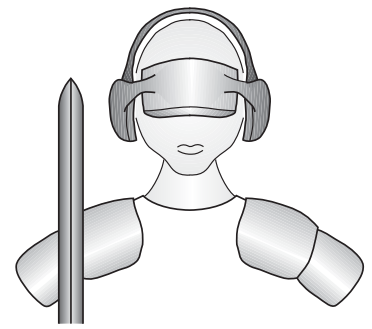


JW24A8L-MOD, JW24A10L-MOD, MW24H8-MOD



Code Mercenaries

USB Joystick and Mouse/Joystick Controller Modules

1. Common Features

- USB interface
- Full USB V1.1/2.0 compliance
- Full USB HID 1.1 compliance
- Generic device, supported by system drivers
- Single +5V power supply via USB

1.1 JW24A8L-MOD

- Standard HID class joystick device
- 4 analog inputs, 8 bit resolution each
- 8 buttons direct or 16 buttons in 4x4 matrix
- 4 auxiliary outputs for LEDs or other uses

1.2 JW24A10L-MOD

- Standard HID class joystick device
- 3 analog inputs, 10 bit resolution each
- 8 buttons direct or 16 buttons in 4x4 matrix
- 4 auxiliary outputs for LEDs or other uses

1.3 MW24H8-MOD

- Standard HID class joystick and mouse device
- Can switch between mouse and joystick mode at any time by a control input
- 3 analog inputs, 8 bit resolution
- 6 buttons
- autocentering option
- reduced range option

1.4 Custom variants

Custom adaptations are available on request.

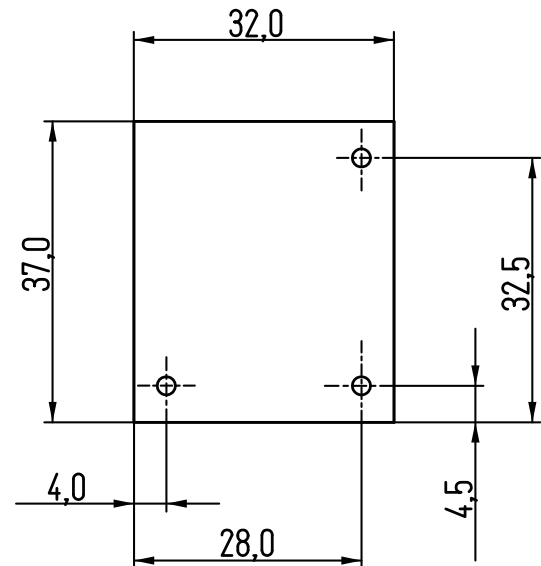
2. Functional overview

The JW24A8L-MOD, JW24A10L-MOD, and MW24H8-MOD are based on the respective JoyWarrior/MouseWarrior chips to offer them in a ready to use form.

The modules are complete USB devices, only a USB cable and the connections to the electromechanical parts need to be added.

The analog inputs are voltage inputs. It is possible to connect hall effect based joysticks or to use the modules for input of any kind of analog voltage signal.

2.1. Mechanical dimensions



The mounting holes are 2.5mm in diameter.
The solder pad holes are 0.9mm in diameter.

Tolerances:

Hole diameters: $-0.05 +0.1$ mm

Hole positions: ± 0.05 mm

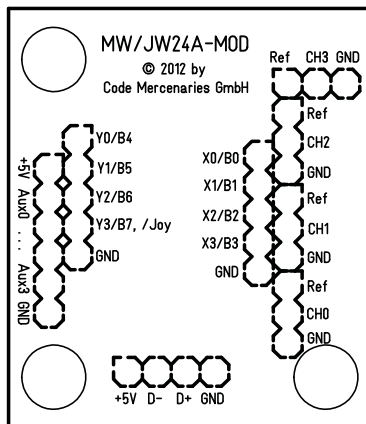
Outer contour: ± 0.2 mm

Attention! The mounting hole positions are not identical with the JW24MOD-A8-x modules. They are mirrored, so using the same mounting positions is possible but the module will need to be mounted face down.

2.2 Electrical ratings

Please refer to the JoyWarrior data sheet for electrical specs.

3. Connections



D+, D-, +5V, GND
Connect to USB cable

B0/X0..B7/Y3

Buttons for JW24A8L and JW24A10L. Depending on the status of J1 connect either up to 8 switches closing to Gnd, or connect up to 16 switches between X and Y lines to form a matrix.

To avoid phantom buttons in matrix mode add diodes in series with the switches. The cathodes of the diodes have to connect to the Y lines.

B0..B5

Buttons for MW24H8. Connect switches closing to Gnd.

/Joy

Switch between mouse and joystick mode for MW24H8. Pull to Gnd to switch to joystick mode.

CH0..CH3

Analog voltage inputs. CH3 is used only on JW24A8L. Voltage on the CHx inputs must be between Gnd and Ref.

