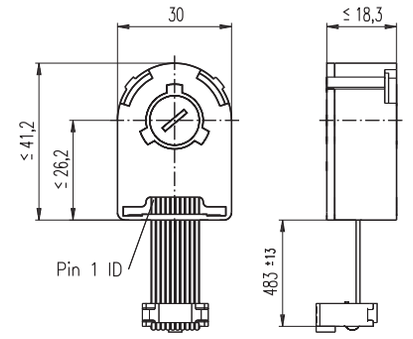
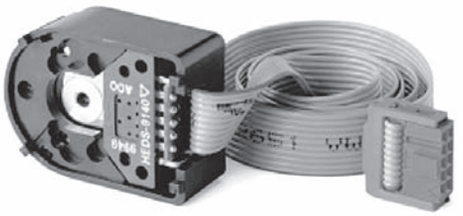
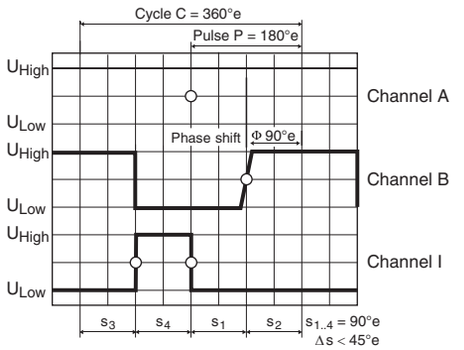
# Encoder HEDL 5540 500 CPT, 3 Channels, with Line Driver RS 422





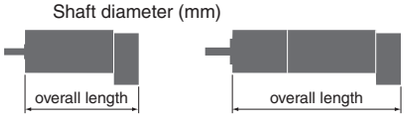






Direction of rotation cw (definition cw p. 70)

Stock program
Standard program
Special program (on request)

| Part 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

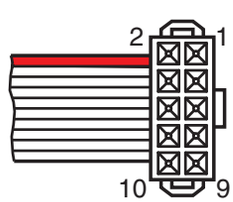
| + Motor | Page | + Gearhead | Page | + Brake | Page | Overall length [mm] / ● see Gearhead | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE 25 | 99/101 | | | | | 75.3 | | | | | | | | |
| RE 25 | 99/101 | GP 26/GP 32 | 257/259 | | | ● | | | | | | | | |
| RE 25 | 99/101 | KD 32, 1.0 - 4.5 Nm | 268 | | | ● | | | | | | | | |
| RE 25 | 99/101 | GP 32, 0.75 - 6.0 Nm | 260/263 | | | ● | | | | | | | | |
| RE 25 | 99/101 | GP 32 S | 286-288 | | | ● | | | | | | | | |
| RE 25, 20 W | 101 | | | AB 28 | 348 | 105.8 | | | | | | | | |
| RE 25, 20 W | 101 | GP 26/GP 32 | 257/259 | AB 28 | 348 | ● | | | | | | | | |
| RE 25, 20 W | 101 | KD 32, 1.0 - 4.5 Nm | 268 | AB 28 | 348 | ● | | | | | | | | |
| RE 25, 20 W | 101 | GP 32, 0.75 - 6.0 Nm | 260/263 | AB 28 | 348 | ● | | | | | | | | |
| RE 25, 20 W | 101 | GP 32 S | 286-288 | AB 28 | 348 | ● | | | | | | | | |
| RE 35, 90 W | 104 | | | | | | 91.7 | | | | | | | |
| RE 35, 90 W | 104 | GP 32, 0.75 - 8.0 Nm | 259-266 | | | | ● | | | | | | | |
| RE 35, 90 W | 104 | GP 42, 3.0 - 15 Nm | 270 | | | | ● | | | | | | | |
| RE 35, 90 W | 104 | GP 32 S | 286-288 | | | | ● | | | | | | | |
| RE 35, 90 W | 104 | | | AB 28 | 348 | 124.3 | | | | | | | | |
| RE 35, 90 W | 104 | GP 32, 0.75 - 8.0 Nm | 259-266 | AB 28 | 348 | ● | | | | | | | | |
| RE 35, 90 W | 104 | GP 42, 3.0 - 15 Nm | 270 | AB 28 | 348 | ● | | | | | | | | |
| RE 35, 90 W | 104 | GP 32 S | 286-288 | AB 28 | 348 | ● | | | | | | | | |
| RE 40, 150 W | 105 | | | | | | 91.7 | | | | | | | |
| RE 40, 150 W | 105 | GP 42, 3.0 - 15 Nm | 270 | | | | ● | | | | | | | |
| RE 40, 150 W | 105 | GP 52, 4.0 - 30 Nm | 273 | | | | ● | | | | | | | |
| RE 40, 150 W | 105 | | | AB 28 | 348 | 124.3 | | | | | | | | |
| RE 40, 150 W | 105 | GP 42, 3.0 - 15 Nm | 270 | AB 28 | 348 | ● | | | | | | | | |
| RE 40, 150 W | 105 | GP 52, 4.0 - 30 Nm | 273 | AB 28 | 348 | ● | | | | | | | | |
| A-max 26 | 126-132 | | | | | 63.1 | | | | | | | | |
| A-max 26 | 126-132 | GP 26, 0.75 - 4.5 Nm | 257 | | | ● | | | | | | | | |
| A-max 26 | 126-132 | GS 30/GP 32 | 258/261 | | | ● | | | | | | | | |
| A-max 26 | 126-132 | GP 32, 0.75 - 6.0 Nm | 260/264 | | | ● | | | | | | | | |
| A-max 26 | 126-132 | GS 38, 0.1 - 0.6 Nm | 269 | | | ● | | | | | | | | |
| A-max 26 | 126-132 | GP 32 S | 286-288 | | | ● | | | | | | | | |
| A-max 32 | 134/136 | | | | | | 82.3 | | | | | | | |
| A-max 32 | 134/136 | GP 32, 0.75 - 6.0 Nm | 259-265 | | | | ● | | | | | | | |
| A-max 32 | 134/136 | GS 38, 0.1 - 0.6 Nm | 269 | | | | ● | | | | | | | |
| A-max 32 | 134/136 | GP 32 S | 286-288 | | | | ● | | | | | | | |

