WACHENDORFF
The Encoder Experts

Encoder Accessories

Encoder Signal Conditioner/Splitter - Wachendorff Encoders



The Wachendorff WDG012VGOM is a compact, DIN rail-mounted encoder distributor designed to condition, split, and cross-switch incremental encoder signals in industrial control systems. The WDG012VGOM is a universal encoder interface: the unit accepts two separate quadrature (A/B/Z or A/B or just A) encoder inputs and delivers two sets of quadrature signals out, with each set of outputs adjustable to HTL, TTL, (single-ended) or RS422 (differential) levels. The WDG012VGOM can act as an encoder level converter, a dual-output encoder splitter, or a contactless encoder signal switcher controlled via remote logic inputs. It handles both symmetric (differential) and asymmetric (single-ended) signal formats across the A, B, and Z channels, supports frequencies up to 1 MHz, and always regenerates full differential output pairs even when only single-ended signals are applied at the input. An integrated auxiliary 5 VDC output simplifies encoder power supply wiring, while front-panel LEDs provide at-a-glance diagnostics of operating mode and control-input status.

Features

- Universal encoder interface, applicable as level converter, encoder splitter and cross switch
- Two encoder inputs (A, /A, B, /B, Z, /Z), adjustable either to HTL, TTL or RS422 level
- Suitable for symmetrical (differential), asymmetrical (single-ended) quadrature as well as single channel signals
- Two signal outputs (A, /A, B, /B, Z, /Z), adjustable either to HTL, TTL or RS422 level
- Contactless and bounce-free switch-over between the encoder channels, by remote control signals
- Auxiliary output 5 VDC for encoder supply
- High frequency range up to 1 MHz
- Three primary applications:
  - Dual level converter (adjust/change/extend signals from two separate encoder inputs to two separate encoder outputs)
  - Encoder splitter (one input split into dual output)
  - Encoder signal switcher (one or two encoder inputs can be crossed/switched on the fly to two different outputs via digital inputs Control1 and Control2)

Signal Conditioner for Wachendorff Series Encoders

AutomationDirect Part Number	Price	Description	Drawing	For Use With
WDG012VGOM	$415.00	Wachendorff Automation 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.	PDF	Any non-ethernet/ comms encoders

WDG012VGOM Specifications

Power Supply	Input Voltage	12–30 VDC
	Protection Circuit	Reverse polarity protection
	Ripple	≤ 10% at 24 VDC
	Consumption	Approximately 50 mA (unloaded)
Connections	Connector Type	Screw terminals, 1.5mm^2 / AWG16
Encoder Supply	Output Voltages	5.2 VDC and 10–28 VDC (approx. 2 VDC lower than input voltage)
	Output Current	Max. 125 mA
	Protection	Short-circuit proof
Incremental Encoder Inputs	Number of Inputs	2 encoders
	Signal Levels	Adjustable to TTL (single ended <5V) / RS422 (differential signal > 1V) or HTL (10–30 V)
	Channels	Symmetrical: A, /A, B, /B, Z, /Z Asymmetrical: A, B, Z
	Frequency	Symmetrical: max. 1 MHz Asymmetrical: max. 250 kHz
	Internal Resistance	Ri ≈ 4.7 kOhm
Control DIP Switch	Number of Inputs	2
	Application	Contactless and bounce-free signal switchover
	Levels	HTL, PNP (10–30 V)
Incremental Encoder Outputs	Number of Outputs	2 encoders
	Output Level	Adjustable to TTL / RS422 or HTL (12–30 V, ≙ power supply voltage)
	Channels	A, /A, B, /B, Z, /Z
	Output Current	RS422/TTL: 50 mA HTL: max. 30 mA (per output)
	Output Circuit	Push-pull
	Signal Propagation Delay	Approximately 600 ns
	Protection	Short-circuit proof
Housing	Material	Plastic
	Mounting	35mm DIN rail (according to EN 60715)
	Protection Class	IP20
	Weight	~ 100g
Temperature Range	Operation	-20 to +60 °C [-4 to +140 °F] (not condensing)
	Storage	-30 to +75 °C [-22 to +167 °F] (not condensing)
Failure Rate	MTBF in Years	146.4 years (long-term usage at 60 °C [140 °F])
Conformity and Standards	EMC 2004/108/EC	EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	Guideline 2011 / 65 / EU	RoHs

