



Online Data sheet

Encoder WDGI 58E

www.wachendorff-automation.com/wdgi58e

Wachendorff Automation

... systems and encoders

- Complete systems
- Industrial rugged encoders to suit your application
- Standard range and customer versions
- Maximum permissible loads
- 48-hour express production
- Made in Germany
- Worldwide distributor network

Encoder WDGI 58E (optical)



- Rugged industrial standard end hollow shaft encoder
- Housing cap die cast aluminum, with particularly eco-friendly powder coating
- Up to 25000 PPR by use of high grad electronics
- Maximum mechanical and electrical safety
- High protection accordingt IP67, shaft sealed to IP65, high noise immunity
- Hollow bore (blind)
- Full connection protection with 10 VDC up to 30 VDC
- High output frequency 600 kHz/2 MHz
- Optional: -40 °C up to +85 °C, Pressure equalising membrane

www.wachendorff-automation.com/wdgi58e

| Resolution | |
|---------------------------------------|---|
| Pulses per revolution PPR | up to 25000 PPR |
| Mechanical Data | |
| Housing | |
| Flange | hollow shaft (blind-bored) |
| Flange material | aluminum |
| Housing cap | die cast aluminum, powder coated |
| Torque supports | incl. 1 torque support WDGDS10001 |
| - 1. Spring plate compensation | axial: ±0.8 mm, radial: ±0.2 mm |
| - Max. operating speed | 6000 rpm up to max. protection rating +60 °C |
| - 2. Cylinder pin 4 mm | needs accessories WDGDS10005 |
| - Compensation | axial: ±0.5 mm, radial: ±1.5 mm, Max. operating speed: 3000 rpm |
| Housing | Ø 58 mm |
| Shaft(s) | |
| Shaft material | stainless steel |
| Starting torque | approx. 1.6 Ncm at ambient temperature |
| Fixing | permanently attached clamping ring |
| Shaft | Ø 6 mm |
| Advice | with adapter sleeve |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 6.35 mm, Ø 1/4" |
| Advice | with adapter sleeve |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 7 mm |
| Advice | with adapter sleeve |
| Shaft length | L: 35 mm |

| | |
|---------------------------------------|---------------------|
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 8 mm |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 9.525 mm, Ø 3/8" |
| Advice | with adapter sleeve |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 10 mm |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 12 mm |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |
| Shaft | Ø 15 mm |
| Shaft length | L: 35 mm |
| Insertion depth min. | 11 mm |

| | |
|---------------------------------------|-------|
| Insertion depth max. | 39 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 60 N |

Bearings

| | |
|----------------------|---|
| Bearings type | 2 precision ball bearings |
| Nominal service life | 1 x 10 ⁹ revs. at 100 % rated shaft load 1 x 10 ¹⁰ revs. at 40 % rated shaft load 1 x 10 ¹¹ revs. at 20 % rated shaft load |
| Max. operating speed | 6000 rpm |

Machinery Directive: basic data safety integrity level

| | |
|-----------------------------|--|
| MTTF _d | 200 a |
| Mission time (TM) | 25 a |
| Nominal service life (L10h) | 1 x 10 ¹¹ revs. at 20 % rated shaft load and 6000 rpm |
| Diagnostic coverage (DC) | 0 % |

Electrical Data

| | |
|----------------------------------|---|
| Power supply/Current consumption | 4,75 VDC up to 5,5 VDC: typ. 100 mA |
| Power supply/Current consumption | 5 VDC up to 30 VDC: typ. 70 mA |
| Power supply/Current consumption | 10 VDC up to 30 VDC: typ. 100 mA |
| Output circuit | TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 Vpp sin/cos |
| Pulse frequency | TTL 5000 ppr: max. 200 kHz HTL 5000 ppr: max. 200 kHz TTL more than 1200 ppr: max. 2 MHz HTL more than 1200 ppr: max. 600 kHz 1 Vpp sin/cos: max. 100 kHz |
| Channels | AB ABN and inverted signals |
| Load | max. 40 mA / channel @ 1 Vpp sin/cos: min. 120 Ohm |
| Circuit protection | circuit type F24, G24, H24, I24, P24, R24 only |

Accuracy

| | |
|--------------------|--|
| Phase offset | 90° ± max. 7.5 % of the period duration |
| pulse-/pause-ratio | 5000 ppr: 50 % ± max. 7 % Output circuits F24, P24, F05, P05, 645: 50 % ± max. 10 % |

