



BAScontrol22C – 22-point BACnet/IP Client Sedona Unitary Controller

Most BACnet devices are BACnet servers which do not initiate requests to other devices other than an initial “I-Am” request when first joining the network. BACnet client devices do initiate requests and expect BACnet servers to respond to requests and data is exchanged. The BAScontrol22C is a BACnet/IP server and also provides BACnet/IP client capability which allows the user to read and/or write points served up by devices on the BACnet internetwork. The BAScontrol22C is a 22-point unitary controller which supports BACnet/IP and Sedona Framework using a 2-port Ethernet switch connection. The controller complies with the B-ASC device profile having a convenient mix of 8 universal inputs, 4 binary inputs, 4 analog outputs and 6 relay outputs. Unique to the unit are 48 web components which link Sedona wire sheet readable/writeable data to web pages, and 24

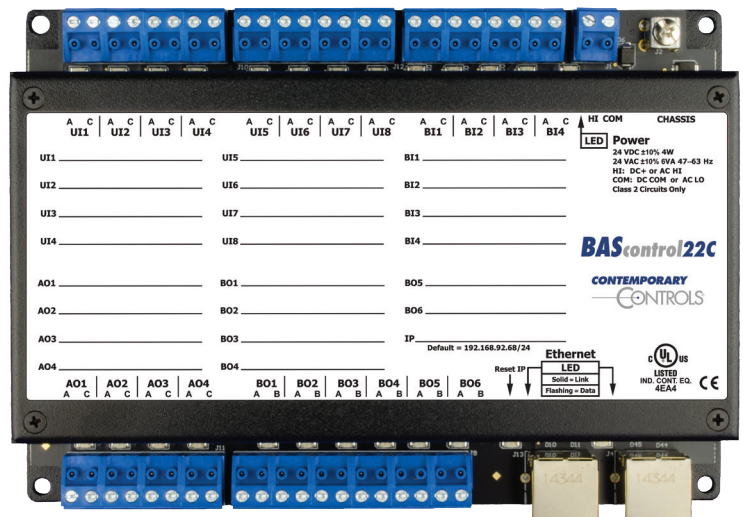
virtual points which link Sedona wire sheet readable/writeable data to a BACnet client. The device is fully web page-configurable, and freely programmable using Sedona’s drag-and-drop programming methodology of assembling components onto a wire sheet to create applications. The unit can be programmed using Niagara Workbench AX or a third-party Sedona programming tool such as Sedona Application Editor (SAE). Rugged design, low profile, and wide temperature operation make it suitable for indoor or outdoor use. To download the free Sedona Application Editor, visit: www.ccontrols.com/sae. For more information about Sedona, SAE, kits, components and programming download the Sedona Reference Manual at: www.ccontrols.com/sedona

Versatile Control Device — unitary controller or remote Ethernet I/O

- BACnet/IP compliant with a B-ASC device profile
- Resident BACnet Client can read/write BACnet objects from other BACnet devices on the network
- Resident Sedona Virtual Machine (SVM)
- Programmable via Workbench AX or Sedona Editor
- Configurable with a common web browser
- Direct connection to Ethernet network
- NTP or manually-settable real-time clock
- COV subscriptions – 14 binary and 2 analog
- Outdoor temperature operation -40°C to +75°C

Flexible Input/Output — 22-points of physical I/O

- Eight configurable universal inputs:
 - Thermistor, resistance, analog voltage, binary input, pulse inputs (4 max)
- Four contact closure inputs
- Four analog voltage outputs
- Six relay outputs



BASC-22CR has six relay outputs

BASautomation® Sedona

BAScontrol22C – Overview

The BAScontrol22C utilizes a powerful 32-bit ARM7 processor with 512 kB of flash memory plus a 16 Mbit serial flash file system for storing configuration data and an application program.

The BAScontrol22C is a BACnet/IP server and also provides some BACnet/IP client capability which allows the user to read and/or write points served up by devices on the BACnet internetwork. By operating at the BACnet/IP level, the BAScontrol22C can share the same Ethernet network with supervisory controllers and operator workstations. The unit can be configured for a fixed IP address or can operate as a DHCP client receiving its IP address from a DHCP server. A real-time clock with a super-cap backup allows for creating local schedules.

