binho

REVISION 1.1
SEPTEMBER 25, 2026



PRODUCT DATASHEET

Binho Atira

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1 Key Features

- Debug & Trace Interfaces
  - SWD (Serial Wire Debug)
  - JTAG (4-wire, plus optional SRST/TRST)
  - SWO (Serial Wire Output)
  - RTT (Real-Time Transfer)
  - ICSP (Microchip In-Circuit Serial Programming, coming soon)
  - UPDI (Microchip Unified Program and Debug Interface, coming soon)
- Support for SPI protocol
  - SPI Controller
  - All 4 SPI Modes Supported
  - Up to 24MHz max clock speed
  - 8 or 16 bit data size
  - Configurable MSB/LSB
  - Up to 16KB transaction length
- Integrated USB to UART Bridge
  - 2M Baud (max)
  - Hardware flow control (optional)
- Integrated Voltage Level Translation
  - Supports digital signals from 1.2V to 5.0V
  - Level translation on all digital buses and pins
- Provides downstream power to DUT
  - Programmable from 1.2V to 5.0V
  - Real-time voltage, current, and power monitoring for downstream powered DUTs
  - Voltage monitoring available for self-powered DUTs
- Robust Machined Aluminum Enclosure
  - 5 x RGB Status LEDS
  - Integrated mounting holes
  - Silent, Fanless design
- All cables and accessories included
  - USB Type A to Type C Adapter Included
  - Stored in custom zippered case
- Full-featured Software Support
  - Point-and-Click GUI
  - Cross-Platform: Windows, Mac, Linux
  - Python, C/C#/C++ SDKs
  - Field-Upgradeable Device Firmware

2 Target Applications

- → Device Driver Development
- → Firmware Development & Verification
- → Proof of Concept Development
- → Automated HW/FW Testing & Agentic Development
- → SPI FLASH & EEPROM Programming
- → Production Line MCU Programming



3 Product Introduction

The Binho Atira is a premium USB programmer for embedded systems development, giving engineers direct, high-speed access to a target microcontroller's debug and programming interfaces. Atira supports SWD, JTAG, SWO, RTT, ICSP, and UPDI. It features a modern USB Type-C port, 5 x RGB LEDs for visual status indication, and a variety of DUT-facing connections, all in a compact, robust machined-aluminum enclosure with integrated mounting holes.

Atira communicates with the host PC over a USB Full-Speed (12 Mbps) link, and also exposes an independent USB-to-UART bridge so a target's serial console can be monitored simultaneously with debugging. An onboard, digitally-programmable voltage regulator lets Atira source or reference a target voltage anywhere from 0.9 V to 5.3 V, with every SWD/JTAG/UART signal line bidirectionally level-shifted to match under firmware control. The Atira features integrated voltage/current/power monitoring and switching capabilities to observe the power draw of the connected downstream device and programmatically power-cycle it without needing to unplug cables or any physical human intervention.

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5 Product Description

This section of the document includes detailed information about the Atira product, starting with an overview of all the included items, followed by a walkthrough of various ports, pinouts, and power domains of the Atira device.

5.1 Included Components

The Binho Atira comes with everything you need to get up and running. The following items are included in the box.

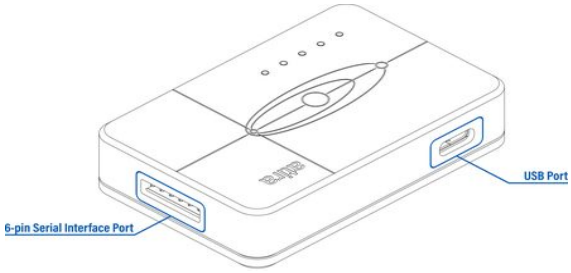


Atira Product Box Contents

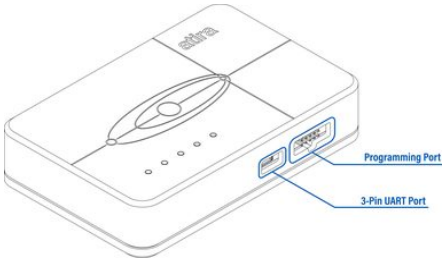
- 1 x Binho Atira USB Adapter
- 1 x Programming Port Kit:
  - 1 x 2×5 pin 1.27mm IDC ribbon cable
  - 1 x 2×5 pin 1.27mm IDC ribbon cable with 2.54mm female headers
- 1 x 6pin Serial Interface Port Kit:
  - 1 x 6 pin 2.54mm pitch cable with male headers
  - 1 x 6 pin 2.54mm pitch cable with female headers
- 1 x 3pin UART Port Kit:
  - 1 x 3 pin 1.0mm JST SH cable with male headers
  - 1 x 3 pin 1.0mm JST SH cable with male headers
  - 1 x 3 pin 1.0mm JST SH cable with 3pin JST SH plug
- 1 x USB Kit:
  - 1 x USB Type C to Type A Cable
  - 1 x USB Type A to Type C Adapter
- 1 x Mounting Kit:
  - 2 x mounting screws
  - 2 x washers
- 1 x Custom Protective Zippered Carry Case

5.2 Ports

The Atira has a total of four (4) ports, shown in the diagram below.



