

Online Data Sheet

Encoder WDG 100G

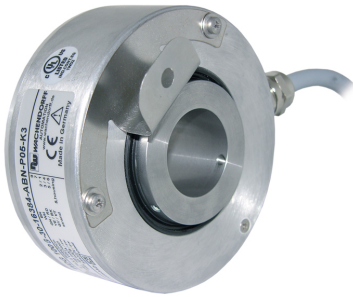
www.wachendorff-automation.com/wdg100g

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 WDG 100G



- Rugged and extremely thin thru-bore encoder for extension on power motors
- Thru-Bore, bore size max. 45 mm
- Full connection protection with 10 VDC up to 30 VDC
- Easy mounting
- Meets protection class IP50
- Up to 20,480 PPR
- Optional: -40 °C up to +80 °C

www.wachendorff-automation.com/wdg100g

| Resolution | | Max. Permissible shaft loading axial | |
|---------------------------------------|--|---------------------------------------|----------|
| Max. pulses per revolution PPR | up to 20480 PPR | Max. Permissible shaft loading axial | 100 N |
| Mechanical Data | | Shaft | Ø 32 mm |
| Housing | | Shaft length | L: 42 mm |
| Flange | hollow shaft (through-bored) | Max. Permissible shaft loading radial | 200 N |
| Flange material | aluminium | Max. Permissible shaft loading axial | 100 N |
| Housing cap | aluminium | Shaft | Ø 35 mm |
| Torque supports | incl. 1 torque support WDGDS0020 | Shaft length | L: 42 mm |
| - 1. Spring plate compensation | axial: ±1 mm, radial: ±0.5 mm | Max. Permissible shaft loading radial | 200 N |
| Housing | Ø 100 mm | Max. Permissible shaft loading axial | 100 N |
| Shaft(s) | | Shaft | Ø 36 mm |
| Shaft material | stainless steel | Shaft length | L: 42 mm |
| Starting torque | approx. 1.5 Ncm at ambient temperature | Max. Permissible shaft loading radial | 200 N |
| Fixing | 2 x M4, DIN 913; Starting torque: 2,5 Nm | Max. Permissible shaft loading axial | 100 N |
| Shaft | Ø 25 mm | Shaft | Ø 38 mm |
| Shaft length | L: 42 mm | Shaft length | L: 42 mm |
| Max. Permissible shaft loading radial | 200 N | Max. Permissible shaft loading radial | 200 N |
| Max. Permissible shaft loading axial | 100 N | Max. Permissible shaft loading axial | 100 N |
| Shaft | Ø 25.4 mm, Ø 1" | Shaft | Ø 40 mm |
| Shaft length | L: 42 mm, L: 1.65 in | Shaft length | L: 42 mm |
| Max. Permissible shaft loading radial | 200 N, 20.39 kp | Max. Permissible shaft loading radial | 200 N |
| Max. Permissible shaft loading axial | 100 N, 10.197 kp | Max. Permissible shaft loading axial | 100 N |
| Shaft | Ø 28 mm | Shaft | Ø 42 mm |
| Shaft length | L: 42 mm | Shaft length | L: 42 mm |
| Max. Permissible shaft loading radial | 200 N | Max. Permissible shaft loading radial | 200 N |
| Max. Permissible shaft loading axial | 100 N | Max. Permissible shaft loading axial | 100 N |
| Shaft | Ø 30 mm | Shaft | Ø 45 mm |
| Shaft length | L: 42 mm | Shaft length | L: 42 mm |
| Max. Permissible shaft loading radial | 200 N | | |

| | |
|---------------------------------------|-------|
| Max. Permissible shaft loading radial | 200 N |
| Max. Permissible shaft loading axial | 100 N |

Bearings

| | |
|----------------------|--|
| Bearings type | 2 precision ball bearings |
| Nominal service life | 3 x 10 ¹⁰ revs. at 100 % rated shaft load 1 x 10 ¹¹ revs. at 40 % rated shaft load 1 x 10 ¹² revs. at 20 % rated shaft load |
| Max. operating speed | 1500 rpm |

