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FIRE ALARM TRAINER

DESCRIPTION

The Consulab CL-10 is a fire alarm trainer that can be wall-mounted or inserted into a Consulab double-sided rack. It is built so that students can assemble, wire, and connect different circuits and components. OEM, CSA and UL approved components from Edwards are used for this panel. The CL-10 Fire Alarm Trainer contains of the following:

- One (1) reference manual.
- One (1) five-zone fire shield panel, surface mounting (A)
- Two (2) sealed lead acid batteries, 5 AH (B)
- Seven (7) end-of-line resistor kits (C)
- One (1) break glass manual pull station (D)
- One (1) photoelectric smoke detector (E)
- One (1) ionization smoke detector (F)
- Two (2) standard bases for detectors
- One (1) heat detector (G)
- One (1) horn (H)
- One (1) alarm & trouble simulator (I)

A. FIVE-ZONE FIRE SHIELD PANEL

The fire shield panel consists of a five-zone conventional fire alarm control unit, an integrated DACT/Dialer, serial annunciator modules, and serial remote relay modules. All components are microprocessor-controlled. The fire shield panel is ideal for both new and retrofit installations. It provides smoke and fire detection, occupant notification and off-premises signaling for small- to medium-sized buildings. Each IDC can be configured for either Class B or Class A operation and one of eight operating modes:

- *Alarm* – with smoke detector verification and instant activation of contact devices;
- *Alarm* – without smoke detector verification;
- *Water flow Alarm* – with 15 second delay;
- *Water flow Alarm* – without 15 second delay;
- Combination *Water flow* (delay) and *Supervisory* (Latching);
- Combination *Water flow* (no delay) and *Supervisory*;
- *Supervisory* (Latching);
- *Monitor* – for monitoring devices other than alarm or supervisory such as fire doors or fire dampers.

Control of the panel's operation is both simple and intuitive. With the door open the following controls are available:

- *Reset* – used to reset the panel;
- *Signal Silence and Drill* – used to silence notification appliances or activate the drill function;
- *Panel Silence* – silences the buzzer on the panel and the remote trouble unit;
- *Remote Disconnect* – disables the DACT, or, if no DACT installed, disables the panel's alarm relay;
- Walk Test – activates the panel's silent and audible walk test mode.

The following system LEDs display the panel's status:

- *Alarm* – panel is in the alarm state;
- *Trouble* – panel is in the trouble state;
- *Supervisory* – panel is in the supervisory state;
- *Power* – indicates the status of the AC power source;
- *Disable* – indicates when any IDC, NAC, relay or the DACT are disabled;
- *Annunciator Trouble* – indicates trouble on the remote annunciator bus;
- *Battery Trouble* – indicates battery or charging problems;
- *Ground Fault* – indicates a short between any panel circuit and ground;
- *Walk Test* – indicates that one or more IDCs are in the walk test mode;
- *Alarms Silenced* – indicates that the panel is in the alarm state with one or more NACs silenced.

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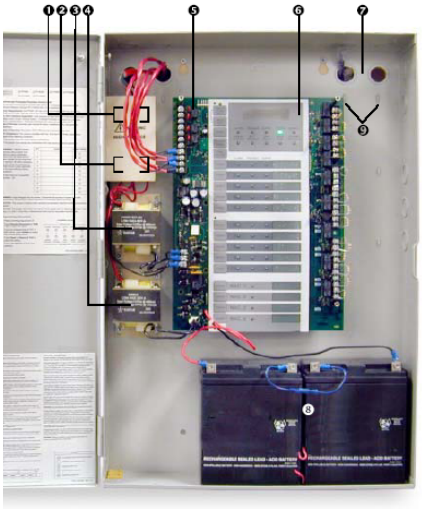
Fire Shield Panel Layout



1. Main AC wiring block and fuse holder: Provides connections for 120 or 230 volt AC (primary power) from dedicated service. Includes primary power fuse (5 Amp).
2. Dual Transformer AC wiring block: Ten-zone panel only. Provides connections between primary side of both main and expander transformer and 120 or 230 volt AC (fused primary power).
3. Transformer: Changes 120 or 230V AC supply voltage to 24V AC.
4. Power expander transformer (XTR): Optional. Available for the ten-zone panel only. Provides additional primary power to increase the available NAC current for the ten-zone panel.
5. Main circuit board: Provides connections for all circuits. Also includes the operator interface.
6. Operator Interface: Includes operator controls, LED indicators and circuit identification labels.
7. Cabinet enclosure: Houses the panel electronics and standby batteries. In some cases the batteries may be housed in an external battery cabinet (BC2).
8. **Standby batteries:** Provide Secondary/Standby power to the panel electronics in the absence of primary power.
9. Tie wrap mounts: Used to secure wires and to help maintain proper separation between power-limited and non power limited conductors.