## Technical Data

| | |
|---|---|
| Supply voltage $V_{CC}$ | 5 V ± 10% |
| Output signal | EIA Standard RS 422 |
| driver used: | DS26LS31 |
| Phase shift Φ | 90°e ± 45°e |
| Signal rise time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 180 ns |
| Signal fall time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 40 ns |
| Index pulse width | 90°e |
| Operating temperature range | -40...+100°C |
| Moment of inertia of code wheel | ≤ 0.6 gcm² |
| Max. angular acceleration | 250000 rad s$^{-2}$ |
| 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.

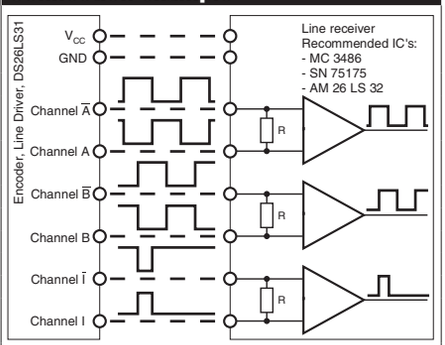
## Pin Allocation




| | |
|---|---|
| 1 | N.C. |
| 2 | $V_{CC}$ |
| 3 | GND |
| 4 | N.C. |
| 5 | Channel $\overline{A}$ |
| 6 | Channel A |
| 7 | Channel $\overline{B}$ |
| 8 | Channel B |
| 9 | Channel $\overline{I}$ (Index) |
| 10 | Channel I (Index) |

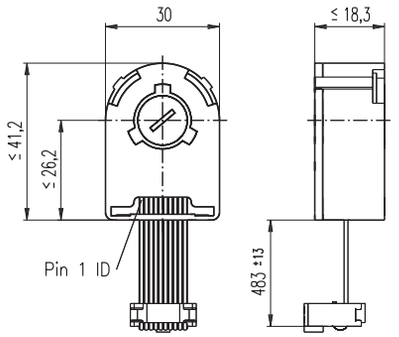
Pin type DIN 41651/
EN 60603-13
flat band cable AWG 28

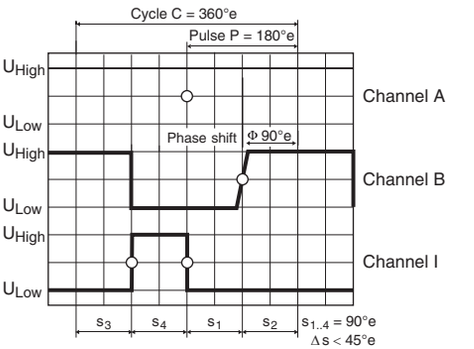
## Connection example




Terminal resistance R = typical 120 Ω

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

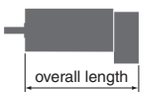


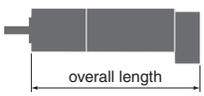




Direction of rotation cw (definition cw p. 70)

