

BASpi-IO

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BACnet® Sedona IO board for Raspberry Pi

The BASpi I/O board is a 12-point BAS expansion board for Raspberry Pi 3. The I/O board, plus the firmware files provided by Contemporary Controls turn your Raspberry Pi into a BACnet-networked, Sedona-programmable controller with 6 Universal Inputs and 6 Relay Outputs. All 12 physical I/O points in addition to 24 Virtual Points are served up over BACnet/IP using Ethernet or Wi-Fi. BASpi is web page configurable over Ethernet or Wi-Fi connections. BASpi I/O board is compatible with Raspberry Pi 3 and requires a Raspbian with Desktop installation, as well as firmware files provided by Contemporary Controls. The firmware will only function with the BASpi-IO board installed. There are two installation options for the BASpi I/O board firmware (see *Software Installation Guide* on www.baspi.io for full details).

A. The entire pre-configured Raspbian image (latest Raspbian with Desktop + BASpi firmware files) provided by Contemporary Controls as a download. All you would need to do is download it from www.baspi.io, write it to an 8GB or larger SD card, mount it on your Raspberry Pi, and power it up to take control.

B. The BASpi firmware files alone can be copied from USB (in case of no Internet connection) and installed onto your existing Raspbian operating system.

Hardware Installation Guide

Electrical

INPUT	DC
Voltage:	5 V
Power:	10W max

Environmental

Operating temperature:	0°C to 60°C
Storage temperature:	-40°C to +85°C
Relative humidity:	10–95%, non-condensing

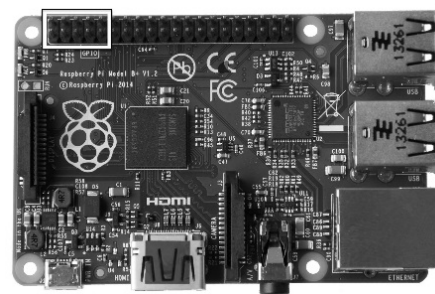
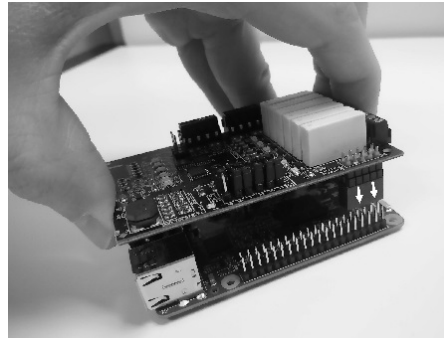
Functional

Protocols supported	Ethernet / Wi-Fi BACnet/IP, Sedona SOX, HTTP
Data Rate	10/100Mbps (Raspberry Pi 3)



Installation

1. Power OFF your Raspberry Pi.
2. Mount the BASpi-IO hat on GPIO pins 1-10 on your Raspberry Pi as shown in the images here.
3. You will need an 8GB or larger micro SD card and a micro SD card to USB adapter.
4. Go to www.baspi.io to download BASpi image or firmware files alone and follow the *Software Installation Guide* there.

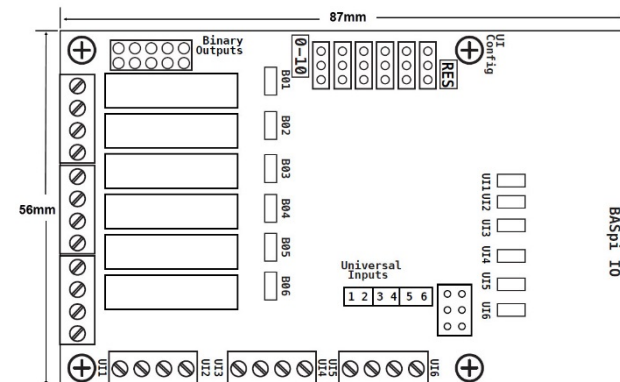


Mechanical Specifications

The BASpi IO board is 56mm x 87mm and has 4x M2.5 screw holes. Depending on the Raspberry Pi case you use, the BASpi IO board can be mounted by inserting its 10-pin header to the Raspberry Pi GPIO pins and left to rest on top.

For cases which support M2.5 standoffs, the M2.5 holes (mechanical drawing below) on the BASpi board can be utilized to secure the board down to the Raspberry Pi using M2.5 screws. The typical screw size range is M2.5 x 4mm or M2.5 x 5mm. The standoff length depends on the case being used.

Typical standoff lengths vary between M2.5 x 7mm and M2.5 x 17mm, depending on the length of space available between the Raspberry Pi board and the BASpi IO board.



