WACHENDORFF
The Encoder Experts

Online Data sheet

Encoder WDGI 58A

www.wachendorff-automation.com/wdgi58a



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 58A-06-60-ABN-M35-SC8	58A06603GSC8	60
WDGI 58A-06-100-ABN-M35-SC8	58A061003GSC8	100
WDGI 58A-06-360-ABN-M35-SC8	58A063603GSC8	360
WDGI 58A-06-500-ABN-M35-SC8	58A065003GSC8	500
WDGI 58A-06-1000-ABN-M35-SC8	58A0610003GSC8	1000
WDGI 58A-06-1024-ABN-M35-SC8	58A0610243GSC8	1024
WDGI 58A-06-2000-ABN-M35-SC8	58A0620003GSC8	2000
WDGI 58A-06-2500-ABN-M35-SC8	58A0625003GSC8	2500
WDGI 58A-06-4096-ABN-M35-SC8	58A0640963GSC8	4096
WDGI 58A-06-5000-ABN-M35-SC8	58A0650003GSC8	5000

Accessory	Description
MG58A	Mounting bell, 68mm and 75mm bolt hole circles, Fortron PPS.
SP300	Servo mount clamp, steel.
MR200KG06	Encoder measuring wheel, 63.7mm diameter (200mm circumference), 6mm shaft, aluminum and plastic, grooved Hytrel contact surface.
MR200KH06	Encoder measuring wheel, 63.7mm diameter (200mm circumference), 6mm shaft, aluminum and plastic, smooth Hytrel contact surface.
MR200NG06	Encoder measuring wheel, 63.7mm diameter (200mm circumference), 6mm shaft, aluminum and plastic, pimpled rubber contact surface.
MR200KR06	Encoder measuring wheel, 63.7mm diameter (200mm circumference), 6mm shaft, aluminum, knurled metal contact surface.
DSK290606	Encoder coupling, double loop, galvanized steel and polyurethane, setscrew, size 29, 6 x 6mm bore.
FB29B0606	Encoder coupling, bellows, stainless steel and aluminum, setscrew, size 29, 6 x 6mm bore.
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.

Encoder WDGI 58A



- Incremental quadrature encoder
- Robust construction for industrial use
- Body protection to IP67, shaft sealed to IP65
- High electrical immunity

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

Mechanical Data	
Flange	synchro flange
Flange material	aluminum
Housing material	Stainless steel
Flange diameter	58 mm [Ø 2.283in]
Cam mounting	pitch 69 mm [2.717 inches] (Accessory SP300)
Shaft material	stainless steel
Starting torque	approx 0.5 Ncm [0.708 in-ozf] at ambient temperature
Shaft	Ø 6 mm [0.236in]
Shaft length	12 mm [0.472in]
Max. Permissible shaft loading radial	125 N [12.746 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Bearings type	2 precision ball bearings
Nominal service life	3 x 10^8 revs. at 100% rated shaft load 5 x 10^9 revs. at 40% rated shaft load 4 x 10^{10} revs. at 20% rated shaft load
Max. operating speed	10000 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

Machinery Directive: basic data safety integrity level	
$MTTF_d$	2200 years
Mission time (TM)	25 years
Nominal service life (L10h)	4 x 10^{10} revs. at 20 % rated shaft load and 10000 rpm
Diagnostic coverage (DC)	0%

General Data	
Weight:	approx. 230 g [8.113 oz]
Connections:	8-pin M12 A-coded connector

Electrical Data	
Power supply VDC	4.75–30 VDC
Current consumption	typ. 40 mA
Signal shape	square-wave
Output circuit	HTL, inv. (TTL/RS422 comp. at 5 VDC)
Channels	ABN and inverted signals
Output	push-pull
Load	max. 40 mA / channel
Signal level mA	at 20 mA
Signal level H>	H > Vcc -10% Vcc
Signal level L	L < 2.5 VDC
Output frequency	HTL: max. 600 kHZ; TTL: max. 1 MHz
Circuit protection	See page 6

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)
Electrical Safety:	according to DIN VDE 0160
Protection rating (EN 60529):	Housing: IP65, IP67 shaft sealed: IP65
Operating temperature:	-40 to +85 °C [-40 to +185 °F]
Storage temperature:	-40 to +85 °C [-40 to +185 °F]

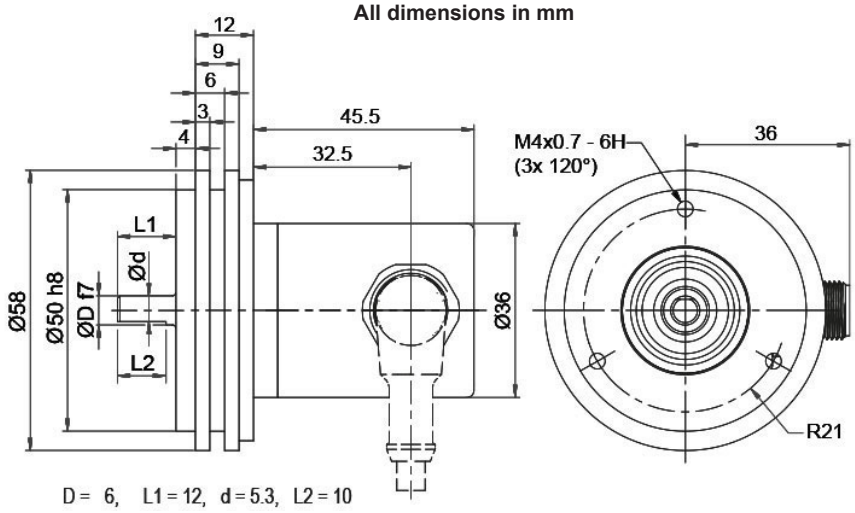
Duty information	
Customs tariff number	90318020
Country of origin	Germany

More Information

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

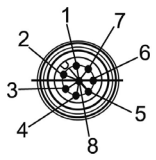
Sensor connector: (M12x1) SC radial, 8-pin

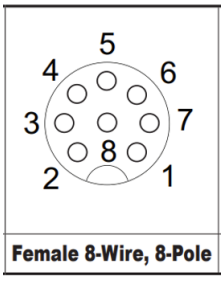
All dimensions in mm



Description

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

Wachendorff WDGI 58A 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	–



Female 8-Wire, 8-Pole

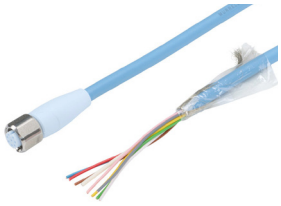
Part Number	Connector	Length	Protection Degree	Shielding
7000-17041-2920xx0	Axial female	xx=03, 05, or 10 (3, 5, or 10m)	IP65 / IP66 / IP67	None
7000-17061-2920xx0	90-degree female			
7024-17121-406xxx0	Axial female	xxx=015, 050, or 100 (1.5, 5, or 10m)	IP65 / IP68 / IP69K	Copper braid, tinned
7024-17141-406xxx0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



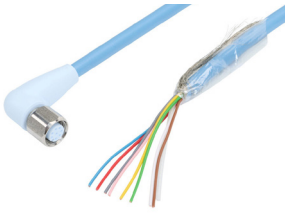
Unshielded Axial



Unshielded 90-degree



Shielded Axial



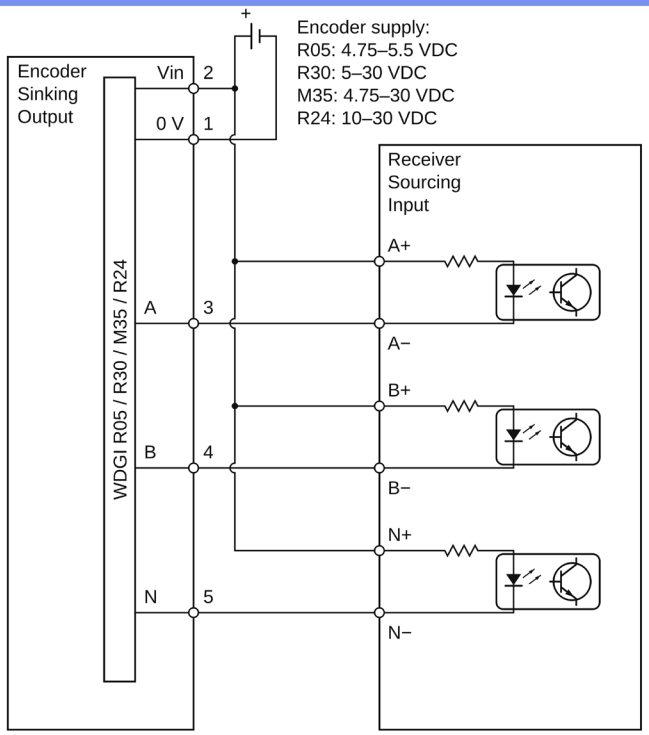
Shielded 90-degree

Example Wiring Diagrams

Example wiring diagrams for the WDGI M35 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.

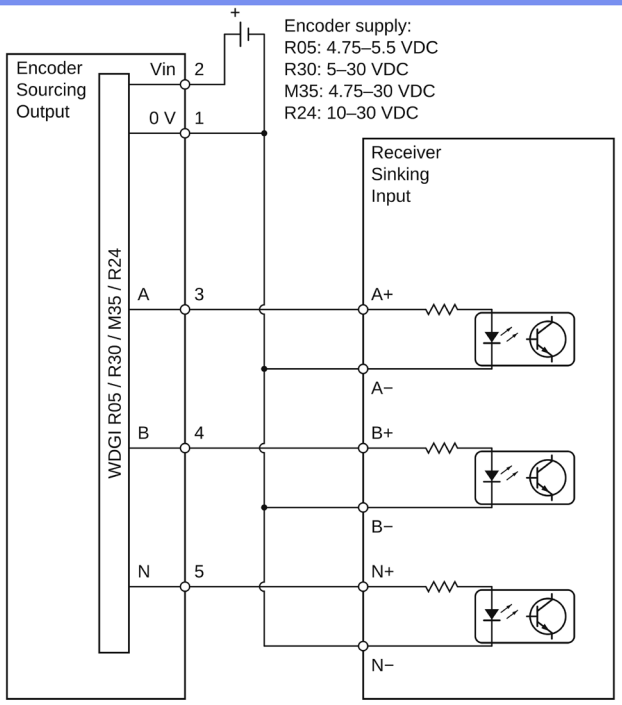
Encoder wired for HTL output with a single ended SINKING configuration shown.

