watchX

User's Manual

V1.1

Contents

Thank you for purchasing watchX

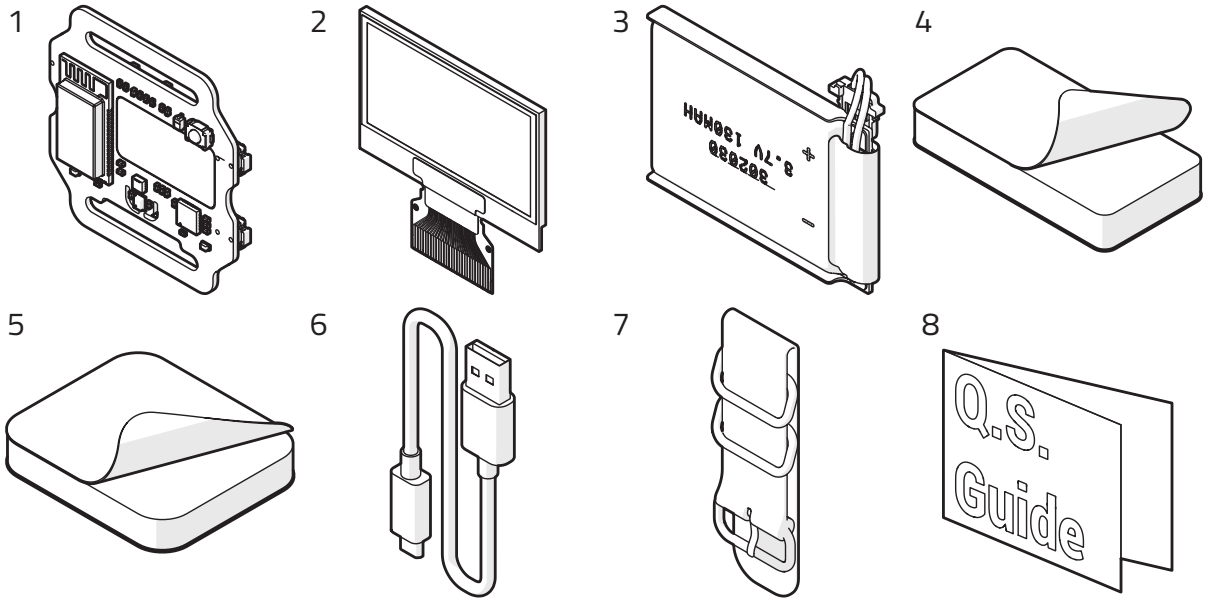
watchX is a multi-purpose wearable development board that anyone can develop.
It can be used as a watch. it's compatible with Arduino/Scratch/Atmel Studio programming interfaces so that users can program the watchX into a completely new device.
From gaming to health monitoring, watchX can be used for development of new wearable applications.

This manual is designed to give you an introductory information about watchX.
You can find information about how to assemble, and program your watchX in the following pages.

Chapter-1 Assembling the watchX

Box contents

The watchX kit comes with the parts listed below;
1- watchX PCB
2- Oled display
3- LiPo battery
4- Long double-sided tape
5- Short double-sided tape
6- USB cable
7- Nato strap
8- Quick start guide

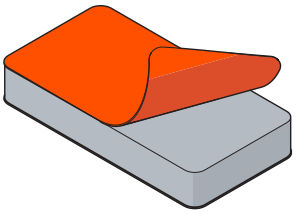


Assembly steps

Before you begin to use your watchX, you must go through some assembly steps.