Rear View



Front View

The rear of the Atira features a USB port for connecting the device to the Host PC and a 6-pin UART connector with hardware flow control feature. The Atira's front side features a simple 3-pin UART connector and programming connector to be used to interface with the DUT. The information in the following subsections provides specific information related to each port.

In addition, this section of the datasheet also provides the pinout information for each of the DUT-facing connectors on the Binho Atira. The cables and accessories included with the Atira make it convenient and easy to break out and access the signals. Further information needed for integrating connectors and cabling specifically for Atira within custom fixtures and test bench setups can be found later in this document in Section 9.2.

5.2.1 USB Port

This USB Type-C port is used to connect Atira to the host PC. This can be done with the provided USB Type-C to A cable or any other USB cable. A USB A to Type-C adapter is also included for the user's convenience. Note that The Binho Atira is a USB 2.0 Full-Speed Device with a 12 Mbps link to the host PC. This connection also provides power to the device - no external power connection is needed.

More information about the USB link to the host PC facilitated over this port can be found in Section 8.1. Furthermore, the USB link is also used to update the Supernova device firmware. Details of the firmware update process can be found in Section 8.2.

5.2.2 Programming Port

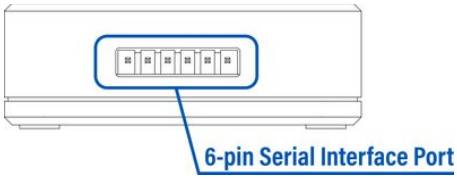
This port includes SWD, JTAG, ICSP, and UPDI interfaces on a 2 x 5 pin 1.27mm pitch connector, which allows the user to interface directly with a DUT. This port has built-in voltage translation and supports digital logic levels from 1.0V to 5.0V.



Front View - Programming Port

5.2.3 6-pin Serial Interface Port

This port provides a full-featured UART bridge (TX, RX, RTS, CTS, GND) plus a VDD_DUT pin which can optionally be used to provide downstream power to the DUT or as a voltage reference pin when the DUT is self-powered. These pins are exposed on a 6-pin, 2.54mm pitch male connector. In addition to the basic serial connection, this port supports optional RTS/CTS hardware flow control. The pinout for this connector can be found in Section 5.3.2.

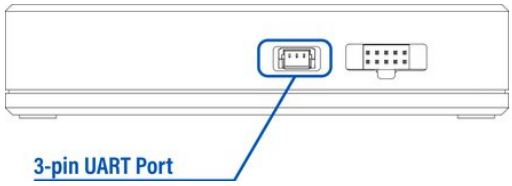


Side View - 6-pin Serial Interface Port

> The serial interface port also has built-in voltage translation and supports digital logic levels from 1.0V to 5.0V. The 6-pin serial interface port shares TX and RX lines with the 3-Pin UART Port, which is detailed in the section below.

5.2.4 3-pin UART Port

This port provides a simple 3-wire UART bridge (TX, RX, GND) on a 3-pin, 1.0mm pitch connector, intended for basic serial console access to a DUT where hardware flow control is not needed. The pinout for this connector can be found in Section 5.3.3.



Front View - 3-pin UART Port

> The 3-Pin UART Port also has built-in voltage translation and supports digital logic levels from 1.0V to 5.0V.
> It is also worth mentioning that the serial interface port shares TX and RX lines with the 3-pin UART Port, which will be detailed as follows.

5.3 Pinouts

This section of the datasheet provides the pinout information for each of the DUT-facing connectors on the Binho Atira. The cables and accessories included with the Atira device make it convenient and easy to break out and access the signals. Further information needed for integrating connectors and cabling specifically for Atira within custom fixtures and test bench setups can be found later in this document in Section 9.2.

5.3.1 Programming Port

The figure and accompanying table below show the pinout for the 2×5 pin connectors used for the Programming Port.

