

## Detects the Rotary Encoder Direction

- Input phase difference signal from the Encoder to detect the direction of rotation.
- High-speed response at 120 kHz.
- Mounts to DIN Track. Thin design enables superb mounting efficiency.
- Front-panel switch enables reversing phase Z logic. Enables connecting either voltage outputs or open-collector outputs.



Be sure to read *Safety Precautions* on page 3.

## Ordering Information

Power supply voltage	Output configuration	Model
12 to 24 VDC	Open-collector output	E63-WF5C

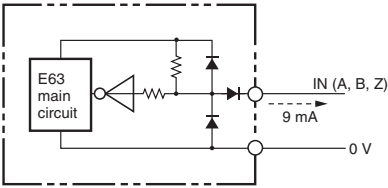
## Ratings and Specifications

### Direct Discrimination Unit [Refer to *Dimensions* on page 4.]

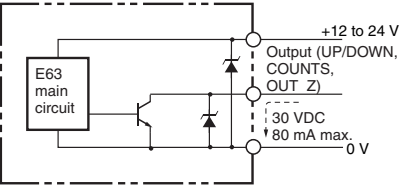
Item	Model	E63-WF5C
Power supply voltage		12 VDC –10% to 24 VDC +15%, ripple (p-p): 5% max.
Current consumption		50 mA max.
Input	Input signal	Phases A, B, and Z (phase difference signals)
	Phase difference	90° ±45° max.
	ON	6 mA max. at 0 to 2 V
	OFF	1.5 mA max. at 8 to 24 V
	Input short current	9 mA
	Max. applied voltage	30 V max.
	Input impedance	Approx. 1 Ω
Output	Output signal	UP/DOWN (direction detection), COUNTS output (count), OUT Z
	Output configuration	Open-collector output
	Output capacity	Applied voltage: 30 VDC max. Sink current: 80 mA max. Residual voltage: 1 V max. (at sink current of 80 mA) Residual voltage: 0.4 V max. (at sink current of 20 mA)
Maximum response frequency		120 kHz
Output response time		2 μs max.
Indicators		Power indicator (red), Phase Z output indicator (green)
Ambient temperature range		Operating: –10 to 55°C (with no icing), Storage: –25 to 80°C (with no icing)
Ambient humidity range		Operating/Storage: 35% to 85% (with no condensation)
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance		Destruction: 300 m/s <sup>2</sup> 3 times each in X, Y, and Z directions
Connection method		Terminal block
Material		Case: ABS
Weight (packed state)		Approx. 100 g
Accessories		Instruction manual

I/O Circuit Diagrams

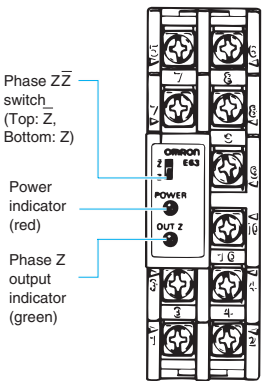
Input Circuits (IN A, IN B, IN Z)



Output Circuits (UP/DOWN, COUNTS, OUT Z)



Operate

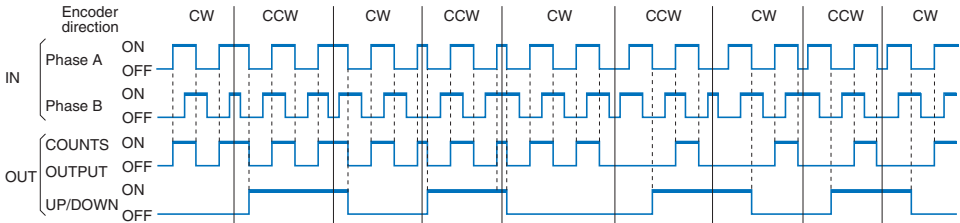


Terminal No.	Signal
1	0 V (common)
2	Encoder power supply: 12 to 24 VDC
3	IN A
4	IN B
5	0 V (common)
6	Power supply: 12 to 24 V
7	COUNTS output
8	UP/DOWN
9	OUT Z
10	IN Z

Note: Terminals 2 and 6 are connected internally.

