

# data SHEET



## **BAScontrol20 — 20-point BACnet/IP Sedona Field Controller 3.1**

The BAScontrol20 is a 20-point Sedona field controller with a direct connection to an Ethernet network. Ideally suited for structured wiring systems, the BAScontrol20 is BACnet/IP compliant with a B-ASC device profile. Having a resident Sedona Virtual Machine (SVM), the unit is freely programmable using Niagara Workbench or a third party tool.

For remote Ethernet I/O applications, the unit can be configured via web pages.

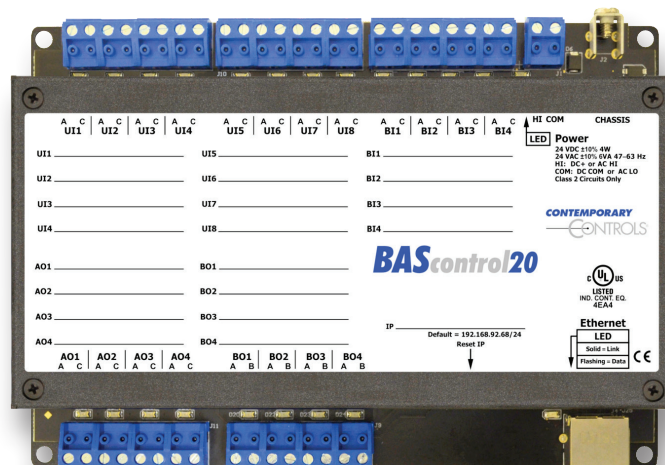
The BAScontrol20 provides a convenient mix of universal inputs, binary inputs and outputs as well as analog outputs. Models exist for both triac and relay outputs. The unit is ideal for unitary control or for expanding I/O points in the field via an Ethernet connection. With version 3.1 the BAScontrol20 has improved functionality and performance.

### **Versatile Control Device** — field controller or remote Ethernet I/O

- BACnet/IP compliant
- B-ASC device profile
- Configurable by Workbench, third-party Sedona tool or web browser
- Direct connection to an Ethernet network
- Powered by a Sedona Virtual Machine

### **Flexible Input/Output** — 20-points of I/O

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



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## BAScontrol20 — Overview

The BAScontrol20 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.

By operating at the BACnet/IP level, the BAScontrol20 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.

A 10/100 Mbps 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 thermistors curves 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.

