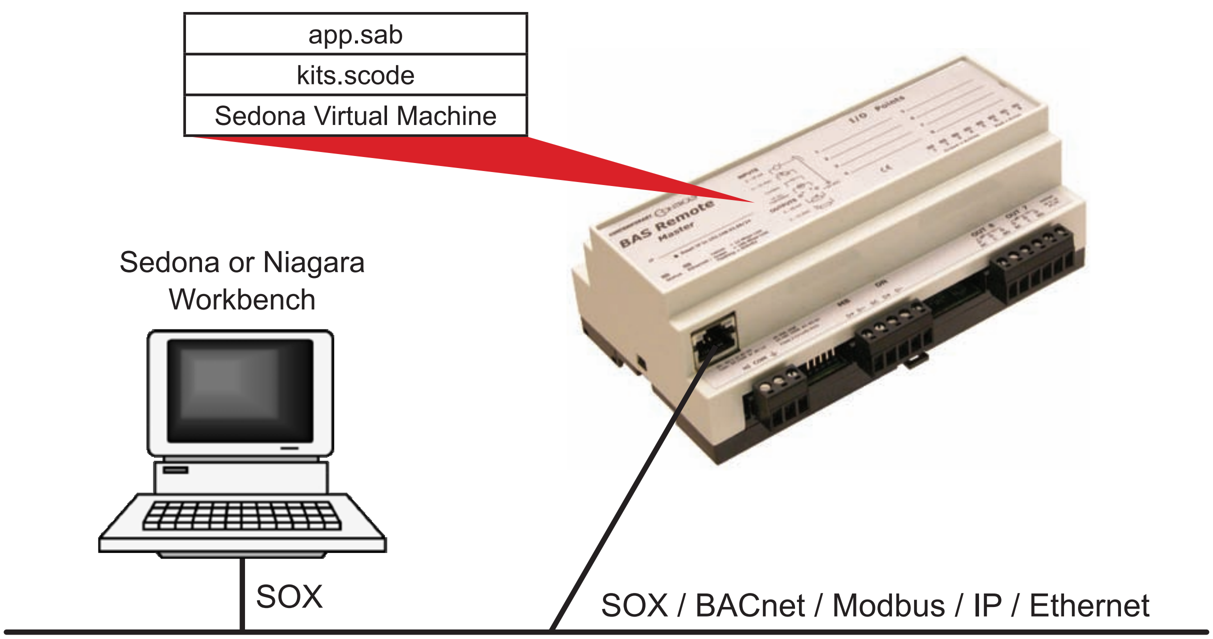
new product INTRODUCTION

BAS Remote — *Powered by Sedona Framework™* Controller

The BAS Remote — a versatile building automation appliance — has been further enhanced with the addition of a Sedona Virtual Machine (SVM) thereby providing the BAS Remote with controller capability. Developed by Tridium Inc., Sedona Framework is a software environment designed to make it easy to build smart, networked, embedded devices. Using the SOX protocol, applications developed on either Niagara Workbench or Sedona Workbench can be downloaded to the BAS Remote over an IP/ Ethernet connection and then executed. The workbench tools allow the system integrator to create custom applications by connecting and configuring Sedona components on a wiresheet. The SVM resident on the BAS Remote executes the wiresheet allowing the system integrator to develop distributed control strategies.



POWERED BY SEDONA FRAMEWORK™

What is Sedona Framework?

Developed by Tridium, Sedona Framework is a software environment designed to make it easy to build smart, networked, embedded devices which are well suited for implementing control applications. The Sedona language is a component-oriented programming language and by utilizing this language, custom components can be developed and assembled into applications.

I thought Sedona Framework was for wireless products?

Although Sedona Framework can work with wireless technology 6LoWPAN, it is can easily work with wired IP networks. Contemporary Controls has chosen to implement Sedona on the company's BAS Remote which uses a Linux 2.6 kernel operating over an IPv4 Ethernet network.

How did Contemporary Controls' implement Sedona?

A Sedona Virtual Machine (SVM) resides in the BAS Remote's flash memory along with a kits.scode file and a Sedona application file called apps.sab. Programs stored in flash are retentive, will boot-up and execute upon power-up with or without a network connection.

When would I use Sedona on a BAS Remote?

Sedona's rich library of components is intended for field-level control allowing for distributed control strategies that can be tightly coupled to a JACE building controller. It is up to the imagination of the system integrator on how best to deploy Sedona controllers.

Is a JACE required to run Sedona?

