cobalt® by Econolite

Rackmount 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 Rackmount 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 Rackmount: Hardware description

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

Cobalt Rackmount ATC controllers include an advanced, Linux-based engine board that conforms to the ATC 5201 standard. It also includes connectors that support integration into Caltrans 33X, ATC, or NEMA TS2 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 optional touchscreen capabilities is readable in direct sunlight, can be operated with gloved hands, and is not affected by condensation or water drops. Optional communication modules can be installed for twisted-pair copper (FSK) or serial (RS232) system interconnect.

Hardware features

- ATC engine board:
  - Conforms to the ATC 5201 Standard
  - 266MHz PowerQUICC II Pro-processor that provides 10x more processing power
  - 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 Ethernet switches provide additional ports and some level of management for networks ENET1 and ENET2
- Advanced graphics controller (optional):
  - Enables Cobalt's enhanced GUI
  - Touch screen capability means the keyboard never has to be used
  - Replaces traditional text menu selection with graphical selection
- Two USB 2.0 ports used to:
  - Update Linux and application software
  - Upload or download configuration
  - Upload logged data
- Datakey socket for an optional 3.3V datakey, two 32MB
- SD memory card socket:
  - The SD Card stores configuration and logs and provides automatic backup of configuration
- CPU active LED
- 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 and C11S
- Built in speaker for enhanced audio controller feedback
- Power supply:
  - External 24VDC protected by a self-resetting electronic fuse
  - Recessed front panel AC power switch
- 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)
- Power connection options:
  - Permanently attached cable and cable wraps for use in 170 or 2070 replacement applications
  - NEMA TS2-Type-1, "A", MS connector which facilitates a detachable power cord for use in Econolite Hybrid cabinets
  - 220VAC power supply 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, two 32MB

Cobalt Rackmount: Software description

Control features

- 16 phases, eight configurable concurrent groups in four 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 (TSP)

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

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 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.

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

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
- Logging of volume and/or occupancy assignable by any or all of the 64 detector

System compatibility

- NTCIP 1201, 1202
- Supports Centracs® and NEMA TS2 NTCIP Level 2 central applications

Cobalt Touch: Software

(Requires Cobalt ATC hardware including the Advanced Graphics Controller)

- 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

Specifications	Cobalt Rackmount Controller
Dimensions	19 in L x 7 in H x 11.5 in W (482.6 mm L x 177.8 mm H x 292.1 W mm)
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
Temperature	-34.6°F to +165°F (-37°C to +74°C)

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