RT02 Series Robust Industrial Joystick

Product Features

- Single axis, dual axis or 3 axis control;
- Potentiometer sensor or Hall sensor;
- Resistant to oil, maritime climate, ozone and UV radiation;
- Mechanical spring-return to center or Friction-hold operation;
- Excellent analog proportional control, CANbus 2.0 or RS232 signal output;
- Easy to install, flexible operation, uniform texture, maintenance-free;
- CE approved, RoHS 2011/65/EU, Annex II, including (EU) 2015/863 compliant.

Application

RunnTech 02 series robust industrial joystick controller is designed for hydraulic proportional control and variable frequency motor control, such as Construction machinery, Precision machine, Military robotics, Refuse handling trucks, offshore, Rotary drilling rigs, Cranes, Marine etc. Available in one, two or three axis configurations, this joystick can be supplied with non-contact Hall effect sensors or long life potentiometer tracks.

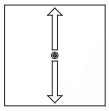
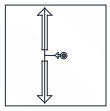
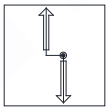
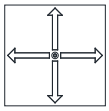
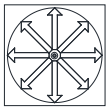
Technical Information

Environment Parameter		
Storage Temperature	-50°C...+80°C	
Operating Temperature	-40°C...+80°C	
Protection Grade	IP64	
Vibration	Amplitude±3g, Frequency: 10Hz-200Hz	
Impact	20g, 6ms, Semi-sinusoidal	
EMC Anti-interference Rank	100V/m, 30MHz to 1GHz, 80% sine-wave modulation, meet EN50082-2 (1995) standard	
EMC Emission Rank	Rank B, 150KHz to 30MHz, meet EN50081-2 (1993) standard	
ESD Anti-interference Rank	Rank 4, 8KV contact discharge, 15KV air discharge, meet IEC61000-4-2 standard	
Mechanical Parameter		
Mechanical Angle	Potentiometer: ±32°, Hall sensor: ±20°	
Operating Torque	5N (50N max)	
Mechanical Life	5 million	
Mechanical Error	± 0.5°	
Electrical Parameter		
Hall Sensor	Power Supply Voltage	5±0.5V DC
	Power Supply Current Consumption	6.5mA/hall sensor

tel: +86 519 8223 0053 | fax: +86 519 8886 5269 | e-mail: info@runntech.com | website: www.runntech.com

Hall Sensor	Resolution Ratio	infinite
	Maximum Voltage	15VDC
	Reversed Polarity Maximum Voltage	14.5VDC
	Load Resistance	5KΩ
	Median Voltage (no-load)	48 - 52%Vs
Potentiometer	Power Supply Voltage	DC24V
	Power Supply Current	<20mA
	Resolution Ratio	infinite
	Resistance (10%)	5KΩ and 10KΩ
	Electrical Angle	±32°
	Output Voltage Range (relative voltage)	0...100%; 10...90%
	Median Voltage	48%～52%
	Potentiometer Maximum Load Voltage	32VDC
	Maximum Power Consumption (25°C)	0.25W
	Switch Direction	switch position ±3°

