

JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK

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 **MS** range, up to 5 proportional axes and 9 on-off push buttons can be integrated in the same joystick.

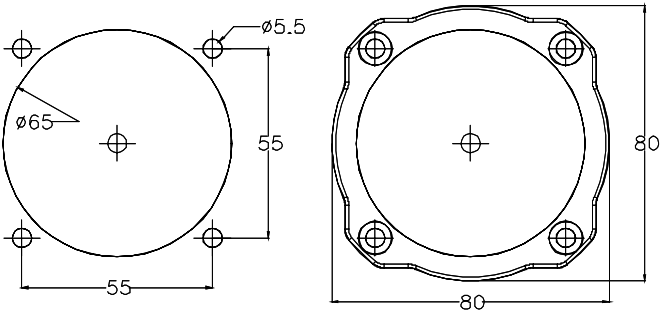
MECHANICAL SPECIFICATIONS

Main body material:	aluminium
Boot material:	EPDM - UV proof
Lever deflection angle:	±22° ±1° (15° On Request)
Electrical angle:	±22° ±1°
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 ±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

Option L2S	Single axis control / Bidirectional
Option L4C	Cross axis control / Bidirectional
Option L4D	Multi axis control / Bidirectional



JHM ORDERING INFORMATION: see page JK22

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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**ANL & ANH VERSION****Basic version**

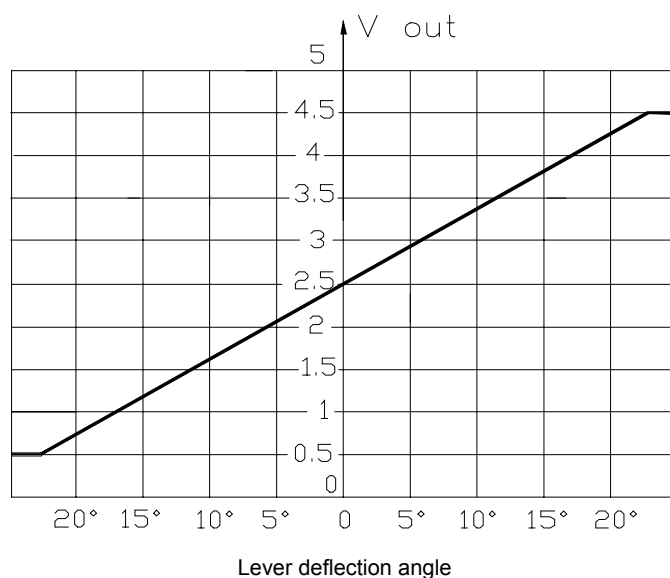
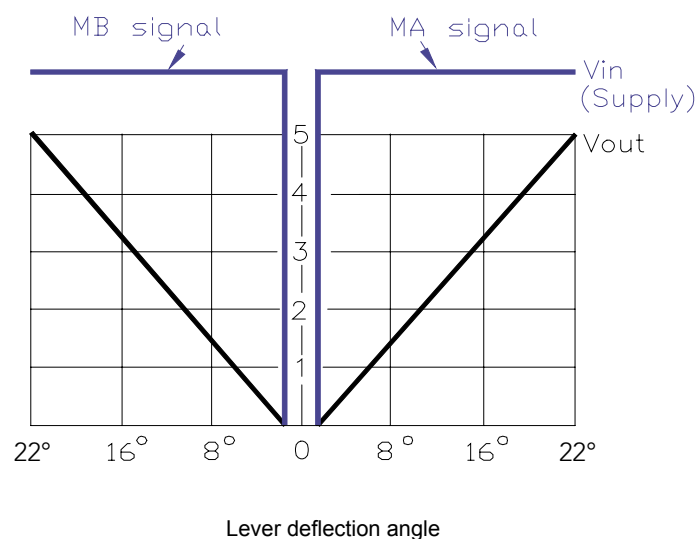
Current consumption @ rest:	< 25 mA (sensor only)
Supply voltage:	ANL version = 5 VDC $\pm 5\%$ ANH version = 8÷32 VDC
Signal output @ rest:	2.5 VDC ± 0.2 V
Output signal range:	0.5 ÷ 4.5 V ± 0.2 V (see graph)
Rated output current:	1 mA
Protections (ANH version):	overvoltage and reversed polarity