Stock program
Standard program
Special program (on request)

| Part 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

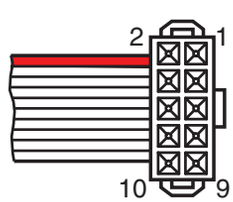
| + Motor | Page | + Gearhead | Page | + Brake | Page | Overall length [mm] / ● see Gearhead | | | |
|---|---|---|---|---|---|---|---|---|---|
| RE 50, 200 W | 106 | | | | | | | | 128.7 |
| RE 50, 200 W | 106 | GP 52, 4 - 30 Nm | 274 | | | | | | ● |
| RE 50, 200 W | 106 | GP 62, 8 - 50 Nm | 275 | | | | | | ● |
| RE 65, 250 W | 107 | | | | | | | | 157.3 |
| RE 65, 250 W | 107 | GP 81, 20 - 120 Nm | 276 | | | | | | ● |
| EC 32, 80 W | 180 | | | | | | 78.4 | | |
| EC 32, 80 W | 180 | GP 32, 0.75 - 6.0 Nm | 259-265 | | | | ● | | |
| EC 32, 80 W | 180 | GP 32 S | 286-288 | | | | ● | | |
| EC 40, 170 W | 181 | | | | | | | 103.3 | |
| EC 40, 170 W | 181 | GP 42, 3.0 - 15 Nm | 270 | | | | | ● | |
| EC 40, 170 W | 181 | GP 52, 4.0 - 30 Nm | 273 | | | | | ● | |
| EC-max 30, 40 W | 192 | | | | | | 62.6 | | |
| EC-max 30, 40 W | 192 | GP 32, 1 - 6 Nm | 264 | | | | ● | | |
| EC-max 30, 40 W | 192 | | | AB 20 | 346 | | 98.4 | | |
| EC-max 30, 40 W | 192 | GP 32, 1 - 6 Nm | 264 | AB 20 | 346 | | ● | | |
| EC-max 30, 40 W | 192 | GP 32 S | 286-288 | | | | ● | | |
| EC-max 30, 40 W | 192 | GP 32, 4.0 - 8.0 Nm | 266 | | | | | | |
| EC-max 30, 60 W | 193 | | | | | | 84.6 | | |
| EC-max 30, 60 W | 193 | GP 32, 4.0 - 8.0 Nm | 266 | | | | | | |
| EC-max 30, 60 W | 193 | GP 42, 3 - 15 Nm | 271 | | | | ● | | |
| EC-max 30, 60 W | 193 | | | AB 20 | 346 | | 120.4 | | |
| EC-max 30, 60 W | 193 | GP 42, 3 - 15 Nm | 271 | AB 20 | 346 | | ● | | |
| EC-max 40, 70 W | 194 | | | | | | | 81.4 | |
| EC-max 40, 70 W | 194 | GP 42, 3 - 15 Nm | 271 | | | | | ● | |
| EC-max 40, 70 W | 194 | | | AB 28 | 347 | | | 110.7 | |
| EC-max 40, 70 W | 194 | GP 42, 3 - 15 Nm | 271 | AB 28 | 347 | | | ● | |
| EC-max 40, 120 W | 195 | | | | | | | 111.4 | |
| EC-max 40, 120 W | 195 | GP 52, 4 - 30 Nm | 274 | | | | | ● | |
| EC-max 40, 120 W | 195 | | | AB 28 | 347 | | | 140.7 | |
| EC-max 40, 120 W | 195 | GP 52, 4 - 30 Nm | 274 | AB 28 | 347 | | | ● | |

## Technical Data

| | |
|---|---|
| Supply voltage $V_{CC}$ | 5 V ± 10% |
| Output signal | EIA Standard RS 422 |
| driver used: | DS26LS31 |
| Phase shift Φ | 90°e ± 45°e |
| Signal rise time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 180 ns |
| Signal fall time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 40 ns |
| Index pulse width | 90°e |
| Operating temperature range | -40…+100°C |
| Moment of inertia of code wheel | ≤ 0.6 gcm² |
| Max. angular acceleration | 250000 rad s⁻² |
| 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.

