HJ60 SERIES MULTI-AXIS HAND OPERATED JOYSTICK

HJ60系列 握杆型多轴操作手柄



产品特点 Product Features

- Ergonomics design on mobile application.
- Uncontact hall effect and long expect-life potentiometer optional.
- Various handle, different number and location of button switches optional.
- CAN bus output optional.

应用范围 Application

Typical application on Cranes, loaders, Forklifts, excavators, access platform, tractors, harvesters. and so on.

技术参数 Technical Information

Electrical data

Potentiometer

Power supply	<36Vdc
Resistance	2KΩ, 5KΩ, 10KΩ
Electrical angle	±18°
Center voltage	48%~52%
Center tap angle	±2.5°
On-load voltage (max)	32Vdc
Power dissipation	0.25W

Hall

Power supply	5±0.5Vdc
Supply current	<11mA (Each of hall)
Maximum allowable overload voltage	20Vdc
Reverse maximum allowable voltage	-10Vdc
Output linearity tolerance	<±0.2V

Directional switch

Load capacity	2mA@30Vdc (Resistance load)
Breakout angle	±5°
Contact resistance	<200Ω

With electronic amplifier

Power supply	18~36Vdc (U21~U24)
	9~18Vdc (I21~I22)
Power current consumption	<20mA
Maximum output current	10mA

CAN BUS

Power supply	9~36Vdc
CAN Version	CAN 2.0B
Protocol	J1939
Connector	6 p-pin(Deutsch)

Microswitch

Load capacity	4A@30Vdc (Resistance load)
Expecting life	30 million times (Mechanical)
	200 thousand times (Electrical)
Insulation resistance	>100MΩ
Breakout angle	±3°~±5°

Mechanical features

Travel angle	±20°
Operating type	Spring return
Breakout force	5N
Operating force (max)	11N
Maximum allowable force	>300N
Expecting life	>2 million cycles (Potentiometer)
	>5 million cycles (Hall effect)
Weight	475g (Without handle)

Environmental data

Operating temperature	-30℃~ +70℃
Storage temperature	-40℃~ +85℃
Protection level	IP65
	(Above the flange)

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产品选型 Product Configuration

① ② ③ ④ ⑤ ⑥ ⑦

series
HJ60

Operating type

1A	single-axis
2AP	dual-axis cross directi -onal operated
2AC	dual-axis arbitrary dire -ctional operated

selection of spring

L	breakout force4.5N
M	breakout force5N (standard)
H	breakout force9N

Microswitch

MS00	Without microswitch
MS12	With 4A before and after mic -roswitch(not available for dual-axis cross directional operated)

Output signal

Potentiometer (power supply < 36Vdc)

P021*	2KΩ potentiometer , 0%~100%Vdc output
P022*	2KΩ potentiometer , 10%~90%Vdc output
P023*	2KΩ potentiometer , 25%~75%Vdc output
P051	5KΩ potentiometer , 0%~100%Vdc output
P052	5KΩ potentiometer , 10%~90%Vdc output
P053	5KΩ potentiometer , 25%~75%Vdc output
P101	10KΩ potentiometer , 0%~100%Vdc output
P102	10KΩ potentiometer , 10%~90%Vdc output
P103	10KΩ potentiometer , 25%~75%Vdc output

Hall (5Vdc power supply)

H51	each axis of single hall , 0.5~2.5~4.5Vdc output
H52	each axis of single hall , 0~2.5~5Vdc output
H53	each axis of single hall , 1.25~2.5~3.75Vdc output
H54	each axis of single hall , 1.0~2.5~4.0Vdc output
H55	each axis of single hall , 1.15~2.5~3.85Vdc output
2H51	each axis of redundant hall , 0.5~2.5~4.5Vdc output
2H52	each axis of redundant hall , 0~2.5~5Vdc output
2H53	each axis of redundant hall , 1.25~2.5~3.75Vdc output
2H54	each axis of redundant hall , 1.0~2.5~4.0Vdc output
2H55	each axis of redundant hall , 1.15~2.5~3.85Vdc output

