

**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)****FEATURES**

The JHM joystick controller has been designed for use in mobile and industrial field applications. The use of the hall effect sensor, which eliminates any contact between moving electrical parts, improves overall resolution, precision and life. A complete line of built-in electronic drivers, generating on-off, proportional and CANbus control signals, guarantees the highest controllability of any type of electro-hydraulic system.

When coupled with an ergonomic multi-function handle of the **M** range, up to 5 proportional axes and 9 on-off push buttons can be integrated in the same joystick.

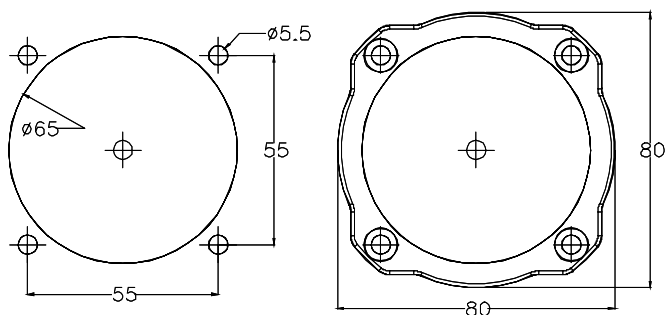
A magnetic position detent on the Y or X axis is also available as option.

**MECHANICAL SPECIFICATIONS**

Main body material:	aluminium
Boot material:	EPDM - UV proof
Lever deflection angle:	$\pm 22^\circ \pm 1^\circ$
Electrical angle:	$\pm 22^\circ \pm 1^\circ$
Operating temperature range:	-25°C / +80°C
Protection class (above panel):	up to IP 67, depending on grip
Life:	> 5 million cycles

**ELECTRICAL SPECIFICATIONS**

Sensor:	hall effect contactless technology
Supply voltage:	ANL version = 5 VDC $\pm 5\%$ other versions = 8÷32 VDC
Current consumption @ rest:	25 mA (sensor only)
Connector type:	Deutsch DT04-12P other types available on request
Output signal configuration:	see next pages for all versions

**PANEL CUT-OUT AND MOUNTING****AVAILABLE JOYSTICK MOVEMENTS**

<b>Option L2S</b>	Single axis control / Bidirectional
<b>Option L4C</b>	Cross axis control / Bidirectional
<b>Option L4D</b>	Multi axis control / Bidirectional



Shown with MS grip

JHM ORDERING INFORMATION: see page JK21

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**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)**

**ANL & ANH VERSION**

**Basic version**

Current consumption @ rest:	< 25 mA (sensor only)
Supply voltage:	ANL version = 5 VDC ±5% ANH version = 8÷32 VDC
Signal output @ rest:	2.5 VDC ±0.2 V
Output signal range:	0.5 ÷ 4.5 V ±0.2 V (see graph)
Rated output current:	1 mA
Protections (ANH version):	overvoltage and reversed polarity

**AVS VERSIONS**

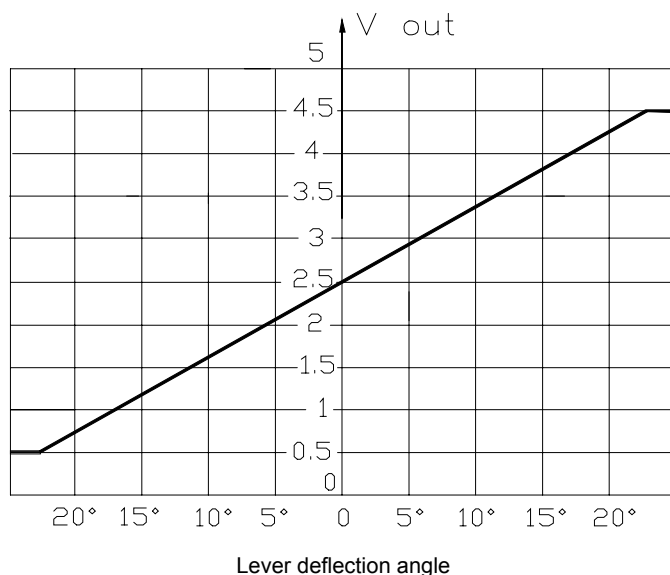
**Center tap output signal with digital directional signals**

Current consumption @ rest:	< 150 mA (without external load)
Supply voltage (Vin):	8÷32 VDC
Signal output @ rest:	0 V
Output signal range:	0÷5 V ±0.2 V (see graph)
Rated output current:	1 mA

