Life Alarm™ Multiplex Systems

UL, ULC Listed; FM, CSFM, and MEA (NYC) Approved*

Universal Transponders for 2120 Multiplex System Expansion or 4120 Network Systems

STANDARD FEATURES

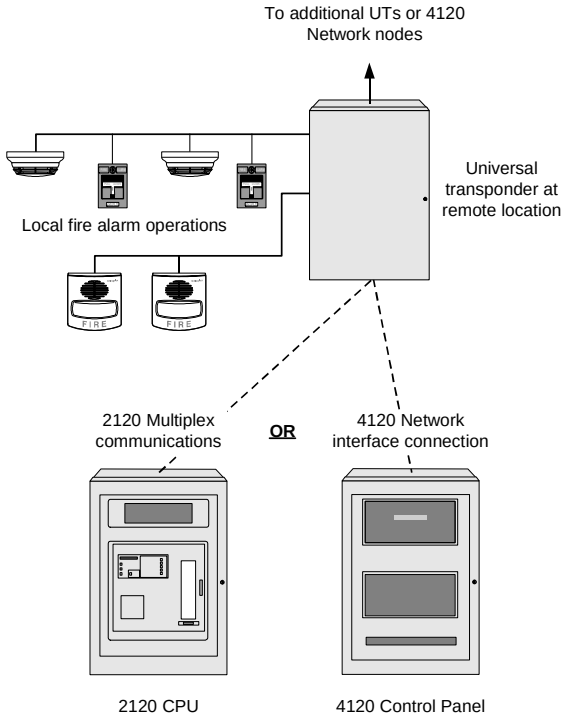
- **Configurable for 2120 Multiplex or 4120 Network communications**
- **Modular design allows expansion of up to 1000 input/output points**
- **Transponder functions include hardwired, addressable, and annunciator functions**
- **Available with solid door or with glass door and a modular retainer panel, in 2, 4, or 6-unit cabinets**
- **Battery supervision (low/no battery)**
- **UL listed to Standard 864 for power-limited applications per NEC 760** (module dependent)

OPTIONAL FEATURES

- **MAPNET II® Addressable Device Communications and TrueAlarm® Analog Detection****
- **Initiating Device circuits, Style B (Class B) or Style D (Class A)**
- **Notification Appliance Circuits, Style Y (Class B) or Style Z (Class A)**
- **Control relays with feedback**
- **Local mode operation**
- **Single, dual, or triple channel audio**
  - Triple channel audio provides a dedicated microphone channel
- **Remote firefighters' telephone circuits with ring signal indication**
- **Internal DACT, serial or contact closure type**
- **Zone selectable alarm verification**
- **Local annunciation modules with supervised interchangeable LEDs**
- **Supervised remote serial annunciators**
- **Programmable control switches**
- **Expansion power supplies**

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7165-0026:160 and 7170-0026:187 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. Applicable FM approval information is available on request. Additional listings may be applicable, contact Simplex for the latest status.

** WALKTEST system test is protected under US Patent No. 4,725,818. MAPNET II addressable communications is protected under U.S. Patent No. 4,796,025. TrueAlarm analog detection is protected under U.S. Patent No. 5,155,468 and 5,173,683.



Typical Universal Transponder Connection Block Diagram

DESCRIPTION

The Universal Transponder (UT) is a modular, microprocessor based interface panel. It monitors initiating device circuits or status inputs, controls notification appliance circuits and/or auxiliary control outputs, and communicates status changes to a Simplex 2120 Multiplex Central Processing Unit (CPU), or to a Simplex 4120 Network. It is available with a wide variety of 4100/4120 series functional modules including MAPNET II and TrueAlarm addressable interfaces.

Local Mode Operation. As an option, the UT can have its own built-in programming so that in the event of a loss of communications with its CPU, the UT will automatically transfer to local mode operation. Any output circuits within the UT can be controlled during local mode in the event of an alarm from any of its monitored input points. The local mode program, with its simple yet powerful and flexible software, can be customized to meet a variety of applications and local code requirements providing increased reliability and survivability to overall system operation.