### Universal Inputs

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

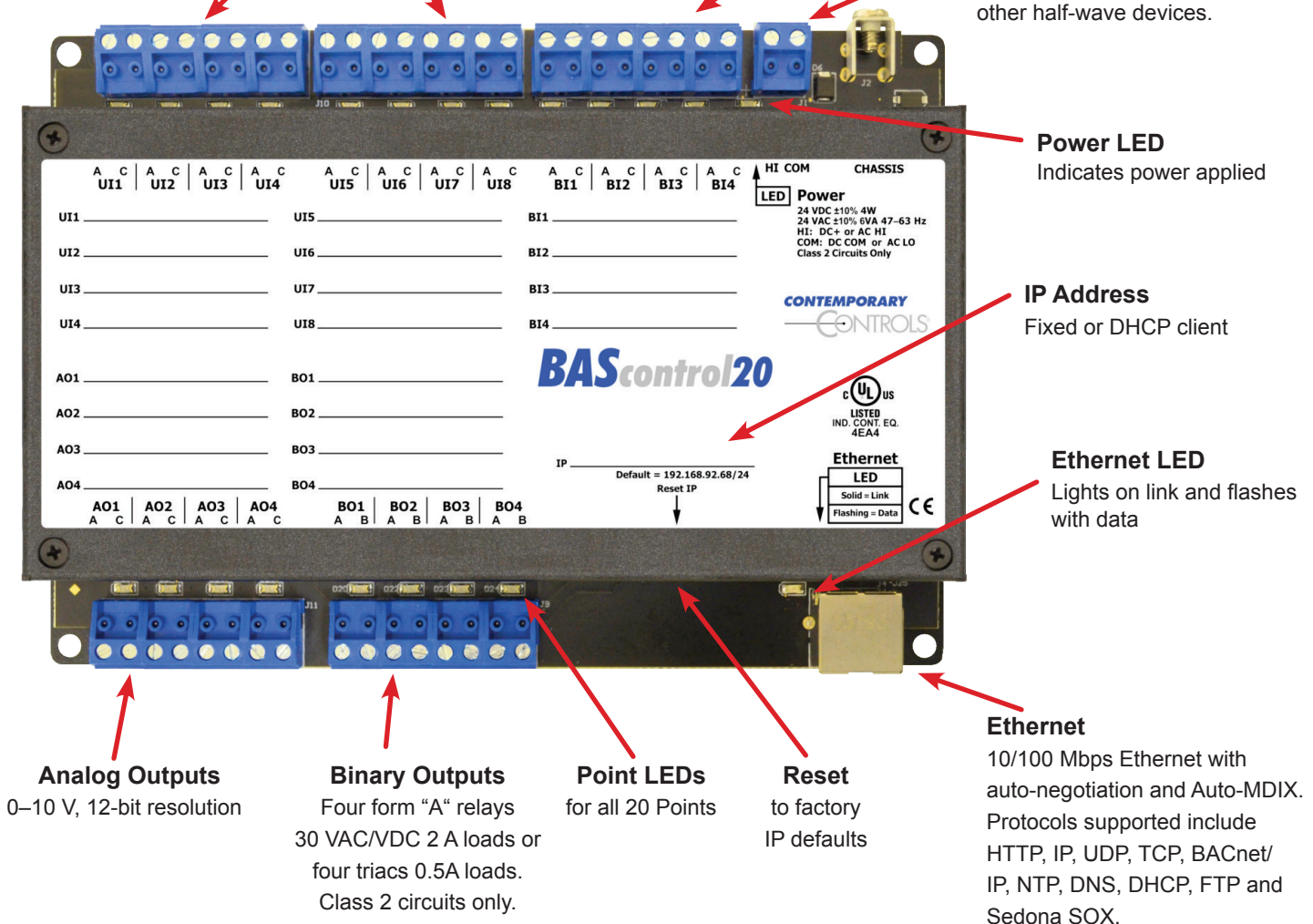
- Analog inputs: 0–10 VDC, 12-bit resolution, 0–20 mA (with external resistor)
- Temperature inputs: Type II or Type III 10 kΩ thermistors; 20 kΩ thermistor
- Resistance inputs: 1 kΩ to 100 kΩ
- Contact closure, voltage-free
- Pulse input accumulators (UI1–UI4): accommodates active or passive sources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

### Binary Inputs

Four points of voltage-free contact closure

### Power Input

24 VAC/VDC 6 VA half-wave rectified allows power sharing with other half-wave devices.



## 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.

Points can be temporary written by entering a value into one of the points. By checking the box adjacent to a point, the value written will be permanent until the box is unchecked. Care must be exercised when forcing values into points. 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 to ON.

The screenshot displays the main configuration page for BAScontrol20. It features four columns of points: Universal Inputs (UI1-UI8), Binary Inputs (BI1-BI4), Analog Outputs (AO1-AO4), and Binary Outputs (BO1-BO4). Each point has a value field and a checkbox. The page includes a navigation bar with buttons for System Configuration, System Status, Set Time, Virtual Points, Web Components, and Restart Controller. An Auto Refresh OFF indicator is present at the bottom. Copyright information for Contemporary Control Systems, Inc. is provided at the bottom of the page.

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 addresses 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 IP Configuration page includes fields for IP Mode (Static IP), IP Address (10.0.0.204), Netmask (255.255.255.0), Gateway (10.0.0.1), Primary DNS (8.8.8.8), and Secondary DNS (8.8.4.4). A note 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." The BACnet Device Configuration page includes fields for Device Object Name (Heat Cool Box), Device Instance (2749204), UDP Port (47808), BBMD IP Address (0.0.0.0), and BBMD Reg Time (100). Under the Enable Protocol section, BACnet and Sedona are checked, while FTP is unchecked. The Authentication section includes fields for User Name (admin) and Password (.....). Buttons for Close and Submit are at the bottom.

## Web Page Configuration — Channel, Time and Web Components

### BAS Channel Configuration

Channel Type:  U11

Temperature Offset:

Temperature Units:  Out of Bounds Value:

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### BACnet Object Configuration

Object Instance:

Object Name:

Object Type:

Object Description:

Units:

COV Increment:

### System Time

Year:

Month:

Day:

Hour:

Minute:

PM:

If enabled, the NTP server will be queried and the time will set at startup, and again after each refresh period.

