Traffic Controllers for Traffic Operations

cobalt by Econolite

Cobalt C ATC

What, exactly, is the Cobalt C-Series?

Cobalt is the next-generation in advanced transportation controller (ATC) specifically designed for the mobile computing environment. Fully meeting ATC standards, Cobalt features a breakthrough hardened seven-inch screen matched with Linux-based OS that makes programming and access to functions the easiest in the industry.

Why do agencies use the Cobalt C-Series?

Cobalt is designed to be reliable, powerful, and user friendly. With the option to run various software solutions, it is the ideal platform for modern ITS traffic systems. Combined with the Connected Vehicle Co-Processor (CVCP) module, Cobalt fully supports Signal Phase and Timing (SPaT)/MAP data messaging capabilities, providing a fundamental V2I element for connected vehicle applications.

How does the Cobalt C-Series benefit the driving public?

Helping to ensure safety, the traffic signal controller represents one of the most important intelligent technology and communication components of a signalized intersection. The Cobalt ATC family of controllers are designed to increase safety and traffic signal operations for years to come.

Cobalt C ATC Hardware

Cobalt ATC controllers may be configured with Econolite's robust Cobalt ASC/3-LX application software package, or other pre-qualified ATC/Linux software application software meeting current ATC standards. OS and software upgrades can be made easily by USB memory stick, SD card, or Ethernet via Econolite's Windows software installation application.

Cobalt-C includes a high-power, Linux-based Engine Board that is compliant with 6.25 ATC standard for a NEMA standard TS2 Type-1 or Type-2 I/O connectors: four Ethernet ports, two USB ports, and an SD Card slot. Additionally, the Cobalt-C seven-inch, high brightness TFT LCD module is readable in direct sunlight, and is not affected by condensation or water drops.

Hardware Details

- Supports Econolite Linux-based software or other pre-qualified ATC/Linux software
- ATC Engine Board
  - *Fully compliant with the 6.25 ATC Standard*
  - *233MHz PowerQUICC II Pro-processor that provides 10 times more processing power than previous generation controller processor*
  - *128Mbytes of DDR2 DRAM memory for application and OS program execution*
  - *64 Mbytes of FLASH for storage of OS Software and user applications*
  - *2MB of SRAM memory for non-volatile parameter storage*
- Two integral Ethernet switches for two networks, LAN and WAN Advanced Graphics Controller
  - *Managed switches for advanced networking solutions*
  - *Broadcast storm filtering built into the switch to protect safety critical processing resources*
- Two USB 2.0 ports used to:
  - *Update application software*
  - *Upload or download configuration*
  - *Upload logged data*
- Datakey socket for an optional 3.3V Datakey, 2 through 32MB
- SD Memory Card socket
- CPU Active LED
- Three communications ports standard:
  - *NEMA-ATC SDLC serial port 1*
  - *25 pin serial port 2*
  - *9 pin console serial port*
- Built in speaker for enhanced audio controller feedback
- Integral carrying handle in back of controller

- Power Supply
  - *Meets all requirements of ATC standard v6.25*
  - *External 24VDC protected by a self-resetting electronic fuse*
- Operating system
  - *Linux 3.12*
  - *Compliant to ATC Standard 6.25 specifications*

Hardware Options

- Two models,
  - *TS2 type 2 connectors*
  - *TS2 type 1 connector*
- Connected and Automated vehicle options:
  - *Connected Vehicle Co-Processor*
- Communications module options:
  - *FSK Module that can be configured for RS232 operation*
  - *2070 TEES 2009 standard 6A, 6B, and 7A plug-in modules*
- Datakey 3.3V, 2 through 32MB