Environmental data

| | |
|----------------------------------|---|
| ESD (DIN EN 61000-4-2): | 8 kV |
| Burst (DIN EN 61000-4-4): | 2 kV |
| includes EMC: | DIN EN 61000-6-2 DIN EN 61000-6-3 |
| Vibration: (DIN EN 60068-2-6) | 50 m/s ² (10 Hz up to 2000 Hz) |
| Shock: (DIN EN 60068-2-27) | 1000 m/s ² (6 ms) |
| Design: | according DIN VDE 0160 |

Duty information

| | |
|------------------------|----------|
| Customs tariff number: | 90318020 |
| Country of origin: | Germany |

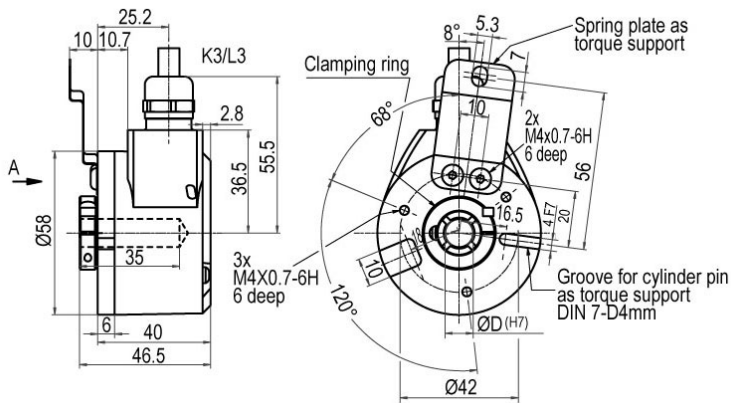
| General Data | |
|------------------------------|---|
| Weight | approx. 220 g |
| Connections | cable or connector, radial |
| Protection rating (EN 60529) | Housing: IP65, IP67; shaft sealed: IP65 |
| Operating temperature | Connector: -40 °C up to +85 °C, cable: -20 °C up to +80 °C, (Option ACA: -40 °C up to +85 °C) 1 Vpp: -10 °C up to +70 °C |
| Storage temperature | Connector: -40 °C up to +85 °C, cable: -30 °C up to +80 °C (option ACA: -40 °C up to +85 °C) |

More Information

General technical data and safety instructions
<http://www.wachendorff-automation.com/gtd>

Options
<http://www.wachendorff-automation.com/acc>

WDGI 58E: Cable connection K3, L3, radial, with 2 m cable

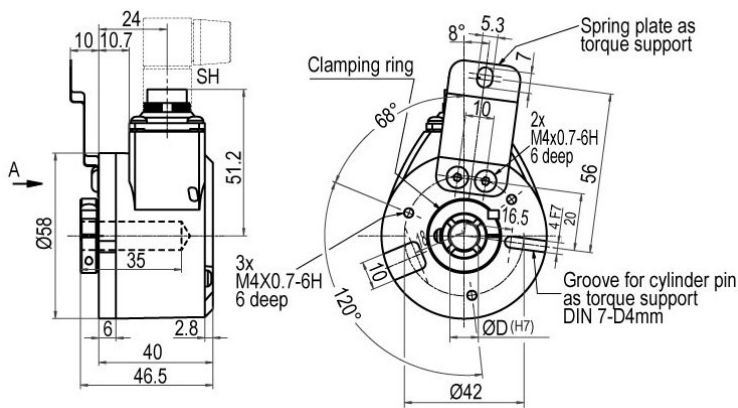


Description

| | | ABN inv. poss. |
|-----------|---|-----------------------|
| K3 | radial, shield not connected | • |
| L3 | radial, shield connected to encoder housing | • |

| Assignments | | | | | |
|------------------------------|---------------|-------------------------|-----------------|-----------------------------------|-----------|
| | K3, L3 | K3, L3 | K3, L3 | K3, L3 | L3 |
| Circuit | G05, G24 | F05, H05, F24, H24, H30 | I05, I24, 524 | P05, R05, P24, R24, 245, 645, R30 | SIN |
| GND | WH | WH | WH | WH | WH |
| (+) Vcc | BN | BN | BN | BN | BN |
| A | GN | GN | GN | GN | GN |
| B | YE | YE | YE | YE | GY |
| N | GY | GY | GY | GY | - |
| Light reserve warning | PK | - | PK | - | - |
| A inv. | - | - | RD | RD | YE |
| B inv. | - | - | BK, (BU at ACA) | BK, (BU at ACA) | PK |
| N inv. | - | - | VT | VT | - |
| Shield | flex | flex | flex | flex | flex |