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**

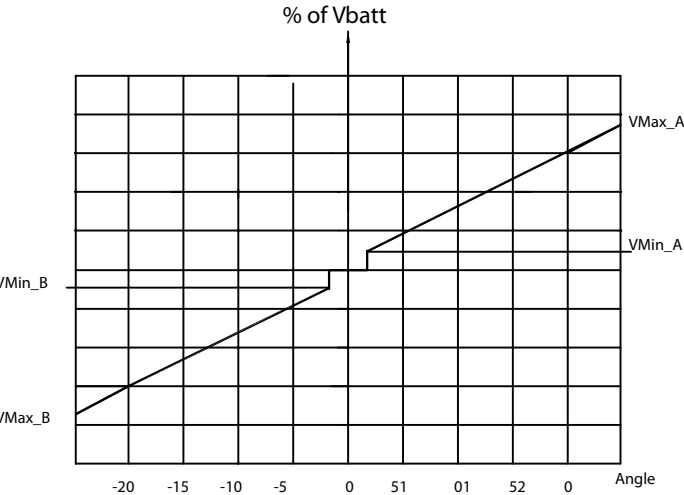
JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK

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:

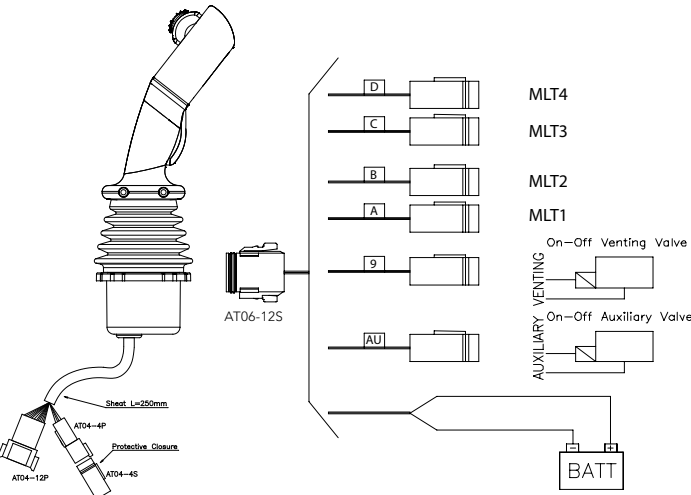
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse and enable, virtual cross movement.
- Assignment for on-off auxiliary outputs.

By use of the calibration window:

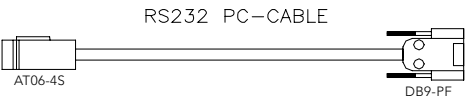
- Operating parameters: Vmin, Vmax, Ramp up, Ramp down.

APPLICATION EXAMPLE

Shown with MS grip



For PC connection (optional)
ordering code: 21.0801.055



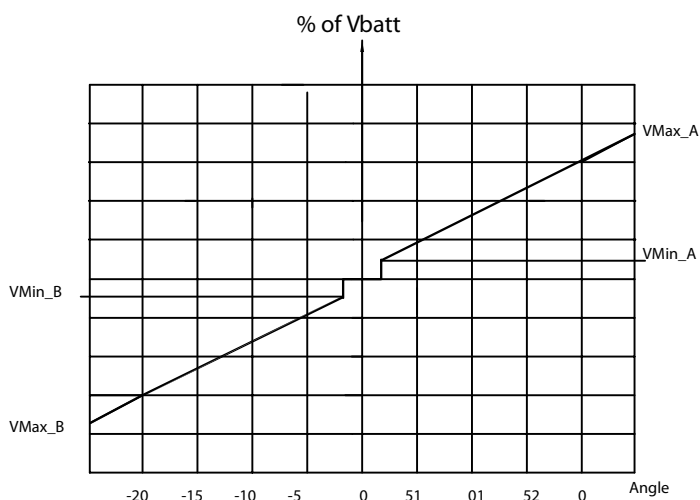
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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**RTM VERSION****Ratiometric adjustable output signal for closed loop proportional actuators**