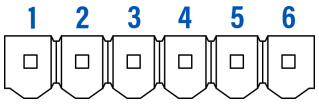


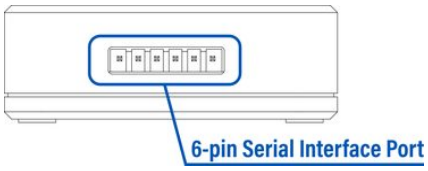
PIN NAME	PIN	PIN FUNCTION(S)
VTARGET	1	Device Under Test (DUT) Voltage Reference / Power Output (configurable) [1]
SWDIO / TMS	2	Serial Wire Data / JTAG Test Mode Select
GND	3, 5	Ground
SWCLK / TCK / SCK	4	Serial Wire Clock / JTAG Test Clock / SPI Clock
SWO / TDO / MOSI / UPDI	6	Serial Wire Output / JTAG Data Out / SPI Data Out / UPDI Data
NC	7	Not connected
TDI / MISO	8	JTAG Test Data In / SPI Data In
nTRST / CS	9	JTAG Test Reset / SPI Chip Select
nRESET	10	Reset (Active Low)

[1]: Atira's downstream supply can be programmed from 1.2 V to 5.0 V in 1.1 mV resolution. Voltage, current and power on the target rail are measured continuously. The monitoring itself can be configured through software with a current range is 0–2.048 A (62.5 µA resolution).

5.3.2 6-pin Serial Interface Port

The figure and accompanying table below show the pinout for the 6-Pin of the Serial Interface Port.



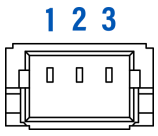


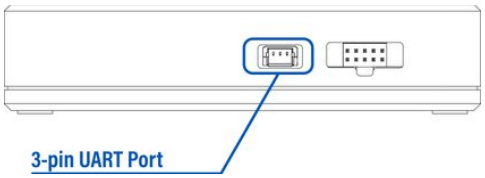
PIN NAME	PIN NUMBER	PIN FUNCTION(S)
GND	1	Ground
CTS	2	UART Clear-To-Send (CTS) Signal for Hardware Flow Control
VTARGET	3	Device Under Test (DUT) Voltage Reference / Power Output (configurable) [1]
TX	4	UART TX Data [2]
RX	5	UART RX Data [2]
RTS	6	UART Ready-To-Send (RTS) Signal for Hardware Flow Control

[1]: UART TX and RX lines are the same as the ones on the Serial Interface Port.

5.3.3 3-pin UART Port

The figure and accompanying table below show the pinout for the 3-Pin Port used for UART.





PIN NAME	PIN NUMBER	PIN FUNCTION(S)
TX	1	UART TX Data [1]
GND	2	Ground
RX	3	UART RX Data [1]

[1]: UART TX and RX lines are the same as the ones on the Serial Interface Port.

5.4 Power

All of Atira's DUT-facing ports share a single I/O power domain, referenced to the VTARGET pin. Atira supports two modes, selected from the host software:

- **Self-powered target**: VTARGET is an input. Atira measures the target's supply voltage and sets its I/O voltage to match, so it can talk to self-powered targets. Atira's output stays off in this mode.
- **Target powered by Atira**: Atira powers the target through VTARGET from its programmable supply and continuously measures voltage, current and power. The I/O voltage follows the programmed output.

5.4.1 Downstream Power

As mentioned, Atira can provide power directly from the USB-C port, so a separate bench supply isn't needed for most bring-up and programming work. The target rail VTARGET is set in software, switched on and off in a controlled way, and monitored for voltage and current.

The voltage is configurable programmatically - it can provide downstream power to the DUT, or it can disengage from providing power and instead use the VTARGET pin as a voltage reference for the logic level of the bus.

> Atira power supply programming supports full range from 1.2V to 5.0V in a maximum of 1.1mV step limited by the internal DAC from the MCU. Also worth mentioning the available current depends on the host port. Full 2A at 5V needs a 3A Type-C host; standard USB-A ports give roughly 300–400 mA at 3.3 V.

5.4.2 Voltage, Current, and Power Monitoring

Atira continuously measures the VTARGET rail with a 16-bit digital power monitor, through a 40 mΩ, 1% shunt resistor. The MCU ADC also reads the target-side voltage VTARGET through a 0.1% divider, so the target voltage can be seen even when Atira's own supply is turned off.

Current is measured from 0 to 2.048 A with 62.5 µA resolution, and voltage up to 5.5 V with 1.6 mV resolution. Conversion time (140 µs to 8.2 ms) and averaging (1 to 1024 samples) can be configured in software.

> Current monitoring on Atira is meant for functional checks and logging. It **does not replace a precision instrument such as a Joulescope**. Its resolution, offset and update rate can't capture low currents or spikes. For low-power characterization or battery-life estimates, use a dedicated power analyzer.

