

# Combination

Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10

300...5000 pulses per revolution

POG 9 + ESL



POG 9 + ESL

## Features

- TTL output driver for cable length up to 500 m
- Electronic speed monitoring
- Circuit breaker with up to three selectable threshold speeds
- EURO-flange B10 / solid shaft  $\varnothing$ 11 mm
- Terminal boxes, turn by 180°

## Optional

- Function control with EMS (Enhanced Monitoring System)

## Technical data - electrical ratings (encoder)

|                       |  |
|-----------------------|--|
| Voltage supply        | 9...30 VDC; 5 VDC $\pm$ 5 %                      |
| Consumption w/o load  | $\leq$ 100 mA                                    |
| Pulses per revolution | 300...5000                                       |
| Phase shift           | 90° $\pm$ 20°                                    |
| Scan ratio            | 40...60 %  |
| Reference signal      | Zero pulse, width 90°                            |
| Output frequency      | $\leq$ 120 kHz<br>$\leq$ 300 kHz (on request)    |
| Output signals        | K1, K2, K0 + inverted<br>Error output (only EMS) |
| Output stages         | HTL-P (power linedriver)<br>TTL/RS422            |
| Sensing method        | Optical  |

## Technical data - electrical ratings (speed switches)

|                      |   |
|----------------------|---|
| Switching accuracy   | $\pm$ 4 % ( $\leq$ 1500 rpm)<br>$\pm$ 2 % ( $>$ 1500 rpm) |
| Switching hysteresis | $\leq$ 30 % of switching speed                            |
| Switching delay time | $\leq$ 40 ms  |

### POG 9 + ESL 90

|                           |   |
|---------------------------|---|
| Switching outputs         | 1 output, speed control                   |
| Output switching capacity | $\leq$ 6 A / 250 VAC; $\leq$ 1 A / 48 VDC |
| Minimum switching current | 100 mA                                    |

### POG 9 + ESL 93

|                      |                          |
|----------------------|--------------------------|
| Voltage supply       | 12 VDC $\pm$ 10 %        |
| Consumption w/o load | $\leq$ 5 mA              |
| Switching outputs    | 3 outputs, speed control |
| Current each output  | 40 mA (DC)               |

## Technical data - mechanical design

|                         |   |
|-------------------------|---|
| Shaft type              | $\varnothing$ 11 mm solid shaft   |
| Admitted shaft load     | $\leq$ 250 N axial<br>$\leq$ 350 N radial   |
| Flange                  | EURO flange B10   |
| Protection DIN EN 60529 | IP 56   |
| Operating torque typ.   | 3 Ncm   |
| Rotor moment of inertia | 220 gcm <sup>2</sup>  |
| Materials               | Housing: aluminium die-cast<br>Shaft: stainless steel                             |
| Operating temperature   | -20...+85 °C  |
| Resistance              | IEC 60068-2-6<br>Vibration 5 g, 10-2000 Hz<br>IEC 60068-2-27<br>Shock 150 g, 1 ms |
| Connection              | Terminal box  |
| Weight approx.          | 2 kg  |
| Interference immunity   | EN 61000-6-2  |
| Emitted interference    | EN 61000-6-3  |
| Approval                | CE  |

### POG 9 + ESL 90

|                               |                 |
|-------------------------------|-----------------|
| Speed (n)                     | $\leq$ 6000 rpm |
| Range of switching speed (ns) | 650...6000 rpm  |

### POG 9 + ESL 93

|                               |                   |
|-------------------------------|-------------------|
| Speed (n)                     | $\leq$ 5000 rpm   |
| Range of switching speed (ns) | 3x 200...5000 rpm |

# Combination

## Encoder with integrated electronic speed switch

### Solid shaft with EURO flange B10

#### 300...5000 pulses per revolution

**POG 9 + ESL**

#### Part number

**Encoder with speed switch ESL 90**

POG9 

|  |    |  |  |        |     |
|--|----|--|--|--------|-----|
|  | DN |  |  | +ESL90 | ... |
|--|----|--|--|--------|-----|

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  | <p style="margin: 0;"><u>Switching speed (ns)</u></p> <p style="margin: 0;">... 650...6000 rpm</p>   |
|  |  |  |  | <p style="margin: 0;"><u>Voltage supply / signals</u></p> <p style="margin: 0;">I 9...30 VDC / output circuit HTL with inverted signals</p> <p style="margin: 0;">TTL 5 VDC / output circuit TTL with inverted signals</p> <p style="margin: 0;">R 9...30 VDC / output circuit TTL with inverted signals</p> |
|  |  |  |  | <p style="margin: 0;"><u>Pulse number - see table</u></p>  |
|  |  |  |  | <p style="margin: 0;"><u>Output signals</u></p> <p style="margin: 0;">DN K1, K2, K0</p>  |
|  |  |  |  | <p style="margin: 0;"><u>EMS - Enhanced Monitoring System</u></p> <p style="margin: 0;">Without EMS</p> <p style="margin: 0;">.2 With EMS</p>  |

#### Pulse number

|     |      |      |      |
|-----|------|------|------|
| 300 | 1000 | 2048 | 4096 |
| 500 | 1024 | 2500 | 5000 |
| 512 | 1200 | 3072 |      |

Other pulse numbers on request.  
 \* Please specify the exact switching speed in addition to the part number (factory setted threshold).