Machinery Directive: basic data safety integrity level

| | |
|-----------------------------|--|
| MTTF _d | 200 a |
| Mission time (TM) | 25 a |
| Nominal service life (L10h) | 1 x 10 ¹² revs. at 20 % rated shaft load and 1500 rpm |
| Diagnostic coverage (DC) | 0 % |

Electrical Data

| | |
|----------------------------------|---|
| Power supply/Current consumption | 4,75 VDC up to 5,5 VDC: max. 100 mA |
| Power supply/Current consumption | 5 VDC up to 30 VDC: max. 70 mA |
| Power supply/Current consumption | 10 VDC up to 30 VDC: max. 100 mA |
| Output circuit | TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 V _{pp} 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 V _{pp} sin/cos: max. 100 kHz |
| Channels | AB ABN and inverted signals |
| Load | max. 40 mA / channel @ 1 V _{pp} sin/cos: min. 120 Ohm |
| Circuit protection | circuit type H24 and R24 only |

Accuracy

| | |
|--------------------|--|
| Phase offset | 90° ± max. 7.5 % of the pulse length |
| pulse-/pause-ratio | 5000 ppr: 50 % ± max. 7 % >5000 ppr: 50 % ± max. 10 % |

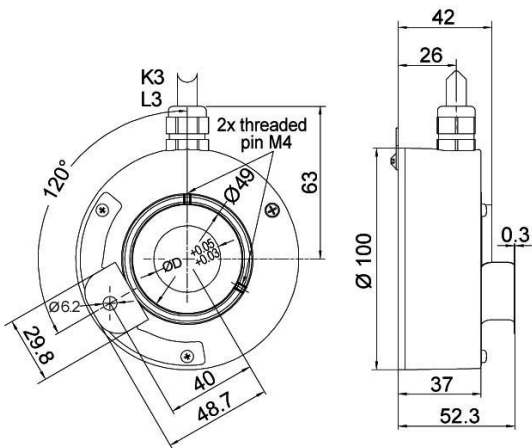
General Data

| | |
|------------------------------|--|
| Weight | approx. 720 g |
| Connections | cable or connector, radial |
| Protection rating (EN 60529) | IP50 |
| Operating temperature | -20 °C up to +80 °C 1 V _{pp} : -10 °C up to +70 °C |
| Storage temperature | -30 °C up to +80 °C |

More Information

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

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

Cable connection K3, L3 with 2 m cable

Description
ABN inv. poss.
K3 radial, shield not connected

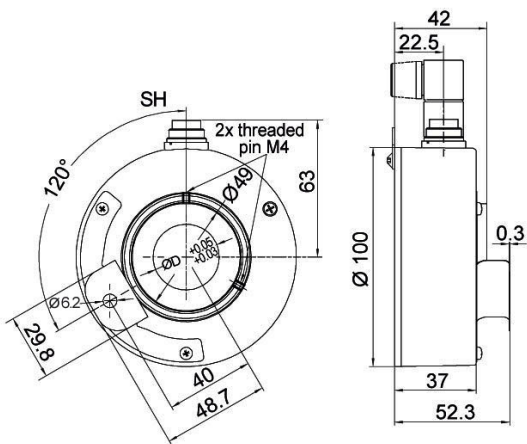
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L3 radial, shield connected to encoder housing

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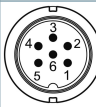

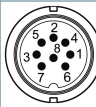

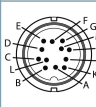
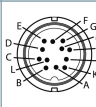
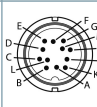
Assignments

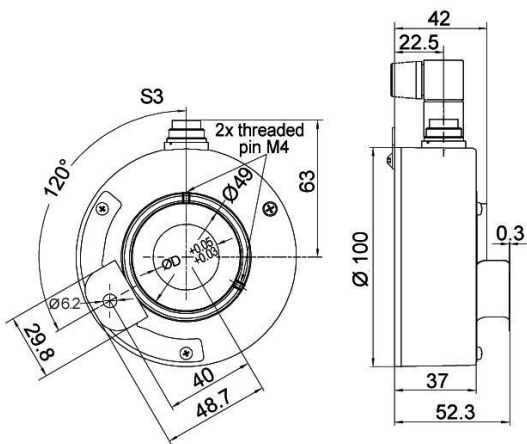
| | K3, L3 | K3, L3 | K3, L3 | K3, L3 |
|------------------------------|-------------------------|-----------------------------------|--------|--------|
| Circuit | F05, H05, F24, H24, H30 | P05, R05, P24, R24, 245, 645, R30 | SIN | SIF |
| GND | WH | WH | WH | WH |
| (+) Vcc | BN | BN | BN | BN |
|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

