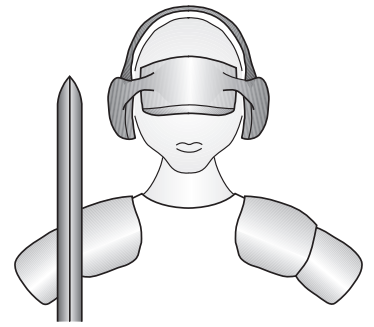# IOW24-DG

USB to I2C Dongle based on IO-Warrior24

Code Mercenaries

1. Features
• USB interface
• USB V1.1/2.0 low speed device
• 100 kHz I2C (IIC / TWI) master
• Throughput up to 750 byte/s
• Based on IO-Warrior24
• Supports clock stretching
• Programmable timeout
• Supports Sensirion sensor protocol
• 5 V and 3.3 V available for external circuit
• Uses standard system drivers
• Standard form factor, no blocked ports

1.1 Variants
The standard IOW24-DG is shipped as a kit containing an assembled and tested PCB, a two part dongle case, and a four wire cable to solder to the dongle as required for the target application.

1.2 Custom variants
OEM versions with specialized cables or custom modifications are possible

2. Functional overview
IOW24-DG packages a standard IO-Warrior24 in a small form factor dongle case with a 3.3 V voltage regulator.
The I2C signals of the IO-Warrior24 are made available externally through solder pads to allow application specific cabling to be attached. All software and tools for IO-Warrior24 are also usable for the dongle.
The I2C interface works as a bus master and supports clock stretching handshake. A timeout can be programmed to avoid hanging due to misbehaving slaves.
For compatibility with low voltage slaves the internal pull up resistors of IOW24 can be switched off by software command.
In addition to the standard I2C protocol the derivative protocol used by Sensirion to talk to their humidity sensors is also supported.

3. Connecting the cable
The function of the signals is marked on the board next to the solder pads for the cable:
3.3	3.3V output, max. 50mA
+5	5V from USB, max. 100mA
-	Ground
DA	I2C SDA signal
CL	I2C SCL signal

Solder the cable to the pads as required for your application.
The 5V and 3.3V supplies are meant to be used exclusive of each other. If both are used at the same time the combined current may not exceed 100mA.
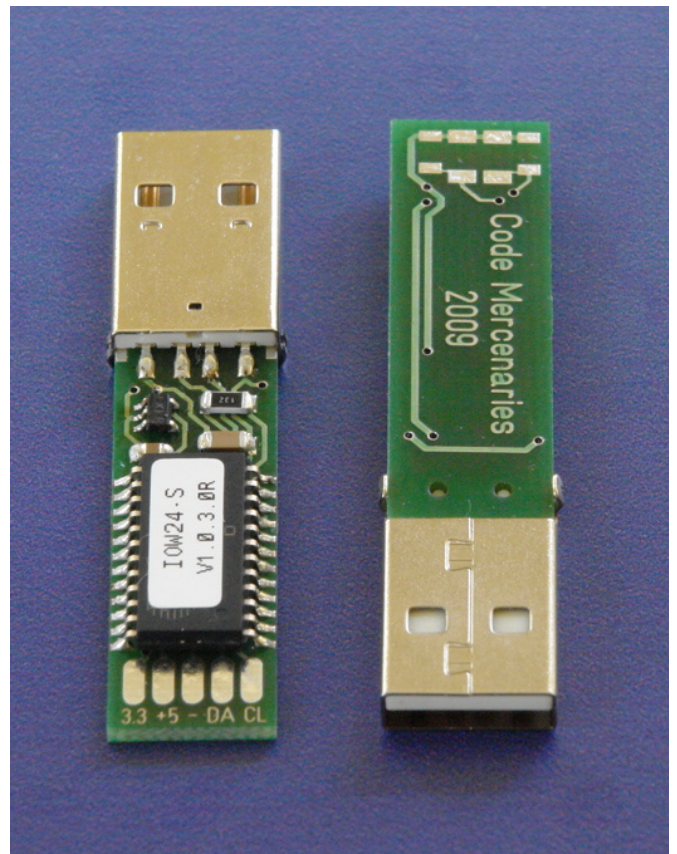
Dongle shown from both sides.

IOW24-DG

3.1 Compatibility with 3.3 V slaves

If a 3.3V slave is to be connected the internal pull up resistors of the IOW24 should be switched off by software on enabling the I2C function.

This requires external pull up resistors which may be added either on the slave side or soldered to the lower side of the dongle PCB. It is recommended to add protection diodes so the slave does not see 5V on the signal lines before the I2C function of the IO-Warrior24 is initialized.

There are landing pads for four components on the lower side of the dongle PCB, the outer ones are intended for pull up resistors, the inner ones for protection diodes. The pads facing the end of the board connect to 3.3 V.

Protection diodes must connect to 3.3 V with their cathodes. MELF packages are not recommended since they are too thick to fit in the dongle case

4. Software/Programming support

The IO-Warrior SDK is used with the dongle. The SDK, additional software, and the data sheet for the IO-Warrior is available on our website.

5. FCC / CE

The IOW24-DG is sold as kit. As such it can not be FCC or CE approved.

Code Mercenaries has excerted greatest care in designing this module 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

The standard packaging for IOW24-DG is a blister pack containing the parts for one unit.
The order code is:
IOW24-DG

Legal Stuff