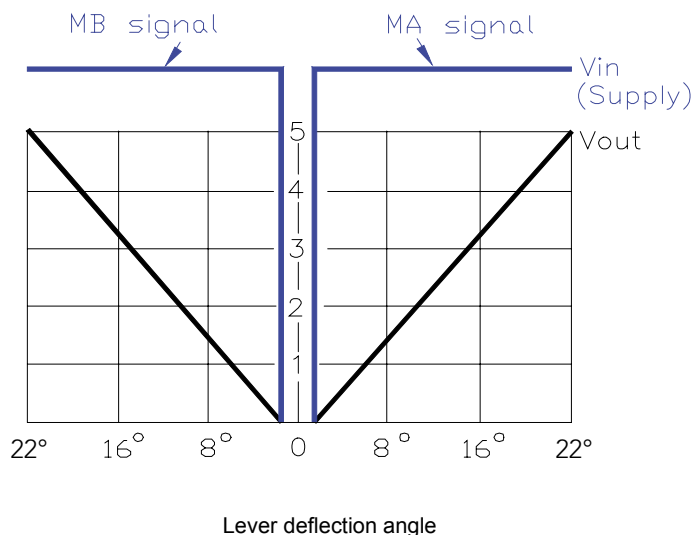
**(MA and MB signals on graph)**

Digital directional outputs on both axes:	0 / Vin (0.7 A max)
Digital directional outputs switching angle:	between 2° and 5°

**OUTPUT SIGNAL CONTROL CHARACTERISTICS**



**OUTPUT SIGNAL CONTROL CHARACTERISTICS**



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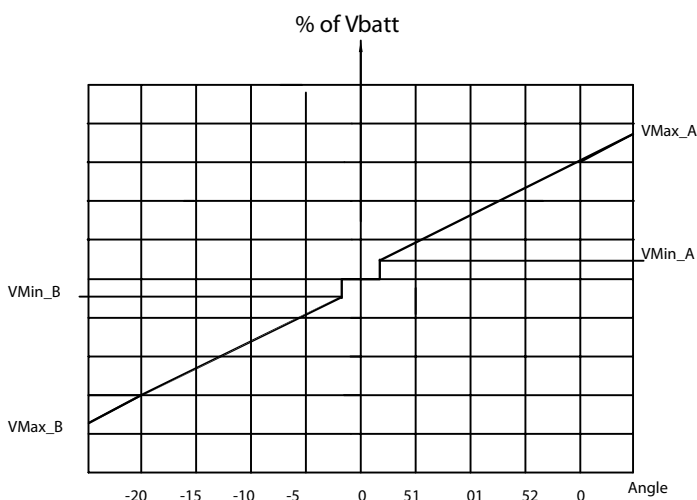
**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)**

**MLT VERSION**

**Adjustable output signal for closed loop proportional actuators**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	250 mA
Analog outputs:	5
Output signal range:	linear signal (adjustable)
	0.5÷4.5 V
	0.9÷4.1 V
	2.0÷6.0 V
Rated output current:	15 mA
Power digital outputs:	4 (0.7 A)
Adjustments:	via RS232 serial line

**OUTPUT SIGNAL CONTROL CURVE**



**ADJUSTABLE PARAMETERS**

The following parameters are adjustable via RS232 serial line by means of a specific calibration and configuration tool.

By use of the configuration window:

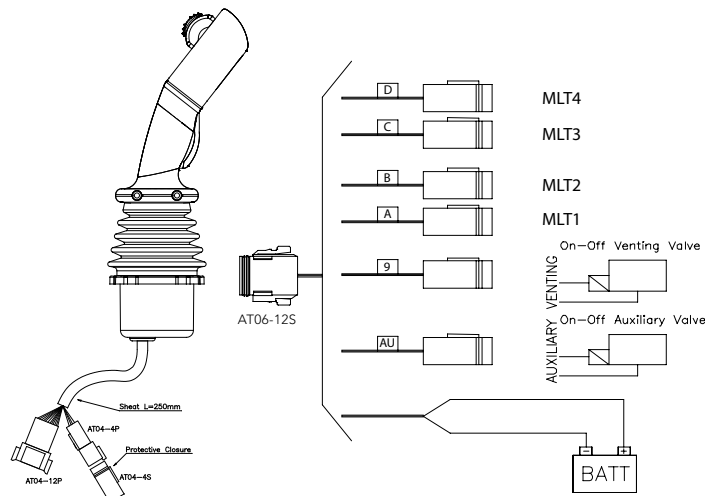
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse and enable, virtual cross movement.
- Assignment for on-off auxiliary outputs.