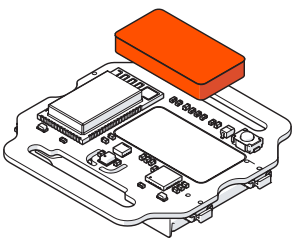
1

remove the protective cover of the long double sided tape



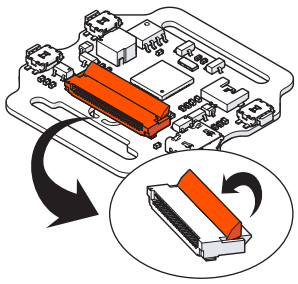
2

stick the tape on the drawn area of the PCB



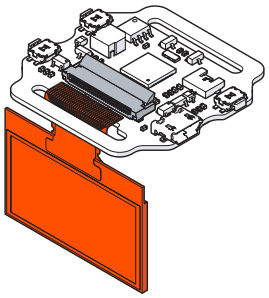
3

unlock the FFC
connector locking latch



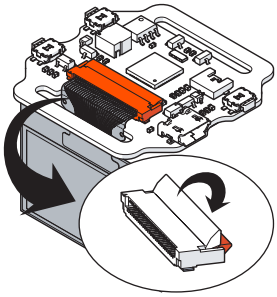
4

guide and insert
the Oled FFC cable
as shown



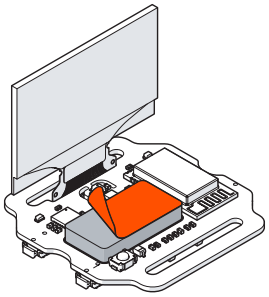
5

lock the FFC
connector locking latch



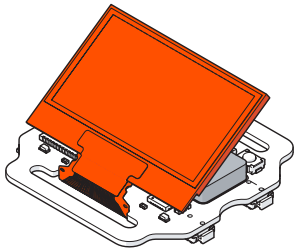
6

remove the other
protective cover of the
long double sided tape



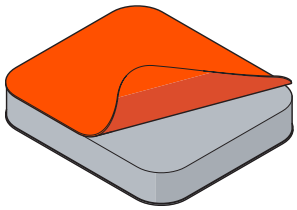
7

stick the Oled
on to the tape carefully



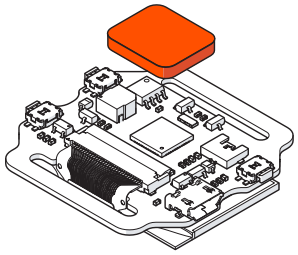
8

remove the
protective cover of the
short double sided tape



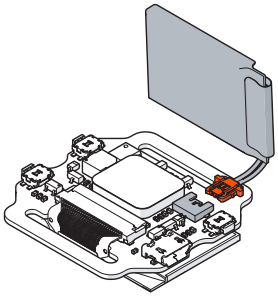
9

stick the tape
on the back of the
PCB



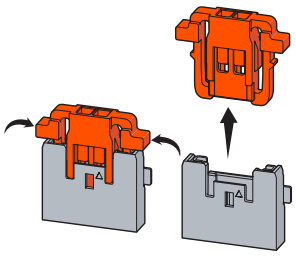
10

connect the
LiPo Battery to the
connector located on PCB



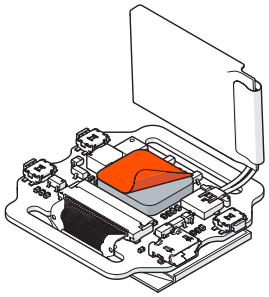
11

you can disconnect
the LiPo Battery
as shown



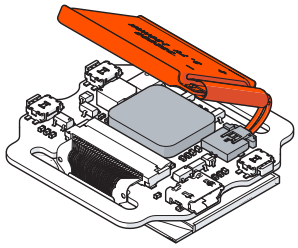
12

remove the other
protective cover of the
short double sided tape



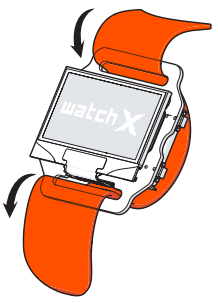
13

stick the
LiPo Battery
on to the PCB carefully



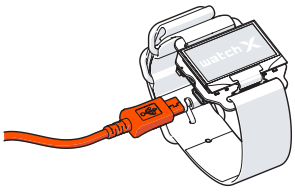
14

put on the
Nato-Strap
as shown



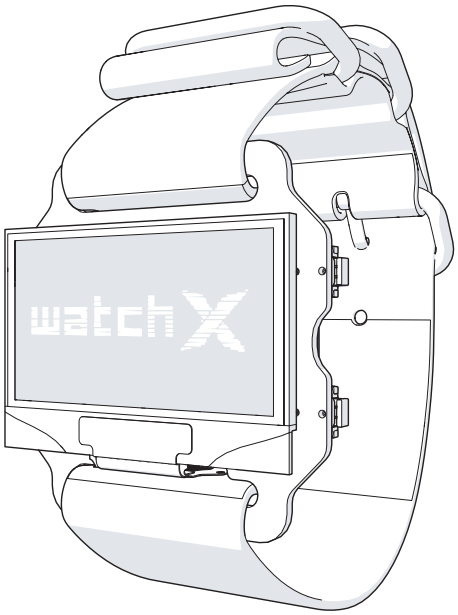
15

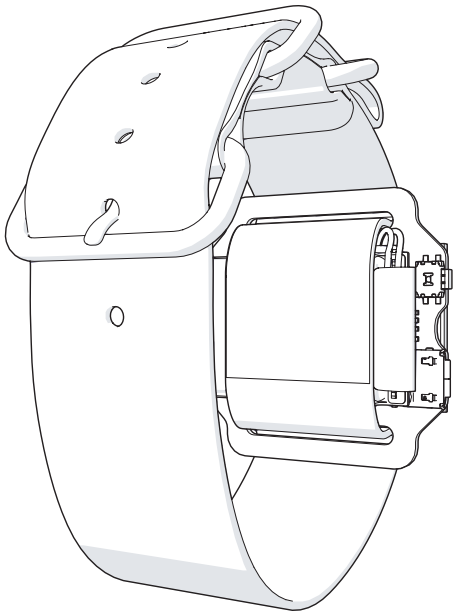
plug the USB cable and start charging and programming!



After finishing the assembly, your watchX is ready to use. You can use the watchX as a regular wristwatch or you can unleash your imagination and develop your own applications with watchX.

Your finished watchX assembly should look like the figures below;





Chapter-2 Get to know watchX

What is watchX?

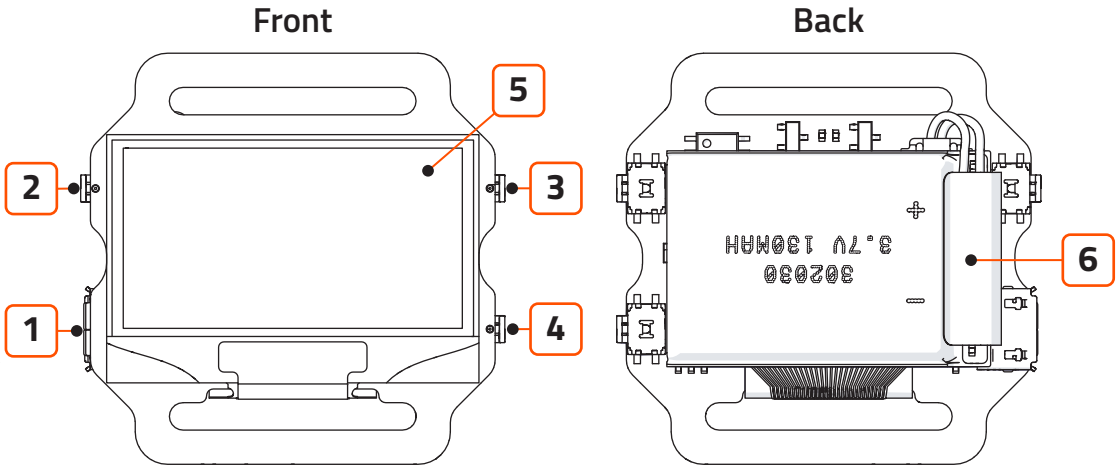
watchX is an Arduino & Scratch compatible wearable development platform. It is basically an Arduino Leonardo development board with lots of supporting components that can be strapped to your wrist. You can wear the watchX as a regular wristwatch or you can program your own custom applications and take them anywhere you like. The device is so powerful and flexible that even we can't put a full definition to it. It is basically what you imagine and what you wish to do with it.

We can't wait to see what you will make with watchX. On your journey, we will be by your side to support your projects with our educational materials that you can download from our website.

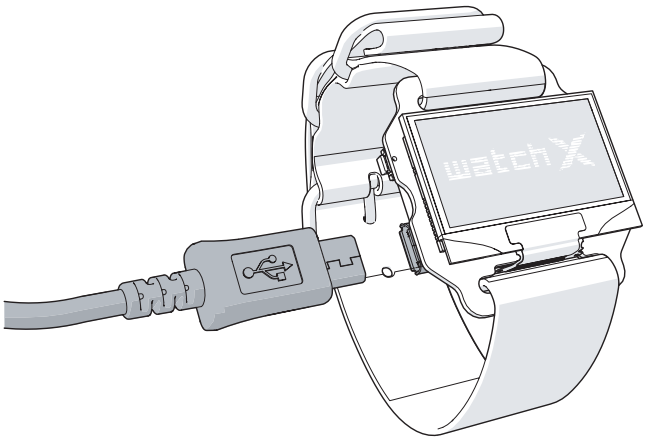
Have a clooser look

1- Micro USB Port
2- Button 1
3- Button 2
4- Button 3
5- Oled Display
6- LiPo Battery

** Reset button is located **under** the top-right side of the Display*



Charging the battery

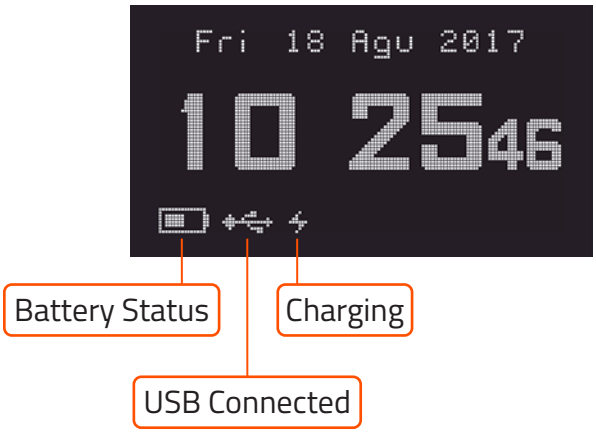


The watchX has a charging IC, this means that you can charge and program your watchX at the same time. Just connect the watchX to a USB power source as shown in the figure. Once the watchX is connected to a power source, it disconnects the battery and continues it's operation with USB Power. This means the watchX saves battery life and reduces stress on it.

If you are using watchX with it's original firmware, you can check it's status about charging and battery status from the icons listed below;

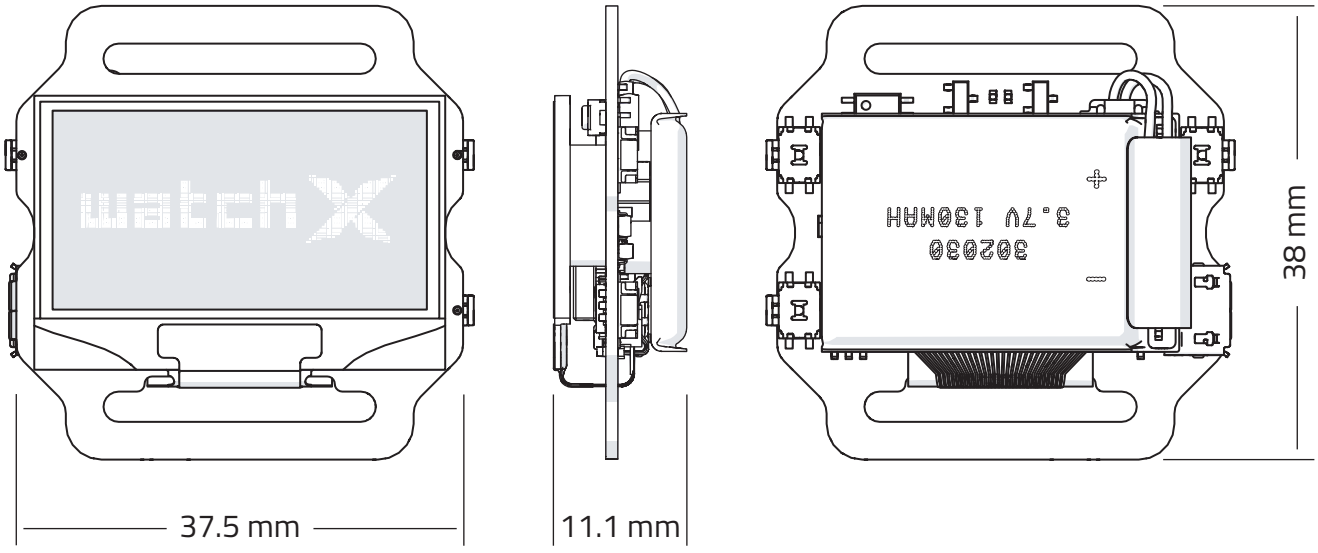
WARNING!
Always charge your watchX® with the original USB Programming and Charging cable.
Do not attempt to charge your watchX® if;
- The charging cable is damaged
- watchX® is wet
- watchX® is damaged
- The battery is deformed or punctured

It is recommended to use a regular cellphone wall charger or your computer's USB Port

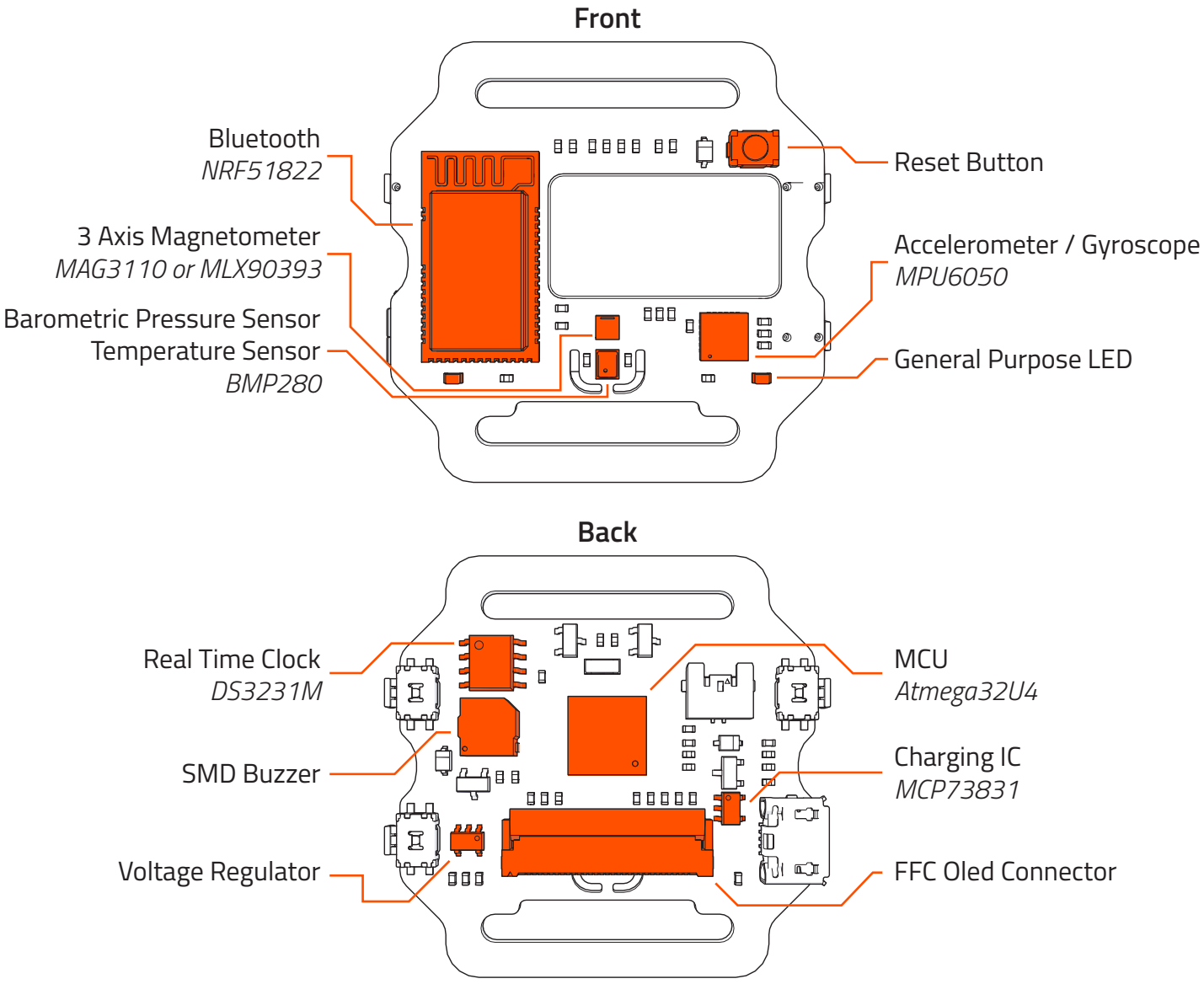


Technical Specifications

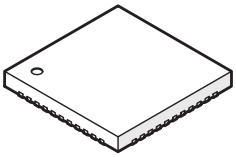
The watchX is designed to deliver the best programming experience. In this section, we are going to have a detailed look at the components of watchX. Let's start with the dimensions and carry on with electronic components.



PCB Layout


Front
Bluetooth
NRF51822
3 Axis Magnetometer
MAG3110 or MLX90393
Barometric Pressure Sensor
Temperature Sensor
BMP280
Reset Button
Accelerometer / Gyroscope
MPU6050
General Purpose LED
Back
Real Time Clock
DS3231M
SMD Buzzer
Voltage Regulator
MCU
Atmega32U4
Charging IC
MCP73831
FFC Oled Connector

Component Specifications

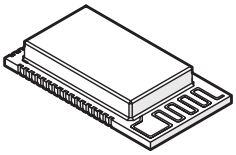


MCU *Atmega 32U4*

Features

- USB 2.0 Full-speed/Low Speed Device Module with Interrupt on Transfer Completion
  - Complies fully with Universal Serial Bus Specification Rev 2.0
  - Supports data transfer rates up to 12Mbit/s and 1.5Mbit/s
  - Endpoint 0 for Control Transfers: up to 64-bytes
  - Six Programmable Endpoints with IN or Out Directions and with Bulk, Interrupt or Isochronous Transfers
  - Configurable Endpoints size up to 256 bytes in double bank mode
  - Fully independent 832 bytes USB DPRAM for endpoint memory allocation
  - Suspend/Resume Interrupts
  - CPU Reset possible on USB Bus Reset detection
  - 48MHz from PLL for Full-speed Bus Operation
  - USB Bus Connection/Disconnection on Microcontroller Request
  - Crystal-less operation for Low Speed mode

Program Memory Type *Flash*
Program Memory (KB) *32*
CPU Speed (MIPS) *16*
RAM (bytes) *2,560*
Data EEPROM (bytes) *1024*
Digital Communication Peripherals *1-UART, 2-SPI, 1-I2C*
Capture/Compare/PWM Peripherals *2 Input Capture, 2 CCP, 12PWM*
Timers *2 x 8-bit, 2 x 16-bit*
Comparators *1*
USB (ch, speed, compliance) *1, Full Speed*
Temperature Range (C) *-40 to 85*
Operating Voltage Range (V) *2.7 to 5.5*
Pin Count *44*



Bluetooth *NRF51822*

The watchX is equipped with *Raytac MDBT40-P (PCB Antenna)* which includes *Nordic nRF51822*

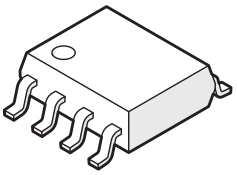
Features

- Ultra low power consumption
- 2.4gHz Multi Protocol Radio

Certificated With

FCC (USA)
CE (Europe)
TELEC (Japan)
NCC (Taiwan)
IC (Canada)
SRRC (China)
KC (South Korea)
RoHS (International)