With electronic amplifier

U21	18~36Vdc power supply , -10V~0V~+10V output
U22	18~36Vdc power supply , +10V~0V~+10V output
U23	18~36Vdc power supply , -5V~0V~+5V output
U24	18~36Vdc power supply , +5V~0V~+5V output
I21	9~36Vdc power supply , 2-wire system 4mA-12mA-20mA output
I22	9~36Vdc power supply , 2-wite system 20mA-4mA-20mA output

CAN BUS (9~36Vdc power supply)

J33	Can 2.0B output, source address 33
J34	Can 2.0B output, source address 34
J35	Can 2.0B output, source address 35
J36	Can 2.0B output, source address 36

Other

NA	Without analog signal output

Handle

HA	HA type , top without button
HAS	HAS type , top with button
HD	HD type , top without button
HDS	HDS type , top with button
HDR	HDR type , top with rocker swi -tch
KGDN	KG type , with deadman switch, without rocker switch
KGDR	KG type , without deadman swi -tch and rocker switch
SS	See SS page

Connection

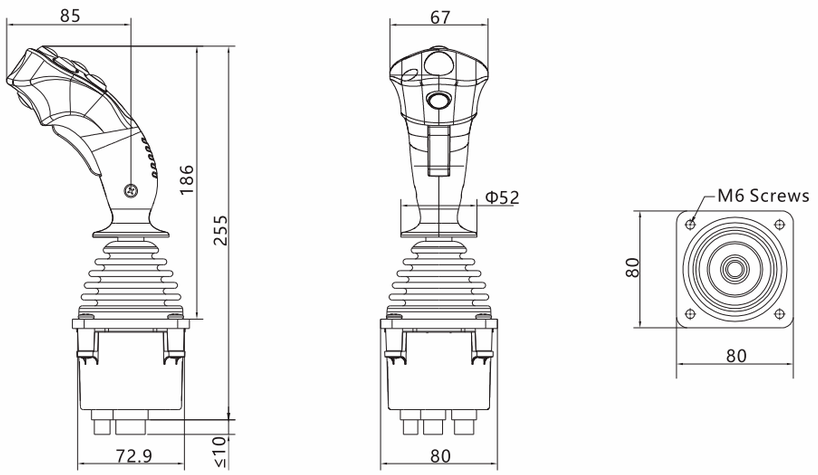
D	Deutsch connector (only availab -le for CAN bus output)
A	AMP connector

Note :
1、with "*" According to customer requirements ;

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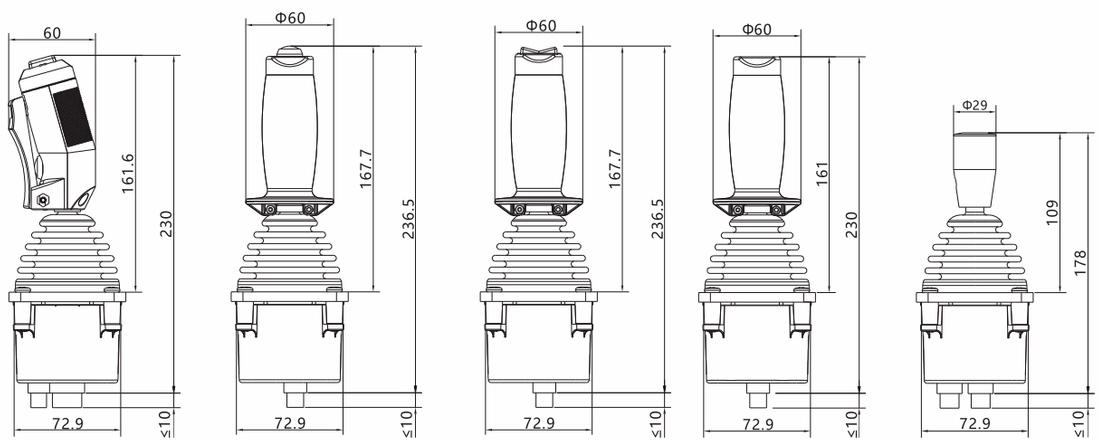
外形尺寸 Dimensions