Product Configuration

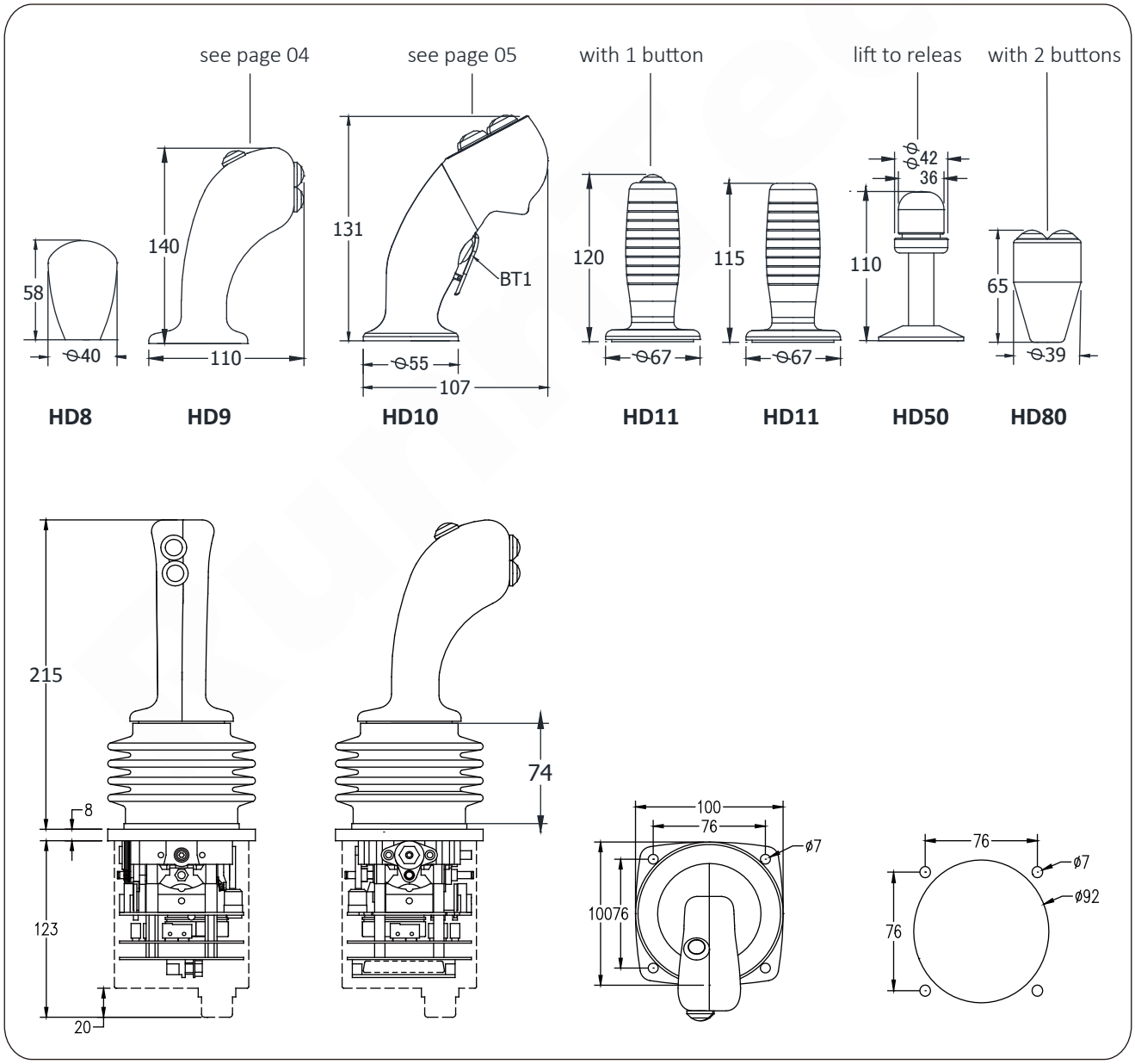
No.	Item	Content	
1	Serial Number	RT02 series robust industrial joystick	
2	Operation Mode	**T** - spring return **TS** - spring return + zero interlock **M** - friction hold **MS** - friction hold + zero interlock	
3	Limiter Plate	 **1a**  **1b**  **1c**  **2** - Y/X axis cross direction  **3** - Y/X axis full direction	
4	Electrical Output Form	Hall Sensor	**HV1**: DC 5V, 0...2.5...5V (rail to rail)
			HV2: DC 5V, 0.5...2.5...4.5V
			HV3: DC 5V, 1.0...2.5...4.0V
			HV4: DC 5V, 1.25...2.5...3.75V
		Potentiometer	**P1**: Simple 2 directions output (potentiometer with dead zone)
			P2: Simple 1 direction output (potentiometer without dead zone)
			V1: DC24V, -10V...0...+10V (voltage output)
			V2: DC24V, +10V...0...+10V (voltage output)
			V3: DC24V, -5V...0...+5V (voltage output)
			V4: DC24V, +5V...0...+5V (voltage output)
			V5: DC24V, 0...+10V (voltage output)
			V6: DC24V, 0...+5V (voltage output)
			I1: 4 wire 4mA...12mA...20mA (current output)
			I2: 4 wire 20mA...4mA...20mA (current output)
5	Potentiometer Type	**1K**, **2K**, **5K**, **10K**, **20K** or **H** (Hall sensor)	
6	Quantity of Switch Signal	**01**, **02** or **03** (the quantity of directional switch signal in each axis)	

7	Switch Signal Closed Position	Refer to Table 4-3 **Directional Switch Signal Closed Position** (Page 09)
8	Handle Grip Style	**HD9**, **HD10**, **HD11** and **HD50** (Page 03...07)
9	Mounting Dimensions	**M6**: 76×76, central hole 92

RT02 - T - 2 - P1 (10K) - 02 (89) - HD10b4-BT2③⑤RBS2②④Y - M6 - 50 (wire outlet length 50cm)

