

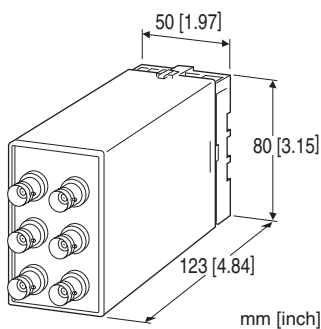
## Dual Output Plug-in Signal Conditioners W-UNIT

### ENCODER SIGNAL DISTRIBUTOR

(rotary encoder use, BNC connection)

#### Functions & Features

- Isolating two phase pulse input signals from a rotary encoder and distributing them to two outputs (input frequency = output frequency)
- Various outputs (open collector, voltage pulse, RS-422 line driver pulse)
- Can be used as a pulse isolator of two different I/O specs
- Converting RS-422 line driver pulse into an open collector pulse
- Maximum frequency of 1 MHz
- BNC connector
- Characteristic impedance 50Ω and 75Ω available



## MODEL: WRPPB-[1][2][3][4]-[5][6]

### ORDERING INFORMATION

- Code number: WRPPB-[1][2][3][4]-[5][6]
- Specify a code from below for each of [1] through [6].  
(e.g. WRPPB-A1K5K5N-M2/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT

- A1:** Dry contact
- K:** 3.3 V pulse, input impedance approx. 8 kΩ 100 pF
- K5:** 3.3 V pulse, input impedance 50 Ω
- K7:** 3.3 V pulse, input impedance 75 Ω
- C:** 5 V pulse, input impedance approx. 14 kΩ 100 pF
- C5:** 5 V pulse, input impedance 50 Ω
- C7:** 5 V pulse, input impedance 75 Ω
- D:** 12 V/24 V pulse
- J:** RS-422 line driver pulse

#### [2] OUTPUT 1

- A:** Open collector
- K5:** 3.3 V pulse, output impedance 50 Ω
- K7:** 3.3 V pulse, output impedance 75 Ω
- M5:** 5 V pulse, output impedance 50 Ω
- M7:** 5 V pulse, output impedance 75 Ω
- Q7:** 10 V pulse, output impedance 50 Ω
- N:** 12 V pulse, load resistance 600 Ω
- J:** RS-422 line driver pulse

#### [3] OUTPUT 2

Same range availability as Output 1  
(Q7 not selectable)

#### [4] OUTPUT LOGIC (both Input 1 & 2)

- N:** The same as the input
- R:** Inverted

#### [5] POWER INPUT

- AC Power
- M2:** 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)
- DC Power
- R:** 24 V DC  
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)
- P:** 110 V DC  
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### [6] OPTIONS

- blank:** none
- /Q:** With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

- COATING (For the detail, refer to our web site.)
- /C01:** Silicone coating
- /C02:** Polyurethane coating
- /C03:** Rubber coating
- TERMINAL SCREW MATERIAL
- /S01:** Stainless steel

#### GENERAL SPECIFICATIONS

- Construction:** Plug-in
- Connection**
- I/O:** BNC connectors  
(Recommended connector manufacturer: Hirose)
- Power input:** M3.5 screw terminals
- Screw terminal:** Chromated steel (standard) or stainless steel
- Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output 1 to output 2 to power

**Input pulse sensing:** DC coupled

## INPUT SPECIFICATIONS

### ■ Dry Contact

**Max. frequency:** 100 kHz

**Min. pulse width:**  $\geq 5 \mu\text{s}$

### Input requirements

**Sensing:** 5 V DC / 10 mA

### Detecting level:

OFF:  $\geq 3.0 \text{ V} / \geq 750 \Omega$

ON:  $\leq 2.0 \text{ V} / \leq 333 \Omega$

Sensing voltage/current shows the excitation supply to the input terminal and the current value at the time of shortcircuit.

Detecting level shows the threshold used to determine ON or OFF status of the pulses and the resistance values of the dry contact of that time.