By use of the calibration window:

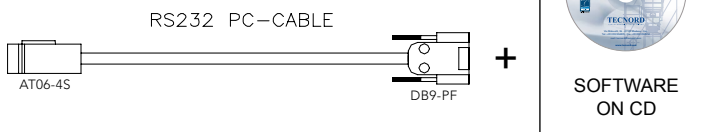
- Operating parameters: Vmin, Vmax, Ramp up, Ramp down.

**APPLICATION EXAMPLE**

Shown with MS grip



**For PC connection (optional)**  
ordering code: 21.0801.055



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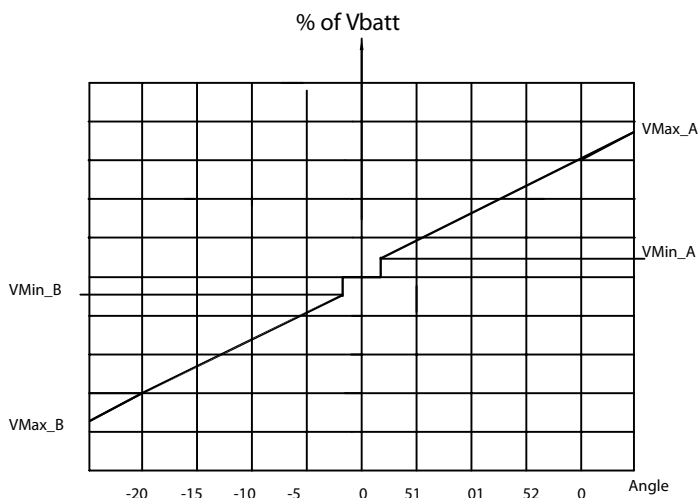
**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)**

**RTM VERSION**

**Ratiometric adjustable output signal for closed loop proportional actuators**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	250 mA
Analog outputs:	5
Output signal range:	linear signal (adjustable) 25÷50÷75% of Vbatt 10÷50÷90% of Vbatt
Rated output current:	15 mA
Power digital outputs:	4 (0.7 A)
Adjustments:	via RS232 serial line

**OUTPUT SIGNAL CONTROL CURVE**



**ADJUSTABLE PARAMETERS**

The following parameters are adjustable via RS232 serial line by means of a specific calibration and configuration tool.

By use of the configuration window:

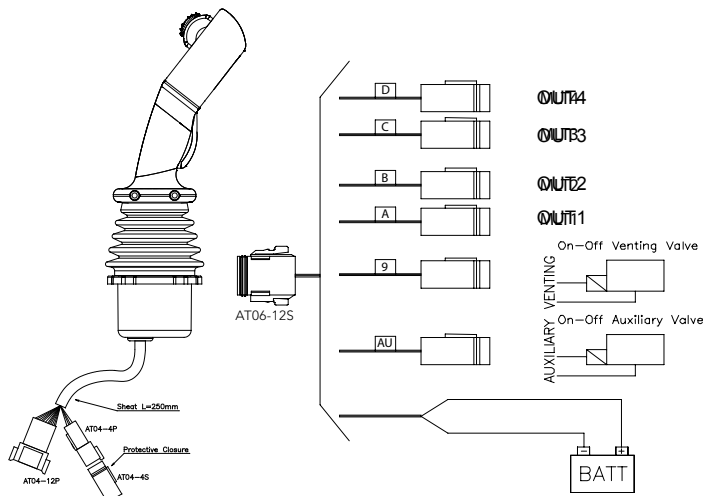
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse and enable, virtual cross movement.
- Output assignment on-off auxiliary valves.

By use of the calibration window:

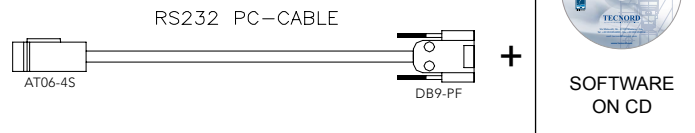
- Operating parameters: Vmin, Vmax, Ramp up, Ramp down.

