APPENDIX B

Gas Detection System
APPENDIX B:
GAS DETECTION SYSTEM
Operation

The SEC 3500 HMI is an operator interface dedicated to communicating to the SEC 3100 gas detectors, SEC 4855 Relay Controllers, SEC 3100 AIM, SEC 3100 LIM units. The SEC 3500 has output capabilities to the plant control system. The SEC 3500 uses an industry standard RS485 communication protocol to interrogate up to 254 Network Devices.

Standard display screens are set up for intuitive interaction for the operator and network devices. The primary screens are Main Zone Summary, Alarm Summary, Bus Summary. Individual device screens can be viewed and programmed from the SEC 3500 HMI. Password protected security ensures only authorized access to critical screens.

Features

- Intuitive graphical interface
- 7.7” 256-color 640x480 DSTN Display
- RS485 Modbus® RTU Communication to SEC 3100
- 10-Base-T/100-Base-TX Ethernet Port
- Configuration and Firmware are Stored in 8MB of Non-volatile FLASH Memory
- CompactFlash® Socket to increase memory capacity
- Dedicated MENU Key and 6 Soft-Keys
- Power unit from 24VDC ±20% supply
- Resistive Analog Touchscreen
- Powerful 32-bit Processor
- Audible alarm
- Remote Web Access and Control Facility
- NEMA 4X / IP66 Front Panel
- 16 Programmable Relays (Expandable to 40)
- Interfaces with up to 254 Network Devices
- “Stat Cast” RS232 System Status Broadcast
SEC 3500 HMI
Operator Interface

SPECIFICATIONS

Operating Voltage
19 to 29 VDC - - -

Power Consumption
40 Watt Max (Not including relay)
Contact current or 24VDC supplied to external relays

Temperature Rating
Operating: 0° to + 50°C
Storage: -25° to + 60°C

Operating Voltage Battery

19 to 29 VDC - - - Lithium coin cell

Memory
8 Mbyte non-volatile flash

Memory Card
CompactFlash Type II slot for Type I & Type II CompactFlash cards

Contact current or 24VDC supplied to external relays

Temperature Rating
CompactFlash Type II slot for Type I & Type II CompactFlash cards

Operation and Storage Humidity
0-80% maximum RH (Non-condensing)
From 0° to + 50°C

Operation and Storage Humidity

CompactFlash Type II slot for Type I & Type II CompactFlash cards

Housing Dimensions
16 (W) x 16 (L) x 10 (D) inches
406 (W) x 406 (L) x 254 (D) mm

Housing Dimensions

16 (W) x 16 (L) x 10 (D) inches
406 (W) x 406 (L) x 254 (D) mm

Enclosure Construction
Powder Coated Steel

System Components
SEC3500 Operator Interface (Master)
SEC3100 Universal Gas Transmitter
Remote Relay Module
3100 AIM Interface Module
3100 ISO Repeater
3100 LIM Interface Module
SEC 3120 Dual Transmitter

System Components

Remote Screen Access
3100 ISO Repeater
3100 LIM Interface Module
SEC 3120 Dual Transmitter

Approvals
CSA: C22.2 No 0, No 0.4-04,
No14-05, No 142
UL 508
UL 2017

Approvals

10 BASE-T / 100 BASE TX
3100 ISO Repeater
3100 LIM Interface Module
SEC 3120 Dual Transmitter

Other Products Available
Gas Detectors - Explosion proof
Gas Detectors - Non Explosion proof
Process Gas Analyzers
Dual Gas Analyzers
Portable Fire Suppression Systems:
Dry Chemical
Halotron
Twin Agent
Stationary Fire Suppression Systems

Other Products Available

Sensor Electronics Corporation
12730 Creek View Avenue, Savage, MN 55378 U.S.A. • (800) 285-3651 • (952) 938-9486 • FAX: (952) 938-9617
www.sensorelectronic.com • sales@sensorelectronics.com

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© 12/16
The SEC 3120 provides dual interface capabilities for any and all SEC gas detectors.

The SEC 3120 features:
- Dual sensor interfacing to enable like-sensor redundancy or control or dissimilar sensor types
- Back lighted LCD for Gas Level/Unit Parameter display
- Four (4) Alarm/Fault Relays configurable for alarm set points, latching and multi-sensor relay logic
- An isolated RS485 Modbus interface provides reliable communication in noisy environments and eliminates “Ground Loop” problems
- Three magnetic switches for local configuration and calibration without compromising explosion proof protections
- Time stamped data logging using a removable non-volatile memory module. Module can be removed from the unit to allow remote data downloading and data archiving.

An optional IS barrier allows “hot” sensor replacement in rated locations. This allows the user to install pre-calibrated/pre-configured sensor boards without removing unit power while maintaining EX rating. Removable circuit board stack and detachable connectors facilitate field-wiring installation.
SEC 3120 Digital Gas Transmitter - Dual Sensor

Specifications

Compatible Sensors
SEC 3000 / SEC 3300 Toxic Detector
SEC Millenium IR Combustible
SEC 5000 IREvolution IR Combustible

Operating Voltage
24 VDC Nom (18-32 VDC Range)

Operating Current (No Sensor)
314mA Max @ 24 VDC - All Options
w/Relays Only: 90mA Max @ 24V
100mA Max @ 18V
No Options: 50mA @ 24V
65mA Max @ 18V

Output (digital)
RS-485 LAN (Isolated)

Output (optional relays)
4-20 mA (source type),
max. 1000 ohm load at 24 VDC supply voltage

Display
Back Lighted LCD
LEDs for relay status

Power Consumption (SEC 3120 only)
Nominal (no options, 24V): 1.2 W
Relays Option: Add 1 W
Heater option: Add 5.9 W

Temperature Rating (°C)
-40° to +40°

Humidity
0-99% RH (Non-condensing)

Housing Construction
Epoxy coated aluminum

Certification
CSA/NRTL Class 1, Div. 1, Groups B,C,D T5
IECEEx: Ex d IIC T5 Gb
UL 2075 (Must be used with UL2075 Approved SEC Millenium)

Housing Dimensions
5.25 (w) x 5.30 (L) x 4.95 (H) inches
{131 (W) x 132 (L) x 124 (H) mm}

Weight
Approximately 6 lbs. (2.8 Kg.)