NTP Success

### NTP Configuration

NTP:

NTP Server:

Time Zone:

NTP Refresh (Days):

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### DST Configuration

Daylight Saving:

	<b>DST ON</b>	<b>DST OFF</b>
Month:	<input type="text" value="March"/>	<input type="text" value="November"/>
Day of Month:	<input type="text" value="2nd SUN"/>	<input type="text" value="1st SUN"/>
Hour:	<input type="text" value="2"/>	<input type="text" value="2"/>

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 super-cap 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

<PREV
NEXT>

	Description	Value	Wire Sheet	Min	Max
WC09	Temporary Occupancy Time (TmpOcc)	<input type="text" value="2.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="12.000000"/>
WC10	Outside Air Heating Lockout (hLock)	<input type="text" value="120.000000"/>	<input type="text" value="Input"/>	<input type="text" value="-15.000000"/>	<input type="text" value="120.000000"/>
WC11	Outside Air Cooling Lockout (cLock)	<input type="text" value="40.000000"/>	<input type="text" value="Input"/>	<input type="text" value="40.000000"/>	<input type="text" value="95.000000"/>
WC12	Fan Mode (0=Auto, 1=On)	<input type="text" value="0.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="1.000000"/>
WC13	Unused	<input type="text" value="0.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>
WC14	Unused	<input type="text" value="0.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>
WC15	Unused	<input type="text" value="0.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="100.000000"/>
WC16	Monday Occupied	<input type="text" value="390.000000"/>	<input type="text" value="Input"/>	<input type="text" value="0.000000"/>	<input type="text" value="1439.000000"/>

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

### Virtual Points

Heating Run Time in Hours VT01 <input type="text" value="132.550"/> <input type="checkbox"/>	Occupied State VT09 <input type="text" value="1"/> <input type="checkbox"/>	Virtual Point 17 VT17 <input type="text" value="0.000"/> <input type="checkbox"/>
Cooling Run Time in Hours VT02 <input type="text" value="0.000"/> <input type="checkbox"/>	Unoccupied Override VT10 <input type="text" value="0"/> <input type="checkbox"/>	Virtual Point 18 VT18 <input type="text" value="0.000"/> <input type="checkbox"/>
Outside Air Temperature Server VT03 <input type="text" value="30.000"/> <input type="checkbox"/>	Thermistor Fault VT11 <input type="text" value="0"/> <input type="checkbox"/>	Virtual Point 19 VT19 <input type="text" value="0.000"/> <input type="checkbox"/>
Outside Humidity Server VT04 <input type="text" value="88.000"/> <input type="checkbox"/>	Head-end Occupy Active VT12 <input type="text" value="1"/> <input type="checkbox"/>	Virtual Point 20 VT20 <input type="text" value="0.000"/> <input type="checkbox"/>
Head-end Occupy Command VT05 <input type="text" value="0"/> <input type="checkbox"/>	Mode Switch VT13 <input type="text" value="1.000"/> <input type="checkbox"/>	Virtual Point 21 VT21 <input type="text" value="0.000"/> <input type="checkbox"/>
Current Heating Set Point VT06 <input type="text" value="74.000"/> <input type="checkbox"/>	Virtual Point 14 VT14 <input type="text" value="0.000"/> <input type="checkbox"/>	Virtual Point 22 VT22 <input type="text" value="0.000"/> <input type="checkbox"/>
Current Cooling Set Point VT07 <input type="text" value="77.000"/> <input type="checkbox"/>	Virtual Point 15 VT15 <input type="text" value="0.000"/> <input type="checkbox"/>	Virtual Point 23 VT23 <input type="text" value="0.000"/> <input type="checkbox"/>
Zone Number VT08 <input type="text" value="10.000"/> <input type="checkbox"/>	Virtual Point 16 VT16 <input type="text" value="0.000"/> <input type="checkbox"/>	Virtual Point 24 VT24 <input type="text" value="0.000"/> <input type="checkbox"/>