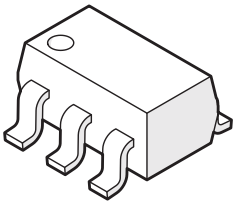
Working Distance *Up to 60 meters in open space*
CPU *32-bit ARM® Cortex™ M0 32-bit CPU*
Memory *256/128KB embedded flash*
RAM *32KB/16KB*
System Peripherals
3 x 16/24-bit timers with counter mode
16 channel CPU independent Programmable Peripheral Interconnect (PPI)
Encryption -128-bit AES ECB/CCM/AAR co-processor
RNG, RTC, Temperature sensor
GPIO
Flexible GPIO pin configuration, 31 GPIO, Up to 4 PWM
Digital I/O
Digital interfaces -SPI Master/Slave, 2-wire, UART
Quadrature decoder
Analog I/O
8/9/10 bit ADC - 8 configurable channels
Low power comparator
Oscillators
16MHz XO, 16MHz RCOSC, 32MHx XO, 32kHz XO, 32kHz RCOSC
Power Management
Wide supply voltage range (1.8v to 3.6V)
Flexible power management scheme
On-chip DC/DC converter
600nA @ 3V OFF mode
2.6µA @ 3V ON mode, all blocks in idle mode
1.2µA @ 3V OFF mode + 1 region RAM retention



Real Time Clock *DS3231MZ+*

Features

-Highly Accurate RTC With Integrated MEMS Resonator Completely Manages All Timekeeping Functions
- Complete Clock Calendar Functionality Including Seconds, Minutes, Hours, Day, Date, Month, and Year, with Leap-Year Compensation Up to Year 2100
- Timekeeping Accuracy ±5ppm (±0.432 Second/Day) from -45°C to +85°C
- Footprint and Functionally Compatible to DS3231
- Two Time-of-Day Alarms
- 1Hz and 32.768kHz Outputs
- Reset Output and Pushbutton Input with Debounce
- Digital Temp Sensor with ±3°C Accuracy
- +2.3V to +5.5V Supply Voltage
- Simple Serial Interface Connects to Most Microcontrollers
  - Fast (400kHz) I2C Interface
- Battery-Backup Input for Continuous Timekeeping
- Low Power Operation Extends Battery-Backup Run Time
- Operating Temperature Range: -40°C to +85°C
- 8-Pin or 16-Pin SO Packages

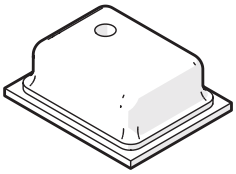


Charging IC *MCP73831*

Features

- High accuracy preset output voltage regulation (+/-0.75%)
- Output voltage options include 4.2V, 4.35V, 4.4V and 4.5V
- User-programmable charge current
- Charge status output can directly drive LEDs
- On-chip thermal regulation
- Preconditioning and end-of-charge ratio options
- Under-voltage lockout

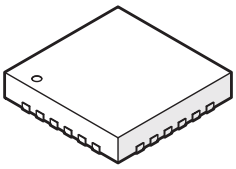
Linear Mode *Yes*
Number of Cells *1*
Int/Ext FET *Int*
Vcc Range (V) *3.75 to 6*
Voltage Regulation Accuracy (%) *0.75*
Max Thermal Regulation *Yes*



Barometric Pressure Sensor Temperature Sensor *BMP280*

Features

Pressure Range *300 - 1100hPa (eqv. 9000m to -500m)*
Relative Accuracy *± 0.12hPa (eqv. ± 1m) (950 to 1050hPa @25 °C)*
Absolute Accuracy *± 1hPa (950 to 1050hpa 0 to +40 °C)*
Temperature Coefficient Offset *1.5 Pa/K (25 to 40 °C @900hPa)*
Digital Interfaces *I2C (up to 3.4mHz)*
Current Consumption *2.7µA @1Hz sampling rate*
Temperature Range *-40 to +85 °C*



Accelerometer Gyroscope *MPU6050*

Features

Gyroscope

- Digital-output X-, Y-, and Z-Axis angular rate sensors (gyroscopes) with a user-programmable fullscale range of ±250, ±500, ±1000, and ±2000°/sec
- External sync signal connected to the FSYNC pin supports image, video and GPS synchronization
- Integrated 16-bit ADCs enable simultaneous sampling of gyros
- Enhanced bias and sensitivity temperature stability reduces the need for user calibration
- Improved low-frequency noise performance
- Digitally-programmable low-pass filter
- Gyroscope operating current: 3.6mA
- Standby current: 5µA
- Factory calibrated sensitivity scale factor
- User self-test

Accelerometer

- Digital-output triple-axis accelerometer with a programmable full scale range of ±2g, ±4g, ±8g and ±16g
- Integrated 16-bit ADCs enable simultaneous sampling of accelerometers while requiring no external multiplexer
- Accelerometer normal operating current: 500µA
- Low power accelerometer mode current: 10µA at 1.25Hz, 20µA at 5Hz, 60µA at 20Hz, 110µA at 40Hz
- Orientation detection and signaling
- Tap detection
- User-programmable interrupts
- High-G interrupt
- User self-test

Additional features

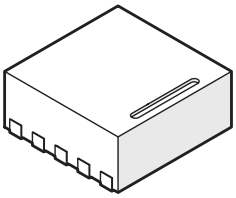
- 9-Axis MotionFusion by the on-chip Digital Motion Processor (DMP)
- Auxiliary master I2C bus for reading data from external sensors (e.g., magnetometer)
- 3.9mA operating current when all 6 motion sensing axes and the DMP are enabled
- VDD supply voltage range of 2.375V-3.46V
- Flexible VLOGIC reference voltage supports multiple I2C interface voltages
- Smallest and thinnest QFN package for portable devices: 4x4x0.9mm
- Minimal cross-axis sensitivity between the accelerometer and gyroscope axes
- 1024 byte FIFO buffer reduces power consumption by allowing host processor to read the data in bursts and then go into a low-power mode as the MPU collects more data
- Digital-output temperature sensor
- User-programmable digital filters for gyroscope, accelerometer, and temp sensor
- 10,000 g shock tolerant
- 400kHz Fast Mode I2C for communicating with all registers
- MEMS structure hermetically sealed and bonded at wafer level
- RoHS and Green compliant

Motion processing

- Internal Digital Motion Processing™ (DMP™) engine supports 3D MotionProcessing and gesture recognition algorithms
- The MPU-60X0 collects gyroscope and accelerometer data while synchronizing data sampling at a user defined rate. The total dataset obtained by the MPU-60X0 includes 3-Axis gyroscope data, 3-Axis accelerometer data, and temperature data. The MPU's calculated output to the system processor can also include heading data from a digital 3-axis third party magnetometer.
- The FIFO buffers the complete data set, reducing timing requirements on the system processor by allowing the processor burst read the FIFO data. After burst reading the FIFO data, the system processor can save power by entering a low-power sleep mode while the MPU collects more data.
- Programmable interrupt supports features such as gesture recognition, panning, zooming, scrolling, tap detection, and shake detection
- Digitally-programmable low-pass filters
- Low-power pedometer functionality allows the host processor to sleep while the DMP maintains the step count.

Clocking

- On-chip timing generator ±1% frequency variation over full temperature range
- Optional external clock inputs of 32.768kHz or 19.2MHz



for watchX V1.2

3 Axis Magnetometer *MAG3110*

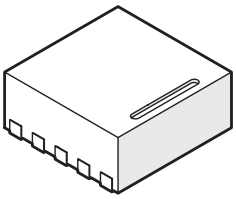
Freescale's MAG3110 is a small, low-power, digital 3-axis magnetometer.

The device can be used in conjunction with a 3-axis accelerometer to realize an orientation independent electronic compass that can provide accurate heading information. It features a standard I2C serial interface output and smart embedded functions. correspond to sample intervals from12.5 ms to several seconds.

The MAG3110 is available in a plastic DFN package and it is guaranteed to operate over the extended temperature range of -40°C to +85°C.

Features

- 1.95 V to 3.6 V supply voltage (VDD)
- 1.62 V to VDD IO voltage (VDDIO)
- Sensitivity of 0.10 µT
- Output Data Rates (ODR) up to 80 Hz
- Low-power, single-shot measurement mode



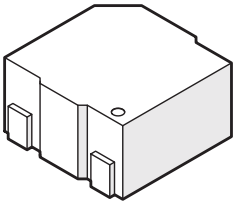
for watchX V1.3

3 Axis Magnetometer *MLX90393*

The MLX90393 brings the highest flexibility in the Triaxis portfolio's smallest packaged assembly. Additionally, the MLX90393 is designed for micropower applications, with programmable duty cycles in the range of 0.1% to 100% allowing for configurable power consumption based on system requirements.