Configuring the Universal Inputs

The BASpi is web page configurable over wired Ethernet IP connection, or wirelessly over Wi-Fi. The web page allows for easy configuration, live monitoring, and forcing of physical points, virtual points, and web components. All points are accessible from the BASpi web page, BACnet /IP clients, and the Sedona wiresheet.

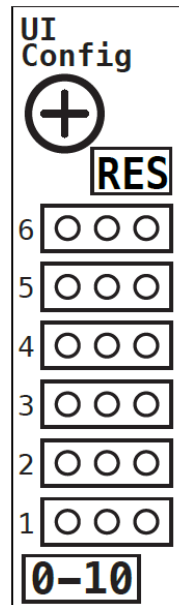
The BASpi universal inputs can be configured for several different channel types. There are two circuits on the 6 Universal Inputs which are jumper-selectable (UI config diagram below). **RES** circuit utilizes a pull-up and the **0-10** does not. Depending on your input type, select pull up or no pull up for each channel by moving the jumpers accordingly.

First configure the jumper on the board:

1. For resistance or thermistor inputs and binary or pulse inputs with pull up, set the config jumper to "RES"

After configuring the jumper, select an appropriate channel type from the web page (see Data Sheet - Web page configuration for more web page detail).

- Therm 10KT2
- Therm 10KT3
- Therm 20K
- Resistance
- Binary Input (with pull up)
- Pulse Input (with pull up)

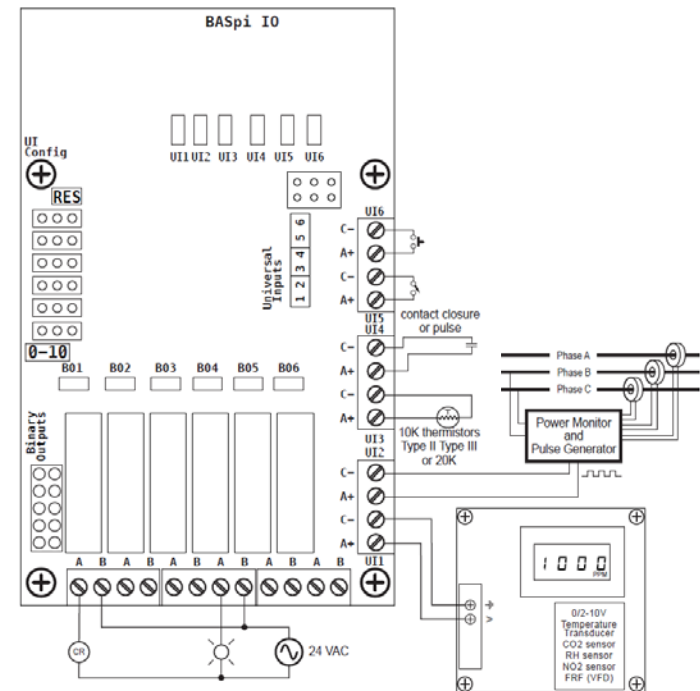


2. For analog, pulse, and binary input (without pull up), set the config jumper to "0-10"

After configuring the jumper, select an appropriate channel type from the web page:

- Analog Input
- Binary Input (no pull up)
- Pulse Input (no pull up)

BASpi-IO Wiring Diagram



Web Configuration

The BASpi contains an interactive web server accessible from any Internet-compatible PC on the local network with recent versions of most standard web browsers such as Microsoft Internet Explorer, Microsoft Edge, Mozilla Firefox, or Google Chrome installed.

To configure the BASpi initially, connect it to your Windows PC using an Ethernet cable and set the PC's IP and subnet mask in Local Area Connection → Properties. In the Internet Protocol Version 4 (TCP/IPv4) settings of your PC, specify an IP address and a Subnet mask in the same subnet as the BASpi (e.g. 192.168.92.5 /24).

BASpi's factory-programmed: Default IP address is **192.168.92.68** and a Class C subnet mask of **255.255.255.0 (/24)** The web server can also be accessed internally from a Raspberry Pi web browser at 127.0.0.1 (local address).

User Name: **admin** Password is: **admin**

Reset IP address and login credentials: In the case that you cannot login to your BASpi unit, remove power and unmount BASpi IO board from Raspberry Pi. Restore power again and BASpi firmware will not function but it will be accessible at its default IP address and login credentials, so you can set it up again. After setup is complete, power off your Raspberry PI, mount the BASpi hat and apply power. Unit will be accessible at specified address.

