The BAScontrol22S is a 22-point unitary controller that supports both BACnet/IP and Sedona Framework (SOX) protocols via an Ethernet connection. BACnet MS/TP is supported via a resident EIA-485 port. The controller complies with the B-ASC device profile having a convenient mix of eight universal inputs, four binary inputs, four analog outputs and six relay outputs. The device is freely-programmable controller executing Sedona’s drag-and-drop methodology of assembling components onto a wire sheet to create applications. It can be programmed using Niagara Workbench or a third-party Sedona programming tool such as Sedona Application Editor.

BACnet and device configuration is accomplished via a common web browser. Optionally, the unit can function as BACnet/IP and BACnet MS/TP remote I/O. Built on the Sedona Framework™, Contemporary Controls has developed more than 100 custom Sedona components which complement the Tridium developed Sedona 1.2 components. Unique to the unit are 48 web components that link wire sheet data to web pages, and 24 virtual points that link wire sheet data and make it available to BACnet clients.

Based on the BAScontrol20 3.2, the BAScontrol22S has all the features of the former, along with two more relay outputs and a built-in EIA-485 port for integration into BACnet MS/TP networks.
BAScontrol22S — Overview

The BAScontrol22S 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.

When operating at the BACnet/IP level, the BAScontrol22S can share the same Ethernet network with supervisory controllers and operator workstations. Its EIA-485 port allows for integration into BACnet MS/TP networks. 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.

Its 10/100 Mbps Ethernet port supports protocols such as BACnet/IP, Sedona SOX, HTTP and FTP. BACnet MS/TP is supported via a resident EIA-485 port.

Configuration of universal inputs and virtual points is accomplished via web pages. Type II and type III 10kΩ thermistor curves and 20kΩ thermistor 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 24VAC/VDC source.

Universal Inputs
Eight input points can be configured — all of the controllers are 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. Discoverable as BACnet objects

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

IP Address
Fixed or DHCP client

TCP/IP LEDs
TX lights on link
Rx lights on receive

Ethernet Port
10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX. Protocols supported include HTTP, IP, UDP, TCP, BACnet/IP, NTP, DNS, DHCP, FTP, and Sedona SOX.

Analog Outputs
0–10 V, 12-bit resolution. Discoverable as BACnet objects

Binary Outputs
Six form “A” relays for 30 VAC/VDC 2 A loads. Class 2 circuits only. Discoverable as BACnet objects

Point LEDs
for all 22 points

Reset
to factory IP defaults

EIA-485 Bias and Termination Jumpers
B Install jumper to apply pull-up bias.
T Install jumper to terminate bus.

EIA-485 Port
Protocol Supported
BACnet MS/TP 9600, 19200, 38400, 76800 bps

Power LED
Indicates power applied

Universal Inputs
Eight input points can be configured — all of the controllers are 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 system integrator or other skilled technicians. To access any of the web pages, authentication is required. The default IP address is 192.168.92.68 with subnet mask of 255.255.255.0 and the default User Name and Password values are both `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 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 entire BACnet internetwork.

MS/TP must be configured when integrating into BACnet MS/TP networks. MS/TP MAC address must be unique on the connected BACnet MS/TP network. Max Masters sets the highest MAC address of a master device node. Baudrate should be set to the same value across all devices on the BACnet MS/TP network.

Either BACnet, Sedona protocols, or both can be selected. BACnet MS/TP is a sub-option of BACnet.
The MS/TP Status page refreshes automatically, so you can watch the MS/TP state change and gain insight into the condition of the MS/TP network (as seen by the controller). MS/TP Statistics page displays the instantaneous state of some of the BACnet MS/TP network values. These are documented in the MS/TP portion of the BACnet standard – with the following parameters being noteworthy:

“**MS/TP Incoming Packets**” – count of incoming MS/TP packets

“**MS/TP Outgoing Packets**” – count of outgoing MS/TP packets

“**RFSM**” is the current Receive Frame State Machine state.

