PRODUCT OVERVIEW

Manual pulse generator (hereinafter referred to as MPG) for CNC machine tools in the origin setting, manual stepping fine-tuning, processing interruptions and insertion, etc., the product is divided into: SS, SE, SM, SF four major series, can be widely used in CNC machine tools, printing machinery, automation systems and so on.

FEATURES IN BRIEF

- Humanized design, more comfortable handfeeling and more beautiful appearance;
- High-performance core encoder, non-contact optical detecting structure, accuracy unchanged after millions of times of use;
- Built-in strong magnet, base type hanging box, more convenient and firm to place;
- High-quality standard spring cable, guaranteed 200,000 times stretching;
- Optional emergency stop, enable, add manual and quick buttons;
- Wireless portable MPG adopts 433M wireless transmission technology, encrypted transmission and anti-interference;
- Shielded design, anti-electromagnetic interference;
- Adopts anti-interference, wear-resistant, oil-resistant and drop-resistant design;
- Can be customized according to customers' requirements.

SE Series

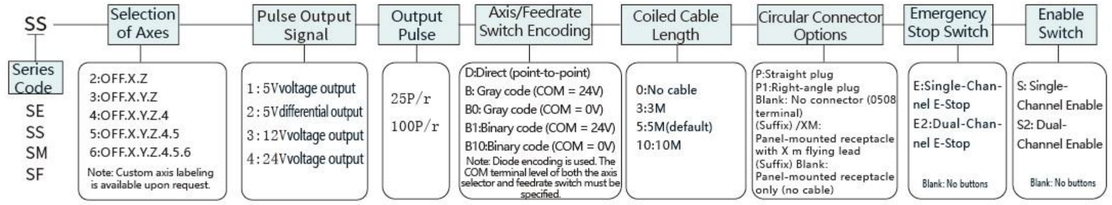
SS Series

SM Series

SF Series

MANUAL PULSE GENERATOR
SE/SS/SM/SF SERIES

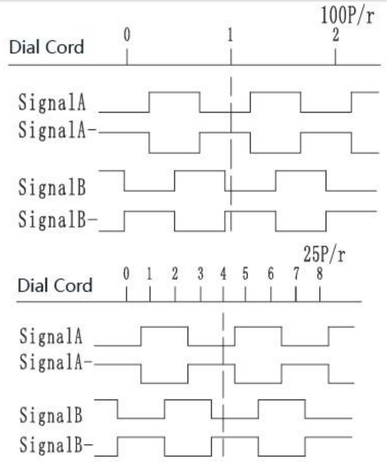
MODEL SELECTION INSTRUCTIONS



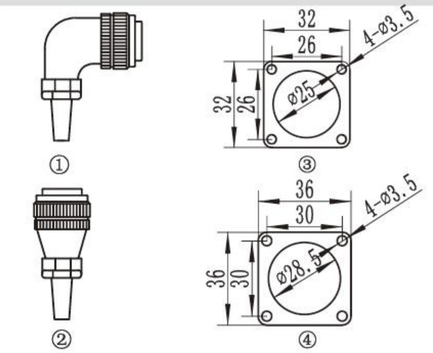
EXAMPLES OF MECHANICAL & ELECTRICAL CHARACTERISTICS

Item \ Model No.	SE-31-100-D	SS-42-100-B	SM-54-100-B0	SF-43-25-D
Applicable systems	Fanuc/domestic system	Siemens/Fagor	Siemens PLC/PLC	Mitsubishi
Pulse output	100P/r	100P/r	100P/r	25P/r
Scope of supply	DC5V±5%	DC5V±5%	DC24V±5%	DC12V±5%
Axis selection	OFF、X、Y、Z	OFF、X、Y、Z、4	OFF、X、Y、Z、4、5	OFF、X、Y、Z、4
Number of Membrane Keys	3	None	None	None
Magnification	3 or 4-position	3-position	3-position	3-position
Switching output method	Corresponding type	Coding type (COM=24V)	Coding type (COM=0V)	Corresponding type
Frequency response	0～20kHz			
Isolation resistor	≥20MΩ			
Operating temperature	-10～+60℃ (without freezing)			
Output form	Voltage output	Differential output	Voltage output	