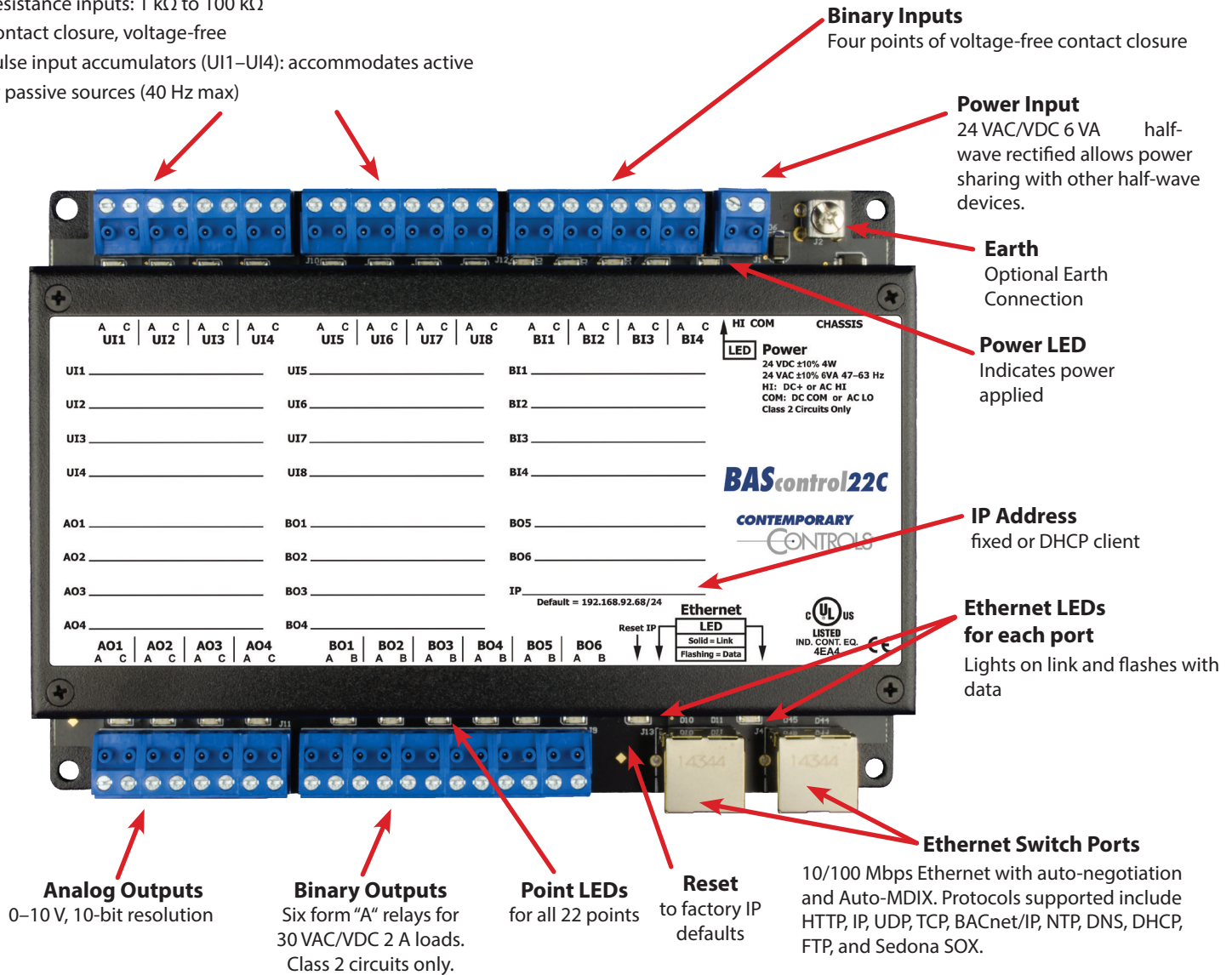
Via a 10/100 Mbps Ethernet switch, the Ethernet port supports protocols such as BACnet/IP, Sedona SOX, HTTP and FTP. Configuration of universal inputs and virtual points can be accomplished using web pages. Type II and type III 10 k Ω thermistor curves and a 20 k Ω thermistor curve are resident in the unit. Current inputs can be measured using external resistors. Contact closures require a voltage-free source. Binary inputs and outputs as well as analog outputs require no configuration. The unit is powered from either a 24VAC/VDC source.

BACnet servers serve up their points to BACnet clients. Writable BACnet server device points can also be written to by BACnet clients. The BAScontrol22C is capable of directly reading from and writing to BACnet/IP devices on the network connected to one of its Ethernet ports by the use of NetV (Network Variable) Sedona components. NetV components allow the BAScontrol22C to read and/or write Analog Input (AI), Binary Input (BI), Analog Value (AV), Binary Value (BV), Analog Output (AO), and Binary Output (BO) BACnet object types in its wire sheet. In addition, with a BACnet router in place (such as BASRT-B or BASRTLX-B), the BAScontrol22C is capable of reading from and/or writing to BACnet MS/TP devices which are being routed to BACnet/IP. The points obtained over the BACnet network can be used in the BAScontrol22C's Sedona wire sheet application logic, become scaled, calculated, and/or converted to different data types, written to other BACnet devices, served up to BACnet supervisory controllers and operator workstations by using Virtual Components, as well as be monitored, displayed, or exposed for configuration on BAScontrol22C's web page by the use of Web Components.

Universal Inputs

Eight input points can be configured — all discoverable as BACnet objects.

- Analog inputs: 0–10 VDC, 12-bit resolution, 0–20 mA (with external resistor)
- Temperature inputs: Type II or Type III 10 kΩ thermistors; 20 kΩ thermistor
- Resistance inputs: 1 kΩ to 100 kΩ
- Contact closure, voltage-free
- Pulse input accumulators (UI1–UI4): accommodates active or passive sources (40 Hz max)



Web Page Configuration – Main Page and System

Access to the web pages is intended for the installer or skilled technicians. In order to access any of the web pages authentication is required. The default IP address is 192.68.92.68 and the default User Name and Password is admin/admin. Once on the main page, the System Configuration button can be clicked.

The main web page provides an overview of all real points plus access to other web pages. To configure a point, click

on the point and a configuration page will appear. To observe the updated data for each point, click Auto Refresh button to ON. Point values can be temporarily forced by checking the box adjacent to the point and entering a value into the point's text box (make sure Auto Refresh button is OFF). The value will remain forced until the box is unchecked or the unit power cycled. Care must be exercised when forcing values into points.

The screenshot displays the main configuration page for BAScontrol22C. It features four columns of points: Universal Inputs (UI1-UI8), Binary Inputs (BI1-BI4), Analog Outputs (AO1-AO4), and Binary Outputs (BO1-BO6). Each point has a text box for its value and a checkbox for forcing it. The page includes navigation buttons for System Config, System Status, Set Time, Virtual Points, Web Components, BACnet Utility, and Restart Controller. An Auto Refresh ON indicator is present at the bottom. Copyright information and a note about the GREEN label are also visible.

