NEW TECHNOLOGIES and NFPA 72 FIRE ALARM SYSTEMS

2002 to 2010 Editions

Presented by
Advanced Electronics Systems

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• In cooperation with:
  • Honeywell
  • ATI – Acoustic Technology, Inc.
  • Fike Alarm Systems

NFPA 72
Origin and Development

• Dates back to 1898 – Committee on Fire Alarms
• 1905 – NFPA 71A – Rules and Requirements
• 1993 – NFPA 72- consolidation of NFPA Guides and Standards; 71, 72, 72E, 72G, 72H, & 74
• 2002- Extensive editorial and technical revisions
• 2007-Significant changes; protection of systems and qualifications of service personnel
NFPA 72- 2010
NEW TECHNOLOGIES

• Carbon monoxide detection
• Video Image Flame Detection
• Video Image Smoke Detection
• Mass Notification
• Inspection, Testing, and Maintenance

CARBON MONOXIDE

Odorless, Colorless, Tasteless, Toxic Gas

Connecticut Legislation:
2005 Required in NEW 1 & 2 Family Homes
2011 Required in Schools
U.S. Legislation – 35 States have some form of legislation
Earliest reported legislation – 1998 West Virginia

VIDEO IMAGE FLAME DETECTION

VIFD
NFPA 2007 Edition
• Section 5.8.5 - NEW TO THE CODE
• May be used for other applications
• Must be protected from unauthorized use.
VIDEO IMAGE SMOKE DETECTION
- VISD
- NFPA 72 2007 Edition
- Section 5.7.6
- May be permitted for other applications
- Must be protected from unauthorized use

MASS NOTIFICATION
- NFPA 2007 Edition
- Section 6.8.4
- Can be interconnected with Fire Alarm systems
- May be used for all hazards notification
- Chemical
- Biological
- Radiological
- ETC.

NFPA 72
Connecticut Fire Safety Code
References 2002 Edition
240 pages
NFPA 2010 Edition
361 Pages
What and Where are the changes?
NFPA 72

- 2010 Standard contains many changes and additions reflecting new challenges, technologies, detection and devices to address our concerns.
- Records of Completion
- Records of Testing and Inspections

NFPA 72

2002
FIRE ALARM SYSTEM – RECORD OF COMPLETION
4 page document

2010
FIRE ALARM AND EMERGENCY COMMUNICATION SYSTEM – RECORD OF COMPLETION
12 page document

NFPA 72

- 2002 Inspection and Testing Form
- 4 Page document

- 2010 Fire Alarm and Emergency Communication System Inspection and Testing Form
- 11 page document
NFPA 72

• Central Monitoring
• 2002 Section 8.2.5.1
• Shall conform to Underwriters Lab/ANSI 827, Standard for Safety Central-Station Alarm Services.
• 2010 section 26.3.5.1
• Same language.
Carbon Monoxide
Symptoms, Solutions, and State Legislation

What is Carbon Monoxide?
- Colorless
- Odorless
- Tasteless
- Deadly

Carbon Monoxide Facts:
- CO is the leading cause of home gas fatalities in the U.S.
- More deaths occur in December and January than any other month.
- A two-pack a day smoker has 400 ppm of CO in their blood at any time.
Carbon Monoxide Facts:

- 61,000 (estimated) people treated for accidental CO exposure from 2006-2008
- 20,636 people
- 439 average number of CO deaths per year

Potential Sources of Carbon Monoxide:

- Camp Stove
- Generator
- Furnace
- Gas Range
- Cook Top
- Clothes Dryer

Carbon Monoxide Symptoms:

- Lethal
- Collapse
- Drowsy
- Weakness
- Headache
- Nausea
- Fatigue
- Shortness of breath

Carbon Monoxide Symptoms Chart:

- Scale: 0 to 1,150 ppm
- Levels:
  - 50 ppm
  - 150 ppm
  - 400 ppm
  - 1,150 ppm
Types of Carbon Monoxide Sensors

- Biomimetic
- Semiconductor
- Electrochemical

CO Detection Products
from System Sensor

RealTest® Overview

Both the CD1204T and CD1204TR offer RealTest® technology. The first true field functional CO test, fully compliant with NFPA 720-2008.

- Reliable
- Simple test procedure
- Immediately know the detector works
- Meets NFPA 2037 requirements
Electrochemical CO Sensor

System Sensor CO detectors use the latest electrochemical sensing technology to provide the most accurate CO detection available.

