



eSci System

eSci-8x8 | eSci-16x16

INTRODUCTION

The eBuilding System Controller (eSci) from Cylon Controls is a facility level controller that delivers cost effective control solutions for a variety of building sizes and building subsystems such as HVAC and lighting. The eSci allows building managers to monitor and control thousands of facilities from a single location. Data from all the eSci controllers is delivered to a single eBuilding Site Server and displayed on a common web browser. A simple menu screen allows for quick navigation to any specific store and the detailed store pages present a customized and user-friendly view of the single building.

The eSci utilizes Cylon's latest IP based, web enabled CBXi platform to present two models of the eBuilding controller. Both the eSci-8x8 and eSci-16x16 feature integrated I/O that can be easily configured to meet the most complex retailer's needs.

The eSci controller family provides backward compatibility and continuity to our existing Teletrol customers by harnessing the power of the new platform through a simplified upgrade program.

FEATURES

- IT-friendly implementation including XML over HTTP
- Ethernet 10/100 LAN support
- BACnet MS/TP RS-485 device network support
- Modbus device network support
- Supports remote update of control logic and firmware
- Ready to mount package with conduit knockouts

The eSci has been designed to integrate into Cylon's **eBuilding** facility automation system - a system that is:

- IT-friendly
- BACnet enabled
- Internet-powered

eBuilding is a scalable system designed for multisite retailers to maximize the potential of their existing Information Technology infrastructure to manage the complete portfolio of multisite facilities. The eSci provides industry standard communications capabilities through its various built-in communications ports.

- 10/100Mbps Ethernet port - supports TCP/IP network traffic, ensuring seamless connectivity with industry standard network infrastructures all over a single port.
- BACnet MS/TP subnet port - designed to communicate with unitary controllers and intelligent sensors, including our SimpleSTAT, TRC and override button device.
- Modbus RTU - for connectivity to devices and subsystems supporting the Modbus RTU protocol.

eSci-8x8

provides internal I/O capability configured as 8 analog inputs and 8 relay outputs

eSci-16x16

provides an internal I/O capability consisting of 16 analog inputs, 8 analog outputs and 8 relay outputs

Includes a BACnet MS/TP serial port to support devices such as SimpleSTATS, TRCs and override controls

Multi-protocol communications support for BACnet MS/TP and Modbus RTU

All I/O has Hand/Off/Auto Local Override functionality

Electronics and power supply assembly is a field replaceable unit to simplify servicing

Optional rugged metal enclosure with conduit knockouts, for convenient installation and wiring

Includes an integral 10/100 Ethernet port supporting local and network communications

APPLICATION

The combination of features packed into the eSci controller makes it ideal for supervisory building control and for integrating with a broad range of HVAC equipment in your facilities. The variety of protocol interface options and versatile control features make the eBuilding eSci well-suited for retrofit as well as new construction applications.

PRODUCT SELECTION CHART

		eSCI-8x8	eSCI-16x16
Service		Main Controller	Main Controller
I/O Point Qty	Outputs with Relay	8	8
	Analog Outputs	0	8
	Analog Inputs	8	16
	Digital Inputs	0	0
Input Options	Voltage 0 ... 10 V @ 40 kΩ	✓	✓
	Resistance 0 ... 450 kΩ	✓	✓
	Temperature -35 °F ... +240 °F	✓	✓
	Current 0 ... 20 mA @ 390 Ω	✓	✓
Output Options	Analog 0 ... 10 V	×	✓
	Digital 0 ... 10 V	✓	✓
	Relay Contacts 24 V AC	✓	✓
HOA Switch & Pot.		✓	✓
18 V Aux Power		✓	✓
Subnet 1 ⁽¹⁾		BACnet MS/TP	BACnet MS/TP
Subnet 2 ⁽²⁾		Modbus RTU	Modbus RTU

Note (1): A maximum of 48 connected BACnet MS/TP devices can be connected.

Note (2): A maximum of 120 points across a maximum of 12 devices are allowed for Modbus RTU.

SPECIFICATIONS

MECHANICAL

Size	Components	eSCI-8x8	166 x 89.5 x 57 mm [6.5 x 3.55 x 2.25"]
	(excluding terminal plugs)	eSCI-16x16	270 x 89.5 x 57 mm [10.6 x 3.55 x 2.25"]
	Enclosure	279.4 x 182.2 x 98.4 mm (11 x 7.25 x 3.875")	
Housing	Components	Flame-Retardant ABS DIN 43880 type-2 compatible Enclosure IP 20	
	Enclosure	0.048" Galvanneal	
Mounting	Components	DIN rail	
	Enclosure	key-hole slots / 8:32 Nut (Qty 2)	

CONNECTION

Note: Use Copper or Copper Clad Aluminum 70 °C conductors only.

Terminals	PCB mounted plug terminal connections
Conductor Area	Max: AWG 12 (3.31 mm ²) Min: AWG 22 (0.355 mm ²)

ENVIRONMENT

Note: This equipment is intended for field installation within an enclosure.

