



Online Data Sheet

Encoder WDG 100H

www.wachendorff-automation.com/wdg100h

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 100H (optical)



- 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 IP54
- Up to 20,480 PPR
- Optional: -40 °C up to +80 °C
Protection to IP55 all around

www.wachendorff-automation.com/wdg100h

Resolution

Pulses per revolution PPR up to 20480 PPR

Mechanical Data

Housing

Flange	hollow shaft (through-bored)
Flange material	aluminum
Housing cap	aluminum, powder coated
Torque supports	incl. 1 torque support WDGS10001
- 1. Spring plate compensation	axial: ±0.8 mm, radial: ±0.2 mm
Housing	Ø 100 mm

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1.5 Ncm at ambient temperature
Fixing	2 x M4, DIN 913; Starting torque: 2,5 Nm

Shaft	Ø 25 mm
Shaft length	L: 42 mm
Insertion depth min.	52 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 25.4 mm, Ø 1"
Shaft length	L: 42 mm, L: 1.65 in
Insertion depth min.	52 mm
Max. Permissible shaft loading radial	200 N, 20.39 kp
Max. Permissible shaft loading axial	100 N, 10.197 kp

Shaft	Ø 28 mm
Shaft length	L: 42 mm
Insertion depth min.	52 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 30 mm
Shaft length	L: 42 mm
Insertion depth min.	52 mm

Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 32 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 36 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 38 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 40 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 42 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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Max. Permissible shaft loading radial	200 N
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Max. Permissible shaft loading axial	100 N
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Shaft	Ø 45 mm
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Shaft length	L: 42 mm
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Insertion depth min.	52 mm
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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	3500 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 3500 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 H24 and 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

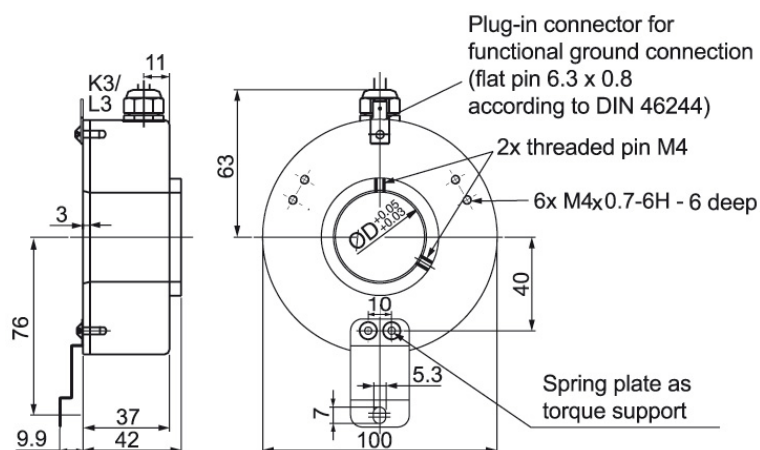
Weight	approx. 720 g
Connections	cable or connector, radial
Protection rating (EN 60529)	IP54
Operating temperature	-20 °C up to +80 °C 1 Vpp: -10 °C up to +70 °C
Storage temperature	-30 °C up to +80 °C

More Information

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

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

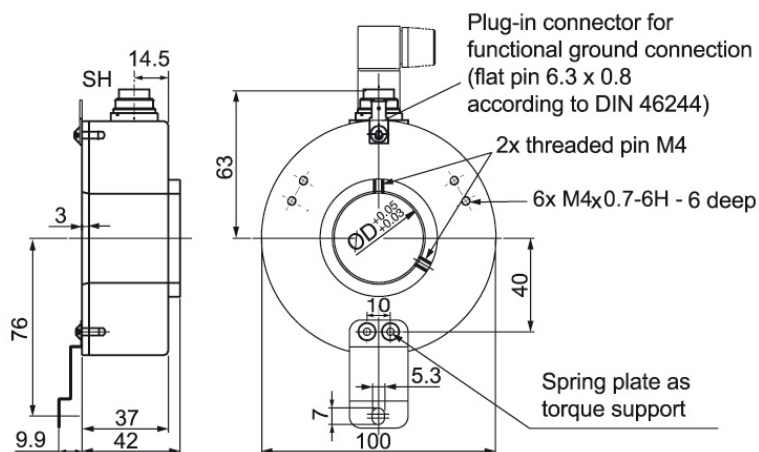
Cable connection K3, L3 with 2 m cable



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

Assignments				
	K3, L3	K3, L3	L3	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

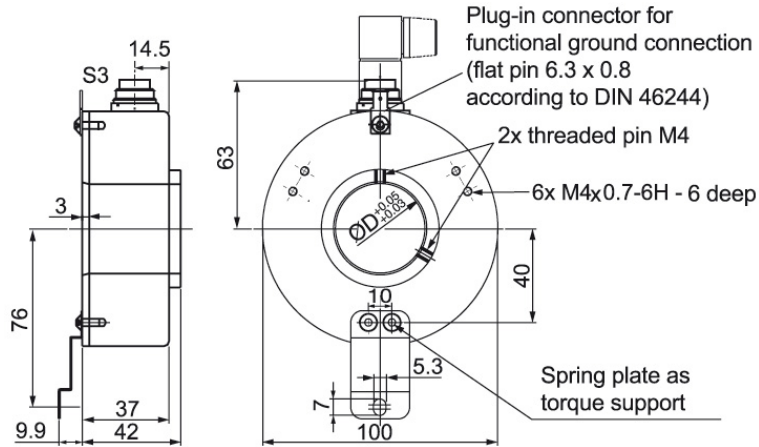
ABN inv. poss.

