

WACHENDORFF
The Encoder Experts

Online Data sheet

Encoder WDGI 58H

www.wachendorff-automation.com/wdgi58h

Wachendorff Automation systems and encoders

- Connectorized incremental quadrature encoders
- Industrial rugged encoders to suit your application
- Maximum permissible loads
- Made in Germany

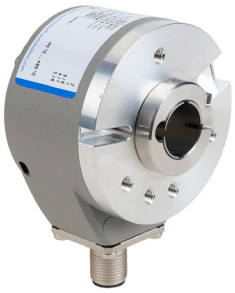
Wachendorff Part Number	AutomationDirect Equivalent	PPR
WDGI 58H-12-60-ABN-R30-SC8	58H12603ESC8	60
WDGI 58H-12-100-ABN-R30-SC8	58H121003ESC8	100
WDGI 58H-12-360-ABN-R30-SC8	58H123603ESC8	360
WDGI 58H-12-500-ABN-R30-SC8	58H125003ESC8	500
WDGI 58H-12-1000-ABN-R30-SC8	58H1210003ESC8	1000
WDGI 58H-12-1024-ABN-R30-SC8	58H1210243ESC8	1024
WDGI 58H-12-2000-ABN-R30-SC8	58H1220003ESC8	2000
WDGI 58H-12-2500-ABN-R24-SC8	58H1225003DSC8	2500
WDGI 58H-12-4096-ABN-R24-SC8	58H1240963DSC8	4096
WDGI 58H-12-5000-ABN-R24-SC8	58H1250003DSC8	5000
WDGI 58H-12-4096-ABN-R05-SC8	58H1240963CSC8	4096
WDGI 58H-12-5000-ABN-R05-SC8	58H1250003CSC8	5000

Wachendorff Part Number	AutomationDirect Equivalent	PPR
WDGI 58H-15-60-ABN-R30-SC8	58H15603ESC8	60
WDGI 58H-15-100-ABN-R30-SC8	58H151003ESC8	100
WDGI 58H-15-360-ABN-R30-SC8	58H153603ESC8	360
WDGI 58H-15-500-ABN-R30-SC8	58H155003ESC8	500
WDGI 58H-15-1000-ABN-R30-SC8	58H1510003ESC8	1000
WDGI 58H-15-1024-ABN-R30-SC8	58H1510243ESC8	1024
WDGI 58H-15-2000-ABN-R30-SC8	58H1520003ESC8	2000
WDGI 58H-15-2500-ABN-R24-SC8	58H1525003DSC8	2500
WDGI 58H-15-4096-ABN-R24-SC8	58H1540963DSC8	4096
WDGI 58H-15-5000-ABN-R24-SC8	58H1550003DSC8	5000
WDGI 58H-15-4096-ABN-R05-SC8	58H1540963CSC8	4096
WDGI 58H-15-5000-ABN-R05-SC8	58H1550003CSC8	5000

Accessory	Description
WDG012VGOM	Signal conditioner, isolated, Input: 2-channel, differential or single-ended line driver encoder, Output: 2-channel, differential or single-ended line driver encoder, 12–30 VDC operating voltage, 35mm DIN rail mount.
WDGHA153Z	Reducer bushing, 15mm to 1/2in, metal.
WDGHA1295	Reducer bushing, 12mm to 3/8in, metal.
WDGHA1263	Reducer bushing, 12mm to 1/4in, metal.
WDGHA1210	Reducer bushing, 12–10mm, metal.
WDGHA1208	Reducer bushing, 12–8mm, metal.
WDGHA1207	Reducer bushing, 12–7mm, metal.
WDGHA1206	Reducer bushing, 12–6mm, metal.
WDGDS10001	Encoder mounting tether, 46mm, stainless steel. Mounting hardware included.
WDGDS10004	Encoder mounting tether, 34mm, stainless steel. Mounting hardware included.
WDGDS10005	Encoder anti-rotation insert, 4mm pin slot, polyamide. Requires 4mm anti-rotation pin (pin not sold by AutomationDirect).
WDGDS10007	Encoder mounting tether, 49mm, stainless steel. Mounting hardware included.
WDGDS10008	Encoder mounting plate, 36mm, stainless steel. Mounting hardware included.
WDGDS10009	Encoder mounting tether, 35mm, stainless steel. Mounting hardware included.
WDGDS10011	Encoder mounting tether, 90.5mm, stainless steel. Mounting hardware included.
WDGDS10012	Encoder mounting tether, 48mm, stainless steel. Mounting hardware included.
WDGDS10013	Encoder mounting plate, 112mm bolt hole circle, stainless steel. Mounting hardware included.
WDGDS10019	Encoder mounting plate, 63mm bolt hole circle, stainless steel. Mounting hardware included.

