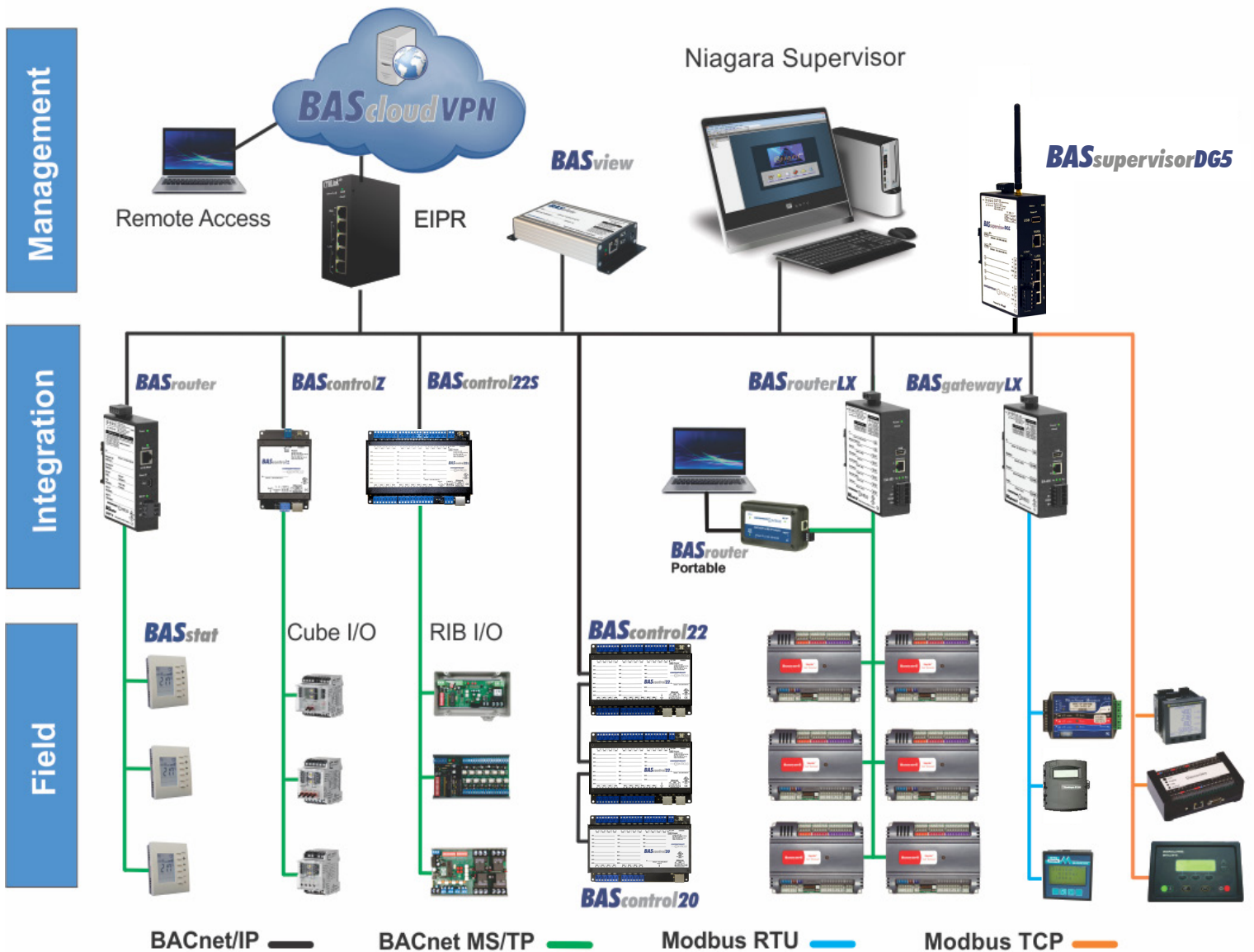


VISUALIZE  
INTEGRATE  
CONTROL  
COMMUNICATE

**BAS**automation®  
Building on BACnet®



## Networked Controls Architecture

A modern building automation system is composed of a three-level hierarchy with BACnet/IP and MS/TP communication throughout. Contemporary Controls provides solutions at all levels of the hierarchy involving *Visualization*, *Integration*, and *Control* as well as *Communication* between levels.

### Management Level

Considered to be the head-end of the system, the management level consists of BACnet clients requesting data or initiating commands down to the lower levels. *Control* and *Visualization* exist at this level in the form of local supervisory controllers, operator workstations, or remote controllers and workstations connected via the Internet.

### Integration Level

Not all protocols are BACnet and not all BACnet devices communicate over the same type of network. *Control* and *Integration* occur at this level with communication both up to the management level and down to the field level. Equipment at this level consists of plant or building controllers often connected to expansion I/O, gateways to other protocols, and routers between different BACnet networks.

### Field Level

BACnet servers reside at the field level responding to requests from BACnet clients. *Control* occurs at this level in the form of unitary and VAV controllers, expansion I/O modules as well as environmental monitors, energy meters, sensors and actuators.





BACnet is an internationally recognized (ISO) data communication protocol standard that enables interoperability between different building systems while offering a flexible range of networking options including the use of Ethernet or IP-centric infrastructure and a simple, low-cost twisted-pair network called MS/TP. Contemporary Control's BASautomation line builds upon this open standard.

## Visualize

The visualization method of choice in a modern networked architecture is the common web browser connected to a BACnet/IP network. Multiple web browsers – even those located remotely – connect to a single head-end or supervisor that manages the building. Depending upon the complexity of the installation you have several choices in supervisors.

The *BASview* is a simple-to-use web-based interface that supports schedules, trends, alarms, runtimes and graphics. The *BASsupervisorDG5* is an application platform providing stunning DGLux5 graphics as well as database management. For the most sophisticated system, *Niagara Framework* offers the most comprehensive options in managing a building or campus. For remote access to building sites, the *BAScloudVPN* is the answer.

## Integrate

To route from BACnet/IP to BACnet MS/TP you could use a building controller or better yet a simple *BASrouter* to make the conversion less expensive and higher performing. For larger BACnet systems, the *BASrouterLX* is appropriate. In the case of field commissioning BACnet MS/TP controllers, the *Portable BASrouter* is more convenient.

Equipment with Modbus RTU or Modbus TCP protocols remain popular and they can be integrated to a BACnet/IP network using the *BASgatewayLX*. Over 100 Modbus device profiles for common boilers, energy meters and generator sets have been developed by Contemporary Controls for the *BASgatewayLX* greatly reducing the system integrator's configuration effort.