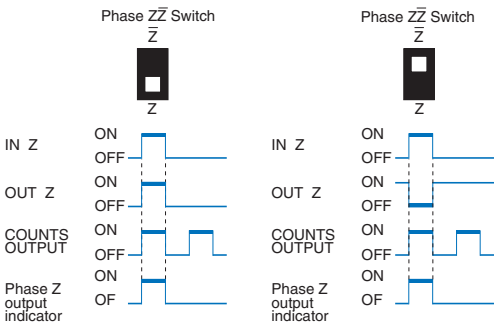
Timing Charts

Relation between Inputs (phase A and phase B) and Outputs (COUNTS, UP/DOWN)



Relation between IN Z and OUT Z

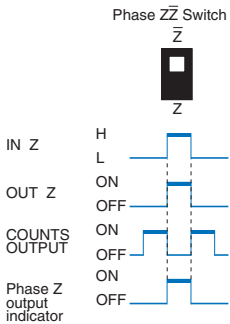
Using a Rotary Encoder with an Open-collector Output



\*Set the phase Z switch to Z.

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Using a Rotary Encoder with a Voltage Output

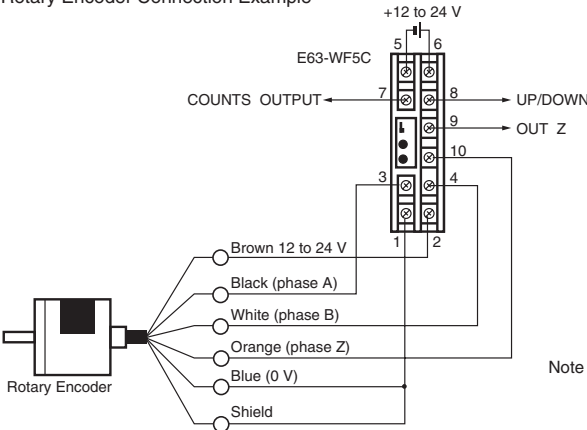


\*Set the phase Z switch to Z.

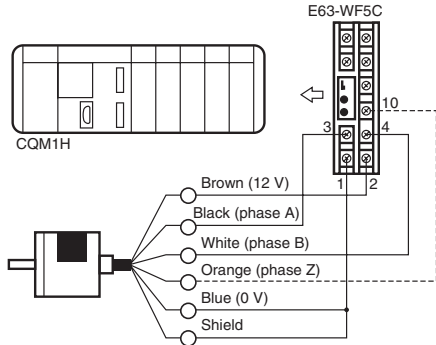
Note: The output from a Rotary Encoder with a Voltage Output can switch 9 mA.

Connection

Rotary Encoder Connection Example



CQM1H Programmable Controller Connection Example



- Note 1: Used only to reset the counter using phase Z. When doing so, set the phase Z switch to Z and use a Rotary Encoder with an Open-collector Output.
- 2: When using phase Z, be sure that the width of phase Z is the same as or wider than the width of phase A.
- 3: Use one of the following Rotary Encoders: E6A2-CW3C, E6A2-CW5C, E6A2-CWZ3C, E6B2-CWZ6C, E6H-CWZ6C, E6C2-CWZ6C, or E6D-CWZ2C.

## Safety Precautions

Refer to *Warranty and Limitations of Liability*.

### WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly.  
Do not use it for such purposes.

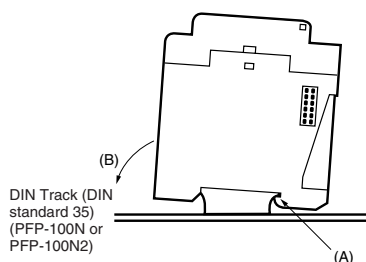


### Precautions for Correct Use

Do not use the Encoder under ambient conditions that exceed the ratings.