“**MNSM**” is the current Master Node State Machine state.

“**Next Station**” is the MS/TP MAC address of the device to which the router will next pass the token. This value may change if devices leave or enter the network — and when the router searches for devices on the network, as per the BACnet MS/TP standard.

“**Available Memory**” is the amount of RAM remaining after buffers are allocated.

“**TX PFM Count**” is the number of Polls For Master transmitted

“**RX PFM Count**” is the number of Poll For Master received.

“**TX Token Count**” is the number of tokens transmitted.

“**RX Token Count**” is the number of tokens received.

“**Clear Silence Timer**” is the number of times the Silence resets because its value is too large.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS/TP Incoming Packets</td>
<td>0</td>
</tr>
<tr>
<td>MS/TP Outgoing Packets</td>
<td>1</td>
</tr>
<tr>
<td>RFSM State</td>
<td>00 Idle</td>
</tr>
<tr>
<td>MNSM State</td>
<td>07 PollForMaster</td>
</tr>
<tr>
<td>Next Station</td>
<td>0</td>
</tr>
<tr>
<td>Poll Station</td>
<td>53</td>
</tr>
<tr>
<td>Invalid Long Frames</td>
<td>0</td>
</tr>
<tr>
<td>Available Memory</td>
<td>19976</td>
</tr>
<tr>
<td>TX PFM Count</td>
<td>4371</td>
</tr>
<tr>
<td>RX PFM Count</td>
<td>0</td>
</tr>
<tr>
<td>TX Token Count</td>
<td>0</td>
</tr>
<tr>
<td>RX Token Count</td>
<td>0</td>
</tr>
<tr>
<td>Clear Silence Timer</td>
<td>0</td>
</tr>
<tr>
<td>Event Count</td>
<td>0</td>
</tr>
<tr>
<td>Flag</td>
<td>SlaveMaster</td>
</tr>
</tbody>
</table>
Web Page Configuration — Channel, Time and Web Components

The channels should be configured first. Universal inputs must first be defined which may lead to more requests for information. Once the channels are 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 to the BACnet client devices.

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 using a supercapacitor 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.

NOTE: A GREEN label indicates that the component has been placed on the wire sheet.
The 24 virtual points are viewable from a separate web page.

The System Status page provides information on the controller.
The BAScontrol22S incorporates Sedona Virtual Machine (SVM) technology developed by Tridium. Using established Tridium tools such as Niagara Workbench or Contemporary Controls’ Sedona Application Editor (SAE), a system integrator can develop a control application using Sedona’s powerful drag-and-drop visual programming methodology. Once developed, the program remains stored in the flash memory and executes by way of the SVM. The application can run standalone in the BAScontrol22S or it can interact with a program in a supervisory controller over Ethernet. The number of potential applications is only limited by the imagination of the system integrator.

The BAScontrol22S includes Tridium’s Sedona 1.2 kits of components — and Contemporary Controls’ product-specific and non-product-specific kits. The BAScontrol22S IO kit provides 22 physical points, 24 BACnet virtual points and four retentive counter components. The BAScontrol22S Web kit has 48 web components which share data with the controller’s web page. Input web components receive data from hosted web page. Output web components send data to hosted web page. Web components are configured for input or output in the properties pane in the Sedona tool. The Contemporary Controls’ Function kit provides additional components for increased flexibility. The Platform kit consists of the Platform Service component which provides platform-specific system information.

The BAScontrol22’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.