NOTE: Detailed information about 4120 Network operation is found in data sheet S4120-0001. 4100 Series control panels become 4120 Series control panels when equipped with a 4120 Network interface and the required network programming.

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TRANSPONDER PANEL TYPES and MODULE DESCRIPTIONS

UNIVERSAL TRANSPONDER PANEL TYPES:

- 4120-8511, Basic Universal Transponder
- 4120-8601, Voice Universal Transponder
- 4120-8602, UT Status Command Center with Voice

MASTER CONTROLLER MODULE

The master controller module provides system control, local mode programming, synchronization, and supervision of all modules, continuously scanning each module for any status changes. This module also contains a card for communicating with the host CPU (refer to page 3 for descriptions of 2120 System interface module options).

INITIATING DEVICE CIRCUITS:

- Eight circuit zone modules provide system expansion of Class B (Style B) or Class A (Style D) Zones
- Capable of supporting UL listed compatible 2-wire smoke detectors plus normally open contact devices (manual stations, heat detectors, etc.)
- UL 1076 listed for Class B security monitoring

NOTIFICATION APPLIANCE CIRCUITS

- Two circuit or six circuit modules provide system expansion of Class B (Style Y) or Class A (Style Z) circuits
- Each circuit is rated 2 A @ 24 VDC, and for 50 W @ 25 VRMS or 100 W @ 70 VRMS for speaker circuits
- Modules are supervised for opens, grounds, and wire-to-wire shorts
- Dual and triple channel modules have integral switching relays for selecting the proper audio channel output

MAPNET II®, TRUEALARM® INTERFACE MODULE (4120-0110):

- Up to 127 MAPNET II addressable devices or TrueAlarm analog sensors per module
- MAPNET II Line Isolator Modules are available for internal panel mount (4120-0111) or for line powered external mounting (2190-9169/9170)
- Refer to data sheet S4100-0002 for details

AUXILIARY CONTROL RELAYS:

- 4120-3001, Four CPU controlled relays with DPDT contacts rated 2 A @ 24 VDC (resistive)
- 4120-3002, Four CPU controlled relays with DPDT contacts rated 10 A @ 24 VDC (resistive)
- 4120-3003, Eight CPU controlled relays DPDT contacts rated 3A @ 24 VDC (resistive)
- Built-In fuse protection is provided per contact
- Feedback points are provided for positive indication of on/off status of remote devices

MASTER POWER SUPPLY/CHARGER (4120-6005):

- Power-limited outputs that are filtered and regulated
- Four amp (4 A) battery charger capable of charging 50 Ah lead-acid batteries to 70% in 12 hours
- Batteries up to 33 Ah batteries can be mounted in the UT cabinet
- Monitors for AC power failure, low/no battery, and high battery voltage
- 240 VAC power input option (4100-6001)

12 VOLT DC POWER OUTPUT OPTION (4120-0119):

- Nonpower-limited, regulated power output for 12 VDC peripheral control
- Output is rated 2 A @ 12 VDC +/- 5%, with ripple of 100 mV p-p maximum

EXPANSION POWER SUPPLIES:

Output rating is 8 A, filtered/unregulated.

- 4120-0108, 120 VAC input
- 4120-0118, 240 VAC input
- 4120-1108, 120 VAC power-limited model

ADDITIONAL BATTERY CHARGER (4120-0104, -0114):

- Can charge lead-acid or Ni-Cad batteries
- Capable of charging up to 110 Ah batteries (batteries are required to be mounted in a 2081-9280 battery cabinet)
- Monitors for AC power failure, low/no battery, and high battery voltage
- Available with 240 VAC power input (4120-0114)

REMOTE UNIT INTERFACE (RUI):

- 4120-0304 RUI modules provide a Style 7 supervised serial communications channel to remotely located annunciators and I/O panels

INTERNAL DUAL LINE DACT MODULES:

- Each provides multiple programmable features such as automatic 24 hour test and power fail report delay
- Each line requires a DACT cable, model 2080-9047, 14 ft long, with RJ45 plug
- Serial DACT 4120-0155 is capable of communicating serial, point-specific information, (refer to data sheet S2080-0009 for additional information)
- Contact Closure DACT 4120-0153:
  - Alarm input typically connects to city relay contacts
  - Provides Supervisory and AC power fail reporting using dedicated relay contacts Provides DACT communications status monitoring using relay feedback point

MODULE DESCRIPTIONS *(Continued)*

CITY CONNECT CIRCUIT (4120-0120):

– 24 VDC remote station (reverse polarity), local energy, shunt master box or a Form 'C' contact output

CODED SIGNAL RELAY (4120-0125):

– Provides synchronization of coded signals throughout a building or complex via connection to a coded signal riser originating from a central location

TAMPER SWITCH (4120-0133):

– Required for UL 1076 Security Listing

– Through the use of a monitor point on the 4120-5004 security monitor board, a Security Alarm will be transmitted to the CPU when the transponder door is opened

– Mounts to the cabinet door latch

2120 COMMUNICATIONS MODULE DESCRIPTIONS

2120 STYLE 7 INTERFACE MODULE (4100-0137):

– Maintains 2120 communications during a wire-to-wire short fault condition

– Primary, secondary, and transmit data status indicators

– Allows "T-tapping" of data lines

DC POWERED FSK MODEM (4100-0131):

– Extends communications distance over leased lines via FSK transmission

– 4-wire full duplex operation

– Diagnostic indicators

– Refer to Simplex data sheet S4100-0009 for more detailed information

FIBER OPTIC LINE DRIVER (FOLD) (4100-0130):

– Provides immunity to electrical transients, short circuit, and ground conditions

– Refer to Simplex data sheet S4100-0012 for more detailed information

COMMUNICATION LINE CONVERTERS:

– Provides a data link between the 2120 CPU, FSK Modems and the Universal Transponder

– 4100-0134 converts an RS-232-C signal from an FSK Modem to standard DC communications

– 4100-0135 converts standard DC communications to an RS-232-C signal and can feed up to four FSK modems

– Refer to Simplex data sheet S4100-0010 for more detailed information

COMMUNICATION LINE REPEATER (4100-0132):

– Extends 2120 DC Communication line distance

– Refer to Simplex data sheet S4100-0011 for more detailed information

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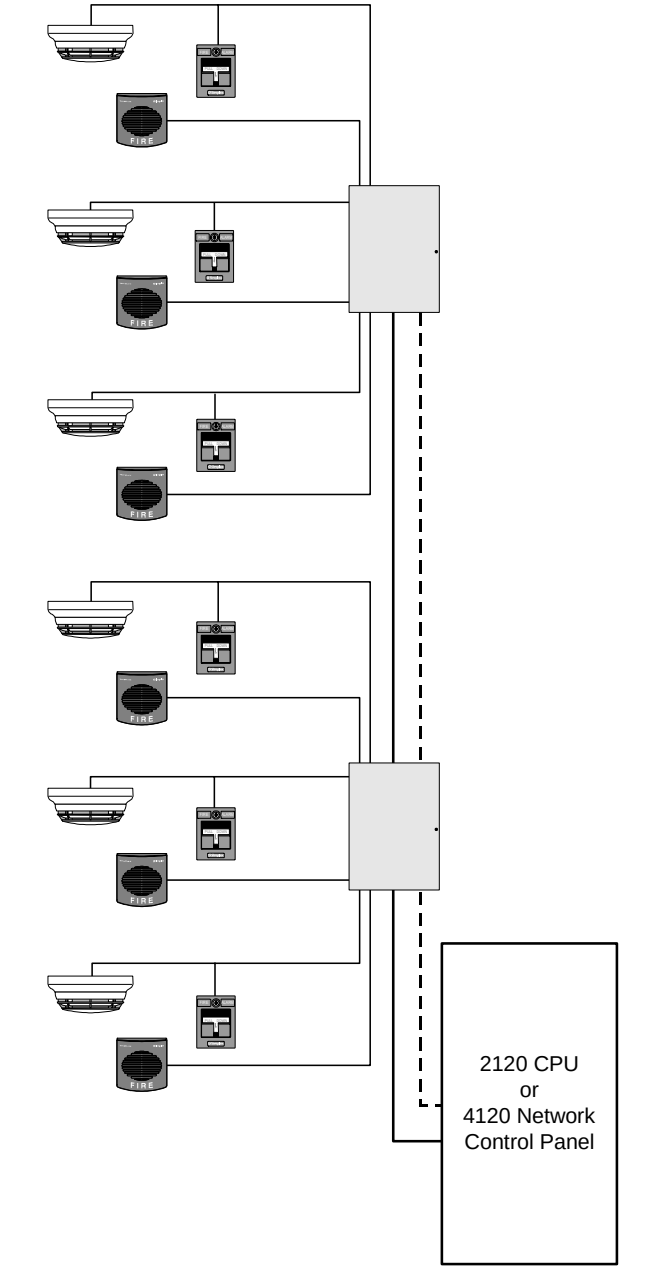
2120 COMMUNICATIONS MODULE MOUNTING

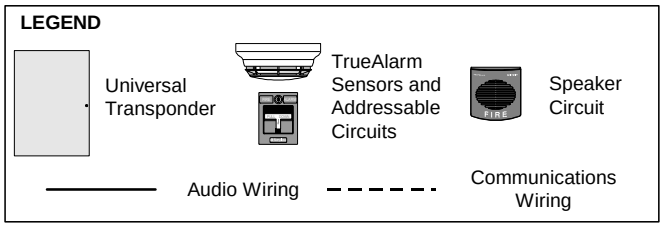
To accommodate 2120 communications modules, there are two mounting plates, a modem plate, and a fiber optic module plate. When these mounting plates are used, the 4100 expansion bay hardware is eliminated, thereby preventing the use of door mounted modules for that bay. Refer to the following chart for mounting plate capacities.

2120 COMMUNICATIONS MODULE MOUNTING CAPACITIES

Mounting Plate Reference	Module Capacities
Fiber optic mounting plate, single unit, 1/2 bay (two plates fit in one 4100 bay)	Four, 4100-0130 FOLDs
	Two, 4100-0130 FOLDs and one, 4100-0132 Repeater
	Two, 4100-0130 FOLDs and one, 4100-0134 or 4100-0135 converter
Modem mounting plate, two-unit, 1 bay	Two, 4100-0131 FSK Modems and two, 4100-0134 or 4100-0135 converters
	Two, 4100-0131 FSK Modems, one, 4100-0134 converter and one, 4100-0132 repeater

VOICE UNIVERSAL TRANSPONDER DESCRIPTIONS





Typical Block Diagram of 4120-8601, Voice Universal Transponders

GENERAL

Voice Universal Transponders provide distributed amplifiers for transmitting voice communications, alarm tones, and/or digitized voice messages to alert area occupants of a fire or other emergency situations.

OPERATION

Audio riser channels originating from a central UT Status Command Center with Voice can be wired in a Class B (Style 4) or a Class A (Style 6) configuration. Each Voice UT has built-in audio monitors on its amplifiers, allowing Class B audio risers to be "T-tapped" and still maintaining supervision of each riser leg.

As an option, the Voice UT can have its own built-in programming and audio controller board so that in the event of a loss of communications with its CPU, the UT will automatically transfer to local mode operation. In the event of an alarm, output circuits within the UT can be controlled during local mode from any of its monitored input points.