Partial Gas List

<table>
<thead>
<tr>
<th>Gas</th>
<th>Partial gas list</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen</td>
<td>(O2) Carbon Monoxide (CO)</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>(H2) Germane (GeH4)</td>
</tr>
<tr>
<td>Ammonia</td>
<td>(NH3) Silane (SiH4)</td>
</tr>
<tr>
<td>Nitric Oxide</td>
<td>(NO) Phosphine (PH3)</td>
</tr>
<tr>
<td>Bromine</td>
<td>(Br2) Sulfur Dioxide (SO2)</td>
</tr>
<tr>
<td>Fluorine</td>
<td>(F2) Nitrogen Dioxide (NO2)</td>
</tr>
<tr>
<td>Arsine</td>
<td>(AsH3) Chlorine Dioxide (ClO2)</td>
</tr>
<tr>
<td>Ozone</td>
<td>(O3) Hydrogen Sulfide (H2S)</td>
</tr>
<tr>
<td>Chlorine</td>
<td>(Cl2) Hydrogen Fluoride (HF)</td>
</tr>
<tr>
<td>Phosgene</td>
<td>(COCl2) Hydrogen Chloride (HCl)</td>
</tr>
<tr>
<td>Diboran</td>
<td>(B2H6) Hydrogen Cyanide (HCN)</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>(HCHO) Hydrogen Selenide (H2Se)</td>
</tr>
<tr>
<td>Ethylene Oxide</td>
<td>(ETO) Hydrogen Peroxide (H2O2)</td>
</tr>
<tr>
<td>Combustible</td>
<td>(HC) Carbon Dioxide (CO2)</td>
</tr>
</tbody>
</table>

SEC 3120 Termination Board
Operation / Description

SEC Millenium is a complete self contained optical hydrocarbon gas detector. The sensing and reference elements are self-compensating for optical integrity and other signal inhibitors. The industry standard 4 - 20 mA analog output provides remote alarm, fault and calibration signals.
Specifications

Model: Sensor Electronics Corporation
SEC MILLENIUM Infrared Hydrocarbon Gas Detector

Available gases:
- Propane
- Propylene
- Methane
- n-Butane
- Ethane
- Gasoline
- Ethanol
- Isopropyl Alcohol
- Ethylene
- Methanol
- Aeromatic 150
- Pentane
- Hexane
- Cyclopentane
- Isobutane
- Toluene
- Methyl Amyl Ketone
- P-Xylene
- MEK
- Tert-Butyl Acetate

Please note that this list is not all-inclusive. The SEC MILLENIUM can be calibrated for most hydrocarbons, provided a calibration gas is available. For more information please contact Sensor Electronics Corporation.

Part Numbers:
- Methane PN: 490000000100L12 (0-100% LEL)
- Methane PN: 49000000050L12 (0-50% LEL)
- Methane PN: 49000000100V12 (0-100% VOL)
- Propane PN: 49000100100L12 (0-100% LEL)
- Propane PN: 49000100100V12 (0-100% VOL)
- Propane PN: 49000100000V12 (0-100% UEL)
- Aeromatic 150 PN: 49000200100L12 (0-100% LEL)
- Ethane PN: 49000300100L12 (0-100% LEL)
- Ethanol PN: 49000400100L12 (0-100% LEL)
- Ethylene PN: 49000500100L12 (0-100% LEL)
- Gasoline PN: 49000600100L12 (0-100% LEL)
- Hexane PN: 49000700100L12 (0-100% LEL)
- Isobutane PN: 49000800100L12 (0-100% LEL)
- Isopropyl Alcohol (IPA) PN: 49000100100L12 (1-100% LEL)
- Methanol PN: 49001000100L12 (0-100% LEL)
- n-Butane PN: 49001100100L12 (0-100% LEL)
- Pentane PN: 49001200100L12 (0-100% LEL)
- Methyl Amyl Ketone PN: 49001400100L12 (0-100% LEL)
- Cyclopentane PN: 49002500100L12 (0-100% LEL)
- Propylene PN: 49002900100L12 (0-100% LEL)
- Toluene PN: 49003700100L12 (0-100% LEL)
- P-Xylene PN: 49004000100L12 (0-100% LEL)
- Tert-Butyl Acetate PN: 49003400100L12 (0-100% LEL)
- Methyl Siloxane PN: 49005300100L12 (0-100% LEL)

Detection Method: Diffusion - Optional sample draw (requires a minimum of 1 liter per minute flow rate.)

Output (analog):
- 4-20 mA (Source type), max. 1000 Ohm load at 24 VDC supply voltage

Response Time:
- T50 < 5 seconds
- T90 < 10 seconds

Construction:
- 316 stainless steel
- Optional nickel plated aluminum

Accuracy:
- +/- 3% LFL, 0 to 50% LFL (Lower Flammable Limit)
- +/- 5% LFL, 51 to 100% LFL

Operating Temperature Rating:
- -40° to +70°C at 0 to 99% RH (non-condensing)

Operating Range:
- 18 to 32 VDC measured at the detector head

Power Consumption:
- 5 Watts Max

Max Current Draw: (at 24VDC)
- Average: 210 mA
- Peak: 400 mA

Approvals:
- C22.2 No. 152-M1984 (R1997)
- Performance Tested
- Class 1, Div 1, Groups B, C, D, T5
- Conforms to UL2075, Methane 0-100% LEL

Installation Category:
- Cat. I, Pollution Degree 2

Weight:
- 5 lbs. (2.3 kg.)