WDGI 58E: Connector (M16x0.75) SH, radial, 5-, 6-, 8-, 12-pin



Description

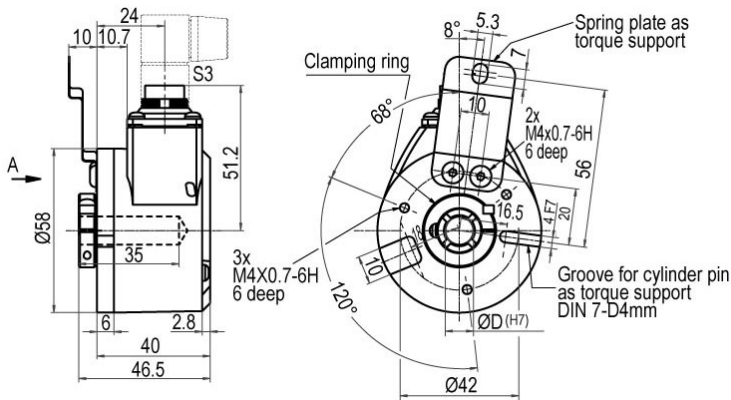
ABN inv. poss.

| | | |
|-------------|--|---|
| SH5 | radial, 5-pin, Connector connected to encoder housing | - |
| SH6 | radial, 6-pin, Connector connected to encoder housing | - |
| SH8 | radial, 8-pin, Connector connected to encoder housing | • |
| SH12 | radial, 12-pin, Connector connected to encoder housing | • |

Assignments

| | SH5 | SH6 | SH6 | SH8 | SH8 | SH12 | SH12 | SH12 | SH12 | SH12 |
|------------------------------|-------------------------|--------------|-------------------------|-------------------------|-----------------------------------|---------------|-------------------------|---------------|-----------------------------------|---------------|
| | 5-pin | 6-pin | 6-pin | 8-pin | 8-pin | 12-pin | 12-pin | 12-pin | 12-pin | 12-pin |
| | | | | | | | | | | |
| Circuit | F05, H05, F24, H24, H30 | G05, G24 | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | P05, R05, P24, R24, R30, 245, 645 | G05, G24 | F05, H05, F24, H24, H30 | I05, I24, 524 | P05, R05, P24, R24, 245, 645, R30 | SIN |
| GND | 1 | 6 | 6 | 1 | 1 | K, L | K, L | K, L | K, L | K, L |
| (+) Vcc | 2 | 1 | 1 | 2 | 2 | M, B | M, B | M, B | M, B | M, B |
| A | 3 | 2 | 2 | 3 | 3 | E | E | E | E | E |
| B | 4 | 4 | 4 | 4 | 4 | H | H | H | H | H |
| N | 5 | 3 | 3 | 5 | 5 | C | C | C | C | - |
| Light reserve warning | - | 5 | - | - | - | G | - | G | - | - |
| A inv. | - | - | - | - | 6 | - | - | F | F | F |
| B inv. | - | - | - | - | 7 | - | - | A | A | A |
| N inv. | - | - | - | - | 8 | - | - | D | D | - |
| n. c. | - | - | 5 | 6, 7, 8 | - | A, D, F, J | A, D, F, G, J | J | G, J | D, G, J |
| Shield | - | - | - | - | - | - | - | - | - | - |

WDGI 58E: Connector (M16x0.75) S3, radial, 7-pin



Description

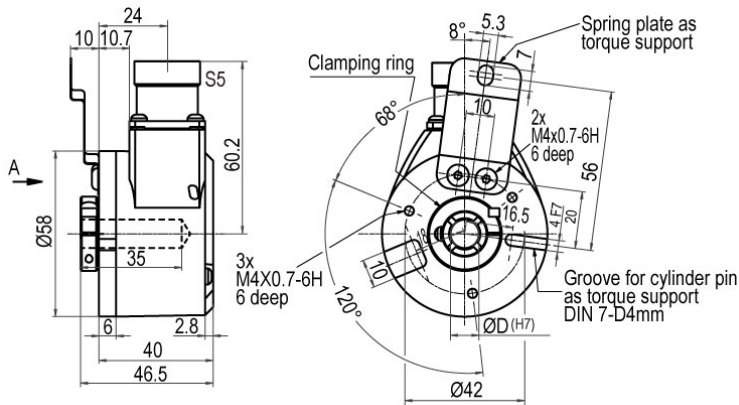
ABN inv. poss.