### ■ Voltage Pulse

**Waveform:** Square or sine

#### •3.3 V Pulse

Max. frequency: 1 MHz

Min. pulse width:  $\geq 0.5 \mu\text{s}$

Input impedance: Approx. 8 k $\Omega$  100 pF

Max. voltage between terminals (pulse): -10 - +15 V

Max. voltage between terminals (DC): -5 - +10 V DC

Detecting level:  $V_H \geq 2.0 \text{ V}, V_L \leq 1.3 \text{ V}$

Input impedance: Approx. 50  $\Omega$ , 75  $\Omega$

Max. voltage between terminals (pulse): -7 - +7.5 V

Max. voltage between terminals (DC): -5 - +10 V DC

Detecting level:  $V_H \geq 1.5 \text{ V}, V_L \leq 0.75 \text{ V}$

#### •5 V Pulse

Max. frequency: 500 kHz

Min. pulse width:  $\geq 1 \mu\text{s}$

Input impedance: Approx. 14 k $\Omega$  100 pF

Max. voltage between terminals (pulse): -10 - +15 V

Max. voltage between terminals (DC): -5 - +10 V DC

Detecting level:  $V_H \geq 3.0 \text{ V}, V_L \leq 2.0 \text{ V}$

Input impedance: Approx. 50  $\Omega$ , 75  $\Omega$

Max. voltage between terminals (pulse): -7 - +10 V

Max. voltage between terminals (DC): -5 - +7.5 V DC

Detecting level:  $V_H \geq 2.4 \text{ V}, V_L \leq 1.2 \text{ V}$

#### •12 V, 24 V Pulse

Max. frequency: 100 kHz

Min. pulse width:  $\geq 5 \mu\text{s}$

Input impedance: Approx. 20 k $\Omega$

Max. voltage between terminals (pulse): -30 - +50 V

Max. voltage between terminals (DC): -30 - +50 V DC

Detecting level:  $V_H \geq 7.0 \text{ V}, V_L \leq 5.0 \text{ V}$

### ■ RS-422 Line Driver Pulse

**Maximum frequency:** 1 MHz

**Receiver:** Conforms to RS-422

## OUTPUT SPECIFICATIONS

### ■ Open collector

**Max. frequency:** 100 kHz

**Rating:** 50 V DC @ 100 mA

**Saturation voltage:** 0.12 V DC

### ■ Voltage Pulse (open voltage):

Rating (3.3, 5, 10 or 12 V)  $\pm 20 \%$

**Max. frequency ; Load resistance** (the lower value of either this or the maximum frequency of the input signal)

3.3 V 1 MHz / Output code K5: 50  $\Omega$ , K7: 75 $\Omega$

5 V 500 kHz / Output code M5: 50  $\Omega$ , M7: 75 $\Omega$

10 V 200 kHz / 75 $\Omega$

12 V 100 kHz / 600  $\Omega$

( $\geq 6 \text{ V}$  @ 600  $\Omega$  load)

**Low level:**  $\leq 0.5 \text{ V}$

■ **RS-422 Line Driver Pulse:** Conforms to RS-422

**Max. frequency:** 1 MHz

**Output current:**  $\pm 20 \text{ mA}$

## INSTALLATION

### Power Consumption

#### •AC:

Approx. 4 VA at 100 V

Approx. 5 VA at 200 V

Approx. 6 VA at 240 V

#### •DC: Approx. 3 W

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** 260 g (0.57 lb)

## PERFORMANCE

### Response time

•Lower value of I/O max. frequency is 1 MHz:

0.15 - 0.5  $\mu\text{sec}$ .

•Lower value of I/O max. frequency is 500 kHz:

0.2 - 1.2 $\mu\text{s}$

•Lower value of I/O max. frequency is less than 500 kHz:

0.2 - 2  $\mu\text{sec}$ .