Unit Status Chart

<table>
<thead>
<tr>
<th>Current Output</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-20 mA</td>
<td>Normal measuring mode</td>
</tr>
<tr>
<td>0.0 mA</td>
<td>Unit Fault</td>
</tr>
<tr>
<td>0.2 mA</td>
<td>Reference channel fault</td>
</tr>
<tr>
<td>0.4 mA</td>
<td>Analytical channel fault</td>
</tr>
<tr>
<td>0.8 mA</td>
<td>Unit warm up</td>
</tr>
<tr>
<td>1.0 mA</td>
<td>Optics fault</td>
</tr>
<tr>
<td>1.2 mA</td>
<td>Zero drift fault</td>
</tr>
<tr>
<td>1.6 mA</td>
<td>Calibration fault</td>
</tr>
<tr>
<td>2.0 mA</td>
<td>Unit spanning</td>
</tr>
<tr>
<td>2.2 mA</td>
<td>Unit Zeroing</td>
</tr>
<tr>
<td>4.0 mA</td>
<td>Zero gas level</td>
</tr>
<tr>
<td>5.6 mA</td>
<td>10% LEL</td>
</tr>
<tr>
<td>8.0 mA</td>
<td>25% LEL</td>
</tr>
<tr>
<td>12 mA</td>
<td>50% LEL</td>
</tr>
<tr>
<td>16 mA</td>
<td>75% LEL</td>
</tr>
<tr>
<td>20 mA</td>
<td>100% LEL</td>
</tr>
<tr>
<td>20.1 – 23 mA</td>
<td>Over range (&gt;100%)</td>
</tr>
</tbody>
</table>

Sensor Electronics Corporation reserves the right to alter specifications without prior notice.
The SEC 3120BRS Digital Transmitter Quad Switch Interface is designed to interface switches to the SEC Modbus network.
SEC 3120BRS Digital Transmitter

Specifications

Model:
SEC 3120BRS Transmitter

Input:
4 Switch
Logic Input Requirements:
0V < Logic 0 < 1V
3V < Logic 1 < 36V

Output:
RS485 LAN (Isolated)

Operating Temperature Range:
-20°C to + 70°C

Operating voltage:
18-30 VDC measure at detector head

Power Requirements:
Nominal DC Voltage:  24 Volt
Minimum:  18 Volt
Maximum:  32 Volt
Maximum Current:  50 mA
(Note: Current value does not include Current due to User-attached devices)
Maximum Current Available to User-attached devices: TBD

Housing Dimensions:
3.54 (W) x 4.17 (L) x 2.28 (H) inches
(90 (W) x 106 (L) x 58 (H) cm)

Weight:
1 lbs. (.46 kg)

System Components:
3120 DIN

Mounting:
Mount to 35mm DIN Rail
Adaptatone® Millennium
Multiple Tone Signal

Single Output
RS485 Activation

5530M & 5530MV Series

FEATURES

> 27 tone capability - No additional tone modules needed
> PLC compatible
> Output up to 110 dB
> Suitable for Division 2 Locations
> Captive components
> RS485 models

AGENCY APPROVALS

> NEMA Type 3R
> UL 464 and 1604 Listed
> UL Listed for indoor and outdoor applications in Class I, Division 2, Groups A, B, C & D; Class II, Division 2, Groups F & G; and Class III Hazardous Locations
> cUL C22.2 No. 205 (24AQ, 24N5 & 24Y6 models)
> CE Marked, LV & EMC Directives, (24Y6 AC & 24AQ models)

SPECIFICATIONS

> Speaker can be rotated and locked in any horizontal direction
> 24V DC battery backup terminals provided

The Edwards 5530M Adaptatone Millennium is a heavy-duty industrial, tone-selectable, signaling device capable of producing volume-controlled, high-decibel tones. It uses a microprocessor circuit to create 27 distinctive tones, selected by setting a dip switch within the unit. For a complete listing of all 27 tones, see page 4-55. The Adaptatone Millennium can be activated from field-wired, normally open contacts, or from a 24VDC or 120VAC external voltage source such as an output of a PLC. PLC compatibility assures no additional loading resistors or relays are required to set up your Adaptatone.

Selected models are designed to serially connect to RS485 networks. The 5530MV-485Y6 additionally has a field recordable voice feature that allows activation of voice messages over the RS485 network. See connectivity and Activation section for more detail. Normally open contacts can be obtained from the Cat. No. 5538-4 and/or Cat. No. 5538-4R Adaptatone Signal Actuators. See pg. 4-49.

Designed for industrial applications requiring high decibel output and microprocessor reliability. Typical applications include emergency warning systems, plant evacuation and security intrusion alarms, process monitoring, shift start-and-dismissal horns, and paging signals.

½" (13mm) conduit or surface mounting. See Adaptatone Signaling Installation, page 4-56.
### Operating Input Card Signal

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Voltage</th>
<th>Activation Voltage</th>
<th>Signal Off</th>
<th>Signal On</th>
</tr>
</thead>
<tbody>
<tr>
<td>5530M-24AQ</td>
<td>24V DC</td>
<td>24VDC</td>
<td>0.10</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>24V AC 50/60 Hz</td>
<td></td>
<td>0.10</td>
<td>1.22</td>
</tr>
<tr>
<td>5530M-24N5</td>
<td>120V AC 50/60 Hz</td>
<td>24VDC</td>
<td>0.10</td>
<td>0.28</td>
</tr>
<tr>
<td>5530M-120N5</td>
<td>120VAC</td>
<td>120VAC</td>
<td>0.10</td>
<td>0.28</td>
</tr>
<tr>
<td>5530M-24Y6</td>
<td>120V AC 50/60 Hz</td>
<td>24VDC</td>
<td>0.10</td>
<td>0.24</td>
</tr>
<tr>
<td>5530M-120Y6</td>
<td>120VAC</td>
<td>120VAC</td>
<td>0.10</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>125V DC</td>
<td></td>
<td>0.04</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>250V DC</td>
<td></td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>5530M-485Y6</td>
<td>120V AC 50/60 Hz</td>
<td>RS485</td>
<td>0.10</td>
<td>0.24</td>
</tr>
<tr>
<td>5530MV-485Y6</td>
<td>240V AC 50/60 Hz</td>
<td></td>
<td>0.10</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>125V DC</td>
<td></td>
<td>0.04</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>250V DC</td>
<td></td>
<td>0.02</td>
<td>0.08</td>
</tr>
</tbody>
</table>