5.4.3 Integrated Voltage Level Translation

Every target-facing signal on Atira (SWD, JTAG, UART and UPDI) goes through a dedicated level translator. Atira can therefore be interfaced with targets with I/O from 1.2 V to 5.0 V without external

adapters. The translators are powered from Atira's own programmable supply (VDD), not from the target. The target never supplies current to Atira's I/O circuitry, and the I/O voltage is set by Atira to match the target, in one of two ways:

Self-powered target → Load switch off. VTARGET is measured, and VDD is set to match it.

Target powered by Atira → VDD is set to the requested voltage and the load switch is enabled, so VTARGET ≈ VDD.

> All translators start as inputs (high impedance toward the target) at power-up, and the MCU sets each line's direction.

6 Electrical Specifications

This section aims to characterize the electrical performance and parameters of the Atira device.

6.1 Absolute Maximum Ratings

> Stresses beyond those listed in the tables in this section may cause permanent damage to the device. These are stress ratings only which do not imply functional operation of the device at these conditions. Exposure to absolute-maximum-rated conditions for extended durations may impact device reliability.

PARAMETER	MIN	MAX	UNIT
USB Input Voltage	-	5.5	V
USB Input Current	-	2000	mA
Operating Temperature	0	70	°C
Electrostatic Discharge (ESD) Rating	-	±4000	V

6.1.1 Programming Port

PARAMETER	MIN	MAX	UNIT
Input Voltage - VTARGET pin	-	6.5	V
Output Current - VTARGET pin	-	800	mA
Voltage on any digital pin	-0.5	6.5	V
Output Current on any digital pin	-	50	mA

6.1.2 6-pin Serial Interface Port

PARAMETER	MIN	MAX	UNIT
Input Voltage - VTARGET pin	-	6.5	V
Output Current - VTARGET pin	-	1000	mA
Voltage on any digital pin	-0.5	6.5	V
Output Current on any digital pin	-	50	mA

6.1.3 3-pin UART Port

PARAMETER	MIN	MAX	UNIT
Voltage on any digital pin	-0.5	6.5	V
Output Current on any digital pin	-	50	mA

6.2 Recommended Operating Conditions

PARAMETER	MIN	TYP	MAX	UNIT
USB Input Voltage	4.5	5.0	5.5	V
USB Input Current	-	500	1500	mA
Operating Temperature	0	25	70	°C

6.2.1 Programming Port

PARAMETER	MIN	TYP	MAX	UNIT
Output Voltage - VTARGET pin	1.2	-	5.0	V
Output Current - VTARGET pin	-	100	500	mA
Voltage on any digital pin	0	-	5.0	V
Output Current on any digital pin	-	5	25	mA

6.2.2 6-pin Serial Interface Port

PARAMETER	MIN	TYP	MAX	UNIT
Output Voltage - VTARGET pin	1.2	-	5.0	V
Output Current - VTARGET pin	-	100	500	mA
Voltage on any digital pin	0	-	5.0	V
Output Current on any digital pin	-	5	25	mA

6.2.3 3-pin UART Port

PARAMETER	MIN	TYP	MAX	UNIT
Voltage on any digital pin	0	-	5.0	V
Output Current on any digital pin	-	5	25	mA

7 Supported Protocols

The Binho Atira supports SWD, JTAG, SWO trace capture, RTT (Real-Time Transfer), ICSP and UPDI device programming, and a general-purpose UART bridge with optional hardware flow control. This section provides the specifics of Atira's capabilities for each of the supported protocols.

The programming protocols SWD, JTAG, SWO, ICSP, UPDI, and SPI share physical pins on the programming port connector. The firmware enforces mutual exclusion between them: only one of these protocols can be active at a time, and a request to start a second one is refused until the first is released. Two exceptions apply:

- SWD + RTT: an RTT streaming session can run concurrently with a host SWD debug session; the two share the SWD bus safely.
- UART bridge: the UART bridge uses dedicated pins and is always available, regardless of which debug or programming protocol is active.

The subsections below detail Atira’s support for each of these protocols.

7.1 SWD - Serial Wire Debug

The Binho Atira operates as a standards-compliant CMSIS-DAP v2 debug probe for ARM Cortex-M targets over the Serial Wire Debug (SWD) interface. CMSIS-DAP v2 uses dedicated USB bulk endpoints for high throughput and enumerates without the need for a custom device driver on all major operating systems.

An advantage of CMSIS-DAP is an open ARM standard, the Atira works out of the box with standard debug tooling, including pyOCD, OpenOCD, and CMSIS-DAP-aware IDEs — no vendor-specific plug-in is required for core debug functionality.

Interface Standard	CMSIS-DAP v2
Target Interface	SWDIO, SWCLK, nRESET
Supported Targets	ARM Cortex-M devices with a Serial Wire Debug port
Concurrent Features	SWO, RTT, UART

Typical operations include flash programming, breakpoint debugging, memory and register access, and core control through any CMSIS-DAP-compatible host tool.