RELATIONSHIP BETWEEN WAVEFORM OUTPUT VS. SCALE POSITION



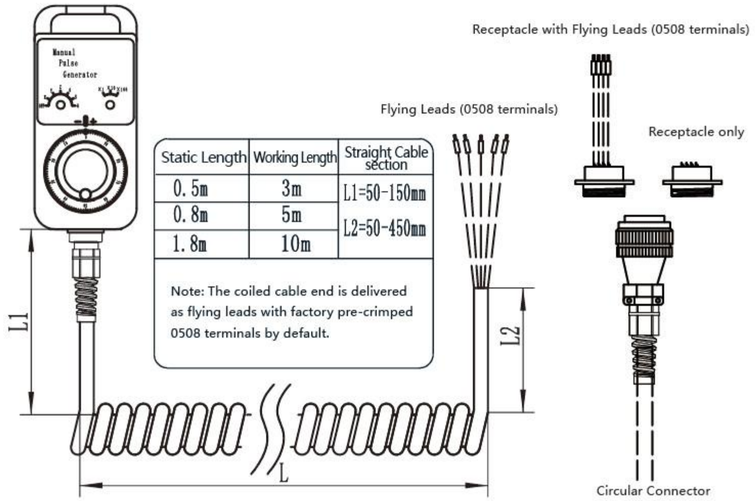
CONNECTOR SPECIFICATIONS



①: Right-angle plug ②: Straight plug
③: 19-pole Socket Opening Size ④:16, 20, 24 & 26-pole Socket Opening Size

Note: See drawing for special connector dimensions

SPRING CABLE SPECIFICATIONS

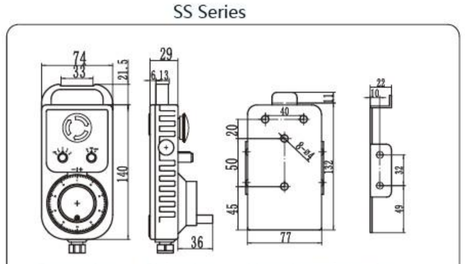


Static Length	Working Length	Straight Cable section
0.5m	3m	L1=50-150mm
0.8m	5m	L2=50-450mm
1.8m	10m	

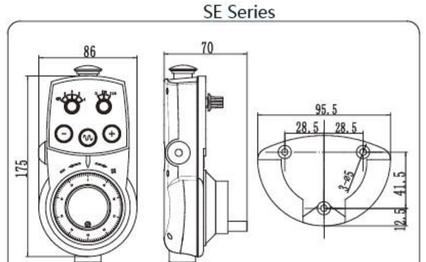
Note: The coiled cable end is delivered as flying leads with factory pre-crimped 0508 terminals by default.

DIMENSION APPEARANCES

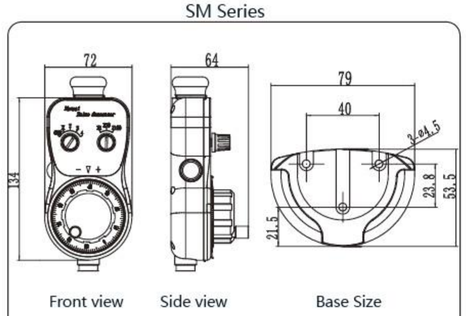
SS Series



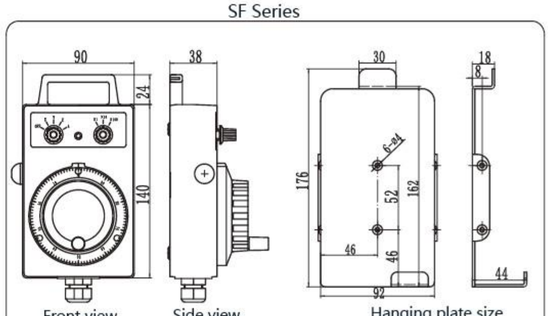
SE Series



SM Series



SF Series



MANUAL PULSE GENERATOR
SE/SS/SM/SF SERIES

WIRING DIAGRAM

SE Series

S/N	Wire Color	Signal (Corresponding Type)	Signal (Coding Type)	Item
1	Red	+5V	+5V	Handwheel Encoder
2	Black	0V	0V	
3	Yellow	HA	HA	
4	White	HB	HB	
5	Pink	HA-	HA-	Differential Option
6	Dark green	HB-	HB-	
7	Purple	COM	COM	Input Common Terminal
8	Yellow/Black	X1	R1	Magnification
9	Light Blue/Black	X10	R2	
10	Transparent/Black	X100	R4	
11	Brown	X	L1	Axis selection
12	Orange	Y	L2	
13	Pale blue	Z	L4	
14	Deep Blue	4	L8	
15	Transparent	-	-	Manual feeding
16	Pale purple	RAPID	RAPID	
17	Gray	+	+	
18	Red and white	EMG	EMG	Emergency stop
19	Red and black	EMGC	EMGC	
20	Light green	EMG1	EMG1	
21	Red and green	EMG1C	EMG1C	

SS/SM Series

S/N	Wire Color	Signal (Corresponding Type)	Signal (Coding Type)	Item
1	Red	+5V	+5V	Handwheel Encoder
2	Black	0V	0V	
3	Yellow	HA	HA	
4	White	HB	HB	
5	Pink	HA-	HA-	Differential Option
6	Dark green	HB-	HB-	
7	Transparent	L+	L+	Indicator light
8	Pale purple	L-	L-	
9	Purple	COM	COM	Input Common Terminal
10	Yellow/Black	X1	R1	Magnification
11	Light Blue/Black	X10	R2	
12	Transparent/Black	X100	R4	
13	Gray	5		Axis selection
14	Brown	X	L1	
15	Orange	Y	L2	
16	Pale blue	Z	L4	
17	Deep Blue	4	L8	
18	Red and white	EMG	EMG	Emergency stop
19	Red and black	EMGC	EMGC	
20	Light green	EMG1	EMG1	
21	Red and green	EMG1C	EMG1C	

SF Series

S/N	Wire Color	Signal (Corresponding Type)	Item
1	Red	+5V	Handwheel Encoder
2	Black	0V	
3	Yellow	HA	
4	White	HB	
5	Pink	HA-	Differential Option
6	Dark green	HB-	
7	Transparent	L+	Indicator light
8	Pale purple	L-	
9	Purple	COM	Input Common Terminal
10	Yellow/Black	X1	Magnification
11	Light Blue/Black	X10	
12	Transparent/Black	X100	
13	Gray	5	Axis selection
14	Brown	X	
15	Orange	Y	
16	Pale blue	Z	
17	Deep Blue	4	
18			
19			

CODING TABLE

Gray code	Axis selection			
	L4	L2	L1	
OFF	0	0	0	
X	0	0	1	
Y	0	1	1	
Z	0	1	0	
4	1	1	0	
5	1	1	1	
6	1	0	1	
7	1	0	0	
Magnification				
	R4	R2	R1	
X1	0	0	1	
X10	0	1	1	
X100	0	1	0	
X1000	1	1	0	

Binary code	Axis selection			
	L4	L2	L1	
OFF	0	0	0	
X	0	0	1	
Y	0	1	0	
Z	0	1	1	
4	1	0	0	
5	1	0	1	
6	1	1	0	
7	1	1	1	
Magnification				
	R4	R2	R1	
X1	0	0	1	
X10	0	1	0	
X100	0	1	1	
X1000	1	0	0	

Precautions

- 1. The color in the wiring diagram is for reference only, the specific use of color shall prevail.
- 2. Coiled cable ends with flying leads (0508 pin-type terminals) by default. When circular connectors are selected, the receptacle is supplied without wiring. Pre-wire must be specified at the time of ordering.
- 3. When encoding type is selected, Gray code output is used by default (COM = 24V). For use with our matrix panel systems, this must be clearly specified.
- 4. Custom configurations are supported upon request.

PRODUCT FEATURES

- The core circuit board is controlled by a single-chip computer with matrix keyboard input;
- Universal shape design, more comfortable and beautiful hand feeling;
- High-performance core encoder, non-contact optical check-out structure;
- Built-in strong magnet, base type hanging box, more convenient and firm to place;
- High-quality standard spring cable, guaranteed 200,000 times stretching;
- Optional emergency stop, enable, and diversified key styles;
- Customized design is available according to customers' requirements.

