

Note:
for TCN, PWM and MLT versions, a 4 poles Deutsch DT04-4P connector is always included

EXAMPLE:

JHM-L4D/ANH-6
BASE

MS/0000/2FPR/R000
GRIP

JHM-L4D/ANH-MS/0000/2FPR/R000-6
COMPLETE JOYSTICK
(with 6 poles Deutsch connector)

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mail: delta@delta-power.com • www.delta-power.com



Via Malavolti, 36 • 41122 Modena • ITALY • Phone +39 (059) 254895 • Fax +39 (059) 253512
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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.

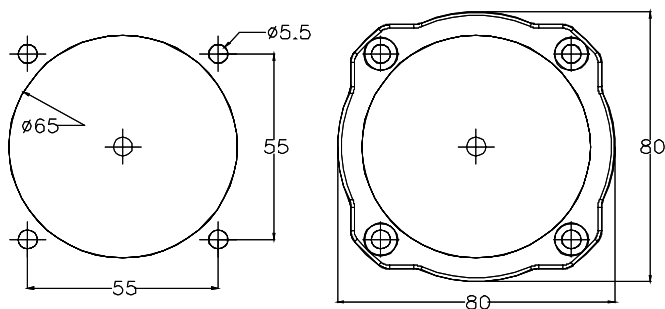
When coupled with an ergonomic multi-function handle of the **M** range, up to 5 proportional axes and 9 on-off push buttons can be integrated in the same joystick. As further option, the JHM is also available with a magnetic position detent on the Y or X axis.

MECHANICAL SPECIFICATIONS

Main body material:	aluminium
Boot material:	NBR / Shore 50 - 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**

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



Shown with MS grip

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

ANL & ANH VERSIONS

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 VERSION

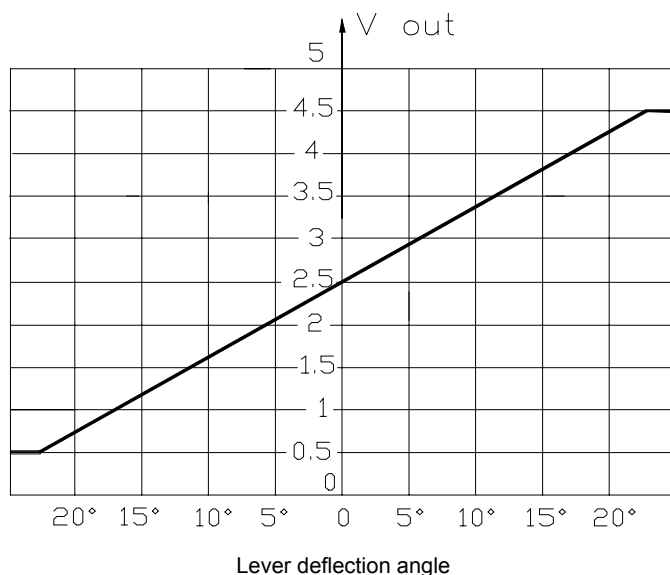
Center tap output signal with digital directional signals

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

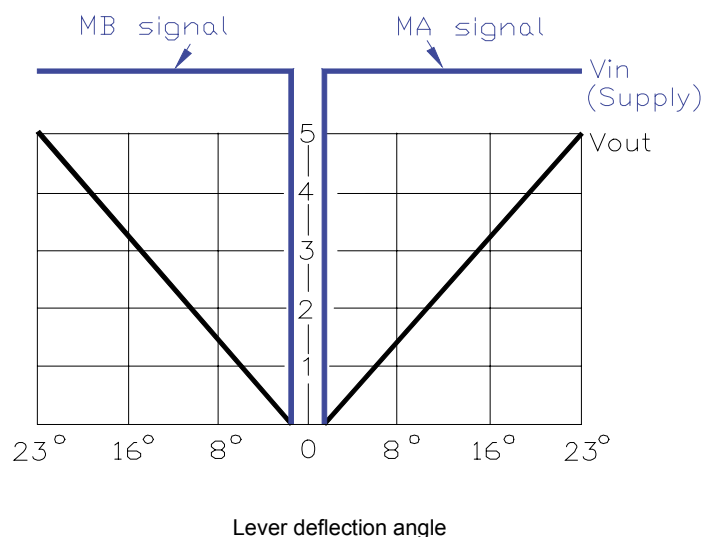
(MA and MB signals on graph)