The audio controller board provides a local source of audio tones and digitized voice messages for the UT's voice circuits, adding reliability to the overall system operation. Local mode programming can be customized to meet a variety of applications and local code requirements.

AUDIO AMPLIFIERS (4120-0201 SERIES)

Features include:

- Power-limited models available rated as:
  - 25 W @ 25 VRMS
  - 90 W @ 70.7 VRMS
- Nonpower-limited models available rated as:
  - 100 W @ 25 VRMS
  - 100 W @ 70.7 VRMS
- Frequency response of 120 to 12,000 Hz
- Battery backup capability
- Integral amplifier monitor
- Optional redundant operation automatically switches over from primary to backup amplifier

PHONE RISER TERMINATION BOARD (4120-0215):

- Clearly marked installer termination points for firefighter telephone riser wiring

FEATURES

- **Custom digitized message data**
- **Routing matrix - input/output switching**
- **Audio inputs:**
  - Network audio
  - Primary voice/tone generator
  - Secondary voice/tone generator (optional)
  - Phone to audio interface
- **Audio outputs:**
  - Channel 1 (single channel, 4100-0210)
  - Channel 2 (dual channel, 4100-0211)
  - Channel 3 (triple channel, 4100-0212)
- **Audio tones:**
  - **Slow Whoop** - A slowly ascending tone from 200 to 830 Hz in 2.5 seconds, recommended for fire alarm only and no other purpose.
  - **High/Low** - A free running tone with a high frequency of 750 Hz and a low frequency of 500 Hz. The "ON" time (high) is 100 milliseconds while the "OFF" time (low) is 400 milliseconds.
  - **Horn** - Continuous 500 Hz tone. Can also be used for coded systems.
  - **Chime** - A 600 Hz tone with a 1.5 second delay time. Can be used as a free running tone or on a coded system.
  - **Beep** - A 500 Hz tone with a time duration of 0.7 seconds on and 0.7 seconds off.
  - **Stutter** -a 500 Hz tone with equal on an off times of 100 milliseconds.
  - **Wail** - Ascends, then descends between 600 to 940 Hz.
  - **GSA Tone** - Continuous 2000 Hz tone.
  - **Bell** - A fundamental frequency of 350 Hz with prominent harmonics at 700 Hz and 2100 Hz.
  - Selectable **Temporal Pattern** for horn, bell, whoop, and chime tones (1/2 sec on, 1/2 sec off, 1/2 sec on, 1/2 sec off, 1/2 sec on, 1 1/2 sec off).

ZONE CODED SIGNALING is available using tones or spoken numbers. Spoken coded messages can be used in place of conventional pulse tone coding to eliminate counting and interpretation of the zone coded location. For example, a fire alarm zone such as First Floor East, Smoke Detector Room 23 will be Code 1123.

Two possible transmission schemes are:

1. Conventional Zone coded Signaling where T = Tone:
   T...T...TT...TTT...T...T...TT...TTT...
2. Spoken Coded Signaling:
   Code, one..one..two..three...
   Code, one..one. two..three

The audio controller has the ability to precede spoken codes with phrases and alert tones. As an alternative, the previous example could have been preceded with a chime tone. The word "*code"* could be replaced with the phrase "*Doctor Firestone, please dial*...".

PREPROGRAMMED SPECIAL MESSAGES are available on request. Up to five minutes of special phrases and messages are available to meet specific applications.