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.

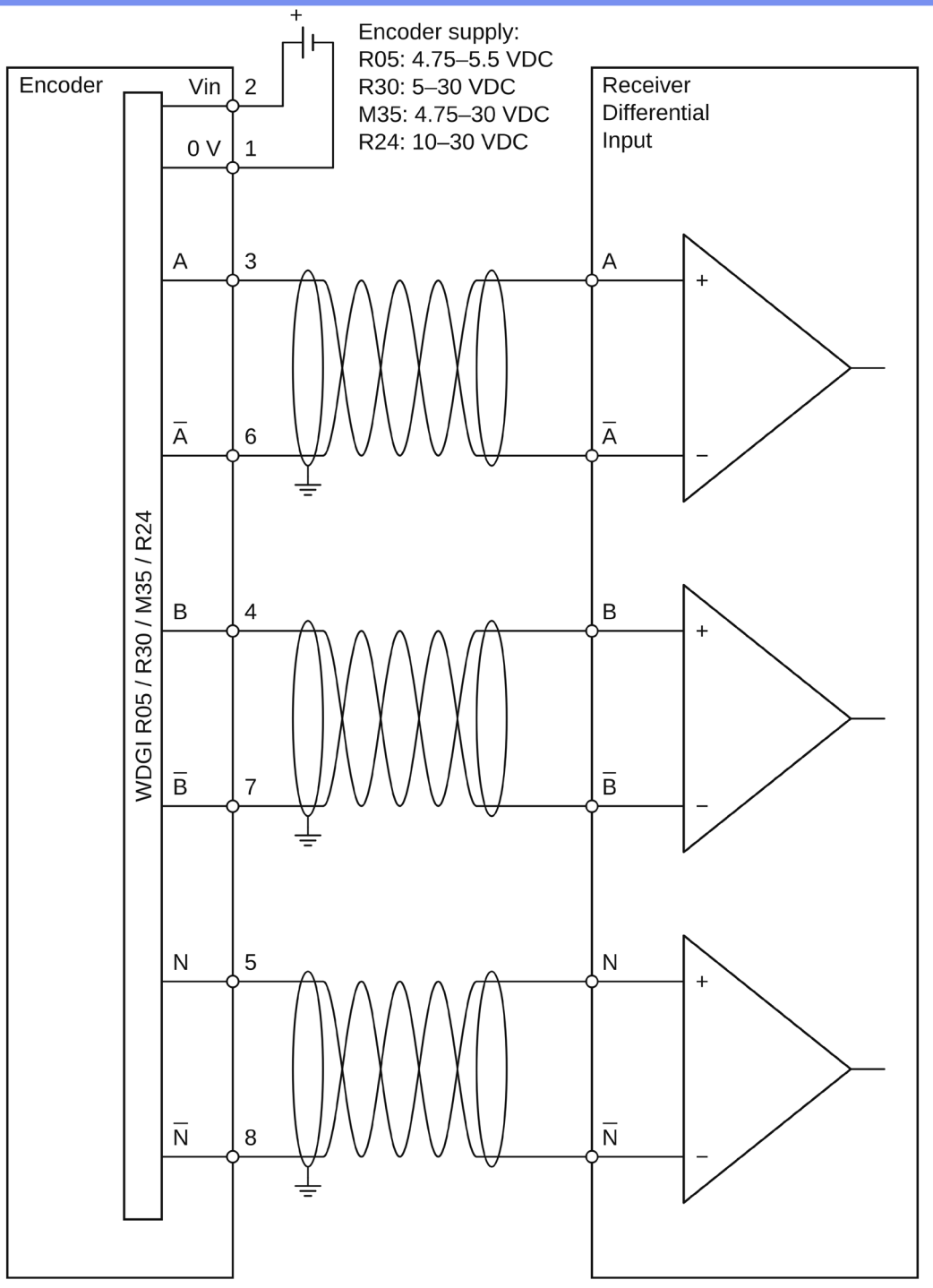
WDGI R05 / R30 / M35 / R24 Encoder → Generic Single-Ended Input — SOURCING Encoder connection



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:

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:

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:

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 58A		
Order No.	**Type**	
WDGI 58A	WDGI 58A	
	Shaft (mm)	
06	06	
	Pulses per revolution PPR	
xx	60, 100, 360, 500, 1000, 1024, 2000, 2500, 4096, 5000	
	Channels:	
ABN	AB quadrature with index pulse	
	Output circuit	
M35	**Power supply VDC**	**Output circuit**
	4.75–30	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	