APPLICATION AREAS

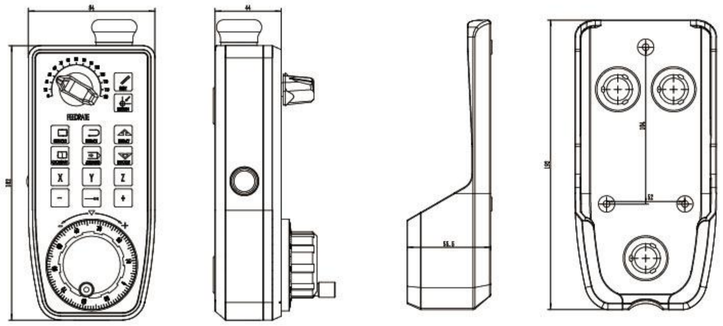
- Siemens, Mitsubishi, Fanuc, Guangzhou CNC, Huazhong CNC and other CNC systems
- Specialized automation equipment, CNC machine tools, printing machines, PLC control systems, etc.

WIRING DIAGRAM

Circular Connector

	Pin No.	Code	Color
Input matrix	1	IN1	White and red
	2	IN2	White and green
	3	IN3	White and blue
	4	IN4	White and black
	5	IN5	White and brown
	6	IN6	White and purple
	7	IN7	Pale blue
	8	IN8	Orange
	9	IN9	Gray
Output matrix	10	01	Yellow and red
	11	02	Yellow and green
	12	03	Yellow and blue
	13	04	Yellow and black
	14	05	Transparent
	15	06	Transparent black
	16	07	Blue and black
	17	08	Blue and brown
Handwheel Signal	18	+5V	Red
	19	0V	Black
	20	HA	White
	21	HA-	Yellow
	22	HB	Green
	23	HB-	Purple
Emergency stop	24	EMG	Brown
	25	EMGC	Blue

OUTLINE DRAWING



INPUT SIGNAL ADDRESS TABLE

Address / Matrix	IN5	IN4	IN3	IN2	IN1
Intermediate Address	M100.4	M100.3	M100.2	M100.1	M100.0
IN6					
Intermediate Address	M101.4	M101.3	M101.2	M101.1	M101.0
IN7	Y	X			
Intermediate Address	M102.4	M102.3	M102.2	M102.1	M102.0
IN8	F1	+		-	Z
Intermediate Address	M103.4	M103.3	M103.2	M103.1	M103.0
IN9		F0V8	F0V4	F0V2	F0V1

OUTPUT SIGNAL ADDRESS TABLE

Address / Matrix	08	07	06	05
Intermediate Address	M104.3	M104.2	M104.1	M104.0
01				
Intermediate Address	M105.3	M105.2	M105.1	M105.0
02				
Intermediate Address	M106.3	M106.2	M106.1	M106.0
03	X1	Z	Y	X
Intermediate Address	M107.3	M107.2	M107.1	M107.0
04		X1000	X100	X10

Note: Wiring and address mapping are based on a Siemens custom configuration example and may vary depending on the actual system and application requirements.

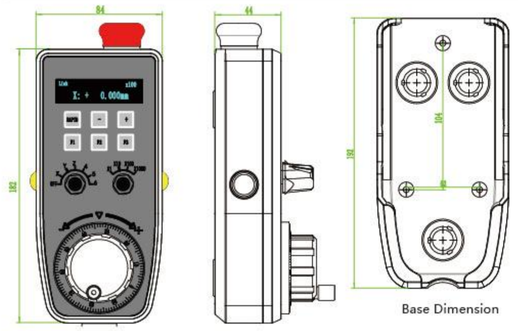
PRODUCT OVERVIEW

Integrated with the FANUC control via IO-Link, the handheld unit provides real-time coordinate display and is connected via a coiled cable for flexible operation.

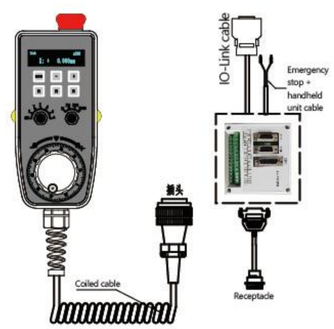
FEATURES

- Emergency stop connection via hardwired interface;
- Three user-defined buttons (F1–F3) with IO-Link signal output;
- Jog function via IO-Link interface;
- 6-axis selection via IO-Link interface;
- 4-step feedrate override via IO-Link interface;
- Dual enable buttons or EU-compliant 3-position enable switch for safe operation;
- Pulse encoder support with A/B signal output to the CNC handwheel interface.