### Signal Input Load Characteristics* (PLC output to meet following product input parameters)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Operating Voltage</th>
<th>Max. off state leakage current (mA)</th>
<th>Continuous on current (mA)</th>
<th>Surge (inrush/duration) Amps/milliseconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>5530M-24AQ</td>
<td>24V DC only</td>
<td>2</td>
<td>740</td>
<td>8/4</td>
</tr>
<tr>
<td>5530M-24N5</td>
<td>120V 50/60 Hz</td>
<td>2</td>
<td>360</td>
<td>2.82/4</td>
</tr>
<tr>
<td>5530M-120N5</td>
<td>120V 50/60 Hz</td>
<td>5</td>
<td>380</td>
<td>2.82/4</td>
</tr>
<tr>
<td>24VDC Input Board</td>
<td>5V DC to 24V DC</td>
<td>2</td>
<td>6</td>
<td>—</td>
</tr>
<tr>
<td>120VAC Input Board</td>
<td>120VAC 50/60 Hz</td>
<td>5</td>
<td>13</td>
<td>—</td>
</tr>
</tbody>
</table>

*This device is PLC compatible and may be operated by PLCs with output characteristics that match the input load requirements of this signal.
AdaptaHorn® Grille Type Vibrating Horn

Weatherproof, NEMA Type 4X

876 & 877 Series

**FEATURES**

- PLC compatible models
- Convenient plug-in assembly
- Corrosion resistant finish
- Completely assembled
- Volume adjustable
- NEMA 4X enclosure

**AGENCY APPROVALS**

- UL Listed
- FM Approved

**SPECIFICATIONS**

- Operating range: -20% to +10% of nominal voltage

**876 AC Series**

- Adjustable output: 78 to 103 dB
- 400 hour rating at 50% duty cycle

**877 DC Series**

- Adjustable output: 78 to 101 dB
- 200 hour rating

The Edwards 876 AC & 877 DC Series are low-current, high decibel, vibrating horns for heavy-duty use and is UL listed to NEMA 4X enclosure requirements. The die-cast weatherproof box has a durable, corrosion resistant, electrostatic heat flowed powder epoxy gray finish. May be used for indoor applications.

Mount on conduit or to any flat surface. A hole on the top has been drilled and tapped for 3/4” (19mm) - 14 NPT conduit. Knockouts are located on the bottom and rear of the unit.

Used where a distinctive, urgent signal is required for outdoor or weatherproof requirements such as: timing scheduling, paging, general alarm, personnel warning, and emergency evacuations.

**872-PO Plastic Projector**

AdaptaHorn Accessory

Plastic projector snaps onto any AdaptaHorn. Available as separate item.
### TECHNICAL INFORMATION

**Volume adjustment set screw**

1/16" (2mm) allen wrench supplied

---

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Volts</th>
<th>Amps</th>
<th>VA</th>
<th>DC coil Res. (Ohms)</th>
<th>dB at 10 Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>876-E5</td>
<td>12V AC</td>
<td>1.25</td>
<td>15</td>
<td>1.5</td>
<td>103</td>
</tr>
<tr>
<td>876-G5</td>
<td>24V AC</td>
<td>.63</td>
<td>15.1</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>876-N5(^1)</td>
<td>120V AC</td>
<td>.13</td>
<td>15.6</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>876-R5</td>
<td>240V AC</td>
<td>.07</td>
<td>16.8</td>
<td>580</td>
<td></td>
</tr>
<tr>
<td>877-E1</td>
<td>12V DC</td>
<td>.27</td>
<td>3.2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>877-G1</td>
<td>24V DC</td>
<td>.16</td>
<td>3.8</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>877-J1</td>
<td>32V DC</td>
<td>.13</td>
<td>4.2</td>
<td>40</td>
<td>101</td>
</tr>
<tr>
<td>877-K1</td>
<td>48V DC</td>
<td>.07</td>
<td>3.5</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>877-P1</td>
<td>125V DC</td>
<td>.025</td>
<td>3.1</td>
<td>600</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Diode polarized version available in red. Order 886D-N5

---

**PLC COMPATIBILITY - SIGNAL INPUT LOAD CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Operating voltage Volts</th>
<th>Max. off state leakage current mA</th>
<th>Continuous on current mA</th>
<th>Surge (inrush/duration) Amps/milliseconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>876-N5</td>
<td>120V AC</td>
<td>25</td>
<td>120</td>
<td>1.02/.000026</td>
</tr>
<tr>
<td>877-G1</td>
<td>24V DC</td>
<td>25</td>
<td>150</td>
<td>1.7/.000042</td>
</tr>
</tbody>
</table>

\(^*\)This device is PLC compatible and may be operated by PLCs with output characteristics that match the input load requirements of this signal.

Electromechanical devices can produce transient spikes and should only be used on PLC output cards that have inherent transient spike suppression. Consult the PLC manufacturer prior to connecting 24V DC electromechanical devices to PLCs.
The Edwards 125XBRi Series XTRA-BRITE™ LED Multi-Status Indicator is a UL and cUL listed, multi-color visual signaling device. It features a corrosion resistant Type 4X enclosure and can be panel or conduit mounted. The base is manufactured from a 33% glass filled nylon, providing high resistance to heat and high chemical resistivity. The lens is made of shatter resistant polycarbonate.

The lights are available in 24V DC and 120V AC 50/60 Hz, in either Red/Blue/Amber or Red/Green/Amber.

Edwards Signaling’s NEW 125XBRi Multi-status Indicator is more “chameleon-like” than ever.

New Adaptive Design: One device does it all
With a quick change to the new 125XBRi Chameleon’s dip switch settings, these flexible multi-status indicators instantly adapt for use with or without control from an external PLC, PAC, or control relay. Now, regardless of the application, you will have just the right device for the job with only half the inventory.

