IMFA Presentation 3.26.2015
Fire Alarm System Technology
4100 Features

- Released in **1988** (512 points)
- **1000 point capacity** (1992)
- 10 Loops of 127 point Addressable Detection Circuits
- Analog Audio Systems
- Digitized Messaging (Eproms)
- Distributed Transponders (Miniplex)
- Conventional Notification Appliances
Universal Fire Management System

4100ES

- Released in 2011
- 2500 point capacity
- 30 Loops of 250 point Addressable Detection Circuits
- Analog & Digital Audio Systems
- Digitized Messaging (FLASH)
- Distributed Transponders (Miniplex with Local Audio)
- Addressable Notification Appliances with Self Test
- Backward Compatible with ALL existing 2120/4100 systems
- Advanced Internet Capabilities
Introducing 4010ES

- 248 Device IDNet+ Channel
  - Twisted pair or existing wiring!
  - Compatible with all IDNet devices including Quick Connect
- Full Networking
  - Peer-to-peer networking
  - All 4010ES Points can be declared public to other nodes
  - Up to 100 points from other nodes can be mapped to 4010ES as external points
  - Compatible with Global and Individual Acknowledge Networks
- Option Cards
  - BNIC, DACT, SafeLINC, RS232, VESDA HLI
  - 8-zone Card
  - Remote InfoAlarm
  - Suppression Listed
- 1 Bay 4100ES Size Cabinet
  - Internal 33AH batteries
Universal Fire Management System

4100ES

- Forward-Backward compatibility:
  - Expansion Bay for mounting in existing 4100 Box
Universal Fire Management System

**4100ES**

- New Large Screen Display

INFOALARM PROVIDES COMPLETE OPERATOR CONTROL OF SYSTEM
Universal Fire Management System

4100ES

- New Large Screen Display

Upgrade existing systems to InfoAlarm
First & Most Recent Events

First 8 Events

First 5 and Last Events
Universal Fire Management System

4100ES

- New Large Screen Display

Up to 10 InfoAlarm Units can be driven from each 4100U Panel
Universal Fire Management System

4100ES

- Long-Term Compatibility
- System Expansion
- Maintenance
Universal Fire Management System

4100ES

- CFG upload from the panel allows the retrieval of the current CFG Software
Universal Fire Management System

4100ES

- CONFIG upload from the panel allows the retrieval of the current CONFIG Software
Universal Fire Management System

4100ES

No Fire Watch Costs

- Shadow CFIG

C-FIG

Primary Configuration

C-FIG

Secondary Configuration
Universal Fire Management System

4100ES

- Long-term Compatibility
- System Expansion
- Maintenance
- Technology

LEADING THE WAY
Maintenance

GROUND FAULT
IDNet +

Designed for Retrofit Applications using existing Non Shielded Wire.

- IDNet+ Quad-Circuit isolation offers superior survivability

- Converts up to 16 Conventional IDCs, using the same wiring, with no compromise to system fault-tolerance

\[\textbf{Superior Survivability}\]
IDNet+ Wiring Options

IDNet+ Output Wiring Options Reference Drawing

Class A Loop Wiring

Class B Single Connection Wiring

Class B Dual Connection Wiring
(dotted lines are T-taps)

Class B Quad Connection Wiring

IDNet Circuit A

IDNet Circuit B

IDNet Circuit C

IDNet Circuit D
IDNet+ Benefits

Installation Diagnostic Tools

- Earth Fault “Search-and-Locate” Diagnostics
  - "Circuit Level" is a Standard Feature with “Built-In” IDNet+ Quad-Isolator
IDNet+ Benefits