The IP settings can be changed to the desired values. Either DHCP or a static IP address can be selected. If a static address is desired, enter the value along with the network mask and gateway address. If domain address is required, enter in the Primary and Secondary DNS addresses.

BACnet device data must be entered when using BACnet. Make sure the Device Instance and Device Object Name are both unique over the complete BACnet Internetwork.

Either BACnet or Sedona protocols or both can be selected.

The screenshot shows two configuration pages. The left page is 'IP Configuration' with fields for IP Mode (Static IP), IP Address (10.0.13.177), Netmask (255.255.240.0), Gateway (10.0.0.1), Primary DNS (8.8.8.8), and Secondary DNS (10.0.0.6). The right page is 'BACnet Device Configuration' with fields for Device Object Name (BAScontrol22C), Device Instance (13177), UDP Port (47808), BBMD IP Address (0.0.0.0), BBMD Reg Time (100), and Time Transmissions (Min) (0). Below these are sections for 'BACnet Client' (Poll Delay, Retry Delay) and 'Enable Protocol' (BACnet/IP, Sedona, FTP). An 'Authentication' section includes User Name (admin) and Password (.....). A 'Configure BACnet Servers' button is also present. A note at the bottom states: 'NOTE: You must click the Submit button to store any changes. Changes will not take effect until the controller has been restarted. You can restart the controller from the main page.'

Web Page Configuration – Channel, Time and Web Components

BAS Channel Configuration

Channel Type U11

Temperature Offset

Temperature Units Out of Bounds Value

BACnet Object Configuration

Object Instance

Object Name

Object Type

Object Description

Units

COV Increment

System Time

Year

Month

Day

Hour

Minute

NTP Configuration

NTP Enabled

NTP Server

Time Zone

NTP Refresh (Days)

NTP Success

DST Configuration

DST Enabled

	DST ON	DST OFF
Month	<input style="width: 50px;" type="text" value="March"/>	<input style="width: 50px;" type="text" value="November"/>
Day of Month	<input style="width: 50px;" type="text" value="2nd SUN"/>	<input style="width: 50px;" type="text" value="1st SUN"/>
Hour	<input style="width: 50px;" type="text" value="2 AM"/>	<input style="width: 50px;" type="text" value="2 AM"/>

The BAS Channel should be configured first. Universal inputs must first be defined which may lead to more requests for information. Once the BAS Channel is configured, the BACnet Object Configuration can be accomplished. Although the BACnet Object Instance is predefined, the Object Name can be entered and Units can be selected with the drop-down. The COV Increment can be specified for those channels intended for COV reporting by the BACnet client device.

Time and date can be set manually or with the help of a NTP server if access to the Internet is possible. Daylight Savings Time can also be supported. Manually-set time is backed up for seven days through the use of a supercap in the event of power loss. If accessing an NTP server using domain names, make sure the DNS servers are specified in the System Configuration screen.

Separate web pages allow for the configuration of up to 48 web components. Web components provide a means to write and read data to and from Sedona wire sheets without the need of a Workbench tool. A web component configured as a wire sheet input can have its input range restricted to minimum and maximum values eliminating the need to add limit detection within the wire sheet logic. Web components are ideal for simplified control logic configuration.

Web Components

	Description	Value	Wire Sheet	Min	Max
WC01	Space Temperature (SpcTmp)	77.272514	Output		
WC02	Default Web Component 2	0.000000	Input	0.000000	100.000000
WC03	Default Web Component 3	0.000000	Input	0.000000	100.000000
WC04	Default Web Component 4	0.000000	Input	0.000000	100.000000
WC05	Default Web Component 5	0.000000	Input	0.000000	100.000000
WC06	Default Web Component 6	0.000000	Input	0.000000	100.000000
WC07	Default Web Component 7	0.000000	Input	0.000000	100.000000
WC08	Default Web Component 8	0.000000	Input	0.000000	100.000000

NOTE: A GREEN label indicates that the component has been placed on the wire sheet.

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DS-BASC22C0-AA0

Virtual Points

Space Temperature Zone 1 VT01 83.187 <input type="checkbox"/>	Occupied State VT09 0.000 <input type="checkbox"/>	Virtual Point 17 VT17 0.000 <input type="checkbox"/>
Cooling Runtime in Hrs VT02 0.000 <input type="checkbox"/>	Virtual Point 10 VT10 0.000 <input type="checkbox"/>	Virtual Point 18 VT18 0.000 <input type="checkbox"/>
Virtual Point 3 VT03 0.000 <input type="checkbox"/>	Virtual Point 11 VT11 0.000 <input type="checkbox"/>	Virtual Point 19 VT19 0.000 <input type="checkbox"/>
Virtual Point 4 VT04 0.000 <input type="checkbox"/>	Virtual Point 12 VT12 0.000 <input type="checkbox"/>	Virtual Point 20 VT20 0.000 <input type="checkbox"/>
Virtual Point 5 VT05 0.000 <input type="checkbox"/>	Virtual Point 13 VT13 0.000 <input type="checkbox"/>	Virtual Point 21 VT21 0.000 <input type="checkbox"/>
Virtual Point 6 VT06 0.000 <input type="checkbox"/>	Virtual Point 14 VT14 0.000 <input type="checkbox"/>	Virtual Point 22 VT22 0.000 <input type="checkbox"/>
Virtual Point 7 VT07 0.000 <input type="checkbox"/>	Virtual Point 15 VT15 0.000 <input type="checkbox"/>	Virtual Point 23 VT23 0.000 <input type="checkbox"/>
Virtual Point 8 VT08 0.000 <input type="checkbox"/>	Virtual Point 16 VT16 0.000 <input type="checkbox"/>	Virtual Point 24 VT24 0.000 <input type="checkbox"/>

Auto Refresh OFF

NOTES:

1. A GREEN label means that the virtual point has been placed on the wire sheet. The label hover text indicates if the point is configured as "Read from Wire Sheet" or "Write to Wire Sheet"
2. Values for virtual points VT01-VT08 are kept in persistent memory and will remain unchanged through resets and power cycles.

