

# **BASpi Quick Start Guide**

Thank you for choosing the Sedona-powered and BACnet networked BASpi I/O board from Contemporary Controls.

You are ready to control without restrictions!

The BASpi I/O board is a 12 point expansion board for Raspberry Pi 3. With the BASpi image, or standalone firmware installed, your Raspberry Pi3 now becomes a Sedona controller with 6 configurable inputs and 6 relay outputs. BACnet/IP Server can interact with BACnet clients and supervisory controllers and a resident Web Server is used for monitoring and configuration over Ethernet or Wi-Fi connections. BASpi is compatible with Raspberry Pi3 boards and requires a Raspbian installation on the Raspberry Pi host as well as additional firmware files provided by Contemporary Controls. BASpi firmware files provide BACnet server functionality, serve up configuration web pages, and run the Sedona Virtual Machine for control applications. The BAScontrol Toolset is offered as free software support.



**#1.** Download and install the free BAScontrol Toolset from www.baspi.io or from the Contemporary Controls website: https://www.ccontrols.com/diy/ to your Windows PC or laptop. This will install the Sedona Application Editor, BASbackup, and BASemulator, and the necessary Sedona component bundle on your PC.



Sedona Application Editor layout:



- #2. When software setup has finished, plug in the micro USB 5VDC power adapter to the Rapberry Pi. Plug in an Ethernet cable for initial setup (Wi-Fi can be configured later). The unit will take about 20 seconds to boot.
- #3. The BASpi can be reached over Ethernet at its default IP address of 192.168.92.68 with a subnet mask of 255.255.255.0

The default web page and Sedona login credentials are: username: **admin** password: **admin**  NOTE: In order for your PC to access this IP address, you have to make sure its LAN card settings are configured for the correct subnet of 192.168.92.x with subnet mask of 255.255.255.0 If you need exact details on how to set up your Ethernet adapter for the required subnet setting, please refer to the BASpi Software Installation Guide

**#4.** Type in the default IP address of 192.168.92.68 into a standard web browser and the BASpi web page will be displayed:



- **#5.** Web page is used to configure channel and device settings:
  - 5a. The BASpi device settings can be configured with the "System Config" button.
  - 5b. The system status of the BASpi can be viewed with "System Status" button.
  - 5c. To set local date and time manually or using an NTP server click "Set Time" button (because the Raspberry Pi has no RTC you may want to use NTP)
  - 5d. To monitor, force, or configure Virtual Points, click the "Virtual Points" button.
  - 5e. To monitor, force, or configure Web Components, click the "Web Components" button.

- #6. In order to write or view Sedona control applications, you will use Sedona Application Editor (SAE).
  - 6a. Launch SAE program and the click the "Open Connection" button
  - 6b. Type the BASpi's IP address in the "Host" field. Default address is 192.16.92.68, if you changed it enter the new address.
  - 6c. Fill in the default credentials for Username = admin and Password = admin and click "OK" to connect.
  - 6d. Open the "Sheets" folder and you can start writing your wiresheet logic.
  - 6e. To store Sedona apps to you PC, use the "Save to PC" button at the top toolbar.
  - 6f. To load Sedona apps from you PC, use the "Load from PC" button at the top toolbar.





Virtual Points allow you to read/write Sedona logic data from a BACnet client. These points are served up over BACnet. You may use a tool such as the free BDT (BACnet Discovery Tool) from Contemporary Controls to discover, read and write points on the BASpi. BDT is available for free here:

<u>https://www.ccontrols.com/sd/bdt.htm</u>. The BASpi can also interact with any BACnet compliant supervisory controller/station. The Virtual points web page is accessible from the main page by clicking the "Virtual Points" button. 6g. To view the status of Virtual Points locally, you may observe the Virtual Points web page and click the Auto Refresh button to the "ON" state. This will update the status of the points in real time. The second method of reading/writing Virtual Points is over BACnet using a BACnet client tool (free BDT) or supervisory controller.