S3 radial, 7-pin, Connector connected to encoder housing

-

| Assignments | | |
|------------------------------|--------------|-------------------------|
| | S3 | S3 |
| | 7-pin | 7-pin |
| | | |
| Circuit | G05, G24 | F05, H05, F24, H24, H30 |
| GND | 1 | 1 |
| (+) Vcc | 2 | 2 |
| A | 3 | 3 |
| B | 4 | 4 |
| N | 5 | 5 |
| Light reserve warning | 6 | - |
| A inv. | - | - |
| B inv. | - | - |
| N inv. | - | - |
| n. c. | 7 | 6, 7 |
| Shield | - | - |

WDGI 58E: Connector (M23) S5, radial, 12-pin



Description

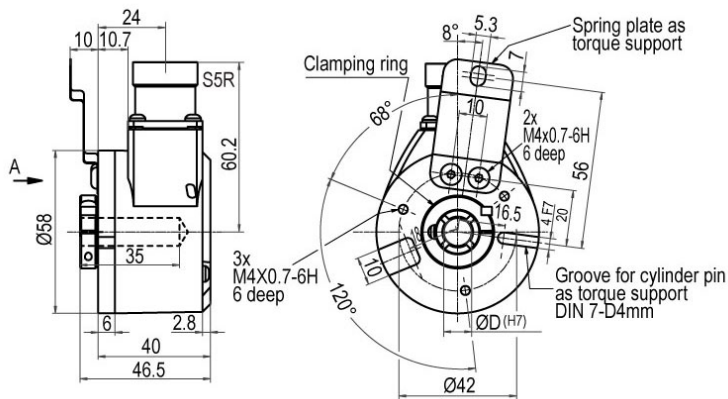
ABN inv. poss.

S5 radial, 12-pin, Connector connected to encoder housing

•

| Assignments | | | | | |
|------------------------------|------------------|-------------------------|---------------|-----------------------------------|-------------------|
| | S5 | S5 | S5 | S5 | S5 |
| | 12-pin | 12-pin | 12-pin | 12-pin | 12-pin |
| | | | | | |
| Circuit | G05, G24 | F05, H05, F24, H24, H30 | I05, I24, 524 | P05, R05, P24, R24, 245, 645, R30 | SIN |
| GND | 10 | 10 | 10 | 10 | 10 |
| (+) Vcc | 12 | 12 | 12 | 12 | 12 |
| A | 5 | 5 | 5 | 5 | 5 |
| B | 8 | 8 | 8 | 8 | 8 |
| N | 3 | 3 | 3 | 3 | - |
| Light reserve warning | 11 | - | 11 | - | - |
| A inv. | - | - | 6 | 6 | 6 |
| B inv. | - | - | 1 | 1 | 1 |
| N inv. | - | - | 4 | 4 | - |
| n. c. | 1, 2, 4, 6, 7, 9 | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9 | 2, 7, 9, 11 | 2, 3, 4, 7, 9, 11 |
| Shield | - | - | - | - | - |

WDGI 58E: Connector (M23) S5R, radial, 12-pin (clockwise)



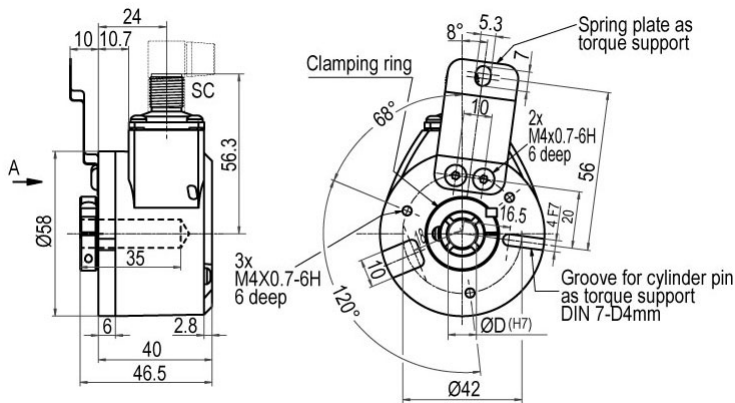
Description

S5R radial, 12-pin, Connector connected to encoder housing

ABN inv. poss.

