

### ASSEMBLY

Controller Assembly	The complete electrical equipment of a controller mounted in a cabinet for controlling signal operation, includes the CPU card, serial communications cards, front panel, field I/O, power supply and chassis.
Controller Unit	Portion of a controller assembly which selects and times signal displays, housing the brains of the unit. Sometimes used interchangeably with "controller assembly."
Chassis	A metal enclosure that houses and protects 170/2070 controller modules; fits into standard 19-inch rack; can be rack or shelf mounted.

### COMMUNICATIONS

2070-6 Comm Module	ASYNCR / MODEM serial communication module.
2070-7 Comm Module	ASYNCR / SYNC serial communication module.
2070-8	A connector box that attaches to the bottom of the 2070 chassis and provides TS 1 A, B, C, and D connectors; controlled by signals on SP5 routed from the C12 connector on a 2070-2B field I/O module.
2070-9 Comm Module	FSK / dial-up MODEM communication module.
Base Communications	The chassis with the CPU module that provides base (synchronous or asynchronous) serial communications. Different communication modules give specific interfaces in slots A1 and A2.
Communication Modules	Modules in the 2070-6, -7, and -9 series; two communication modules can be installed simultaneously in slots A1 and A2.

### CONFIGURATIONS

2070E	A designation for a 2070 controller with OS-9 and no VME bus.
2070L	A designation for a 2070 controller with OS-9 and no VME bus. Superseded by the 2070E. Also called a "2070 Lite."
2070 Lite	A 2070 controller that does not support a VME card cage, thus requiring less power supply. Similar to the 2070 controller, the lite version can connect to a 170 cabinet with the 2070-2A field I/O or an ITS cabinet using the 2070-2B field I/O.
Cabinet Configuration	Type of controller interface(s) needed to connect to a cabinet, by evaluating the total number of load bays, input files, and communication interfaces required.

### CPU

2070-1A	An OS-9 based 2070 CPU module. Does not support Ethernet communications.
2070-1B	The original OS-9 based 2070 CPU module; superseded by the 2070-1E. Supports Ethernet communications.
2070-1C	A Caltrans-specific designation for a Linux-based 2070 CPU.
2070-1E	The current OS-9 based 2070 CPU module. Supports Ethernet communications.
CPU	Stands for central processing unit and utilizes microprocessors as the "brain" of the controller.
Engine Board	A daughter card that plugs into the 2070-1C CPU module containing the CPU, RAM, FLASH RAM, and where the Linux OS and applications are located.
Real Time Clock (RTC)	The RTC is located on the CPU module and is maintained by the stand by power.
Ethernet Port	Interface to the Ethernet is provided on the 2070-1C module from the engine board.
SDLC	Stands for synchronous data link control and is a high-speed serial port.
Serial Ports	Communication channels over which data is transmitted and received as asynchronous or synchronous streams of bits.
SP1	Serial communication channel routed to communications module slot A1; used by applications for general purposes, such as communications with remote systems, masters, and external equipment.

SP2	Serial communication channel routed to communications module slot A1; used by applications for general purposes, such as communications with remote systems, masters, and external equipment.
SP3	Serial communication channel routed to communications module slot A2 and the field I/O module; used by applications for NEMA TS 2 SDLC communications with BIUs and MMUs or for general purpose communications (when NEMA TS 2 SDLC is not needed).
SP4	Serial communication channel routed to communications module slot A2 and front panel connector C50; used by applications for general purposes, but typically called the "laptop" or "technician" port because of its front panel connections.
SP5	Serial communication channel routed to connector C12 on the field I/O module; used by applications to control parallel I/O in 170 and TS 1 cabinets, and serial I/O in ITS and ATC cabinets.
SP6	Serial communication channel routed to the front panel; used by applications to write characters to the display and read button presses on the keypad.
SP8	Serial communication channel routed to connector C13 on the CPU module; usage not currently defined.