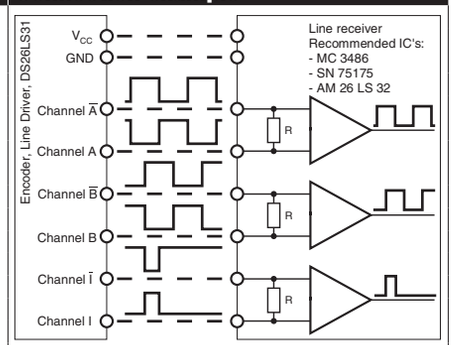
## Pin Allocation




| | |
|---|---|
| 1 | N.C. |
| 2 | $V_{CC}$ |
| 3 | GND |
| 4 | N.C. |
| 5 | Channel $\overline{A}$ |
| 6 | Channel A |
| 7 | Channel $\overline{B}$ |
| 8 | Channel B |
| 9 | Channel $\overline{I}$ (Index) |
| 10 | Channel I (Index) |

Pin type DIN 41651/
EN 60603-13
flat band cable AWG 28

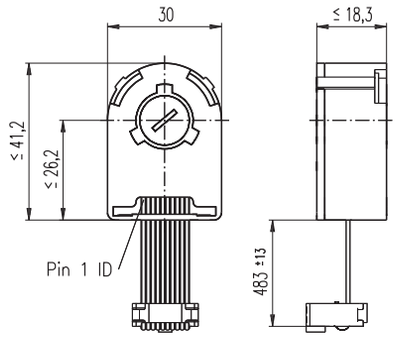
## Connection example

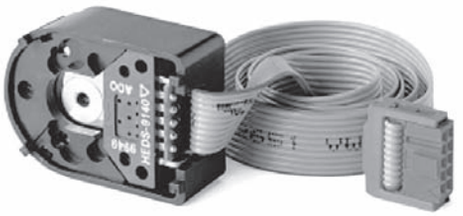


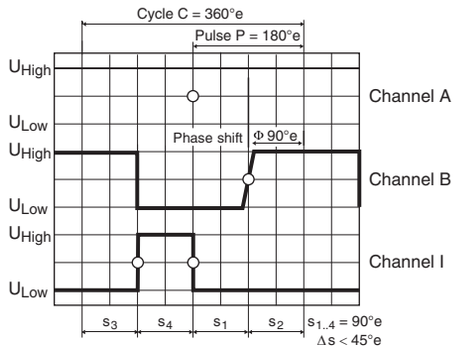

Terminal resistance R = typical 120 Ω

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








Direction of rotation cw (definition cw p. 70)

Stock program
Standard program
Special program (on request)