The BAS Remote will execute standalone without a JACE. However, a connected JACE can communicate to a Sedona device using the SOX protocol and have access to all aspects of a Sedona wiresheet.

What programming tools are required to use Sedona?

In order to develop Sedona application programs, a workbench tool such as Sedona Workbench or Niagara Workbench is required to develop Sedona wiresheets. Anyone familiar with Niagara Framework will have no problems using Sedona.

Are there any licenses required to run Sedona applications?

There are no Sedona run-time licenses. However, a workbench license needs to be purchased if a copy is not already owned by the programmer.

Can I develop custom Sedona components that will run on the BAS Remote?

Components can be developed using the Sedona language which is similar to Java. Components are deployed as kits and kits need to be complied. An open source complier called sedonac is available from the website sedonadev.org. Contemporary Controls has developed components that link Sedona components with the BAS Remote's physical I/O. These components reside in the BAS Remote kit which can be downloaded from Contemporary Controls' website.

What I/O is available to me with the BAS Remote?

The BAS Remote Master has six universal input/outputs and two relay outputs. The same mix is found on BAS Remote Expansion modules. In addition, the BAS Remote Master functions as a Modbus master allowing the connection of 2-wire Modbus ASCII or RTU slaves. All physical I/O points plus virtual points are accessible via Sedona logic.

How do I know this will all work?

Contemporary Controls participates in Tridium's conformance testing program in order to have the right to brand products as *Powered by Sedona Framework*™. Support questions will be answered by Contemporary Controls.

For timely information, go to www.ccontrols.com/basautomation/sedona.htm or www.sedona.org.

Creating Applications by Linking Components

The Logic Group

logical operations using Boolean variables

And2	Two-input Boolean product — two-input AND gate
And4	Four-input Boolean product — four-input AND gate
B2P	Binary to pulse — simple mono-stable oscillator (single-shot)
BSW	Boolean switch — selection between two Boolean variables
ConstBool	Boolean constant — a predefined Boolean value
OneShot	Single Shot — provides an adjustable pulse width to an input transition
Or2	Two-input Boolean sum — two-input OR gate
Or4	Four-input Boolean sum — four-input OR gate
Not	Not — inverts the state of a Boolean
SRLatch	Set/Reset Latch — single-bit data storage
WriteBool	Write Boolean — setting a writable Boolean value
Xor	Two-input exclusive Boolean sum — two-input XOR gate

The Counter/Timer Group

extended Boolean logic

Count	Preset Counter — bi-directional preset counter
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
TickTock	Ticking clock — an astable oscillator used as a time base
Timer	Timer — countdown timer
UpDn	Up/down counter — up/down float counter