### 2070 - FIELD I/O

2070 - 2B Field I/O	Used for the ITS and ATC cabinets, they come with a 25-pin connector that plugs into the port in the 2070-2B module.
2070 - 2E Field I/O	Has a C-1 connector that also has a new connector called C11 that brings total outputs and inputs count to 64 outputs and 64 inputs, but needs a cabinet that is wired to use the C11 connector.
2070 - 2N Field I/O	Used in TS 2 Type 1 cabinets, the 2070-N has one 10-pin connector, a power receptacle, and a 15-pin TS 2/SDLC connector that plugs into TS 2 NEMA cabinet.
2070 - 8 Field I/O	Used in TS 1/ TS 2 Type 2 cabinets, has the TS 1 mil spec A, B, C connectors for the discrete I/O to the NEMA cabinet.
2070-2A	The original field I/O module with 170 style connectors; superceded by the 2070-2E.
2070-2B	A single-wide field I/O module for use with ITS and ATC cabinets, or with a 2070-8. Provides a 25-pin D subminiature connector C12 with SP3 and SP5 signals; McCain's version also provides a dedicated 15-pin D subminiature connector for SP3.
2070-2E	A double-wide field I/O module for 170 cabinets. Provides C1 and C11 parallel I/O connectors for 64 inputs and 64 outputs, a 25 pin D subminiature connector C12 with SP3 and SP5 signals, and an internal switch to disable SP3 so that SP3 can be used at communications module slot A2.
2070-2N	A double-wide field I/O module for TS 2 cabinets. Provides a 10-pin NEMA TS 2 "A" connector, a power receptacle, and a 15-pin TS 2 SDLC connector with SP3.
2070-Field I/O Modules	Modules in the 2070-2 series that provide parallel and serial cabinet inputs and outputs.

### FRONT PANEL

2070-3A	A 2070 front panel module with a 4 row by 40 column display.
2070-3B	A 2070 front panel module with an 8 row by 40 column display.
2070-3C	A 2070 front panel module with no display or keypad.
2070-3D	A 2070 font panel module with a 16-line display.
AUX Switch	A generic toggle switch on the 2070 front panel that can be assigned any function through software.
Front Panel	Modules in the 2070-3 series that attach to the front of the 2070 chassis; they provide a 9-pin D subminiature connector with SP4 signals, an AUX switch, and an option keypad and display. Large screen, small screen, or no screen options available.

### MEMORY

Datakey	The Datakey is a serial interface external portable memory device for transporting database or software upgrades to or from the CPU module.
DRAM	The DRAM, or dynamic random access memory is the main memory used by the OS and applications. Volatile memory, contents lost at power interruption.
Flash Memory	Memory that can hold its contents indefinitely when not powered. Provides slower access time than SRAM memory. Generally used for storage of OS and application programs.
SRAM	Static Random Access Memory. Can hold its contents for several weeks when out of powered. Provides faster access time than Flash memory. Generally used for data storage such as application program databases and logs.

### MODULES

Modules	Plug-in boards that allow expansion or customization of the 2070 controller unit.
Power Supply	Designated with 2070-4 found on far right side of the back of the 2070 controller. Provides the DC power to the controller: +5V, +12V and -12V.
VME	"Versa Module Europa": a modular bus, analogous to a PCI bus in today's personal computers. Provided as an option in the original 2070 controller standard using a 2070-1A CPU but never widely deployed.

### OPERATING SYSTEMS

Linux OS	The open source operating system used on later 2070 units that conform to the ATC 5.2b (and later) standards.
Operating System (OS)	A supervisory program that allows application programs to run. Performs basic tasks such as recognizing input from keyboard, sends output to display screen, keeps track of files and directories on disk, and controls peripheral devices such as disk drives and printers. 2070 controllers use either an OS-9-based or Linux-based operating system.
OS-9	The embedded operating system for the original 2070 units; included with 2070-1B and 1E CPUs.
Real Time Operating System (RTOS)	An operating system that guarantees responses within a specified time constraint, guaranteeing that the operating system will respond to an input condition.

### SOFTWARE

Applications	Software programs executed by the operating system that provide functionality such as intersection signal control.
Drivers	Program extensions to the OS that enable use of specific I/O devices such as USB or Ethernet.
Watchdog	Health signal generated by a traffic controllers and observed by the monitor to verify proper operation of the controller unit and software program.

### STANDARDS

ATC 5.2b	A national standard for Linux-based 2070 and NEMA traffic signal controllers; a 2070 can be an ATC if configured with the appropriate CPU.
Modular Architecture	A design philosophy wherein hardware and software functionality is separated into discrete blocks with well-defined roles and interactions.
NTCIP	National Transportation Communication for ITS Protocol. A specific variation of SNMP (Simple Network Management Protocol) that requires a MIB (Management Information Base) or collection of data objects within the application software of the controller that allows remote access, control, and status monitoring from central management software.
Open Architecture	A design philosophy wherein software and hardware functionality is defined by freely available, non-proprietary, and widely distributed standards.