General Configuration



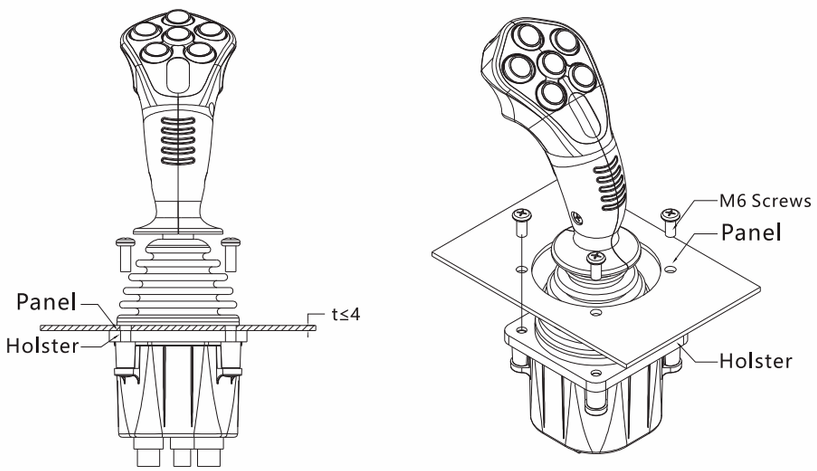
SS type

Optional handle configuration

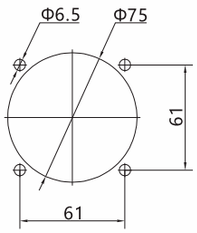


KGDR type　HDS type　HDR type　HD type　HA type

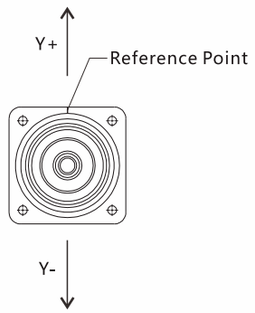
机械安装 Product Installation



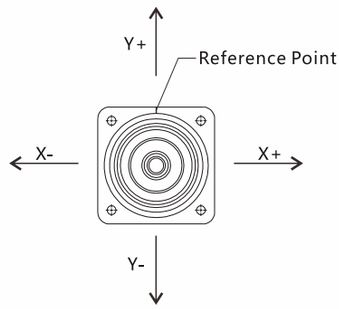
Mounting



Panel opening



Single direction operated

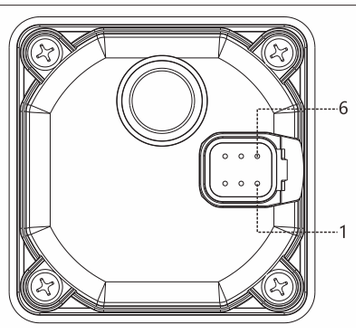


Double direction operated

电气安装 Electrical Connections

Deutsch connection

Deutsch connection			
Pin	CAN Output	Hall (wide voltage)	color
1	GND	GND	black
2	VCC	24Vdc	red
3	CAN high	X out	yellow
4	CAN low	Y out	green
5	CAN shield	deadman button	N/A
6	N/A	deadman button	N/A



安普(AMP)接插件

16 Pin		
Pin	Potentiometer	Hall
1	Y-axis forward directional switch	Button switch 4
2	N/A	Button switch3
3	X -axis pot left terminal	Button switch2
4	X-axis pot wiper	Button switch1
5	X-axis pot right terminal	Top Button
6	X -axis pot center tap	Button switch5
7	X-axis switch common terminal	Button switch6
8	X-axis left directional switch	Deadman switch
9	Y-axis pot backward terminal	N/A
10	Y-axis pot wiper	N/A
11	Y-axis pot forward terminal	Common terminal of button switch
12	Y-axis pot center tap	Deadman switch
13	Y-axis switch common terminal	N/A
14	Y-axis backward directional switch	N/A
15	X-axis right directional switch	N/A
16	N/A	N/A

