

# 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 ATC Hardware

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

Cobalt includes a high-power, Linux-based Engine Board that is compliant with the ATC 6.25 and proposed 6.34 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, 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.



## Hardware Details

- Supports Econolite Linux-based software or other pre-qualified ATC/Linux software
- ATC Engine Board
  - Fully compliant with the ATC Standard version 6.25 and proposed ATC Standard 6.34
  - 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, 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, 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

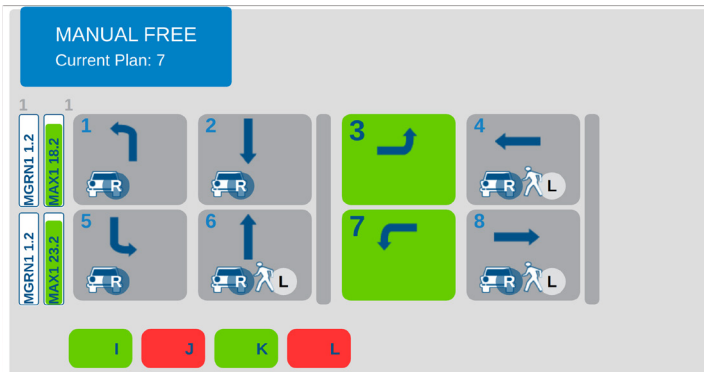
- Built in speaker for enhanced audio controller feedback
- Integral carrying handle in back of controller
- Power Supply
  - Meets all requirements of ATC standard 6.34
  - External 24VDC protected by a self-resetting electronic fuse
- Operating system
  - Linux 2.6.3x or later kernel and Board Support Package (BSP)
  - Compliant to ATC Standard V. 6.25 Annex B specifications

## Hardware Options

- Two user interface options:
  - Advanced Display with graphics and touch-screen (Standard)
  - Basic Display with text and textual menus only—no touch or graphics (Option)
- Two models,
  - TS2 Type-2 connector
  - 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



# Capabilities



- 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: 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 diagnostic 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 via telemetry to a traffic management center

## Systems

- NTCIP level 2 compliance
- Supports Centrac<sup>®</sup>, Aries<sup>®</sup> and TS2 NTCIP Level 2-compliant central applications

## Software Options

- EOS
- ASC/3 - LX

## Control Features

- 16 phases, 8 configurable concurrent groups in 4 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
- Extendable 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 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



## Cobalt Software Options

### Cobalt Touch Software (requires Cobalt ATC hardware including the Advanced Graphics Controller)

- All the ASC/3-LX 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

### ASC/3-LX Software (General)

- Field-proven for over 8 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
- 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

### Optional Software

- Adaptive

## Connected Vehicle Co-Processor

Cobalt ATC is designed to support the Connected Vehicle Co-Processor (CVCP) module. The CVCP module is intended to allow third-party-developed and processor-intensive connected vehicle applications, including leveraging SAE J2735 (5.9 GHz DSRC), to be used with Cobalt or any other properly equipped ATC-compliant traffic controller.

## 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