Encoder WDGI 58H





- Rugged industrial standard encoder
- Housing cap die cast aluminum with particularly eco-friendly powder coating
- Up to 5000 PPR
- Thru-Bore
- High protection class IP65, with oil seal
- Maximum mechanical and electrical safety
- High noise immunity

Electrical Data	R24 Series	R30 Series	R05 Series
Power supply VDC	10–30 VDC	5–30 VDC	4.75–5.5 VDC
Output circuit	HTL inverted	HTL, inv. (TTL/RS422 comp. at 5 VDC)	TTL, RS422 comp. inverted
Signal level H>	H > Vcc - 2.5 VDC	H > Vcc - 10% Vcc	H > 2.5 VDC
Signal level L	L < 2.5 VDC	L < 2.5 VDC	L < 0.5 VDC
Circuit protection	Yes (see page 6)	Inverse-polarity protection only (see page 6)	No (see page 6)
Channels	ABN, and inverted signals	ABN, and inverted signals	ABN and inverted signals

Electrical Data (Common)	
Current consumption	typ. 70 mA
Signal shape	square-wave
Output	push-pull
Load	max. 40 mA / channel
Signal level mA	at 20 mA
Output frequency	max. 200 kHz

Resolution	
Pulses per revolution (ppr)	60, 100, 360, 500, 1000, 1024, 2000, 2500, 4096, 5000

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/s² (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27	1000 m/s² (6 ms)
Electrical Safety:	according to DIN VDE 0160
Protection rating (EN 60529):	Housing: IP65 all around
Operating temperature:	-40 to +85 °C [-40 to +185 °F]
Storage temperature:	-40 to +85 °C [-40 to +185 °F]

Machinery Directive: basic data safety integrity level	
$MTTF_d$	200 years
Mission time (TM)	25 years
Nominal service life (L10h)	1 x 10^{11} revs. at 20% rated shaft load and 6000 rpm
Diagnostic coverage (DC)	0%

Mechanical Data	
Flange	hollow shaft (through-bored)
Flange material	aluminum
Housing material	die cast aluminum, powder coated
Torque support options	incl. 1 torque support WDGDS10001
1. WDGDS10001 (included)	Torque support spring plate Compensation: axial: ±0.8 mm [0.0315in] radial: ±0.2 mm [0.0079in] Max. operating speed 6000 rpm
2. WDGDS10005 (sold separately)	Anti-rotation insert Requires customer supplied 4mm cylinder pin Compensation: axial: ±0.5 mm [0.0197in] radial: ±1.5 mm [0.0591in] Max. operating speed: 3000 rpm
Flange diameter	Ø 58 mm [Ø 2.283in]
Shaft material	stainless steel
Starting torque	approx 2.2 Ncm [3.115 in-ozf] at ambient temperature
Bore	Models 58H12: Ø 12 mm [0.472in] Models 58H15: Ø 15mm [0.591in]
Shaft length	44.5 mm [1.752in]
Insertion depth (min.)	11 mm [0.433in]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	60 N [6.118 kp]
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*

*Note: Due to frequency limits some maximum speeds may be lower than the mechanical max. Use the following formula to determine the maximum electrical speed: Max RPM = f_max(Hz) × 60 ÷ PPR

General Data

Weight:	approx. 220 g [7.76 oz]
Connections:	8-pin M12 A-coded connector

More Information

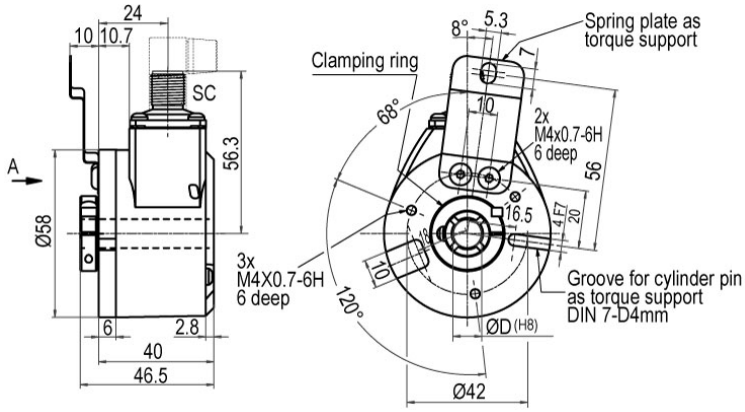
General technical data and safety instructions
http://www.wachendorff-automation.com/gtd

Duty information

Customs tarriff number	90318020
Country of origin	Germany

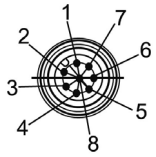
Sensor connector: (M12x1) SC radial, 8-pin

All dimensions in mm

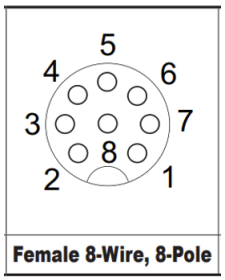


Description

SC8	radial, 8-pin, Connector connected to encoder housing

Wachendorff WDGI 58H Connector Pinout			
SC8 8-Pin Connector	**Circuit**	**Pin**	**Murrelektronik Wire Colors Part# 7000-170x1-292xxxx or 7024-171x1-406xxxx**
	GND	1	White
	(+) VCC	2	Brown
	A	3	Green
	B	4	Yellow
	N	5	Gray
	A inv.	6	Pink
	B inv.	7	Blue
	N inv.	8	Red
	Shield	Connected to housing	–

Part Number	Connector	Length	Protection Degree	Shielding
7000-17041-2920xx0	Axial female	xx=03, 05, or 10 (3, 5, or 10m)	IP65 / IP66 / IP67	None
7000-17061-2920xx0	90-degree female			
7024-17121-406xxx0	Axial female	xxx=015, 050, or 100 (1.5, 5, or 10m)	IP65 / IP68 / IP69K	Copper braid, tinned
7024-17141-406xxx0	90-degree female			