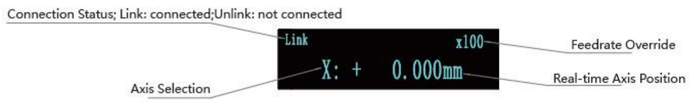
OUTLINE DRAWING



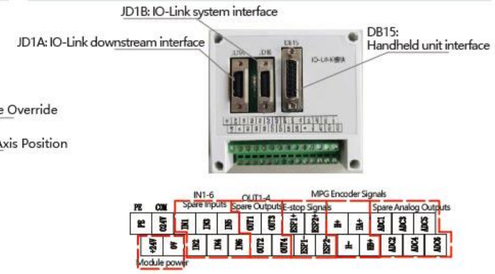
Wiring Overview



DISPLAY INDICATIONS



IO-LINK MODULE WIRING



MANUAL PULSE GENERATOR
SG60/80 SERIES

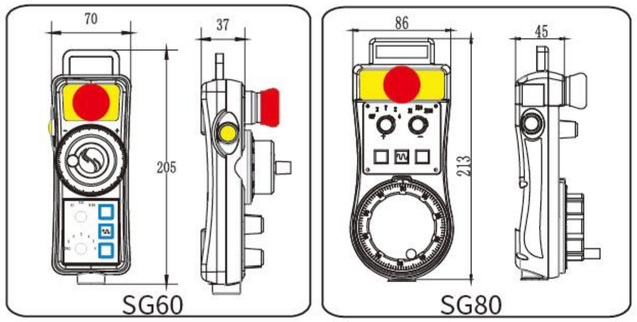
PRODUCT CHARACTERISTICS

- Ergonomic design, feel more comfortable, more beautiful appearance;
- High-performance core encoder, non-contact optical detecting structure, accuracy unchanged after millions of times of use;
- Built-in strong magnet, base type hanging box, more convenient and firm to place;
- High-quality standard spring cable, guaranteed 200,000 times stretching;
- Shielded design, anti-electromagnetic interference;
- Adopts anti-interference, wear-resistant, oil-resistant and drop-resistant design;

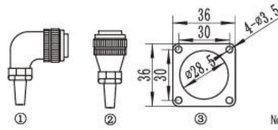
MODEL SELECTION INSTRUCTIONS

SG60	Selection of Axes	Pulse Output Signal	Output Pulse	Axis/Feedrate Switch Encoding	Coiled Cable Length	Circular Connector Options	Emergency Stop Switch	Enable Switch	Function Buttons
Series Code SG80	2:OFF.X.Z 3:OFF.X.Y.Z 4:OFF.X.Y.Z.4 5:OFF.X.Y.Z.4.5 6:OFF.X.Y.Z.4.5.6 Note: Custom axis labeling is available upon request.	1:5Vvoltage output 2:5Vdifferential output 3:12Vvoltage output 4:24Vvoltage output	25P/r 100P/r	D:Direct (point-to-point) B: Gray code (COM = 24V) B0: Gray code (COM = 0V) B1:Binary code (COM = 24V) B10:Binary code (COM = 0V) Note: Diode encoding is used. The COM terminal level of both the axis selector and feedrate switch must be specified.	0:No cable 3:3M 5:5M(default) 10:10M	P:Straight plug P1:Right-angle plug Blank: No connector (0508 terminal) (Suffix) /XM: Panel-mounted receptacle with X m flying lead (Suffix) Blank: Panel-mounted receptacle only (no cable)	E:Single-Channel E-Stop E2:Dual-Channel E-Stop	S: Single-Channel Enable S2: Dual-Channel Enable SG60 supports single enable only; SG80 supports both single and dual enable options.	

EXTERNAL DRAWING

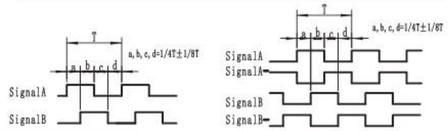


CONNECTOR SPECIFICATIONS



Dimensions of aerofoil
①: Right-angle plug
②: Straight plug
③: Socket opening size
Note: see the drawings for special dimensions