#### Accessories

##### Connectors and cables

|       |                           |
|-------|---------------------------|
| HEK 8 | Sensor cable for encoders |
|-------|---------------------------|

##### Mounting accessories

|      |  |
|------|--|
| K 35 | Spring washer coupling for solid shaft ø6...12 mm  |
| K 50 | Spring washer coupling for solid shaft ø11...16 mm |
| K 60 | Spring washer coupling for solid shaft ø11...22 mm |

##### Diagnostic accessories

|           |                       |
|-----------|-----------------------|
| HENQ 1100 | Analyzer for encoders |
|-----------|-----------------------|

##### Relay module for POG 9 + ESL 93

|         |             |
|---------|-------------|
| ES 93 R | Relay modul |
|---------|-------------|

# Combination

Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10

300...5000 pulses per revolution

## POG 9 + ESL

### Part number

Encoder with speed switch ESL 93

POG9 

|  |    |  |  |        |     |     |     |
|--|----|--|--|--------|-----|-----|-----|
|  | DN |  |  | +ESL93 | ... | ... | ... |
|--|----|--|--|--------|-----|-----|-----|

Switching speed 3 (ns3)

... 200...5000 rpm

Switching speed 2 (ns2)

... 200...5000 rpm

Switching speed 1 (ns1)

... 200...5000 rpm

Voltage supply / signals

I 9...30 VDC / output circuit HTL with inverted signals

TTL 5 VDC / output circuit TTL with inverted signals

R 9...30 VDC / output circuit TTL with inverted signals

Pulse number - see table

Output signals

DN K1, K2, K0

EMS - Enhanced Monitoring System

Without EMS

.2 With EMS

### Pulse number

|     |      |      |      |
|-----|------|------|------|
| 300 | 1000 | 2048 | 4096 |
| 500 | 1024 | 2500 | 5000 |
| 512 | 1200 | 3072 |      |

Other pulse numbers on request.

Please indicate the exact switching rotation speeds  
(permanent parameter defined at works).

# Combination

## Encoder with integrated electronic speed switch

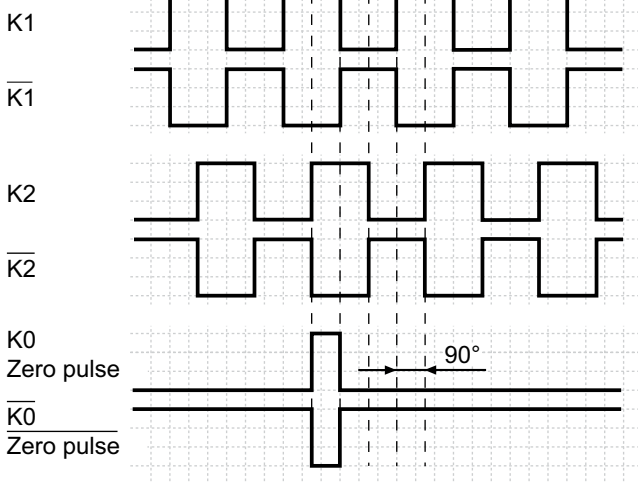
### Solid shaft with EURO flange B10

#### 300...5000 pulses per revolution

**POG 9 + ESL**

### Output signals

At positive rotating direction



### Option EMS: LED status / Error output

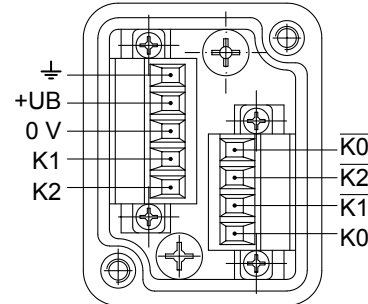
|                   |   |
|-------------------|---|
| Flash light red*  | Error of signal sequence, zero pulse or pulses<br>(Error output = HIGH-LOW alternation) |
| Red               | Overload output driver<br>(Error output = LOW)  |
| Flash light green | Encoder o.k., rotating<br>(Error output = HIGH)   |
| Green             | Encoder o.k., stopped<br>(Error output = HIGH)  |
| No light          | No output voltage connection or wrong connection (Error output = LOW)                   |