The standard evacuation message is:

> *"Attention...Attention...Attention...An emergency has been reported.... All occupants walk to the nearest stairway exit and walk down to your assigned re-entry floor or main lobby... Do not use the elevator... Walk to the nearest stairway.... Do not use the elevator.... Walk to the nearest stairway."*

ANNUNCIATOR MODULE DESCRIPTIONS

LED ANNUNCIATION AND SWITCH CONTROL

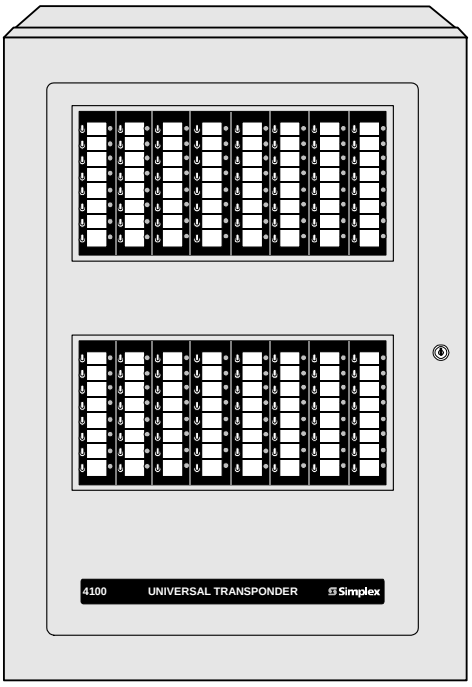
The Universal Transponder can also contain optional annunciation modules which can be utilized to indicate the status of any system monitor point or control point in the system. These annunciator modules provide clearly marked toggle switches to allow operation of the system's control points. The LEDs are fully supervised and programmable for a slow rate pulse or steady illumination.

64/64 LED/SWITCH CONTROLLER (4120-0301):

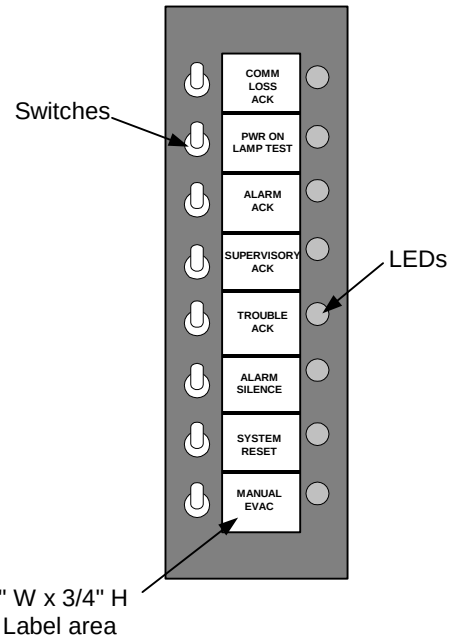
- Interfaces up to 64 LEDs and 64 switches to the master controller via serial communication
- Continuously monitors switches for changes in status
- Supervises and controls LEDs
- Supervises LED/switch module placement

24 POINT I/O GRAPHIC INTERFACE (4120-0302):

- Each of the 24 points can be individually configured as either a switch input or a lamp driver output
- 150 MA lamp driver output (+24 VDC common)
- Outputs can be steady, slow pulse, or fast pulse
- Switch inputs can monitor 2 position or 3 position switches
- Lamp test input
- Provides supervised monitoring and/or control for smoke control applications



Universal Transponder with Annunciation Modules
(4-unit cabinet shown)



