**MKF-PJS04 series**

Mate Industrial Joystick, Hall / Potentiometer effect, Dual axis, Panel Mounted

**APPLICATION**

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

on.

**DESCRIPTION**

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

7

6

5

4

3

2

1

**Output Connection**

D (Only for Deutsch

connector

A (AMP connector)

L Output directly

**Microswitch**

MS01 Without microswitch

MS06 With 4A before and after microswitch (not available for dual-axis cross directional operated)

**Spring**

M (Breakout force 5N)

**Series**

MKF-PJS04

**Handle**

MHA top without button

MHAS top with button

MHD top without button

MHDS top with button

MHDR top with rocker switch

MKG DN with dead man switch, without rocker switch

MKG DR with dead man switch and rocker switch

MSS See SS page

MSA See SA page

MSP See SP page

**Output signal**

**Potentiometer (power supply< 36Vdc)**

P05A 5KΩ potentiometer, 0%~100%Vdc output

P05B 5KΩ potentiometer, 10%~90%Vdc output

P05C 5KΩ potentiometer, 25%~75%Vdc output

P10A 10KΩ potentiometer, 0%~100%Vdc output

**Hall (Power supply 5Vdc)**

H01 each axis of single hall, 0.5~2.5~4.5Vdc output

H02 each axis of single hall, 0~2.5~5Vdc output

H03 each axis of single hall, 1.25~2.5~3.75Vdc output each

H04 axis of single hall, 1.0~2.5~4.0Vdc output

H05 each axis of single hall, 1.15~2.5~3.85Vdc output

2H01 each axis of redundant hall, 0.5~2.5~4.5Vdc output

2H02 each axis of redundant hall, 0~2.5~5Vdc output

2H03 each axis of redundant hall, 1.25~2.5~3.75Vdc output

2H04 each axis of redundant hall, 1.0~2.5~4.0Vdc output

2H05 each axis of redundant hall, 1.15~2.5~3.85Vdc output

**With electronic amplifier**

WV21 18~36Vdc power supply , -10V~0V~ + 10V output

WV22 18~36Vdc power supply , +10V~ 0V~ +10V output

WV23 18~36Vdc power supply , -5V~0V~ +5V output

WV24 18~36Vdc power supply , +5V~0V~ + 5V output

WI21 9~36Vdc power supply , 2-wire system 4mA~12mA~20mA output

WI22 9~36Vdc power supply , 2-wite system 20mA~4mA~20mA output

**CAN BUS(9~36Vdc power supply)**

WJ33 Can 2.0B output, source address 33

WJ34 Can 2.0B output, source address 34

WJ35 Can 2.0B output, source address 35

WJ36 Can 2.0B output, source address 36

NA Without analog signal output

**Operating Limiter**

1X (X Single axis)

1Y (Y Single axis)

2P (dual-axis for cross direction)

2C (dual-axis for any direction)

**Electrical data**

|  |  |
| --- | --- |
| **Potentiometer** | |
| Power supply | <36Vdc |
| Resistance | 2KΩ, 4KΩ, 5KΩ, 10KΩ |
| Electrical angle | ±18° |
| Center voltage | 48%~52%Vdc (Power supply) |
| Center tap angle | ±2.5° |
| On-load voltage (max) | 32Vdc |
| Power dissipation | 0.25W ( 25°) |
| **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 | <±4V |
| **Directional switch** | |
| Load capacity | 2mA@30Vdc (Resistance load) |
| Breakout angle | ±3°~ 5° |
| Contact resistance | <200Ω |
| **With electronic amplifier** | |
| Power supply | 18~36Vdc (U21~U24) 9~36Vdc |
| 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° |