Capabilities
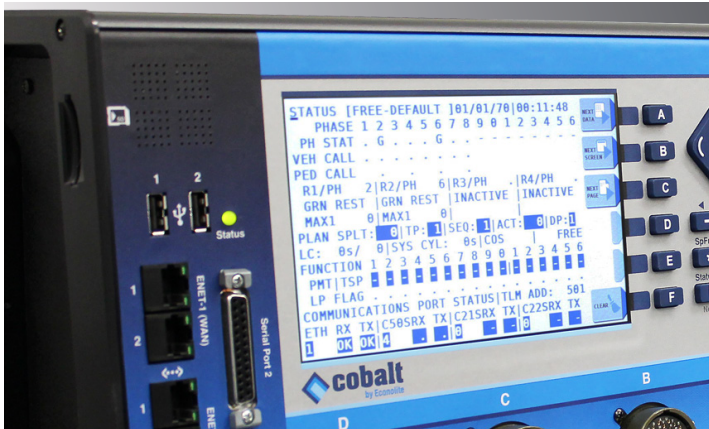
Control Features

- 16 phases, 8 configurable concurrent groups in 4 timing rings
- 16 vehicle overlaps that can be configured as normal, -green/yellow, PPLT/FYA or Econolite
- 16 pedestrian phases that can be configured as pedestrian overlaps
- Exclusive pedestrian operation
- Dynamic max operation
- Extendable walk and pedestrian clearance
- Advanced Walk
- Bike input and green timing
- Extendable red clearance
- Transit Signal Priority

Coordination Features

- 120 coordination event plans, each with its own cycle, offsets, split timing, coordinated phases, vehicle and pedestrian recall and phase omits
- Offset and split entries displayed in percent or seconds
- Automatic permissive periods
- Fixed or floating force-off
- Crossing arterial coordination
- Quick-sync feature

Preemption Features

- Ten preemption sequences. Each may be configured as priority, first-come-first-serve, or bus preemption operation
- ECPI interlock to provide added monitoring
- Railroad gate-down input and timing
- Conditional delay when entering preemption
- Multiple exit preemption options
  - *Exit to selected exit phase*
  - *Exit to coordination (no transition)*
  - *Exit to interrupted pedestrian phase*
  - *Exit to interrupted vehicle phase*
  - *Use timing from an exit timing plan once, then the normal timing plan*
  - *Exit to a selected phase first, then to free or coordination (selectable)*
  - *Exit free for one complete cycle, then resume coordination (no transition)*
  - *Exit to the phases where the most drivers have waited the longest*

Time Base Features

- 200 schedule programs, configurable for any combination of months, days of the week, and days of the month
- Fixed or floating exception day programs that override the day plan event on a specific day
- 50 day plan events that can use any of the 100 action plans
- 100 action plans that can be used by any of the 50 day plans

Status Display Features

- Keyboard selection of detailed dynamic status displays for each of the main controller unit functions including: controller, coordinator, preemptor, time base, detectors, and MMU

Detector Features

- 64 vehicle detectors
- 16 system or speed detectors
- Unique detector types and operation
- Individually assignable to phase and functions
- Lock/non-lock function by detector
- 4 detector plans
- 4 detector diagnostics plans
- Logging of volume and/or occupancy assignable by detector
- 4 pedestrian diagnostic plans

Logging Features

- Separate buffers for detector activity, detector failures, controller events, and MMU events
- Logged data can be:
  - *Viewed on front panel*
  - *Retrieved via a RS-232 terminal port, USB flash drive, or SD Card*
  - *Transferred with High Resolution Signal Performance Measures to local file system or SD card*
  - *Transferred via telemetry to a traffic management center*

Systems

- NTCIP level 2 compliance
- Supports Centracs®, Aries® and TS2 NTCIP Level 2-compliant pre-qualified central applications
- Lock down open services and use only encrypted communications to system.

Cobalt Software

Cobalt ASC/3 Linux Software

- Provides menu selection
- Field-proven for over 9 years
- Allows for an agency-specific default database
- Automatic backup of controller database to optional Datakey, SD card, or manual back up to USB flash drive
- Context sensitive help
- 100-statement logic processor to test inputs, outputs or timers and take actions based on the results
- Peer-to-Peer operation allows controllers to share information with other controllers, independent of the central system (one controller can communicate with up to 15 other controllers through Ethernet)

Optional Software

- Centracs Adaptive
- Intersection Monitor

User Interface

At its foundation, Cobalt-C has an intuitive navigation system that can be used with a laptop. Mobile device connectivity includes four Ethernet ports and two Universal Serial Bus (USB) ports that include support for an external Wi-Fi device. Cobalt-C also includes a Secure Digital (SD) port to provide almost unlimited file storage capability.

Basic Specifications

- Temperature
  - *-34.6°F to +165°F (-37°C to +74°C)*
- Power
  - *110VAC @ 50/60 HZ or optional 220/240 VAC @ 50/60 HZ*
  - *Fuse protection for either 110 or 220/240V*
  - *Protection for the 24VDC supply is provided by a resettable electronic fuse*
- Dimensions
  - *14.84"W x 8.50"H x 6.13"D*