7.2 JTAG - Joint Test Action Group

The Binho Atira operates as a standards-compliant CMSIS-DAP v2 debug probe for targets that expose a JTAG-DP or a JTAG TAP: TCK, TMS, TDI, TDO, and optional nTRST signals with standard IR/DR scan operations.

Interface Standard	CMSIS-DAP v2
Target Interface	TCK, TMS, TDI, TDO, nTRST, nRESET
Supported Targets	Microcontrollers with JTAG-DP or JTAG TAP
Concurrent Features	UART

7.3 SWO - Serial Wire Output

The Binho Atira captures Serial Wire Output (SWO) trace from ARM Cortex-M targets, giving zero-intrusion printf-style instrumentation and event tracing via the target's ITM/TPIU.

The Atira configures the target's trace registers (DEMCR, TPIU ACPR/SPPR, ITM TCR/TER) over SWD and captures the resulting SWO stream, exposing it to the host through the standard CMSIS-DAP SWO commands so that existing tools (e.g. pyOCD, OpenOCD) can consume it directly.

Interface Standard	CMSIS-DAP v2
Target Interface	SWO
Supported Targets	ARM Cortex-M targets that include the ITM and TPIU trace blocks and bring SWO out to a pin (typically Cortex-M3, M4, M7 and M33 devices).
Concurrent Features	SWD, UART

SWO capture is mutually exclusive with UPDI (shared receiver hardware) and with JTAG (shared TDO/SWO pin).

7.4 RTT - Real-Time Transfer

The Binho Atira features support for Segger RTT (Real-Time Transfer) protocol for high-speed, bidirectional communication with a running target device without halting it. The Atira scans target RAM for the RTT control block over background SWD memory access and then streams data in both directions.

Direction	Bidirectional
Control Block Discovery	Automatic RAM Scan
Concurrency	Runs alongside an active host SWD debug session

Interface Standard	CMSIS-DAP v2
Target Interface	SWO
Supported Targets	ARM Cortex-M targets that include the ITM and TPIU trace blocks and bring SWO out to a pin (typically Cortex-M3, M4, M7 and M33 devices).
Concurrent Features	SWD, UART

RTT data is streamed to the host over the Atira's secondary USB serial (monitor) port, so any terminal application can display target output live during a debug session.

7.5 ICSP - In-Circuit Serial Programming

> **NOTICE**
> This feature is under active development. Please contact support@binho.io for pre-release access.

The Binho Atira supports programming modern Microchip PIC microcontrollers over the ICSP interface (In-Circuit Serial Programming Interface).

Additional details will be added to this section of the datasheet in an upcoming release.

> *Note:* High-voltage programming (HVP) entry by means of a 12V MCLR pulse will be supported in the future by means of an external adapter board.

7.6 UPDI - Unified Program and Debug Interface

> **NOTICE**
> This feature is under active development. Please contact support@binho.io for pre-release access.

The Binho Atira supports programming modern Microchip AVR microcontrollers over the single-wire UPDI interface, covering all three NVM controller generations. The UPDI interface is available on pin 6 of the programming port.

Supported Families:	tinyAVR 0/1-series (NVM v0), AVR DA/DB (NVM v2), AVR DD/EA (NVM v3)
Physical Layer	Single-wire half-duplex UPDI, 115200 baud
Addressing	16-bit (NVM v0) and 24-bit (NVM v2/v3) modes
Supported Operations	SIB/device ID read, flash read/write, EEPROM read/write, fuse programming
Link Initialization	BREAK \+ SYNCH auto-baud sequence

Additional details will be added to this section of the datasheet in an upcoming release.

> *Note:* High-voltage programming (HVP) entry by means of a 12V MCLR pulse will be supported in the future by means of an external adapter board. Please contact us at techsupport@binho.io for additional information.

7.7 SPI - Serial Peripheral Interface

> *Note: The usage of SPI Master/Slave terminology is considered obsolete. Master and Slave are now Controller and Peripheral.*

The Binho Atira supports SPI controller mode of operation intended for programming of SPI memory devices such as FLASH and EEPROM, flashing firmware or calibration data to devices with SPI interfaces, or even general SPI transfers. The table below shows the possible bus configurations that can be configured in SPI Controller mode of operation.

Supported Voltage:	1.2V to 5.0V
Supported Clock Rates:	10kHz, 50kHz, 500kHz, 1MHz, 2MHz, 4MHz, 8MHz, 12MHz, 16MHz, 24MHz
Supported Modes:	0, 1, 2, and 3
Data Size:	8 or 16 bits
Byte Order	MSB-first, LSB-first
Number of CS pins:	1
CS pin polarity:	Configurable Active HIGH, Active Low
Max Transfer Length	16 KB

SPI Controller support is available in Binho Mission Control Desktop GUI software as well as the Python and C/C#/C++ SDKs.

