cobalt® by Econolite

Shelfmount Controllers

The Next Generation in Advanced Transportation Controller (ATC)

Cobalt is Econolite's next-generation ATC specifically designed for the mobile computing environment. Fully meeting ATC standards, Cobalt features a breakthrough hardened seven-inch touchscreen Graphical User Interface (GUI) matched with Linux-based OS that makes programming and access to functions the easiest in the industry.

Cobalt Shelfmount controllers are designed to support Connected and Automated Vehicle (CAV) programs. An optional Connected Vehicle Co-Processor (CVCP) module can be installed to support advanced Vehicle-to-Infrastructure (V2I) processing for CAV applications.

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

Key features

- Large seven-inch color Thin Film Transistor Liquid Crystal Display (TFT LCD)
- Touch-screen display for intuitive, graphical programming
- High brightness and contrast display for better outdoor readability; not available with than any other controller on the market
- Linux, open architecture real-time multitasking operating system
- Web-based user interface for remote programming and status observation
- Meets or exceeds the requirements of the ATC 5201 standard

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Cobalt Shelfmount: Hardware description

Cobalts Shelfmount ATC controllers may be configured with Econolite's highly capable EOS software, with optional Cobalt touch graphical interface, or other prequalified ATC/Linux application software meeting current ATC standards. OS software upgrades can be made easily by USB memory stick, SD card, Ethernet via remote installer software, or through the Centracs® Advanced Transportation Management System (ATMS).

Cobalt Shelfmount ATC controllers include a high-power, Linux-based engine board that conforms to the ATC 5201 standard. It also includes connectors that support integration into NEMA TS2 Type-1 or Type-2 cabinets, four Ethernet ports, two USB ports, and an SD card slot. Additionally, Cobalt's seven-inch color, high brightness TFT LCD module with optional touchscreen capabilities is readable in direct sunlight, can be operated with gloved hands, and is not affected by condensation or water drops.

Hardware features

- ATC engine board:
  - Conforms to the ATC 5201 Standard
  - 266MHz PowerQUICC II Pro-processor that provides 10 times more processing power than our previous generation controller processor
  - 128MB of DDR2 DRAM memory for application and OS program execution
  - 64MB 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, ENET1 and ENET2
- Advanced Graphics Controller (optional):
  - Enables Cobalts enhanced GUI
  - 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 Linux or 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 NEMA serial port 2
  - 9-pin C50S console serial port
- Built in speaker for enhanced audio controller feedback
- Integral carrying handle in back of controller
- Power supply:
  - External 24VDC protected by a self-resetting electronic fuse
- Operating system:
  - Linux 3.12 or later kernel and Board Support Package (BSP)
  - Meets all requirements of the ATC 5201 standard

Hardware options

- Two user interface options:
  - Advanced display with graphics and touch-screen (optional)
  - Basic display with textual menus only; no touch or graphics (standard)
- Two models:
  - TS2 Type-2 connectors
  - TS2 Type-1 connector
- 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

Cobalt Shelfmount: Software description

Control features

- 16 phases, eight configurable concurrent groups in four timing rings
- 16 pedestrian phases that can be configured as pedestrian overlaps
- Dynamic max operation
- Extendable walk and pedestrian clearance
- Advanced Walk
- Bike input and green timing
- Adaptive red clearance

Coordination features

- 120 coordination patterns, each with its own cycle, offsets and split plan selection
- 120 split plans, each with its own 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

Time-based 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 plan events that can use any of the 100 action plans

Status display features

Keyboard selection of detailed dynamic status displays for each of the main controller unit functions including controllers, coordinators, preemptors, time base, detectors, and MMUs.

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
- Four detector plans
- Four detector diagnostic plans
- Four pedestrian diagnostic plans
- Individually assignable to phase and functions
- Logging of volume and/or occupancy assignable by detector

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 via telemetry to a traffic management center

Cobalt Touch: Software

(Requires Cobalt ATC hardware including the Advanced Graphics Controller)

Includes all ASC/3-LX software features in addition to 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

General features

- 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
- Hyperlink feature allows jumping from a status field to the screen where data is defined
- 100-statement logic processor to test inputs, outputs or timers and take actions based on the results

Connected Vehicle Co-Processor (CVCP)

Cobalt ATC is designed to support the CVCP module. The CVCP module is intended to allow third-party-developed and processor-intensive CV applications, including leveraging SAE J2735 messaging, to be used with Cobalt or any other properly equipped ATC-compliant traffic controller.

ATMS compatibility

- NTCIP 1201, 1202
- Supports Econolite's Centracs® or other NTCIP-based management system

Specifications	Cobalt Shelfmount Controller
Dimensions	14.84 in L x 8.50 in H x 6.13 in W (376.9 mm L x 215.9 mm H x 155.7 W mm)
Power Supply	• 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
Temperature	-34.6°F to +165°F (-37°C to +74°C)

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