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

**Dielectric strength:** 500 V AC @ 1 minute (input to output 1 to output 2)

2000 V AC @ 1 minute (input or output 1 or output 2 to power to ground)

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

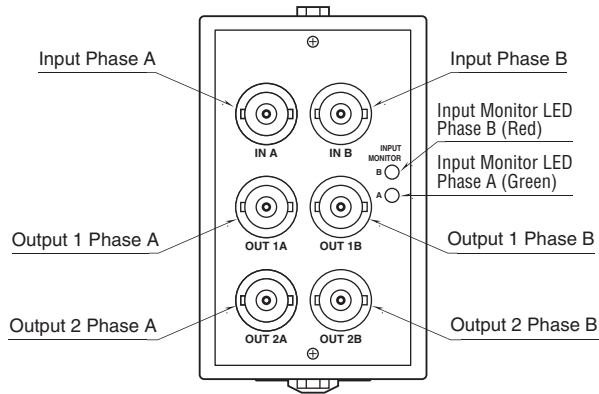
EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1  
 Measurement Category II  
 Pollution Degree 2  
 Input or output 1 or output 2 to power input:  
 Reinforced insulation (300 V)  
 Input to output 1 to output 2: Basic insulation (300 V)  
 RoHS Directive

## EXTERNAL VIEW

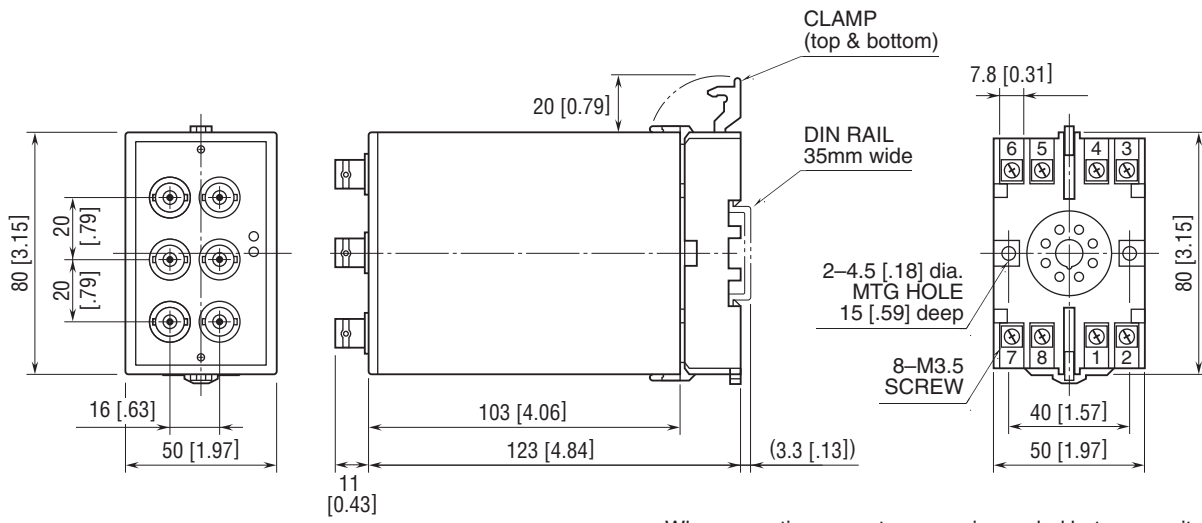


## OUTPUT LOGIC

Applicable for both Output 1 and 2.