The 24 virtual points are viewable from a separate web page.

System Status

Firmware Revision 3.2.8	MAC Address 00:50:DB:01:BA:43	Available Memory 22392
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System Message Log

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BAScontrol22C : 3.2.8 : Sep 13 2018 : 08:51:19
Free memory: 97544
Watchdog timer enabled
Low memory limit= 8192
Creating object name and instance mappings...done
Creating object data...done
Updating forcing data...done
IP Addr: 10.0.13.177
IP Mask: 255.255.240.0
IP Gate: 10.0.0.1
Start Responder...OK
SVM starting; 53992 bytes free
Running SVM in platform mode
Sedona VM 1.2.28
buildDate: Sep 13 2018 08:51:18
endian: little
blockSize: 4
refSize: 4

bacnet-ip : 3.2.8 : Sep 13 2018 : 08:51:15
Network initialized
RTC Time: Wed Apr 10 10:51:25 2019
    
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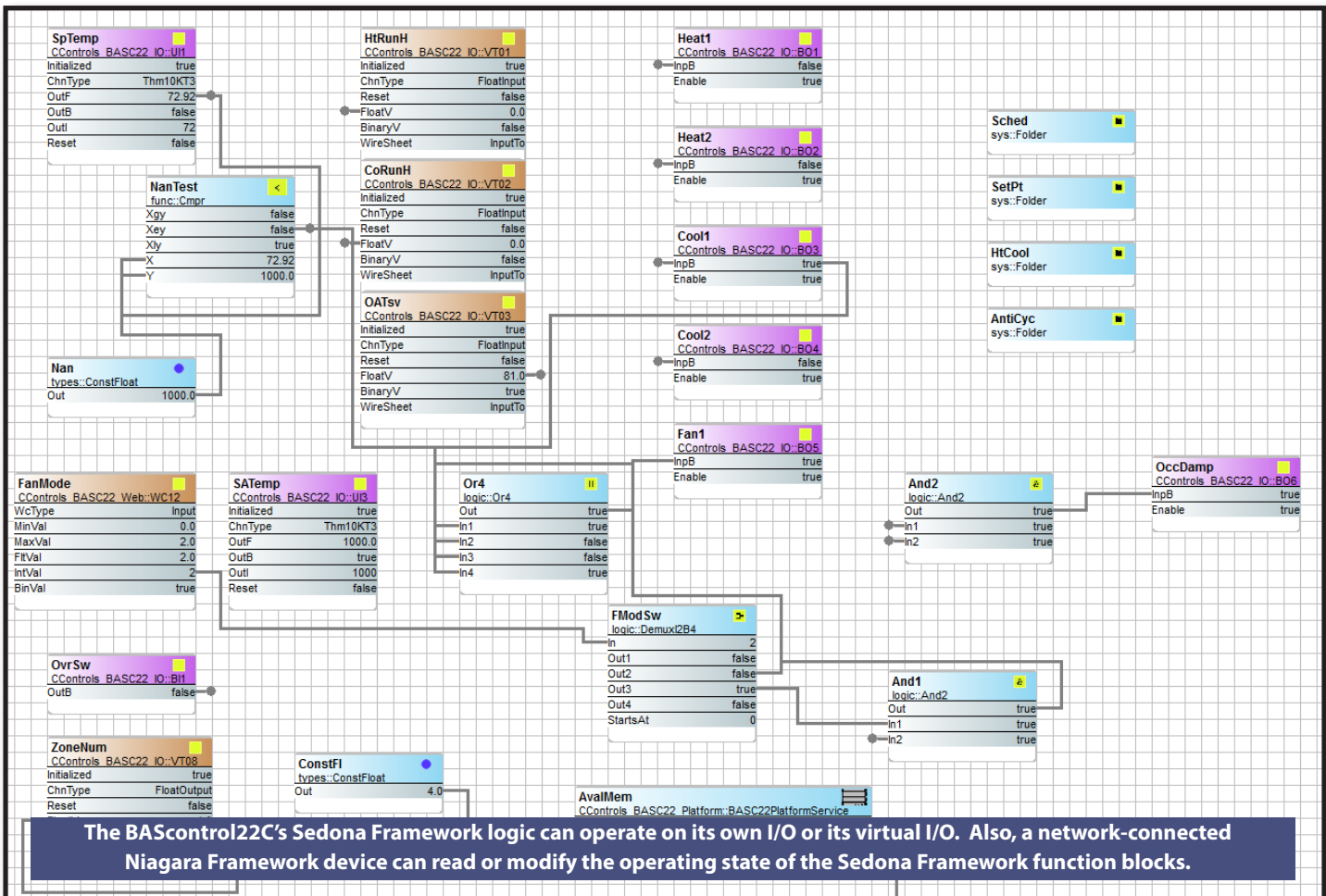
The System Status page provides information on the controller.

Powered by a Sedona Virtual Machine – for Implementing Control

The BAScontrol22C incorporates Sedona Virtual Machine (SVM) technology developed by Tridium. Using established Tridium tools such as Niagara Workbench AX, a system integrator can develop a control application using Workbench’s powerful drag-and-drop visual programming methodology. Once developed, the program remains stored in the BAScontrol22C and executes by way of the SVM. The application can run standalone in the BAScontrol22C or it can interact with a program in a Tridium JACE supervisory controller over Ethernet. The number of potential applications is only limited by the imagination of the system integrator.