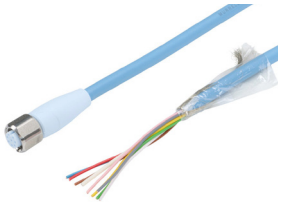
Female 8-Wire, 8-Pole



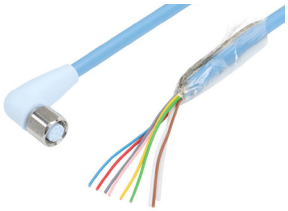
Unshielded Axial



Unshielded 90-degree



Shielded Axial



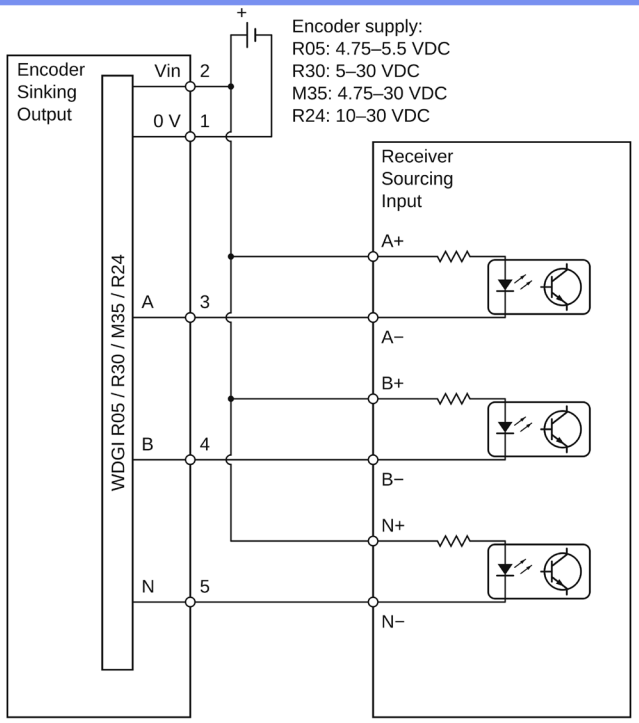
Shielded 90-degree

Example Wiring Diagrams

Example wiring diagrams for the WDGI 58H R05/R24/R30 encoder series are shown below and on the following pages. These examples show the encoder connected to a high-speed input card (P2-HSI or P3-HSI) for the Productivity PLC series.

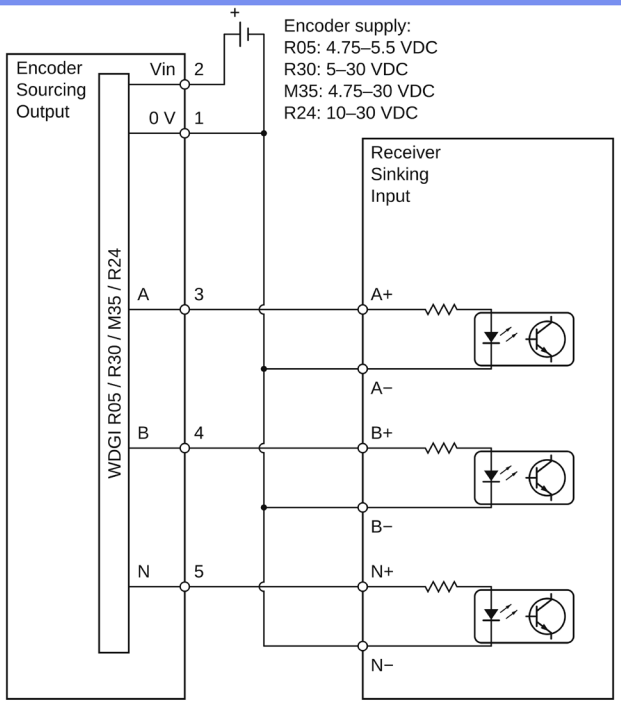
Encoder wired for HTL output with a single ended SINKING configuration shown.

WDGI R05 / R30 / M35 / R24 Encoder → Generic Single-Ended Input — SINKING Encoder connection



Encoder wired for HTL output with a single ended SOURCING configuration shown.