① serial number
② operation mode
③ limiter plate
④ electrical output form
⑤ potentiometer type
⑥ quantity of switch signal
⑦ switch signal closed position
⑧ handle grip style
⑨ button location
⑩ mounting dimension
wire outlet length

Product Installation



tel: +86 519 8223 0053 | fax: +86 519 8886 5269 | e-mail: info@runntech.com | website: www.runntech.com

Table 1-4 Handle HD9

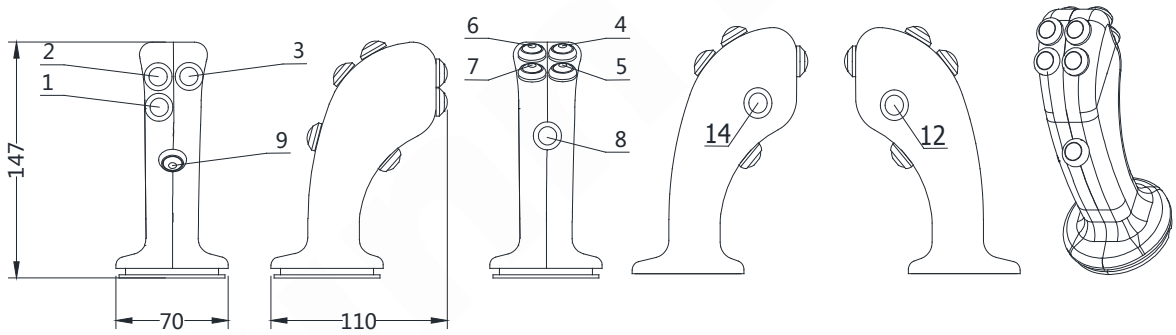
HD9 Handle

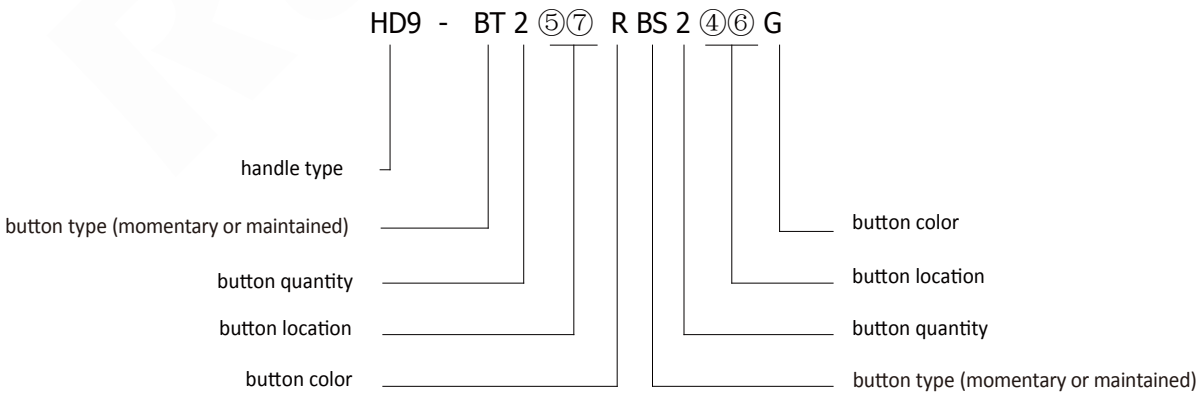
HD9 handle can be installed with a variety of accessories: self-lock button and self-resetting button.

We also can customize special technical parameters to meet your requirements.

HD9 handle use PA66 + 305GF, to achieve excellent high temperature performance and can be installed in RT300 or RT02 series joysticks to achieve multi-axis control.

Operation Temperature: -40-85℃
Storage Temperature: -40-85℃
Meet IEC68 part 2-20
Protection Grade: IP64/65





button selection reference Table 2-1

Table 1-5 Handle HD10

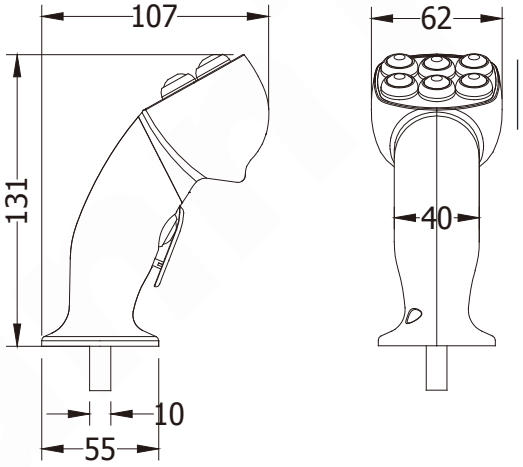
HD10 Handle

HD10 handle is ergonomically designed to provide a high degree of comfort, highly integrated, the handle can be installed with a variety of accessories: self-resetting (momentary) push button, self-locking push button, analog thumbwheel controller (W100) or rocker switch (QTOT).