7.8 UART - Universal Asynchronous Receiver / Transmitter

The Binho Atira supports full-duplex UART protocol with baud rates up to 2M baud, with and without hardware flow control. A USB CDC-ACM virtual COM port on the host PC is transparently bridged to the UART interface on Atira, so any serial terminal or script can communicate with the DUT without specialized drivers or software. The UART protocol pins are exposed on both the 6-pin Serial Interface Port and also on the 3-pin UART Port. The UART protocol uses dedicated pins and remains available for

use along with the programming protocols. The table below shows the possible bus configurations that are available.

Supported Voltage:	1.2V to 5.0V
Supported Baud Rates:	600 - 2M Baud
Supported Parity:	None, Even, Odd
Data Size:	7 bits, 8 bits
Stop Bits:	1, 2
Hardware Flow Control:	No, Yes

A secondary USB CDC-ACM (virtual comm) monitor port can be enabled to passively monitor the UART traffic on the bus (and to carry RTT data), allowing one application/script to interact with the target while another passively observes the bus traffic in real-time.

UART protocol support is available in Binho Mission Control Desktop GUI software as well as the Python SDK.

8 Application Information

NOTICE

The best source of the latest and most up-to-date information regarding the features of this product and the very specifics of how to operate the device can be found on our customer support portal. This support portal features a full set of comprehensive documentation and can be found at https://support.binho.io. More details on all of the items below can be found in the support portal.

8.1 USB Link to Host PC

The Atira enumerates as both a USB HID device and USB CDC device simultaneously, as such no special device driver needs to be installed. This ensures Atira is compatible with any platform that has OS-level support for USB HID and USB CDC devices, which includes Windows, MacOS, and many distributions of Linux.

The USB connection with the host PC is a USB 2.0 Full-Speed 12Mbps link.

8.2 Device Firmware Update

The Binho Atira features field-upgradeable firmware over USB. This allows for new features to be developed and released to all devices, such as enhancements and customizations, and even support for new protocols. When in device firmware update mode, Atira will connect to the host PC as a USB HID, USB Mass Storage Device, as well as a WebUSB device. The new firmware file can easily be downloaded by dragging and dropping the updated firmware file onto the drive. Firmware update is also available over USB HID as and can be updated directly from a compatible web browser from https://dfu.binho.io. Please see the “Device Firmware Update” section of our user guide for more information.

8.3 Cross-Platform Support

The Binho Atira works seamlessly on all modern PC operating systems, such as Windows, Mac OS, and Ubuntu (Linux). This is achieved by implementing the USB connections as a standard USB HID and USB CDC device, and optionally as a mass-storage device. This means there is no need to install custom device drivers, allowing the device to be used on any operating system which provides a system driver for these device classes.

8.4 Point-and-Click GUI Software

Binho Mission Control, our point-and-click GUI software, available for Windows, MacOS, and Linux, provides an easy, no-code means to quickly get up and running with Atira (as well as other Binho devices). Binho Mission Control supports performing transactions as a MCU Programmer, SPI Controller/Memory Programmer, or on a UART bus. This software also provides the means to update the Atira device firmware. Additionally, numerous examples and tools are provided as open-source python scripts which can be run on any platform.

8.5 Automation API / SDK

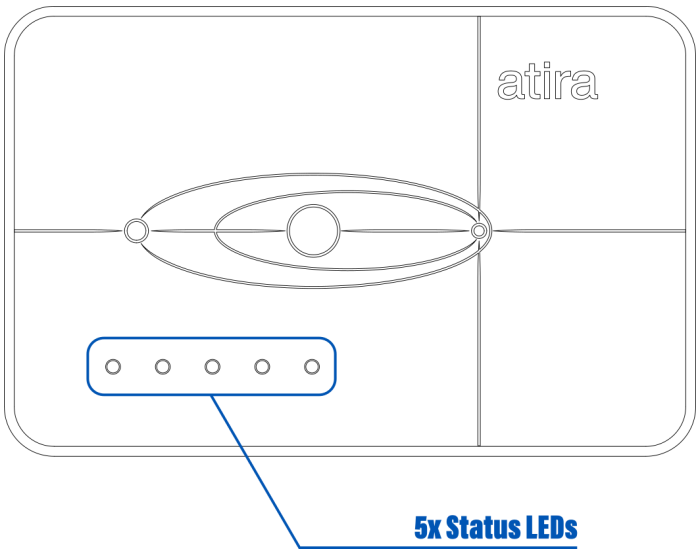
Binho provides cross-platform automation support by means of a fully-featured open-source python library (python 3.10 or later). A C/C#/C++ SDK is also available for Windows, MacOS, and Linux.