## Control

Using BACnet's open protocol and the open control language provided by Sedona Framework, along with a free programming tool called the Sedona Application Editor, the *BAScontrol* series becomes a truly open controller. The *BAScontrolZ* and the *BAScontrol22S* offer BACnet client and server capabilities allowing these devices to respond to commands from a head-end while commanding attached BACnet MS/TP I/O modules from the *Cube I/O* and *RIB I/O* families. The *BAScontrol20* offers 20 points of I/O while the *BAScontrol22* offers 22 points and a daisy-chained Ethernet connection. The *BASstat* is a BACnet MS/TP communicating thermostat for staged heating/cooling RTUs and for fan coils.

## Communicate

To facilitate communication throughout the network hierarchy, Contemporary Controls' **CTRLink – Ethernet Built for Buildings** product line provides the necessary connectivity equipment including Ethernet managed and unmanaged switches, media converters, PoE injectors and splitters. Also included are IP wired and wireless routers with Wi-Fi or cellular connections, as well as UL864 smoke and fire rated Ethernet switches. The needs of the building industry are addressed with 24 VAC/VDC powering, DIN-rail mounting or panel-mounting in shallow depth panels.

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# Control

## Achieving an Open Controller — Built on the Sedona Framework

Contemporary Controls defines an open controller as follows:

- Utilizes an open protocol for network communications
- Supports an open programming language for implementing control strategies
- Provides a programming tool that is available to systems integrators without restriction
- Fosters a community of developers and integrators that share technology for the public good

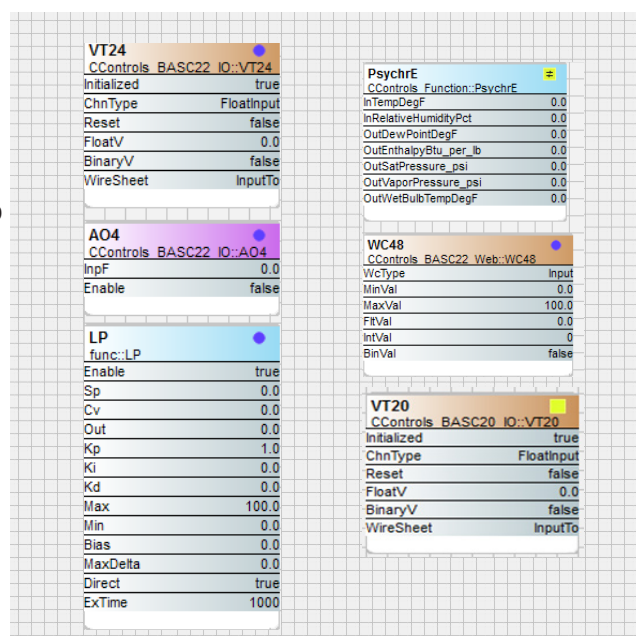
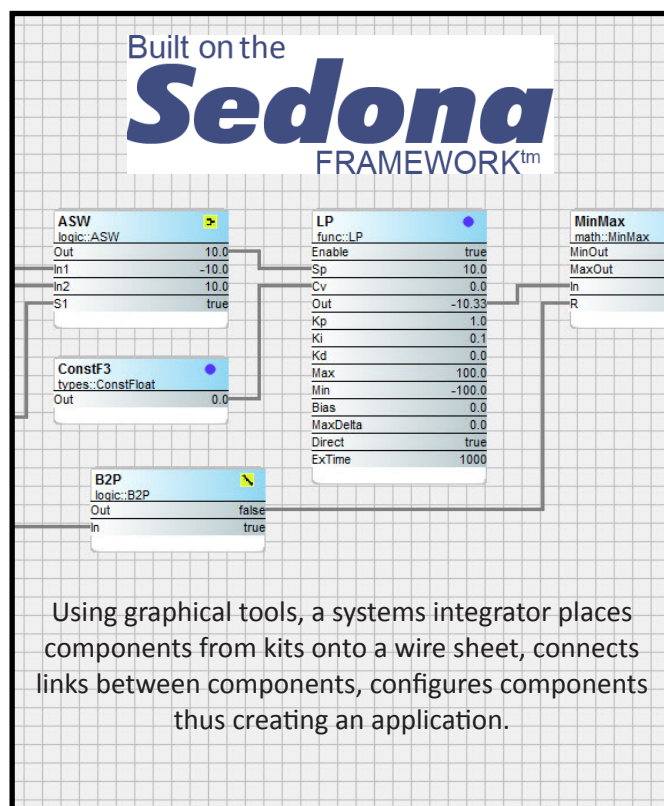
For buildings, BACnet is most recognized open protocol but it does not define a control language. Created by Tridium, Sedona Framework has similar attributes to the very popular Niagara Framework and it is available to the public under an Academic Free license. Developers like Contemporary Controls can build upon the technology to make networked, smart, embedded controllers. System integrators are free to use Contemporary Controls' Sedona Application Editor to program Sedona-compliant devices from any Sedona supplier. In addition, Contemporary Controls fosters a community of developers and system integrators that participate in the sharing and development of Sedona components, kits and applications for the benefit of the building controls industry.

## BACnet + Sedona = Open Controller

## BAScontrol Series – Combining an Open Protocol with an Open Control Language

The BAScontrol Series is a line of BACnet unitary controllers complying with the B-ASC device profile that support both BACnet/IP and Sedona Framework (SOX) protocols via an Ethernet connection. A resident web server allows controllers to be accessible via a common web browser.

Each device in the series is a freely-programmable controller executing Sedona's drag-and-drop methodology of assembling components onto a wire sheet to create applications. They can be programmed using Niagara Workbench or a Sedona programming tool such as Contemporary Controls' Sedona Application Editor (SAE). Built on the Sedona Framework, Contemporary Controls has developed more than 100 custom Sedona components which complement the standard Tridium-developed Sedona 1.2 components that reside within the device. Unique to the BAScontrol series are 48 Web Components that allow wire sheet data to be read and written from a common web browser; and 24 Virtual Components that allow wire sheet data to be read and written from a BACnet client.



Sample of standard and custom Sedona Components



## BAScontrol Series — a Common Core of Functionality

Controllers in the series support a common core of features and differ only by I/O count and network connections. Configuration is via a 10/100 Mbps Ethernet connection. All models have a real-time clock and are powered from a 24 VAC/VDC power source.

Model	Universal Inputs (UI)	Binary Inputs (BI)	Analog Outputs (AO)	Binary Outputs (BO)	Virtual Components (AV or BV)	Web Components	Ethernet Port	EIA-485 MS/TP Port
BAScontrol20	8	4	4	4	24	48	1	0
BAScontrol22	8	4	4	6	24	48	2	0
BAScontrol22S	8	4	4	6	24	48	1	1
BAScontrolZ	0	0	0	0	24	48	1	1

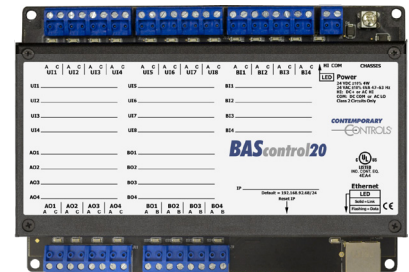
The BAScontrol20 has eight universal inputs that can be individually configured as an analog input, thermistor input, resistance input, pulse input or contact closure input. One model provides four relay outputs and another four triac outputs. The BAScontrol22 has the same basic capabilities as the BAScontrol20 while providing two more relay outputs. There is no triac version. The BAScontrol22 also has two Ethernet ports that allow for the daisy-chaining of Ethernet connections.