Installation Diagnostic Tools

- Earth Fault “Search-and-Locate” Diagnostics
  - “Device Level” with “Optional” IDNet Isolator Modules & Bases

```
CARD 3, IDNET+ CARD (250 POINTS)
IDNet+ Earth Fault ABNORMAL

LOOP NUMBER: D
CHANNEL OUTPUT EARTH FAULT

LOOP NUMBER: D
M2-74, IDNet Isolator EARTH FAULT
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IDNet+ Benefits

Installation Diagnostic Tools

- Duplicate Device Detection Diagnostics
  - Displays a Duplicate error if two or more devices are set to the same address
Wireless WalkTest™
System Testing

For the Simplex 4100 to ES

TOOLS - Wireless WalkTest™ for the 4100U
Universal Fire Management System
4100ES

- LONG – TERM COMPATIBILITY
- SYSTEM EXPANSION
- MAINTENANCE
- TECHNOLOGY
Suppression Release Peripheral (SRP)

Positive “Dual Command Control” Operation

- Offers Superior Reliability & Mission Protection
  - Requires a Release Signal from Two Inputs (IDNet & NAC) to Activate the RAC Output
  - If One but Not Both Inputs are Active, a Trouble is Reported on the Host Panel after 10 Seconds

- Virtually Eliminates the Adverse Activation of the Releasing Circuit from Transient Electrical Signals
**SRP:** Suppression Release Peripheral

4090-9006

Both Activation Inputs must occur before Solenoid will operate
Addressable VESDA Integration
Application Photo – Sub-floor (Data Center)
Application Photo – In-cabinet (Power Gen)
Application Photo – In-cabinet (Power Gen)
Application Photo – Mini Sampling Point
Real Incident detected by VESDA
Application Photo – Battery Rooms with Beam Pockets
Application Photo – Environmental Challenges

Jack Daniels Distillery

Classified Environments (Explosion Proof)

VESDA is FM hazardous listed:
Class 1 Div 2,
Groups A,B,C, & D
VESDA ECO

- VESDA ASD actively draws air samples across a distributed pipe network.
- The VESDA ECO detector is installed along the pipe so that the sampled air is passed over one or two gas sensors within a replaceable pre-calibrated sensor cartridge.
- VESDA ECO uses a pellistor/catalytic bead sensor for the detection of combustible gases and electro-chemical sensor the detection of toxic gases and oxygen.
Heat Detection
4-20 MA Output Monitoring

4-20 mA Current Loop

24 VDC

Mapnet Addressable Loop

Analog Monitor Zam
Gas Sensors
Liquid Level Sensors
Temperature Sensors

4-20 MA Output Monitoring

Result: Monitor Poisonous Gases
Result: Critical Building Functions

Instrumentation
Video Fire Detection

4-20mA current source
3 core cable as a minimum.

4-20mA current source with video
3 x screened twisted pair 18 AWG
TrueAlert LED Message Board

The first UL listed textual notification device for fire alarm systems

- Supervised and activated by the IDNet™ interface.
- Can be used as a customer programmable sign board when not signaling an alarm via Ethernet connection
- Custom messages are overridden when an emergency condition triggers an alarm message
- Listed to UL Standard 1638 for Fire Alarm
- SimplexGrinnell has applied for a patent on this technology
Simplex Addressable Communication Loop

IDNet Communications Channel

Battery Back-up from Fire Panel
I/P Secondary Connection

Non-Emergency Messaging via Multiple Workstations running TrueAlert Messenger Software
# Standard Messages

<table>
<thead>
<tr>
<th>Message Title</th>
<th>Displayed Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bomb Threat</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Bomb Threat</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>An emergency has been reported in the building. Please proceed to the nearest exit and vacate the building.</td>
<td></td>
</tr>
<tr>
<td><strong>Hostile Intruder</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Hostile Intruder</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>An emergency has been reported in the building. Please secure your area and wait for further instructions.</td>
<td></td>
</tr>
<tr>
<td><strong>Shelter In Place</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Shelter In Place</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>An emergency condition has been reported. Secure your windows and doors and remain in the building. Unsafe conditions may exist outside. You will be notified when further information is available.</td>
<td></td>
</tr>
<tr>
<td><strong>Alternate Exit</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Evacuate-Alt</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>An emergency condition has been discovered in the building. Proceed to your alternate exit and vacate the building.</td>
<td></td>
</tr>
<tr>
<td><strong>Severe Weather Alert</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Weather Alert</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>A severe weather warning has been issued. Proceed to the designated shelter area and wait for further instructions.</td>
<td></td>
</tr>
<tr>
<td><strong>All Clear</strong></td>
<td>Top Line, Fixed</td>
<td><strong>All Clear</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>Attention please, the emergency condition has been cleared. You may return to your normal activities</td>
<td></td>
</tr>
<tr>