Tridium’s Niagara Workbench or a third-party tool can be used to program a Sedona application running in the BAScontrol22S.
## Contemporary Controls’ Developed Sedona Components

### BAScontrol22S I/O Kit – BAScontrol22S platform specific components

| 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 wire sheet data with BACnet/IP clients retentively |
| VT09 – VT24 | Virtual points – share wire sheet data with BACnet/IP clients |

### BAScontrol22S Web Kit – BAScontrol22S platform specific components

| WC01 – WC48 | Web components – share wire sheet data with the BAScontrol22 web pages |

### 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

#### The HVAC Group
**operations that facilitate control**
- **LS**eq: Linear Sequencer — bar graph representation of input value
- **ReheatSeq**: Reheat sequence — linear sequence up to four outputs
- **Reset**: Reset — output scales an input range between two limits
- **Tstat**: Thermostat — on/off temperature controller

#### The Scheduling Group
**scheduling operations based upon time of day**
- **DailySc**: Daily Schedule Boolean — two-period Boolean scheduler
- **DailyS1**: Daily Schedule Float — two-period float scheduler
- **DateTime**: Time of Day — time, day, month, year

#### The Logic Group
**convenient functions for developing control schemes**
- **Cmp**: Comparison math — comparison (<=) of two floats
- **Cnt**: Integer counter — up/down counter with integer output
- **Fq**: Pulse frequency — calculates the input pulse frequency
- **Hysteresis**: Hysteresis — setting off/on trip points to an input variable
- **IR**: IRamp — generates a repeating triangular wave with an integer output
- **L**: Limiter — Limits output within upper and lower bounds
- **Lin**: Linearize — piecewise linearization of a float
- **LP**: LP — proportional, integral, derivative (PID) loop controller
- **Ramp**: Ramp — generates a repeating triangular sawtooth wave with a float output
- **SR**: Set/Reset Latch — single-bit data storage
- **Tck**: Ticking clock — an astable oscillator used as a time base
- **Up**: UpDown — up/down counter with float output

#### The Math Group
**math-based components**
- **Add**: Two-input addition — results in the addition of two floats
- **Add4**: Four-input addition — results in the addition of four floats
- **Avg**: Average of N — sums the last N floats while dividing by N thereby providing a running average
- **Div2**: Divide two — results in the division of two float variables
- **Favg**: Float average — average value of float over time
- **Lp**: Proportional, integral, derivative (PID) loop controller
- **Min**: Minimum selector — selects the lesser of two inputs
- **MinMax**: Minimum/Maximum detector — records both the maximum and minimum values of a float
- **Mul2**: Multiply two — results in the multiplication of two floats
- **Mul4**: Multiply four — results in the multiplication of four floats
- **Neg**: Negate — changes the sign of a float
- **Round**: Round — rounds a float to the nearest N places
- **Sub**: Subtract two — results in the subtraction of two floats
- **Sub4**: Subtract four — results in the subtraction of four floats
- **TimeAvg**: Time average — average value of float over time

#### The Timing Group
**time-based components**
- **Dly**: Delay timer — time delay from a “true” to “false” transition of the input
- **DlyOn**: On delay timer — time delay from an “false” to “true” transition of the input
- **OneShot**: Single Shot — provides an adjustable pulse width to an input transition
- **Timer**: Timer — countdown timer

#### The Types Group
**variable types and conversion between types**
- **B2F**: Binary to float encoder — 16-bit binary to float conversion
- **Const**: Boolean constant — a predefined Boolean value
- **ConstF**: Float constant — a predefined float variable
- **ConstI**: Integer constant — a predefined integer variable
- **F2B**: Float to binary decoder — float to 16-bit binary conversion
- **F2I**: Float to integer — float to integer conversion
- **I2F**: Integer to float — integer to float conversion
- **L2F**: Long integer to float conversion
- **Write**: Write Boolean — setting a writable Boolean value
- **WriteF**: Write Float — setting a writable float value
- **WriteI**: Write Integer — setting an integer value