The BAScontrol22S has one Ethernet port and one MS/TP serial port for connecting downstream BACnet I/O modules such as the Cube I/O and RIB I/O along with any other BACnet MS/TP controllers. By adding BACnet client capability to the BAScontrol22S, the BAScontrol22S' wire sheet can now interact with expansion I/O modules thereby allowing for a greater variety of I/O capabilities to meet project requirements with a minimum amount of interfacing hardware.

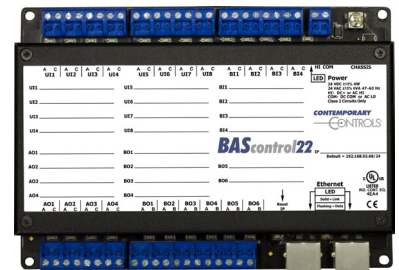
The BAScontrolZ has no physical I/O points of its own but gains the same I/O expansion capability as the BAScontrol22S in its ability to support Cube I/O, RIB I/O and other MS/TP devices. In a small package, the BAScontrolZ provides Sedona intelligence to unintelligent I/O modules are distributed over a wide area. With both BACnet/IP and MS/TP connections, the BAScontrolZ has several other features that merit investigation.

## Have it Your Way — Freely-Programmable or Configurable

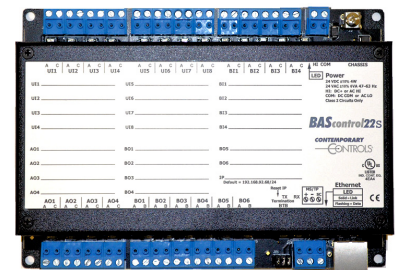
The BAScontrol series is freely programmable using Sedona Framework. Standard components from Tridium and custom components from the Sedona community are assembled onto a wire sheet by system integrators to create applications. To simplify the deployment of applications in the field, the Sedona application can be password protected and still be accessible by users to make configuration changes. By incorporating web components in the wire sheet logic, configuration changes can be made from password protected web pages. Likewise, virtual components can be used to make process changes from BACnet clients. This flexibility of Sedona allows system integrators the ability to safeguard the application by only allowing configuration without losing the ability to make subtle logic changes in order to comply with a specific sequence of operation requirement.



*BAScontrol20 20 I/O and Single Ethernet Port*



*BAScontrol22 22 I/O and Dual Ethernet Ports*



*BAScontrol22S 22S I/O and Single Ethernet Port and MS/TP Port*

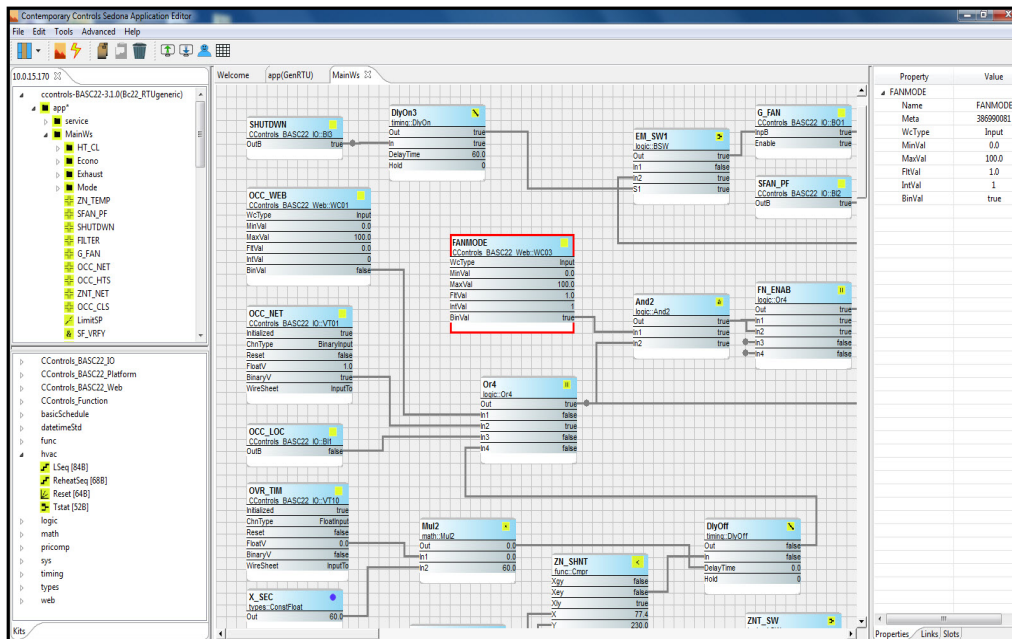
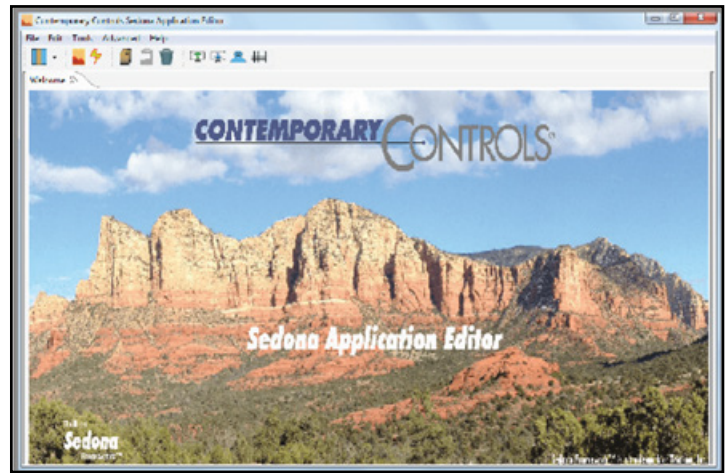


*BAScontrolZ No I/O and Single Ethernet Port and MS/TP Port*

# Control

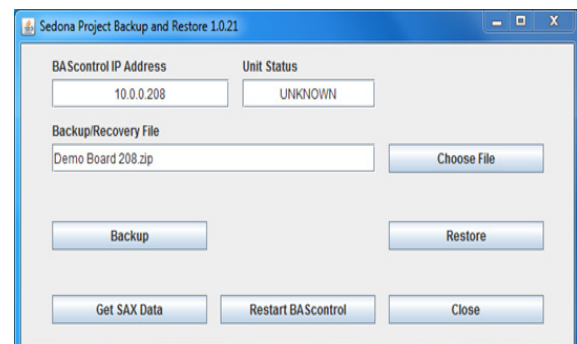
## Sedona Applications Editor as a Sedona Tool

In order to program a Sedona device a Sedona tool is required. For those who have access to Niagara Workbench 3.7 or 3.8, Workbench can function as a Sedona tool assuming Sedona is installed in Workbench along with the same kits used by the connected Sedona controller. One alternative Sedona tool is Contemporary Controls' Sedona Application Editor (SAE) which is available free by download from Contemporary Controls' web site. SAE is much simpler to use than the full-featured Workbench when only Sedona devices are involved. To assist the user in learning how to use Sedona, the SAE download includes a sample Sedona Virtual Machine (SVM) that works on the PC (SVM-PC) where SAE is installed. In this way Sedona programs can be developed with SAE and executed on the SVM-PC with ease.