Supply voltage:	8÷32 VDC
Current consumption @ rest:	250 mA
Analog outputs:	5
Output signal range:	linear signal (adjustable) 25÷50÷75% of V _{batt} 10÷50÷90% of V _{batt}
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:

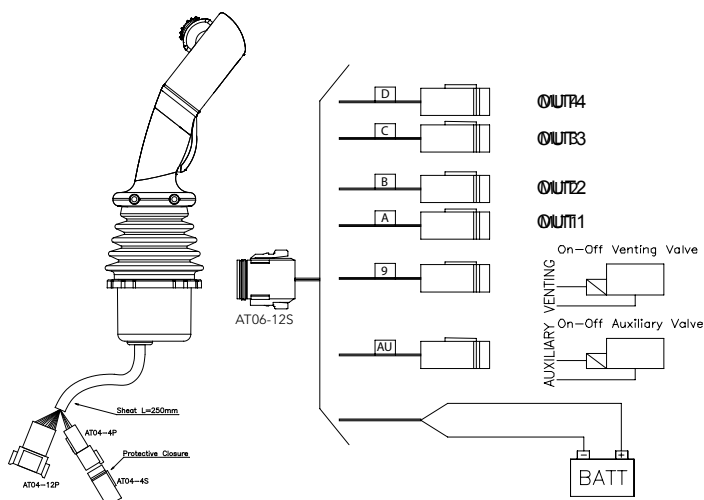
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse and enable, virtual cross movement.
- Output assignement on-off auxiliary valves.

By use of the calibration window:

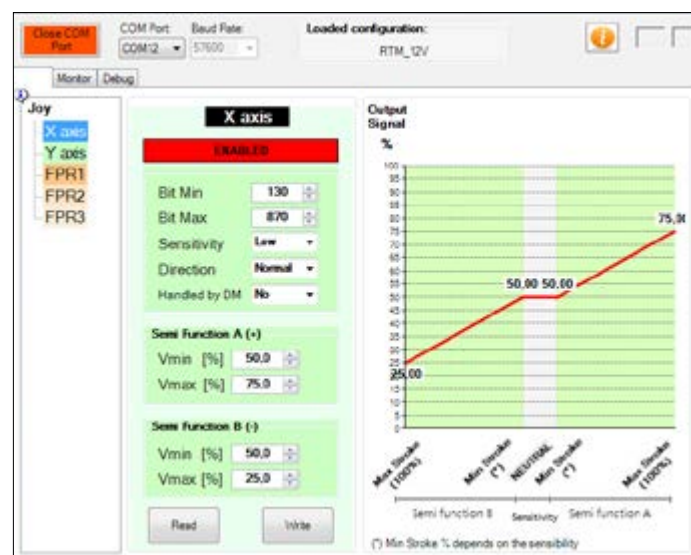
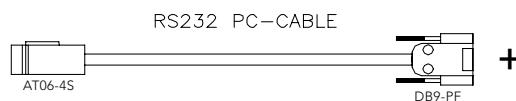
- Operating parameters: Vmin, Vmax, Ramp up, Ramp down.

