**Portwell®**
Industrial Automation

Product Description

- Ergonomic design for a more comfortable grip and aesthetically pleasing appearance. A high-performance core encoder and a rotary switch featuring Taiwan-imported components. The built-in strong magnet allows for a base-style hanging box, enabling easier and more secure placement.
- Compatible with various CNC systems, PLCs, and controller systems. Customizable functions can be added, such as rapid traverse, jog, incremental feed, and forward/reverse rotation.
- Multiple encoding modes are available for selection

Technical Drawings

unit：mm

86

70

175

95.5

28.5 28.5

3-⌀5

41.5

12.5
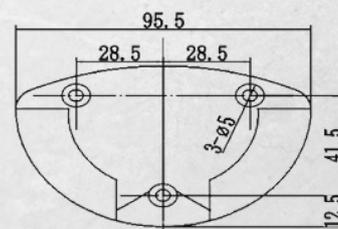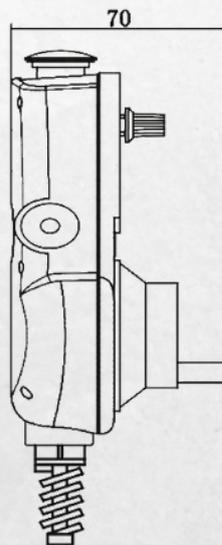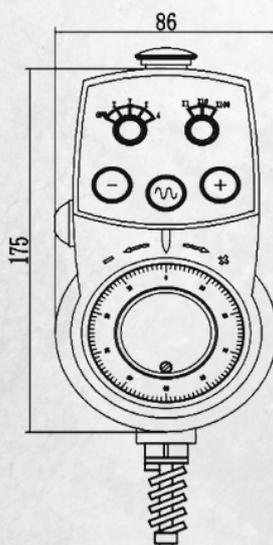
Base Mounting Dimensions

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Wiring Diagram

* Unused wires must be cut short and properly insulated to prevent exposed copper, Wrap each individual wire tip separately to prevent contact and short circuits.
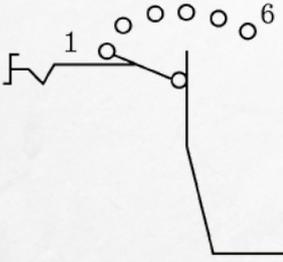
Comprehensive Handwheel Wiring Diagram

No.	Color		Signal	Function
Pulse Generator	Red Wire		VCC	Pulse+ Voltage
	Black Wire		0V	Pulse- Voltage
	Green Wire		A	Phase A
	White Wire		B	Phase B
	Purple Wire		A-	A-Phase Reversal
	Purple-Black Wire		B-	B-Phase Reversal
Axis Selection Switch	Yellow Wire		X	Axis Select X
	Yellow-Black Wire		Y	Axis Select Y
	Brown Wire		Z	Axis Select Z
	Brown-Black Wire		4	Axis Select 4
	Pink Wire		5	Axis Select 5
	Pink-Black Wire		6	Axis Select 6
Multiplier Switch	Grey Wire		X1	Multiplier X1
	Grey-Black Wire		X10	Multiplier X10
	Orange Wire		X100	Multiplier X100
E-STOP Switch	Blue Wire		C	E-Stop Common (C)
	Blue-Black Wire		NC	E-Stop Normally Closed (NC)
Operation Indicator Light	Green-Black Wire		LED+	Indicator Cathode (+)
	White-Black Wire		LED-	Indicator Cathode (-)
Working Terminal	Orange-Black Wire		COM	Switch Input Common

Warning: Unused wires must be cut short, stripped of excess copper, and individually insulated. Ensure they do not contact other circuits, components, or the casing to prevent short circuits. · Please read this specification carefully before wiring to avoid affecting handwheel operation. · The positive and negative wires of the encoder must not be reversed. Excessive voltage will burn out the device. The standard voltage is 5V. For specific systems (e.g., Mitsubishi uses 12V, PLC uses 24V), connect the voltage confirmed at the time of purchase. · The COM terminal is the common point for the handwheel switches and must be connected, otherwise the switches will not function. · Handle the handwheel with care. Impacts can cause damage. Do not apply excessive force when rotating the encoder disk or switches to avoid reducing service life. · If A-, B- signals are not required, leave them unconnected. The handwheel indicator light operates at DC 5–24V. · For Mitsubishi systems and PLCs that do not require A-, B- signals, leave these terminals unconnected.

Technical Specifications

Pulse Generator

Wire Color	Signal	Function
Red	VCC	Connect according to system requirements, e.g., Mitsubishi systems require 12V.
Black	OV	
Green	A	
White	B	
Purple	A-	This wire/connection is optional if the function is not required. Leave it unconnected if the wire is not provided.
Purple-Black	B-	

Axis Selection

Wire Color	Signal	Gray Code Diagram Set					Binary Code Diagram Set				
		Function	L4	L2	L1	Axis Code	L4	L2	L1	Axis Code	Wiring
Yellow (L1)	L1	OFF	0	0	0	000	0	0	0	000	
Yellow-Black (L2)	L2	X Axis	○	○	●	001	○	○	●	001	To L1
Brown (L4)	L4	Y Axis	○	●	●	011	○	●	○	010	To L2
Brown-Black (L8)	L8	Z Axis	○	●	○	010	○	●	●	011	To L3
		4 Axis	●	●	○	110	●	○	○	100	
		5 Axis	●	●	●	111	●	○	●	101	
		6 Axis	●	○	●	101	●	●	○	110	
		7 Axis	●	○	○	100	●	●	●	111	

Feedrate Override

Wire Color	Signal	Function	R2	R1	Axis Code	R1	R2	Axis Code	Function
Grey (R1)	R1	X1	○	●	000	○	●	01	To R1
Grey-Black (R2)	R2	X10	●	●	001	●	○	10	To R2
Orange (R4)	R4	X100	●	○	011	●	●	11	
		COM	Common Point			Common Point			COM

Enable Button

ENPB1

Wire Color	Signal	Function
Orange-Black	COM	Common Point

Custom Button

Wire Color	Signal	Function
Green-Black	+	Unused function: leave unconnected
White-Black	−	
Red-Black	∿	

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Ordering Information

E-STOP Switch (STOP)

(blue)	Blue	C
(blue-black)	Blue-Black	NC

Gray Code Diagram Set			
L4	L2	L1	Function
0	0	0	X Axis
0	0	1	Y Axis
0	1	1	Z Axis
0	1	0	4 Axis
1	1	0	5 Axis
1	1	1	6 Axis
1	0	0	7 Axis

Gray Code Diagram Set			
R4	R2	R1	Function
0	0	0	0
0	0	1	1
0	1	1	10
0	1	0	100
1	1	0	1000

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