The BAScontrol22C includes Tridium’s Sedona 1.2 kits of components — and Contemporary Controls’ product-specific and non-product-specific kits. The BAScontrol22 IO Kit components provide 22 physical points, virtual points and four retentive counters. The BAScontrol22C Web Kit has 48 components that share data with web pages. Input components receive data from hosted web pages. Output components send data to hosted web pages. The Contemporary Controls’ Function kit provides additional components for increased flexibility.

The free Sedona Application Editor, Workbench AX, or a third-party Sedona tool can be used to program Sedona applications running on the BAScontrol 22C.



The BAScontrol22C’s Sedona Framework logic can operate on its own I/O or its virtual I/O. Also, a network-connected Niagara Framework device can read or modify the operating state of the Sedona Framework function blocks.

Contemporary Controls' Developed Sedona Components

<p>BAScontrol22 I/O Kit BAScontrol22 platform specific components</p>	<p>AO1 – AO4 Analog output – analog voltage output point BI1 – BI4 Binary input – binary input point BO1 – BO6 Binary output – binary output point ScanTim Scan time monitor – records the min, max and average scan times UI1 – UI4 Universal input – binary, analog voltage, thermistor, resistance or accumulator UI5 – UI8 Universal input – binary, analog voltage, thermistor or resistance UC1 – UC4 Retentive universal counters – up/down retentive counters VT01 – VT08 Retentive virtual points – share retentive wire sheet data with BACnet/IP clients VT09 – VT24 Virtual points – share wire sheet data with BACnet/IP clients</p>
<p>BAScontrol22 Web Kit BAScontrol22 platform specific components</p>	<p>WC01 – WC48 Web components – share wire sheet data with the BAScontrol22 web pages</p>
<p>Contemporary Controls Function Kit Common to Sedona 1.2 compliant controllers</p>	<p>Cand2 Two-input Boolean product – two-input AND/NAND gate with complementary outputs Cand4 Four-input Boolean product – four-input AND/NAND gate with complementary outputs Cand6 Six-input Boolean product – six-input AND/NAND gate with complementary outputs Cand8 Eight-input Boolean product – eight-input AND/NAND gate with complementary outputs Cmt Comment – comment field up to 64 characters Cor2 Two-input Boolean sum – two-input OR/NOR gate with complementary outputs Cor4 Four-input Boolean sum – four-input OR/NOR gate with complementary outputs Cor6 Six-input Boolean sum – six-input OR/NOR gate with complementary outputs Cor8 Eight-input Boolean sum – eight-input OR/NOR gate with complementary outputs CtoF °C to °F – Celsius to Fahrenheit Temperature Conversion Dff "D" Flip-Flop – D-style Edge-triggered Single-bit Storage FtoC °F to °C – Fahrenheit to Celsius Temperature Conversion HLpre High – Low Preset – defined logical true and false states PsychrE Psychrometric Calculator – English Units PsychrS Psychrometric Calculator – SI Units SCLatch Set/Clear Latch – single-bit level-triggered single-bit data storage</p>
<p>Contemporary Controls Client Kit BAScontrol22C platform specific components</p>	<p>NetV Network Variable — command single BACnet object of type AI, AO, AV, BI, BO, or BV NETVAI4 Network Variable AI4 — initiate read of up to four BACnet objects of type AI NETVAO4 Network Variable AO4 — initiate read or write of up to four BACnet objects of type AO NETVBI4 Network Variable BI4 — initiate read of up to four BACnet objects of type BI NETVBO4 Network Variable BO4 — initiate read or write of up to four BACnet objects of type BO</p>

