

Connected Vehicle CoProcessor Module



Managing CV Apps for the Infrastructure

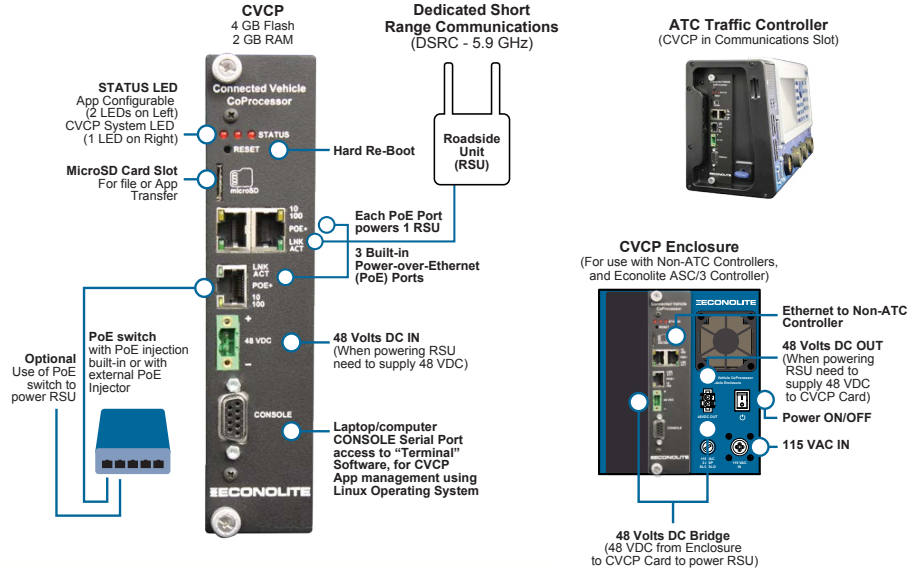
A critical capability in the Connected Vehicle (CV) and Smart Cities environment is Vehicle-to-Infrastructure (V2I) communications that leverages Dedicated Short-Range Communications (DSRC) and robust applications. DSRC provides the capability for continuous collection, aggregation, and use of real-time data to enhance transportation efficiency and safety.

The Econolite Connected Vehicle CoProcessor (CVCP) module provides an interface between the controller and DSRC devices. It is designed to enable third-party-developed or processor-intensive applications to be used with an ATC controller application, including Econolite 2070 and Cobalt ATC line of advanced transportation controllers. This makes the Econolite CVCP ideal in supporting CV research, development, and applications programs to early CV deployments.

The CVCP plugs into the communications slot of an ATC traffic controller, providing an interface with DSRC-based Roadside Units (RSU) and sensors. The CVCP is a robust and hardened module that runs Linux 3.10.17. The Econolite CVCP includes three Power-over-Ethernet (PoE), Ethernet ports, three serial communications ports, one micro-SD card slot, and a RS232 Linux console port for enhanced flexibility.

At a Glance

- ▶ The Econolite CVCP plugs into an A2 communication module slot of a 2070 controller with a 2070-1C CPU module installed, or the communications slot of an ATC controller like the Cobalt shelf-mount or rack-mount controller. The CVCP provides a direct interface to DSRC-based Roadside Units (RSU), including a 48 VDC power source.
- ▶ In a testbed scenario, the use of an external processing unit like the CVCP, which sits between the traffic controller and the RSU, provides an ideal deployment and operation environment to manage and evaluate early release versions of CV Apps. See overview diagram on reverse side.



CVCP Module Specifications Overview

System on Module (SOM) socket

- Supports Boundary Devices Nitrogen6X-SOM
- iMX6 Quad Core Processor - 1GHz - 2GB DDR3 DRAM

SOM Peripheral Support

- ARM Cortex-M3 Microcontroller operating at 100MHz
- Supercapacitor backed Real Time Clock with SRAM
- Three front panel LEDs; two are user-programmable

Serial Communications

- Two internal, EIA-485, serial ports (SP1 and SP2) supporting asynchronous rates of: 1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, and 115.2k bps
 - SP1 provides serial communications between Host Board microcontroller and the ATC Engine Board
 - SP2 provides communications between SOM and the ATC Engine Board
- One external, EIA-232, 9-pin asynchronous serial console port located on front panel.
 - Provides configuration communications to SOM
 - Default rate of 115200 bps, 8 bits data, no parity, 1 stop bit

Environmental Specifications

- ATC/TEES-Compliant (-37°C to +74°C)



Ethernet Communications

- Integrated 5-port 10/100 managed Ethernet switch
 - Three front panel mounted 10/100, 802.3 at Type-1, Ports Capable of Power-over-Ethernet on front panel
 - One 10/100 port to backplane DIN connector for communications with ATC switch.
 - One 10/100 port to SOM

Power

- Internal: 5VDC @ 0.5A
- External: 48VDC @ 1.05A
- Recommended 48VDC power supplies:
 - Internal/development use: SL Power CENB1080A4803F01
 - Field use: TDK-Lambda DPP120481

Mechanical Specifications

- Product Dimensions (L x W x D) – 8.66in x 6.97in x 1.59in
- Standard Model 2070 communications slot mechanical form factor

Software Specifications

- Linux 3.x SDK

Optional

- Stand alone enclosure and power supply