| Assignments | | | | | |
|------------------------------|------------------|-------------------------|---------------|-----------------------------------|-------------------|
| | S5R | S5R | S5R | S5R | S5R |
| | 12-pin | 12-pin | 12-pin | 12-pin | 12-pin |
| | | | | | |
| Circuit | G05, G24 | F05, H05, F24, H24, H30 | I05, I24, 524 | P05, R05, P24, R24, 245, 645, R30 | SIN |
| GND | 10 | 10 | 10 | 10 | 10 |
| (+) Vcc | 12 | 12 | 12 | 12 | 12 |
| A | 5 | 5 | 5 | 5 | 5 |
| B | 8 | 8 | 8 | 8 | 8 |
| N | 3 | 3 | 3 | 3 | - |
| Light reserve warning | 11 | - | 11 | - | - |
| A inv. | - | - | 6 | 6 | 6 |
| B inv. | - | - | 1 | 1 | 1 |
| N inv. | - | - | 4 | 4 | - |
| n. c. | 1, 2, 4, 6, 7, 9 | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9 | 2, 7, 9, 11 | 2, 3, 4, 7, 9, 11 |
| Shield | - | - | - | - | - |

WDGI 58E: Sensor-connector (M12x1) SC, radial, 4-, 5-, 8-, 12-pin



Description

ABN inv. poss.

| | | |
|-------------|--|---|
| SC4 | radial, 4-pin, Connector connected to encoder housing | - |
| SC5 | radial, 5-pin, Connector connected to encoder housing | - |
| SC8 | radial, 8-pin, Connector connected to encoder housing | • |
| SC12 | radial, 12-pin, Connector connected to encoder housing | • |

Assignments

| | SC4 | SC5 | SC8 | SC8 | SC8 | SC12 | SC12 | SC12 | SC12 |
|------------------------------|-------------------------|-------------------------|-------------------------|-----------------------------------|--------------|---------------------|-------------------------|---------------|-----------------------------------|
| | 4-pin | 5-pin | 8-pin | 8-pin | 8-pin | 12-pin | 12-pin | 12-pin | 12-pin |
| | | | | | | | | | |
| Circuit | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | P05, R05, P24, R24, R30, 245, 645 | SIN | G05, G24 | F05, H05, F24, H24, H30 | I05, I24, 524 | P05, R05, P24, R24, 245, 645, R30 |
| GND | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 3 |
| (+) Vcc | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| A | 2 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 |
| B | 4 | 2 | 4 | 4 | 5 | 6 | 6 | 6 | 6 |
| N | - | 5 | 5 | 5 | - | 8 | 8 | 8 | 8 |
| Light reserve warning | - | - | - | - | - | 5 | - | 5 | - |
| A inv. | - | - | - | 6 | 4 | - | - | 9 | 9 |
| B inv. | - | - | - | 7 | 6 | - | - | 7 | 7 |
| N inv. | - | - | - | 8 | - | - | - | 10 | 10 |
| n. c. | - | - | 6, 7, 8 | - | 7, 8 | 2, 7, 9, 10, 11, 12 | 2, 5, 7, 9, 10, 11, 12 | 2, 11, 12 | 2, 5, 11, 12 |
| Shield | - | - | - | - | - | - | - | - | - |

Options**Low temperature**

The encoder WDGI 58E with the output circuit types F24, G24, H24, I24, P24, R24, F05, G05, H05, I05, P05, R05, 245, 524, 645 is also available with the extended temperature range -40 °C up to +85 °C [-40 °F up to +185 °F] (measured at the flange).

Order key**ACA****Pressure equalising membrane**

The WDGI 58E shaft encoder is also optionally available with a pressure equalising membrane. This prevents water from penetrating into the encoder housing in the case of high air humidity.

The IP67 protection level, temperature range and salt spray resistance are maintained. Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.

Order key**ACR****Cable length**

The encoder WDGI 58E can be supplied with more than 2 m cable. The maximum cable length depends on the supply voltage and the frequency; see www.wachendorff-automation.com/atd

Please extend the standard order code with a three figure number, specifying the cable length in decimetres.