APPLICATION EXAMPLE

Shown with MS grip



For PC connection (optional)
ordering code: 21.0801.055

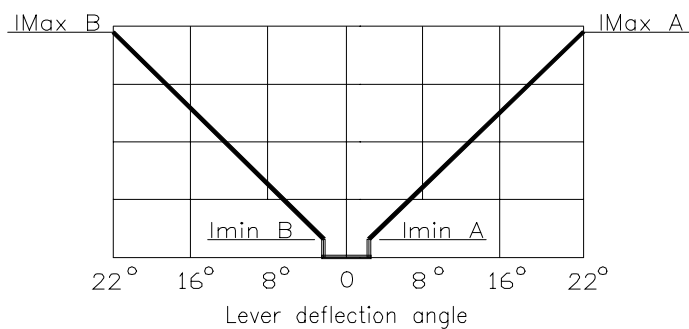


JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK**PWM VERSION****2 PWM output channels**

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 Tecnomat calibration and configuration tool (see picture below)

Notes:

- 1) 3rd axis available using FPR-PWM roller switch - $I_{max} = 1.5 A$
- 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:

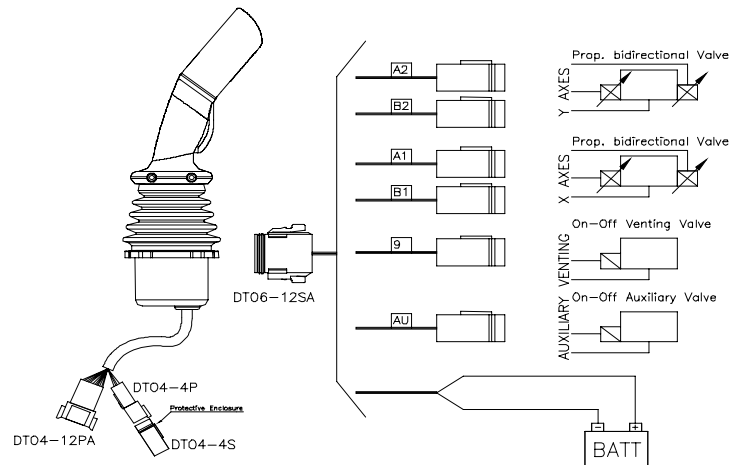
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse, virtual cross movement.
- Current setpoint selection (for 360° movement only).
- Output assignment on-off auxiliary valves.
- Digital directional output signals on both axes (N.O. or N.C. mode)

By use of the calibration window:

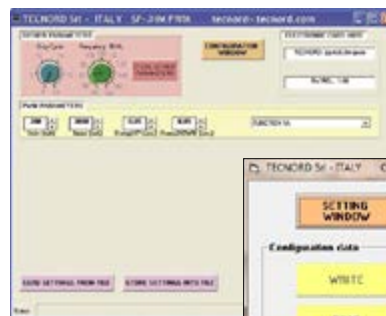
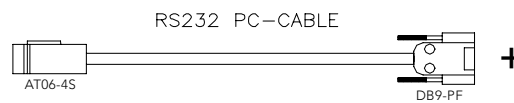
- Operating parameters: Imin, Imax, Ramp up and Ramp down times.

APPLICATION EXAMPLE

Shown with MS grip



For PC connection (optional)
ordering code: 21.0801.055



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Via Malavolti, 36 - 41122 Modena - ITALY - Phone +39 (059) 254895 - Fax +39 (059) 253512 - mail: tecnord@tecnord.com - www.tecnord.com

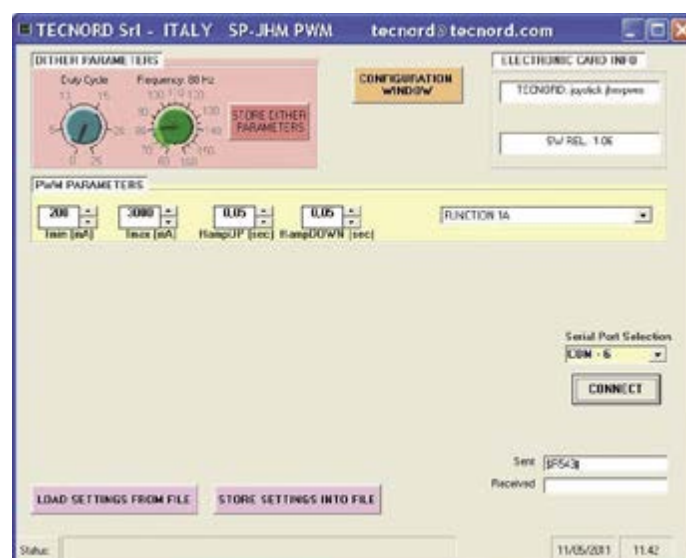
Supply voltage:	8÷32 VDC
Current consumption @ rest:	< 250 mA
PWM output:	1 x single proportional solenoid valves
Current output range (PWM):	100 to 1600 mA (3A available on request)
Dither frequency:	60 to 250 Hz (100 Hz factory preset)
Adjustable ramp time:	0.05 to 5 s
Power digital outputs:	5 (3.5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