General Specifications

Initiating Device Circuits – IDCs:	Class B (5, 3 and 1) / Class A (0, 1 and 2)
Notification Appliance Circuits – NACs :	Class B (2 and 0) / Class A (0 and 1)
Power Supply:	3.0 amps total
NAC Voltage Rating:	24 Vfwr
Maximum NAC current:	1.5 A each / 2.5 A total
AC Input:	120V AC, 60 Hz, 0.8 A
Base Panel Current Draw:	120 mA (Standby) / 170 mA (Alarm)
Panel Battery Charge Capacity (sealed lead acid only):	Up to 18 Ah, 7Ah max in cabinet
Auxiliary Current	0.5 amps max. May be programmed as resetable.
Auxiliary Output:	19 to 25.7V DC
IDC Alarm Current:	1.5 mA
IDC Circuit:	Maximum loop resistance: 13 Ohms; Maximum loop capacitance: 0.03 µF
IDC Operating Voltage:	16.3 to 25.7V DC
UL Detector ID:	100
Alarm Contact (normally open)	30V DC @ 1 A (resistive load)
Operating Environment Temperature:	32 – 120 °F (0 – 49 °C); Humidity: 5 - 93% RH, non-condensing
Terminals (wire gauge):	18 - 12 AWG (0.75 mm² - 2.5 mm²)
Asynchronous Serial Communications:	Maximum resistance: 13 Ohms; Maximum capacitance: 0.03 µF

B. SEALED LEAD ACID BATTERIES

The sealed lead acid batteries are excellent for the following applications with regard to size, Amp hour rating, and proper terminal connections: battery backup for access control systems, fire alarm Systems, and security alarm systems, emergency lights, lighted exit signs, and uninterruptible power supplies. Two-year warranty.

General Specifications

Nominal Voltage:	12V DC
Rated Capacity:	5 AH – 20 hour rate
Terminals:	F1-Faston Tab No. 187
Capacity:	20 hour rate (0,25 A)
Internal resistance:	35 mΩ
Type:	Rechargeable

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C. END-OF-LINE RESISTOR KIT

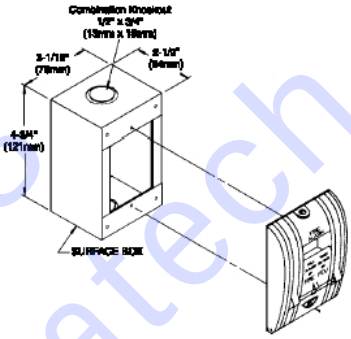
The end-of-line resistor kit consists of seven (7) 4.7 kΩ – 0.5 W resistors which are mounted on a clear plastic. The resistors can be used at the end of each zone.

D. BREAK GLASS MANUAL PULL STATION

The break glass manual pull station is a non-coded manual station featuring the very familiar 'teardrop' shape with positive pull-lever single action operation. This fire alarm station is easy to install and designed to provide years of dependable service. Station testing and reset can be done simply by opening the top latch and operating the exposed switch.

Main Features

- Traditional familiar appearance
- Single stage operation
- Simple positive pull action
- Clamp type terminal connections
- Semi-flush or surface mounting
- Rugged die-cast design
- Durable baked enamel finish
- No sharp corners



General Specifications

Alarm contacts:	Single Pole Normally Open
Current:	3 A at 30 VAC
	3 A at 30 VDC
Approvals:	ULC S528M

E. PHOTOELECTRIC SMOKE DETECTOR

The low-profile plug-in photoelectric smoke detector distinguishes itself as a performance leader in its class with its highly stable design that resists air movements caused by heating and air conditioning, and changing environmental conditions. This makes it a reliable performer ideally suited to modern building interiors. A bright, easy-to-see LED on the detector glows steady when it is in alarm, thus eliminating much of the guesswork when responding to front-panel indications. If a detector is removed for any reason while the panel is in its normal state, a zone trouble condition will result. This ensures the integrity of the alarm system at all times.