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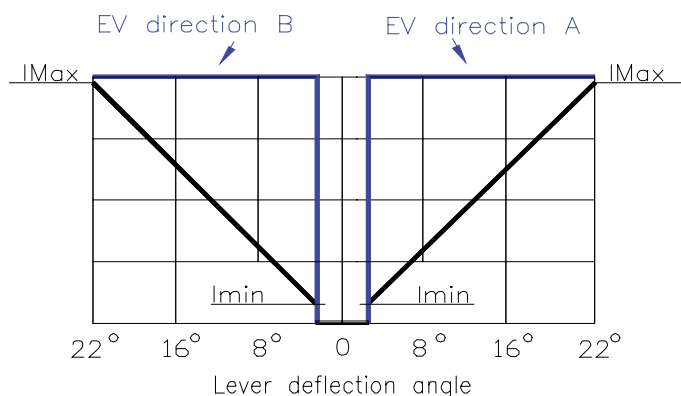
JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)

TCN VERSIONS

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



I_{min} 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:

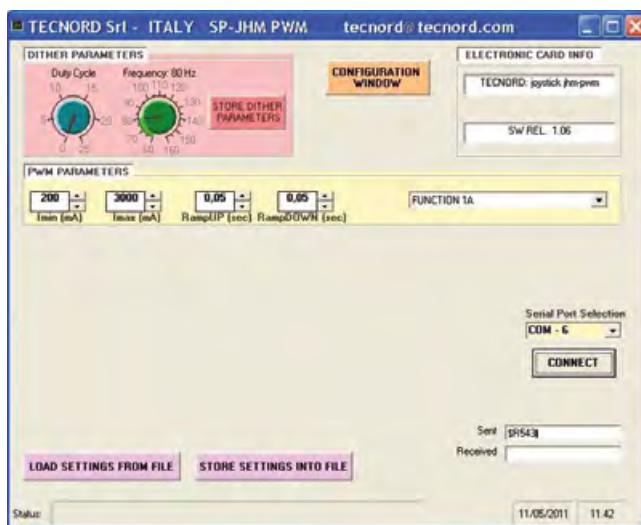
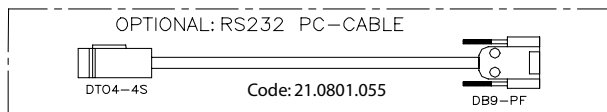
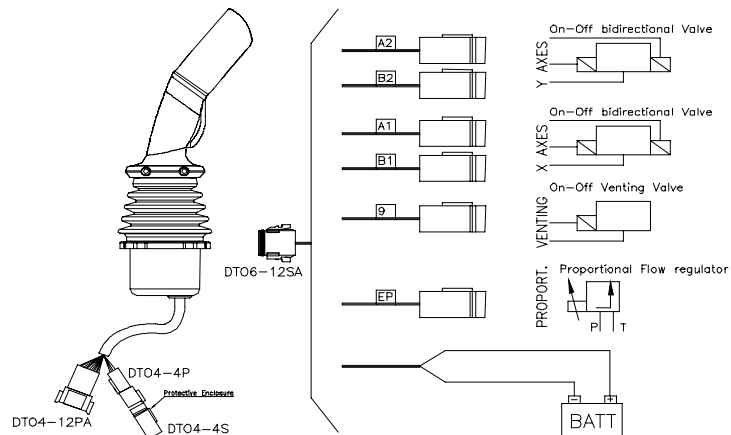
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse, virtual cross movement.
- Current setpoint selection (for 360° movement only).
- Output assignment on-off auxiliary valves.