We also can customize special technical parameters to meet your requirements.

HD10 handle use PA66 + 305GF, to achieve excellent high temperature performance and can be installed in RT100, RT200, RT300 RT01 or RT02 series joysticks to achieve multi-axis control.

Operation Temperature: -40-85℃
Storage Temperature: -40-85℃
Meet IEC68 part 2-20
Protection Grade: IP64/65



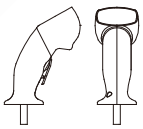
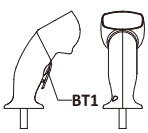
Model Selection	Style	Description
HD10a		without Deadman trigger
HD10b		with Deadman trigger

Table 1-6 Handle HD10 Panel Layout

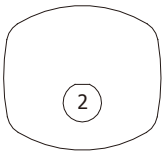
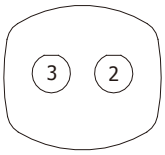
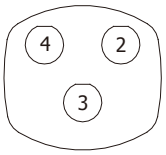
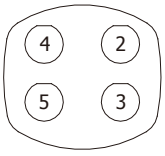
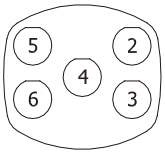
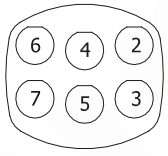
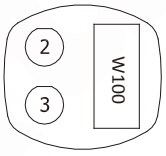
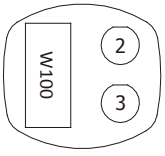
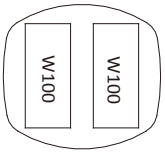
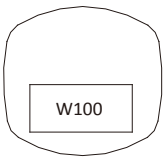
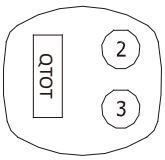
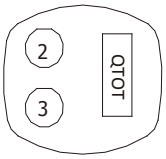
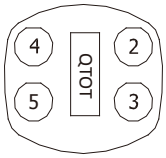
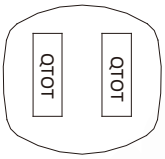
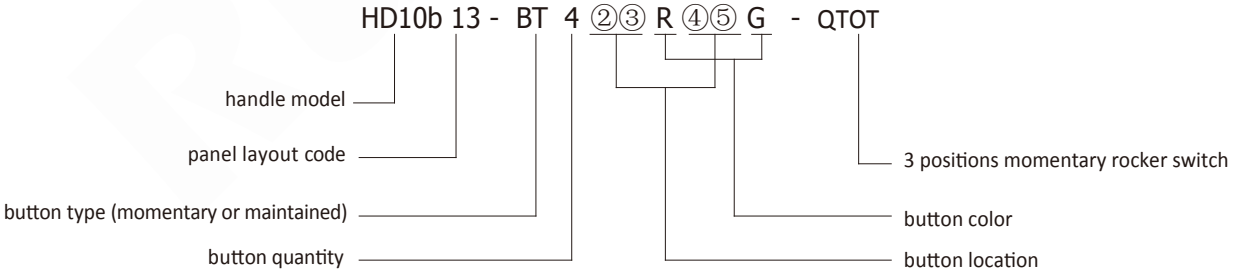
Layout Code	Layout	Description (all functions selection refer to the Table 2-1)
1		1 momentary button (**BT**) / maintained button (**BS**)
2		2 momentary button (**BT**) / maintained button (**BS**)
3		3 momentary button (**BT**) / maintained button (**BS**)
4		4 momentary button (**BT**) / maintained button (**BS**)
5		5 momentary button (**BT**) / maintained button (**BS**)
6		6 momentary button (**BT**) / maintained button (**BS**)
7		1 proportional thumbwheel (**W100**) and 2 momentary button (**BT**) / maintained button (**BS**)
8		1 proportional thumbwheel (**W100**) and 2 momentary button (**BT**) / maintained button (**BS**)
9		2 proportional thumbwheel controller (**W100**)