Features

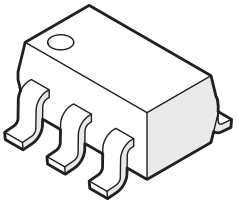
- Selectable SPI and I2C bus protocols
- On board filter settings
- On the fly programmable operating modes and sleep times for micro-power use
- External and internal acquisition triggering modes
- External interrupt pin enables waking a microcontroller when the field changes
- On board temperature sensor
- RoHS compliant



Buzzer *ST-0503-3*

Features

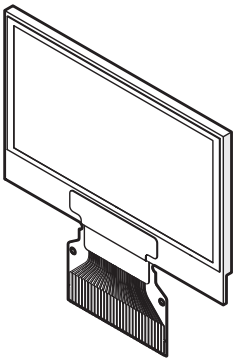
Rated Voltage *3 V*
Sound Pressure Output *10 dB @10 cm*
Frequency *4000 Hz*
Termination *SMD*



Voltage Regulator *LP2985-33DBVR*

Features

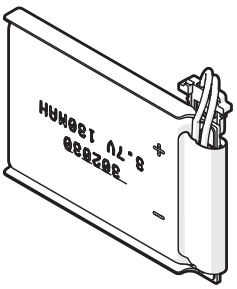
Output Tolerance *%1.5*
Ultra Low Dropout *280 mV @ 150 mA (full load) - 1 mV @ 1mA*
Wide V_{IN} Range *16 V Max*
Low I_Q *850 µA @ 150 mA (full load)*
Shutdown Current *0.01 µA*
Low Noise *30 μV_{RMS} with 10-nF bypass capacitor*
- Stable With Low-ESR Capacitors, Including Ceramic
- Overcurrent and Thermal Protection
- High Peak-Current Capability



Oled Display

Features

Diagonal Size *1.3"*
Display Resolution *128 x 64 (~110PPI)*
Active Area *29.42 mm x 14.7 mm*
IC Driver *SSD1306*
Display Mode *Passive Matrix*
Display Color *White*
Drive Duty *1/64 Duty*
Connection *FPC Connector (0.5mm pitch)*



LiPo Battery

Features

Nominal Voltage *3.7 V*
Power Capacity *130 mAh*
Number of Cells *1*
- Onboard protection circuit
- Reverse coupling preventing connector design

Chapter-3 Using the watchX

The idea behind the watchX

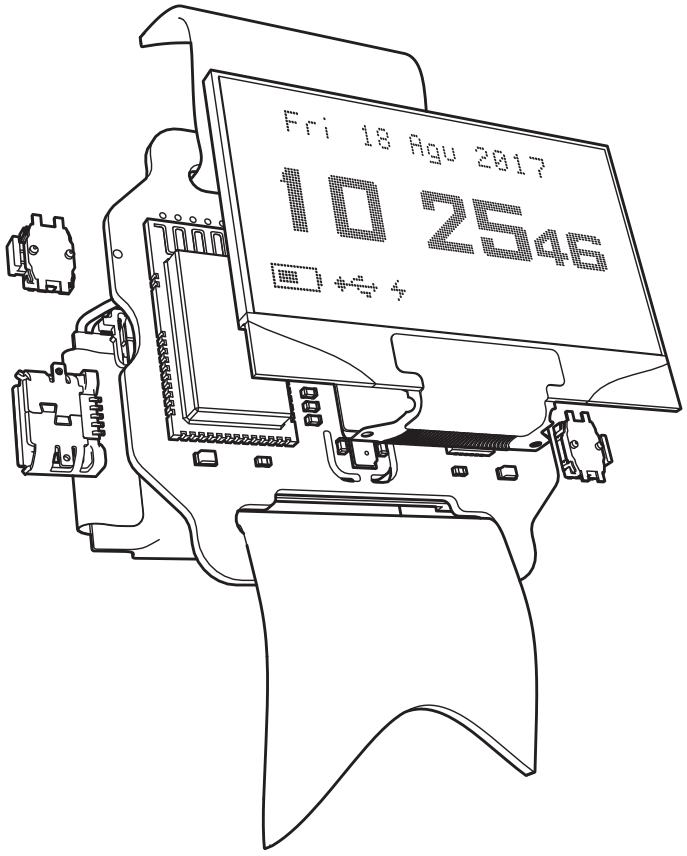
watchX has been developed to be an open, flexible and user-friendly platform as much as possible. What to do with it? That is all up to the user. As developers we will give you the full access to use the watchX hardware for you to bring your imagination to life. That's why, we think that watchX is the next chapter in the development community.

Let's start with the Arduino compatibility. watchX is fully Arduino compatible and works with Arduino IDE. When you connect your watchX to your computer via USB cable, you computer will detect the watchX as an Arduino Leonardo development board. From that point on, all you have to do is download the Arduino IDE from www.watchx.io downloads section and start developing your own applications. You will find the necessary pin layout schemes and Arduino IDE explanations in the following pages of this manual.

And for our Scratch users, you can download the mBlock and install our extension to it. Then you can start programming right away. You will also find the detailed explanations for scratch in the following pages.

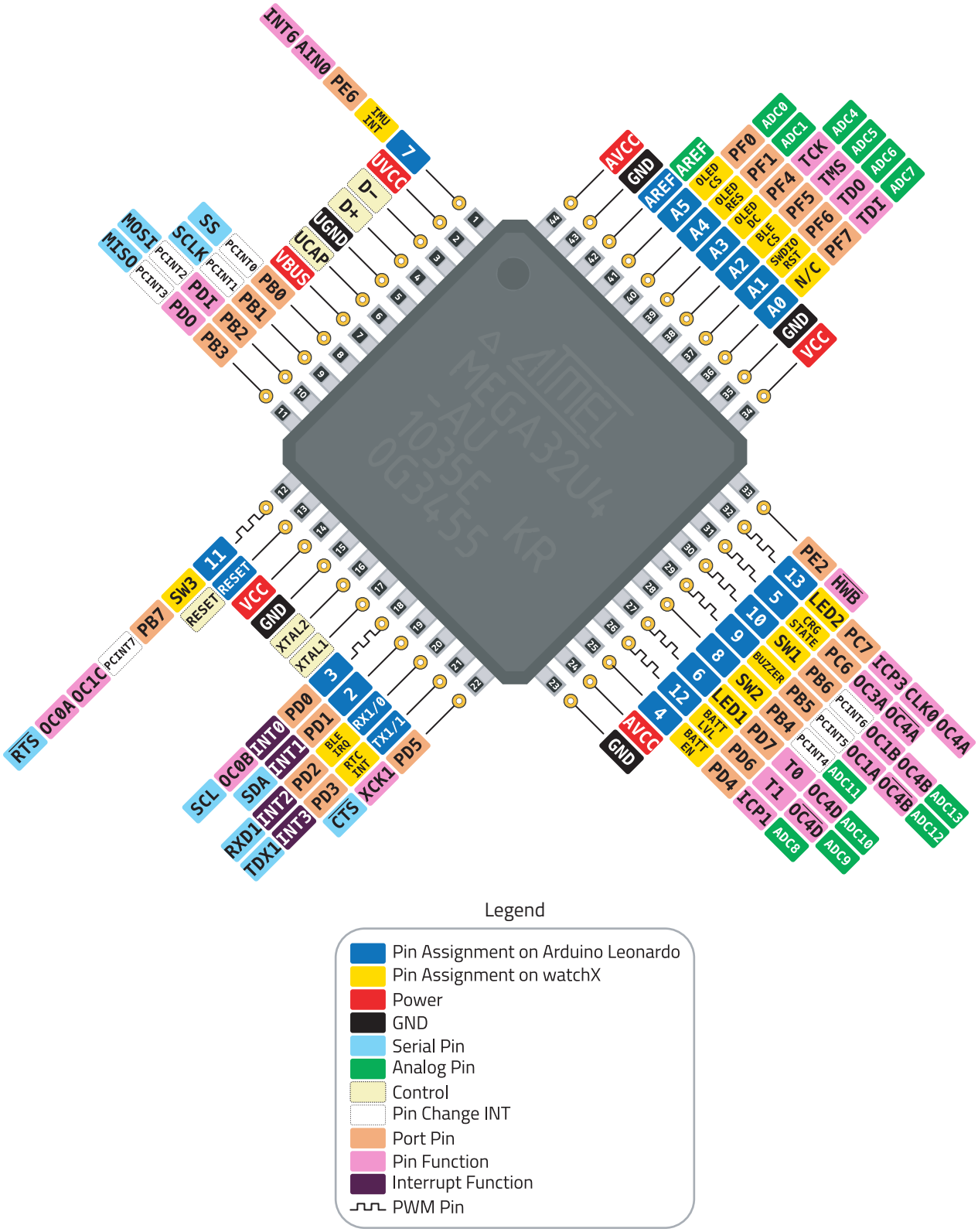
Last but not least, we also have developed a watch firmware for watchX. You can download our firmware from GitHub and Compile&Upload it to your watchX using the Arduino IDE. Just follow the steps in the "Programming with Arduino IDE" section.

