

Cylon® MATRIX-2 Series



DESCRIPTION

The **MATRIX-2** is an IoT (Internet of Things) embedded **ASPECT®** Control Engine in standard Cylon controller form factor. It is designed to provide flexible site control applications for medium to large scale building automation systems. It can be used to connect with Cylon **CB Series** and **AAM NB Series** of BACnet® MS/TP field level controllers. The **MATRIX-2** supports serial communications protocols such as BACnet, AAM PUP, and Modbus®. Additionally, TCP/IP communications using FT/Net, BACnet, Modbus and Cylon's Unitron (when used with the UC32.netK) protocols are available when using the RJ-45 connection.

APPLICATION

A capacity-based licensing model makes the **MATRIX-2** family of controllers scalable for medium to large buildings applications, including a campus environment when combined with the **ASPECT-Enterprise** server software. The **MATRIX-2** provides network management and integration of the supported field level RS-485 and TCP/IP communication protocols.

When deployed with embedded **ASPECT** Runtime Engine, the **MATRIX-2** is capable of supervisory-based control functions including but not limited to energy management routines, custom sequencing, alarm and event annunciation, historical alarming and trending, and master control scheduling. Additionally, streaming of live connected data is displayed rich HTML5 graphics using a web browser.

ASPECT uses secure web technologies to enrich the user experience through common internet applications (appropriate security measures required, such as VPN or firewall) for alarm annunciation and scheduling. Receive alarms either from the integrated alarm console or through e-mail clients, or Twitter®. Schedule your building equipment through an integrated scheduler or by using common scheduling platforms such as Microsoft® Outlook®, Apple iCal, Google Calendar™.

MATRIX-2-11

750 Points on 1 Device (TCP/IP or RS485)

MATRIX-2-216

750 Points or 16 Devices (TCP/IP and/or RS485)

MATRIX-2-232

1,250 Points or 32 Devices (TCP/IP and/or RS485)

MATRIX-2-264

1,750 Points or 64 Devices (TCP/IP and/or RS485)

MATRIX-2-296

2,000 Points or 96 Devices (TCP/IP and/or RS485)

MAT-LP-8 (License Upgrade)

250 Points or 8 Devices (TCP/IP and/or RS485)

PLATFORM MAXIMUMS

2,500 Points or 128 Devices

64 Devices per RS-485 port

HARDWARE PLATFORM

ARM Cortex-A8 @ 1 GHz, 512 MB RAM, 4 GB Flash

Two 10/100 MB Ethernet RJ-45 Connections

Two RS-485 ports @ 9K6, 19K2, 38K4, 57K6, 76K8 or 115K2

EMBEDDED SOFTWARE

Operating System: Secure Linux OS

Application: Embedded **ASPECT®** Runtime Engine

DIN-rail mounting

Consistent mounting method as other Cylon controllers

Fan-less design for high reliability

PRODUCT SELECTION CHART

Product Selection Chart							
Part Number	Device Capacity ¹	Point Capacity ¹	BACnet MSTP and/or IP	Modbus RTU and/or TCP	AAM PUP	Teletrol TSC®	Unitron (using UC32.netK)
MATRIX-2-11	1 ³	750 ³	✓	✓	✓	✓	✓
MATRIX-2-216	16	750	✓	✓	✓	✓	✓
MATRIX-2-232	32	1,250	✓	✓	✓	✓	✓
MATRIX-2-264	64	1,750	✓	✓	✓	✓	✓
MATRIX-2-296	96	2,000	✓	✓	✓	✓	✓
MAT-LP-8	8	+250	-	-	-	-	-
MAT-LIC-CHG ²	-	-	-	-	-	-	-

Note 1: MATRIX-2 supports a maximum of 2,500 points and 128 device connections.

Note 2: Field upgrades require a MAT-LIC-CHG license.

Note 3: MATRIX-2-11 variant cannot be upgraded.

SPECIFICATIONS

MECHANICAL

Size (excluding terminal plugs)	166 x 89.5 x 57 mm [6.54 x 3.5 x 2.24"]
Enclosure	Flame-Retardant ABS DIN 43880 type-2 compatible Enclosure IP 20
Mounting	DIN rail

CONNECTION

Note: Use Copper or Copper Clad Aluminum 70 °C (158 °F) conductors only.