Web Components allow you to read/write Sedona logic data from the BASpi web page. These points are served up to the BASpi's web page.

The Web Components web page is accessible from the main page by clicking the "Web Components" button.

6h. To view the status of Web Components, you may observe the Web Components web page and click the Auto Refresh button to the "ON" state. This will update the status of the points in real time. This concept is very similar to a simple web page dashboard for monitoring and control of points on the BASpi's wiresheet.

<prev< th=""><th></th><th></th><th></th><th></th><th>N</th></prev<>					N
	Description	Value	Wire Sheet	Min	Max
WC01	Default Web Component 1	1.000000	Output		
WC02	Default Web Component 2	0.000000	Input	0.000000	100.0000
WC03	Default Web Component 3	0.000000	Input	0.000000	100.0000
WC04	Default Web Component 4	0.000000	Input	0.000000	100.0000
WC05	Default Web Component 5	0.000000	Input	0.000000	100.0000
WC06	Default Web Component 6	0.000000	Input	0.000000	100.0000
WC07	Default Web Component 7	0.000000	Input	0.000000	100.0000
WC08	Default Web Component 8	0.000000	Input	0.000000	100.0000

#7. BASemulator Operation

BASemulator allows you to emulate the entire BASpi platform on your PC. This can be useful in many different ways. The emulator can be used to pre-configure the device and write its Sedona wiresheet program prior to deploying it or when there is no access to the real BASpi. It can be used for practice and development of wiresheet applications.

- 7a. To start software emulation of the BASpi platform, launch the BASemulator and choose BASpi as platform from the drop-down selection. By default, the emulator is set to run on localhost 127.0.0.1:5001. It is not required, but if you want, you could specify the Interface IP and Web Server Port to run the emulator on.
- 7b. To launch the software emulation, click the "Start Emulator" button which will start the emulated Sedona Virtual Machine, BACnet Server, and Web Server on your PC. c. The "Start Emulator" button will change state



7c. The "Start Emulator" button will change state to "Emulator Running" to indicate the emulator is launched. In addition, an "Emulated BASpi" web page will be open in your default web browser. This page can be used to configure the device settings and channels. The emulator always runs on the specified "Interface IP", "Netmask", and "Web Server Port" parameters in the BASemulator GUI. This means that the "System Configuration" settings on the Emulated BASpi web page are only used for setting the configuration of the real BASpi device which these settings will be uploaded to later (using BASbackup - project backup and restore utility).

Universal Inputs

UI4

UI5

UI6

Universal Input 1

0.000

Universal Input 2

0.000

Universal Input 3

0.000

UI1

UI2

UI3



# Emulated BASpi

		mulate			
System Config	System Status	Set Time	Virtual Points	Web Components	Restart Controller
		Auto Refre	esh OFF		

### #8. BASbackup Operation

BASbackup is a project backup and restore utility which allows you to save your projects to a single zip file. A project consists of both the Sedona wiresheet control application running in the platform SVM, and all web page configuration including Channel Configuration, System Configuration, Time, Virtual Points, and Web Components configuration. Backups of the platform should be made frequently, especially once a satisfactory device setup and control application (wiresheet) has been accomplished. Both emulated or real devices can be backed up using BASbackup and the device's IP address. These backups can be restored onto both real or emulated platforms of the same type (ex. BASpi). Backup files can be created for safekeeping of the project, for cloning devices, or transferring emulated platform projects on to real

BASpi device. One of the advantages of having an emulator is that all logic and configuration can be accomplished, backed up to a file and then restored to the real platform when convenient.

Once you have configured your device (emulated or real) and completed the Sedona wiresheet application, you are ready to back it up to a file. You can launch the the BASbackup utility either from the Desktop shortcut or from the *"BASbackup"* button in the emulator. If you want to create a backup from the emulator, the BASemulator must be running in order to be backed up. If you are backing up from a real device, the device must be online. BASbackup has a Unit Status which will indicate device state once the unit's IP address is entered. Emulated devices run on localhost address of 127.0.0.1 and port 5001 by default, unless you specified a different address when you launched the emulator.