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

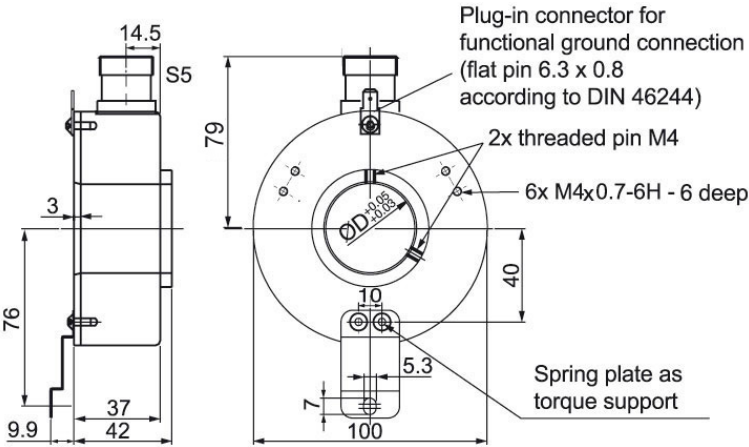
ABN inv. poss.

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

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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	-

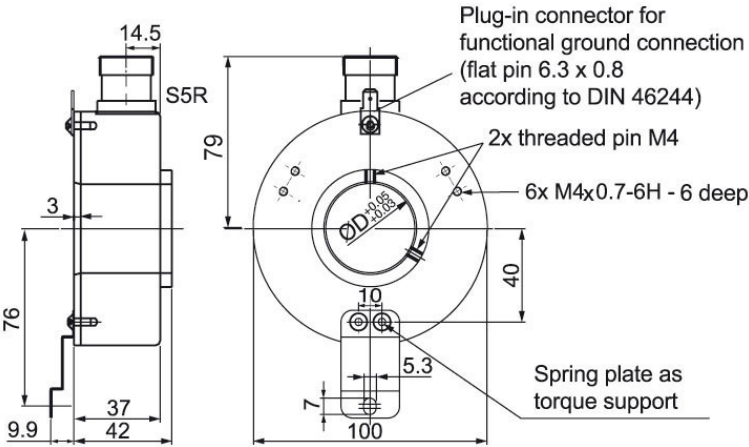
Connector (M23) S5, 12-pin



Description	ABN inv. poss.
S5 radial, 12-pin, Connector connected to encoder housing	•

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	-	-	-	-

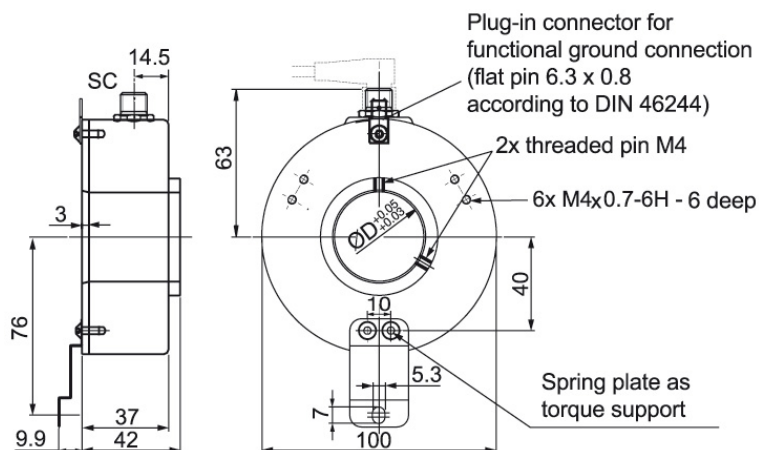
Connector (M23) S5R, 12-pin (clockwise)



Description	ABN inv. poss.
S5R radial, 12-pin, Connector connected to encoder housing	•

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

Options

Low temperature

Order key

The encoder WDG 100H 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).

ACA

IP55 all around (not 1 Vpp Sin/Cos)

Order key

The encoder WDG 100H can be supplied in a full IP55 version.

ACP

Max. RPM: 1500 rpm

Permitted Shaft-Loading, axial: 100 N, 12.237 kp

Permitted Shaft-Loading, radial: 120 N, 22.434 kp

Max. PPR: 20480 ppr

Starting-torque: approx. 5 Ncm at ambient temperature, approx. 1.416 in-ozf at ambient temperature

Cable length

Order key

The encoder WDG 100H 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

XXX = Decimeter

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

Example: 5 m cable = 050

Example Order No.	Type										Your encoder					
WDG 100H	WDG 100H										WDG 100H					
	Bore size															
25	25; 1Z= Ø 25.4 mm,Ø 1"; 28; 30; 32; 36; 38; 40; 42; 45															
	Pulses per revolution PPR:															
1024	512, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vpp 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 (TTL at 5 VDC)				-	H30								
		5 - 30	HTL, inv. (TTL/RS422 comp. at 5 VDC)				-	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								
		10 - 30	TTL, RS422 comp., inverted				-	245								
		8192 up to 20480	4.75 - 5.5	TTL				-	F05							
		4.75 - 5.5	TTL, RS422 comp., inverted				-	P05								
		10 - 30	HTL				-	F24								
		10 - 30	HTL inverted				-	P24								
		10 - 30	TTL, RS422 comp., inverted				-	645								
	1024, 2048	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									
	sensor-connector, M12x1, 12-pin, radial					•	SC12									
	Options															
	Description					Order key										
	Low temperature					ACA										
	IP55					ACP										
	Without option					Empty										
	Cable length					XXX = Decimeter										
Example Order No.=	WDG 100H	25	1024	ABN	H24	K3		WDG 100H								Your encoder

Example Order No. =	WDG 100H	25	1024	ABN	H24	K3		WDG 100H								Your encoder
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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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