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

PROCESSOR

Type	TI Sitara AM335X Dual-core ARM Cortex A8
Clock Speed	1 GHz
System Memory	4 GB eMMC Flash + 512 MB DDR3 DRAM
Real-Time Clock	Yes, backed for 7 days typical

SECURITY

Transport Layer Security	Support for TLS 1.3
Upgrade Security	Upgrade software bundles are signed

ELECTRICAL

Supply Requirements	24 V AC/DC ±20 % 50/60 Hz
Supply Rating	20 VA

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. E176435
Safety	CE Approved

COMMUNICATIONS

Ethernet ports	Auto-sensing 10/100BASE-TX (RJ45) Addressing: IP address or Hostname/DHCP Client or Static IP Connection Topology: Daisy-chain, supports Spanning Tree Modbus TCP, BACnet/IP
RS-485 Port 1 & 2	Isolated RS-485 port supporting protocols up to 115K2 (default 38K4) Max cable length 1.2 km @ default ¼ unit load device. Protocol license enforced, driver selectable BACnet MSTP, Modbus RTU, AAM PUP, Teletrol TSC and Unitron Serial Network Load license enforced up to 64 devices

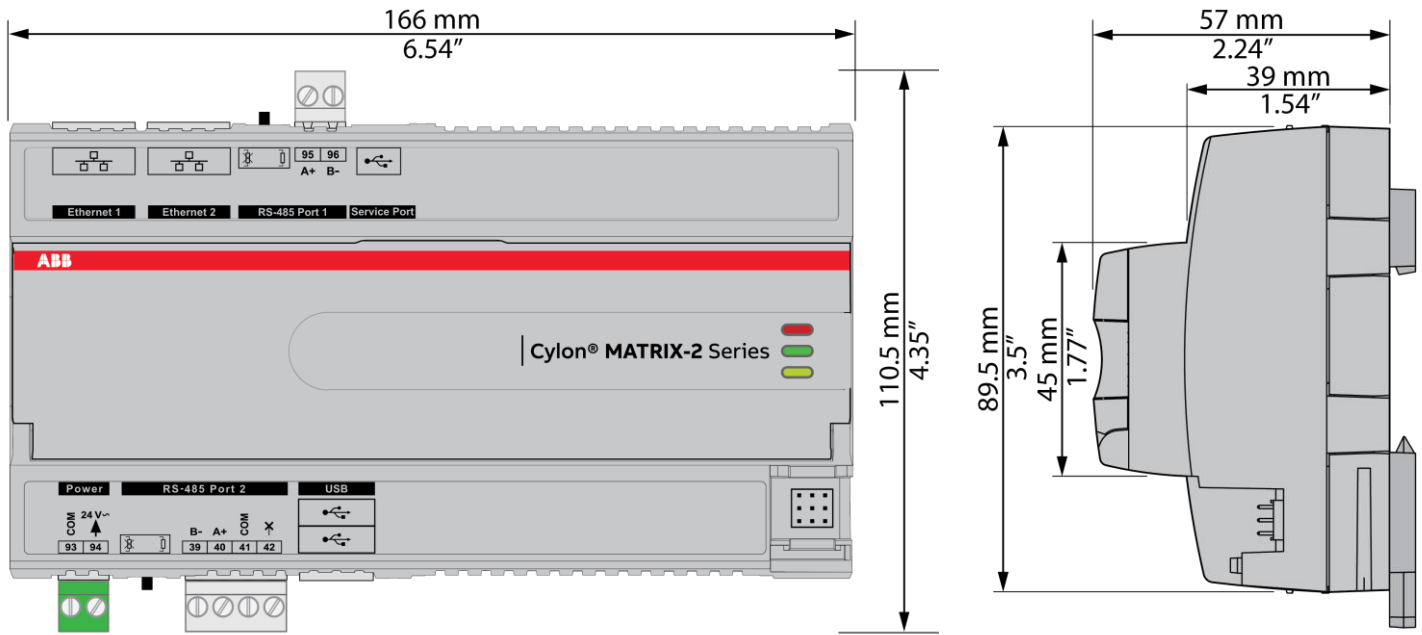
Note:

- Port 1 is isolated
- Port 2 is non-isolated

SETUP & CONFIGURATION

Software	ASPECT®-Studio
Browser	Standard web browsers that support HTML5, including: Internet Explorer 8/9/10/11, Firefox, Opera 12, Safari 6, and Google Chrome