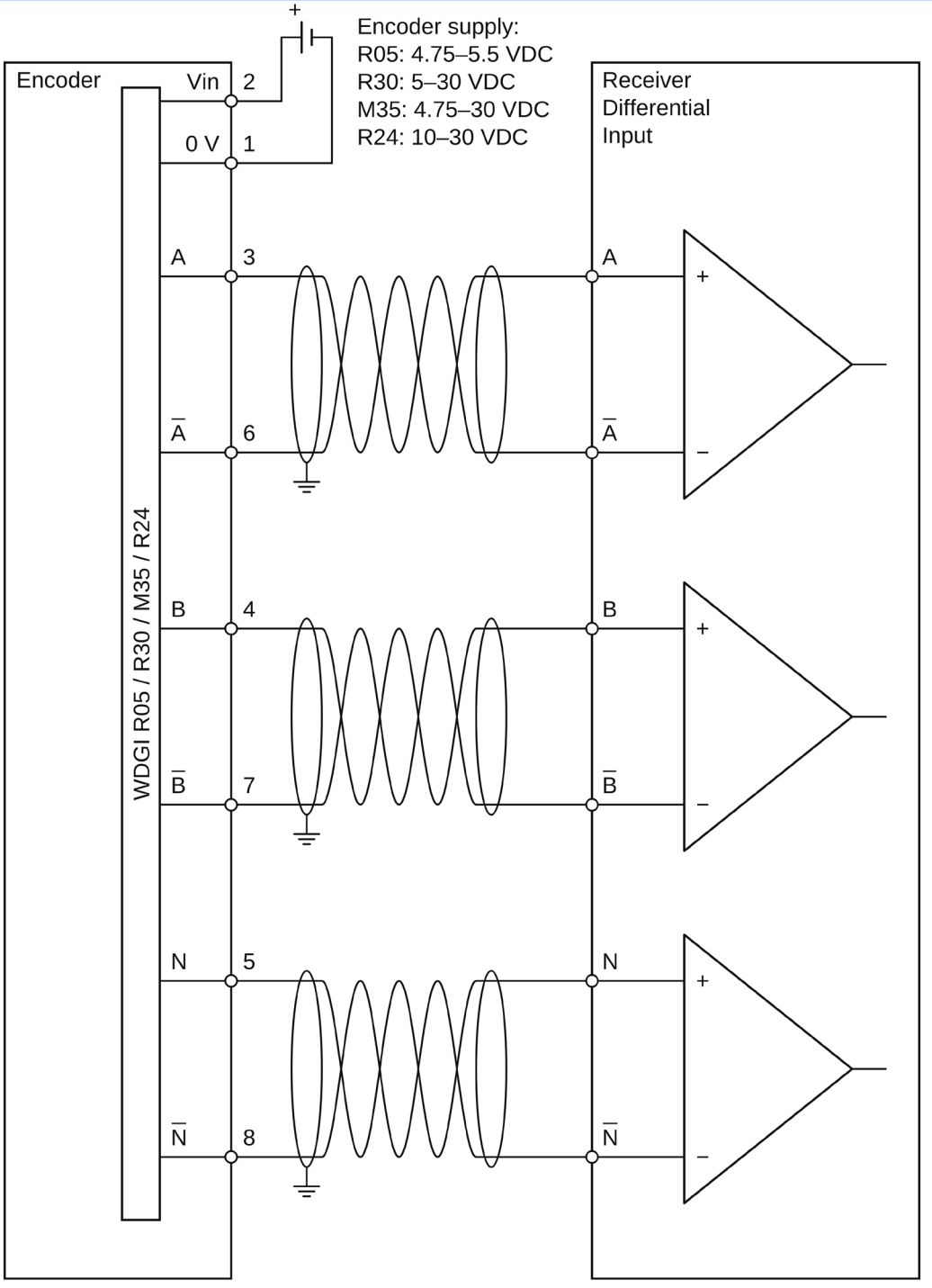
WDGI R05 / R30 / M35 / R24 Encoder → Generic Single-Ended Input — SOURCING Encoder connection



Line Driver Configuration

Encoder wired for TTL output with a line driver configuration shown.

WDGI R05 / R30 / M35 / R24 Encoder → Generic Complementary-Pair Input



Circuit protection:

(Models with R24 output circuits)

Reversing the polarity of the input power supply while simultaneously short-circuiting the outputs to each other or to GND or V+ will not result in damage.
Applying GND and V+ to two outputs is not permitted and can lead to failure.

Power Supply Inverse-polarity protection:

(Models with R24 and R30 output circuits)

Encoders have reverse polarity protection and can be mis-wired without concern of damage to the encoder. However, the encoder will not function properly.

Output Short circuit protection:

(All models)

Requirements:

- Supply lines not reversed!
- Only one output is short-circuit-proof against GND, +V (max. allowable supply voltage) or another output.

Example Ordering WDGI 58H			
Order No.	**Type**		
WDGI 58H	WDGI 58H		
	Shaft (mm)		
xx	12, 15		
	Pulses per revolution PPR		
xx	R05: 4096, 5000		
	R24: 2500, 4096, 5000		
	R30: 60, 100, 360, 500, 1000, 1024, 2000		
	Channels:		
ABN	AB quadrature with index pulse		
	Output circuit		
Rxx	**Type**	**Power supply VDC**	**Output circuit**
	R05	4.75–5.5	TTL, RS422 comp., inverted
	R24	10–30	HTL inverted
	R30	5–30	auto-configurable HTL, inv. (TTL/RS422 comp. at 5 VDC)
	Electrical connections		
SC8	**Description**		
	Connector: (shield connected to encoder housing)		
	8-pin M12 A-coded		

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For additional information, please contact AutomationDirect.
www.automationdirect.com