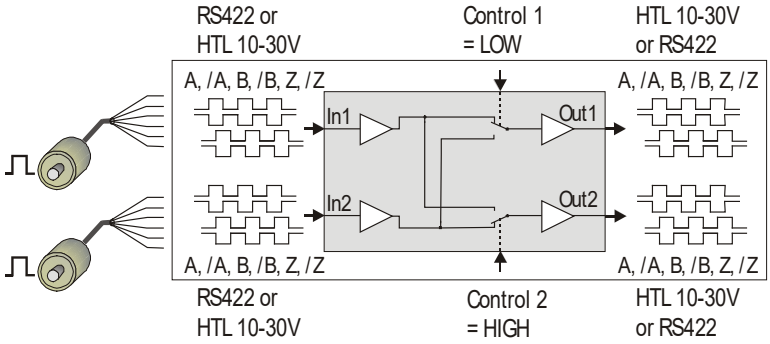
Signal Conditioner - Applications

Dual Level Converter

Both inputs can be individually set to either symmetric (differential) format using A, /A, B, /B, Z, /Z channels, or to asymmetric (single-ended) format using A, B, Z channels only. Acceptable input levels are RS422 (differential), TTL* (single-ended) and HTL 10–30 V.

The output format can again be selected individually for each output. The outputs provide all signals including the inverted channels, even when no inverted signals are applied to the input.

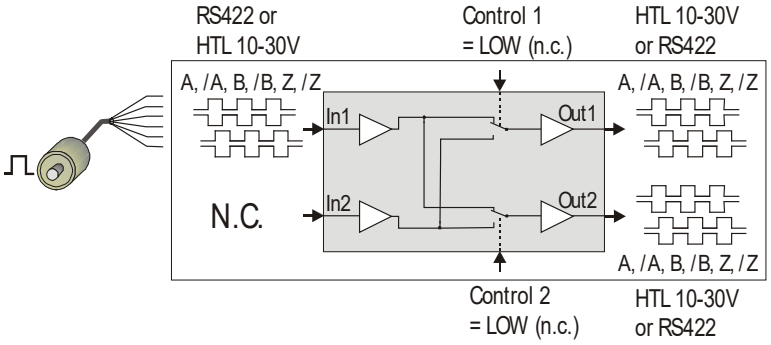
With Control input 1 = LOW (or unconnected) and Control input 2 = HIGH the signal ways are as shown in the drawing above, featuring two independent level converters.



Encoder Splitter (Dual Output)

Input 1 is used as encoder input, and Input 2 remains unconnected. The input can be set to either symmetric (differential) format using A, /A, B, /B, Z, /Z channels, or to asymmetric (single-ended) format using A, B, Z channels only. Acceptable input levels are RS422 (differential), TTL* (single-ended) and HTL 10–30 V.

The output standard can again be selected individually for each output. The outputs provide always all signals including the inverted channels, even when no inverted signals are applied to the input. Control1 and Control2 remain unconnected with this application.



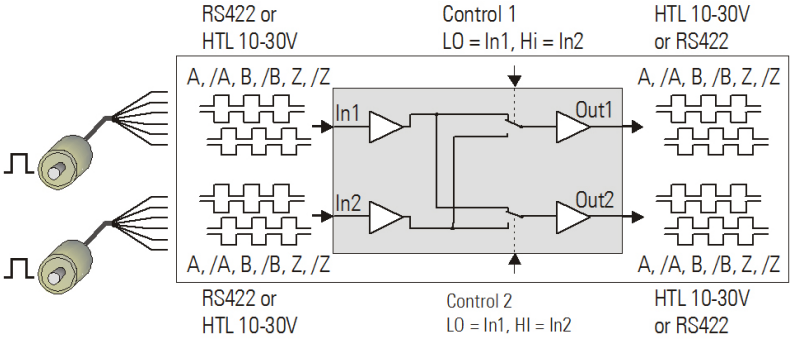
Encoder Signal Switcher

Both inputs can be individually set to either symmetric (differential) format using A, /A, B, /B, Z, /Z channels, or to asymmetric (single-ended) format using A, B, Z channels only. Acceptable input levels are RS422 (differential), TTL* (single-ended) and HTL 10–30 V.

The output standard can again be selected individually for each output. The outputs provide always all signals including the inverted channels, even when no inverted signals are applied to the input.

Inputs Control1 and Control2 select the signal ways:

- LOW: The corresponding output is connected to input 1
- HIGH: The corresponding output is connected to input 2



** For TTL inputs (single-ended <5V), see section 3.4 of the WDG012VGOM user manual.*