

## 2. Chassis I/O – Series A Specifications

### 2.1 Essential Concepts

#### Experion Chassis Series-A Modules and Platform

Chassis Input/Output Modules-Series A (CIOM-A) is a chassis based platform. Modules exist in a single-wide and double-wide form factor. Modules are inserted into chassis slot positions; single-wide occupy one slot position while double-wide modules occupy two slots. As a platform, the chassis is host to not only I/O modules, but modules that perform other functions.

Some examples include:

- C200E Control Processor
- Redundancy Module (RM)
- Battery Extension Module
- ControlNet Interface Module (CNI)
- Ethernet Module

The I/O modules are the focus of this document. Other module types are covered in separate Specification documents.

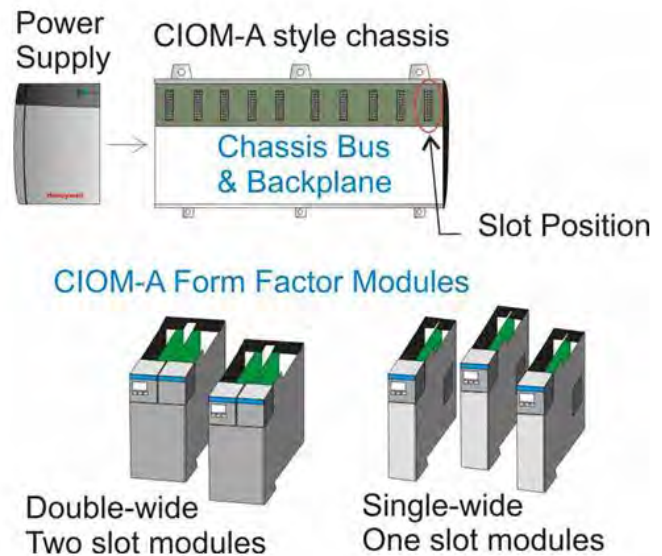


Figure 2-1 Experion Chassis Series

#### Power

Module power is supplied by a Series-A specific power supply. Power supplies are available in a redundant and non-redundant configuration. The power module plugs to the left side of each chassis and does not consume a chassis slot position. The power supply provides DC power for the modules inserted into the chassis. Field power is provided by separate (external) power supplies.

#### Series-A Chassis Types

Chassis differ by the number of module positions or slots that the given chassis can accommodate. Chassis come in five versions (4, 7, 10, 13, and 17 slot). Some modules are double-wide and will use two chassis positions.

#### Model Number Conventions (TC and TK)

All model numbers are preceded by a **TC-** or a **TK-**. The TC designator indicates that the module is not conformal coated while the TK designator indicates that the module has conformal coating applied. Aside from this the modules are identical.

#### Supported Control Processors

All CIOM-A I/O modules are usable with the C200E control processor.

### C200E and the I/O ControlNet

Figure 3-1 shows how CIOM-A modules interface to the C200E control processor over the I/O Control Network. ControlNet is an open communication protocol developed by Rockwell and is based on RG-6 coax at 5 mega bit transmission speed. Coax segments can be extended using repeaters and fiber optic modules. Although the media can be redundant, the interface modules have a single set of electronics for both A and B cables.

**The C200E or Downlink Chassis:** This is the chassis that has the C200E inserted. It is also referred to as the “Downlink” chassis because it has the CNI (ControlNet Interface) modules that connect the C200E to the various remote I/O modules. The user can insert up to four total “Downlink” CNIs to create four separate I/O network routings. This provides the flexibility to create from one to four different I/O network branches.

**Redundant C200E:** When the C200E is implemented in a redundant configuration there are two chassis with an identical set of modules installed in the same physical positions.

**Mixed I/O Families:** As the figure, shows, CIOM-A I/O modules can be implemented on the same I/O Control Network as the RIOM-A module type. RIOM-A module are interfaced to the I/O CNet through ControlNet Gateway modules and the CIOM-A modules are interfaced through the CNI module.

**Downlink and Uplink CNIs:** There are only two versions of the CNI (single media and dual media). The terms uplink and downlink are assigned based on the CNI location in the topology.

### I/O ControlNet Limits:

Item	Limit	See
Maximum number of CNI modules/Downlink chassis	4	
Maximum number of uplink CNI's (I/O chassis) and Gateways per downlink CNI	8	
Maximum number of I/O units per downlink CNI	24	Note-1
Maximum I/O units per C200E	64	Note-1 & 2
Note-1: In most cases an I/O unit is one I/O module. Some module types (like the SI and Profibus module) will consume more than one I/O unit.		
Note-2: PMIO (connected through the IOLIM) will also consume this resource.		

**TC-IXR061, TK-IXR061****Table 6-10** RTD Input, 6-Point Module (Isolated)

Parameter	Specification
Number of Points	6 galvanically isolated channels
Signal Input Ranges	1-487 $\Omega$ , 2-1000 $\Omega$ , 4-2000 $\Omega$ , 8-4020 $\Omega$
Sensors Supported	Resistance 1-487 $\Omega$ 100, 200, 500,1000 $\Omega$ Platinum, $\alpha = 0.00385$ 100, 200, 500,1000 $\Omega$ Platinum, $\alpha = 0.003916$ 120 $\Omega$ Nickel, $\alpha = 0.00672$ 100, 120, 200, 500 $\Omega$ Nickel, $\alpha = 0.00618$ 10 $\Omega$ Copper
Resolution 487 $\Omega$ , 100 $\Omega$ Pt, 100 $\Omega$ Ni, 10 $\Omega$ Cu 1000 $\Omega$ , 200 $\Omega$ Pt, 200 $\Omega$ Ni 2000 $\Omega$ , 500 $\Omega$ Pt, 500 $\Omega$ Ni 4020 $\Omega$ , 1000 $\Omega$ Pt	16 bits across each input range 7.7 milliohm/bit 15 milliohm/bit 30 milliohm/bit 60 milliohm/bit
Accuracy	0.1% FS @ 25°C
Module Update Rate for All Channels	50 milliseconds
Settling Time to 5% of Full Scale	Less than 80 milliseconds
Open Wire Detection Open Wire Detection Time	Out of Range reading reported Less than 5 seconds
Common Mode Rejection	120 dB @ 60 Hz, 100 dB @ 50 Hz
Channel Bandwidth	DC to 15 Hz (-3 db)
Normal Mode Noise Rejection	60 dB @ 60 Hz
RFI Immunity	Error of less than 2.0% of FS at 10 V/m, 27 to 1000 MHz
Input Offset Drift with Temperature	10 milliohms/°C typical
Gain Drift with Temperature	50 ppm/°C typical
Power Dissipation	4.3 W max
Backplane Current	See Module Power Consumption Data, page 46.
Isolation Voltage Channel to channel User to system	100% tested at 2546 VDC for 1s 100% tested at 2546 VDC for 1s
Connection Terminal Blocks	TC-TBNH, 20-position terminal block