- Operating parameters: Imin, Imax, Ramps.

The diagram illustrates the DT06-12SA hydraulic control unit, which is a multi-port manifold. On the left, a large hydraulic cylinder is connected to the manifold. Below the cylinder, a cable with a DT04-12PA connector is shown, and a protective enclosure is indicated. The manifold has several ports labeled: A2, B2, A1, B1, 9, and EP. Each port is connected to a corresponding valve or regulator. The valves are labeled: On-Off bidirectional Valve for the Y AXES, On-Off bidirectional Valve for the X AXES, and On-Off Venting Valve for the VENTING. A Proportional Flow regulator is also shown, with a PI (Proportional Integral) and T (Time) control. The entire system is powered by a BATT (Battery) unit.



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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK

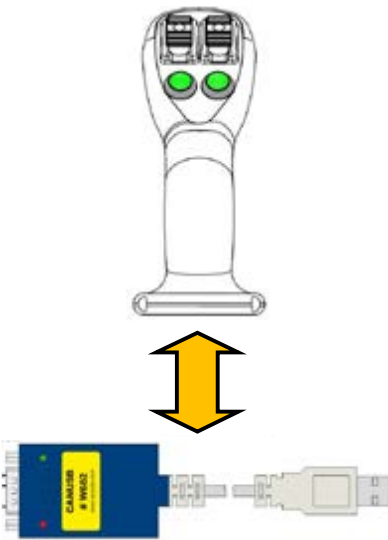
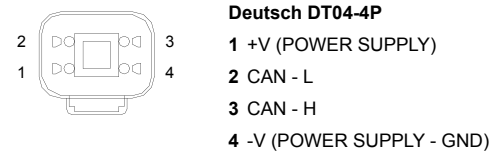
CANBUS VERSION

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).

CONNECTIONS



ADJUSTABLE PARAMETERS

The following parameters are adjustable via CAN:

For CANopen version

- Node ID

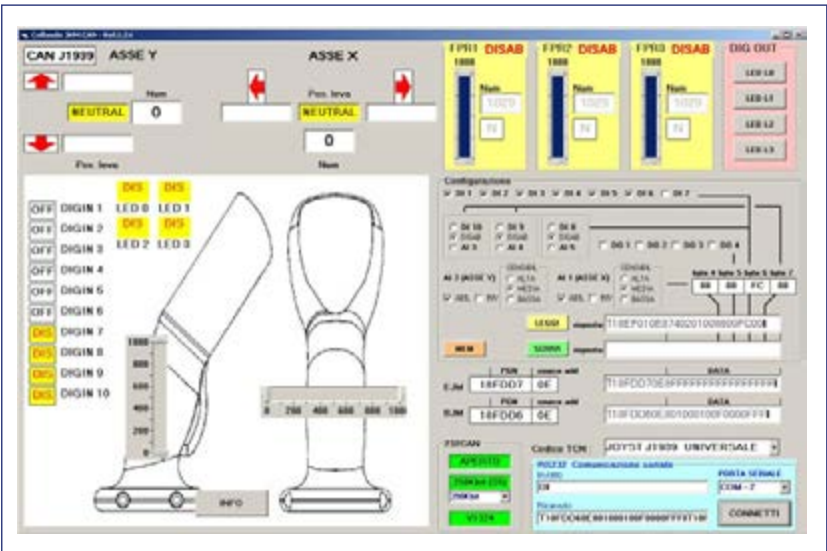
For J1939 version

- Node ID

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

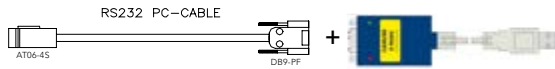
- Read joystick configuration
- Adjust X, Y axes sensibility and direction
- Enable /disable digital or analog inputs and digital outputs

