DESCRIPTION

The MATRIX is an IoT (Internet of Things) embedded ASPECT® Control Engine 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 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 family of controllers scalable for medium to large buildings applications, including a campus environment when combined with the ASPECT®-Enterprise server software. The MATRIX 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 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 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 Series

MATRIX-216 | MATRIX-232 | MATRIX-264 | MATRIX-296

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATRIX-216</td>
<td>750 Points or 16 Devices (TCP/IP and/or RS485)</td>
</tr>
<tr>
<td>MATRIX-232</td>
<td>1,250 Points or 32 Devices (TCP/IP and/or RS485)</td>
</tr>
<tr>
<td>MATRIX-264</td>
<td>1,750 Points or 64 Devices (TCP/IP and/or RS485)</td>
</tr>
<tr>
<td>MATRIX-296</td>
<td>2,000 Points or 96 Devices (TCP/IP and/or RS485)</td>
</tr>
<tr>
<td>MAT-LP-8</td>
<td>250 Points or 8 Devices (TCP/IP and/or RS485)</td>
</tr>
</tbody>
</table>

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
One 10/100 MB Ethernet RJ-45 Connection
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

Fan-less design
**Product Selection Chart**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Device Capacity</th>
<th>Point Capacity</th>
<th>BACnet MSTP and/or IP</th>
<th>Modbus RTU and/or TCP</th>
<th>AAM PUP</th>
<th>Teletrol TSC*</th>
<th>Unitron (using UC32.netK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATRIX-216</td>
<td>16</td>
<td>750</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MATRIX-232</td>
<td>32</td>
<td>1,250</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MATRIX-264</td>
<td>64</td>
<td>1,750</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MATRIX-296</td>
<td>96</td>
<td>2,000</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MAT-LP-8</td>
<td>8</td>
<td>+250</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MAT-LIC-CHG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: MATRIX supports a maximum of 2,500 points and 128 device connections
Note 2: Field upgrades require a MAT-LIC-CHG license.

**SPECIFICATIONS**

**Physical**
- Form Factor: DIN Rail mountable
- Dimensions: 17 cm x 16.5 cm x 3.8 cm (6.7” x 6.5” x 1.5”)

**Operation**
- Processor: ARM Cortex-A8 1 GHz with embedded Linux OS
- Memory: 512 MB SDRAM, 4 GB flash, 4 GB SD
- Power Input: 24 V AC - 50/60 Hz - 1.35 A max

**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

**Agency Approvals**
- Safety: CE Approved, UL/cUL Listed, Open Energy Management (PAZX/PAZX7), E95642
- EMC: FCC, Class A Computing Device; Part 15
- BTL: B-RTR

**Environmental**
- Operating temperature: 10 °C to 40 °C (50 °F to 104 °F)
- Relative humidity: 0 to 80% RH non-condensing

**Communications**
- Network: 10/100 MB auto-sensing using RJ-45 port
- Serial Interfaces: 2 x RS-485@ 9K6, 38K4, 57K6, 76K8 or 115K2 (default 38K4)
  - Biasing: 3.32k - switch selectable
  - LED indication for TXD, RXD, Byte-Error, Parity-Error
- Protocol: license enforced, driver selectable
  - BACnet MSTP and IP, Modbus TCP and RTU, AAM PUP, Teletrol TSC and Unitron
- Serial Network Load: license enforced, up to 64 devices per RS-485 port