**APPLICATION EXAMPLE**

Shown with MS grip



**For PC connection (optional)**  
ordering code: 21.0801.055



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**PWM VERSION**

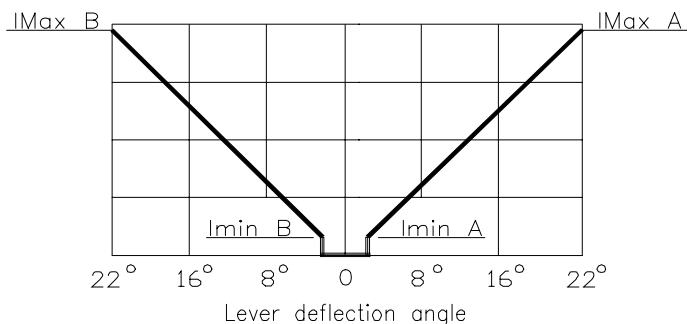
**2 PWM output channels**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	250 mA
PWM output:	2 x dual proportional solenoid valves
Current output range (PWM):	100 to 1600 mA (3 A available on request)
Dither frequency:	60 to 250 Hz (100 Hz factory preset)
Adjustable ramp time:	0.05 to 5 s
Power digital outputs:	2 (3.5 A)
Adjustments:	via PC, RS232 serial line connection, using the Tecnard calibration and configuration tool (see picture below)

**Notes:**

- 1) 3rd axis available using FPR-PWM roller switch - I<sub>max</sub> = 1.5 A
- 2) the base height is 60 mm instead of the standard 46 mm

**OUTPUT SIGNAL CONTROL CURVE**



**ADJUSTABLE PARAMETERS**

The following parameters are adjustable via RS232 serial line by means of the calibration/configuration tool.

By use of the configuration window:

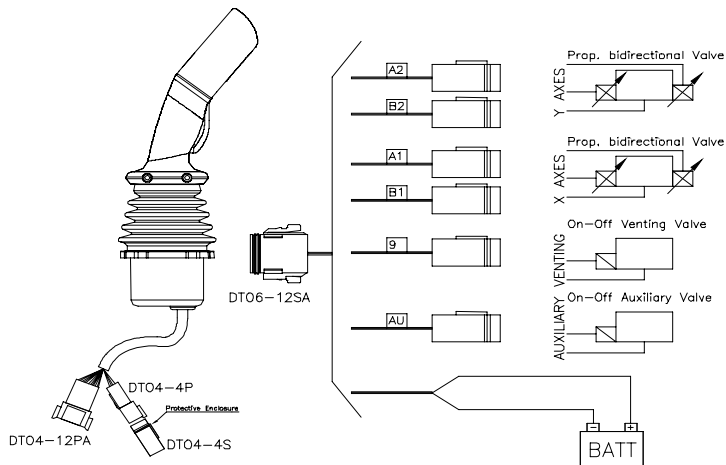
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse, virtual cross movement.
- Current setpoint selection (for 360° movement only).
- Output assignment on-off auxiliary valves.
- Digital directional output signals on both axes (N.O. or N.C. mode)

By use of the calibration window:

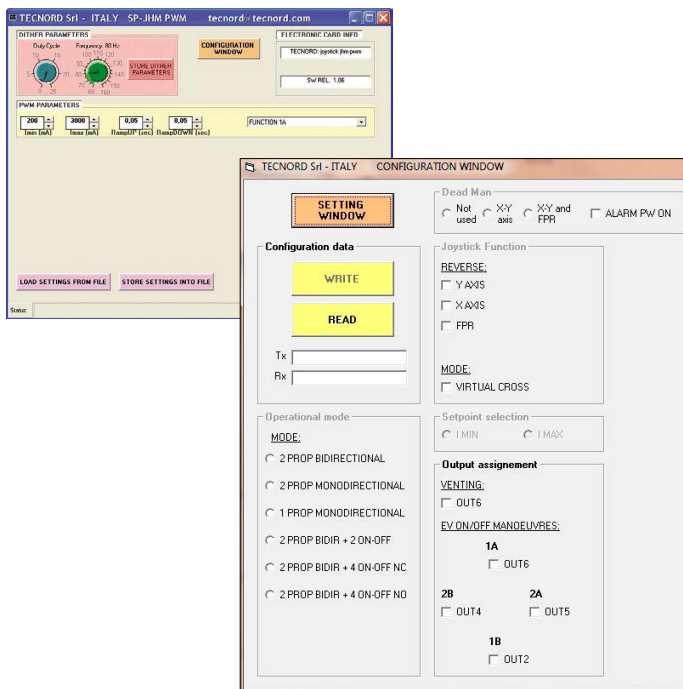
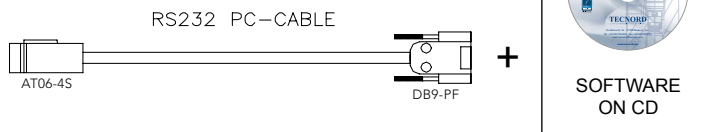
- Operating parameters: I<sub>min</sub>, I<sub>max</sub>, Ramp up and Ramp down times.