## BASbackup — Sedona Project Backup and Restore Utility

Sedona tools have provision for backing up and restoring Sedona applications but Sedona controllers like the BAScontrol series have other data such as BACnet and web page configurations that must be saved as well. In order to completely save all programmable data on a BAScontrol series controller, the BASbackup utility was developed. This program can be downloaded for free from Contemporary Controls' web site.



## BACnet MS/TP Communicating Thermostat

The BASstat series consists of BACnet MS/TP fully configurable communicating thermostats suitable for multi-stage heating/cooling of HVAC equipment such as rooftop units (RTUs) or control of fan coils.

In the case of RTUs, the thermostat measures space temperature (local or remote) and then uses low-voltage relays to sequentially engage one or two stages of heating or cooling to satisfy set point.

For fan coils, two analog outputs are provided – one for heating and one for cooling. The fan can be operated continuously or automatically. This series has a large LCD screen showing room temperature or set point, and related status. Configuration is accomplished by entering engineering mode.



**BASstat**

## Cube I/O— Expanding the Number of I/O Points in the Field

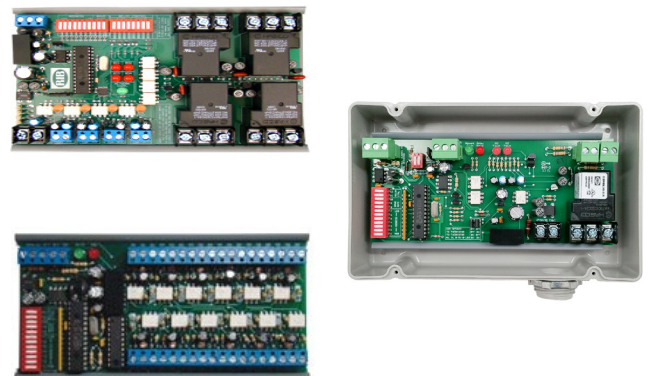
For those installations that require that field input/output devices must be distributed away from the central controller or simply that more points are needed in Class 2 field installations, Contemporary Controls has a solution for both BACnet MS/TP and Modbus RTU systems. These compact cost-effective Cube I/O modules are available with varying configurations of analog and digital inputs and outputs. Digital input modules can be configured to support either “wet or dry” contacts up to 10 points. There are also analog input modules to measure voltage and resistance, analog output modules that output voltage, relay output modules and mixed digital input/output modules. All modules operate from a 24 VAC/VDC supply.



*Contemporary Controls’ provides custom Sedona kits for both the Cube I/O and RIB I/O to simplify interfacing to the BAScontrol22S and BAScontrolZ.*

## RIB I/O — Network Compatible Relays for Class 1 Loads

When driving lighting panels or other Class 1 loads, network compatible relays located distant from Class 2 panels are helpful. The RIB I/O modules can switch 20A loads up to 277 VAC using form “C” contacts. Modules are BACnet MS/TP compliant and therefore offer convenient expansion for Contemporary Controls’ Sedona controllers. Some models are provided in plastic enclosures while others are installed in customer-supplied panels. Modules can be 24 VAC/VDC powered.





# Integrate

The BASrouter, portable BASrouter and BASrouterLX provide stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MS/TP, allowing a mix of BACnet network technologies within a single BACnet internetwork.

All models have a 10/100 Mbps Ethernet port for BACnet/IP and BACnet/Ethernet, and an isolated EIA-485 port for BACnet MS/TP. A total of 31 full-load or 63 half-load devices can be attached to the MS/TP network over a shared two or three wire EIA-485 network.

Data rates from 19.2 to 76.8 kbps are supported with the BASrouterLX supporting the higher 115.2 kbps rate. Commissioning of all BASrouters is accomplished using a standard web browser.

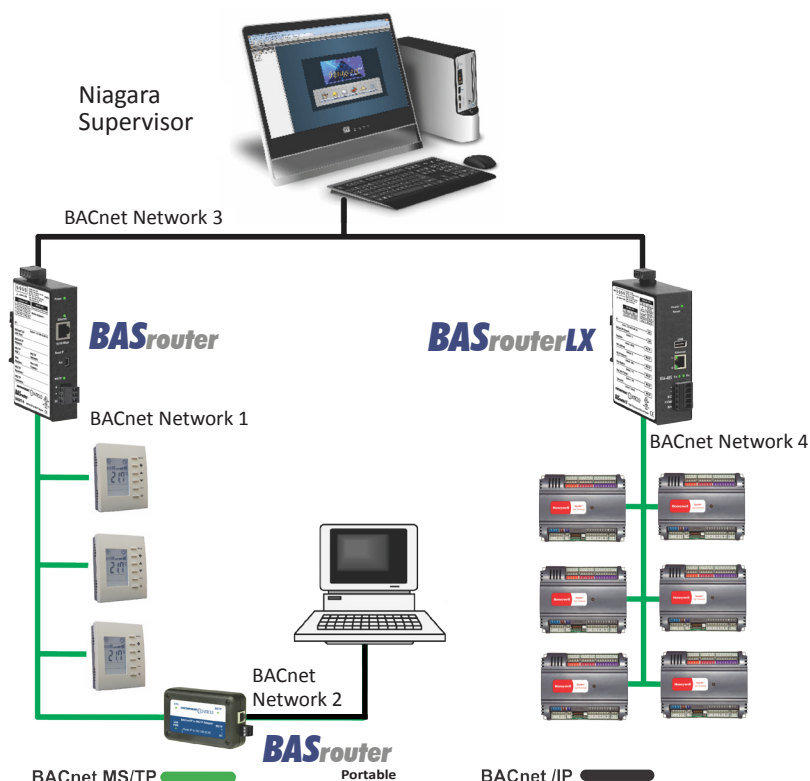
For basic BACnet routing, the BASrouter can be used with support for 5 BBMD entries in its BDT (Broadcast Distribution Table).

This small unit is DIN-rail mounted and powered from a low-voltage 24 VAC/VDC supply.