- 8a. To create a backup file of your real or emulated device, first choose its IP address. The default BASpi IP address of 192.168.92.68 as well as the default IP address of Emulated BASpi of 127.0.0.1:5001 are stored in the list for your convenience. If you have already assigned a different IP address for your device, type it in the IP address field. A list of the 10 most recently used addresses is maintained in the IP address field.
- 8b. The unit status will change to "ONLINE" if your device is accessible on the network.
- 8c. To create the backup file, either type the desired name into the "Backup/recovery File" field with care to keep the .zip file extension, or slick "Choose File" button, type the file name there, and click "Open".
- 8d. You are ready to backup. Click the "Backup" button, authenticate with username and password (admin/admin), and the process will begin. Once finished the progress line will read "Complete" and your file will be stored in the default location of \Contemporary Controls\ backups unless you specified a different location. This backup file contains all device configuration in addition to the device's Sedona wiresheet application.
- 8e. The restore process allows you to restore a backup file to a real or emulated platform of the same type (ex. BASpi). The concept is similar, first choose the target device which you will be restoring to by typing its IP address or choosing from the list if already used. The device status will change to "ONLINE" if the device is accessible on the network.

Real BASpi backup example:

BAScontrol IP Address		DAC
-0192.168.92.68	▼ Delete IP	BASbacku
Sedona Bundle	Unit Status	
Component_Bundle_BASC_1.1.1		<u>          8b         8c     </u>
Backup/Recovery File		
BASpi-IO_ZoneControlBackup.zip		Choose File 👌
O Backup		Restore
Cot SAV Data	Postart PA Scontrol	Close

## Emulated BASpi backup example:

BASbackup BAScontrol IP Addr	ess	
80 0127.0.0.1:5001 Sedona Bundle	Unit Status	БАЗраскор
Component_Bundle	e_BASC_1.1.1 ONLINE	
BASpi-IO_ZoneCon	trolBackup.zip	Choose File Ó
8d Backup		Restore
Get SAX Da	ata Restart BAScontrol	Close

ASbackup		
BAScontrol IP Address	Delete IP	BASbackup
Sedona Bundle	Unit Status	,
Component_Bundle_BASC_1.1.1	ONLINE	
Backup/Recovery File		
BASpi-IO_ZoneControlBackup.zip		Choose File
Complete		
Backup		Restore
Get SAX Data	Restart BAScontrol	Close

- 8f. Choose the backup file you wish to restore by clicking *"Choose File"* button. Select your desired backup file and click *"Open"*
- 8g. Now you are ready to restore. Click the *"Restore"* button and the *Restore Setup* window will be presented. This gives you a chance to make any changes to the device settings if needed. Look these settings over one last time because these will be the settings your device will use after the required reboot. Once you are sure these are the settings you want, click *"Restore"*, authenticate with username and password (admin/admin) and the process will begin.
- 8h. When the process has completed, you will be prompted to restart the device. Changes will take effect after the reboot.

NOTE: Backup and restore operations can be done between real or emulated devices as long as they are of the same platform type (ex. BASpi).

102 150 02 50	Configuration values in the text haves will contact
192.100.92.00	values in the Main Configuration file when a
Netmask	recovery operation is performed.
255.255.255.0	The recovery process generates new files to be
C-t	uploaded to the controller. If you want to save a
102 168 02 1	backup of the recovery data, choose a file; when
192.108.92.1	the recovery process is complete, a new zip file will be created
DNS1	
8.8.8.8	
DNS2	
8.8.4.4	
PACast Daviss Instance	
2749	
BACnet Device Name	10
BAScontrol System	
Recovery File Name	
	Choose File
Restore Options	
✓ Wire Sheet	
Main Configuration	
Web Component Configuration	
Restore C	Close

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