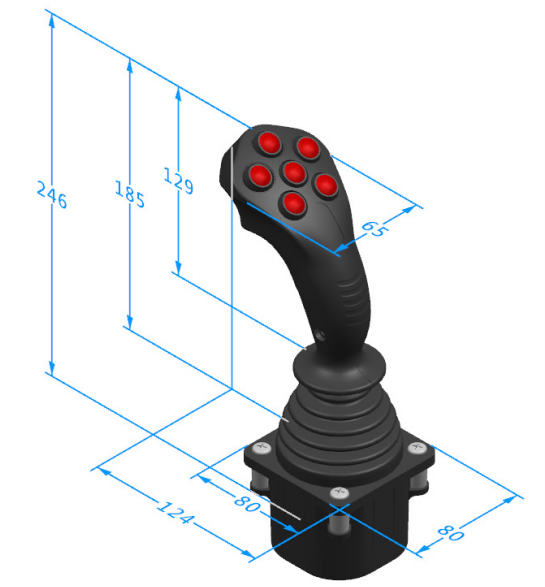
**Mechanical features**

|  |  |
| --- | --- |
| Travel angle | ±20° |
| Operating type | Spring return |
| Breakout force | 7N |
| Operating force(max) | 16N |
| Maximum allowable force | >300N |
| Expecting life | >2million cycles (Potentiometer) >5 million cycles (Hall effect) |
| Weight | 475g (Without handle) |