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 <input type="text" value="3.1.1"/>	MAC Address <input type="text" value="00:50:DB:00:D2:F2"/>	Available Memory <input type="text" value="13080"/>
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System Message Log

```

INFO: NTP success; setting system time
Restarting VM
Getting new kit data from staged scode file
Verifying that kit versions are correct for platform
Moving kits.scode.stage to kits.scode
kits.scode.stage renamed
Programming new kits.scode...
Kits programming OK
Moving app.sab.stage to app.sab
app.sab.stage renamed
INFO:NTP success at address 192.96.207.244
INFO: NTP success; setting system time
INFO:NTP success at address 216.75.56.132
INFO: NTP success; setting system time
            
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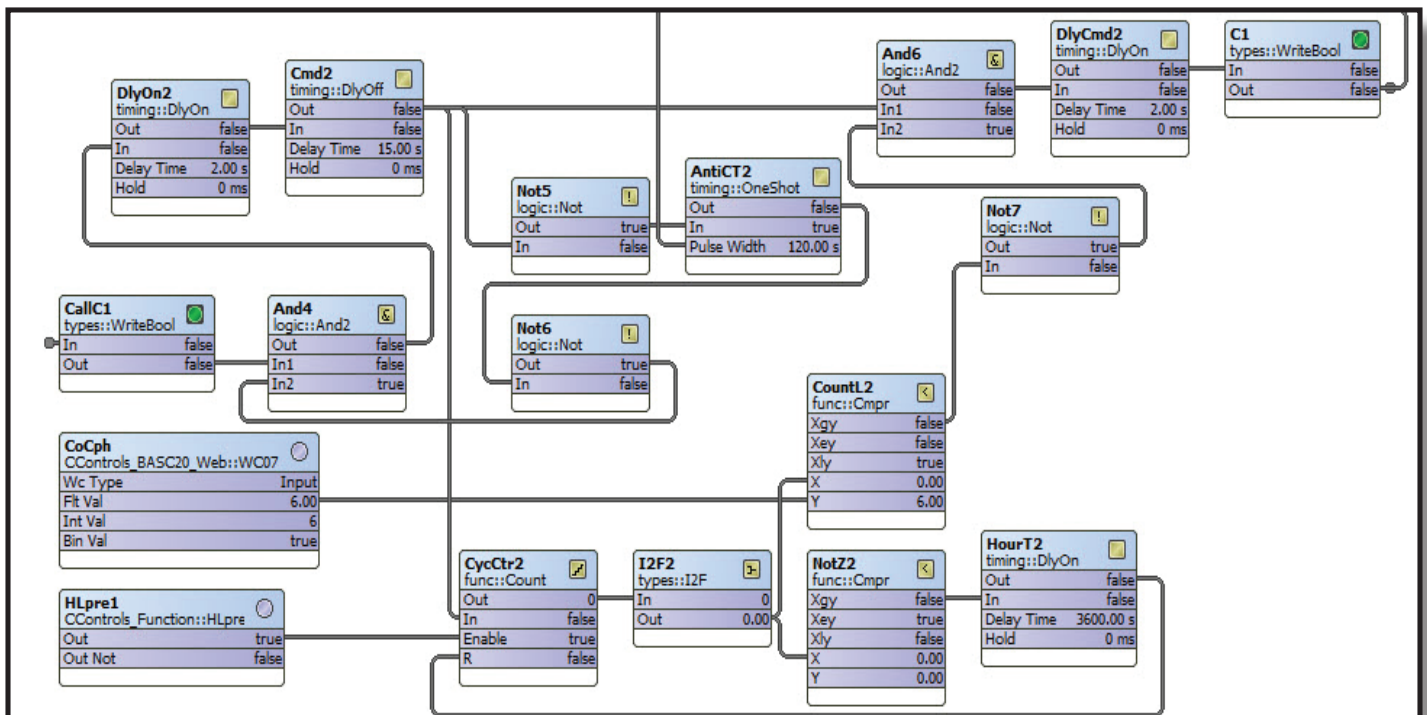
The System Status page provides information on the controller.

## Powered by a Sedona Virtual Machine — for Implementing Control

The BAScontrol20 incorporates Sedona Virtual Machine (SVM) technology developed by Tridium. Using established Tridium tools such as Niagara Workbench, 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 BAScontrol20 and executes by way of the SVM. The application can run standalone in the BAScontrol20 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 systems integrator.

The BAScontrol20 includes Tridium's Sedona 1.2 kits of components — and Contemporary Controls' product-specific and non-product-specific kits. The BAScontrol20 IO Kit components provide 20 physical points, virtual points and four retentive counters. The BAScontrol20 Web Kit has 48 components that share data with webpages. Input components receive data from hosted webpages. Output components send data to hosted webpages. The Contemporary Controls' Function kit provides additional components for increased flexibility.