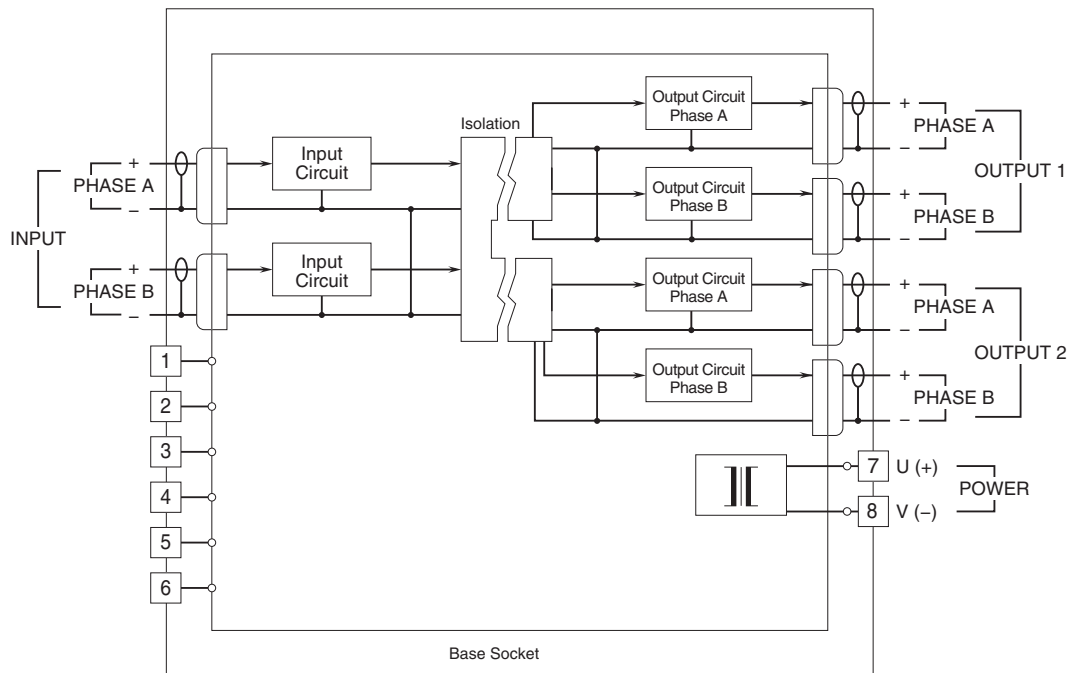
Input \ Output		Voltage pulse RS-422 line driver pulse	Dry contact
		H L	OFF ON
Voltage pulse or RS-422 line driver pulse	Non-inverted	H L	H L
	Inverted	H L	H L
Open collector	Non-inverted	OFF ON	OFF ON
	Inverted	OFF ON	OFF ON

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



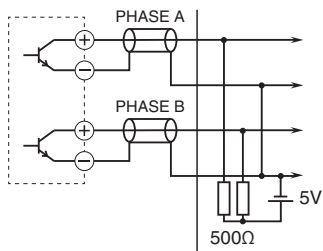
• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

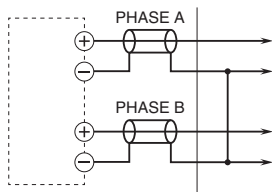


### Input Connection Examples

#### • Dry Contact Input

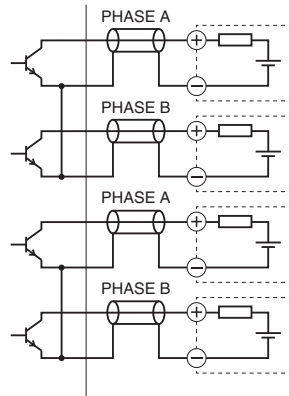


#### • Voltage Pulse Input

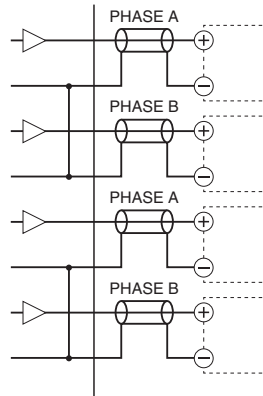


### Output Connection Examples

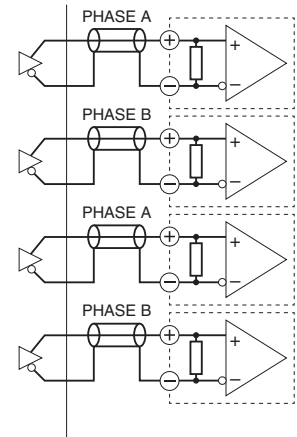
#### • Open Collector Output



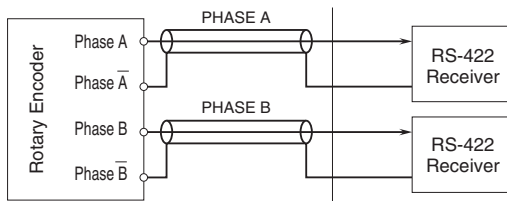
#### • Voltage Pulse Output



#### • RS-422 Line Driver Pulse Output



#### • RS-422 Line Driver Pulse Input





Specifications are subject to change without notice.