From now on, you can develop your own applications or modify the others as you wish. The watchX will be a perfect companion for you to learn and practice programming.



Pin Layout

According to **MCU** *Atmega 32U4*

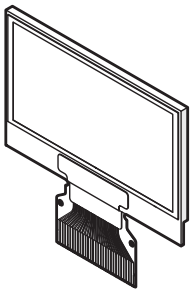


Legend

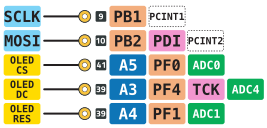
- Pin Assignment on Arduino Leonardo
- Pin Assignment on watchX
- Power
- GND
- Serial Pin
- Analog Pin
- Control
- Pin Change INT
- Port Pin
- Pin Function
- Interrupt Function
- PWM Pin

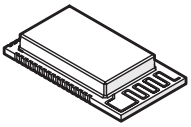
Pin Layout

According to **Components**



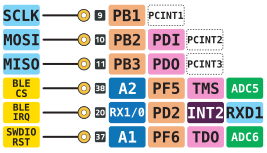
Oled Display

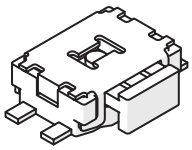




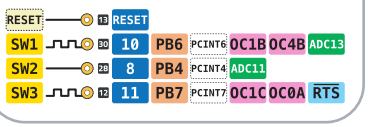
Bluetooth

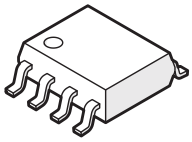
NRF51822





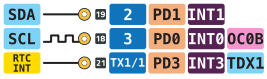
Switches



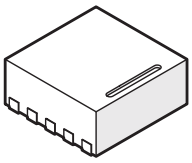


Real Time Clock

DS3231MZ+



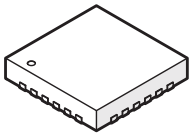
I2C Address **0x68**



3 Axis Magnetometer

MAG3110 for watchX V1.2
MLX90393 for watchX V1.3

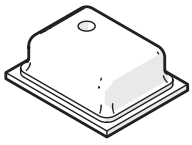
I2C Address
0x0E for watchX V1.2
0x19 for watchX V1.3



Accelerometer Gyroscope *MPU6050*

*__ADO__ pin is connected to **VCC**

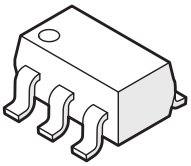
I2C Address **0x69**



Barometric Pressure Sensor Temperature Sensor *BMP280*

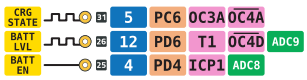
*__SDO__ pin is connected to **GND**

I2C Address **0x76**

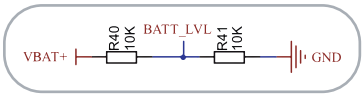


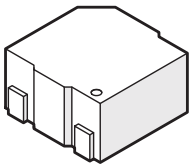
Charging IC

MCP73831



Circuit Diagram

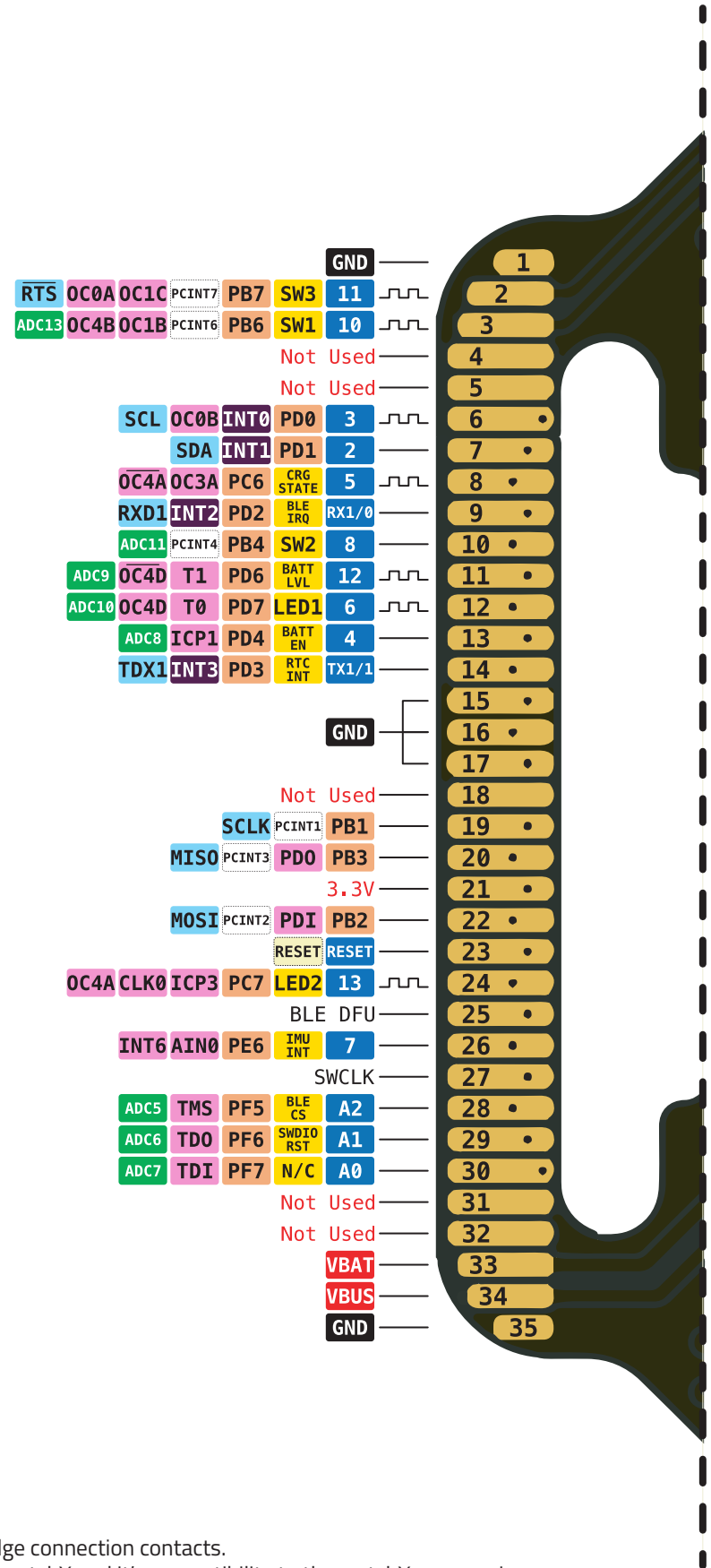




Buzzer *ST-0503-3*

Pin Layout

According to **Edge Connector**

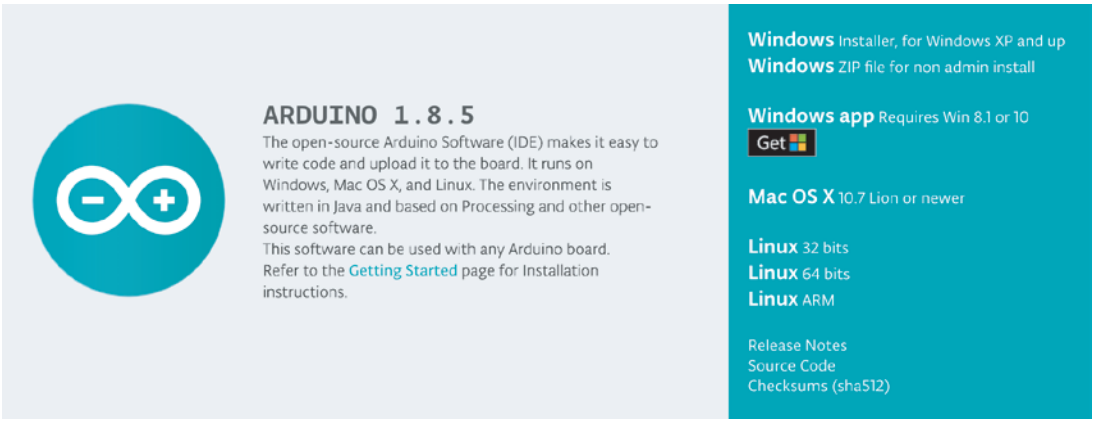


Do not solder on the edge connection contacts.
This may damage your watchX and it's compatibility to the watchX accessories.