CH0 = X

CH1 = Y

CH2 = Z or scroll

CH3 = Xr (JW24A8L only)

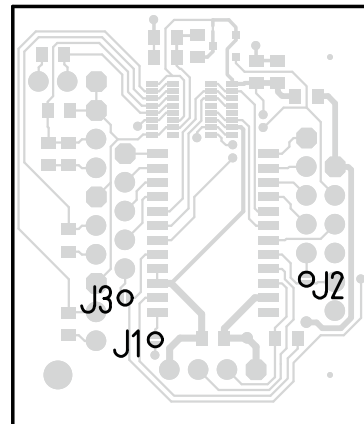
Ref

Filtered +5V supply for the axes sensors.

Aux0..Aux3

Auxiliary outputs on JW24A8L and JW24A10L. Can be set under software control, support blink modes for use with LEDs. See JoyWarrior data sheet for details.

4. Jumpers



Three solder jumpers are located on the component side of the modules. JW24A8L-MOD and JW24A10L-MOD use only jumper 1. All three jumpers are used by MW24H8-MOD.

4.1 JW24A8L-MOD Jumpers

J1 - Direct

Closing this jumper enables direct mode for the buttons. By default buttons are run in matrix mode.

J2 - not used
leave open

J3 - not used
leave open

4.2 JW24A10L-MOD Jumpers

J1 - Direct

Closing this jumper enables direct mode for the buttons. By default buttons are run in matrix mode.

J2 - not used
leave open

J3 - not used
leave open

4.3 MW24H8-MOD Jumpers

J1 - RAW

Closing this jumper disables the autocalibration and autocentering function. The module will then report the raw axis data. This can be useful during design test or for applications that can't accept the autocalibration or autocentering feature.

J2 - Center

Closing this jumper disables the automatic recentering. Automatic recentering does adjust the center, or non moving position if the input value is stable on a non center value for a longer time period.

This function compensates drift in the sensor.

J3 - Range

Closing this jumper doubles the sensitivity of the mouse function. i.e. half of the value range of the input signal will be sufficient to get to full cursor speed. This option can be used to compensate reduced voltage swing from the sensor or a circular movement restriction of the sensor. This does not affect the joystick data.

5. FCC / CE

The JW24/MW24 modules are sold as components to be integrated into a device. As such they can not be FCC or CE approved.

Code Mercenaries has exerted greatest care in designing the modules to minimize RF emission and assure stable operation. Though the use of proper cable materials and correct integration into a device is crucial to assure product safety and interference free operation.

The integrator who assembles the module into a device has to take care for appropriate testing and safety measures.

6. Ordering information

Partname	Order Code	Description
JoyWarrior24A8L-MOD	JW24A8L-MOD	Joystick controller for four axes 8 bits each, 8/16 buttons, 4 aux outputs
JoyWarrior24A10L-MOD	JW24A10L-MOD	Joystick controller for three axes 10 bits each, 8/16 buttons, 4 aux outputs
MouseWarrior24H8-MOD	MW24H8-MOD	Joystick/Mouse hybrid controller, three axes 8 bits each, 6 buttons

The modules listed here are standard products. Customized modules are available on request.

6.1 Packaging info

Modules are sold in single units for the standard models, packaging is antistatic wrap.

The modules are produced in larger boards consisting of 56 modules each. For custom versions it is only possible to produce in multiples of 56, though the actual shipping quantity may vary from this as faulty modules may be rejected in production testing. Please contact sales for questions regarding customizing a module.

6.2 USB VendorID and ProductID

By default all JoyWarrior modules are shipped with the USB VendorID of Code Mercenaries (\$7C0 or decimal 1984) and a fixed ProductID.

On request modules can be equipped with the customers VendorID and ProductID. VendorIDs can be obtained from the USB Implementers Forum <www.usb.org>

Customized modules are subject to minimum order quantities, contact <sales@codemerccs.com> for details.

Following are the ProductIDs:

JW24A8L-MOD	\$1117
JW24A10L-MOD	\$1118
MW24H8-MOD	\$1115

Legal Stuff

This document is ©1999-2013 by Code Mercenaries.

The information contained herein is subject to change without notice. Code Mercenaries makes no claims as to the completeness or correctness of the information contained in this document.

Code Mercenaries assumes no responsibility for the use of any circuitry other than circuitry embodied in a Code Mercenaries product. Nor does it convey or imply any license under patent or other rights.

Code Mercenaries products may not be used in any medical apparatus or other technical products that are critical for the functioning of lifesaving or supporting systems. We define these systems as such that in the case of failure may lead to the death or injury of a person. Incorporation in such a system requires the explicit written permission of the president of Code Mercenaries.

Trademarks used in this document are properties of their respective owners.

Code Mercenaries
Hard- und Software GmbH
Karl-Marx-Str. 147a
12529 Schönefeld
Germany
Tel: +49-3379-20509-20
Fax: +49-33790-20509-30
Mail: support@codemerccs.com
Web: www.codemerccs.com

HRB 9868 CB
Geschäftsführer: Guido Körber, Christian Lucht