The Math Group

operations on Float, Integer and Boolean variables

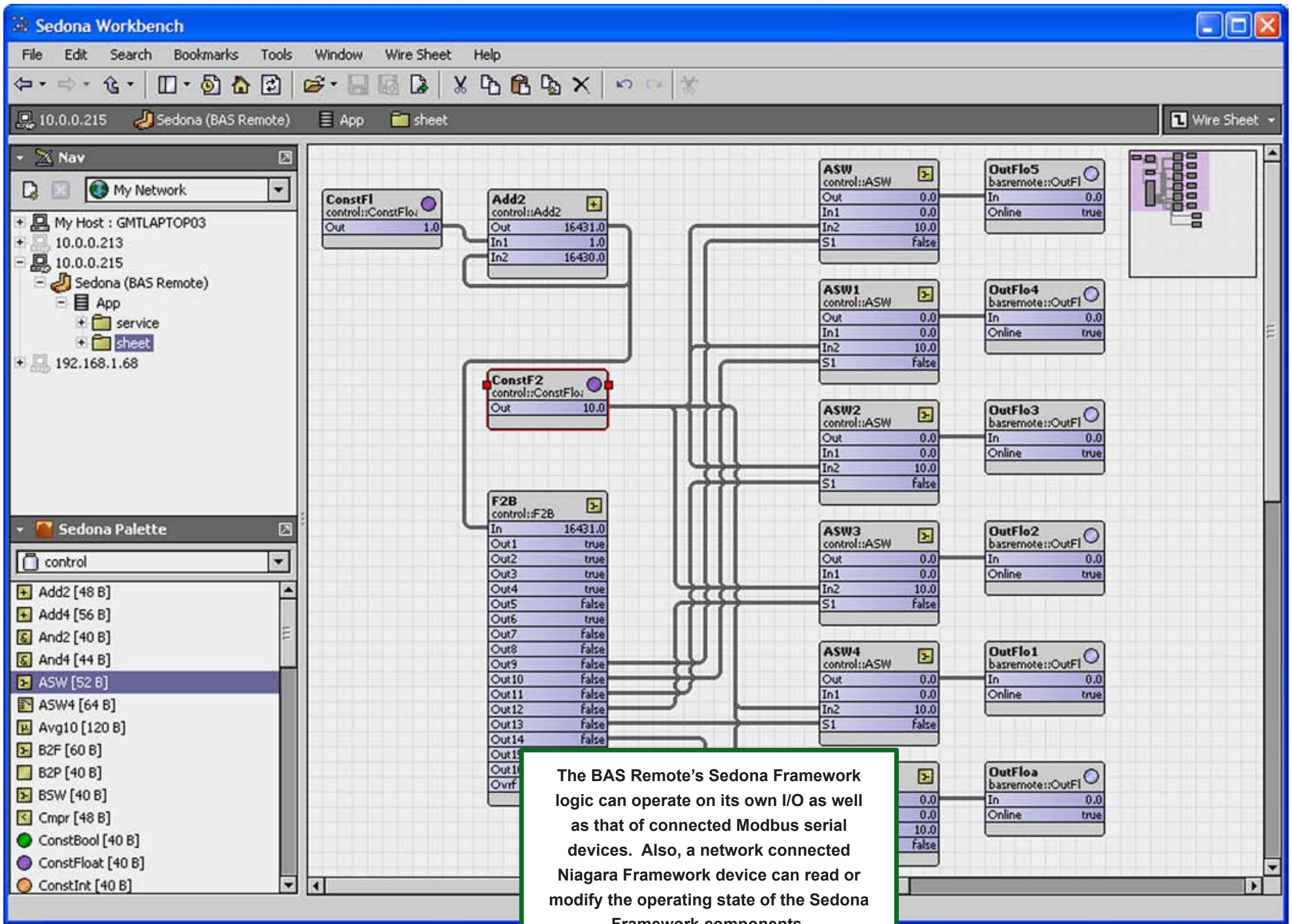
Add2	Two-input addition — results in the addition of two floats
Add4	Four-input addition — results in the addition of four floats
Avg10	Average of 10 — sums the last ten floats while dividing by ten thereby providing a running average
B2F	Binary to float encoder — 16-bit binary to float conversion
Cmpr	Comparison math — comparison (<=>) of two floats
ConstFloat	Float constant — a predefined float variable
ConstInt	Integer constant — a predefined integer variable
Div2	Divide two — results in the division of two float variables
F2B	Float to binary decoder — float to 16-bit binary conversion
F2I	Float to integer — float to integer conversion
FloatOffset	Float offset — float shifted by a fixed amount
I2F	Integer to float — integer to float conversion
L2F	Long to float — 64-bit signed integer to float conversion
LSeq	Linear sequencer — bar graph representation of input value
Linearize	Linearize — piecewise linearization 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
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
WriteFloat	Write Float — setting a writable float value
WriteInt	Write integer — setting an integer value

The Control Group

operations that facilitate control

ASW	Analog switch — selection between two float variables
ASW4	Analog switch — selection between four floats
DailySc	Daily Schedule Boolean — two-period Boolean scheduler
DailyS1	Daily Schedule Float — two-period float scheduler
Freq	Pulse frequency — calculates the input pulse frequency
Hysteresis	Hysteresis — setting on/off trip points to an input variable
InpBool	Binary input (BI) — BAS Remote binary input
InpFloat	Analog input (AI) — BAS Remote analog input
ISW	Integer switch — selection between two integer variables
Limiter	Limiter — restricts output within upper and lower bounds
LP	LP — proportional, integral, derivative (PID) loop controller
MinMax	Minimum/Maximum — stores the min and max of a float
OutBool	Binary output (BO) — BAS Remote binary output
OutFloat	Analog output (AO) — BAS Remote analog output
Ramp	Ramp – generates a repeating triangular wave
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

Tridium's Sedona Workbench or Niagara Workbench can be used to program Sedona running in the BAS Remote



The BAS Remote's Sedona Framework logic can operate on its own I/O as well as that of connected Modbus serial devices. Also, a network connected Niagara Framework device can read or modify the operating state of the Sedona Framework components.

Ordering Information

Model	*Description*
BASR-8M	BAS Remote Master with 8 I/O points
BASR-8X	BAS Remote Expansion with 8 I/O points
BASR-8M/P	BAS Remote Master with 8 I/O points and PoE

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