Programming the watchX with Arduino IDE

Step 1 - Download the Arduino IDE

Go to www.arduino.cc and navigate to the Software/Downloads page. Download and install the suitable version of Arduino IDE to your operating system.



You can find more information and detailed instructions on how to install the Arduino IDE from;
For Linux: *https://www.arduino.cc/en/Guide/Linux*
For MacOSX: *https://www.arduino.cc/en/Guide/MacOSX*
For Windows: *https://www.arduino.cc/en/Guide/Windows*

Step 2 - Download and install the watchX libraries

The library files are modified in a way so that they can be used with watchX. Go to www.watchx.io and navigate to the Downloads page. Download the library files.

Then, follow the library installation instructions from *https://www.arduino.cc/en/Guide/Libraries* use the manual installation method.

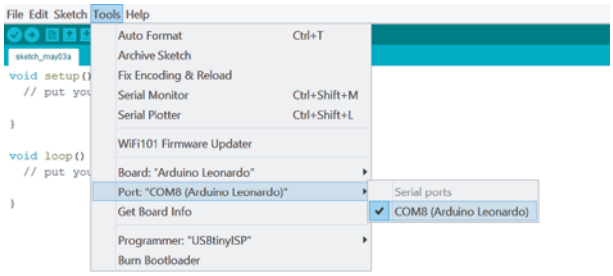
After this step, you are all set to write and upload your Arduino Sketches to watchX

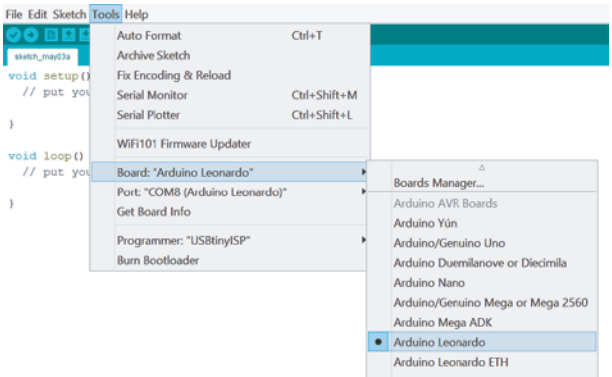
Step 3 - Upload an Arduino Sketch to watchX

Connect the watchX to your computer via USB cable. Your computer must recognize the watchX as an Arduino Leonardo. That is normal because watchX uses Arduino Leonardo bootloader.

Go to Tools -> Port and select the port that the watchX is connected.

Go to Tools -> Board and select Arduino Leonardo.





Now, you are ready to upload any sketch you like to watchX. You can use the pin layout provided for hardware control. You can check and modify the examples published on the downloads page of watchx.io And you can download the watchX Firmware from GitHub and upload it to your watchX.

Programming the watchX with Scratch IDE (using mBlock)

mBlock is the one of the most used Scratch IDE, it is well recognized, easy to use and easy to develop the extensions for. That's why we based our Scratch compatibility on mBlock. Follow the steps below and explore the easy drag&drop environment of Scratch programming.

Step 1 - Download the mBlock

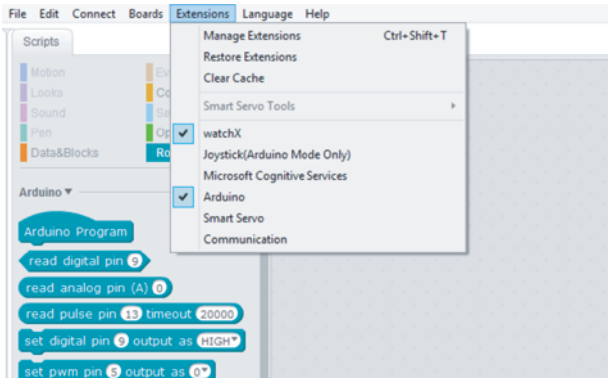
Go to *www.makeblock.com* and navigate to the Software/Downloads page. Download and install the suitable version of **mBlock3** to your operating system.

Step 2 - Download and install the watchX extension

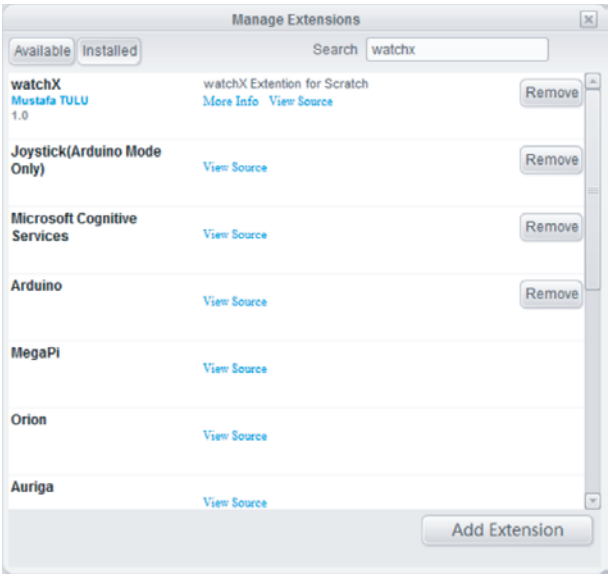
The mBlock extension for watchX is designed so that users can easily harness the power of watchX without getting into much detail. There are two ways to add extensions on mBlock. You can either add the extension manually or you can use the Extension Manager's search tool and load the extension automacily.

For manual extension adding, download the watchX extension for mBlock, from the downloads section of *www.watchx.io.*

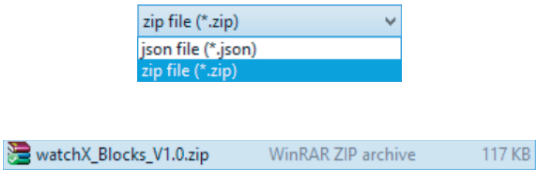
a) Open the **Manage Extension** window from the **Extensions** menu



b) To make an online extension load, search watchX from the search bar section and download&add the watchX extension. To add the extension manually, click the **Add Extension** button.



c) Choose the filetype as .zip from the selection window and select the extension file you have downloaded.

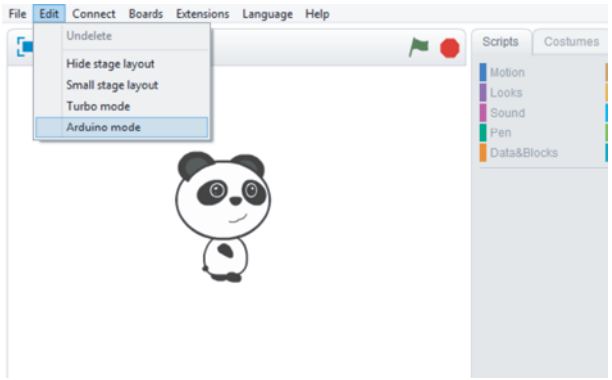


Step 3 - Upload a Scratch program to watchX

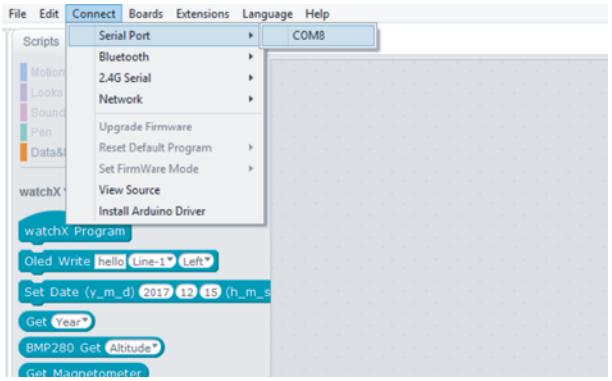
Connect the watchX to your computer via USB cable. Your computer must recognize the watchX as an Arduino Leonardo. That is normal because watchX uses Arduino Leonardo bootloader.