By use of the calibration window:

- Operating parameters: I_{min}, I_{max}, Ramps.

APPLICATION EXAMPLE

Shown with MS grip



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

PWM VERSIONS

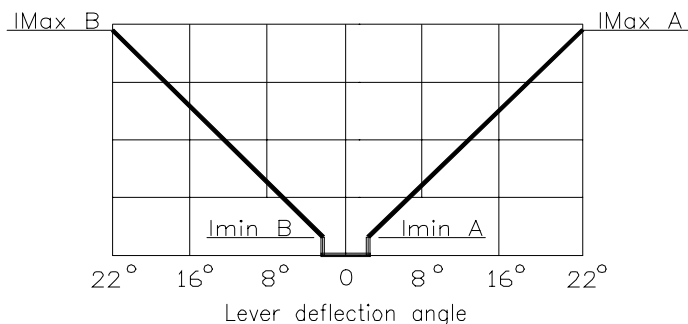
2 PWM output channels

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 Tecnord 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:

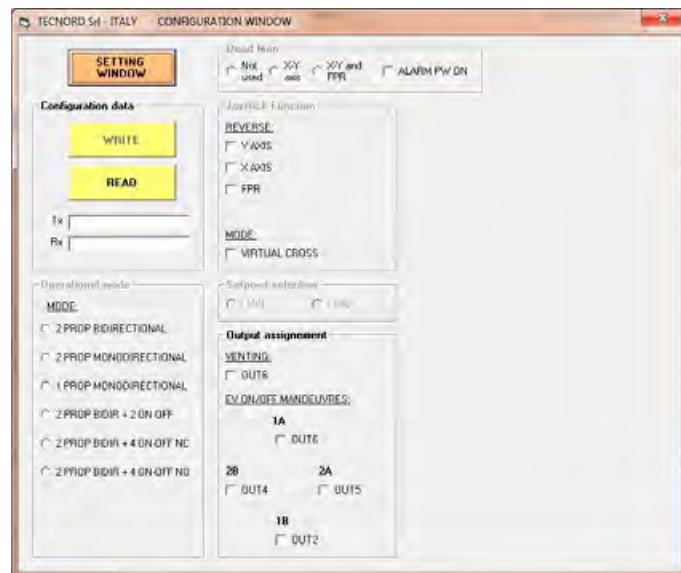
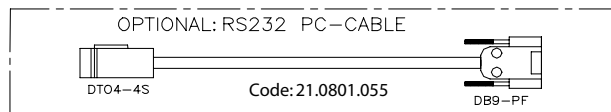
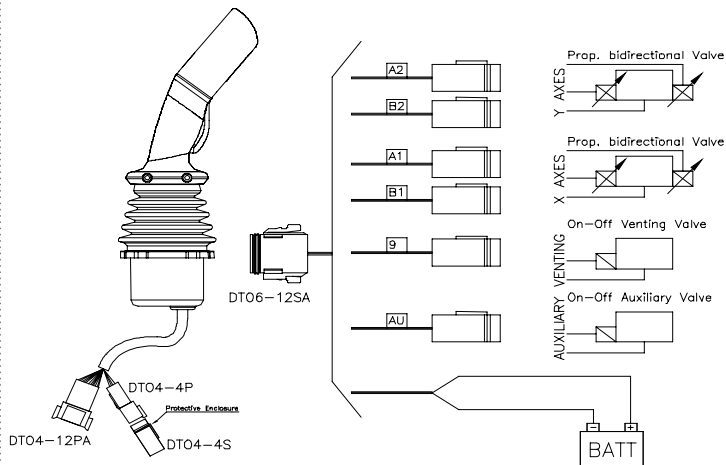
- Operation mode.
- Deadman push button enable.
- Joystick functions: axes reverse, virtual cross movement.
- Current setpoint selection (for 360° movement only).
- Output assignment on-off auxiliary valves.
- Digital directional output signals on both axes (N.O. or N.C. mode)

By use of the calibration window:

- Operating parameters: I_{min}, I_{max}, Ramp up and Ramp down times.