Ambient Temperature	-25 °C ... 50 °C (-13 °F ... 122 °F)
Ambient Humidity	0% ... 90% RH non-condensing
Storage Temperature	-30 °C ... +70 °C (-22 °F ... 158 °F)
EMC Immunity	EN 61326-1: 2013
EMC Emission	EN 61326-1: 2013
	EN 61000-3-2: 2014
	EN 61000-3-3: 2013
Approvals	UL Listed (CDN & US) UL916 Energy Management Equipment
	- File No. E123522 (within enclosure)
	- File No. E176435 (without enclosure)

ELECTRICAL

Supply Requirements	Components	24 V AC/DC ±20 % 50/60 Hz
	Enclosure	100 ... 240 V AC, 50/60 Hz (connected via provided pigtails)
Supply	eSCI-8x8	30 VA
Rating	eSCI-16x16	42 VA
FLX Power Connection	Proprietary FLX bus connector carries power and comms between the components of the eSCI-16x16.	
Auxiliary Power	18 V DC / 60 mA output	

PROCESSOR

Type	Ti Sitara AM335X Dual-core ARM Cortex A8
Clock Speed	1000 MHz
System Memory	4 GB eMMC Flash + 512 MB DDR3 DRAM
Real-Time Clock	Yes, backed for 7 days typical

COMMUNICATIONS

Ethernet ports	Dual Switched 10/100BASE-TX (RJ45) Addressing: IPv4, IPv6 or Hostname / DHCP Client or Static IP Connection Topology: Daisy-chain BACnet/IP, BTL-BBC
RS485 Port 1	BACnet MS/TP RS485 @ 9K6,19K2, 38K4(default), 57K6, 76K8 or 115k2 Baud. Max cable length 1.2 km @ default ¼ unit load device
RS485 Port 2	Modbus RTU RS485 @ 9K6,19K2, 38K4(default), 57K6, 76K8 or 115k2 Baud. Max cable length 1.2 km @ default ¼ unit load device
FLX bus	115.2K Baud Max bus length (including extension cables): 30 m / 100 ft. using 18 AWG conductors 15 m / 50 ft. using 22 AWG conductors
FLX bus Connection	FLX bus connector carries inter-module communications and module power

INPUTS / OUTPUTS

Note: Shielded cable is recommended for all input connections.

Digital Output with Relay	Digital Output 0 ... 10 V @ 20 mA max load Relay Contacts with ability to switch up to 24 V AC Maximum Load: 24 V AC, 2 (1) A resistive (inductive) for all relay contacts
Analog Output	Analog Output 0 ... 10 V @ 20 mA max load, 12-bit resolution
Universal Inputs	Analog Input Range: 0 ... 10 V @ 130 kΩ Accuracy: ±0.5% full scale [50mV]
	Resistance measurement Range: 0 ... 450 kΩ Accuracy: ±0.5% of measured resistance
	Temperature measurement Range: -40 °C ... +110 °C Accuracy: 10k NTC sensors (e.g. 10k Type 2 (10K3A1) or 10k Type 3 (10K4A1): ±0.3°C, -40 to 90°C (-40°F to 194°F); ±0.4°C > 90°C (194°F)
Digital Inputs	Current input Range: 0 ... 20 mA @ 390 Ω Accuracy: ±0.5% full scale [100µA]
	Digital Volt-Free contact, 2 mA contact-wetting current
Digital Inputs	Digital Volt-Free contact, 2 mA contact-wetting current

Notes: 1) All inputs and outputs are protected against short circuit, as well as over-voltage up to 24 V AC.
2) Inputs use on-board 16-bit analog to digital convertor.
3) 18 V DC supply, max 60 mA per CBXi unit, is available for powering sensors.

SOFTWARE FEATURES

Maximum number of Equipment Blocks	200
Maximum number of Event Enrolments	250
Maximum number of Schedules	10

INSTALLATION SUPPORT SERVICES

Wireless Smart Device via Archer T4U V3 USB 3.0 Wifi Adapter (ordered separately) plugged into USB port of eSCI