WAVEFORM OUTPUT



WIRING DIAGRAM

S/N	Wire Color	Signal (Open-collector Output Type)	Signal (Line Driver Output Type)	Item
1	Red	+5V	+5V	Handwheel Encoder
2	Black	0V	0V	
3	Yellow	HA	HA	
4	White	HB	HB	
5	Pink	HA-	HA-	Differential Option
6	Dark green	HB-	HB-	
7	Purple	COM	COM	Input Common Terminal
8	Yellow/Black	X1	R1	Magnification
9	Light Blue/Black	X10	R2	
10	Transparent/Black	X100	R4	
11	Brown	X	L1	Axis selection
12	Orange	Y	L2	
13	Pale blue	Z	L4	
14	Deep Blue	4	L8	
15	Gray	4	4	Manual feeding
16	Pale purple	RAPID	RAPID	
17	Transparent	–	–	
18	Red and white	EMG	EMG	Emergency stop
19	Red and black	EMGC	EMGC	
20	Light green	EMG1	EMG1	
21	Red and green	EMG1C	EMG1C	

CODING TABLE

Gray code	Axis selection	L4	L2	L1
	OFF	0	0	0
	X	0	0	1
	Y	0	1	1
	Z	0	1	0
	4	1	1	0
	5	1	1	1
	6	1	0	1
	7	1	0	0
	Magnification	R4	R2	R1
	X1	0	0	1
	X10	0	1	1
	X100	0	1	0
	X1000	1	1	0

Binary code	Axis selection	L4	L2	L1
	OFF	0	0	0
	X	0	0	1
	Y	0	1	0
	Z	0	1	1
	4	1	0	0
	5	1	0	1
	6	1	1	0
	7	1	1	1
	Magnification	R4	R2	R1
	X1	0	0	1
	X10	0	1	0
	X100	0	1	1
	X1000	1	0	0

PRECAUTIONS

1. The color in the wiring diagram is for reference only, the specific use of color shall prevail.
2. Coiled cable ends with flying leads (0508 pin-type terminals) by default. When circular connectors are selected, the receptacle is supplied without wiring. Pre-wire must be specified at the time of ordering.
3. When encoding type is selected, Gray code output is used by default (COM = 24V). For use with our matrix panel systems, this must be clearly specified.
4. Custom configurations are supported upon request.

MANUAL PULSE GENERATOR
SK SERIES

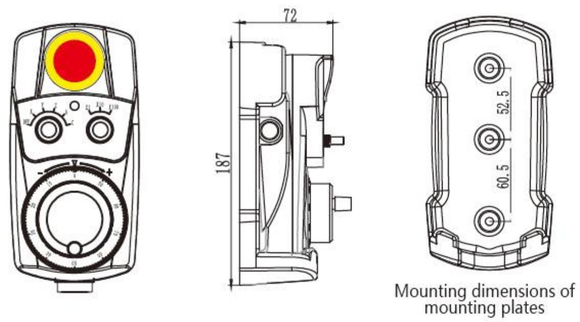
PRODUCT CHARACTERISTICS

- Ergonomic design, feel more comfortable, more beautiful appearance;
- High-performance core encoder, non-contact optical detecting structure, accuracy unchanged after millions of times of use;
- Built-in strong magnet, base type hanging box, more convenient and firm to place;
- High-quality standard spring cable, guaranteed 200,000 times stretching;
- Shielded design, anti-electromagnetic interference;
- Adopts anti-interference, wear-resistant, oil-resistant and drop-resistant design;

MODEL SELECTION INSTRUCTIONS

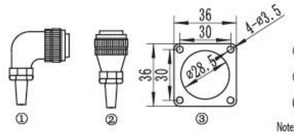
SK	Selection of Axes	Pulse Output Signal	Output Pulse	Axis/Feedrate Switch Encoding	Coiled Cable Length	Circular Connector Options	Emergency Stop Switch	Enable Switch
Series Code	2:OFF.X.Z 3:OFF.X.Y.Z 4:OFF.X.Y.Z.4 5:OFF.X.Y.Z.4.5 6:OFF.X.Y.Z.4.5.6 Note: Custom axis labeling is available upon request.	1:5Vvoltage output 2:5Vdifferential output 3:12Vvoltage output 4:24Vvoltage output	25P/r 100P/r	D:Direct (point-to-point) B: Gray code B1:Binary code	0:No cable 3:3M 5:5M(default) 10:10M	P:Straight plug P1:Right-angle plug Blank: No connector (0508 terminal) (Suffix) /XM: Panel-mounted receptacle with X m flying lead (Suffix) Blank: Panel-mounted receptacle only (no cable)	E:ne-Single-Channel E-Stop E2:Dual-Channel E-Stop	S: Single-Channel Enable S2: Dual-Channel Enable Blank: No buttons