DIMENSIONS

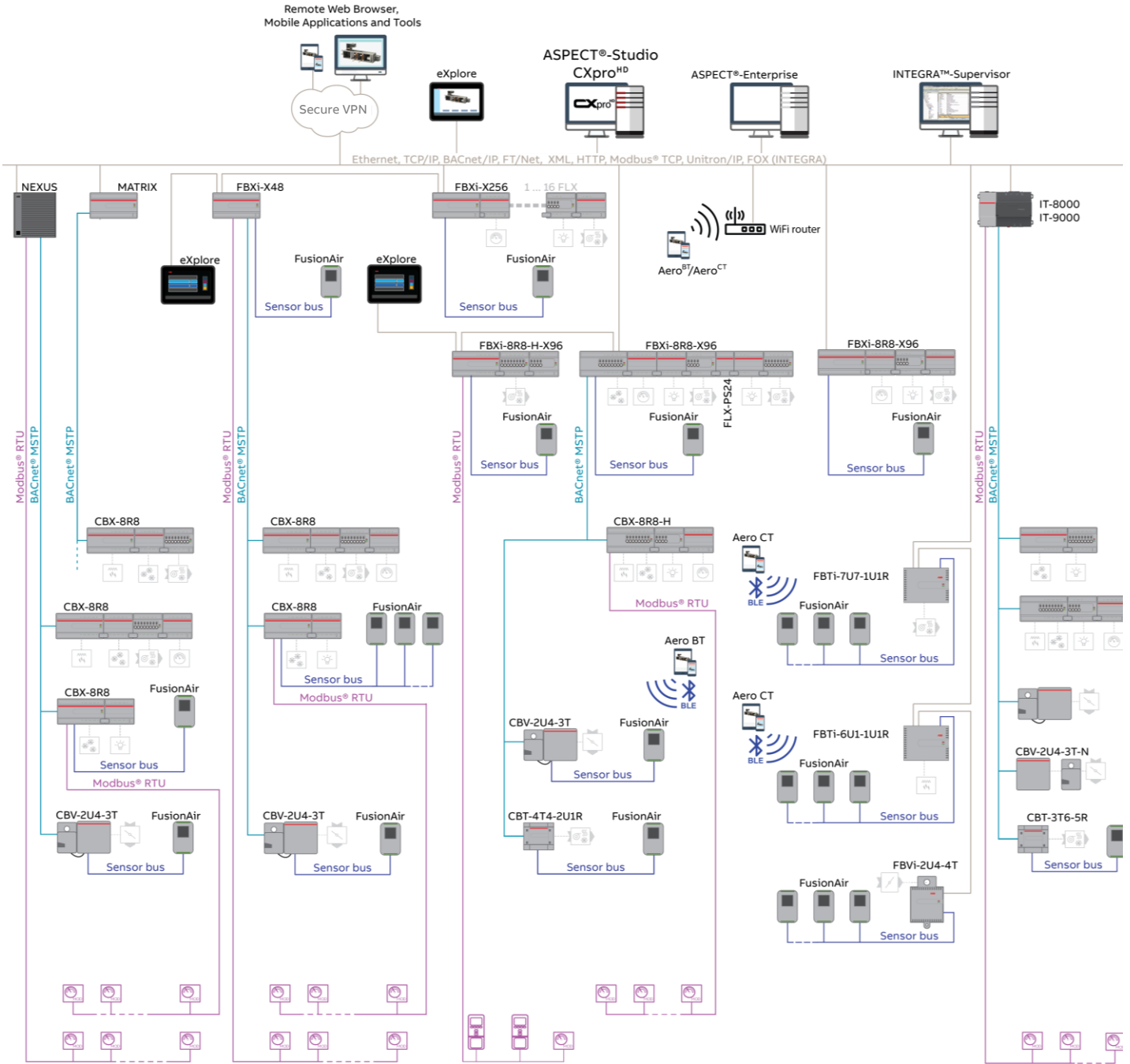


Note: There is no support for a Sensor on the MATRIX-2, so terminal 42 is Not Connected.

ORDERING INFORMATION

Order Code	Product Name	Description
ABB2CQG100118R1021	MATRIX-2-11	MATRIX-2-11 ACE 750 points, 1 device
ABB2CQG100114R1021	MATRIX-2-216	MATRIX-2-216 ACE 750 points, 16 devices
ABB2CQG100115R1021	MATRIX-2-232	MATRIX-2-232 ACE 1250 points, 32 devices
ABB2CQG100116R1021	MATRIX-2-264	MATRIX-2-264 ACE 1750 points, 64 devices
ABB2CQG100117R1021	MATRIX-2-296	MATRIX-2-296 ACE 2000 points, 96 devices

SYSTEM ARCHITECTURE



FBXi / CBXi-8R8 / CBX-8R8	FLX-8R8 - H	FBVi-2U4-4T	INTEGRA Series	FusionAir Smart Sensor
CBXi-8R8-H / CBX-8R8-H	FLX-4R4-H	NEXUS Series	eXplore	CBT-STAT
CBV-2U4-3T	FLX-PS24	MATRIX-2 Series		UCU Room Display
FLX-8R8 / FLX-4R4 / FLX-16DI	CBT-4T4-2U1R			