**APPLICATION EXAMPLE**

Shown with MS grip



For PC connection (optional)  
ordering code: 21.0801.055



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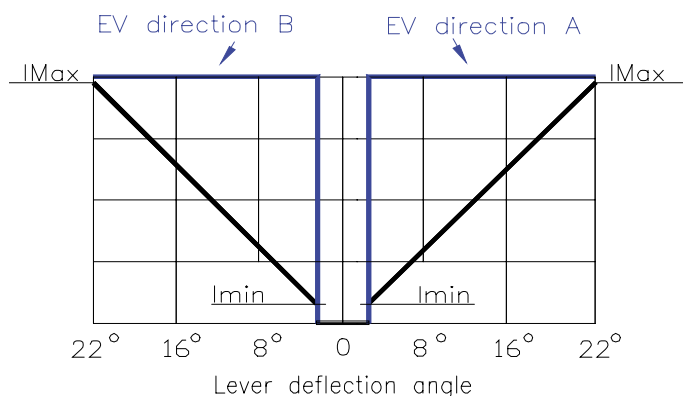
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**TCN VERSION (special configuration of PWM version)**

**1 PWM output in combination with up to 5 on-off outputs**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	< 250 mA
PWM output:	1 x single proportional solenoid valves
Current output range (PWM):	100 to 1600 mA (3A available on request)
Dither frequency:	60 to 250 Hz (100 Hz factory preset)
Adjustable ramp time:	0.05 to 5 s
Power digital outputs:	5 (3.5 A)
Adjustments:	via PC, RS232 serial line connection, using the Tecnord calibration and configuration tool (see picture below)

**OUTPUT SIGNAL CONTROL CURVE**



Imin and digital outputs activation: between 2° and 5°

**ADJUSTABLE PARAMETERS**

The following parameters are adjustable via RS232 serial line by means of a specific calibration and configuration tool.

By use of the configuration window:

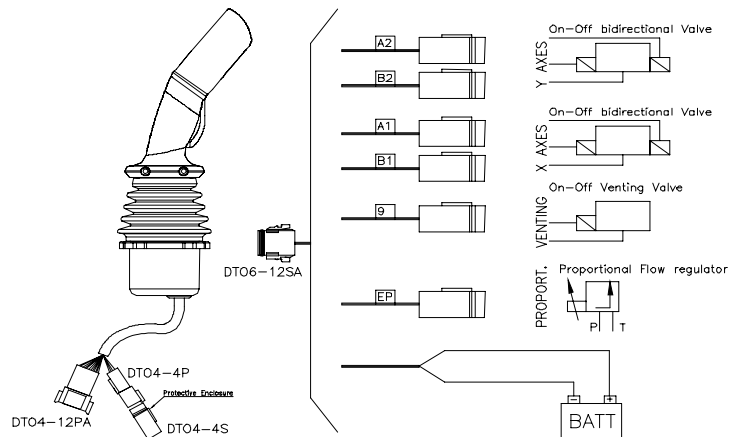
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse, virtual cross movement.
- Current setpoint selection (for 360° movement only).
- Output assignement on-off auxiliary valves.

By use of the calibration window:

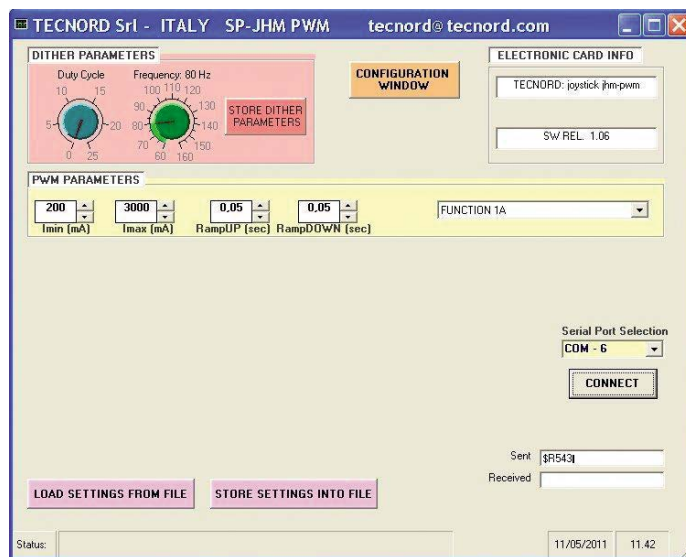
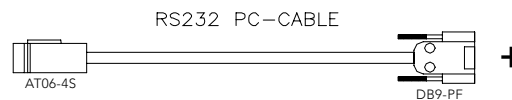
- Operating parameters: Imin, Imax, Ramps.