EXTERNAL DRAWING



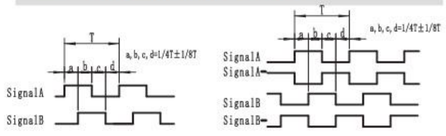
Mounting dimensions of mounting plates

CONNECTOR SPECIFICATIONS



Dimensions of aerofoil
①: Right-angle plug
②: Straight plug
③: Socket opening size
Note: see the drawings for special dimensions

WAVEFORM OUTPUT



WIRING DIAGRAM

S/N	Wire Color	Signal (Open-collector Output Type)	Signal (Line Driver Output Type)	Item
1	Red	+5V	+5V	Handwheel Encoder
2	Black	0V	0V	
3	Yellow	HA	HA	
4	White	HB	HB	
5	Pink	HA-	HA-	Select and use
6	Dark green	HB-	HB-	
7	Transparent	L+	L+	Indicator light
8	Pale purple	L-	L-	
9	Purple	COM	COM	Input Common Terminal
10	Yellow/Black	X1	R1	Magnification
11	Light Blue/Black	X10	R2	
12	Transparent/Black	X100	R4	
13	Gray	5		
14	Brown	X	L1	Axis selection
15	Orange	Y	L2	
16	Pale blue	Z	L4	
17	Deep Blue	4	L8	
18	Red and white	EMG	EMG	scram (optional)
19	Red and black	EMGC	EMGC	
20	Light green	EMG1	EMG1	
21	Red and green	EMG1C	EMG1C	

CODING TABLE

Gray code	Axis selection	L4	L2	L1
	OFF	0	0	0
	X	0	0	1
	Y	0	1	1
	Z	0	1	0
	4	1	1	0
	5	1	1	1
	6	1	0	1
	7	1	0	0
	Magnification	R4	R2	R1
	X1	0	0	1
	X10	0	1	1
	X100	0	1	0
	X1000	1	1	0

Binary code	Axis selection	L4	L2	L1
	OFF	0	0	0
	X	0	0	1
	Y	0	1	0
	Z	0	1	1
	4	1	0	0
	5	1	0	1
	6	1	1	0
	7	1	1	1
	Magnification	R4	R2	R1
	X1	0	0	1
	X10	0	1	0
	X100	0	1	1
	X1000	1	0	0

PRECAUTIONS

1. The color in the wiring diagram is for reference only, the specific use of color shall prevail.
2. Coiled cable ends with flying leads (0508 pin-type terminals) by default. When circular connectors are selected, the receptacle is supplied without wiring. Pre-wire must be specified at the time of ordering.
3. When encoding type is selected, Gray code output is used by default (COM = 24V). For use with our matrix panel systems, this must be clearly specified.
4. Custom configurations are supported upon request.