Tridium’s Sedona 1.2 Components

<p>The HVAC Group operations that facilitate control</p>	<p>LSeq ReheatSeq Reset Tstat</p>	<p>Linear Sequencer — bar graph representation of input value Reheat sequence — linear sequence up to four outputs Reset — output scales an input range between two limits Thermostat — on/off temperature controller</p>
<p>The Scheduling Group scheduling operations based upon time of day</p>	<p>DailySc DailyS1 DateTime</p>	<p>Daily Schedule Boolean — two-period Boolean scheduler Daily Schedule Float — two-period float scheduler Time of Day — time, day, month, year</p>
<p>The Function Group convenient functions for developing control schemes</p>	<p>Cmpr Count Freq Hysteresis IRamp Limiter Linearize LP Ramp SRLatch TickTock UpDn</p>	<p>Comparison math — comparison (<=>) of two floats Integer counter — up/down counter with integer output Pulse frequency — calculates the input pulse frequency Hysteresis — setting on/off trip points to an input variable IRamp — generates a repeating triangular wave with an integer output Limiter — Restricts output within upper and lower bounds Linearize — piecewise linearization of a float LP — proportional, integral, derivative (PID) loop controller Ramp — generates a repeating triangular or sawtooth wave with a float output Set/Reset Latch — single-bit data storage Ticking clock — an astable oscillator used as a time base Float counter — up/down counter with float output</p>
<p>The Priority Group prioritizing actions of Boolean, Float and Integer variables</p>	<p>PrioritizedBool PrioritizedFloat PrioritizedInt</p>	<p>Prioritized boolean output — highest of sixteen inputs Prioritized float output — highest of sixteen inputs Prioritized integer output — highest of sixteen inputs</p>
<p>The Types Group variable types and conversion between types</p>	<p>B2F ConstBool ConstFloat ConstInt F2B F2I I2F L2F WriteBool WriteFloat WriteInt</p>	<p>Binary to float encoder — 16-bit binary to float conversion Boolean constant — a predefined Boolean value Float constant — a predefined float variable Integer constant — a predefined integer variable Float to binary decoder — float to 16-bit binary conversion Float to integer — float to integer conversion Integer to float — integer to float conversion Long to float — long integer to float conversion Write Boolean — setting a writable Boolean value Write Float — setting a writable float value Write integer — setting an integer value</p>
<p>The Logic Group logical operations using Boolean variables</p>	<p>ADemux2 And2 And4 ASW ASW4 B2P BSW DemuxI2B4 ISW Not Or2 Or4 Xor</p>	<p>Analog Demux — Single-input, two-output analog de-multiplexer Two-input Boolean product — two-input AND gate Four-input Boolean product — four-input AND gate Analog switch — selection between two float variables Analog switch — selection between four floats Binary to pulse — simple mono-stable oscillator (single-shot) Boolean switch — selection between two Boolean variables Four-output Demux — integer to Boolean de-multiplexer Integer switch — selection between two integer variables Not — inverts the state of a Boolean Two-input Boolean sum — two-input OR gate Four-input Boolean sum — four-input OR gate Two-input exclusive Boolean sum — two-input XOR gate</p>
<p>The Timing Group time-based components</p>	<p>DlyOff DlyOn OneShot Timer</p>	<p>Off delay timer — time delay from a “true” to “false” transition of the input On delay timer — time delay from an “false” to “true” transition of the input Single Shot — provides an adjustable pulse width to an input transition Timer — countdown timer</p>
<p>The Math Group math-based components</p>	<p>Add2 Add4 Avg10 AvgN Div2 FloatOffset Max Min MinMax Mul2 Mul4 Neg Round Sub2 Sub4 TimeAvg</p>	<p>Two-input addition — results in the addition of two floats Four-input addition — results in the addition of four floats Average of 10 — sums the last ten floats while dividing by ten thereby providing a running average Average of N — sums the last N floats while dividing by N thereby providing a running average Divide two — results in the division of two float variables Float offset — float shifted by a fixed amount Maximum selector — selects the greater of two inputs Minimum selector — selects the lesser of two inputs Min/Max detector — records both the maximum and minimum values of a float Multiply two — results in the multiplication of two floats Multiply four — results in the multiplication of four floats Negate — changes the sign of a float Round — rounds a float to the nearest N places Subtract two — results in the subtraction of two floats Subtract four — results in the subtraction of four floats Time average — average value of float over time</p>

BACnet Protocol Implementation Conformance (PIC) Statement



BAScontrol22C BACnet/IP Sedona Field Controller



BACnet Protocol Implementation Conformance Statement (Annex A)

Date: April 11, 2019
Vendor Name: Contemporary Controls
Product Name: BAScontrol22
Product Model Number: BASC-22R
Applications Software Version: 1.2.28 **Firmware Revision:** 3.1.2 **BACnet Protocol Revision:** 3
Product Description: BACnet/IP compliant 22-point field controller or remote I/O that allows a direct connection to Ethernet without the need of a BACnet router.

- BACnet Standardized Device Profile (Annex L):**
- BACnet Operator Workstation (B-OWS)
 - BACnet Building Controller (B-BC)
 - BACnet Advanced Application Controller (B-AAC)
 - BACnet Application Specific Controller (B-ASC)
 - BACnet Smart Sensor (B-SS)
 - BACnet Smart Actuator (B-SA)

- List all BACnet Interoperability Building Block Supported (Annex K):**
- DS-RP-B Data Sharing — ReadProperty – A,B
 - DS-WP-B Data Sharing — WriteProperty – A,B
 - DS-RPM-B Data Sharing — ReadProperty/Multiple – B
 - DS-COV-B Data Sharing — ChangeOfValue – B
 - DM-DDB-B Device Management — Dynamic Device Binding – B
 - DM-DOB-B Device Management — Dynamic Object Binding – B
 - DM-DCC-B Device Management — Device Communication Control – B
 - DM-TS-B Device Management — Time Synchronization – B

- Segmentation Capability:**
- Able to transmit segmented messages Window Size:
 - Able to receive segmented messages Window Size:

Standard Object Types Supported:

Object Type Supported	Can Be Created Dynamically	Can Be Deleted Dynamically
Analog Input	No	No
Analog Output	No	No
Analog Value	No	No
Binary Input	No	No
Binary Output	No	No
Binary Value	No	No
Device	No	No

No optional properties are supported.

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s):
- MS/TP master (Clause 9), baud rate(s):
- MS/TP slave (Clause 9), baud rate(s):
- Point-To-Point, EIA 232 (Clause 10), baud rate(s):
- Point-To-Point, modem, (Clause 10), baud rate(s):
- LonTalk, (Clause 11), medium:
- Other:

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) Yes No

Networking Options:

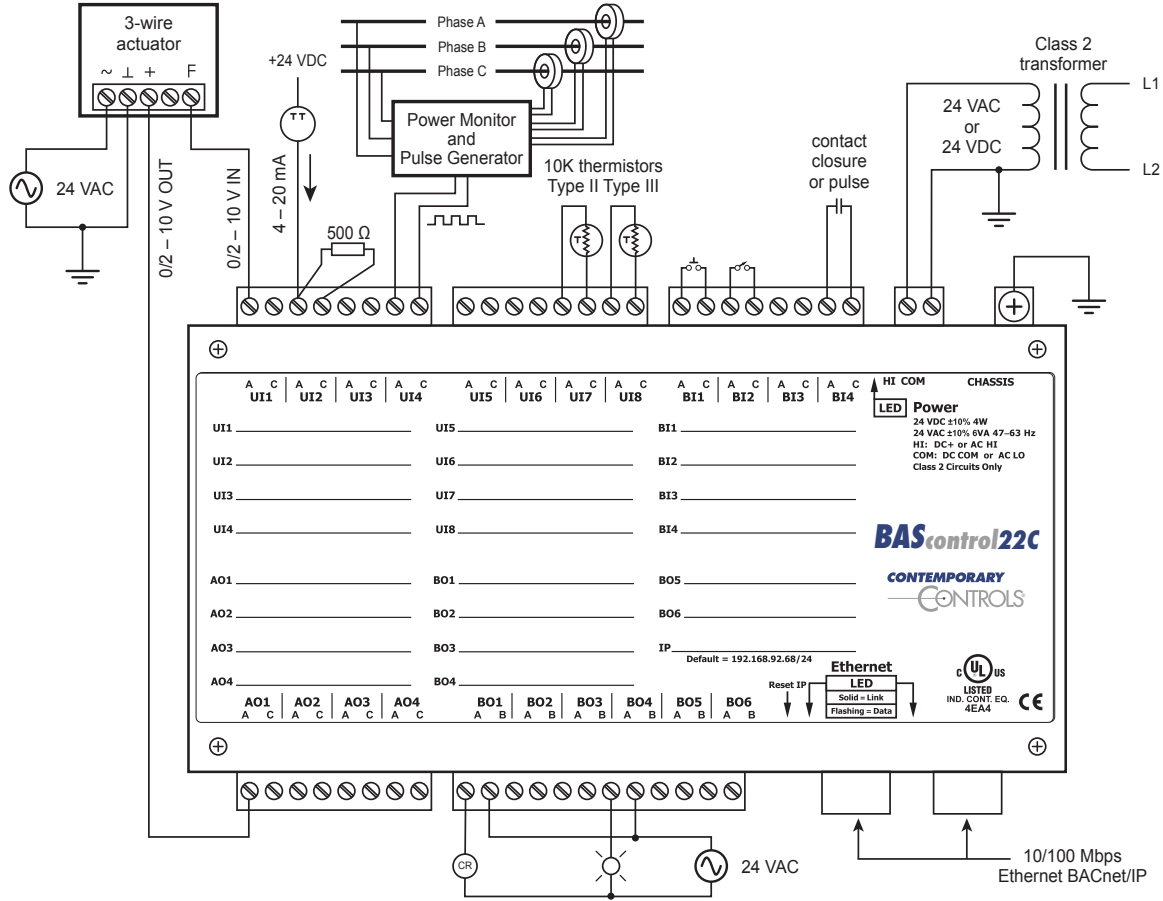
- Router, Clause 6 – List all routing configurations, e.g., ARCNET-Ethernet-MS/TP, etc.
- Annex H, BACnet Tunnelling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
- Does the BBMD support registrations by Foreign Devices? Yes No

Character Sets Supported:

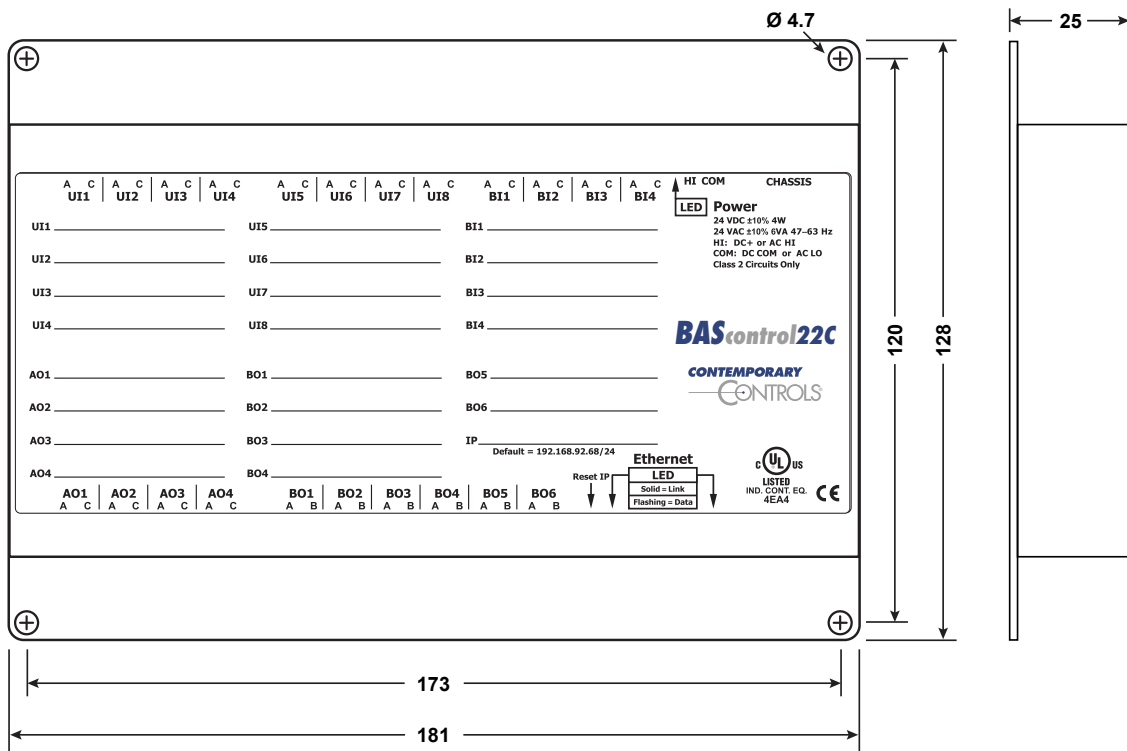
- Indicating support for multiple character sets does not imply that they can all be supported simultaneously.
- ANSI X3.4
 - IBM™/Microsoft™ DBCS
 - ISO 8859-1
 - ISO 10646 (UCS-2)
 - ISO 10646 (UCS-4)
 - JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/network(s) that the gateway supports:
 No gateway support.