\* Only at rotating encoder

### Terminal assignment

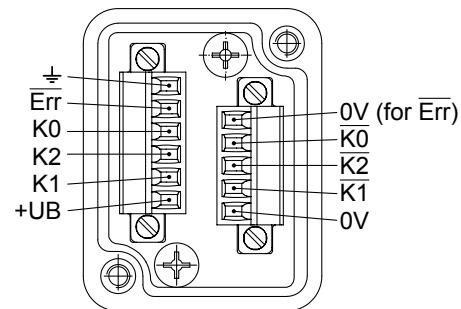
#### View A

Connecting terminal in terminal box POG 9



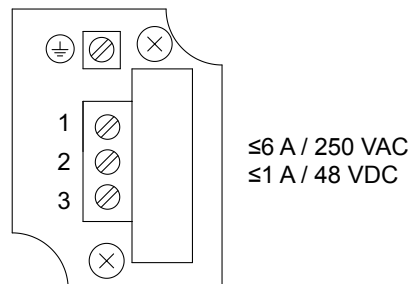
#### Option EMS: View A

Connecting terminal in terminal box POG 9.2



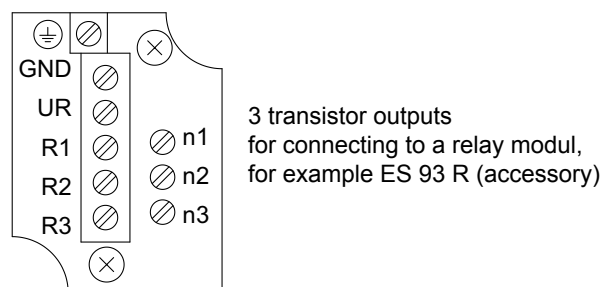
#### View B

Connecting terminal electronic speed switch ESL 90



#### View B

Connecting terminal electronic speed switch ESL 93



# Combination

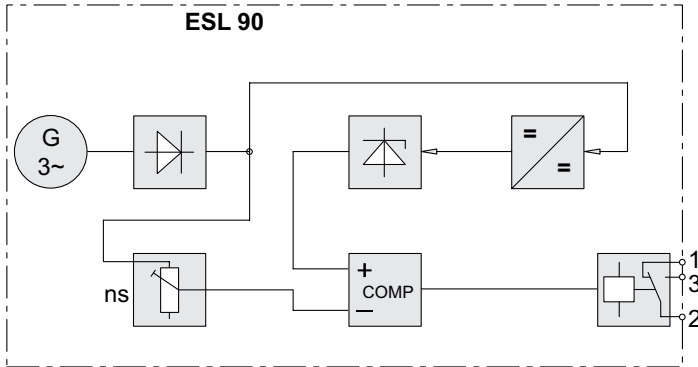
Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10

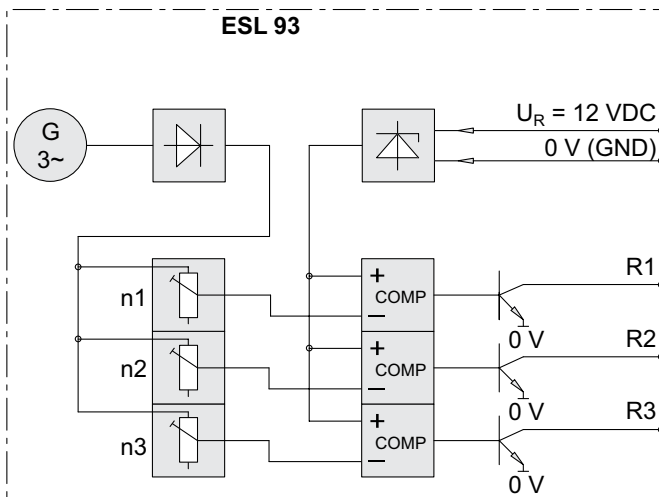
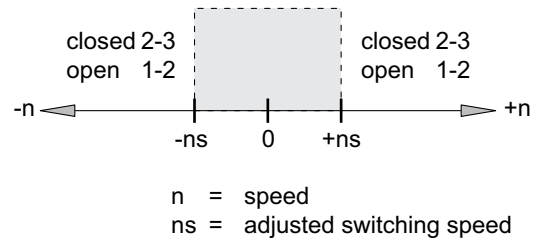
300...5000 pulses per revolution

POG 9 + ESL

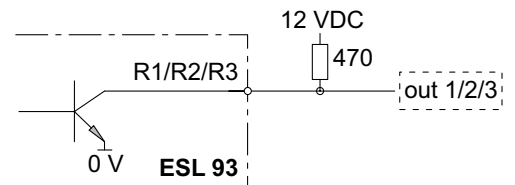
## Block circuit diagram



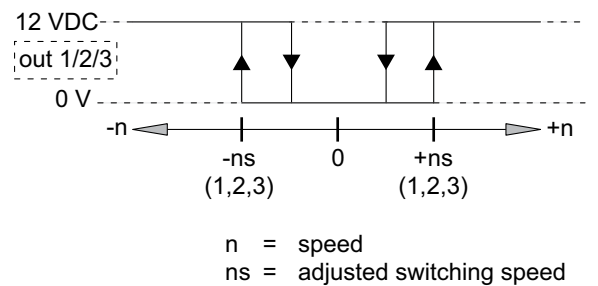
### Switching characteristics



### Recommended output circuit



### Switching characteristics



# Combination

Encoder with integrated electronic speed switch

Solid shaft with EURO flange B10

300...5000 pulses per revolution

POG 9 + ESL

## Dimensions