Tridium's Niagara Workbench or a third-party tool can be used to program a Sedona application running in the BAScontrol20.



The BAScontrol20'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

### BAScontrol20 I/O Kit – BAScontrol20 platform specific components

AO1 – AO4	Analog output – analog voltage output point
BI1 – BI4	Binary input – binary input point
BO1 – BO4	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 – VT24	Retentive virtual Points – share retentive wire sheet data with BACnet/IP clients

### BAScontrol20 Web Kit – BAScontrol20 platform specific components

WC01 – WC48	Web components – share wire sheet data with the BAScontrol20 web pages
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### Contemporary Controls Function Kit – Common to Sedona 1.2 compliant controllers

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

## Tridium's Sedona 1.2 Components

<p><b>The HVAC Group</b> operations that facilitate control</p>	<p><b>LSeq</b> <b>ReheatSeq</b> <b>Reset</b> <b>Tstat</b></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><b>The Scheduling Group</b> scheduling operations based upon time of day</p>	<p><b>DailySc</b> <b>DailyS1</b> <b>DateTime</b></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><b>The Function Group</b> convenient functions for developing control schemes</p>	<p><b>Cmpr</b> <b>Count</b> <b>Freq</b> <b>Hysteresis</b> <b>IRamp</b> <b>Limiter</b> <b>Linearize</b> <b>LP</b> <b>Ramp</b> <b>SRLatch</b> <b>TickTock</b> <b>UpDn</b></p>	<p>Comparison math — comparison (&lt;=&gt;) 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><b>The Priority Group</b> prioritizing actions of Boolean, Float and Integer variables</p>	