**APPLICATION EXAMPLE**

Shown with MS grip



For PC connection (optional)  
ordering code: 21.0801.055



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**CANBUS VERSION**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	< 250 mA
Physical layer:	ISO 11898, 250 Kbit/s
Protocol:	J1939/ CANopen
Connector type:	Deutsch DT04-4P

With CANbus link, following signals can be managed on the multifunctional grip:

- 4 digital outputs 0.7A (LEDs, detent coils, buzzers, etc).
- 6 analog voltage input 0-5 V (proportional rollers and mini-joysticks).
- 6 digital inputs (push buttons, toggles, etc).

**ADJUSTABLE PARAMETERS**

The following parameters are adjustable via CAN:

**For CANopen version**

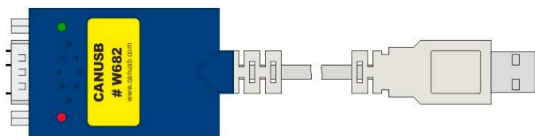
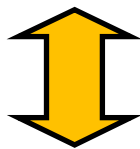
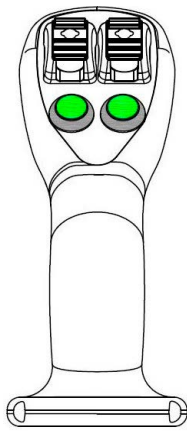
- Node ID

**For J1939 version**

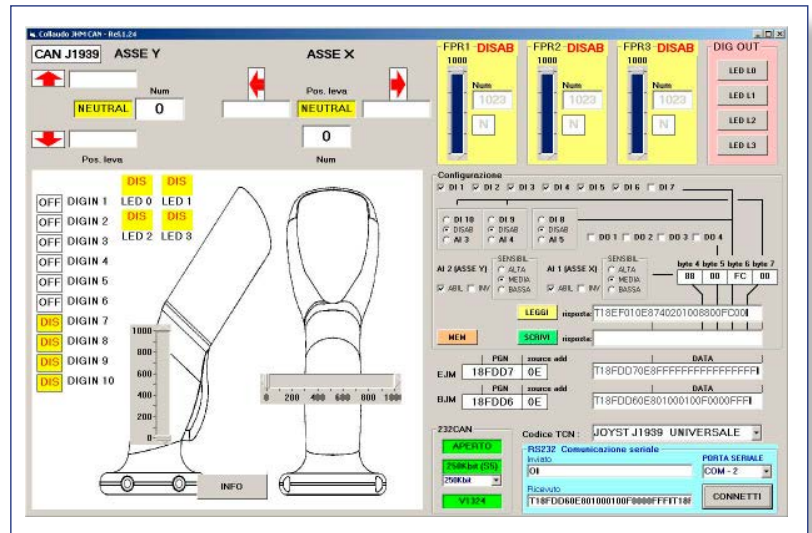
- Node ID

In addition, with the specific “Calibration and Configuration PC Tool” and the CAN/USB hardware interface device (see picture below) is possible:

- Read joystick configuration
- Adjust X, Y axes sensibility and direction
- Enable /disable digital or analog inputs and digital outputs
- Change Node ID

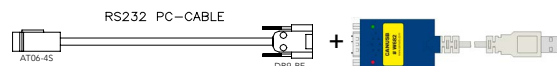


**FOR J1939 VERSION ONLY**



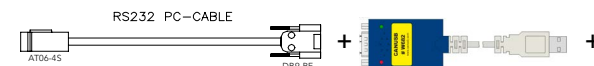
**CANOPEN VERSION ONLY**

ordering code: 21.0801.071



**J1939 VERSION ONLY**

ordering code: 21.0801.062



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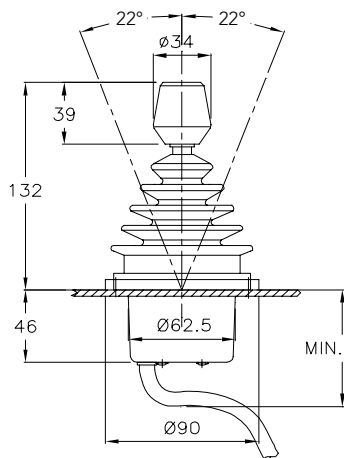
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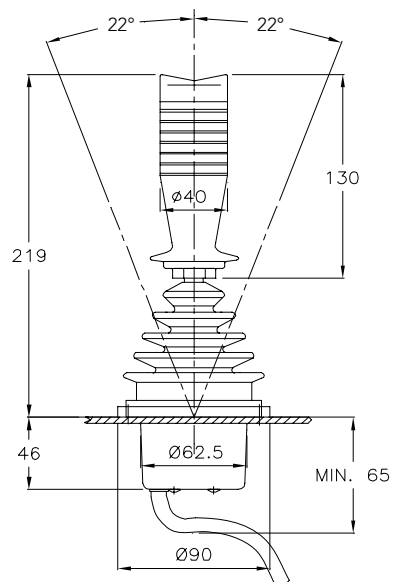
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**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**

