

Numerous Potential Applications

INTERSECTION

DEMAND METERING

DATA

DHS

Graphics: Ralph W. Boaz

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Goals of ITS Standards

- To give us choices!
- To provide for the future
- Create systems and devices that are:
 - **Portable**
 - **Compatible**
 - **Interoperable**
 - **Interchangeable ***

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Advanced Transportation Controller (ATC) Standards

- **Advanced Transportation Controllers (ATCs)** as defined by ATC 5201 Standard v06
- **Application Programming Interface (API) Software** as defined by ATC 5401 Standard v02
- **Advanced Transportation Controller Cabinet (ATCC)** as defined by ATC 5301 Standard v02

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Background on ATC Cabinet Standard v02

- **ITS Cabinet Standard Version v01.02.17b** (Version 1) published in **November 2006**
- **Funded effort on Version 2** of the standard **2008-2010**
 - Concept of Operations – **formal User Needs identified**
- Work continued on a **volunteer basis into 2011**
 - Established **high-level requirements**
- Three **manufacturers continued the work** to a detail level design and **produced working equipment**
- **Project funded** again starting in **late 2015**

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Background on ATC Cabinet Standard v02 (cont.)

- Detailed designs and lessons learned from manufacturers incorporated into the standard
- Name changed to **ATC 5301 Cabinet Standard v02**
- ATC Joint Committee accepted ATC 5301 v02 as a **Recommended Standard** in **October 2018**
- **ATC 5301 v02 Jointly Approved** by AASHTO, ITE and NEMA in **March 2019**
- **Over 1000 ATC Cabinets deployed** across the US produced by five manufacturers



Design Goals for ATC Cabinet Version 2

- Focus on **increasing value** to end users
- **Flexibility** within the standard for innovative designs
- **Higher density** – More capability in a smaller space
- Increased **technician safety**
- Increased **public safety**
- **Enhanced monitoring** functionality
- Increased cabinet **power efficiency**
- Provide **LED signal compatibility**

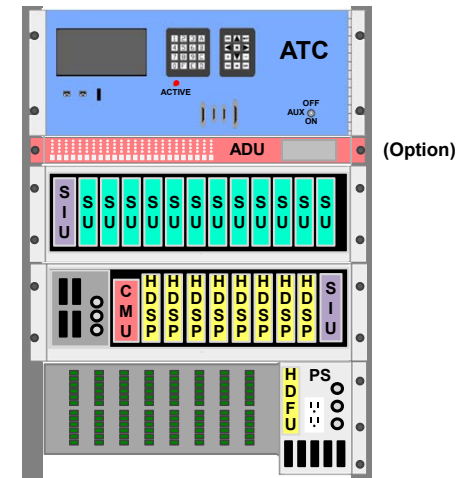
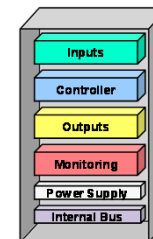


Key ATC Cabinet v02 Elements

- Universal Switch Pack / Flasher (**HDSP-FU**)
- Cabinet Monitor Unit (**CMU**)
- Auxiliary Display Unit (**ADU**)
- Serial Interface Unit (**SIU**)
- Cabinet Power Supply (**PS**)
- High-Density Flash Transfer Relay Unit (**HDFTR**)



ATC Cabinet v02 A Generic Representation

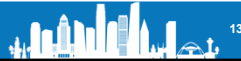


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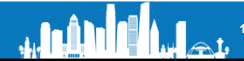
Features of ATC Cabinet Version 2

- **Functional standard** except where component interchangeability is desired
- All **major assemblies** are **connectorized**
- **Double** the number of **detector channels** in the same space
- **Double** the number of **channels per switch pack** and the switch pack is **physically smaller**
- **Eliminate arc flash hazard** per NFPA 70E
- **Touch safe** design

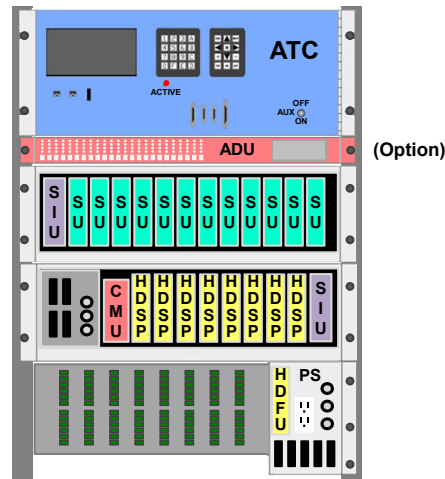
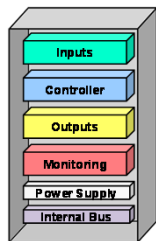


Features of ATC Cabinet Version 2 (cont.)

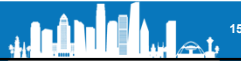
- **Low voltage option for 48 Vdc** on field wires
 - Electrically safe for humans
- Load current monitoring for **detecting dark approaches**
- **Better LED compatibility** – potential power conservation and alternative power sources
- Most **assemblies replaceable** while intersection in **flash**



ATC Cabinet v02 A Generic Representation



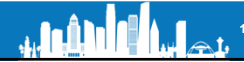
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Example ATC Cabinets



Photos: Courtesy of Intelight, Econolite and McCain.



Example ATC Cabinets



Photos: Courtesy of Mobotrex and Trafficware.

I/O Differences In Cabinet Standards

TFCS	Physical Mounting	Internal Bus	Signal Monitor	Input Channels	Monitored Output Channels
ATC Cabinet v02	Rack and Shelf	Serial 614.4 kbps	Cabinet Monitor Unit	120	32
ITS Cabinet v01	Rack	Serial 614.4 kbps	Cabinet Monitor Unit	120	28
NEMA TS 2	Shelf	Serial 153.6 kbps	Malfunction Management Unit	64	16
Caltrans Model 33X	Rack	Parallel / Discrete Wiring	Conflict Monitor	44	16/18
NEMA TS 1	Shelf	Parallel / Discrete Wiring	Conflict Monitor	8	3/6/12/18

Planning and Procurements

- Have **written plan and policy for deploying new equipment and systems** as part of your ITS strategy
 - **Disconnect exists** from what we **plan to do** and what we are **prepared to do**
 - **e.g. 2030 vision** versus **1980s infrastructure**
- Require **ATC units that conform to ATC 5201 Standard v06 (06A)** or later
- Require **ATC units** come with operational **API Software conforming to ATC 5401 Standard v02 (02A)**
- Require **ATC Cabinets that conform to ATC 5301 Standard v02**

Needs for ITS

- **Public awareness and expectation** of use of technology to improve **efficiency, mobility and safety**
- High demand for **Transportation Systems and Field Devices** to **do more** things and **perform** old things **better**
- Rapid improvements in technology makes choosing products difficult
- Get the **best capability you can now**
- **Ensure you have choices** in the future

Parting Shot

**“WHETHER YOU THINK YOU CAN,
OR YOU THINK YOU CAN'T
— YOU'RE RIGHT.”**

HENRY FORD

REVOLUTIONIZED THE AUTOMOBILE INDUSTRY

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