FOR J1939 VERSION ONLY



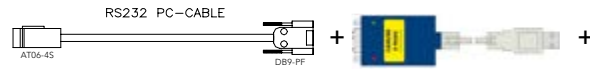
CANOPEN VERSION ONLY

ordering code: 21.0801.083



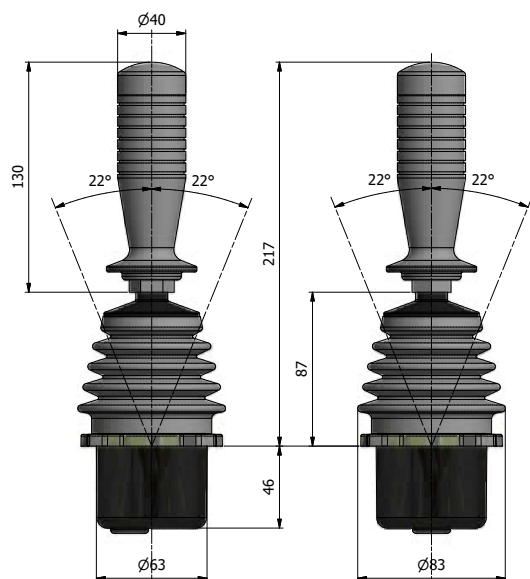
J1939 VERSION ONLY

ordering code: 21.0801.062

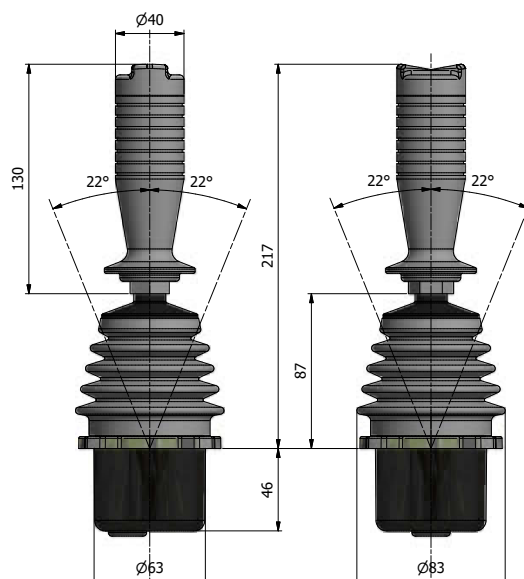


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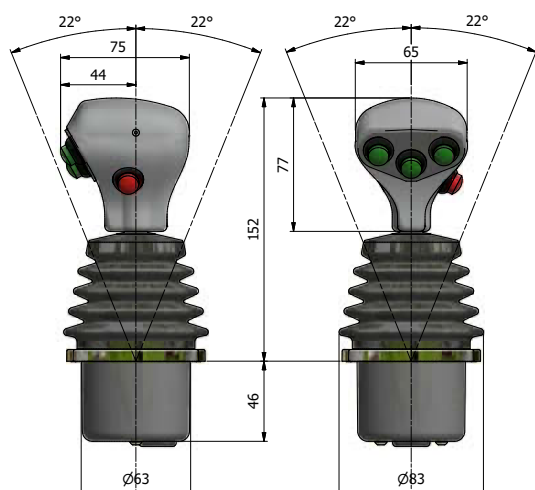
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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK*JHM joystick with grips - configuration examples with overall dimensions*