XTRA-SAFE™ Enabled
The Chameleon 125XBRi devices ship as standard with Edwards Signaling’s XTRA-SAFE™ Technology (patent pending) Enabled. XTRA-SAFE™ multi-status indicating devices employ patented combinations of color AND flash-rate to provide more definite status indication to those who are color-blind. With XTRA-SAFE™, when Chameleon multi-status indicators are turned red, they pulse at a rate of 240 flashes per minute, further emphasizing the urgency that the color red typically connotes. When amber, these devices pulse at a “less urgent” rate of 120 flashes per minute. When Chameleon multi-status indicators are turned blue or green and no other colors are activated, the Chameleon devices remain “steady-on” and do not flash. Even in extreme cases where no color is perceived, flash-rate variation provides a redundant layer of visual indication.

When XTRA-SAFE™ Technology is enabled, and multiple colors are energized, the device will cycle through the energized colors at the following pre-set flash-rates:
- Red: 240 FPM
- Amber: 120 FPM
- Green or Blue: 65 FPM

XTRA-SAFE™ Disabled
While in most cases, the added layer of safety gained by operating a multi-status indicator with XTRA-SAFE™ Technology is desirable, some applications may not require differentiation in flash rates. In other applications, changes do not correspond to escalating levels of urgency. The adaptive design of the new Chameleon 125XBRi allows the product to be adapted to accommodate these requirements by a simple dip switch configuration. With XTRA-SAFE™ Disabled, when red or amber, the unit pulses at a rate of 65 flashes per minute. When Chameleon multi-status indicators are turned green or blue and no other colors activated, the Chameleon devices remain “steady on” and do not flash.

When XTRA-SAFE™ Technology is disabled, and multiple colors are energized, the device will cycle through the energized colors at 65 FPM.

Externally Controlled
The Chameleon multi-status indicators can also be used in applications where they will be controlled “externally” using a Programmable Logic Controller (PLC) or other such external controller. When externally controlled by a PLC, activation of colors and flash-rate are fully customizable, and can be programatically determined. In applications, where multiple colors are activated simultaneously, the lights operate on a priority with red highest, amber second and blue or green, the lowest.

The 125 Class Chameleon beacons can be mounted on 1/2” or 3/4” NPT conduit using a 1/2” internal or 3/4” external conduit hub that comes with the unit. It can also be panel-mounted using the mounting gasket provided with the unit. When panel-mounting the 125 Class Chameleon, the surface and construction details of the panel must be taken into consideration to ensure the integrity of the outdoor, NEMA 4X rating is fully maintained.

125XBRi Features
- Available in 24V DC or 120V AC
- Available with gray or black base
- Available in Red/Blue/Amber or Red/Green/Amber
- Option for panel or conduit mounting
- PLC Compatible
- XTRA-SAFE™ Technology enables status indication for those who are color blind
- Dip switch settings for use with or without external control
- Immune to shock and vibration
- -31°F to 150°F (-35° to 66°C) operating temperature
- Protective wire guard available, Cat. No. 125GRD
**125XBRI Series**

**Chameleon**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>Base Color</th>
<th>LED Colors</th>
<th>Projected LED Life (L70)**</th>
<th>Operating Voltage</th>
<th>Current</th>
<th>Replacement Lens</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED Multi-Status Indicator in NEMA 4X Enclosure</td>
<td>125XBIRGA24D</td>
<td>Gray</td>
<td>Red, Green, Amber</td>
<td>148,000 hours</td>
<td>24 VDC</td>
<td>0.150 A</td>
<td>125LC*</td>
</tr>
<tr>
<td></td>
<td>125XBIRGA120A</td>
<td>Gray</td>
<td>Red, Green, Amber</td>
<td>148,000 hours</td>
<td>120 VAC 50/60 Hz</td>
<td>0.100 A</td>
<td>125LC*</td>
</tr>
<tr>
<td></td>
<td>125XBIRBA24D</td>
<td>Gray</td>
<td>Red, Blue, Amber</td>
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<td>24 VDC</td>
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<td>0.100 A</td>
<td>125LC*</td>
</tr>
<tr>
<td></td>
<td>125XBIRGA24DB</td>
<td>Black</td>
<td>Red, Green, Amber</td>
<td>148,000 hours</td>
<td>24 VDC</td>
<td>0.150 A</td>
<td>125LC*</td>
</tr>
<tr>
<td></td>
<td>125XBIRGA120AB</td>
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<td>24 VDC</td>
<td>0.150 A</td>
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</tr>
<tr>
<td></td>
<td>125XBIRBA120B</td>
<td>Black</td>
<td>Red, Blue, Amber</td>
<td>148,000 hours</td>
<td>120 VAC 50/60 Hz</td>
<td>0.100 A</td>
<td>125LC*</td>
</tr>
</tbody>
</table>

*Clear

**LED Manufacturer’s Median Projected LED Life for LUXEON Rebel LEDs (L70 at 85ºC and Tjunction 98ºC). Actual LED life will vary inversely with ambient temperature, voltage, driver current, junction temperature and duty-cycle at which the signaling device is operated. Please refer to http://www.philipsllumileds.com/pdfs/WP15.pdf.**

**PLC Output to Meet Input Parameter Specifications**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Operating Voltage</th>
<th>Max. Off State Leakage Current (mA)</th>
<th>Continuous On Current (mA)</th>
<th>Surge (inrush / duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125XBIRGA24D</td>
<td>24 VDC</td>
<td>5</td>
<td>150</td>
<td>28.5 A / 65 µSeconds</td>
</tr>
<tr>
<td>125XBIRGA120A</td>
<td>120 VAC 50/60 Hz</td>
<td>5</td>
<td>100</td>
<td>28.5 A / 212 µSeconds</td>
</tr>
<tr>
<td>125XBIRBA24D</td>
<td>24 VDC</td>
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<td>120 VAC 50/60 Hz</td>
<td>5</td>
<td>100</td>
<td>28.5 A / 212 µSeconds</td>
</tr>
</tbody>
</table>

**Dimensional Drawing**

- **Gasket (provided for use when direct panel mounting)**
- **Locknut - 1.3625" O.D. (provided for use when direct panel mounting)**
- **Double threaded for panel mounting or 1/2" internal or 3/4" external conduit mounting**

**Agency Approvals**

- UL Listed
- Listed NEMA 4X Enclosure
- Listed
Chameleon™
105XBRi Series XTRA-BRITE™
LED Multi-Status Indicator
in NEMA 4X Enclosures

The Edwards 105XBRi Series XTRA-BRITE™ LED Multi-Status Indicator is a heavy duty, reliable UL and cUL listed, multi-color visual signaling device. It features a corrosion resistant Type 4X enclosure that is UL listed for Marine use, and can be panel or conduit mounted. The base is manufactured from glass-reinforced thermoplastic polyester resin and the double fresnel lens is made of shatter resistant polycarbonate.

