

Traffic Controllers for Traffic Operations



What, exactly, is the Cobalt controller?

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 touchscreen GUI matched with Linux-based OS that makes programming and access to functions the easiest in the industry.

Why do agencies use Cobalt?

Cobalt is designed to support connected and automated vehicle programs. 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 Cobalt 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 RackMount Hardware

Cobalt's RackMount ATC controllers may be configured with Econolite's robust Cobalt Touch 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.

Cobalt RackMount controllers include an advanced, Linux-based Engine Board that is compliant with the ATC 5.2b and proposed 6.10 standard provides connectors that support integration into 33x, ITS or NEMA TS 2 Type-1 cabinets: four Ethernet ports, two USB ports, and an SD Card slot. Additionally, Cobalt's seven-inch color, high brightness TFT LCD module with touch screen capabilities is readable in direct sunlight, can be operated with gloved hands, and is not affected by condensation or water drops. Optional cards can be purchased for twisted-pair copper (FSK) or serial (RS232) system interconnect.

Hardware Details

- Caltrans C1/C11 cabinet interface to replace 170 or 2070 controllers in 33X cabinets
- Synchronous Data Link Communications (SDLC) for hybrid or NEMA standard TS2 Type-1 cabinets
- Supports Econolite Linux-based software or other pre-qualified ATC/Linux software
- ATC Engine Board
 - Fully compliant with the ATC Standard version 5.2b and proposed ATC Standard 6.10
 - 266MHz PowerQUICC II Pro-processor that provides 10 times more processing power than our 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 Ethernet switches provide additional ports and some level of management for networks ENET1 and ENET2
- Advanced Graphics Controller
 - Enables Cobalt's enhanced graphics user interface
 - Touch screen capability means the keyboard never has to be used
 - Replaces traditional text menu selection with graphical selections
- 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, 8MB
- SD Memory Card socket
 - The SD Card stores configuration and logs, providing automatic backup of configuration



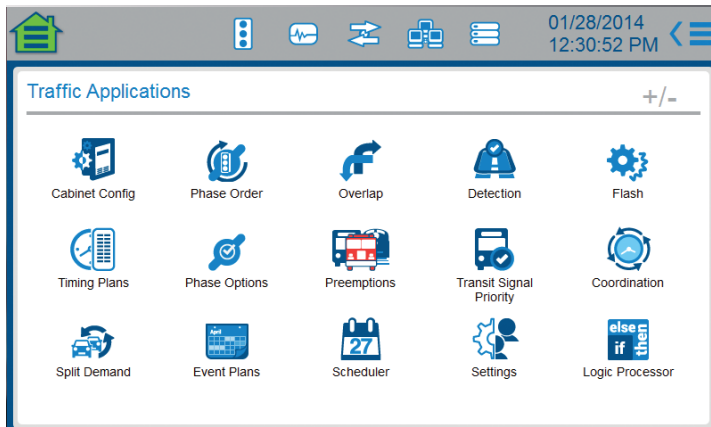
- CPU Active LED
- Built in speaker for enhanced audio controller feedback
- Recessed front panel Aux switch
- Serial Ports
 - Front panel mounted, 9-pin, C50s / Console port
 - Rear panel mounted
 - 15-Pin NEMA Port 1, SDLC
 - 25-Pin, NEMA, Port 2, Terminal
 - 25-Pin ATC, C12S
 - One slot for optional ATC / 2070 communications module for access to SP1 and SP2
- Parallel Ports
 - Rear panel mounted
 - C1S
 - C11S
- Power Supply
 - Meets all requirements of ATC standard v6.10.
 - Recessed front panel AC power switch
- Operating system
 - Linux 2.6.3x or later kernel and Board Support Package (BSP)
 - Compliant to ATC Standard V. 5.2.b Annex B specifications

Hardware Options

- Power Connection options:
 - A permanently attached cable and cable wraps for use in 170 or 2070 replacement applications
 - A NEMA TS2-Type 1, "A", MS connector which facilitates a detachable power cord for use in Econolite Hybrid cabinets
 - A 220VAC assembly
- Communications module options:
 - FSK Module that can be configured for RS232 operation and use a 9 or 25 pin D connector
 - 2070 TEES 2009 standard 6A, 6B, and 7A plug-in modules
- Optional Datakey 3.3V, 8MB



Capabilities



- 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
- 16 day plans that can use any of the 100 event plans

Status Display Features

- Touch selection of detailed dynamic status display for 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 any or all of the 64 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
 - Transferred via communications to a traffic management center

Systems

- NTCIP level 2 compliance
- Supports Centrac's®, Aries® and TS2 NTCIP Level 2-compliant pre-qualified central applications

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
- Adaptive 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



Cobalt RM Software

- Software features, plus the following:
 - Full-color graphic interface with touch-screen capability
 - Provides menu selection using touch selections
 - Programming uses touch data entry allowing touch gestures to select yes/no, select enable/disable, pull-down list selections and more
 - Screen can be swiped to advance to another screen
 - Naming of timing plans, event plans, day plans, and week plans
- Field-proven for over 9 years
- Allows for an agency-specific default database
- Automatic backup of controller database to optional datakey 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
- Cobalt Mobile remote tablet interface
- Peer-to-Peer operation is a feature that 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

- Centrac Adaptive
- Intersection Monitor

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
 - 19" W x 7" H x 11.5" D