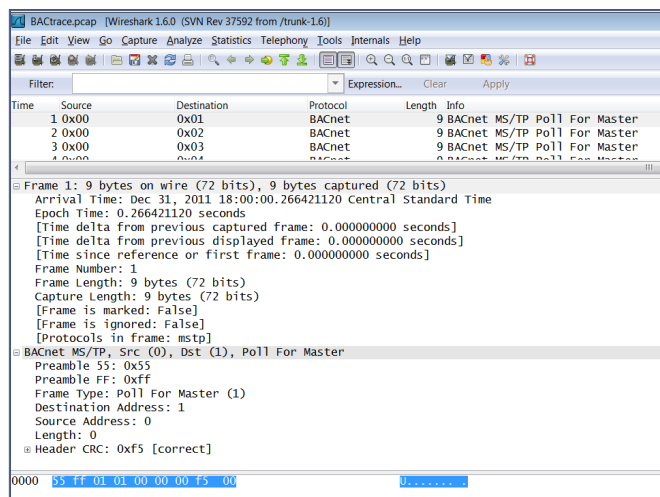
The BASrouterLX differs in that it supports both master and slave BACnet MS/TP devices, has a larger BDT table for up to 50 entries and has higher performance due to its faster processor and larger memory.

As an aid in troubleshooting MS/TP issues, it can capture MS/TP traffic which can be viewed using Wireshark®.

For temporary connections while commissioning or troubleshooting a MS/TP network, the Portable BASrouter can be used. With the portable unit, power is derived from the USB port on a laptop computer although data communications occur over the laptop's Ethernet port.



## Stand Alone Routing Between BACnet/IP, BACnet Ethernet and BACnet MS/TP



Wireshark capture of MS/TP Data

## Modbus to BACnet Conversion

Modbus remains a popular network technology. It is commonly found on jobs such as boiler control, variable speed drives, and metering applications, however these devices lack BACnet compliance. To make Modbus devices appear as individual BACnet devices a BASgatewayLX is used.

This device has one 10/100 Mbps Ethernet for both Modbus TCP and BACnet/IP and an optically-isolated Modbus EIA-485 serial port for Modbus RTU or Modbus ASCII devices.

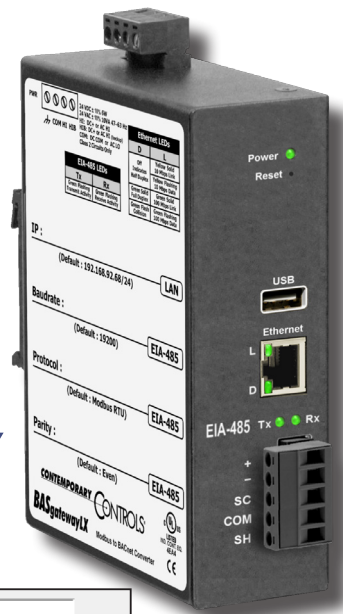
Up to 30 Modbus serial TCP devices (represented by up to 1000 polled points) can be connected to ports on the BASgatewayLX.

The virtual routing feature in the BASgatewayLX allows each connected Modbus device to appear as an individual BACnet-compliant device. A device profile for each Modbus type device is needed.

Contemporary Controls maintains a library of over 100 common device profiles from many well-known companies. If one is not available that you are searching for, Contemporary Controls will be glad to provide it upon request. Custom device profiles can be uploaded to the BASgatewayLX.

Using web pages and a resident database of common Modbus device profiles, Modbus data points from Modbus Serial or Modbus TCP devices are mapped to BACnet objects.

## BASgatewayLX



Device Name: ND350

Modbus Address: 10 (1 to 246)

Modbus IP Address: 0.0.0.0

Device Instance: 2450010

Modbus Registers (Max 1000):

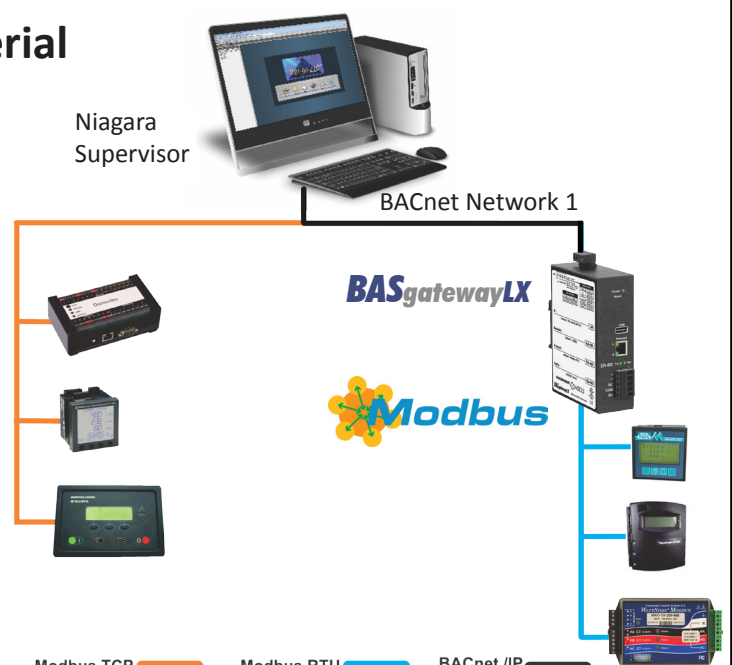
- ☐ 400513 eScale Energy Register
- ☒ 400515 kWh Energy Register
- ☒ 400517 kVAh Energy Register
- ☒ 400519 kvarh Inductive Energy Register
- ☒ 400521 kvarh Capacitive Energy Register
- ☒ 400523 Import kvarh Energy Register
- ☒ 400525 Export kWh Energy Register
- ☐ 400527 Export kvarh Energy Register

*BASrouterLX Wireshark capture.  
Simply check which Modbus registers  
are to be polled.*

## Mixing Modbus TCP and Modbus Serial

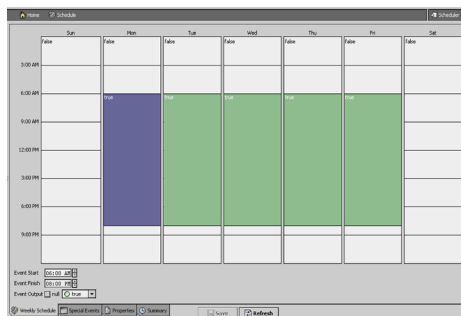
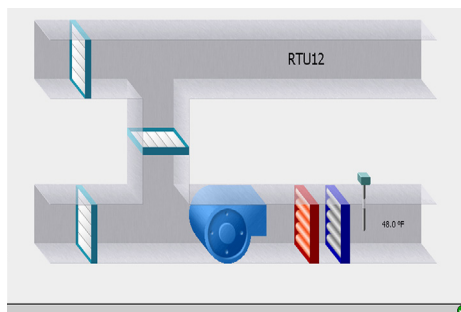
A single BASgatewayLX can handle both Modbus TCP devices and Modbus Serial devices simultaneously as long as the 30 device/1000 polled point limit is maintained. In this application the Modbus TCP connection is called a “one-armed gateway” because both Modbus TCP and BACnet/IP messages transfer through the same Ethernet port.