Annunciator Control Switch Module

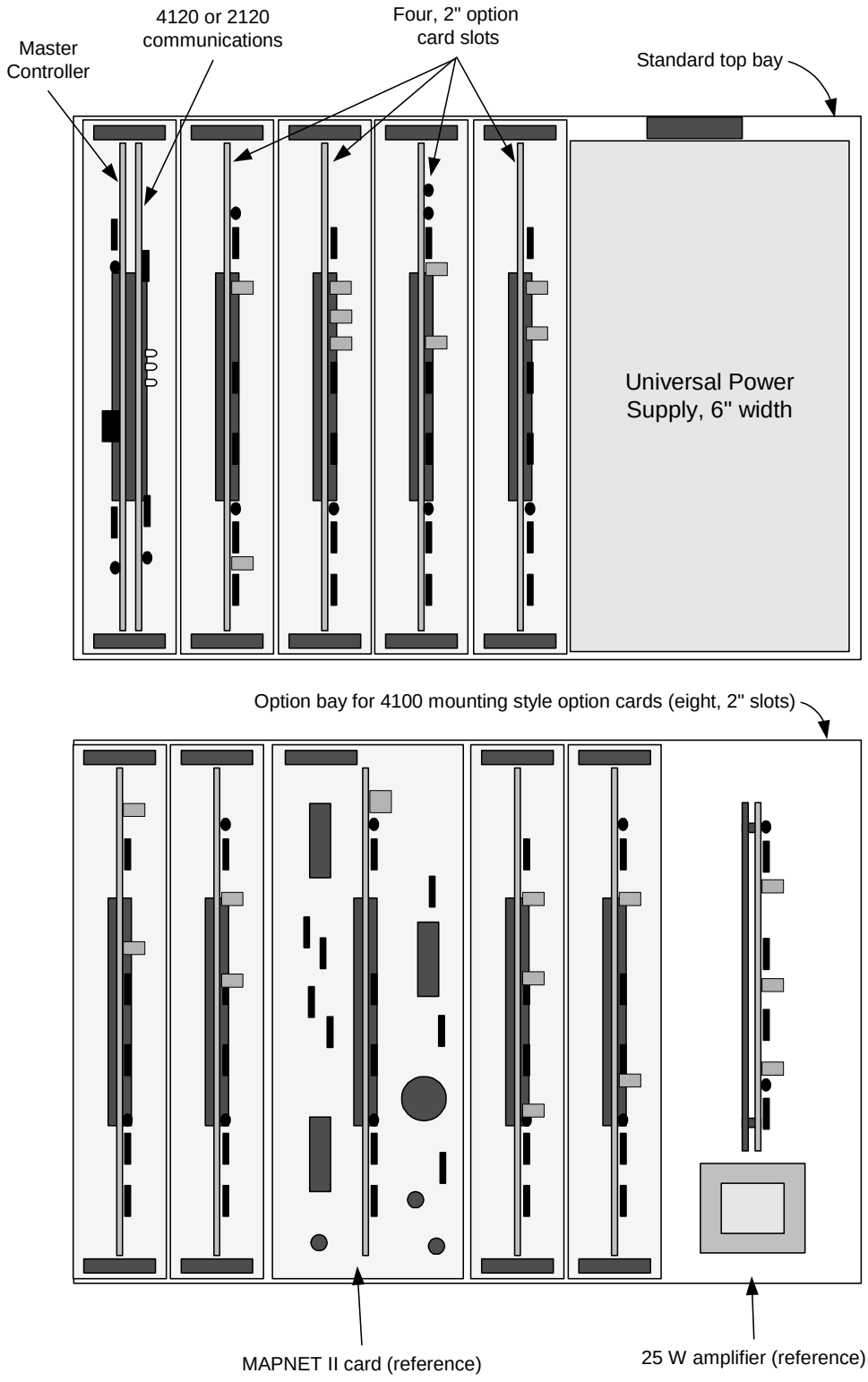
LED/SWITCH MODULES

These modules contain socketed LEDs to allow customization within each module by interchanging different color LEDs. Switch modules can be used to manually control functions such as HVAC control, pressurization fan, damper, speaker circuit, etc.