<td><strong>Evacuate</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Evacuate</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>A fire has been reported in the building. Proceed to the nearest exit and vacate the building. Report to your designated assembly place outside the building.</td>
<td></td>
</tr>
<tr>
<td><strong>Alert</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Alert</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>An emergency condition has been detected in another part of the building. Please remain in your area. You will be notified if further action is required.</td>
<td></td>
</tr>
<tr>
<td><strong>Live Voice</strong></td>
<td>Top Line, Fixed</td>
<td><strong>Live Voice</strong></td>
</tr>
<tr>
<td>Bottom Line, Continuous Scroll</td>
<td>A live voice announcement is currently being broadcast</td>
<td></td>
</tr>
<tr>
<td><strong>Blank</strong></td>
<td>One Line</td>
<td>No characters are displayed, used to conserve battery backup</td>
</tr>
</tbody>
</table>
EMERGENCY MESSAGES

STATIC TEXT LINE

ALL LEDs are TRI-COLOUR

Dynamic (Scrolling) TEXT LINE

RED

YELLOW

GREEN

LEADING THE WAY
TrueAlert Intelligent Fire Notification

Amber Alert Addressable Multicandella Notification Appliances
Fire Panel Internet Interface

Internet-based communications link enables facility managers and building owners to use a web browser to monitor the status of their fire alarm systems.
Outdoor EC Systems

- Real-time warning and instruction to shelter or evacuate during a threat to life safety
- Campus-wide over outdoor areas covering acres or miles
- Can include off-site buildings and satellite property
- Same message to all locations or specific instruction to individual buildings, areas, points of egress
**Giant Voice**

**Hi-powered Tower Speakers:**
Intelligible outside speakers ranging from 400 watts to 3200 watts of power, coverage range up to a third of a mile radius on one tower.

**Solar-powered Towered Speakers:**
Completely self-contained, requiring no external power; ideal for deployment areas and changing high profile security areas.
EAS/NOAA - Receivers Phase I

- Interface which provides Audio to a 4100U from emergency notification broadcasts EAS / NOAA.
- Allows emergencies to be automatically or manually re-broadcast over Fire Alarm Voice system.
- Interface to LED Readerboards possible (Future).
- Custom Transmitters & receiver plug-ins also available (Allowing a campus to generate it’s own emergency events through campus radio station)
- 2 Patents issued, 1 other pending
Add to an Intelligent Fire Protection Program
- Signals the moment extinguisher is removed
- Signals when an extinguisher falls out of pressure range
- Signals when access is continually blocked
- Will not allow a non-pressurized extinguisher back into service
- Works with a building’s existing fire/security panel
- Electronic signal will demand attention if there is any issue
Fire Alarm / BACNet

BACNet/MODbus Open Standard

Building Controls Market Need:
- End users desire an open network topology to access all facility sub systems; HVAC, Lighting Control, Security, and Fire Alarm

Industry Solution:
- Industry standard communications protocol
- Including ModBus and other common protocols

Local Area Network - Industry Open LAN enabling Third-Party Open Integration

- Honeywell System
- Landis/Staefa System
- Trane System
- Vendor X System
- Simplex System
Seamless Network Configuration Using Ethernet

- Brand X with DACT
- Brand Y with DACT
- Simplex Legacy with DACT

Physical Plant (ISN):
- 4100 Education
- 4100ES Science
- 4020 Gymnasium
- 4100 Dormitory A

Loop 1:
- 4100U Theater
- 4100U Infirmary
- 4100U Nursing
- NDU Nursing
- 4020 Cafeteria

Loop 2:
- 4100 Dormitory B
- 4100 Dormitory C

Internet

DACR

Medical Center (CS)

Fire and Security (CS)

To Additional Client Servers

Service Laptop (CSS)

Ethernet

Up to 7 Loops

Simplex Grinnell

BE SAFE

LEADING THE WAY
Network System Integrator (NSI)

• Flexible 4120 interface for non-networkable or competitive panels
  – 8 isolated inputs (wet, dry, mix)
  – 7 programmable outputs (contacts)
  – Powered by monitored panel
  – 12 or 24 VDC compatible
Is It Secure?

Protect Devices
- Leverages existing network security infrastructure
- Devices do not have public IP addresses

Secure Across Internet
- SSL for end-to-end encryption and authentication
- Prevents interception and device/server impersonation

Axeda Enterprise
Authorized Access
- Users authenticated against corporate security
- Privileges limit access to applications, devices, data
- Audit log of user activity
Typical Incident Activity Summary

1. **TrueInsight Services Center** automatically notified by fire panel
2. **TrueInsight Tech** diagnoses fault by accessing the fire panel
3. **Services Tech** enters Service Solution Recommendations into Electronic Service Request
4. **District Office** schedules best available tech for the job and dispatches call
5. **District Tech** confers direct with Services Tech if needed to solve problem during site visit
Universal Fire Management System

4100ES

- Long-term Compatibility
- System Expansion
- Maintenance
- Technology
Incident Commander - September 2012
THANK YOU!!

ANY QUESTIONS?