MANUAL PULSE GENERATOR

WIRELESS MPG

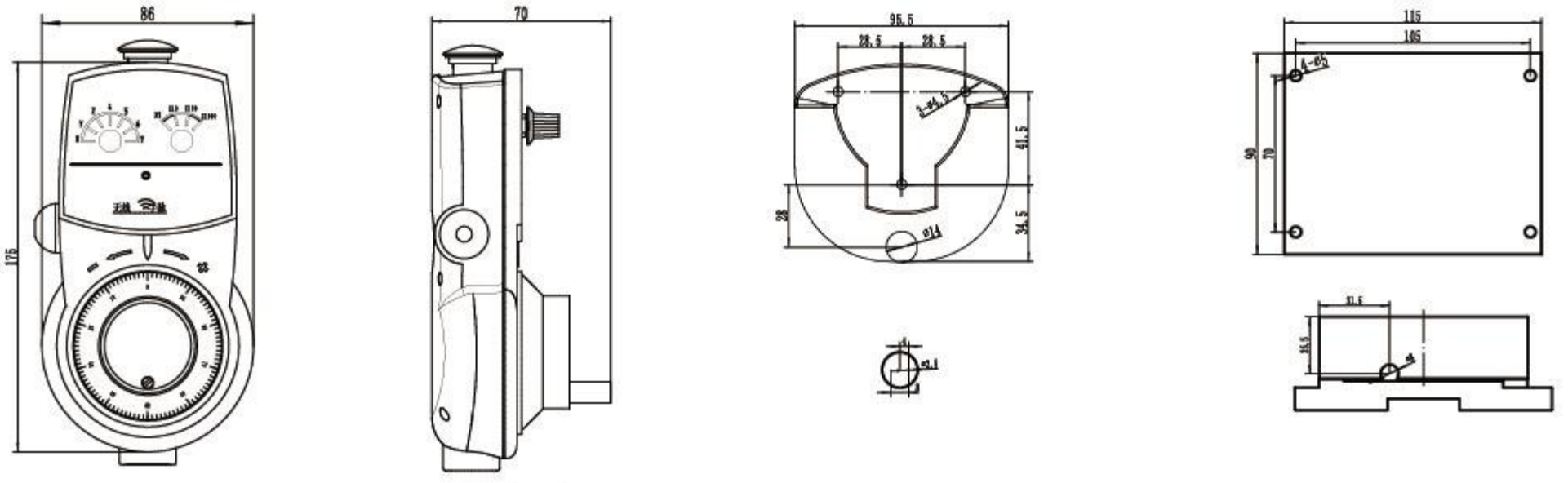
FEATURES IN BRIEF MODEL:SW-A

- Adopting 433M wireless transmission technology, data encrypted transmission, stable and reliable, strong anti-interference;
- Wireless transmission distance 100 meters (open), stable and reliable;
- Response speed is fast, complete signal transmission and reception within 1ms;
- Low voltage alarm function, standby automatically enters the dormant mode;
- Adopting alloy encoder, stable and reliable performance; good hand feeling and clear tooth position;
- With emergency stop, enable, axis selection (max. 7 axes) and multiplier function;
- It has the functions of selecting axis selection and multiplier coding mode and selecting common terminal;
- 3.7v rechargeable lithium battery, low power consumption design, energy saving and environmental protection, random charging.

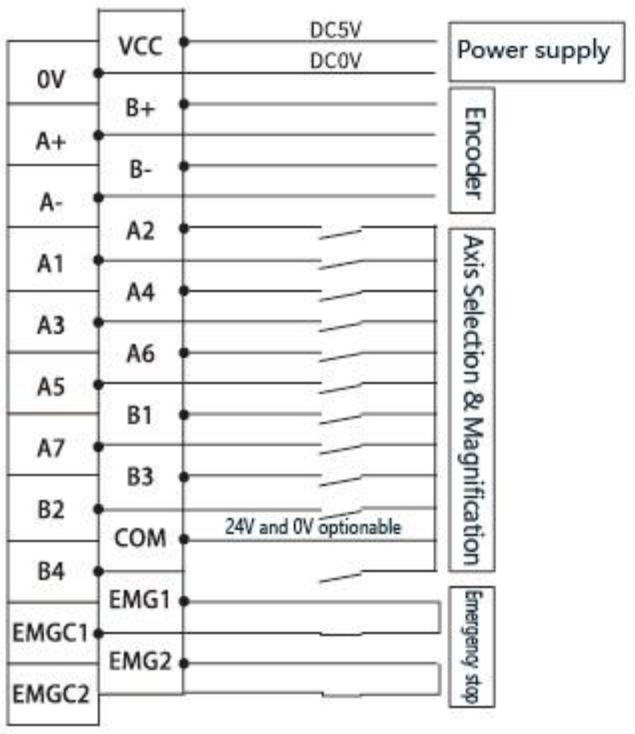
APPLICATION AREAS

- CNC lathes, CNC engraving and milling machines, machining centers, large gantry machines, laser cutting machines and other equipment
- Adapted to Siemens, Mitsubishi, Fanuc, Guangzhou CNC, Huazhong CNC, KND and other systems.

OUTLINE DRAWING



WIRING DIAGRAM



P2P STATUS TABLE

Axis Selection Switch Status Table

Terminal No.	X	Y	Z	4	5	6	7
A1	●						
A2		●					
A3			●				
A4				●			
A5					●		
A6						●	
A7							●

Magnification Switch Status Table

Terminal No.	X1	X10	X100	X1000
B1	●			
B2		●		
B3			●	
B4				●

GRAY CODE STATUS TABLE

Axis Selection Switch Status Table

Terminal No.	X	Y	Z	4	5	6	7
A1	●	●			●	●	
A2		●	●	●	●		
A3				●	●	●	●

Magnification Switch Status Table

Terminal No.	X1	X10	X100	X1000
B1	●	●		
B2		●	●	●
B3				●