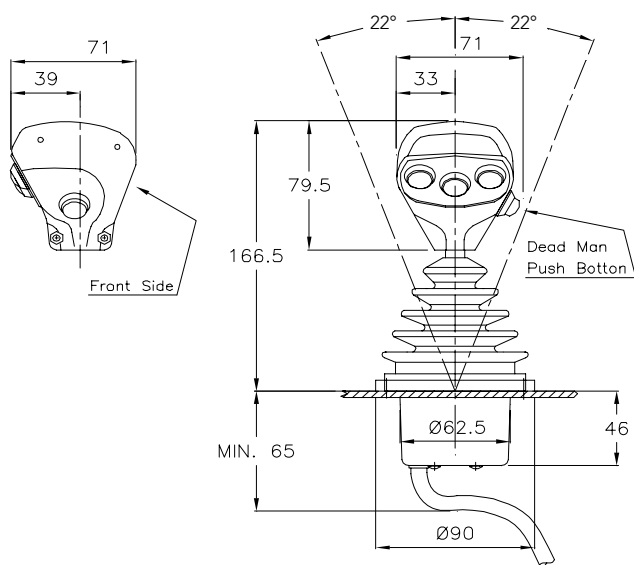
**JHM joystick with grips - configuration examples with overall dimensions**



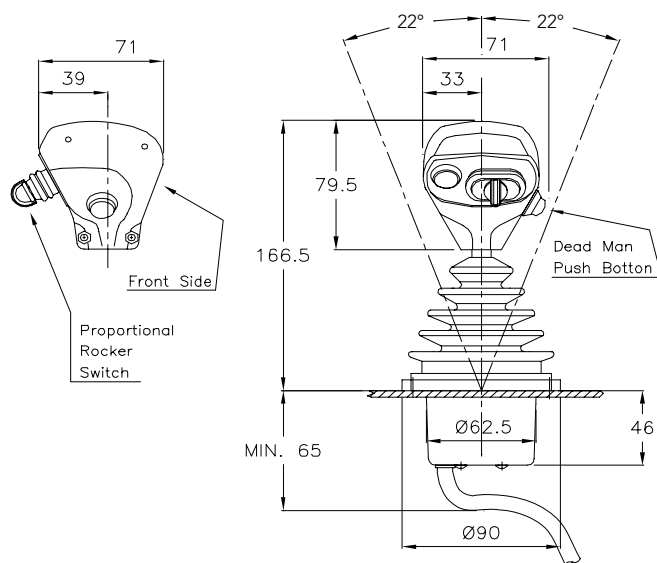
JHM base with IL handle  
Complete code: **JHM-L4D/ANH-IL 0000**



JHM base with IC handle  
Complete code: **JHM-L4D/ANH-IC 0200**



JHM base with IE type handle  
Complete code: **JHM-L4D/ANH-IE A4P9 0000**



JHM base with IE type handle  
Complete code: **JHM-L4D/ANH-IE A1P9 1PRS**

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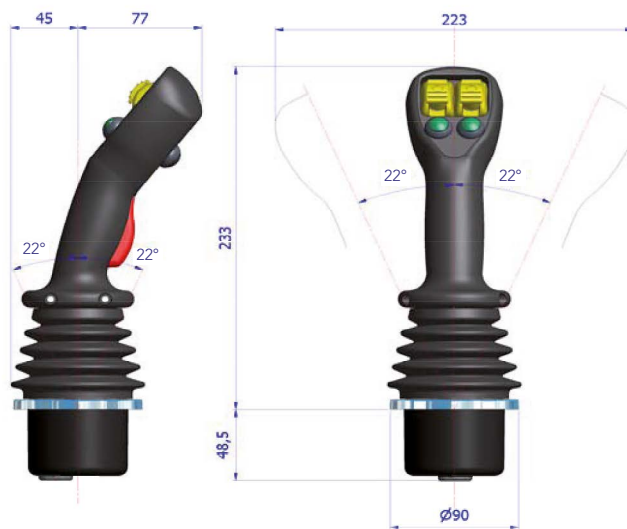