These detectors detect low levels of CO that may be harmful over long periods of time and high concentrations that pose an immediate danger.

End of Life

All CO detectors include a limited life CO cell that must be replaced at end of life.

System Sensor recommends replacing the CO122FF and CO122FF at six years from the date of manufacture.

The date of replacement is clearly marked inside the unit.

Trouble Relay

Unlike other detectors, the trouble relay in System Sensor detectors will notify the control station of cell trouble and at end of life. This enables service providers to make proactive service calls to meet customer needs.

Our detectors also include an end-of-life timer that begins counting upon power-up and炝 locker the sensor if it is only when powered
SENS terminals provide electrical supervision and fast, easy wiring.

Alarm LEDs:
Red and green LEDs help differentiate between normal conditions and alarm conditions.

Multiple Mounting Options:
Multiple mounting options for mounting to a single-gang electrical box or surface mounting to the wall or ceiling.
Low Current Draw

Low current draw with 25 mA in standby and 40 mA in alarm.

The model that most CO detectors can be connected to the panel, without purchasing an expensive panel or extra a relay power supply.

CO1204T and CO1204TR CO Detectors

Our award-winning line of system connected CO detectors includes the rectangular CO1204T and round CO1204TR. These detectors include RealFast — the first and only field functional CO unit fully compliant with NFTA 700, 2008.

These detectors also provide multiple mounting options, enable 24/7 central station monitoring, require a low current drain, and are quick and easy to install, test, and maintain.

CO-PLATE Accessory

In cases when you would like to upgrade competitive detectors to the CO1204T, but the footprint of the competitive detector must be covered, the CO-PLATE CO Detector Replacement Plate perfectly covers the outline of the previously installed detector. The CO-PLATE then mounts to the CO PLATE for a clean, low-profile finish.
CO-PLATE Accessory

In cases when you would like to upgrade competitive detectors to the CO-129AT, but the footprint of the competitive detector must be covered, the CO-PLATE CO Detector Replacement Plate perfectly covers the outline of the previously installed detector. The CO129AT can mount to the CO-PLATE for a clean, low-profile finish.
New Trends in CO Legislation

On 7/13/11, Governor Dan Malloy signed HB 5226, Public Act No. 11-248 into law. The Act requires newly constructed public or nonpublic school buildings to install CO detection on or after 1/1/12.

The Act permits either UL 2034 or UL 2075 CO detection devices to be installed.

It directs the State Fire Marshal and the Code & Standards Committee to publish regulations on the location, power requirements, testing and maintenance for carbon monoxide detection equipment.

California State Building Code Update – 2010

California Residential Code (IRC):
- New detached one- and two-family dwelling, townhouses not more than three stories

California Building Code (CBC):
- New Group R and Group I occupancies
  - Apartment houses
  - Dormitories
  - Fraternities and sororities
  - Hotels, motels and boarding houses

International Residential Code Update – 2009

Adoption of CO detection requirements:
- Issues
  - Implications apply only to buildings and not to tenants by the state
  - New Hampshire
  - North Dakota
  - Provisions are only adopted by local governments, not the state
  - Pennsylvania
  - South Carolina
New section was added to the 2012 edition of the IBC and IPC requiring CO detection to be installed in new and existing Group R and Group H occupancies.

- Containing a fuel-burning appliance
- Which has an attached garage
- Any new parking garage, as defined in the IBC, or enclosed parking garage ventilated in accordance with Section 404H of the International Mechanical Code, shall not be deemed to be an attached garage.

**Exception:** Sleeping units or dwelling units
which do not themselves contain a fuel-burning appliance or have an attached garage, but
which are placed in a building with a fuel-
burning appliance or an attached garage,
need not be provided with single station CO
alarms provided that:

- The sleeping unit or dwelling unit is located
more than one story above or below any
story which contains a fuel burning
appliance or an attached garage.

- The sleeping unit or dwelling unit is not
connected by duct work or ventilation
vents to any room containing a fuel-
burning appliance or to an attached
garage.