LED/SWITCH MODULE SELECTION

4120-0401	Eight red LEDs
4120-0402	Eight red and eight yellow LEDs
4120-0403	Eight red LEDs and eight momentary switches
4120-0404	Eight red LEDs, eight green LEDs, and eight three position maintained switches
4120-0405	Eight red LEDs, eight yellow LEDs, and eight momentary switches

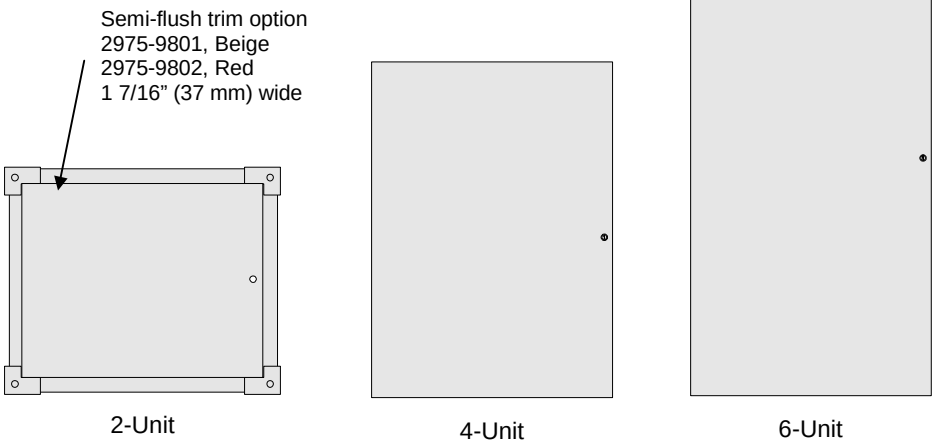
MODULE LOCATION REFERENCE DIAGRAM



MOUNTING REFERENCE

UNIVERSAL TRANSPONDER CABINET DIMENSIONS

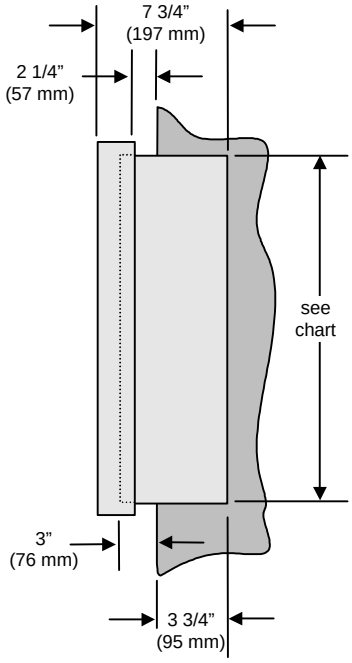
Model Number	Color	Size	Height	Cabinet Width	Cabinet Depth	Door Width
2975-9190	Beige	2-Unit	20 3/4" (527 mm)	25 3/4 (654 mm)	6 3/4" (171 mm)	26 3/8" (670 mm)
2975-9191	Red					
2975-9192	Beige	4-Unit	36 1/4" (921 mm)			
2975-9193	Red					
2975-9194	Beige	6-Unit	52 1/8" (1324 mm)			
2975-9195	Red					



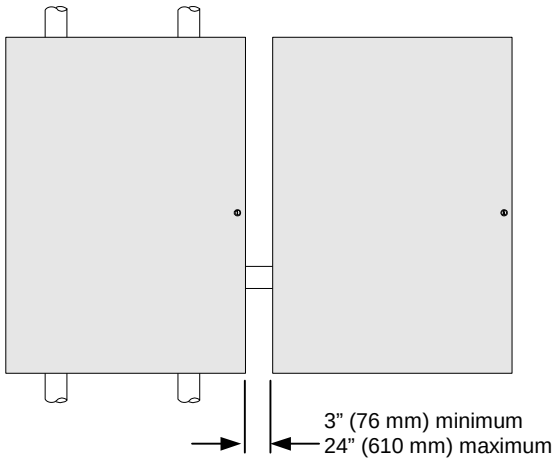
2-Unit

4-Unit

6-Unit



Installation Detail
Side View



IMPORTANT: Distance between cabinets must be no less than 3 inches (76 mm) and no more than 24 inches (610 mm).

NOTE: A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, article 250, and NFPA 780.

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Simplex

Westminster, Massachusetts 01441-0001 U. S. A.
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