INTERFACE

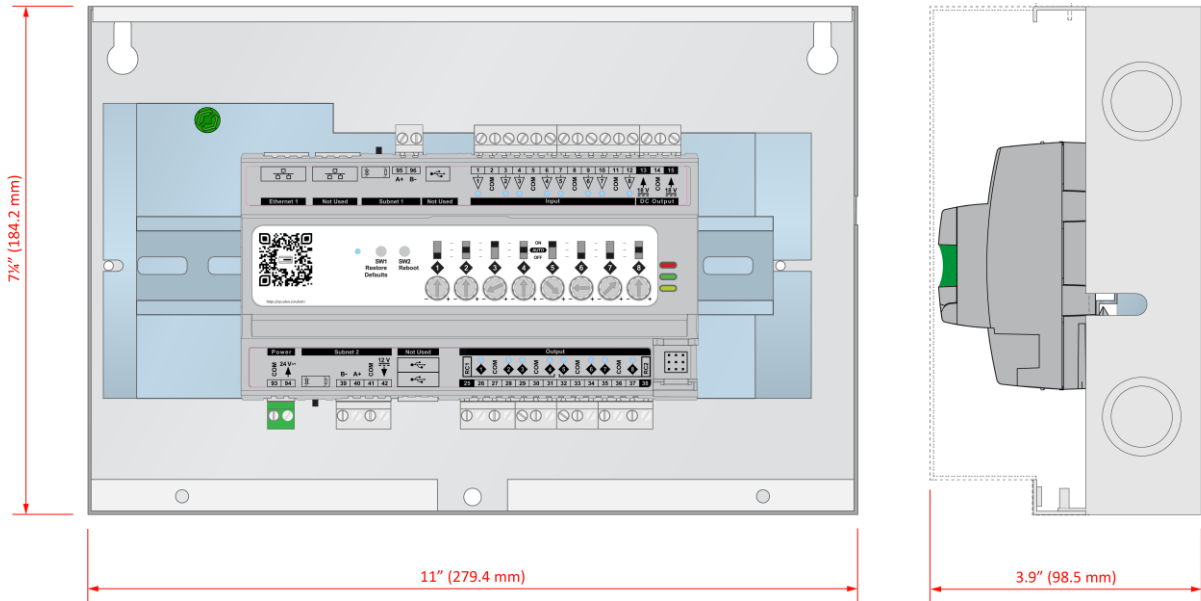
eBuilding Software Envoy



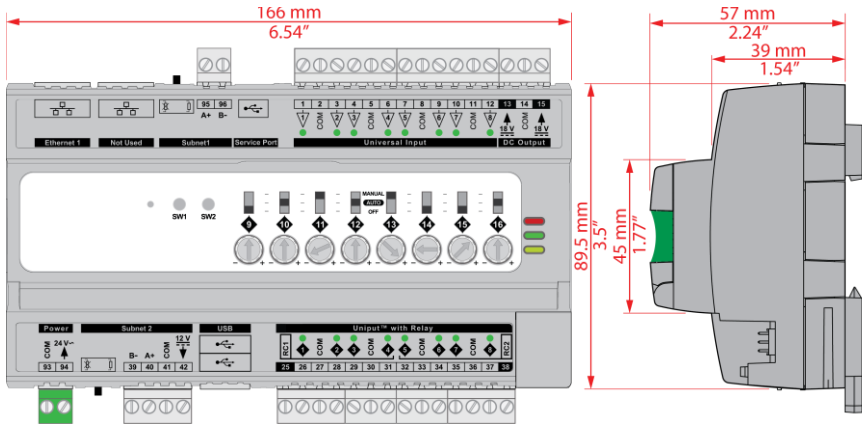
DIMENSIONS

eSci-8x8

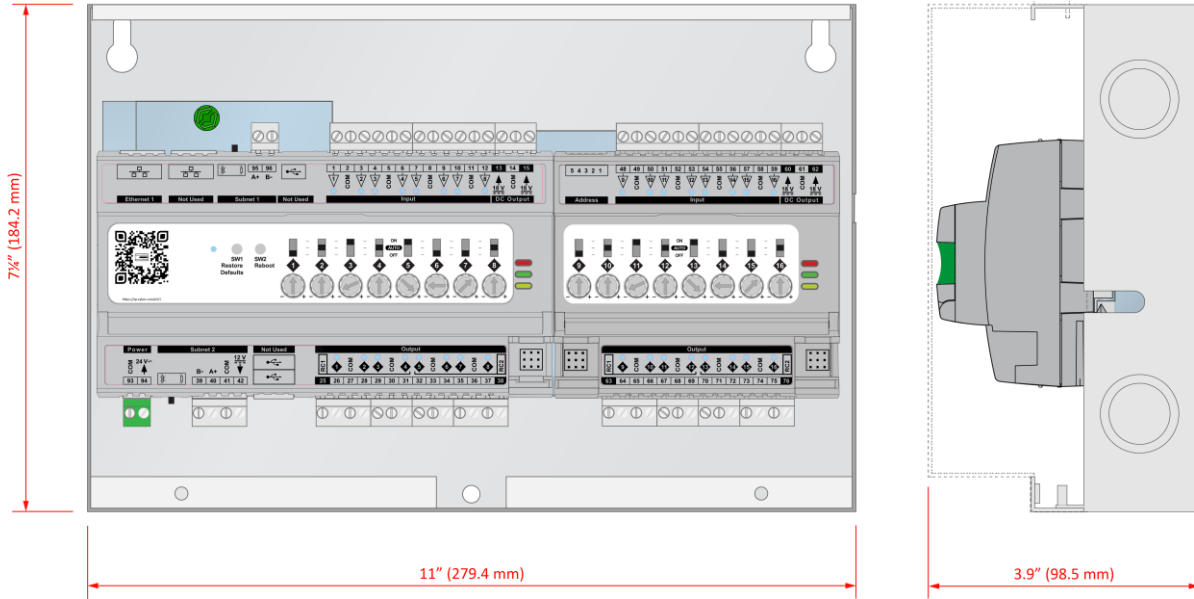
Enclosure and Mounting



Components



eSci-16x16
Enclosure and Mounting



Components