Configuration is similar to that of a Modbus serial device. However, this time the IP address of the Modbus TCP device must be entered as well as a Modbus slave address. Notice that all Modbus devices — TCP and serial — are assigned to a unique BACnet network number.





	Source State	Ack State	Source	Alarm Class	Priority	Misg Test
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit1	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit2	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit3	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit7	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit8	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit9	defaulAlarmClass	255	Zone 4 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit4	defaulAlarmClass	255	Zone 7 Temp Too High
11:42:45:56 PM CT	Offnormal	0 Ack'd / 25 Unacked	BoosterWinhibit3	defaulAlarmClass	255	Zone 7 Temp Too High
11:42:45:53 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit10	defaulAlarmClass	255	In Range
11:42:45:53 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit15	defaulAlarmClass	255	Boiler Pressure Ok
11:42:45:53 PM CT	Normal	0 Ack'd / 33 Unacked	BoosterWinhibit12	defaulAlarmClass	255	In Range
11:42:45:53 PM CT	Normal	0 Ack'd / 33 Unacked	BoosterWinhibit18	defaulAlarmClass	255	Zone 8 Temp Ok
11:42:45:53 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit6	defaulAlarmClass	255	In Range
11:42:45:53 PM CT	Normal	0 Ack'd / 33 Unacked	BoosterWinhibit14	defaulAlarmClass	255	Zone Temp OK
11:42:45:53 PM CT	Normal	0 Ack'd / 33 Unacked	BoosterWinhibit16	defaulAlarmClass	255	In Range
11:42:45:53 PM CT	Normal	0 Ack'd / 33 Unacked	BoosterWinhibit17	defaulAlarmClass	255	In Range
11:42:45:53 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit11	defaulAlarmClass	255	Zone 3 Temp OK
11:42:45:53 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit9	defaulAlarmClass	255	Zone 3 Temp OK
11:42:45:52 PM CT	Normal	0 Ack'd / 32 Unacked	BoosterWinhibit17	defaulAlarmClass	255	In Range



The Niagara Framework® is a software platform that integrates diverse systems and devices regardless of manufacturer, or communication protocol into a unified platform that can be easily managed and controlled over the Internet using a standard web browser. By integrating diverse building systems such as environmental controls, security, lighting, energy, video, fire and life safety, Niagara is creating better buildings that are smarter, use less energy, and are more efficient.

Niagara Framework® is a viable visualization option because of the easy expansion offered by its flexible control hierarchy and wealth of integration options.

The Niagara Supervisor network server provides centralized data logging, alarming, scheduling and real-time displays to web browser clients.

The JACE building controller provides local supervision over BACnet routers, gateways and Sedona Framework™ field controllers. Control programming and configuration are accomplished using a single tool — Niagara Workbench.

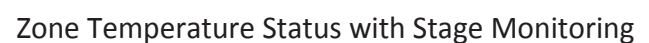
Using Niagara Workbench, a systems integrator can configure and commission Niagara building controllers, operator workstations and Sedona Framework™ field controllers — creating a building automation system that can be scaled for small, medium and large buildings.

As a licensee of Niagara<sup>AX</sup> Framework from Tridium, Contemporary Controls has created an Authorized Systems Integrator Program to for contractors that will purchase, install and commission building automation systems for end users.

This is an opportunity for electrical and mechanical contractors to gain access to one of the most popular building automation technologies while allowing them to bid on the controls portion of a project.



## Visualize



# Visualize

## Simple Web-based Interface

The BASview is a stand-alone, embedded, web-based graphical interface for building automation and process automation systems. It can be accessed from any web browser — providing client functionality to any BACnet/IP or Modbus TCP system.

By using Contemporary Controls' BASrouter or BASgateway products, additional protocols such as BACnet MS/TP and Modbus RTU and Modbus ASCII are supported.

The device is simple to install and use. A 10/100 Mbps Ethernet connection is all that is needed. Client features include animated graphic screens, scheduling, historical trending, runtime accumulation and alarm monitoring.

The BASview automatically toggles outputs and changes setpoints on schedule, collect runtime and trend data, and monitor alarm conditions.

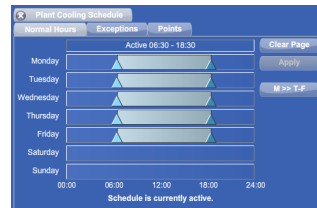
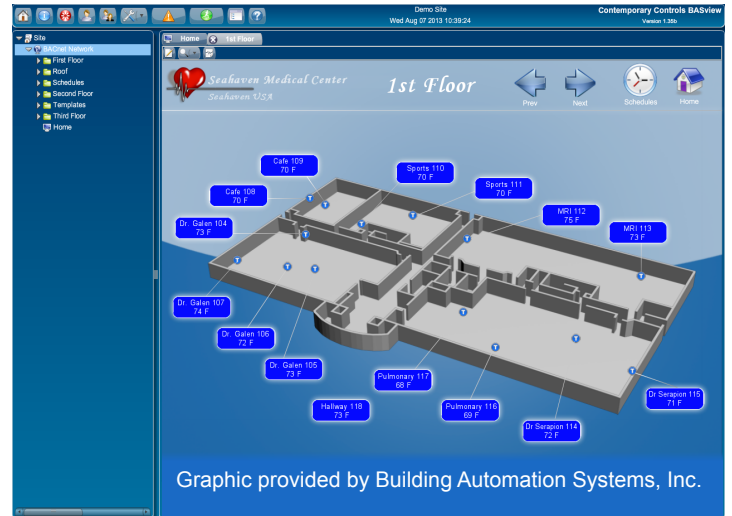
As an embedded device, the BASview uses Flash memory for internal storage instead of a hard disk to maintain its ruggedness.

The device is totally self-contained, requiring no external PC or application for its use. Any number of web browser users can access the device. The only requirement is the installation of an Adobe Flash player in the browser. There are no other licensing requirements to use the product.

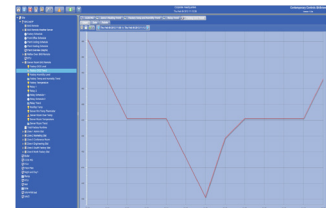
The BASview supports an HTML-only view which can be used for devices which do not support FLASH, such as cell phones and some tablets. It is ideal for small to medium sized buildings or processes that require a simple-to-use graphical interface with no licensing requirements.



**BASview**



SCHEDULES



TRENDS



**SCHEDULES** — Allows for control of several points based on the time of day.



**TRENDS** — Automatically records point values at specified intervals to allow for later viewing.



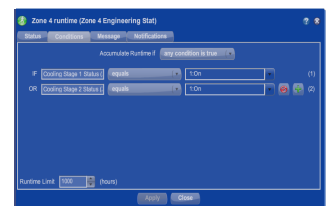
**ALARMS** — Monitors specified conditions and then generates alarm message and optional email alerts.