- The building is provided with a common
anti-carbon monoxide alarm system.
New requirements permit system-connected CO detectors to be installed:

- Carbon monoxide detectors shall be installed and maintained in accordance with NFPA 72.
- Carbon monoxide detectors shall be listed and comply with UL 2034.
Manufacturer of Mass Notification Systems
Emergency Alarm and Warning Systems
Acoustic Technology, Inc.
30 Jeffries Street, East Boston, MA 02128
617-567-4969 x305 tbyrne@atystem.com
Advanced Integrations

- Primary ATI Control Station
- Secondary (Backup) ATI Control Station
- Serial Interface (RS - 232 Connection)
- IP Network (Internet or LAN)

- Plasma TV
- Alphanumeric Pager
- Message Sign
- Local Operator Console
- Laptop
- Desktop work Station
- Cap Server
- Cellular Phone
- PDA / Smart Phone
- Landline Phone
- IP Speaker (Optional)
- E-mail

- Plasma TV
- Alphanumeric Pager
- Message Sign
How the ATI system works

- System activations are initiated from the control stations either manually or by detection of remote devices such as pull stations and hardwired and/or wireless pushbuttons.

- Activations are sent from the control station to the field units using RF communication and/or IP communication. Hardwired as twisted pair or fiber optics can also be used.

- Remote devices such as control stations and pushbuttons are monitored by remote terminal units (RTU).

- The notifications will be broadcast as alert tones, audio messages and/or live PA through outdoor units and/or indoor units.

- The system can send notification to beacons, strobes, pagers, electronic message signs, cell phones, text messages, networked computers, etc...

- The system can broadcast audio on existing indoor PA or fire alarm voice evacuation systems.
ATI Control Station

- Easy-to-use software
- Customized display map
- Total, zone and individual activations
- Activates tone alerts and voice messages
- Live PA

Mobile Control Station also available
- Lightweight, transportable control station
- Includes the same features as our stationary control station
ATI Customized Software

- Simple activation procedures
- Several reports to document all system activities
Outdoor High Powered Speaker Station HPSS16/HPSS32

- HPSS16 - 1600 Watts Audio Output
- HPSS32 - 3200 Watts Audio Output
- Directional to reduce sound reflection
- Tilt function to eliminate multiple sound arrival

- Radio communication
- Optional wired communication using fiber-optic or IP
- Optional wireless IP communication

- NEMA stainless steel enclosure
- High-efficiency Class D amplifier
- Ability to monitor system functionality
- Easy to maintain
- Battery Operated
- Single board design

Solar option
- Batteries are trickle charged using solar power
- Dual ac-solar charging system
Mobile High Powered Speaker Station
MHPSS

- CARC paint
- NATO hitch available
Remote Terminal Units (RTU)/PA Interface/Indoor Speaker Unit(ISU)/Outdoor Speaker Unit(OSU)

- Used to initiate alarms and activations through multiple remote devices
- Control gates, traffic lights, message signs, strobes. Interface Fire Alarm or PA Systems.
- Initiate total or specific area activations. Remote activation supports devices including pull-stations, push buttons, local operator console, etc. Enables system monitoring.
Major Achievements - Notable Contracts Awarded:

- Indian Point Energy Center, the World Trade Center NY, Hudson County NJ, the City of San Francisco, CA, the City of Nashville, TN, NASA Langley Research, MASSPORT Authority, Region of Durham, ON Canada

- US Army Presidential Compound Bagdad Iraq, Bagdad Regional Hospital, Bagram Air Force Base Afghanistan, US Army Training Center Fort Huachuca, Fort Drum, Fort Leonardwood, Fort Lee, Fort Story, Fort Jackson, Fort Stewart, Fort Sill, Fort Ruckers, Fort Sam Houston, Fort Harrison, Fort Riley, Carlisle Barracks, Blue Grass Army Depot, the White Sand Missile Range, Groton Naval Base, Uokonsuka Naval Base, Naval Medical Center, Military Ocean Terminal, Eglin AFB, Whiteman AFB, Columbus AFB, Laughlin AFB, Vance AFB, Maxwell AFB, Goodfellow AFB, Sheppard AFB, Randolph AFB, Luke AFB, Barksdale AFB, Tyndall AFB, Lackland AFB, Kessler AFB, Little Rock AFB, Malmstrom AFB, Altus AFB, Shaws AFB, Kirtland AFB, Ingleside NAS, Corpus Christi NAS, Pensacola NAS, Kingsville NAS, Jacksonville NAS, JRB New Orleans NAS, Stewart ANG, Bangor ANG, Nebraska Air National, Seal Beach, NAS Fallen

- Westpoint, Virginia Tech University, Virginia Military Institute, Texas A&M University, San Diego State University, University of Massachusetts, Brandeis University, University of South Carolina, North Carolina State University, Washington State University, Oklahoma City Community College, University of the Virgin Islands, New Mexico Highlands University, Queen’s University