<p><b>PrioritizedBool</b> <b>PrioritizedFloat</b> <b>PrioritizedInt</b></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><b>The Types Group</b> variable types and conversion between types</p>	<p><b>B2F</b> <b>ConstBool</b> <b>ConstFloat</b> <b>ConstInt</b> <b>F2B</b> <b>F2I</b> <b>I2F</b> <b>L2F</b> <b>WriteBool</b> <b>WriteFloat</b> <b>WriteInt</b></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><b>The Logic Group</b> logical operations using Boolean variables</p>	<p><b>ADemux2</b> <b>And2</b> <b>And4</b> <b>ASW</b> <b>ASW4</b> <b>B2P</b> <b>BSW</b> <b>DemuxI2B4</b> <b>ISW</b> <b>Not</b> <b>Or2</b> <b>Or4</b> <b>Xor</b></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><b>The Timing Group</b> time-based components</p>	<p><b>DlyOff</b> <b>DlyOn</b> <b>OneShot</b> <b>Timer</b></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><b>The Math Group</b> math-based components</p>	<p><b>Add2</b> <b>Add4</b> <b>Avg10</b> <b>AvgN</b> <b>Div2</b> <b>FloatOffset</b> <b>Max</b> <b>Min</b> <b>MinMax</b> <b>Mul2</b> <b>Mul4</b> <b>Neg</b> <b>Round</b> <b>Sub2</b> <b>Sub4</b> <b>TimeAvg</b></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>

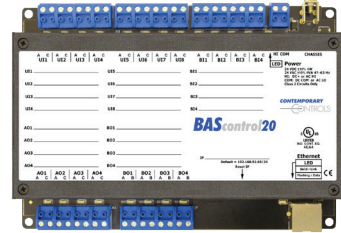


## BACnet Protocol Implementation Conformance (PIC) Statement



### BAScontrol20

20-point BACnet/IP Sedona Field Controller



### BACnet Protocol Implementation Conformance Statement (Annex A)

**Date:** June 1, 2015  
**Vendor Name:** Contemporary Controls  
**Product Name:** BAScontrol20  
**Product Model Number:** BASC-20R and BASC-20T  
**Applications Software Version:** 1.2.28    **Firmware Revision:** 3.1.1    **BACnet Protocol Revision:** 3  
**Product Description:** BACnet/IP compliant 20-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 – B
- DS-WP-B Data Sharing — WriteProperty – B
- DS-RPM-B Data Sharing — ReadPropertyMultiple – 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:**

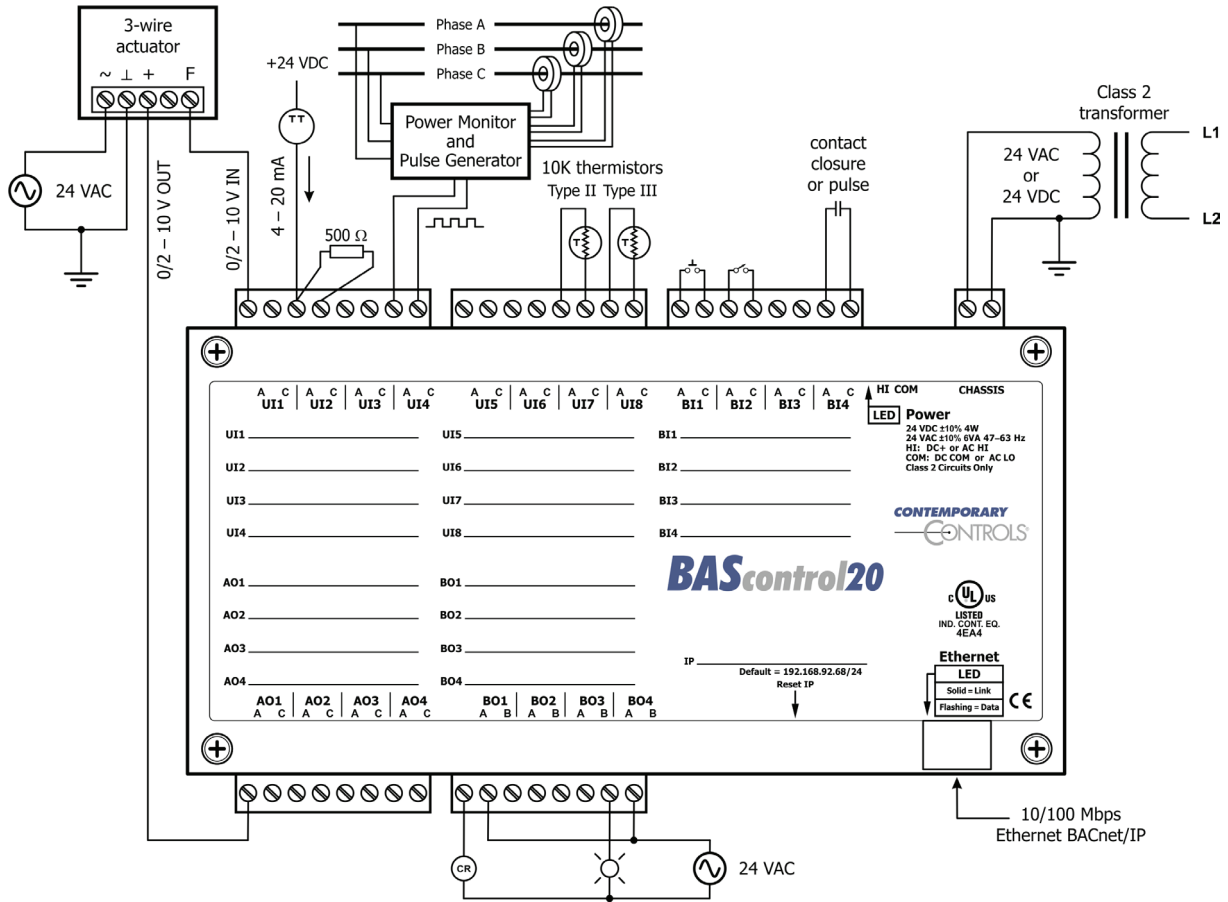
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS C 6226

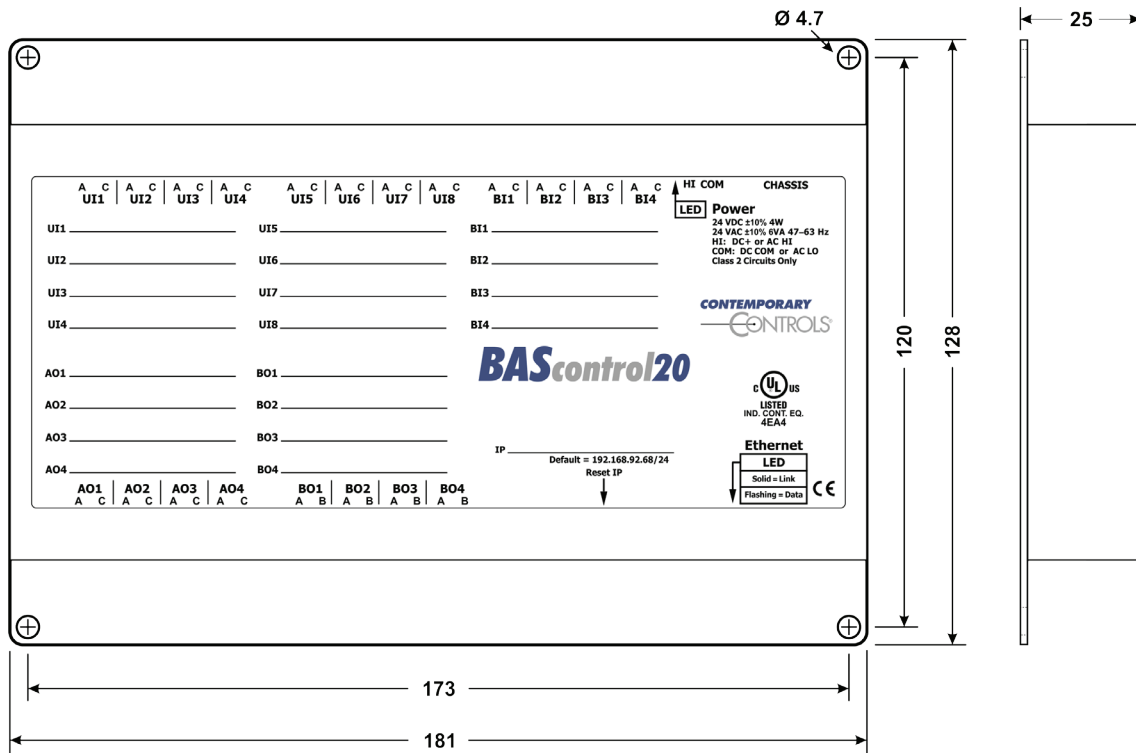
**If this product is a communication gateway, describe the types of non-BACnet equipment/network(s) that the gateway supports:**  
 No gateway support.

# Data Sheet — 20-point BACnet/IP Sedona Field Controller 3.1

## Wiring Diagram



## Dimensions (all dimensions are in mm)



## Specifications

### Universal Inputs (Points UI1 through UI8)

<b>Configured As</b>	<b>Characteristics</b>
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)

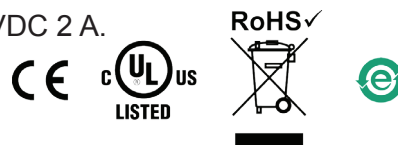
Contact closure	Excitation current 1.2 mA. Open circuit voltage 12 VDC. Sensing threshold 3 VDC (low) and 7 VDC (high). Response time 20 ms.
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### Analog Outputs (Points AO1 through AO4)

Analog output	0–10 VDC. 12-bit resolution. 4 mA maximum.
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### Binary Outputs (Points BO1 through BO4) (Class 2 circuits only — requires external power source)

Model BASC-20R	Normally open relay contacts. 30 VAC/VDC 2 A.
Model BASC-20T	Isolated triacs. 30 VAC 0.5 A.



### 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
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

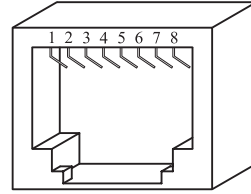
### Electrical

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

## Specifications (continued)

### Environmental/Mechanical

Operating temperature	0°C to 60°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-20R	BAScontrol with 20 I/O points, includes 4 relay outputs
BASC-20T	BAScontrol with 20 I/O points, includes 4 triac outputs

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