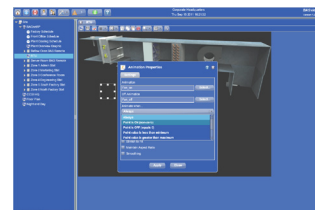
**RUNTIMES** — Monitors specific conditions and accumulates the amount of time the conditions are true, and generates a message and optional email alerts when a limit is reached.

Time	Type	Message
Mon Sep 12 2011 11:45	Activation	Zone 4 air on for 1 minute
Mon Sep 12 2011 11:37	Activation	Y1 and Y2 on!
Mon Sep 12 2011 11:32	Clear	Cooling Off
Mon Sep 12 2011 11:30	Activation	Y1 and Y2 on!

ALARMS



RUNTIMES



GRAPHICS



**GRAPHICS** — Used to display information from the system and to control equipment.

# Communicate

## CTRLink® Ethernet Built for Buildings

Ethernet is the network of choice for intelligent buildings due to its high speed, familiarity among users, ease in connecting to wireless networks, support for structured wiring, the ability to share power and data over one cable, plus its use with Internet protocols.

Ethernet equipment needs to be cost-effective and robust, reliable, easy to install, maintain and use. It must carry proper regulatory approvals and, in some instances, withstand varying outdoor temperatures. For demanding applications, office-grade equipment, with its frequent model changes and inconvenient mounting, will not do.

For simple systems, Plug-and-Play (PnP) switches will suffice. These products operate “right out of the box” and can be put into service without adjustments. Auto-negotiation is standard where data rate (10/100/1000 Mbps) and duplex (half or full) are set between link partners without user intervention. LED indicators identify link status. DIN-rail and panel-mounting are available, as is 24 VAC/VDC power.

The Skorpion series provide a wide range of options from 5 to 16 copper ports, including models specifically intended to monitor the BACnet/IP protocol using Wireshark®. For campus installations with the need to interconnect distant buildings, copper/fiber models exist supporting either multimode or single-mode fiber with distances up to 15 km. The BASswitch series is intended for shallow depth control panels where the devices are either panel or DIN-rail mounted. With either series, power can be derived from a shared 24V DC power supply or Class 2 transformer.

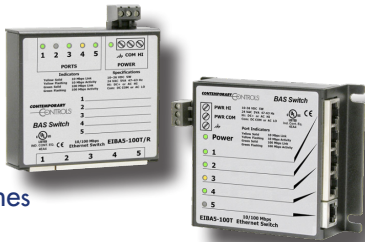
More demanding applications require managed switches that support the simple network management protocol (SNMP) — providing data on the network’s health and the ability to configure the network to meet the needs of the system. Advanced functions like RapidRing® cable redundancy to guard against a single cable break, IGMP snooping, virtual local-area-networks (VLANs), port mirroring for connecting a network analyzer, and priority tagging can be found in managed switches from Contemporary Controls.

For long runs up to 15 km and inherent immunity to electromagnetic interference, media converters with low latency can be used between copper ports. Both single-mode and multimode fiber are supported. For powering a single-port Power-over-Ethernet (PoE) device, a PoE Injector can be used. For generating power from a PoE source, a PoE Splitter can be used.

An IP Router connects two Internet Protocol (IP) networks, passing necessary traffic while blocking all other traffic. Ethernet-to-Ethernet routing is supported via a four-port internal switch. For passing messages over the cellular or Wi-Fi network, a USB adapter can be installed.



Skorpion Unmanaged Ethernet Switches



BASswitch Low-Profile Switches



Managed Ethernet Switches



PoE Injector or Splitter



Ethernet Media Converters



Wired or Wireless IP Routers



# Communicate

## Smoke and Fire Rated Ethernet Switches

The EIS Ethernet Interconnect Switch and the EIRX Gigabit Managed Ethernet Switch from Contemporary Controls comply with the requirements of Underwriters Laboratories (UL) 864 Control Units and Accessories for Fire Alarm Systems 9th Edition. The UL recognized component mark is rarely seen by the customer, but is often part of a larger system that is UL Listed by the fire alarm supplier. A UL recognized component has already been evaluated and tested in accordance with UL's component safety standards, streamlining the qualification process for the system supplier.

The EIS line of unmanaged switches accommodates up to eight 10/100 Mbps twisted-pair ports or a mix of four 10/100 Mbps twisted-pair ports and two single-mode or two multimode 100 Mbps fiber optic ports. Auto-negotiation and flow control are supported. The units are powered from a 24 VAC/VDC supply and can be DIN-rail or panel mounted.

The EIRX Managed Ethernet Switch provides a flexible mix of 28 ports in a highly reliable, compact 1U rack-mount design. The switch is equipped with four 10/100 Mbps twisted-pair ports, 20 ports for 100BASE-FX SFP links and 4 ports for 1000BASE-LX SFP links to be used as backbone ports. It offers redundant power supply connections for mains powering.



**EIS Ethernet Interconnect Switch Series**



**EIRX Gigabit Managed Ethernet Switch**

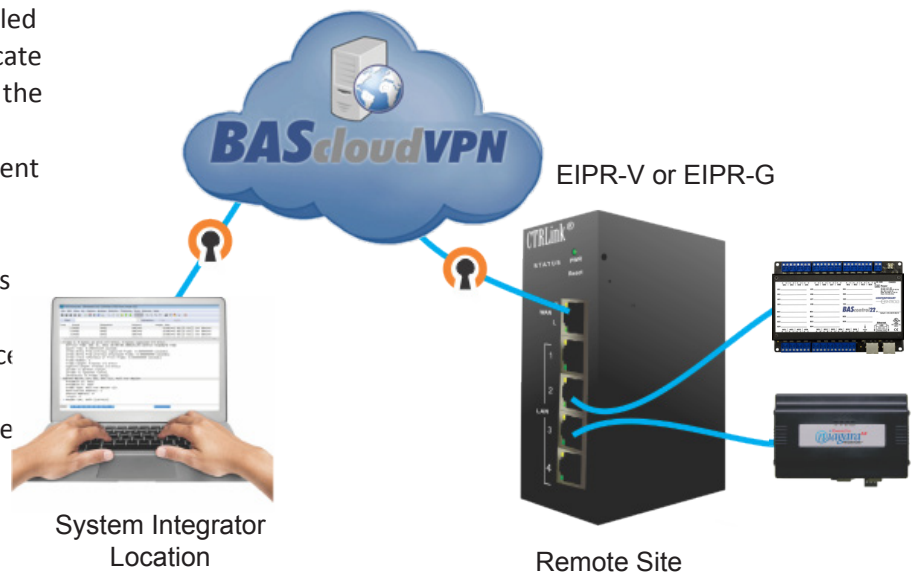
## BAScloudVPN – Secure, Remote, Anytime Access

A Virtual Private Network (VPN) provides a secure means of remotely accessing a customer site from the convenience of the system integrator's place of business. Using OpenVPN technology, Contemporary Controls offers BAScloudVPN — two remote anytime access solutions that address different needs. The first solution has Contemporary Controls hosting a cloud-based OpenVPN server accessible from both local and remote sites for a subscription fee. This approach offers the most flexibility while leaving the maintenance of the cloud server to Contemporary Controls. The second solution eliminates the server fee by placing a purchased mini-version of the BAScloudVPN server at the system integrator's place of business in the form of an EIPR-G Gigabit VPN Router. The systems integrator maintains the mini-server. All that is needed is access to the Internet and possible port-forwarding configuration of the local router.