The lights are available in 24V DC and 120V AC 50/60 Hz, in either Red/Blue/Amber or Red/Green/Amber.

Edwards Signaling’s NEW 105XBRi Multi-status Indicator is more “chameleon-like” than ever.

New Adaptive Design: One device does it all
With a quick change to the new 105XBRi Chameleon’s dip switch settings, these flexible multi-status indicators instantly adapt for use with or without control from an external PLC, PAC, or control relay. Now, regardless of the application, you will have just the right device for the job with only half the inventory.

XTRA-SAFE™ Enabled
The Chameleon 105XBRi devices ship as standard with Edwards Signaling’s XTRA-SAFE™ Technology (patent pending) Enabled. XTRA-SAFE™ multi-status indicating devices employ patented combinations of color AND flash-rate to provide more definite status indication to those who are colorblind. With XTRA-SAFE™, when Chameleon multi-status indicators are turned red, they pulse at a rate of 240 flashes per minute, further emphasizing the urgency that the color red typically connotes. When amber, these devices pulse at a “less urgent” rate of 120 flashes per minute. When Chameleon multi-status indicators are turned blue or green and no other colors are activated, the Chameleon devices remain “steady-on” and do not flash. Even in extreme cases where no color is perceived, flash-rate variation provides a redundant layer of visual indication.

When XTRA-SAFE™ Technology is enabled, and multiple colors are energized, the device will cycle through the energized colors at the following pre-set flash-rates:
- Red: 240 FPM
- Amber: 120 FPM
- Green or Blue: 65 FPM

XTRA-SAFE™ Disabled
While in most cases, the added layer of safety gained by operating a multi-status indicator with XTRA-SAFE™ Technology is desirable, some applications may not require differentiation in flash rates. In other applications, changes do not correspond to escalating levels of urgency. The adaptive design of the new Chameleon 105XBRi allows the product to be adapted to accommodate these requirements by a simple dip switch configuration. With XTRA-SAFE™ Disabled, when red or amber, the unit pulses at a rate of 65 flashes per minute. When Chameleon multi-status indicators are turned green or blue and no other colors are activated, the Chameleon devices remain “steady on” and do not flash.

When XTRA-SAFE™ Technology is disabled, and multiple colors are energized, the device will cycle through the energized colors at 65 FPM.

Externally Controlled
The Chameleon multi-status indicators can also be used in applications where they will be controlled “externally” using a Programmable Logic Controller (PLC) or other such external controller. When externally controlled by a PLC, activation of colors and flash-rate are fully customizable, and can be programmatically determined. In applications, where multiple colors are activated simultaneously, the lights operate on a priority with red highest, amber second and blue or green, the lowest.

The Chameleon has three different configurations for mounting that include the 105BX junction box, the 105BM mounting bracket and the 105PM pipe mount attachment. The unit can be mounted on ¾” NPT using the 105PM pipe attachment. It can also be surface or wall mounted using the 105BX junction box, or wall mounted using the 105BX junction box with the 105BM mounting bracket.

All three mounting options are non-conductive plastic fixtures and do not provide earth-ground continuity when attached to metallic wiring systems. They are intended for use with the 105XBRi Chameleon visual signals only when earth-grounding is not required. They can only be used with metallic wiring systems when installed at the end of the run.

105XBRi Features
- Available in 24V DC or 120V AC
- Available in Red/Blue/Amber or Red/Green/Amber
- Three mounting bases: ¾” pipe mount attachment, outlet box attachment, or wall mounting bracket
- PLC Compatible
- XTRA-SAFE™ Technology enables status indication for those who are color blind
- Dip switch settings for use with or without external control
- Immune to shock and vibration
- -31°F to 150°F (-35° to 66°C) operating temperature

Data Sheet ES001-0113 Issue 1
Not to be used for installation purposes.
Page 1 of 2
### 105XBRI Series Chameleon

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
<th>LED Colors</th>
<th>Projected LED Life (L70)*</th>
<th>Operating Voltage</th>
<th>Current</th>
<th>Replacement Lens</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED Multi-Status Indicator in NEMA 4X Enclosure</td>
<td>105XBRIRGDA24D</td>
<td>Red, Green, Amber</td>
<td>148,000 hours</td>
<td>24 VDC</td>
<td>0.150 A</td>
<td>105-LC</td>
</tr>
<tr>
<td></td>
<td>105XBRIRGDA120A</td>
<td>Red, Green, Amber</td>
<td>148,000 hours</td>
<td>120 VAC 50/60 Hz</td>
<td>0.100 A</td>
<td>105-LC</td>
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<tr>
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<tr>
<td></td>
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<td>Red, Blue, Amber</td>
<td>148,000 hours</td>
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*LED Manufacturer’s Median Projected LED Life for LUXEON Rebel LEDs (L70 at 85°C and Tjunction 98°C). Actual LED life will vary inversely with ambient temperature, voltage, driver current, junction temperature and duty-cycle at which the signaling device is operated. Please refer to http://www.philipslumileds.com/pdfs/WP15.pdf.