APPLICATION EXAMPLE

Shown with MS grip



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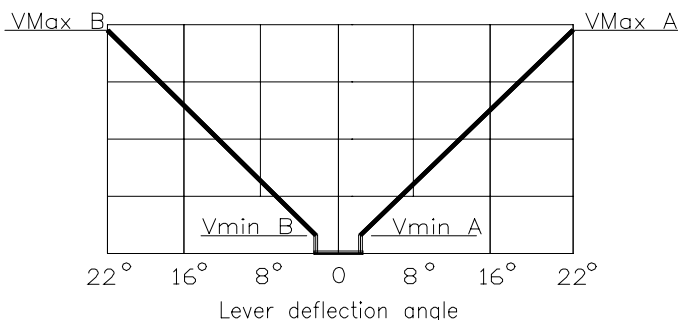
JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK (JOYSTICK BASE ONLY)

MLT VERSIONS

Output adjustable signal for closed loop proportional actuators

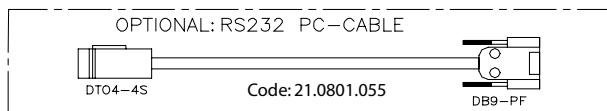
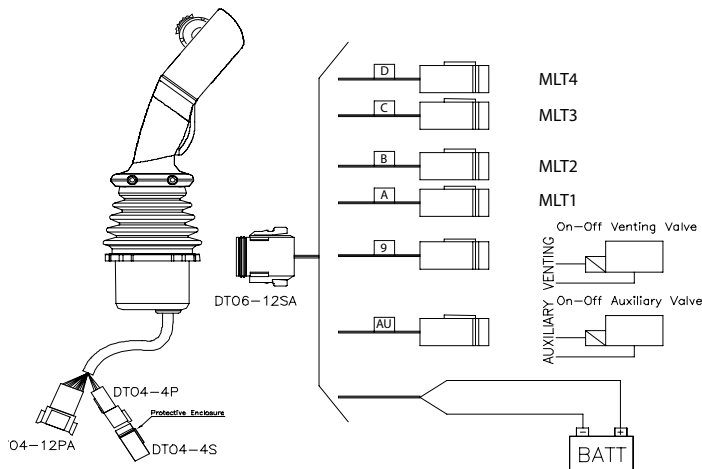
Supply voltage:	8÷32 VDC
Current consumption @ rest:	250 mA
Analog outputs:	4
Output signal range:	linear signal 0.9÷4.1 V 2÷6 V or ratiometric output available on request
Rated output current:	15 mA
Power digital outputs:	4 (0.7 A)
Digital inputs available:	2
Adjustments:	via RS232 serial line

OUTPUT SIGNAL CONTROL CURVE



APPLICATION EXAMPLE

Shown with MS grip



ADJUSTABLE PARAMETERS

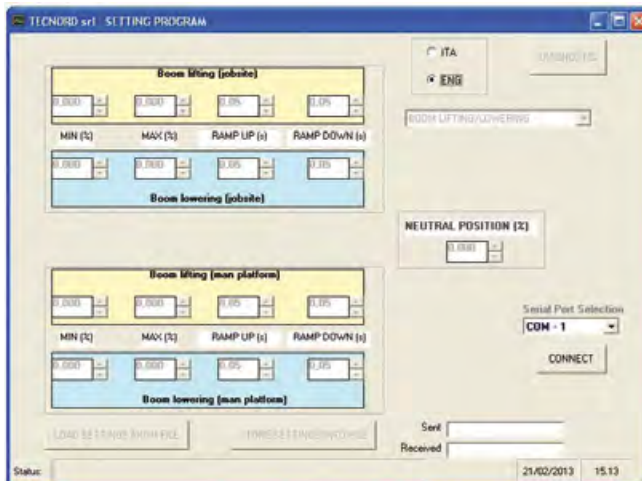
The following parameters are adjustable via RS232 serial line by means of a specific calibration and configuration tool.