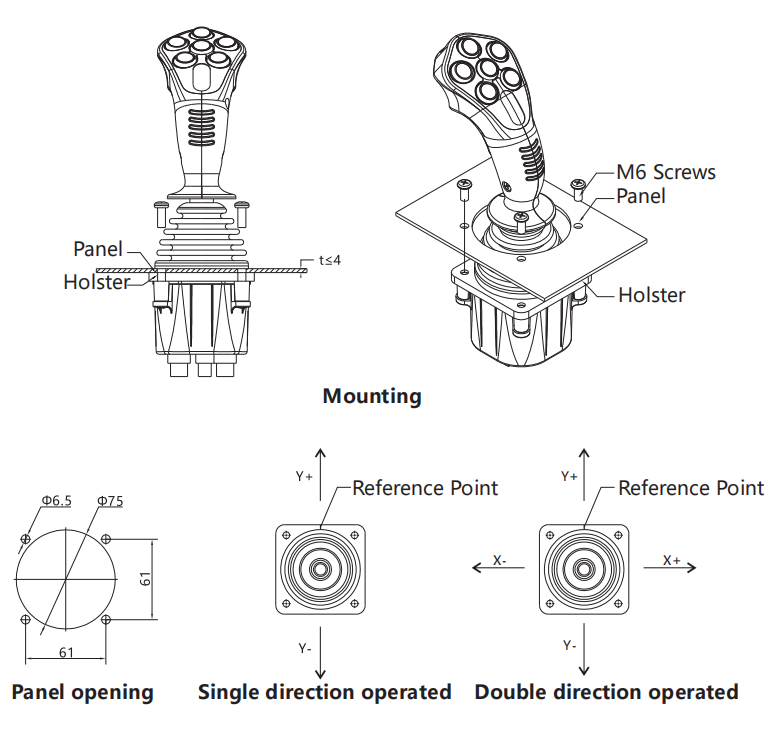
**Environmental data**

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

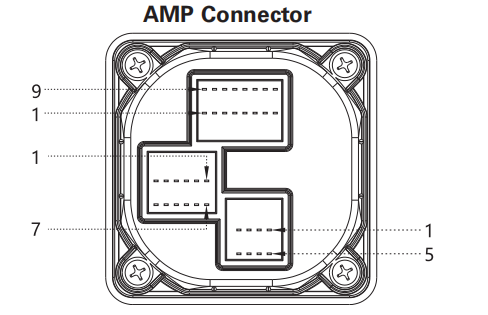
**Dimensions**



**Product installation**



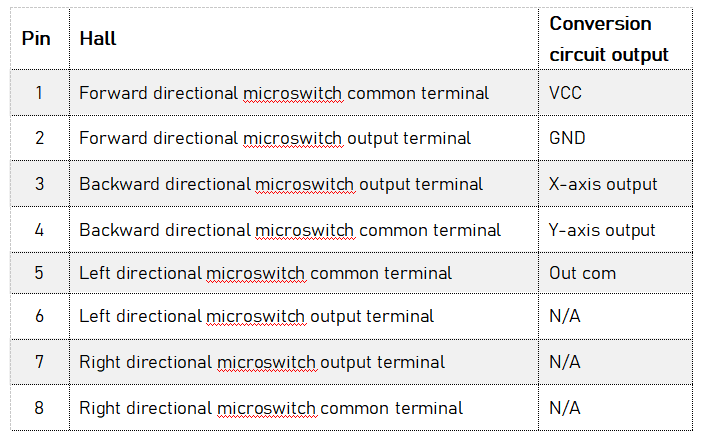
**Electrical Connections**



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pin** | **Pontentiometer** | **Hall** | **w/ electrical amplifier of output voltage** | **W/ electrical amplifier of output current** |
| 1 | Y-axis forward directional switch | Button switch 4 | Common terminal of button switch | Common terminal of button switch |
| 2 | N/A | Button switch 3 | Button switch 1 | Button switch 1 |
| 3 | X-axis port left terminal | Button switch 2 | Button switch 2 | Button switch 2 |
| 4 | X-axis port wiper | Button switch 1 | Button switch 3 | Button switch 3 |
| 5 | X-axis port right terminal | Top button | Button switch 4 | Button switch 4 |
| 6 | X-axis port right terminal | Button switch 5 | Button switch 5 | Button switch 5 |
| 7 | X-axis switch common terminal | Button switch 6 | Button switch 6 | Button switch 6 |
| 8 | X-axis left directional switch | Deadman switch | Top button | Top button |
| 9 | Y-axis port backward terminal | Button switch 9 | Deadman switch | Deadman switch |
| 10 | Y-axis port wiper | Button switch 10 | Deadman switch | Deadman switch |
| 11 | Y-axis port forward terminal | Common terminal of button switch | X-axis left directional switch | X-axis left directional switch |
| 12 | Y-axis port center tap | Deadman swtich | X-axis port right terminal | X-axis port right terminal |
| 13 | Y-axis switch common terminal | N/A | Y-axis backward directional switch | X-axis switch common terminal |
| 14 | Y-axis backward directional switch | N/A | Y-axis forward directional switch | Y-axis forward directional switch |
| 15 | X-axis right directional switch | N/A | Switch common terminal | Y-axis forward directional switch |
| 16 | N/A | N/A | N/A | Y-axis switch common terminal |

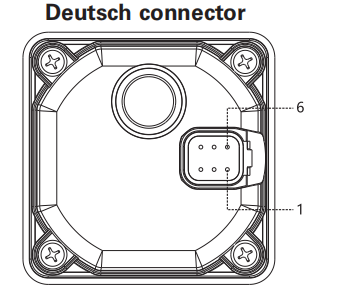
**16 Pin**

|  |  |  |
| --- | --- | --- |
| **Pin** | **Pontentiometer** | **Hall** |
| 1 | Button switch 4 | +5V +5V(redundant hall) |
| 2 | Button switch 3 | 0V( redundant hall) |
| 3 | Button switch 2 | +5V power supply |
| 4 | Button switch 1 | 0V power supply |
| 5 | Top button | Y-axis output(redundant hall) |
| 6 | Button switch 5 | X-axis output |
| 7 | Button switch 6 | X-axis output(redundant hall) |
| 8 | Deadman switch | Y-axis output |
| 9 | Button switch 9 | Z1-axis output |
| 10 | Button switch 10 | Z2-axis output |
| 11 | Common terminal of button switch | Z-axis output(redundant hall) |
| 12 | Deadman swtich | Z2-axis output(redundant hall) |

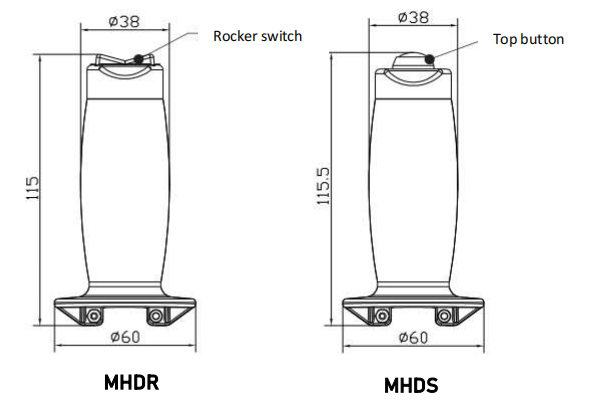
**12 Pin 8 Pin**

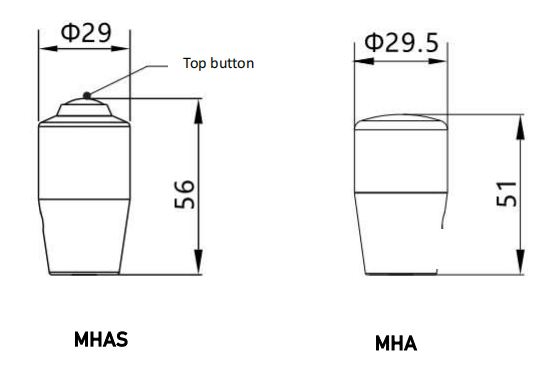
**Electrical Connections**

|  |  |  |
| --- | --- | --- |
| **Pin** | **Can output** | **Color** |
| 1 | GND | Black |
| 2 | VCC | Red |
| 3 | CAN high | Yellow |
| 4 | CAN low | Green |
| 5 | CAN shield | N/A |
| 6 | N/A | N/A |