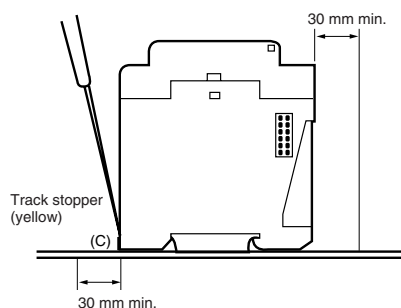
#### ● Mounting

- Mount to DIN Track as shown in the following diagram.
- Hook part (A) at the top of the E63-WF on the DIN Track first and then press in on the E63-WF in the direction indicated by (B).



#### ● Removal from DIN Track

Pull down on the track stopper (C) with a flat-blade screwdriver and then remove the E63-WF from the DIN Track. When using DIN standard 35 track, keep other devices on the track separated from the E63-WF by at least 30 mm to facilitate mounting and removal.



- Do not place the connection cable together with high-voltage cables. Keep it isolated from other cables whenever possible.
- The response speed of the E63-WF is 120 kHz. Do not allow the Rotary Encoder to exceed this speed.

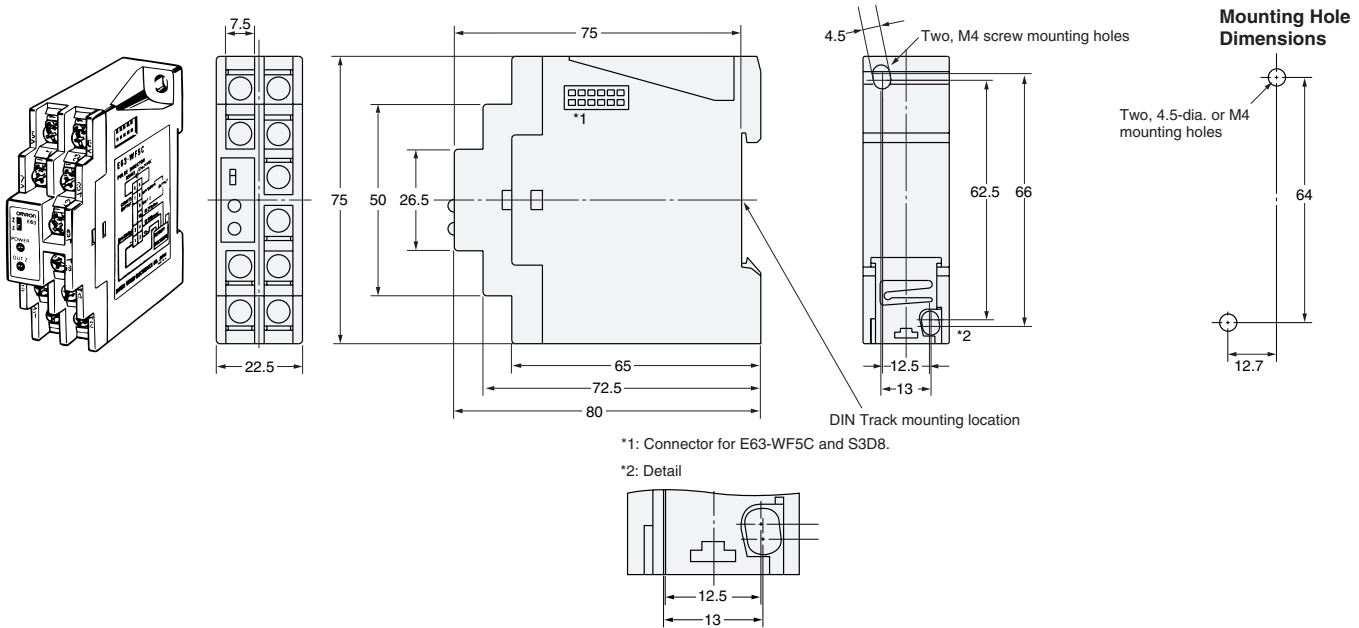
#### ● Connection

Spurious pulses may be generated when power is turned ON and OFF. Wait at least 0.1 s after turning ON the power to the Encoder before using the connected device, and stop using the connected device at least 0.1 s before turning OFF the power to the Encoder. Also, turn ON the power to the load only after turning ON the power to the Encoder.

Dimensions

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

E63-WF



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