Connector (M16x0.75) SH, 5-, 6-, 8-, 12-pin

Description
ABN inv. poss.

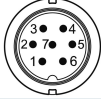
| | | |
|-------------|--|---|
| SH5 | radial, 5-pin, Connector connected to encoder housing | - |
| SH6 | radial, 6-pin, Connector connected to encoder housing | - |
| SH8 | radial, 8-pin, Connector connected to encoder housing | • |
| SH12 | radial, 12-pin, Connector connected to encoder housing |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

Assignments

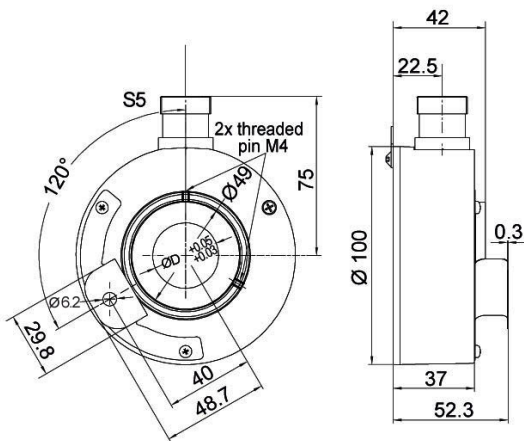
| | SH5 | SH6 | SH8 | SH8 | SH8 | SH12 | SH12 | SH12 |
|------------------------------|---|---|---|---|---|---|--|---|
| | 5-pin | 6-pin | 8-pin | 8-pin | 8-pin | 12-pin | 12-pin | 12-pin |
| |  |  |  |  |  |  |  |  |
| Circuit | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | F05, H05, F24, H24,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

Connector (M16x0.75) S3, 7-pin

Description
ABN inv. poss.
S3 radial, 7-pin, Connector connected to encoder housing

-

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

Connector (M23) S5, 12-pin

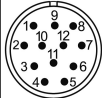
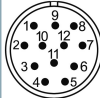
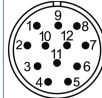
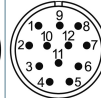


Description

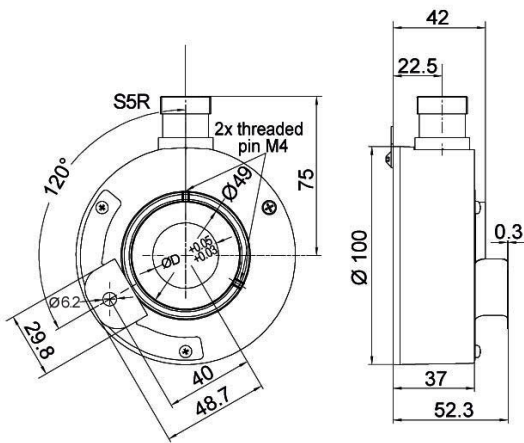
ABN inv. poss.

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

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

Connector (M23) S5R, 12-pin (clockwise)

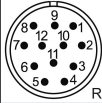
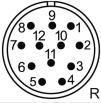
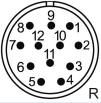
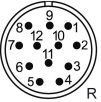


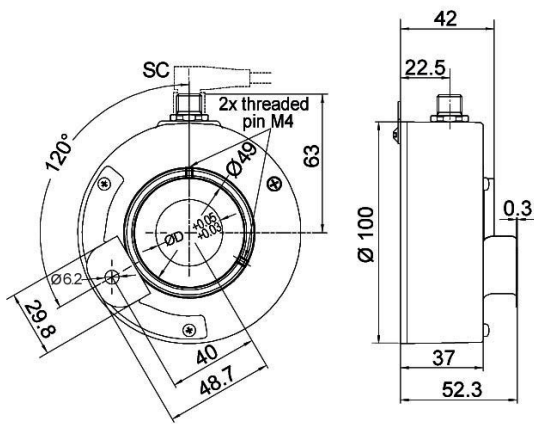
Description

ABN inv. poss.