8.6 Multi-Adapter/Gang-able Operation

Binho Atira devices can be operated in gang-able fashion with many units connected to the same host PC. This allows for making complicated automated test fixtures or custom gang programming stations a breeze. Many examples exist demonstrating how easy it is to work with multiple devices.

8.7 RGB Status LEDs

The Binho Atira features 5 x RGB status LEDs. These can be used to provide clarity to the mode of the device, state of operation, and protocol/bus traffic.

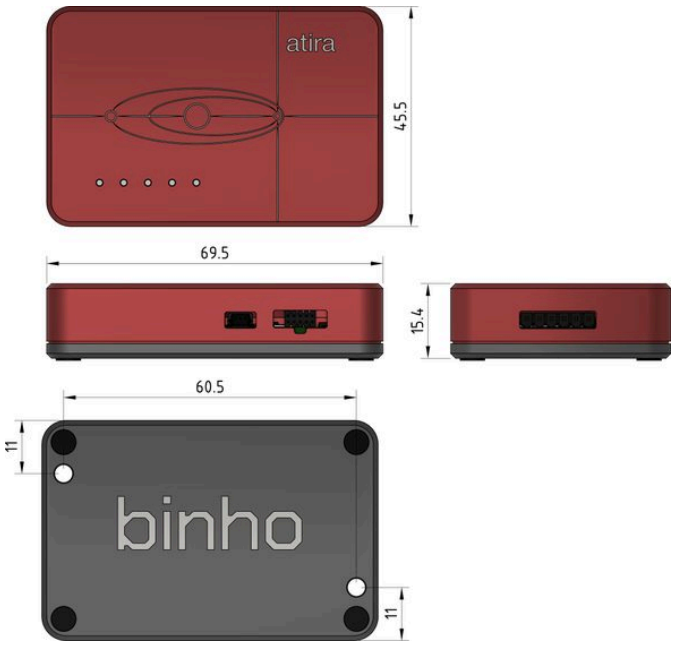


9 Integration Support

The Binho Atira has been designed in a way which lends itself to robust and elegant integration directly into test fixtures and other custom equipment. The information in this section is meant to aid in both the mechanical and electrical integration of the Atira into your own test stations. In case any additional information is needed for a particular integration, please reach out to techsupport@binho.io for additional assistance.

9.1 Mechanical Drawing

The machined aluminum enclosure for Binho Atira features two integrated mounting holes on the back of the device to facilitate simple and robust installation into test fixtures or other environments. A set of fasteners are included with the product.



Fasteners for 2 x Mounting Holes:
Socket Head Screw M3 x 0.5mm Thread, 10mm Long
McMaster Part Number: 92290A115

All dimensions in mm.
Scale: 1:1
Tolerancing: ISO 286 Grade IT7

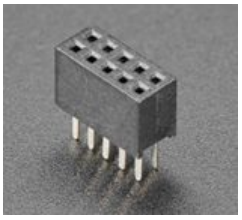
Binho Atira Mounting Geometry

9.2 Connectors & Wiring

The Atira comes with all cables and wire harnesses needed to interface it with the circuit under test. In an effort to make it convenient and straightforward to integrate into custom fixtures and test benches, Atira's ports use common industry standard connectors that are readily available off-the-shelf. This allows for a lot of flexibility and elegance when integrating the device with your custom hardware.

9.2.1 Programming Port

The Programming port is implemented with the industry-standard 2 x 5 pin 1.27mm pitch IDC male header. The included ribbon cables can be used with any equivalent IDC male header or 2.54mm male pin headers. Many compatible 10 pin ribbon cables and connectors are available off-the-shelf.



0.05" Pitch Thru-Hole Female Socket Header

Adafruit / 5327 [**Digikey**]

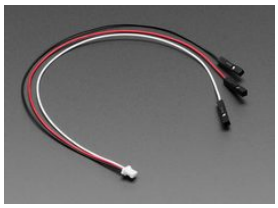


10-pin 2x5 Socket-Socket 1.27mm IDC, Cable

Adafruit / 1675 [**Mouser**]

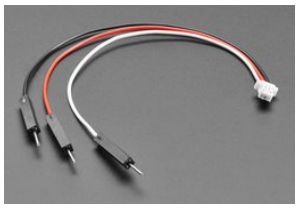
9.2.2 3-pin UART Port

The 3-pin UART port is commonly used within the Raspberry Pi ecosystem and is implemented with a JST SH 1.0mm pitch 3-pin socket. Several off-the-shelf harnesses are available:



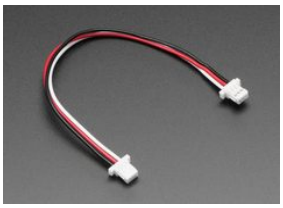
JST SH Compatible 1mm Pitch 3 Pin to Premium Socket Cable

Adafruit / 6376 [**Mouser**]



JST SH Compatible 1mm Pitch 3 Pin to Premium Male Headers Cable

Adafruit / 5755 [**Mouser**]



JST SH Compatible 1mm Pitch 3-pin Plug-Plug Cable

Adafruit/ 6404 [**Mouser**]

9.2.3 6-pin Serial Interface Port

The 6-pin Serial interface port is provided by a 2.54mm pitch 6-position shrouded male header. This header is compatible with standard 2.54mm / 0.1" pitch jumper wires and matches common USB ↔ Serial Adapter cables available on the market. Similar to the programming port, which Atira box content already provides a cable, there are also several ways to build a connector.



Premium Female/Female Jumpers wires

Adafruit / 3955 [**Mouser**]



Small Alligator Clips to Female Jumper wires

Adafruit / 4304 [**Mouser**]



2.54mm 6-pin socket-socket cable

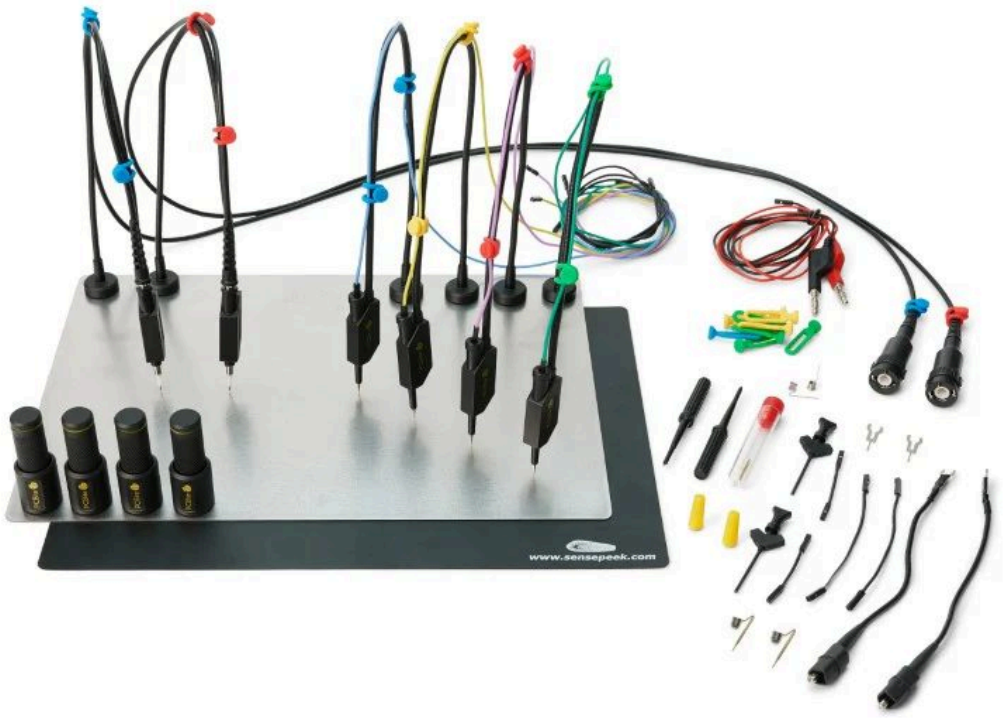
Adafruit / 206 [**Mouser**]

10 Available Accessories

The Atira comes with everything needed to get up and running. In an effort to further enhance the productivity of our customers, we offer a number of accessories to aid in the R&D process, which are briefly presented below for consideration. For additional details on these items, please visit our website to learn more.

10.1 Hands-Free Probe Kits

Binho has partnered with the experts at Sensepeek, makers of the popular PCBite line of hands-free probes in order to offer our customers the ultimate debugging experience that is perfect for usage with digital protocols. Binho is an authorized distributor for the full lineup of Sensepeek products.



10.2 Demonstration & Accessory Boards

The Binho engineering team is hard at work developing and curating a selection of demonstration and accessory boards for use with Atira. This section of the datasheet will be updated to include the details of the recommended accessories in the future.

11 Appendices

The content in the following section is meant to provide helpful contextual information and additional resources applicable to users of Atira.

12 Revision Log

REV	DESCRIPTION OF CHANGES	DATE
1.0	Initial Draft	8/12/26
1.1	Additional data and details Formatting improvements	9/25/26