#### The Function Group
**convenient functions for developing control schemes**
- **Prioritized**: Prioritized boolean output — highest of sixteen inputs
- **PrioritizedF**: Prioritized float output — highest of sixteen inputs
- **PrioritizedI**: Prioritized integer output — highest of sixteen inputs
- **B2F**: Binary to float encoder — 16-bit binary to float conversion
- **Const**: Boolean constant — a predefined Boolean value
- **ConstF**: Float constant — a predefined float variable
- **ConstI**: Integer constant — a predefined integer variable
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- **F2I**: Float to integer — float to integer conversion
- **I2F**: Integer to float — integer to float conversion
- **L2F**: Long to float — long integer to float conversion

#### The Function Group
**convenient functions for developing control schemes**
- **ADemux2**: Analog Demux — single-input, two-output analog de-multiplexer
- **And**: Two-input Boolean product — two-input AND gate
- **And4**: Four-input Boolean product — four-input AND gate
- **ASW**: Analog switch — selection between two float variables
- **ASW4**: Analog switch — selection between four floats
- **B2P**: Binary to pulse — simple mono-stable oscillator (single-shot)
- **BSW**: Boolean switch — selection between two Boolean variables
- **DemuxI2B4**: Four-output Demux — integer to Boolean de-multiplexer
- **ISW**: Integer switch — selection between two integer variables
- **Not**: NOT — inverts the state of a Boolean
- **Or**: Two-input Boolean sum — two-input OR gate
- **Or2**: Two-input Boolean sum — two-input OR gate
- **Or4**: Four-input Boolean sum — four-input OR gate
- **Xor**: Two-input exclusive Boolean sum — two-input XOR gate

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#### The Logic Group
**logical operations using Boolean variables**
- **Cmp**: Comparison math — comparison (<=) of two floats
- **Cnt**: Integer counter — up/down counter with integer output
- **Fq**: Pulse frequency — calculates the input pulse frequency
- **Hysteresis**: Hysteresis — setting off/on trip points to an input variable
- **IR**: IRamp — generates a repeating triangular wave with an integer output
- **L**: Limiter — Limits output within upper and lower bounds
- **Lin**: Linearize — piecewise linearization of a float
- **LP**: LP — proportional, integral, derivative (PID) loop controller
- **Ramp**: Ramp — generates a repeating triangular sawtooth wave with a float output
- **SR**: Set/Reset Latch — single-bit data storage
- **Tck**: Ticking clock — an astable oscillator used as a time base
- **Up**: UpDown — up/down counter with float output

#### The Priority Group
**prioritizing actions of Boolean, Float and Integer variables**
- **B2F**: Binary to float encoder — 16-bit binary to float conversion
- **Const**: Boolean constant — a predefined Boolean value
- **ConstF**: Float constant — a predefined float variable
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- **F2B**: Float to binary decoder — float to 16-bit binary conversion
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- **F2I**: Float to integer — float to integer conversion
- **I2F**: Integer to float — integer to float conversion
- **L2F**: Long to float — long integer to float conversion
- **Write**: Write Boolean — setting a writable Boolean value
- **WriteF**: Write Float — setting a writable float value
- **WriteI**: Write Integer — setting an integer value

#### The Timing Group
**time-based components**
- **DlyOff**: Off delay timer — time delay from a “true” to “false” transition of the input
- **DlyOn**: On delay timer — time delay from an “false” to “true” transition of the input
- **OneShot**: Single Shot — provides an adjustable pulse width to an input transition
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- **Mul**: Multiply two — results in the multiplication of two floats
- **Mul4**: Multiply four — results in the multiplication of four floats
- **Neg**: Negate — changes the sign of a float
- **Round**: Round — rounds a float to the nearest N places
- **Sub**: Subtract two — results in the subtraction of two floats
- **Sub4**: Subtract four — results in the subtraction of four floats
- **TimeAvg**: Time average — average value of float over time
BACnet Protocol Implementation Conformance Statement (Annex A)

Date: February 1, 2017
Vendor Name: Contemporary Controls
Product Name: BAScontrol22S
Product Model Number: BASC-22S
Applications Software Version: 1.2.28
Firmware Revision: 3.2.0
BACnet Protocol Revision: 3

Product Description:
BACnet/IP
MS/TP
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 – B
- DS-WP-B Data Sharing — WriteProperty – 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:

<table>
<thead>
<tr>
<th>Object Type Supported</th>
<th>Can Be Created Dynamically</th>
<th>Can Be Deleted Dynamically</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Input</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Analog Output</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Analog Value</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Binary Input</td>
<td>No</td>
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</tr>
<tr>
<td>Binary Output</td>
<td>No</td>
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</tr>
<tr>
<td>Binary Value</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Device</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

No optional properties are supported.

Data Link Layer Options:
- BACnet/IP (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/TIA 878.1, EIA-485 ARCCNET (Clause 8), baud rate(s):
- MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, and 76800
- 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
- ISO 8859-1
- IBM/®/Microsoft/® DBCS
- 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.

February 1, 2017
DS-BASC22S0-AA1
Wiring Diagram

Dimensions (all dimensions are in mm)

- Diameter: 4.7 mm
- Width: 25 mm
- Height: 120 mm
- Length: 82 mm
- Width: 173 mm
- Height: 181 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: –10º to +190 ºF (–23.3º to +87.8ºC)  
    Type III 10 kΩ thermistors: –15º to +200 ºF (–26.1º to +93.3ºC)  
    20 kΩ thermistors: 15º to 215º F (–9º to +101º 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

**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

**Analog Outputs (Points AO1 through AO4)**

- Analog output: 0–10 VDC. 12-bit resolution. 4 mA maximum

**Binary Outputs (Points BO1 through BO6) (Class 2 circuits only — requires external power source)**

- Binary output: Normally open relay contacts. 30VAC/VDC 2A

**Regulatory Compliance**

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

**Functional**

- **Ethernet**
  - 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
- **EIA-485**
  - Compliance: EIA-485
  - Protocols supported: BACnet MS/TP
  - Data rate: 9600, 19200, 38400, 76800 bps
  - Physical layer: EIA-485
  - Port connector: 3-pin screw terminal
  - LED: Green TX = Transmit data/token  
    Green RX = Receive data/token

**Electrical**

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

**RoHS**

CE Mark; UL Listed; RoHS

DS-BASC22S0-AA1

Data Sheet – BAScontrol22S
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

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD +</td>
</tr>
<tr>
<td>2</td>
<td>TD –</td>
</tr>
<tr>
<td>3</td>
<td>RD +</td>
</tr>
<tr>
<td>6</td>
<td>RD –</td>
</tr>
<tr>
<td>Other pins</td>
<td>Not Used</td>
</tr>
</tbody>
</table>

EIA-485 Pin Assignments

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td>3</td>
<td>SC</td>
</tr>
</tbody>
</table>

EIA-485 Bias and Termination Jumpers

- **B**: Install jumper to apply pull-up bias.
- **T**: Install jumper to terminate bus.
- **B**: Install jumper to apply pull-down bias.

Electromagnetic Compatibility

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

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-22S</td>
<td>BACnet/IP and MS/TP with 22 I/O points, includes 6 relays</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>United States</th>
<th>China</th>
<th>United Kingdom</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contemporary Control Systems, Inc.</td>
<td>Contemporary Controls (Suzhou) Co. Ltd</td>
<td>Contemporary Controls Ltd</td>
<td>Contemporary Controls GmbH</td>
</tr>
<tr>
<td>2431 Curtiss Street, Downers Grove, IL 60515 USA</td>
<td>11 Huoju Road, Science &amp; Technology Industrial Park, New District, Suzhou PR China 215009</td>
<td>14 Bow Court, Fletchworth Gate, Coventry CV5 6SP, United Kingdom</td>
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<td>Fax:+44 (0)24 7641 3923</td>
<td>Fax: +49 341 520359 16</td>
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