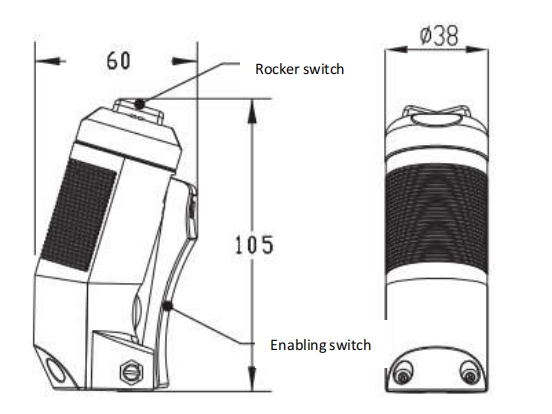


**Handle Optional**

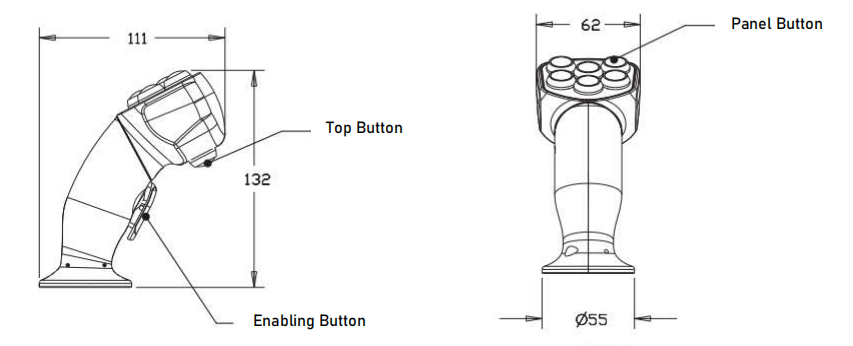




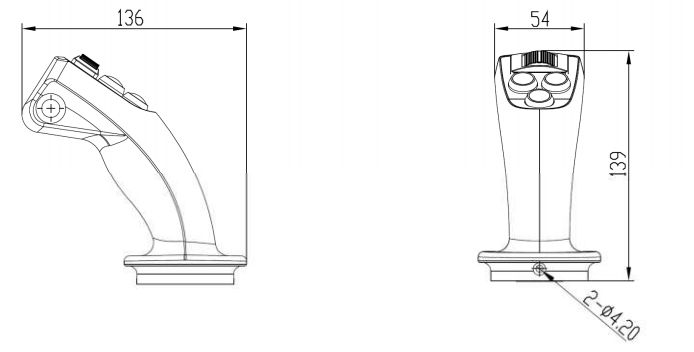
**MKG DN** with enabling switch, No rocker switch



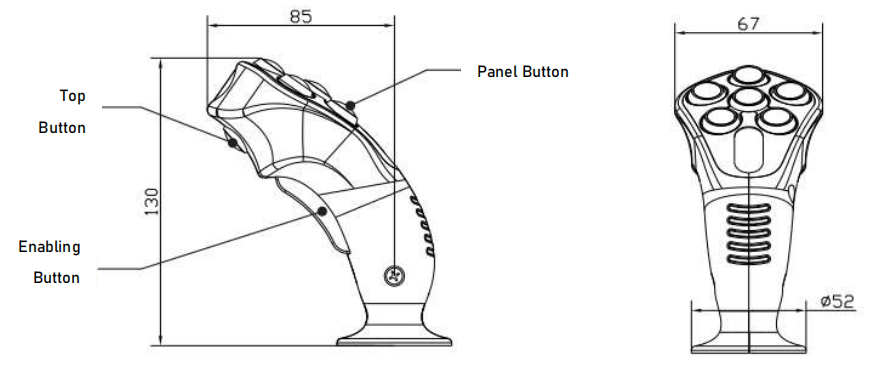
**MKG DR** with enabling switch, with rocker switch



**MSA**



**MSP**



**MSS**