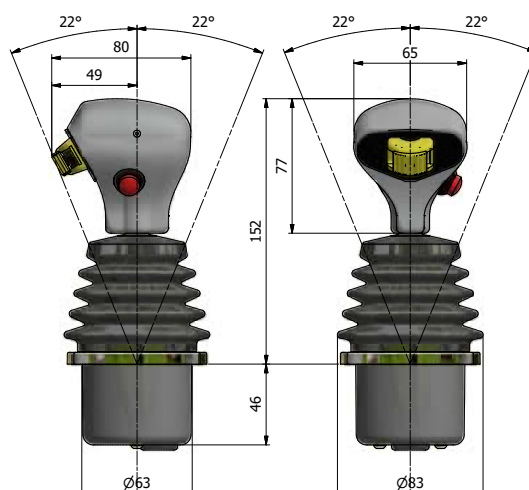
JHM base with IC handle
Complete code: **JHM-L4D/ANH-IC-0000**



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



JHM base with IE type handle
Complete code: **JHM-L4D/ANH-IE-A3P9-0000**



JHM base with IE type handle
Complete code: **JHM-L4D/ANH-IE-A1FPR-0000**

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**



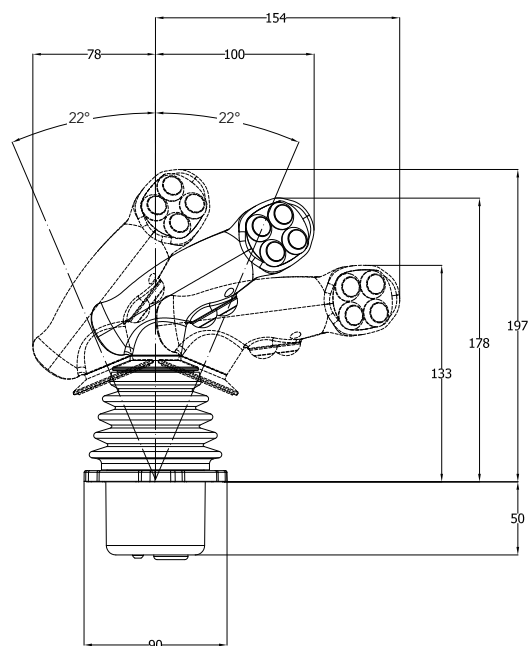
JHM base with MG type handle
Complete code: **JHM-L4D/ANH-MG-A2P9-1FPR-0000**

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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK***JHM joystick with HL – HR grips - configuration examples with overall dimensions***

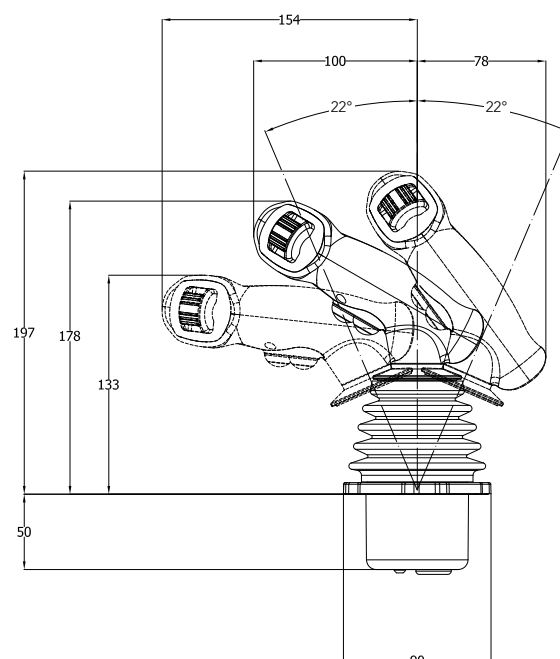
JHM base with HL type handle
Complete code: **JHM-L4D/ANH-HL-01FPR-2P9-R000**



JHM base with HL type handle
Complete code: **JHM-L4D/ANH-HL-04P9-2P9-R000**



JHM base with HR type handle
Complete code: **JHM-L4C/NN-HR-04P9-2P9-R1FPR**



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