Table 1-6 Handle HD10 Panel Layout

Layout Code	Layout	Description (all functions selection reference Table 2-1)
10		1 proportional thumbwheel controller (**W100**)
11		1 rocker switch (**QTOT**) and 2 momentary button (**BT**) / maintained button (**BS**)
12		1 rocker switch (**QTOT**) and 2 momentary button (**BT**) / maintained button (**BS**)
13		1 rocker switch (**QTOT**) and 4 momentary button (**BT**) / maintained button (**BS**)
14		2 rocker switch (**QTOT**)

* we also can customize special panel layout.



button selection refer to Table 2-1

Table 2-1 Accessories

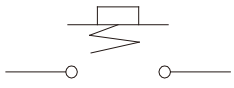
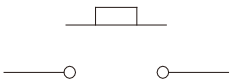
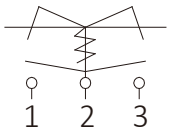
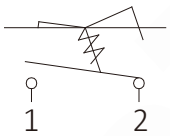
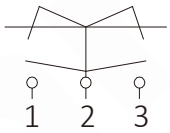
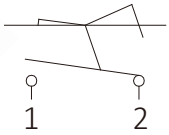
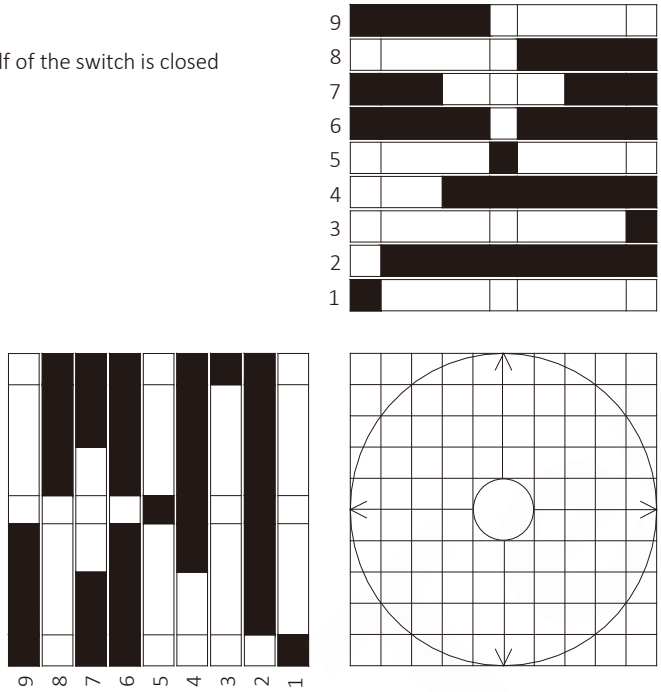
No.	Type	Description	Parameter	Remark
1	**BT**	momentary button 	24V2A	button color: Red - **R** Blue - **BU** Black - **BK** Yellow - **Y** Green - **G** White - **W**
2	**BS**	maintained button 	24V2A	button color: Red - **R** Blue - **BU** Yellow - **Y** Green - **G**
3	**QTOT**	3 positions momentary rocker switch 	3 pins 250V15A	
4	**QTO**	2 positions momentary rocker switch 	2 pins 250V15A	
5	**QSOS**	3 positions maintained rocker switch 	3 pins 250V15A	
6	**QSO**	2 positions maintained rocker switch 	2 pins 250V15A	
7	**QSOT**	3 positions, one side momentary another side maintained rocker switch	3 pins 250V15A	
8	**W100**	proportional thumbwheel (Hall Sensor)	input 5V DC	Please keep far away from the magnetic object

Table 4-3 Directional Switch Signal Closed Position

Entity on behalf of the switch is closed



Analog output refer to the following figure

Electrical Output Form	Hall Sensor	**HV1**: DC 5V, 0...2.5...5V (rail to rail)
		HV2: DC 5V, 0.5...2.5...4.5V
		HV3: DC 5V, 1.0...2.5...4.0V
		HV4: DC 5V, 1.25...2.5...3.75V
	Potentiometer	**P1**: Simple 2 directions output (potentiometer with dead zone)
		P2: Simple 1 direction output (potentiometer without dead zone)
		V1: DC24V, -10V...0...+10V (voltage output)
		V2: DC24V, +10V...0...+10V (voltage output)
		V3: DC24V, -5V...0...+5V (voltage output)
		V4: DC24V, +5V...0...+5V (voltage output)
		V5: DC24V, 0...+10V (voltage output)
		V6: DC24V, 0...+5V (voltage output)
		I1: 4 wire 4mA...12mA...20mA (current output)
		I2: 4 wire 20mA...4mA...20mA (current output)