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<th>Continuous On Current (mA)</th>
<th>Surge (inrush/duration) (A/μSeconds)</th>
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<td>105XBRIRGDA24D</td>
<td>24 VDC</td>
<td>5</td>
<td>150</td>
<td>28 A / 65 μSeconds</td>
</tr>
<tr>
<td>105XBRIRGDA120A</td>
<td>120 VAC 50/60 Hz</td>
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<td>100</td>
<td>28.5 A / 212 μSeconds</td>
</tr>
<tr>
<td>105XBRIRBA24D</td>
<td>24 VDC</td>
<td>5</td>
<td>150</td>
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<td>105XBRIRBA120A</td>
<td>120 VAC 50/60 Hz</td>
<td>5</td>
<td>100</td>
<td>28.5 A / 212 μSeconds</td>
</tr>
</tbody>
</table>

### Hazardous Location Ratings

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Class</th>
<th>Division</th>
<th>Group</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>105XBRIRGDA24D</td>
<td>I</td>
<td>2</td>
<td>A, B, C, D</td>
<td>T5 (100°C, 212°F)</td>
</tr>
<tr>
<td>105XBRIRGDA120A</td>
<td>II</td>
<td>2</td>
<td>F, G</td>
<td>T5 (100°C, 212°F)</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td></td>
<td></td>
<td>T5 (100°C, 212°F)</td>
</tr>
<tr>
<td>105XBRIRBA24D</td>
<td>I</td>
<td>2</td>
<td>A, B, C, D</td>
<td>T6 (85°C, 185°F)</td>
</tr>
<tr>
<td>105XBRIRBA120A</td>
<td>II</td>
<td>2</td>
<td>F, G</td>
<td>T6 (85°C, 185°F)</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td></td>
<td></td>
<td>T6 (85°C, 185°F)</td>
</tr>
</tbody>
</table>

### Dimensional Drawing

### Agency Approvals

- Listed NEMA 4X Enclosure
- Listed for Class I, Division 2, Groups A, B, C & D
- Listed for Class II, Division 2, Groups F & G and Class III locations
- Marine UL 595 Listed, Category UXUB
- Marine UL 1598A Listed

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Plainville, CT 06062  
1.800.336.4206  
www.edwardssignaling.com  
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LED-BASED WARNING LIGHT FOR HEAVY-DUTY INDUSTRIAL APPLICATIONS

- XLT™ Technology
- Available in 24VAC/DC, 120VAC and 240VAC
- Five lens/lamp colors
- Flashing mode standard, configurable to Steady-burn
- 60,000-hour, vibration-resistant LED lamp
- ½ - inch pipe mount
- Type 4X, IP66 enclosure, Marine Listed
- UL and cUL Listed

Electraray® Hazardous Location LED Flashing Warning Light with XLT™

Model 225XL FOR GREEN STEADY

The Model 225XL is a hazardous location flashing signal light that features the super bright LED array with XLT™, eXtreme Light Technology. The unit is available in 24VAC/DC, 120-240VAC self detecting voltage and five colors – amber, blue, green, red and clear. The 225XL comes standard in flashing mode and is field configurable to steady burn mode for maximum functionality.

The Model 225XL has been certified by UL as meeting Type 4X watertight and corrosion-resistant requirements, and is rated for Division 2 applications. This hazardous location warning light has a black polyurethane-coated base and the inner Fresnel lens is available in five colors – amber, blue, green, red and clear. The clear polycarbonate outer dome can be quickly removed for access while changing the LED or inspecting the unit.

Federal Signal’s super bright LED array used in the 225XL with XLT inside produces intense light output and 60,000 hours of service. Increased shock and vibration resistance add to this unit’s rugged industrial portfolio of features.

The 225XL is UL Listed for Class I, Division 2, Groups A, B, C and D; Class II Division 2, Groups F and G; and Class III.

The Federal Signal Model 225XL is ideal for wet, corrosive atmospheres like those found in food processing industries or anywhere a vibration-resistant visual signal is needed.

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Operating Current</th>
<th>In-rush Current</th>
<th>Flash Rate/Minute</th>
<th>Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>225XL</td>
<td>24VAC/DC</td>
<td>0.38 amps</td>
<td>1.75 amps, 5.0 mS</td>
<td>60</td>
<td>½” Pipe</td>
</tr>
<tr>
<td>225XL</td>
<td>120VAC</td>
<td>0.21 amps</td>
<td>2.00 amps, 0.25 mS</td>
<td>60</td>
<td>½” Pipe</td>
</tr>
<tr>
<td>225XL</td>
<td>240VAC</td>
<td>0.13 amps</td>
<td>2.00 amps, 0.25 mS</td>
<td>60</td>
<td>½” Pipe</td>
</tr>
</tbody>
</table>
ELECTRARAY® HAZARDOUS LOCATION LED LIGHT (225XL)

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Dome, Clear</td>
<td>K8444D219C-04</td>
<td>PC Board Assembly, 24VAC/DC</td>
<td>K2005455A</td>
</tr>
<tr>
<td>Interior Lens, Amber</td>
<td>K8550292A-02</td>
<td>PC Board Assembly, 120/240VAC</td>
<td>K2005416A</td>
</tr>
<tr>
<td>Interior Lens, Blue</td>
<td>K8550292A-01</td>
<td>LED Lamp, Amber</td>
<td>K147169A-06</td>
</tr>
<tr>
<td>Interior Lens, Clear</td>
<td>K8550292A-03</td>
<td>LED Lamp, Blue</td>
<td>K147169A-07</td>
</tr>
<tr>
<td>Interior Lens, Green</td>
<td>K8550292A-04</td>
<td>LED Lamp, Clear</td>
<td>K147169A-10</td>
</tr>
<tr>
<td>Interior Lens, Red</td>
<td>K8550292A-05</td>
<td>LED Lamp, Green</td>
<td>K147169A-08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LED Lamp, Red</td>
<td>K147169A-09</td>
</tr>
</tbody>
</table>

* Optimal hours under ideal conditions.