16 Pin		
Pin	Conversion circuit output voltage	Conversion circuit output current
1	Common terminal of button switch	Common terminal of button switch
2	Button switch 1	Button switch 1
3	Button switch2	Button switch2
4	Button switch3	Button switch3
5	Button switch4	Button switch4
6	Button switch5	Button switch5
7	Button switch6	Button switch6
8	Top Button	Top Button
9	Deadman switch	Deadman switch
10	Deadman switch	Deadman switch
11	X-axis left directional switch	X-axis left directional switch
12	X-axis pot right terminal	X-axis pot right terminal
13	Y-axis backward directional switch	X-axis switch common terminal
14	Y-axis forward directional switch	Y-axis forward directional switch
15	Switch common terminal	Y-axis forward directional switch
16	N/A	Y-axis switch common terminal

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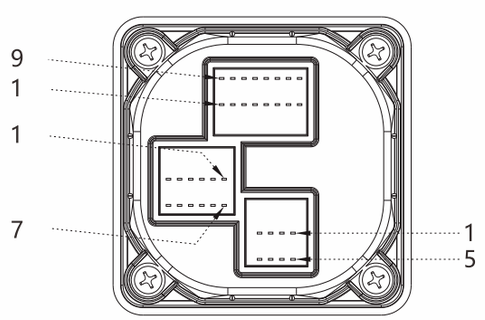
12 Pin

Pin	Potentiometer	Hall
1	Button switch 4	+5V power supply (hall effect sensor 3&4)
2	Button switch 3	0V power supply (hall effect sensor 3&4)
3	Button switch2	+5V power supply (hall effect sensor 1&2)
4	Button switch1	0V power supply (hall effect sensor 1&2)
5	Top Button	Y-axis output (3)
6	Button switch5	X-axis output (2)
7	Button switch6	X-axis output (4)
8	Deadman switch	Y-axis output (1)
9	N/A	N/A
10	N/A	N/A
11	Button switch common terminal	N/A
12	Deadman switch	N/A

8 Pin

Pin	Potentiometer	Hall
1	Y-axis pot forward	Forward directional microswitch common terminal
2	Y-axis pot center tap	Forward directional microswitch output terminal
3	Y-axis pot wiper	Backward directional microswitch output terminal
4	Y-axis pot backward	Backward directional microswitch common terminal
5	X-axis pot left	Left directional microswitch common terminal
6	X-axis pot wiper	Left directional microswitch output terminal
7	X-axis pot center tap	Right directional microswitch output terminal
8	X-axis pot right	Right directional microswitch common terminal

AMP Connector

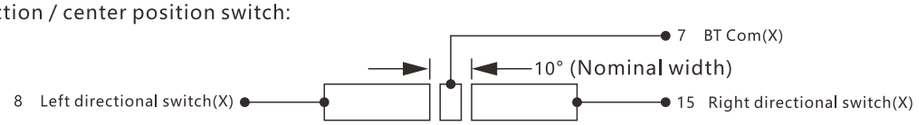


机械安装 Product Installation

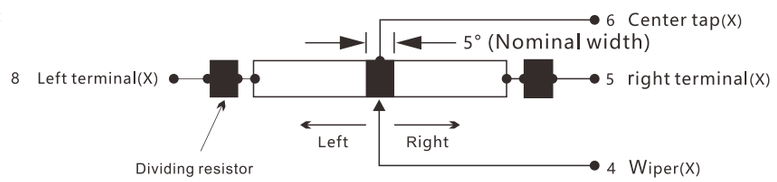
Connector

X axis :

Direction / center position switch:

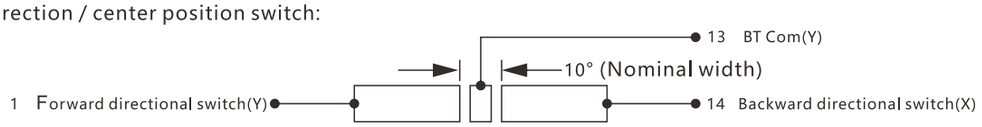


Potentiometer:



Y axis :

Direction / center position switch:



Potentiometer:

