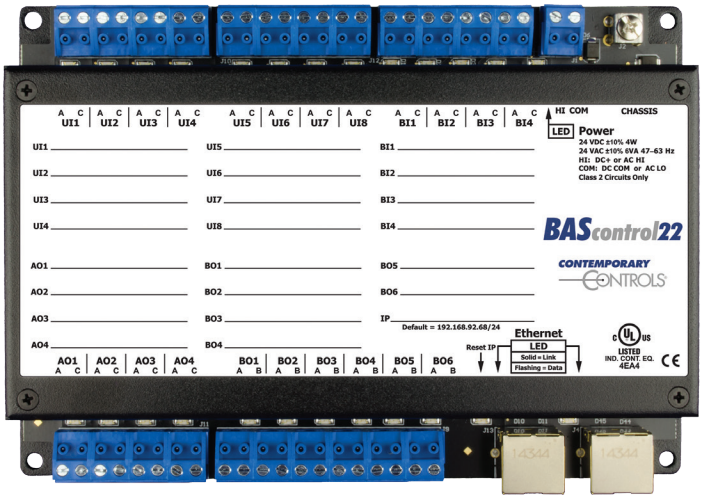
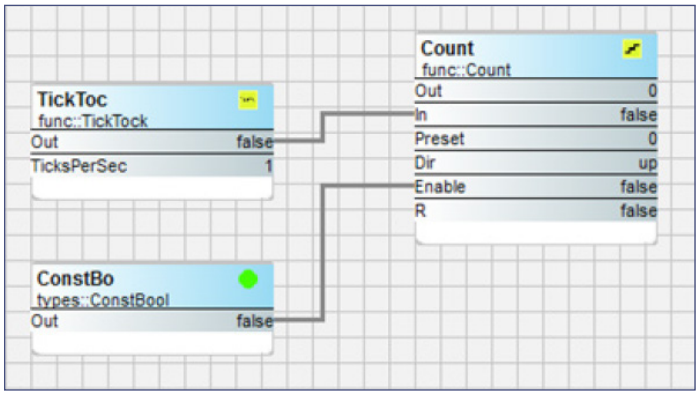
Building Automation Training with BAScontrol22

- 22-point simple to use building automation unitary controller
- LEDs for each channel and Ethernet port
- Eight configurable universal inputs supporting analog voltage, thermistor, resistance, contact closure and pulse inputs
- 2 Ethernet connections for configuration and programming
- Utilizes simple, open source, Sedona drag and drop programming
- Free programming and backup tool
- Simple web page configuration
- Easy connection to Wi-Fi networks
- Free simulator program for homework assignments
- Communicates via BACnet to supervisor





The BAScontrol22 is an ideal controller for training technicians on programming DDCs and use of unitary building automation controllers. The BAScontrol22 provides eight universal inputs, four binary inputs, four analog outputs and six binary outputs (relay) which can be used for most unitary control applications. The BAScontrol22 has two 10/100 Mbps Ethernet connections which provide a simple connection to most PCs or a simple connection to a Wi-Fi network through a commonly available access point or Wi-Fi bridge. By having two Ethernet connections one can be used for the student's PC and one can connect to an Ethernet switch which interconnects all of the BAScontrol22 units in the classroom. Switches can be cascaded to support more BAScontrol22 units. This would also allow the teacher's PC to communicate to all of the BAScontrol22 units for assistance and examination purposes.

Each port of the BAScontrol22 has an LED to indicate its current status. This can be helpful in providing feedback to the student regarding the current behavior of the unit.

The BAScontrol22 is configured via a simple password protected webpage which can operate with any standard browser. This allows the selection of the universal input types, such as 0-10V measurements, thermistor connections for temperature measurement, resistance measurements, contact closure or pulse inputs. The

BAScontrol22 inputs and outputs can also be monitored and overridden via the webpage.

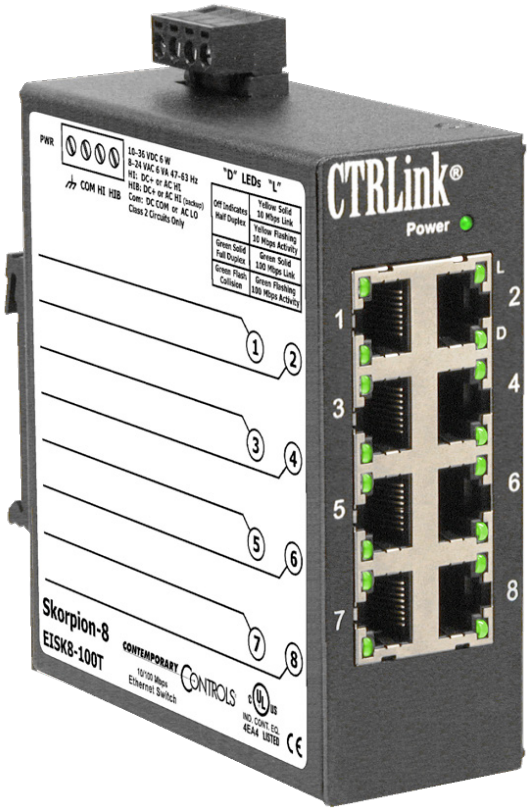
For control the BAScontrol22 utilizes Sedona, a simple open source drag and drop programming language developed by Tridium, one of the leading vendors of building automation supervisors. Contemporary Controls provides a free editor for developing Sedona programs. This is the Sedona Application Editor (SAE). When using SAE the student will drag and drop components onto the screen and immediately see their effect. This "live" aspect of Sedona makes it one of the simplest to use languages for programming unitary controllers. Components are interconnected to create a control program and SAE will immediately show the result of the connections. There are over 100 types of components which can be used to create simple or complex control applications.

Contemporary Controls also offers a free Sedona simulator which allows the student to practice his Sedona programming without the need of a controller. The simulator acts as the BAScontrol22 and runs on his PC. SAE can run on the same PC and allows the student to create and test their Sedona applications outside of the classroom.

Contemporary Controls also offers a free tool for backing up the settings and Sedona application developed by the student into one zip file. This is the BASbackup application. This application can store the BAScontrol22 configuration and Sedona application which can be used for the student to backup their work or to hand in their assignment to the teacher.

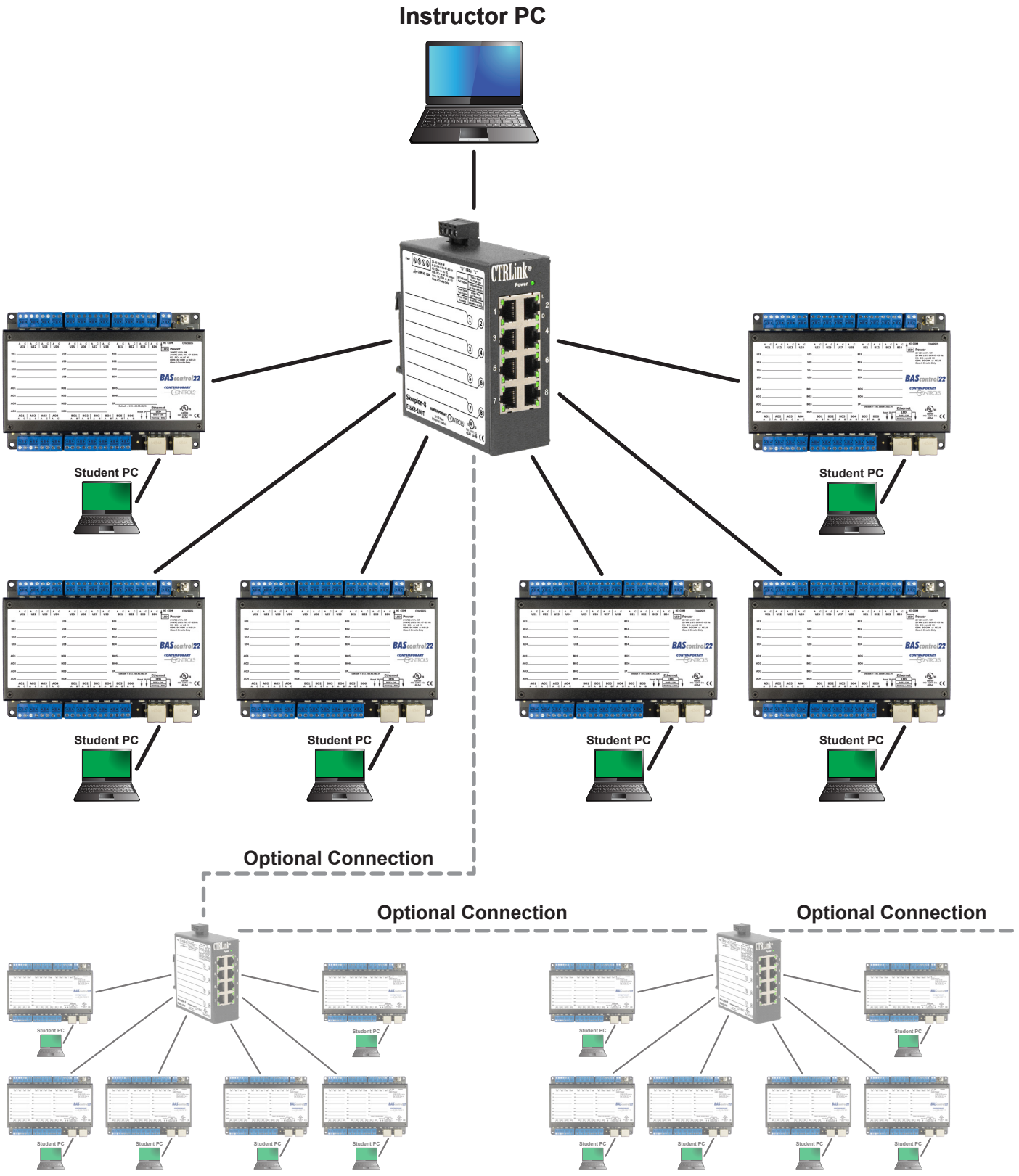
The BAScontrol22 also communicates to head-end or building automation supervisors via BACnet. This ASHRAE standard is one of the most popular protocols for communications between controllers and supervisors. The BAScontrol22 provides 24 virtual objects which the BACnet supervisor can write to control set points in the BAScontrol22 or read to learn the status of the BAScontrol22. All of the 22 channels of the BAScontrol22 can also be controlled or read from the BACnet supervisor.

The Contemporary Controls EISK8-100T is ideal for interconnecting the BAScontrol22 units in the classroom. It is DIN rail mountable and 24VAC powered for simple installation and mounting in a standard building automation enclosure. This also represents what is commonly used in the field. The EISK8 units can be cascaded to interconnect all of the BAScontrol22 units in the classroom along with the instructor's PC.



EISK8-100T

Classroom Setup



BAScontrol22 I/O Kit – BAScontrol22 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 retentive wire sheet data with BACnet/IP clients
VT09 – VT24	Virtual points – share wire sheet data with BACnet/IP clients

BAScontrol22 Web Kit – BAScontrol22 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

Sedona Components

HVAC Group

LSeq	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

Scheduling Group

DailySc	Daily Schedule Boolean — two-period Boolean scheduler
DailyS1	Daily Schedule Float — two-period float scheduler
DateTime	Time of Day — time, day, month, year

Function Group

Cmpr	Comparison math — comparison (<=>) of two floats
Count	Integer counter — up/down counter with integer output
Freq	Pulse frequency — calculates the input pulse frequency
Hysteresis	Hysteresis — setting on/off trip points to an input variable
IRamp	IRamp — generates a repeating triangular wave with an integer output
Limiter	Limiter — Restricts output within upper and lower bounds
Linearize	Linearize — piecewise linearization of a float
LP	LP — proportional, integral, derivative (PID) loop controller
Ramp	Ramp — generates a repeating triangular or sawtooth wave with a float output
SRLatch	Set/Reset Latch — single-bit data storage
TickTock	Ticking clock — an astable oscillator used as a time base
UpDn	Float counter — up/down counter with float output

Priority Group

PrioritizedBool	Prioritized boolean output — highest of sixteen inputs
PrioritizedFloat	Prioritized float output — highest of sixteen inputs
PrioritizedInt	Prioritized integer output — highest of sixteen inputs

Types Group

B2F	Binary to float encoder — 16-bit binary to float conversion
ConstBool	Boolean constant — a predefined Boolean value
ConstFloat	Float constant — a predefined float variable
ConstInt	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 to float — long integer to float conversion
WriteBool	Write Boolean — setting a writable Boolean value
WriteFloat	Write Float — setting a writable float value
WriteInt	Write integer — setting an integer value

Logic Group

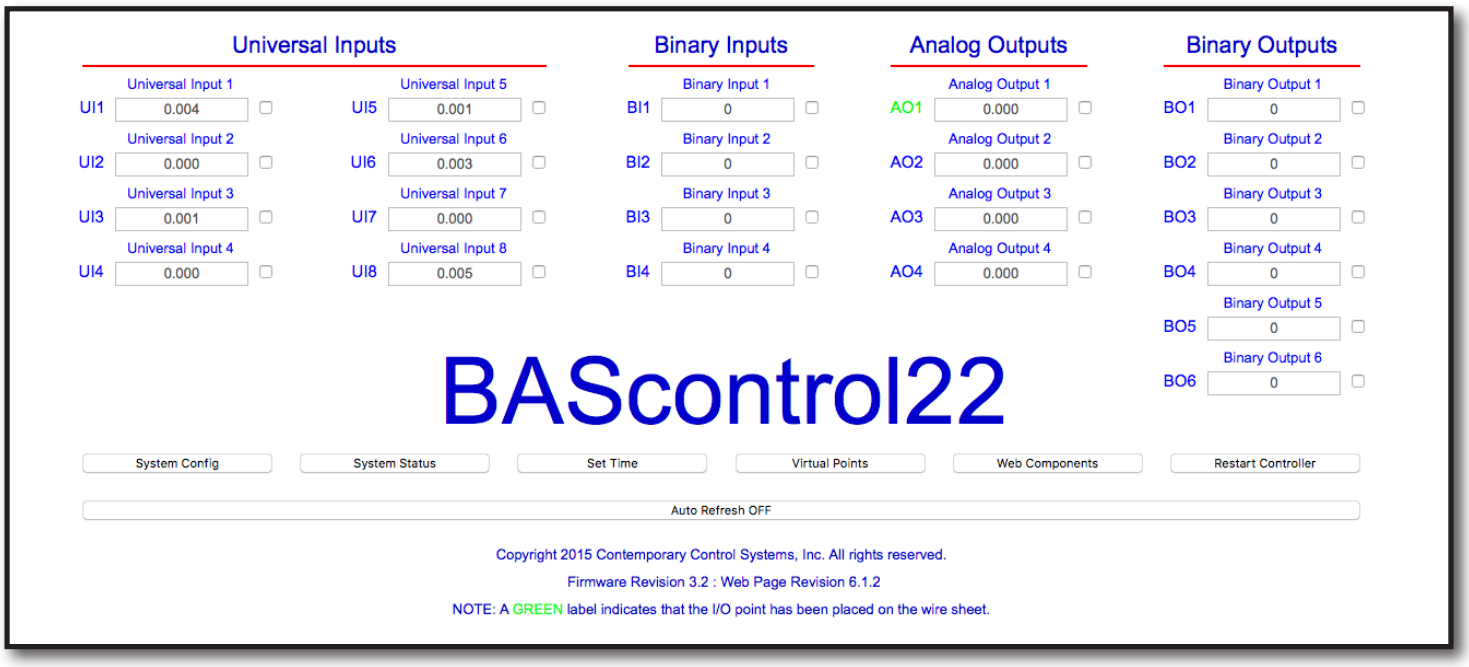
ADemux2	Analog Demux — Single-input, two-output analog de-multiplexer
And2	Two-input Boolean product — two-input AND gate
And4	Four-input Boolean product — four-input AND gate
ASW	Analog switch — selection between two float variables
ASW4	Analog switch — selection between four floats
B2P	Binary to pulse — 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
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

Timing Group

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
Timer	Timer — countdown timer

Math Group

Add2	Two-input addition — results in the addition of two floats
Add4	Four-input addition — results in the addition of four floats
Avg10	Average of 10 — sums the last ten floats while dividing by ten thereby providing a running average
AvgN	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
FloatOffset	Float offset — float shifted by a fixed amount
Max	Maximum selector — selects the greater of two inputs
Min	Minimum selector — selects the lesser of two inputs
MinMax	Min/Max 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
Sub2	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



BAScontrol22 Web Page

Ordering Information

Model	*Description*
BASC-22R	BAScontrol with 22 I/O points, includes 6 relay outputs
EISK8-100T	8 ports 10/100 Mbps Skorpion switch

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
11 Huoju Road
Science & Technology Industrial Park
New District, Suzhou
PR China 215009

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
ccl.info@ccontrols.com

Germany
Contemporary Controls GmbH
Fuggerstraße 1 B
04158 Leipzig
Germany

Tel: +49 341 520359 0
Fax: +49 341 520359 16
ccg.info@ccontrols.com

www.ccontrols.com