Wiring Diagram



Dimensions (all dimensions are in mm)



Specifications

Universal Inputs (Points UI1 through UI8)

Configured As	Characteristics
Analog input	0–10 VDC or 0–20 mA (with external resistor). Input impedance 1 MΩ on voltage.
Temperature input	Type II 10 kΩ thermistors: –10° to +190 °F (–23.3° to +87.8°C) Type III 10 kΩ thermistors: –15° to +200 °F (–26.1° to +93.3°C) 20 kΩ thermistors: 15° to 215° F (–9° to +101° C)
Contact closure input	Excitation current 0.5 mA. Open circuit voltage 12 VDC. Sensing threshold 3 VDC (low) and 7 VDC (high). Response time 20 ms.
Pulse input (Points UI1–UI4)	0–10 VDC for active output devices 0–12 VDC for passive devices (configured for internal pull-up resistor) 40 Hz maximum input frequency with 50% duty cycle. Adjustable high and low thresholds.
Resistance	1 kΩ -100 kΩ range

Binary Inputs (Points BI1 through BI4)

Contact closure	Excitation current 1.2 mA. Open circuit voltage 12 VDC Sensing threshold 3 VDC (low) and 7 VDC (high). Response time 20 ms
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Analog Outputs (Points AO1 through AO4)

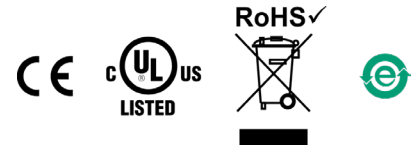
Analog output	0–10 VDC. 10-bit resolution. 4 mA maximum
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Binary Outputs (Points BO1 through BO6) (Class 2 circuits only — requires external power source)

Binary output	Normally open relay contacts. 30VAC/VDC 2A
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Regulatory Compliance

CE Mark; CFR 47, Part 15 Class A; RoHS
UL 508, C22.2 No. 142-M1987



Functional

Compliance	IEEE 802.3
Protocols supported	BACnet/IP, Sedona SOX, HTTP and FTP
Data rate	10 Mbps, 100 Mbps
Physical layer	10BASE-T, 100BASE-TX
Cable length	100 m (max)
Port connector	Shielded RJ-45
LED	Green = Link established Flash = Link activity

Ethernet

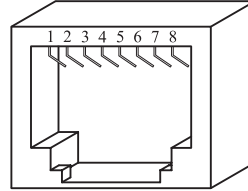
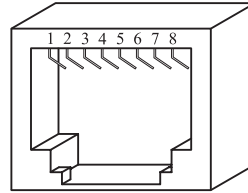
Electrical

<i>Input (DC or AC)</i>	<i>DC</i>	<i>AC</i>
Voltage (V, ± 10%)	24	24
Power	4 W	6 VA
Frequency	N/A	47–63 Hz

Specifications (continued)

Environmental/Mechanical

Operating temperature	-40°C to +75°C
Storage temperature	-40°C to +85°C
Relative humidity	10–95%, noncondensing
Protection	IP30
Weight	0.6 lbs. (.27 kg)



RJ-45 Pin Assignments

10BASE-T/100BASE-TX

Terminal	Usage
1	TD +
2	TD -
3	RD +
6	RD -
Other pins	Not Used

Electromagnetic Compatibility

Standard	Test Method	Description	Test Levels
EN 55024	EN 61000-4-2	Electrostatic Discharge	6 kV contact & 8 kV air
EN 55024	EN 61000-4-3	Radiated Immunity	10 V/m, 80 MHz to 1 GHz
EN 55024	EN 61000-4-4	Fast Transient Burst	1 kV clamp & 2 kV direct
EN 55024	EN 61000-4-5	Voltage Surge	2 kV L-L & 2 kV L-Earth
EN 55024	EN 61000-4-6	Conducted Immunity	10 Volts (rms)
EN 55024	EN 61000-4-11	Voltage Dips & Interruptions	1 Line Cycle, 1 to 5 s @ 100% dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class B
CFR 47, Part 15	ANSI C63-4	Radiated Emissions	Class A

Ordering Information

Model	Description
BASC-22CR	BAScontrol22 BACnet Client/Server 22-Point 6 Relay

United States

Contemporary Control Systems, Inc.
2431 Curtiss Street
Downers Grove, IL 60515 USA

Tel: +1 630 963 7070
Fax: +1 630 963 0109

info@ccontrols.com

China

Contemporary Controls (Suzhou) Co. Ltd
19F, Metropolitan Towers,
No.199 Shishan Road,
Suzhou New District,
215009 China

Tel: +86 512 68095866
Fax: +86 512 68093760

info@ccontrols.com.cn

United Kingdom

Contemporary Controls Ltd
14 Bow Court
Fletchworth Gate
Coventry CV5 6SP
United Kingdom

Tel: +44 (0)24 7641 3786
Fax: +44 (0)24 7641 3923

info@ccontrols.co.uk

Germany

Contemporary Controls GmbH
Fuggerstraße 1 B
04158 Leipzig
Germany

Tel: +49 341 520359 0
Fax: +49 341 520359 16

info@ccontrols.de

www.ccontrols.com