Hexiwear Docking Station

From MikroElektonika Documentation

The **Hexiwear Docking Station** is an expansion board for Hexiwear, the wearable IoT development kit. It provides an interface for programming, debugging, and enhancing Hexiwear with additional functionalities (by adding click boards™).

Hexiwear Docking Station

| **Hexiwear Docking Station**	
Compatibility	Hexiwear (http://docs.mikroe.com/Hexiwear), click boards™ (http://www.mikroe.com/click)
Interface	Hexiwear connector, 3 mikroBUS™ sockets, I2S pinout, Micro USB port, JTAG Debug connector
Programming	OpenSDA with DAPLink firmware (or external programmer)

Contents

Hexiwear

Hexiwear is a standalone development kit for IoT, designed to look and feel like a consumer-grade device. Consult the Hexiwear (http://docs.mikroe.com/Hexiwear) user guide for a detailed overview.

Features

Every feature of the Docking Station is intended to either expand Hexiwear's functionality or to provide an interface for changing and debugging its firmware. The two most important features are the three mikroBUS™ sockets, and the OpenSDA circuitry that allows you to program/debug Hexiwear through USB.

What's on board

The majority of components are on the front side.
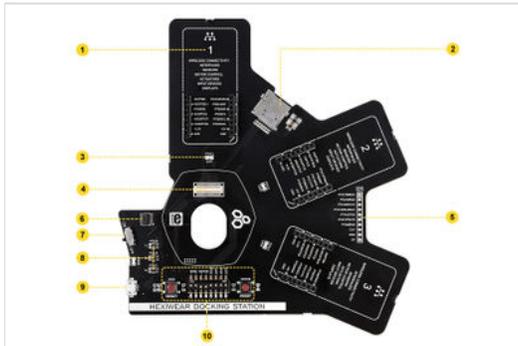
1. mikroBUS™ socket for click boards™ (one of three)
2. microSD slot (card not included)
3. LED (one of three)
4. Hexiwear connector that interfaces to Hexiwear's main MCU (K64x) and Wireless MCU (KW4x)
5. I2S interface
6. JTAG connector for external programmers
7. ON/OFF switch
8. Pushbuttons
9. Micro USB port
10. OpenSDA control interface

The OpenSDA programmer/debugger circuitry in on the rear of the board:

Buttons and switches close-up

There is a row of 8 configuration switches right under the Hexiwear connector. Switches 1-5 are for setting up the OpenSDA programmer/debugger to connect either to the K64 MCU or the KW4x BLE MCU.

In both cases, switch 5 should be set in the upper position (ON). The configuration in the image above is for programming and debugging K64 (switches 1,2 and 5 in the upper position, while 3 and 4 are in lower position). To program and debug KW4x, put switches 1 and 2 into the lower position, and switches 3-5 in the upper position.

To use the Docking station with an external programmer (through the JTAG connector), switch 5 should be in lower position.

The remaining switches (6-8) are for choosing whether PTA12, PTA13 and PTA14 pins are connected to the Docking Station LEDs (the pins can also be used as GPIOs (refer to the schematic to see how specific pins are routed).

Schematic
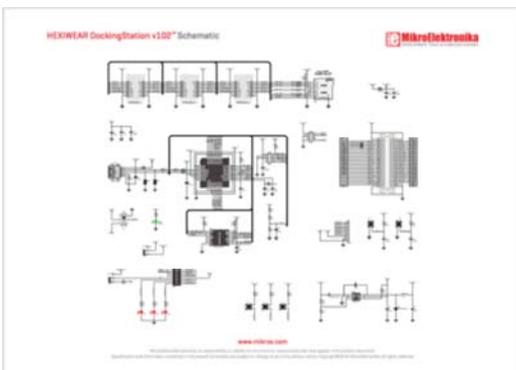
The Hexiwar Docking Station schematic is available as a printable PDF file (http://cdn-docs.mikroe.com/images/a/a7/HEXIWEAR_DockingStation_v102_Sch.PDF)

click boards

The click board eco-system vastly enhances Hexiwear's potential as a development tool. Hundreds of sensors, actuators, transceivers, displays, ports, encoders and interfaces are available on click boards – add-on boards with a standardized connector and form factor.

See all available click boards™ (http://www.mikroe.com/click/click) on MikroElektronika's website.

OpenSDA

OpenSDA is an open-standard serial and debug adapter. It bridges serial and debug communications between a USB host and a target board microcontroller (K64 and KW4x in case of Hexiwear). The hardware circuit is based on NXP Kinetis K20 family MCU and an integrated USB controller. OpenSDA features a mass storage device (MSD) bootloader.

Learn more in the official user guide (http://www.nxp.com/files/32bit/doc/user_guide/OPENSDAUG.pdf).

Resources

- Hexiwear product page (http://www.hexiwear.com/)

- Hexiwear User Guide (http://docs.mikroe.com/Hexiwear)

- OpenSDA User Guide (http://www.nxp.com/files/32bit/doc/user_guide/OPENSDAUG.pdf)

- mikroBUS standard specifications (http://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf)