 330  | ●                                    |
| RE 35, 90 W  | 81      |                      |         |         |      | 91.7                                 |
| RE 35, 90 W  | 81      | GP 32, 0.75 - 4.5 Nm | 234     |         |      | ●                                    |
| RE 35, 90 W  | 81      | GP 32, 0.75 - 6.0 Nm | 236/237 |         |      | ●                                    |
| RE 35, 90 W  | 81      | GP 32, 4.0 - 8.0 Nm  | 239     |         |      | ●                                    |
| RE 35, 90 W  | 81      | GP 42, 3.0 - 15 Nm   | 242     |         |      | ●                                    |
| RE 35, 90 W  | 81      | GP 32 S              | 255-257 |         |      | ●                                    |
| RE 35, 90 W  | 81      |                      |         | AB 28   | 330  | 124.3                                |
| RE 35, 90 W  | 81      | GP 32, 0.75 - 4.5 Nm | 234     | AB 28   | 330  | ●                                    |
| RE 35, 90 W  | 81      | GP 32, 0.75 - 6.0 Nm | 236/237 | AB 28   | 330  | ●                                    |
| RE 35, 90 W  | 81      | GP 42, 3.0 - 15 Nm   | 242     | AB 28   | 330  | ●                                    |
| RE 35, 90 W  | 81      | GP 32 S              | 255-257 | AB 28   | 330  | ●                                    |
| RE 35, 90 W  | 81      | GP 32, 4.0 - 8.0 Nm  | 239     | AB 28   | 330  | ●                                    |
| RE 40, 150 W | 82      |                      |         |         |      | 91.7                                 |
| RE 40, 150 W | 82      | GP 42, 3.0 - 15 Nm   | 242     |         |      | ●                                    |
| RE 40, 150 W | 82      | GP 52, 4.0 - 30 Nm   | 245     |         |      | ●                                    |
| RE 40, 150 W | 82      |                      |         | AB 28   | 330  | 124.3                                |
| RE 40, 150 W | 82      | GP 42, 3.0 - 15 Nm   | 242     | AB 28   | 330  | ●                                    |
| RE 40, 150 W | 82      | GP 52, 4.0 - 30 Nm   | 245     | AB 28   | 330  | ●                                    |
| A-max 26     | 102-108 |                      |         |         |      | 63.1                                 |
| A-max 26     | 102-108 | GP 26, 0.5 - 4.5 Nm  | 231/232 |         |      | ●                                    |
| A-max 26     | 102-108 | GS 30/GP 32          | 233/236 |         |      | ●                                    |
| A-max 26     | 102-108 | GP 32, 0.75 - 6.0 Nm | 235/238 |         |      | ●                                    |
| A-max 26     | 102-108 | GS 38, 0.1 - 0.6 Nm  | 241     |         |      | ●                                    |
| A-max 26     | 102-108 | GP 32 S              | 255-257 |         |      | ●                                    |
| A-max 32     | 110/112 |                      |         |         |      | 82.3                                 |
| A-max 32     | 110/112 | GP 32, 0.75 - 6.0 Nm | 236/238 |         |      | ●                                    |
| A-max 32     | 110/112 | GS 38, 0.1 - 0.6 Nm  | 241     |         |      | ●                                    |
| A-max 32     | 110/112 | GP 32 S              | 255-257 |         |      | ●                                    |

## Technical Data

|                                                                                  |                                  |
|----------------------------------------------------------------------------------|----------------------------------|
| Supply voltage $V_{CC}$                                                          | 5 V $\pm$ 10%                    |
| Output signal                                                                    | EIA Standard RS 422              |
| driver used:                                                                     | DS26LS31                         |
| Phase shift $\Phi$                                                               | 90°e $\pm$ 45°e                  |
| Signal rise time<br>(typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 180 ns                           |
| Signal fall time<br>(typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 40 ns                            |
| Index pulse width                                                                | 90°e                             |
| Operating temperature range                                                      | -40...+100°C                     |
| Moment of inertia of code wheel                                                  | $\leq 0.6$ gcm <sup>2</sup>      |
| Max. angular acceleration                                                        | 250 000 rad s <sup>-2</sup>      |
| Output current per channel                                                       | min. -20 mA, max. 20 mA          |
| Option                                                                           | 1000 Counts per turn, 2 Channels |

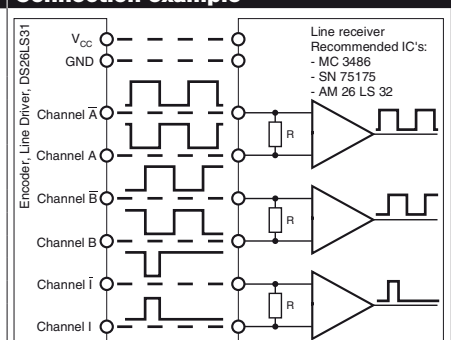
The index signal I is synchronised with channel A or B.