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






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

Sensor-connector (M12x1) SC, 4-, 5-, 8-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 | • |

Assignments

| | SC4 | SC5 | SC8 | SC8 | SC8 |
|------------------------------|---|---|---|---|---|
| | 4-pin | 5-pin | 8-pin | 8-pin | 8-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 |
| GND | 3 | 3 | 1 | 1 | 1 |
| (+) Vcc | 1 | 1 | 2 | 2 | 2 |
| A | 2 | 4 | 3 | 3 | 3 |
| B | 4 | 2 | 4 | 4 | 5 |
| N | - | 5 | 5 | 5 | 7 |
| Light reserve warning | - | - | - | - | - |
| A inv. | - | - | - | 6 | 4 |
| B inv. | - | - | - | 7 | 6 |
| N inv. | - | - | - | 8 | 8 |
| n. c. | - | - | 6, 7, 8 | - | - |
| Shield | - | - | - | - | - |

Options

Low temperature

The encoder WDG 100G with the output circuit types F24, H24, P24, R24, F05, H05, P05, R05, 245, 645 is also available with the extended temperature range -40 °C up to +80 °C (measured at the flange).

Order key

ACA

Cable length

The encoder WDG 100G 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 |
|--|--|-------------------------|----------------------------|------------------------------|------------------|
| WDG 100G | WDG 100G | | | | WDG 100G |
| | Bore size | | | | |
| 25 | 25; 1Z= Ø 25.4 mm, Ø 1"; 28; 30; 32; 35; 36; 38; 40; 42; 45 | | | | |
| | Pulses per revolution PPR: | | | | |
| 1024 | 512, 1000, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vss Sin/Cos only 1024, 2048 Other PPRs on request | | | | |
| | Channels: | | | | |
| ABN | AB, ABN | | | | |
| | Output circuit | | | | |
| H24 | Resolution PPR | Power supply VDC | Output circuit | Light reserve warning | Order key |
| | up to 2500 | 5 - 30 | HTL | - | H30 |
| | | 5 - 30 | HTL inverted | - | R30 |
| | up to 5000 | 4.75 - 5.5 | TTL | - | H05 |
| | | 4.75 - 5.5 | TTL, RS422 comp., inverted | - | R05 |
| | | 10 - 30 | HTL | - | H24 |
| | | 10 - 30 | HTL inverted | - | R24 |
| | 8192 up to 20480 | 10 - 30 | TTL, RS422 comp., inverted | - | 245 |
| | | 4.75 - 5.5 | TTL | - | F05 |
| | | 4.75 - 5.5 | TTL, RS422 comp., inverted | - | P05 |
| | | 10 - 30 | HTL | - | F24 |
| | 1024, 2048 | 10 - 30 | HTL inverted | - | P24 |
| | | 10 - 30 | TTL, RS422 comp., inverted | - | 645 |
| | | 4.75 - 5.5 | 1 Vpp sin/cos | • | SIF |
| | 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 | |
| | Options | | | | |
| | Description | | | Order key | |
| | Without option | | | Empty | |
| | Low temperature | | | ACA | |
| | Cable length | | | XXX = Decimeter | |

| | | | | | | | | | | | | | | |
|---------------------------|----------|----|------|-----|-----|----|--|----------|--|--|--|--|--|---------------------|
| Example Order No.= | WDG 100G | 25 | 1024 | ABN | H24 | K3 | | WDG 100G | | | | | | Your encoder |
|---------------------------|----------|----|------|-----|-----|----|--|----------|--|--|--|--|--|---------------------|



For further information please contact our local distributor.
Here you find a list of our distributors worldwide.
http://www.wachendorff-automation.com/distributors_worldwide.html



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