Carry on the following steps.

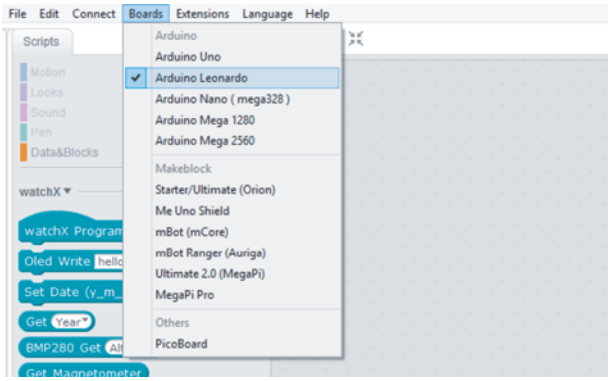
a) Select Arduino mode from the Edit menu.



b) Select the port watchX is connected from the Connect menu.



c) Select the Arduino Leonardo option from the Boards menu.



You have successfully set the mBlock for watchX. Now you can construct your program and upload it to watchX by simply clicking the Upload button.

You can also find the detailed explanation and documents of watchX blocks and how to use them from www.watchx.io downloads section.

Chapter-4 Troubleshooting

problem	possible causes	solutions
watchX doesn't turn on	Battery connection Battery charge level No program loaded to watchX	- Check if the battery is connected to watchX properly and check the cables whather they are damaged or not. (If the battery cables are damaged, pay extreme care and do not shot the poles together. If you need to change the battery, always dispose the old battery with respect to environment.) - Check if the battery is charged or not. If the battery is not charged, connect the watchX to a USB power source with the given cable. - Connect your watchX to your computer and upload a program to it by following the steps explained in the Chapter 3.
Battery is not charging	Battery connection Weak power source Poor quality USB cable Dead battery	- Check if the battery is connected to watchX properly and check the cables whether they are damaged or not. (If the battery cables are damaged, pay extreme care and do not shot the poles together. If you need to change the battery, always dispose the old battery with respect to environment.) - Check if your power source is supplying enough power. - Use the cable given with watchX - The battery might be dead, replace the battery.

problem	possible causes	solutions
I can’t upload a program	Poor quality USB cable Wrong Arduino IDE settings Wrong Scratch IDE settings	- Use the cable given with watchX - Check the Arduino IDE settings, make sure that you have selected the correct port and the correct board type. Make sure that you have loaded the watchX libraries correctly. - Check the Scratch IDE settings, make sure that you have selected the correct port and the correct board type. Make sure that you have loaded the watchX extension correctly.
I can’t connect via Bluetooth	Bluetooth is not turned on Bluetooth App is outdated The program running on watchX is not written correctly	- Make sure that the Bluetooth is enabled on your mobile device. If the problem continues restart your device. - The Bluetooth App on your device might be an older version. Make sure that you are using an up to date version. - Check your program uploaded to watchX. Make sure that it is correctly written and there are no mistakes in the sketch.
Display is not working	Oled FFC cable is not connected properly The program running on watchX is not written correctly	- Make sure that the Oled FFC cable is connected properly. Check the steps explained in the Chapter1 - Check your program uploaded to watchX. Make sure that it is correctly written and there are no mistakes in the sketch.

There could be some other problems that you might be facing.
You can always contact: support@argex.io

Chapter-5 Safety and warranty

Safety

Read and understand the users manual carefully before using watchX.

Caution: Do not try to modify or fix watchX. The watchX is not user serviceable.
Caution: Use the watchX with caution and in accordance with local traffic regulations.
To avoid the risk of injury or damage, always follow these basic precautions.
Only use the watchX in accordance with the specifications outlined in this manual and on www.watchx.io
Do not attempt to repair or adjust any electrical or mechanical functions of this device. Tempering with these conditions may create a hazardous condition and will void your warranty.

Use restrictions

Do not temper or abuse your watchX including, without limitation, do not drop, disassemble, puncture, crush, throw, glue, paint or deform your watchX.
Prevent the watchX from getting in contact with any kind of liquid or moisture.
Do not clean your watchX with any kind of wet towel or hot air source.
Do not blow pressurized air on to the watchX.
Do not try to remove any electronic component from watchX board and do not solder on watchX PCB. This will void your warranty.
Do not place watchX near open flames or excessive heat, such as candles, fireplaces or cooktops.
Do not bring sharp objects in contact with the watchX to avoid scratches and damage.
Avoid temperatures below -10C/14F and above 50C/122F.

Battery and charging

Only use the battery supplied with watchX.
Only replace the watchX battery with an original watchX battery.
Do not tamper with the battery.
Do not drop, crush throw paint, glue, puncture or deform the battery.
Do not make any modifications to the battery.
Do not make any solder on the battery. This may create hazardous conditions.
Do not tamper with, or make any modifications to the battery cables and the battery connectors located on the watchX PCB and connected on the battery cable.
Only use the charging cable supplied with the watchX.
Do not use 3rd party charging cables.
Only charge with USB Compliant ports and chargers.
Only program your watchX with USB Compliant ports.
Do not charge the watchX if it's wet.
Do not clean your watchX when it's being charged.
Do not dispose the watchX battery into fire. It may explode an can cause injury.

Medical Device Interference

watchX contains components and radios that emit electromagnetic fields. Maintain a safe distance of separation between your medical device and the watchX. If you suspect any kind of interference with your pacemaker or any other medical device, stop using the watchX Consult this condition with your physician/doctor and medical device manufacturer.

Warranty

argeX warrants that it's products will conform to the specifications. The warranty lasts for one (1) year from the date of purchase. argeX will not be liable for any defects that are caused by neglect, misuse or mistreatment by the customer. Including improper setup or testing, or any products that have been altered or modified in any way by the customer. Moreover, argeX will not be liable for any defects that result from the customer's design or setup.

If any of the argeX products fail to conform to the warranty set forth above, argeX's sole liability will be to replace such products. argeX's liability is limited to the products that are determined by argeX not to conform such warranty. If argeX elects to replace such products, argeX has to have a reasonable time to provide replacements. Replaced products will be warranted for the one (1) year from the date of purchase.

EXCEPT AS SET FORTH ABOVE, PRODUCTS ARE PROVIDED "AS IS" AND "WITH ALL FAULTS". argeX DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

The customer agrees that prior to using any systems that include argeX products, the customer will test such systems and the functionality of the products as used in such systems. argeX may provide technical, applications or design advice, quality characterization, reliability data or other services. The customer acknowledges and agrees that providing these services will not expand ot otherwise alter argeX's warranties, as set forth above, and that no additional obligations or liabilities will arise from argeX providing such services.

argeX products are not authorized for use of safety-critical applications where a failure of the argeX product would reasonably be expected to cause severe personal injury or death. Safety-critical applications include, without limitation, life support devices and systems, equipment or systems for the operation of nuclear facilities and weapon systems. argeX products are neither designed nor intended for use in military or aerospace applications or environments, nor for automotive applications or the automotive environment. The customer acknowledges and agrees that any such use of argeX products are solely at the customer's risk, and the customer is sole responsible for the compliance of all legal and regulatory requirements in connection with such use.

The customer acknowledges and agrees that the customer is the sole responsible for complience with all legal, regulatory and safety-related requirements concerning the products and any use of argeX products in the customer's applications, notwithstanding any applications related information or support that may be provided by argeX.

Changes to specifications

argeX may make changes to specifications and product descriptions any time, without notice. The product information on the website or materials is subject to change without notice.

Regional disposal and recycling information

This symbol indicates that this product and/or battery should not be disposed of with household waste. When you decide to dispose of this product and/or its battery, do so in accordance with local environmental laws and guidelines.

www.argex.io