## Pin Allocation



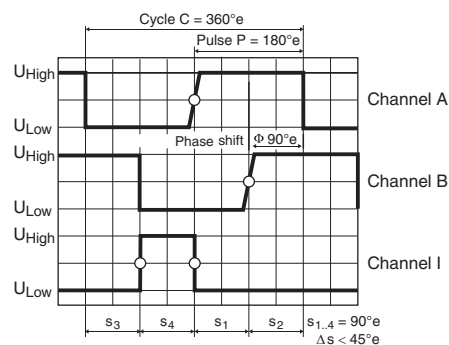
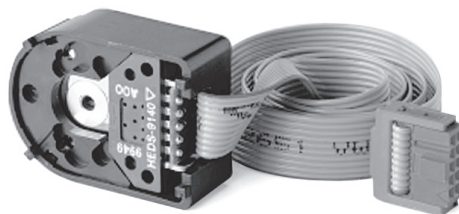
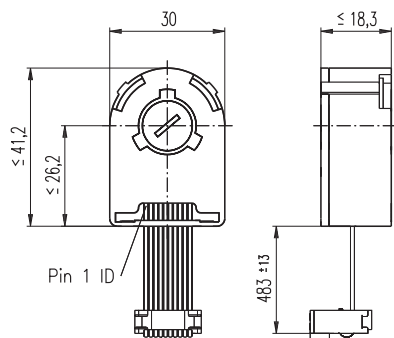
- 1 N.C.
  - 2  $V_{CC}$
  - 3 GND
  - 4 N.C.
  - 5 Channel A
  - 6 Channel A
  - 7 Channel B
  - 8 Channel B
  - 9 Channel I (Index)
  - 10 Channel I (Index)
- Pin type DIN 41651/  
EN 60603-13  
flat band cable AWG 28

## Connection example



Terminal resistance R = typical 120  $\Omega$

# Encoder HEDL 5540 500 CPT, 3 Channels, with Line Driver RS 422



Direction of rotation cw (definition cw p. 48)

- Stock program
- Standard program
- Special program (on request)

## Article Numbers

| 110512 | 110514 | 110516 |
|--------|--------|--------|
|--------|--------|--------|

| Type                           |       |       |       |
|--------------------------------|-------|-------|-------|
| Counts per turn                | 500   | 500   | 500   |
| Number of channels             | 3     | 3     | 3     |
| Max. operating frequency (kHz) | 100   | 100   | 100   |
| Max. speed (rpm)               | 12000 | 12000 | 12000 |
| Shaft diameter (mm)            | 3     | 4     | 6     |

## maxon Modular System

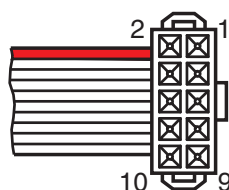
| + Motor       | Page | + Gearhead           | Page    | + Brake | Page | Overall length [mm] / • see Gearhead |
|---------------|------|----------------------|---------|---------|------|--------------------------------------|
| RE 25         | 78   |                      |         |         |      | 63.8                                 |
| RE 25         | 78   | GP 26/GP 32          | 231/234 |         |      | •                                    |
| RE 25         | 78   | KD 32, 1.0 - 4.5 Nm  | 240     |         |      | •                                    |
| RE 25         | 78   | GP 32, 0.75 - 6.0 Nm | 235/237 |         |      | •                                    |
| RE 25         | 78   | GP 32 S              | 255-257 |         |      | •                                    |
| RE 25, 20 W   | 78   |                      |         | AB 28   | 330  | 94.3                                 |
| RE 25, 20 W   | 78   | GP 26/GP 32          | 231/234 | AB 28   | 330  | •                                    |
| RE 25, 20 W   | 78   | KD 32, 1.0 - 4.5 Nm  | 240     | AB 28   | 330  | •                                    |
| RE 25, 20 W   | 78   | GP 32, 0.75 - 6.0 Nm | 235/237 | AB 28   | 330  | •                                    |
| RE 25, 20 W   | 78   | GP 32 S              | 255-257 | AB 28   | 330  | •                                    |
| EC-4pole 22   | 175  |                      |         |         |      | 70.1                                 |
| EC-4pole 22   | 175  | GP 22/GP 32          | 227/238 |         |      | •                                    |
| EC-4pole 22   | 175  | GP 32 S              | 255-257 |         |      | •                                    |
| EC-4pole 22   | 176  |                      |         |         |      | 87.5                                 |
| EC-4pole 22   | 176  | GP 22/GP 32          | 227/238 |         |      | •                                    |
| EC-4pole 22   | 176  | GP 32 S              | 255-257 |         |      | •                                    |
| EC-4pole 30   | 177  |                      |         |         |      | 67.6                                 |
| EC-4pole 30   | 177  | GP 32, 4.0 - 8.0 Nm  | 239     |         |      | •                                    |
| EC-4pole 30   | 177  | GP 42, 3 - 15 Nm     | 243     |         |      | •                                    |
| EC-4pole 30   | 177  |                      |         | AB 20   | 328  | 104.0                                |
| EC-4pole 30   | 177  | GP 32, 4.0 - 8.0 Nm  | 239     | AB 20   | 328  | •                                    |
| EC-4pole 30   | 177  | GP 42, 3 - 15 Nm     | 243     | AB 20   | 328  | •                                    |
| EC-4pole 30   | 178  |                      |         |         |      | 84.6                                 |
| EC-4pole 30   | 178  | GP 32, 4.0 - 8.0 Nm  | 239     |         |      | •                                    |
| EC-4pole 30   | 178  | GP 42, 3 - 15 Nm     | 243     |         |      | •                                    |
| EC-4pole 30   | 178  |                      |         | AB 20   | 328  | 121.0                                |
| EC-4pole 30   | 178  | GP 32, 4.0 - 8.0 Nm  | 239     | AB 20   | 328  | •                                    |
| EC-4pole 30   | 178  | GP 42, 3 - 15 Nm     | 243     | AB 20   | 328  | •                                    |
| EC-i 40, 50 W | 190  |                      |         |         |      | 49.0                                 |
| EC-i 40, 50 W | 190  | GP 32, 1 - 6 Nm      | 238     |         |      | •                                    |
| EC-i 40, 50 W | 190  | GP 32 S              | 255-257 |         |      | •                                    |
| EC-i 40, 70 W | 191  |                      |         |         |      | 59.0                                 |
| EC-i 40, 70 W | 191  | GP 32, 1 - 6 Nm      | 238     |         |      | •                                    |
| EC-i 40, 70 W | 191  | GP 32 S              | 255-257 |         |      | •                                    |

## Technical Data

|                                                                               |                                  |
|-------------------------------------------------------------------------------|----------------------------------|
| Supply voltage $V_{CC}$                                                       | 5 V $\pm$ 10%                    |
| Output signal driver used:                                                    | EIA Standard RS 422 DS26LS31     |
| Phase shift $\Phi$                                                            | 90° $\pm$ 45°e                   |
| Signal rise time (typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 180 ns                           |
| Signal fall time (typically, at $C_L = 25$ pF, $R_L = 2.7$ k $\Omega$ , 25°C) | 40 ns                            |
| Index pulse width                                                             | 90°e                             |
| Operating temperature range                                                   | -40...+100°C                     |
| Moment of inertia of code wheel                                               | $\leq 0.6$ gcm <sup>2</sup>      |
| Max. angular acceleration                                                     | 250 000 rad s <sup>-2</sup>      |
| Output current per channel                                                    | min. -20 mA, max. 20 mA          |
| Option                                                                        | 1000 Counts per turn, 2 Channels |

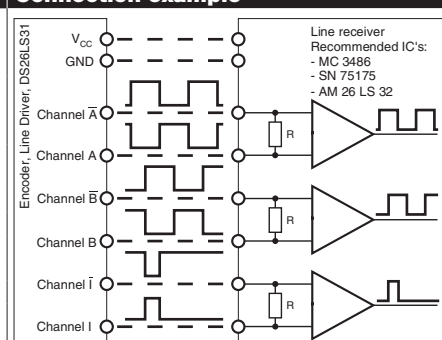
The index signal I is synchronised with channel A or B.

## Pin Allocation



- 1 N.C.
  - 2  $V_{CC}$
  - 3 GND
  - 4 N.C.
  - 5 Channel A
  - 6 Channel A
  - 7 Channel B
  - 8 Channel B
  - 9 Channel I (Index)
  - 10 Channel I (Index)
- Pin type DIN 41651/  
EN 60603-13  
flat band cable AWG 28

## Connection example



Terminal resistance R = typical 120  $\Omega$