**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**

**JHM joystick with grips - configuration examples with overall dimensions**



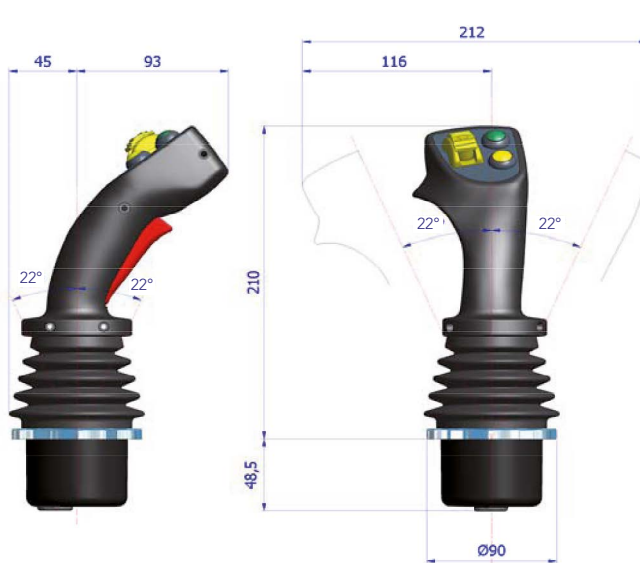
JHM base with MS type handle  
Complete code: **JHM L4D/ANH-MS A6P9 R3P9**



JHM base with MS type handle  
Complete code: **JHM L4D/ANH-MS A2P9 2FPR R1P9**



JHM base with MG type handle  
Complete code: **JHM L4D/ANH-MG A4P9 R1P9**



JHM base with MG type handle  
Complete code: **JHM L4D/ANH-MG A2P9 1FPR 0000**

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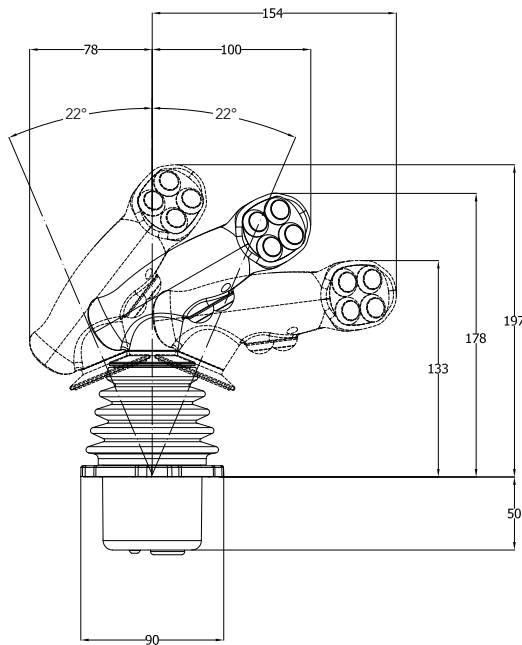
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**JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**

**JHM joystick with HL – HR grips - configuration examples with overall dimensions**



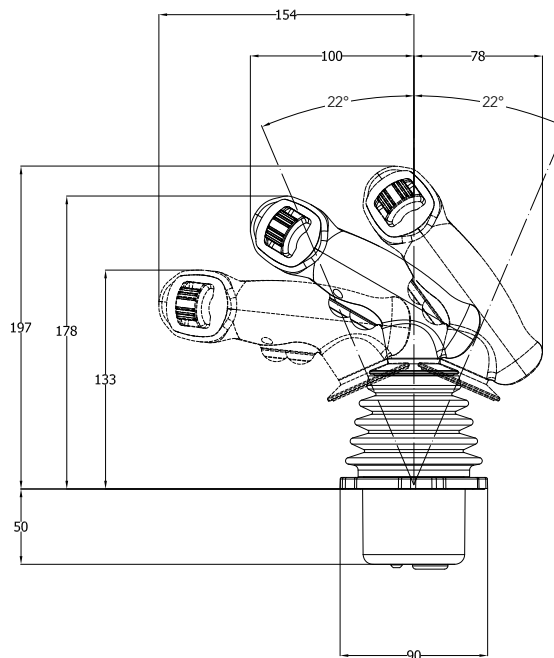
JHM base with HL type handle  
Complete code: **JHM-L4D/ANH-HL-04P9-2P9/RDFF**



JHM base with HL type handle  
Complete code: **JHM-L4D/ANH-HL-04P9-2P9/RDFF**



JHM base with HR type handle  
Complete code: **JHM-L4C/NN-HR-0FPR-2P9/R000**



JHM base with HR type handle  
Complete code: **JHM-L4C/NN-HR-0FPR-2P9/R000**

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