**HOW TO ORDER**

- Specify model, voltage and color
- Please refer to Model Number Index 225XL beginning on page 372

**REPLACEMENT PARTS**

- Exterior Dome, Clear: K8444D219C-04
- Interior Lens, Amber: K8550292A-02
- Interior Lens, Blue: K8550292A-01
- Interior Lens, Clear: K8550292A-03
- Interior Lens, Green: K8550292A-04
- Interior Lens, Red: K8550292A-05

**SPECIFICATIONS**

- Lamp Life*: 60,000 hours
- Lamp Style: LED-based Lamp
- Operating Temperature: -58°F to 150°F
- Net Weight: 3.2 lbs.
- Shipping Weight: 4.0 lbs.
- Height: 7.5" (190.5 mm)
- Diameter: 5.5" (139.7 mm)

* Optimal hours under ideal conditions.
**Description**

Altronix AL600ULX series power supply/chargers convert a 115VAC, 60Hz input into a single fused, four (4), eight (8) or sixteen (16) fuse or PTC protected outputs. Outputs are selectable for 12VDC or 24VDC with a total of 6A max.

**Key Features**

- Available with 1, 4, 8 or 16 outputs.
- Fused or PTC protected outputs.
- Supervision:
  - AC Fail.
  - Battery Fail and Battery Presence.
- Built-in charger for sealed lead acid or gel type batteries.
- Instantaneous transfer to stand-by batteries.
- Short circuit and overload protection.
- AC input and DC output options.
- UL Listed in the U.S. and Canada.
- CSFM and MEA Approved.
- Lifetime Warranty / Made in the U.S.A.
- All units are available in grey or red enclosure.

---

**AL600ULX Series Power Supply Configuration Reference Chart**

<table>
<thead>
<tr>
<th>Altronix Model Number</th>
<th>Total Output Rating (A)</th>
<th>Input Rating: 115VAC, 60Hz</th>
<th>Input Fuse Rating</th>
<th>Power Distribution Module</th>
<th>Class 2 Rated Power-Limited Outputs (auto-resettable)</th>
<th>Number of Outputs</th>
<th>Fused Output Ratings</th>
<th>PTC Output Ratings</th>
<th>Accommodates Batteries</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL600ULX</td>
<td>6A</td>
<td>3.5A</td>
<td>5A/250V</td>
<td>N/A</td>
<td>–</td>
<td>1</td>
<td>6A</td>
<td>–</td>
<td>Two (2) 7AH</td>
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<tr>
<td>AL600ULXX</td>
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<td>4</td>
<td>3.5A</td>
<td>–</td>
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<tr>
<td>AL600ULPD4CB</td>
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<td></td>
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<td>PD4ULCB</td>
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<td>–</td>
<td>2.5A</td>
<td>Two (2) 7AH</td>
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<tr>
<td>AL600ULPD8</td>
<td></td>
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<td></td>
<td>PD8UL</td>
<td>–</td>
<td>8</td>
<td>3.5A</td>
<td>–</td>
<td>Two (2) 7AH</td>
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<td>Two (2) 7AH</td>
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<td>–</td>
<td>16</td>
<td>3.5A</td>
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<td>Two (2) 12AH</td>
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<td>Two (2) PD8ULCB</td>
<td>✓</td>
<td>16</td>
<td>–</td>
<td>2.5A</td>
<td>Two (2) 12AH</td>
</tr>
</tbody>
</table>
Specifications

**Input**
- Voltage: 115VAC, 60Hz, 3.5A max.
- Fusing: 5A / 250V.

**Outputs**
- Voltage: 12VDC or 24VDC selectable.
- Current: 6A @ 12VDC or 24VDC continuous max.
- Protection: Fused 3.5A / PTC 2.5A.
- Other: Overvoltage protection. Filtered and regulated.

**Back-up Battery** (not included)
- Capacity: 7AH / 12VDC (1 or 2 within enclosure).
- 12AH / 12VDC (requires larger “X” enclosure).
- 40 AH / 65 AH (requires separate enclosure).
- Type: Sealed lead acid or gel type.
- Failover: Upon AC loss, instantaneous.

**Supervision**
- AC Failure: Form “C” contacts.
- Battery: Form “C” contacts.

**Indicators (LED)**
- Input: 115VAC is present.
- DC Output: Powered.
- Battery: Discharged or not connected.

**Agency Listings**

All Models:
- UL:
  - UL294  Access Control System Units.
  - UL1481  Power Supplies for Fire Protective Signaling Systems.
- cUL:
  - CSA C22.2 No.205  Signal Equipment.

AL600ULX and AL600ULXX only:
- CSFM  California State Fire Marshall Approved.
- MEA  NYC Department of Buildings Approved.
- FM  Factory Mutual Approved.

**Physical and Environmental**

**Dimensions (H x W x D)**
- AL600ULX, AL600ULPD4(CB), AL600ULPD8(CB):
  - 13.5” x 13” x 3.25” (342.9mm x 330.2mm x 82.6mm).
- AL600ULXX, AL600ULXPD16(CB):
  - 15.5” x 12” x 4.5” (393.7mm x 304.8mm x 114.3mm).

**Product / Shipping Weight (approx.)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Weight</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL600ULX</td>
<td>7.05 lbs. (3.2 kg)</td>
<td>8.9 lbs. (4.1 kg)</td>
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<td>AL600ULXX</td>
<td>8.65 lbs. (3.92 kg)</td>
<td>10.95 lbs. (4.97 kg)</td>
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<td>AL600ULPD4(CB)</td>
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<td>AL600ULPD8(CB)</td>
<td>7.3 lbs. (3.31 kg)</td>
<td>9.15 lbs (4.15 kg)</td>
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<td>8.95 lbs. (4.06 kg)</td>
<td>11.25 lbs. (5.1 kg)</td>
</tr>
</tbody>
</table>

**Temperature**

- Operating: 0°C to 49°C (32°F to 120°F).
- Storage: -20°C to 70°C (-4°F to 158°F).
- Relative Humidity: 85% +/-5%.

**BTU/Hr. (approx.):**
- 12VDC: 37 BTU/Hr.
- 24VDC: 74 BTU/Hr.