Main Features

- Sensitive to visible and invisible products of combustion
- Stable, reliable design
- Non-polarized
- Simple to install, difficult to vandalize
- Flexible mounting options
- At-a-glance alarm indication
- Easy to maintain
- Attractive appearance with clean, modern lines

General Specifications

Oper. voltage range:	14 - 30V DC
Normal oper.current:	62 µA
Alarm Current:	100 mA (max.) limited by control panel
Sensitivity Range:	1.38 - 3.08 % obs/ft
Test Feature:	Sensitivity reading using test/picker tool
Oper. temperature:	32 °F to 100 °F (0 °C to 38 °C)
Oper. humidity:	20 - 95% RH (non condensing)
Oper. air velocity:	0 - 5,000 ft/min (manufacturer rated)
	0 - 300 ft/min (UL listed)
Storage env. temp.:	32 °F to 120 °F (0 °C to 49 °C)

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F. IONIZATION SMOKE DETECTOR

The low-profile plug-in ionization detector is meticulously engineered to deliver high-performance features, superb reliability, and unbeatable quality – the low-cost solution for conventional detection applications. The twist-and-lock design makes short work of installation and maintenance operations. A plastic breakout on the detector housing optionally prevents removal from the base except with a special tool. A bright, easy-to-see LED on the detector glows steady when it is in alarm, thus eliminating much of the guesswork when responding to front-panel indications. If a detector is removed for any reason while the panel is in its normal state, a zone trouble condition will result. This ensures the integrity of the alarm system at all times.

Main Features

- Sensitive to visible and invisible products of combustion
- Stable, reliable design
- Non-polarized
- Simple to install, difficult to vandalize
- Flexible mounting options
- At-a-glance alarm indication
- Easy to maintain
- Attractive appearance with clean, modern lines

General Specifications

Oper. voltage range:	14 - 30V DC
Normal oper.current:	50 µA
Alarm Current:	100 mA (max.) limited by control panel
Sensitivity Range:	0.69 to 1.29 % obs/ft
Test Feature:	Sensitivity reading using test/picker tool or Gemini 501
Ion source:	0.85 µC Americanium
Oper. temperature:	32 °F to 100 °F (0 °C to 38 °C)
Oper. humidity:	20 - 95% RH (non condensing)
Oper. air velocity:	0 - 300 ft/min (UL listed)
Storage env. temp.:	-4 °F to 140 °F (-20 °C to 60 °C)

G. HEAT DETECTOR

The heat detector provides high quality, reliability, and the ultimate in design and decor. The low silhouette and pure white finish blends with most ceiling styles to provide an inconspicuous unit. A temperature increase at the detector of 15°F (9°C) or more per minute activates the rate-of-rise feature. This closes the contacts in the detector to transmit the alarm condition to the fire alarm control panel. When the rate-of-rise element alone has been activated, the detector is self-restoring. If the temperature of the center disk rises to the detector's rated temperature, the fixed temperature element activates. This closes contacts in the detector and transmits the alarm condition to the fire alarm control panel. The fixed temperature element is non-restorable and, when activated, the detector must be replaced. The need for replacement is indicated when the center disk has fallen free from the detector.

Main Features

- SPNO contacts
- Low profile
- Rate-of-rise element
- Fixed temperature element

General Specifications

ULC temperature rating:	135 °F (57 °C)
ULC max. ambient ceiling temp. rating:	100 °F (38 °C)
Detector operation:	Fixed temperature and rate-of-rise
Contact rating:	Single pole normally open 3.0 A at 6-125V AC / 1.0 A at 6-28V DC / 0.3 A at 125V DC / 0.1 A at 250V DC
Operating environment:	Indoor – dry

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H. HORN

The horn is among the smallest, most compact audio-visual emergency signaling devices in the world. Thanks to patented breakthrough technology, the horn strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – full light technology. This produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors, thus ensuring the entire coverage area receives consistent illumination from the strobe flash. The horn strobes offers a selectable 15 to 110 candela output with a conveniently-located switch on the side of the device. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

Main Features

- Unique low profile design
- Four field-configurable options in one device
- Easy to install
- Unparalleled performance

General Specifications

Housing:	White textured UV stabilized, color impregnated engineered plastic. Exceeds 94 V-0 UL flammability rating.
Operating voltage:	Coded or non-coded, filtered 20-31V DC or unfiltered 20-27 Vfwr
Horn pulse rate:	Continuous, steady tone only, 9-12 VRMS
Lens:	Optical grade polycarbonate (clear)

I. ALARM AND TROUBLE SIMULATOR

The alarm and trouble simulator consists of a panel with five toggle test switches that simulate the following conditions:

- Alarm
- Supervision
- Trouble
- Ground fault
- Sprinkler alarm

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