

# Spindle Position Displays

Hollow shaft max.  $\varnothing 25$  mm, manual format alignment

Display LCD two lines, interface RS485

## N 140



N 140 with cable output

### Features

- Electronic spindle position display
- Absolute multiturn measuring system
- Display: LCD backlit, two lines
- Actual value and target display
- Hollow shaft  $\varnothing 20$  mm /  $\varnothing 25$  mm
- Interface RS485
- Resolution: 2304 steps/revolution  $\pm 4096$  revolutions

### Technical data - electrical ratings

|                            |                                                                                                                                                                                                              |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voltage supply             | 24 VDC $\pm 10$ %                                                                                                                                                                                            |
| Current consumption        | $\leq 30$ mA                                                                                                                                                                                                 |
| Display                    | LCD, 7-segment display, 2-lines, backlit                                                                                                                                                                     |
| Measuring principle        | Absolute multiturn measuring system                                                                                                                                                                          |
| Measuring range            | -999,99...+9999,99 mm<br>-99.999...+999.999 inch                                                                                                                                                             |
| Steps per turn             | 2304                                                                                                                                                                                                         |
| Number of turns            | 4096 / 12 bit                                                                                                                                                                                                |
| Spindle pitch              | $\leq 23$ mm                                                                                                                                                                                                 |
| Interface                  | RS485 (ASCII protocol)                                                                                                                                                                                       |
| Data memory                | Parameter buffer: EEPROM<br>Current value buffer: >10 years by integrated 3 V lithium battery                                                                                                                |
| Programmable parameters    | Display position horizontal/vertical<br>Measuring unit mm/inch<br>Counting direction<br>Spindle pitch<br>Spindle tolerance<br>Positioning direction<br>Direction arrows<br>Tolerance window<br>Round up/down |
| Standard<br>DIN EN 61010-1 | Protection class II<br>Overvoltage category II<br>Pollution degree 2                                                                                                                                         |
| Emitted interference       | DIN EN 61000-6-3                                                                                                                                                                                             |
| Interference immunity      | DIN EN 61000-6-2                                                                                                                                                                                             |
| Approval                   | UL/cUL                                                                                                                                                                                                       |

### Technical data - mechanical design

|                         |                                                              |
|-------------------------|--------------------------------------------------------------|
| Hollow shaft            | $\varnothing 20$ mm, $\varnothing 25$ mm                     |
| Operating speed         | $\leq 600$ rpm (short-term)                                  |
| Protection DIN EN 60529 | IP 65                                                        |
| Operating temperature   | -10...+50 °C                                                 |
| Storing temperature     | -20...+70 °C                                                 |
| Relative humidity       | 80 % non-condensing                                          |
| Torque support          | Torque pin provided at housing                               |
| E-connection            | - Cable output (30 cm) with male/female connector M16, 5-pin |
| Housing type            | Surface-mount with hollow shaft                              |
| Dimensions W x H x L    | 56 x 100 x 62.5 mm                                           |
| Mounting                | Surface-mount with hollow shaft                              |
| Weight approx.          | 200 g                                                        |
| Material                | Polycarbonate black, UL 94V-0                                |

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N 140

#### Part number

N 140. 

|   |   |   |   |  |    |
|---|---|---|---|--|----|
| 1 | 0 | 3 | A |  | 01 |
|---|---|---|---|--|----|

|  |   |   |   |  |                                 |
|--|---|---|---|--|---------------------------------|
|  |   |   |   |  | <u>Hollow shaft</u>             |
|  |   |   | A |  | Hollow shaft ø25 mm             |
|  |   |   | B |  | Hollow shaft ø20 mm             |
|  |   |   |   |  | <u>Display</u>                  |
|  |   |   | A |  | Inclined                        |
|  |   |   |   |  | <u>Voltage supply</u>           |
|  |   | 3 |   |  | 24 VDC                          |
|  |   |   |   |  | <u>E-connection</u>             |
|  |   | 0 |   |  | Cable output with M16 connector |
|  |   |   |   |  | <u>Interface</u>                |
|  | 1 |   |   |  | RS485                           |

#### Description

N 140 spindle position display supports the editing engineer in manual spindle positioning operations. The principal benefits of the new electronic spindle position display is saving time in machine setup and editing as well as elimination of errors when aligning formats to new position values. The absolute measuring system captures any change in position even in powerless state. The backlit LCD display provides the editing engineer with all necessary information for efficient editing of new spindle positions. The two-line display shows both current value and target. A little arrow signalizes the editing engineer the direction the spindle must be turned to get to the new position. RS485 serial interface enables network of 32 spindle position displays with PC or PLC. For complete solutions also memory controllers as decentralized operating and memory terminals are available. Up to 100 format profiles can be stored by teach-in. Upon request the desired profile is recalled and retransmitted upon pressing a button to every spindle position and shown as target.

#### Accessories

##### Connectors and cables (page %S)

|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| Z 165.B01 | Mating connector M16, 5-pin, less cable                                           |
| Z 165.AW1 | Cable connector M16, 5-pin, less cable with integrated terminating resistor 120 Ω |
| Z 165.D05 | Data and supply cable M16, Master to N 140, N 141 and N 142, 5 m                  |
| Z 165.S01 | Cable connector M16, 5-pin, less cable                                            |
| Z 165.V01 | Coupling cable between M16 and M16, 1 m                                           |

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## Terminal assignment

The diagram shows two circular connectors joined by a central coupling. The left connector is labeled "M16 connector" and has five pins numbered 1 through 5. The right connector is labeled "M16 female connector" and has five corresponding sockets numbered 1 through 5. The pins and sockets are arranged in a circular pattern, with pin 1 at the bottom and pin 5 at the top.

Hollow shaft  $\varnothing 25$  mm

Hollow shaft  $\varnothing 20$  mm

Fixing pin for bore  $\varnothing 10$  mm

25 H7  
(20 H7)

58.5

100

10

16

56

7

20°

40  $\pm 0.2$

$\varnothing 37$

8

1

62.5

21.5

6

M5

$\varnothing 37$

M16-female connector

M16 connector

4

8.5

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