Both solutions are based upon the same principle while requiring Internet access at both the local and remote sites. An OpenVPN client installed on the system integrator's computer initiates a connection to an OpenVPN server while an OpenVPN client installed in an EIPR-V or EIPR-G VPN Router at the remote site initiates a connection to the same OpenVPN server. A connection between the two sites can now occur without concern for intervening firewalls. The EIPR client will automatically connect to the server and stay connected as long as the Internet connections are present. The EIPR-G family provides a variety of models that support wired, Wi-Fi and cellular communications.

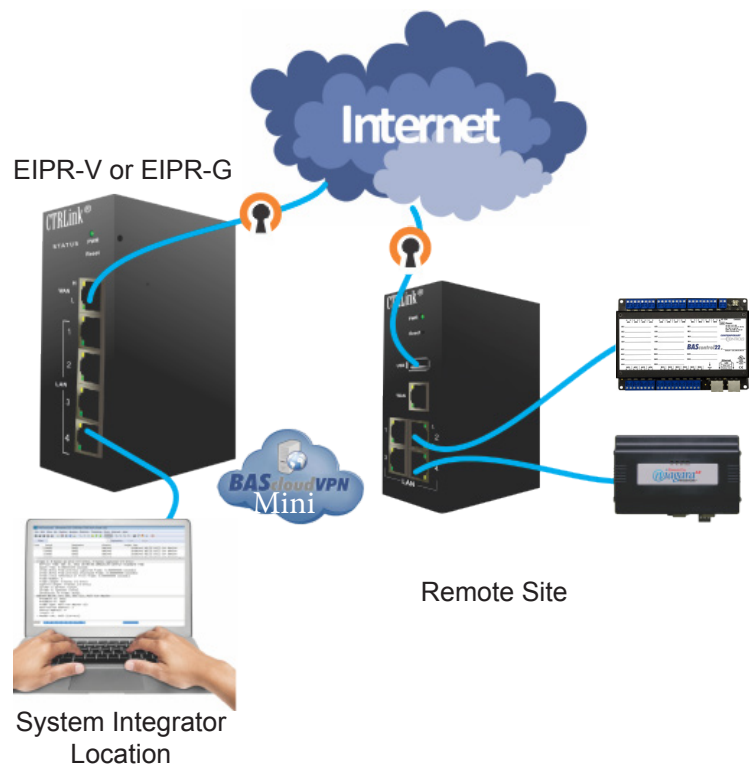
## Solution 1: BAScloudVPN Server Hosted by Contemporary Controls

OpenVPN client software and certificate are installed on the system integrator's computer and a certificate is installed on the EIPR-V or EIPR-G VPN Router at the remote site. Both the computer and VPN router WAN-port are connected to the Internet. Equipment at the remote site is then connected to the EIPR Ethernet LAN-ports. After configuration, connections are established between the two sites and Contemporary Controls' BAScloudVPN. Now the system integrator's computer can access devices connected to the EIPR-V/EIPR-G at the remote site. The BAScloudVPN server subscription provides a simple and worry-free way to create a VPN connection between the local and remote sites.



## Solution 2: Mini-BAScloudVPN Hosted by the Systems Integrator

An Ethernet connection is made between the system integrator's computer and a LAN-port on an EIPR-G Gigabit VPN Router installed at the system integrator's location. This router is configured as an OpenVPN server and a connection is made from its WAN-port to the Internet. Any intervening firewalls will require a port forward to allow OpenVPN clients to communicate with the OpenVPN server. On the remote site, an OpenVPN client certificate is installed on the EIPR-V or EIPR-G and connection to the Internet is made through its WAN-port. Equipment at the remote site is then connected to LAN-ports on the EIPR. Now the system integrator's computer can access devices connected to the EIPR at the remote site. There is no subscription fee with this approach because the BAScloudVPN server has been purchased in the form of an EIPR-G. The system integrator assumes any maintenance needs such as firmware updates to the server.



# Original Design Manufacturing (ODM) Service

We can provide the product you require under your brand. The year 2015 marked our 40<sup>th</sup> year of experience in electronics design, development and manufacturing. We have a rich inventory of intellectual property that can be tapped for your next project.

Two design and manufacturing locations provide private label, ODM and electronics manufacturing services. Leverage our design and manufacturing resources to reduce your costs and time-to-market.

## Design to Worldwide Standards

Two design centers — one in China and the other in the United States — cooperate on product designs from concept to production. **Capabilities include:**

- Schematic capture & printed circuit board layout
- Firmware and programmable logic development
- Mechanical design
- Design for Test (DFT)
- Design for Manufacturing (DFM)
- Environmental testing
- Electromagnetic Compatibility (EMC)
- Safety and performance testing

We assist in obtaining regulatory approvals, including UL, CE and CCC markings.

## Worldwide Electronics Manufacturing

Contemporary Controls offers lead-free surface-mount-technology (SMT) electronics manufacturing in the United States and China while complying with the requirements for the Restriction of Hazardous Substances (RoHS) European Union directive. Through-hole assembly and wave soldering are also supported. Contemporary Controls adheres to the workmanship standards established by IPC — Association Connecting Electronics Industries.

The Downers Grove, Illinois, manufacturing plant focuses on lower-volume, higher-mix products or those products requiring Made-in-America compliance or a North American Free Trade Agreement (NAFTA) certificate.

For higher-volume, lower-mix, cost-sensitive requirements, our Suzhou, PRC plant offers the highest production capacity and global logistics support. The Suzhou plant is ISO 9001:2008 registered. Both plants are under Underwriters Laboratories (UL) surveillance. Your intellectual property (IP) is protected at either plant location.



# WorldWide Locations

[www.ccontrols.com](http://www.ccontrols.com)



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## Quality Policy

Contemporary Controls develops, manufactures and markets innovative networking and control products to the benefit of our automation customers worldwide. We are committed to delivering products and services that meet customer requirements and strive to exceed their expectations through our continuous improvement efforts.

# CONTEMPORARY CONTROLS®