By use of the configuration window:

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

By use of the calibration window:

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



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

CANBUS VERSIONS

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).



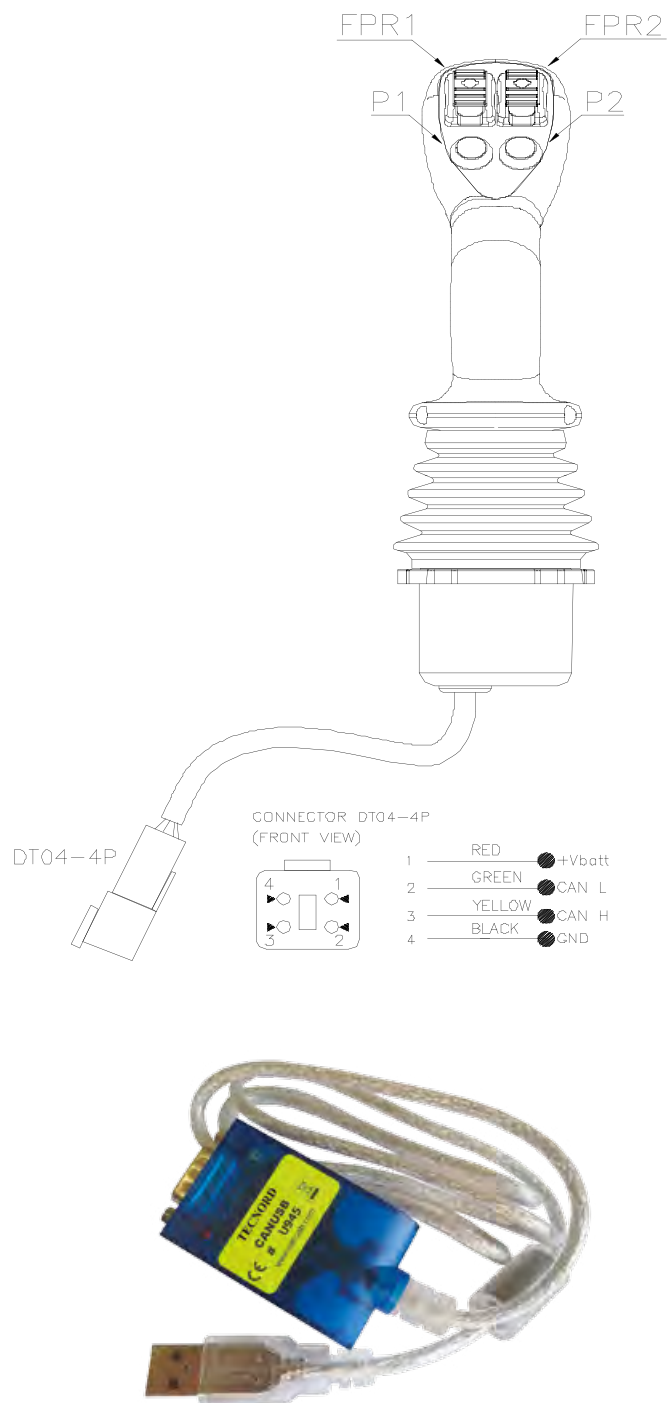
ADJUSTABLE PARAMETERS

The following parameters are adjustable via Can line by means of a specific calibration and configuration tool and an hardware interface device (see picture). By use of the configuration window:

- Node ID

APPLICATION EXAMPLE

Shown with MS grip



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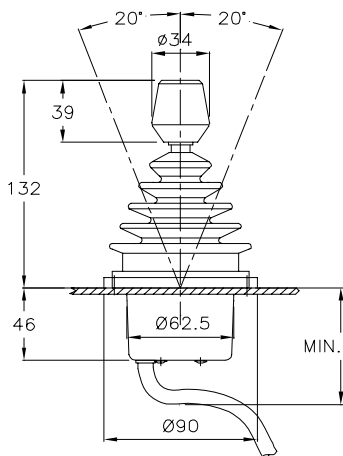
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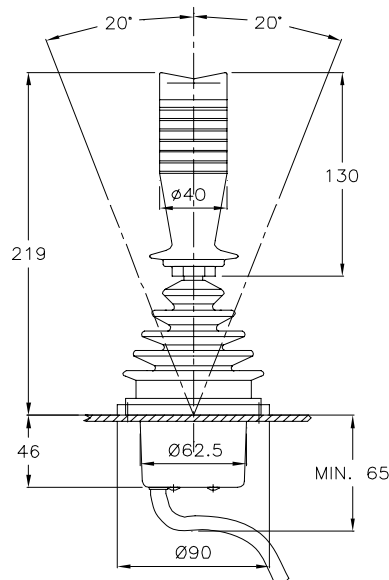
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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK

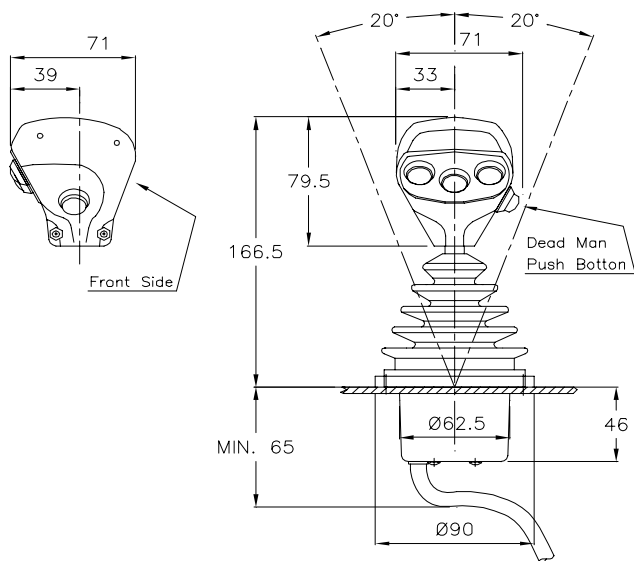
JHM joystick with grips - configuration examples with overall dimensions



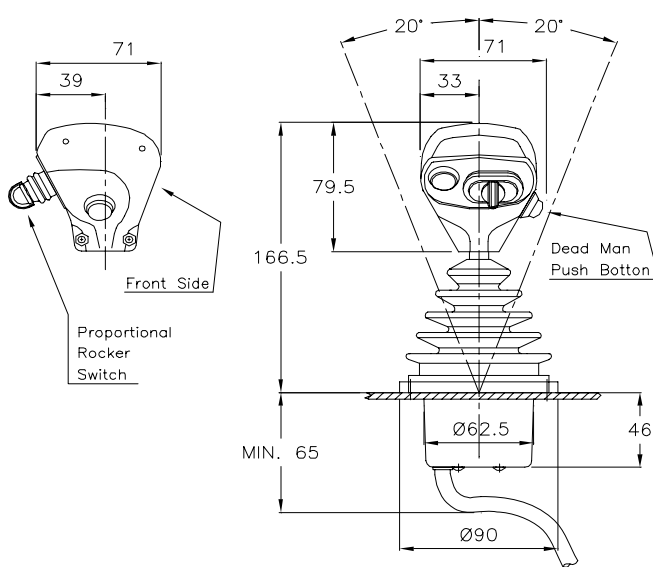
JHM base with IL handle
Complete code: **JHM-L4D/ANH-IL 0000**