| Part 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

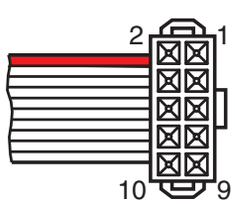
| + Motor | Page | + Gearhead | Page | + Brake | Page | Overall length [mm] / ● see Gearhead | | |
|---|---|---|---|---|---|---|---|---|
| RE 25 | 100 | | | | | 63.8 | | |
| RE 25 | 100 | GP 26/GP 32 | 257/259 | | | ● | | |
| RE 25 | 100 | KD 32, 1.0 - 4.5 Nm | 268 | | | ● | | |
| RE 25 | 100 | GP 32, 0.75 - 6.0 Nm | 260/263 | | | ● | | |
| RE 25 | 100 | GP 32 S | 286-288 | | | ● | | |
| RE 25, 20 W | 100 | | | AB 28 | 348 | 94.3 | | |
| RE 25, 20 W | 100 | GP 26/GP 32 | 257/259 | AB 28 | 348 | ● | | |
| RE 25, 20 W | 100 | KD 32, 1.0 - 4.5 Nm | 268 | AB 28 | 348 | ● | | |
| RE 25, 20 W | 100 | GP 32, 0.75 - 6.0 Nm | 260/263 | AB 28 | 348 | ● | | |
| RE 25, 20 W | 100 | GP 32 S | 286-288 | AB 28 | 348 | ● | | |
| RE 30, 15 W | 102 | | | | | 88.8 | | |
| RE 30, 15 W | 102 | GP 32, 0.75 - 4.5 Nm | 261 | | | ● | | |
| RE 30, 60 W | 103 | | | | | 88.8 | | |
| RE 30, 60 W | 103 | GP 32, 0.75 - 6.0 Nm | 259-265 | | | ● | | |
| RE 30, 60 W | 103 | KD 32, 1.0 - 4.5 Nm | 268 | | | ● | | |
| RE 30, 60 W | 103 | GP 32 S | 286-288 | | | ● | | |
| EC-4pole 22 | 199 | | | | | 70.1 | | |
| EC-4pole 22 | 199 | GP 22/GP 32 | 253/264 | | | ● | | |
| EC-4pole 22 | 199 | GP 32 S | 286-288 | | | ● | | |
| EC-4pole 22 | 200 | | | | | 87.5 | | |
| EC-4pole 22 | 200 | GP 22/GP 32 | 253/264 | | | ● | | |
| EC-4pole 22 | 200 | GP 32 S | 286-288 | | | ● | | |
| EC-4pole 30 | 201 | | | | | | 67.6 | |
| EC-4pole 30 | 201 | GP 32, 4.0 - 8.0 Nm | 266 | | | | ● | |
| EC-4pole 30 | 201 | GP 42, 3 - 15 Nm | 271 | | | | ● | |
| EC-4pole 30 | 201 | | | AB 20 | 346 | | 104.0 | |
| EC-4pole 30 | 201 | GP 32, 4.0 - 8.0 Nm | 266 | AB 20 | 346 | | ● | |
| EC-4pole 30 | 201 | GP 42, 3 - 15 Nm | 271 | AB 20 | 346 | | ● | |
| EC-4pole 30 | 202 | | | | | | 84.6 | |
| EC-4pole 30 | 202 | GP 32, 4.0 - 8.0 Nm | 266 | | | | ● | |
| EC-4pole 30 | 202 | GP 42, 3 - 15 Nm | 271 | | | | ● | |
| EC-4pole 30 | 202 | | | AB 20 | 346 | | 121.0 | |
| EC-4pole 30 | 202 | GP 32, 4.0 - 8.0 Nm | 266 | AB 20 | 346 | | ● | |
| EC-4pole 30 | 202 | GP 42, 3 - 15 Nm | 271 | AB 20 | 346 | | ● | |
| EC-i 40, 50 W | 216 | | | | | | | 49.0 |
| EC-i 40, 50 W | 216 | GP 32, 1 - 6 Nm | 264 | | | | | ● |
| EC-i 40, 50 W | 216 | GP 32 S | 286-288 | | | | | ● |
| EC-i 40, 70 W | 217 | | | | | | | 59.0 |
| EC-i 40, 70 W | 217 | GP 32, 1 - 6 Nm | 264 | | | | | ● |
| EC-i 40, 70 W | 217 | GP 32 S | 286-288 | | | | | ● |

## Technical Data

| | |
|---|---|
| Supply voltage $V_{CC}$ | 5 V ± 10% |
| Output signal | EIA Standard RS 422 |
| driver used: | DS26LS31 |
| Phase shift Φ | 90°e ± 45°e |
| Signal rise time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 180 ns |
| Signal fall time (typically, at $C_L$ = 25 pF, $R_L$ = 2.7 kΩ, 25°C) | 40 ns |
| Index pulse width | 90°e |
| Operating temperature range | -40…+100°C |
| Moment of inertia of code wheel | ≤ 0.6 gcm² |
| Max. angular acceleration | 250000 rad s$^{-2}$ |
| 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.

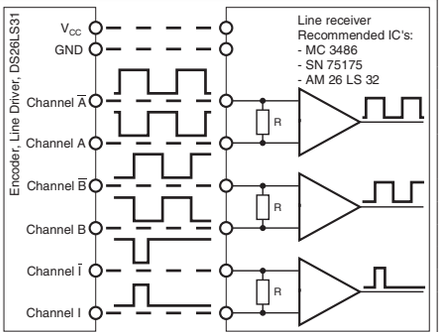
## Pin Allocation




| | |
|---|---|
| 1 | N.C. |
| 2 | $V_{CC}$ |
| 3 | GND |
| 4 | N.C. |
| 5 | Channel $\overline{A}$ |
| 6 | Channel A |
| 7 | Channel $\overline{B}$ |
| 8 | Channel B |
| 9 | Channel $\overline{I}$ (Index) |
| 10 | Channel I (Index) |

Pin type DIN 41651/
EN 60603-13
flat band cable AWG 28

## Connection example




Terminal resistance R = typical 120 Ω