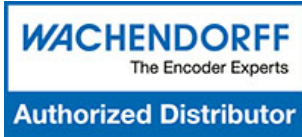
Example: 5 m cable = 050

Order key**XXX = Decimeter**

| Example Order No. | Type | Your encoder | | | |
|-----------------------------------|--|-------------------------|--------------------------------------|------------------------------|------------------|
| WDGI 58E | WDGI 58E | WDGI 58E | | | |
| Bore size | | | | | |
| 10 | 06; 2Z= Ø 6.35 mm, Ø 1/4"; 07; 08; 4Z= Ø 9.525 mm, Ø 3/8"; 10; 12; 15 | | | | |
| Pulses per revolution PPR: | | | | | |
| 1024 | 4, 6, 25, 32, 36, 50, 60, 64, 70, 88, 100, 120, 125, 150, 180, 200, 240, 250, 256, 300, 314, 360, 400, 500, 512, 600, 720, 750, 768, 800, 900, 1000, 1024, 1200, 1250, 1270, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000, 8000, 8192, 10000, 10240, 12500, 16384, 20000, 20480, 25000 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request | | | | |
| Channels: | | | | | |
| ABN | AB, ABN (SIN: AB) | | | | |
| Output circuit | | | | | |
| G24 | Resolution PPR | Power supply VDC | Output circuit | Light reserve warning | Order key |
| | up to 2500 | 5 - 30 | HTL (TTL at 5 VDC) | - | H30 |
| | | 5 - 30 | HTL, inv. (TTL/RS422 comp. at 5 VDC) | - | R30 |
| | up to 5000 | 4.75 - 5.5 | TTL | • | G05 |
| | | 4.75 - 5.5 | TTL | - | H05 |
| | | 4.75 - 5.5 | TTL, RS422 comp., inverted | • | I05 |
| | | 4.75 - 5.5 | TTL, RS422 comp., inverted | - | R05 |
| | | 10 - 30 | HTL | • | G24 |
| | | 10 - 30 | HTL | - | H24 |
| | | 10 - 30 | HTL inverted | • | I24 |
| | | 10 - 30 | HTL inverted | - | R24 |
| | | 10 - 30 | TTL, RS422 comp., inverted | • | 524 |
| | | 10 - 30 | TTL, RS422 comp., inverted | - | 245 |
| | (higher frequency) 1200 up to 25000 | 4.75 - 5.5 | TTL | - | F05 |
| | | 4.75 - 5.5 | TTL, RS422 comp., inverted | - | P05 |
| | | 10 - 30 | HTL | - | F24 |
| | | 10 - 30 | HTL inverted | - | P24 |
| | 1024, 2048 | 4.75 - 5.5 | TTL, RS422 comp., inverted | - | 645 |
| | 1024, 2048 | 4.75 - 5.5 | 1 Vpp sin/cos | - | SIN |
| | Electrical connections | | | | |
| K3 | Description | | ABN inv. poss. | Order key | |
| | Cable: length (2 m standard, WDG 58T: 1 m) | | | | |
| | radial, shield not connected | | • | K3 | |
| | radial, shield connected to encoder housing | | • | L3 | |
| | Connector: (shield connected to encoder housing) | | | | |
| | connector, M16x0.75, 5-pin, radial | | - | SH5 | |
| | connector, M16x0.75, 6-pin, radial | | - | SH6 | |
| | connector, M16x0.75, 8-pin, radial | | • | SH8 | |
| | connector, M16x0.75, 12-pin, radial | | • | SH12 | |
| | connector, M16x0.75, 7-pin, radial | | - | S3 | |
| | connector, M23, 12-pin, radial | | • | S5 | |
| | connector, clockwise pin count, M23, 12-pin, radial | | • | S5R | |
| | sensor-connector, M12x1, 4-pin, radial | | - | SC4 | |
| | sensor-connector, M12x1, 5-pin, radial | | - | SC5 | |
| | sensor-connector, M12x1, 8-pin, radial | | • | SC8 | |
| | sensor-connector, M12x1, 12-pin, radial | | • | SC12 | |

| Options | | |
|------------------------------|-----------------|--|
| Description | Order key | |
| Low temperature | ACA | |
| Pressure equalising membrane | ACR | |
| Without option | Empty | |
| Cable length | XXX = Decimeter | |

| | | | | | | | | | | | | | | | | | |
|---------------------------|----------|----|------|-----|-----|----|--|--|----------|--|--|--|--|--|--|--|---------------------|
| Example Order No.= | WDGI 58E | 10 | 1024 | ABN | G24 | K3 | | | WDGI 58E | | | | | | | | Your encoder |
|---------------------------|----------|----|------|-----|-----|----|--|--|----------|--|--|--|--|--|--|--|---------------------|



For further information please contact our local distributor.
Here you find a list of our distributors worldwide.
<https://www.wachendorff-automation.com/contact-sales-en/>

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