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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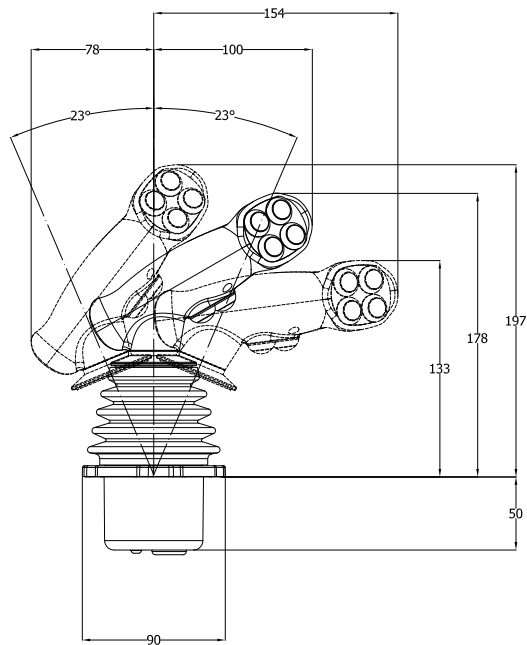
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JHM HEAVY DUTY MULTI-AXIS HALL EFFECT JOYSTICK

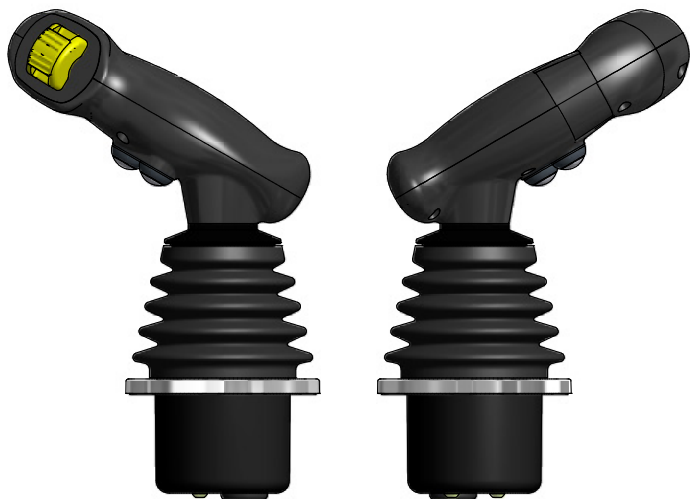
HR joystick with grips - configuration examples with overall dimensions



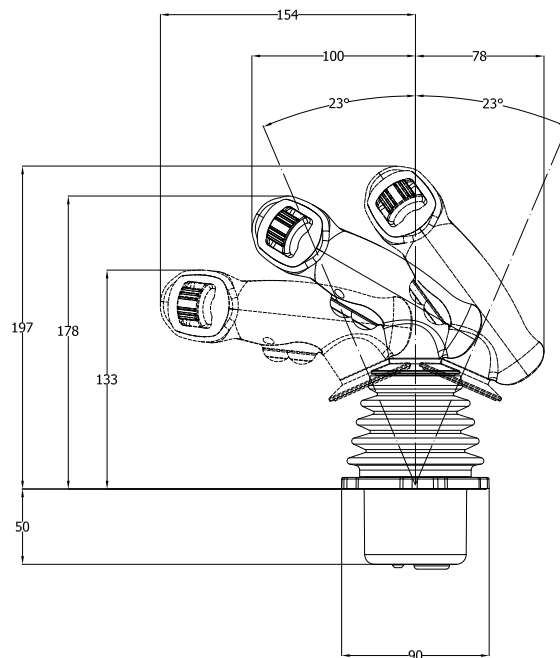
JHM base with HL type handle
Complete code: **JHM-L4D/ANH-HL-04P9-2P9/RDFF**



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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