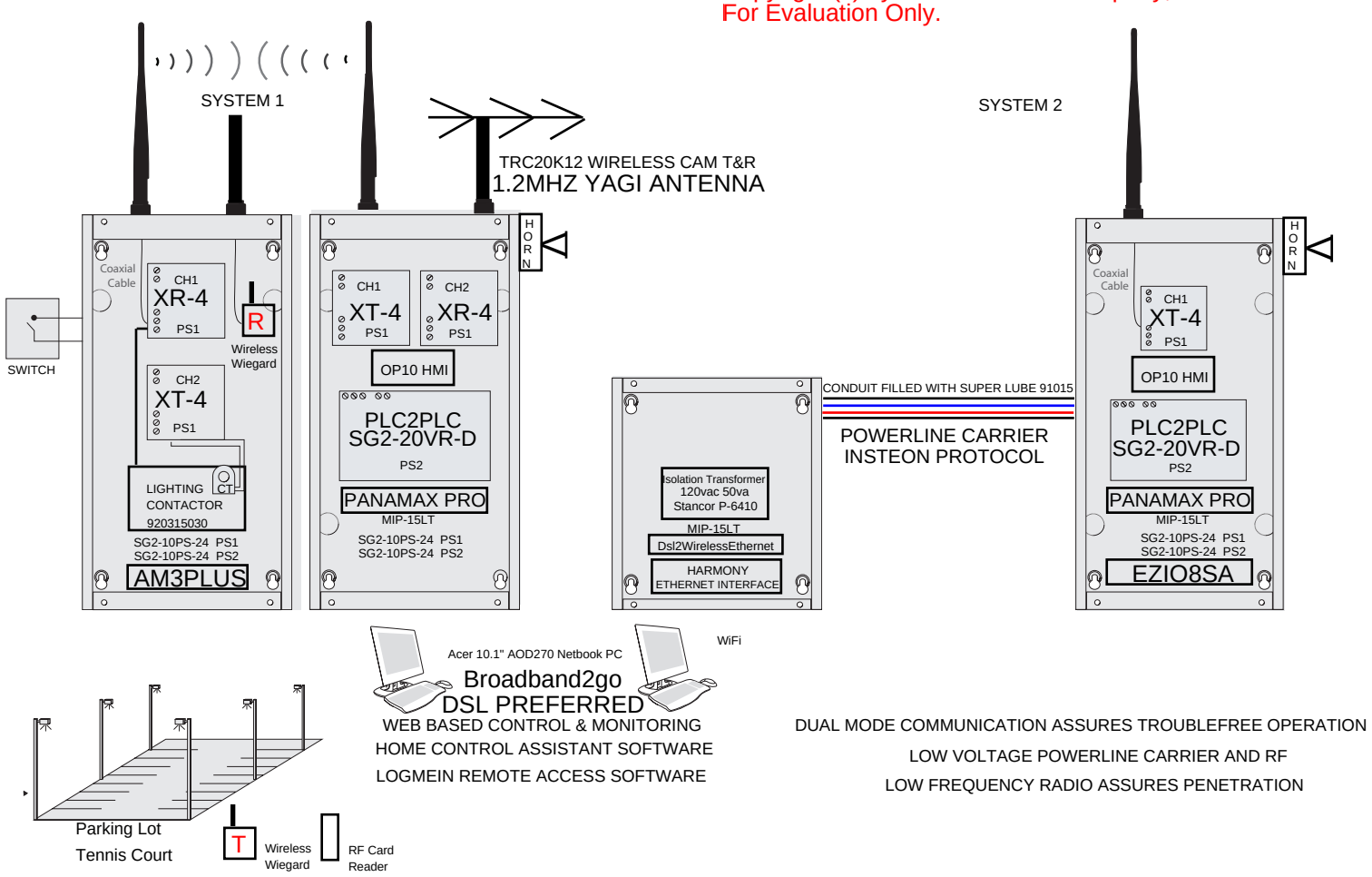


PIECES	NOMENCLATURE	PRICE EACH	LINE TOTAL
1	PLC	152.00	152.00
4	POWER SUPPLY 24VDC 30W	48.00	192.00
1	OP10 HMI	119.00	119.00
2	XT-4	230.00	460.00
2	XR-4	230.00	460.00
1	MIP-15LT	145.00	145.00
1	Smartenit EZIO8SA	121.00	121.00
1	TRC20K12 WIRELESS CAM T&R	$1200.00	$1200.00
1	36 X 36 X 12 ENCLOSURE		
		GRAND TOTAL	

1	EZIO8SA	148.00	148.00
1	HARMONY 5010M	200.00	200.00
5	SUPER LUBE 91015	100.00	100.00
1	L-RX202 Long Range RFID Reader	499.00	$499.00
1	Stancor P-6410	90.00	$90.00
		GRAND TOTAL	

SG2 PROGRAMMABLE ~~RELAY~~ PLC? 3rd Edition

SAME LOW PRICES!

Full-featured Model from $89

Note: Some options require the use of specific base units

INPUTS
- Digital
- Analog
- Pt 100 (optional temperature module)

INPUT SUPPLY
- 12VDC
- 24VDC
- 85-240VAC

BUILT-IN HMI (full-featured units)
- 16x4 LCD backlit display
- 8 function keys, 4 user defined keys
- 31 customizable message screens

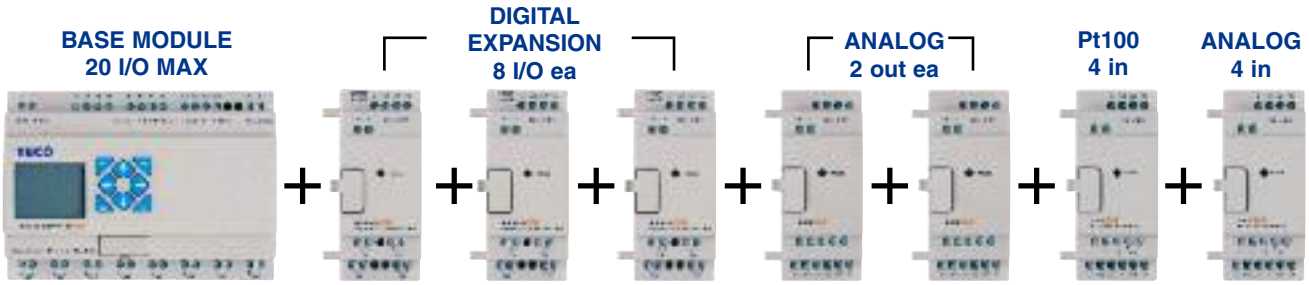
OUTPUTS
- Relay (8A resistive load)
- Transistor
- Analog (optional 0-10V or 0-20mA module)

MEMORY CAPACITY
- 300 Ladder rungs
- 260 Function block instructions
- 126 Internal auxiliary instructions
- 31 Timer instructions
- 31 HMI instructions
- 31 Counter instructions
- 31 Real-time Clock instructions
- 31 Analog compare instructions
- 240 Data registers
- 15 PID instructions
- 15 Multiplexer instructions (2 bit)
- 62 Math instructions (+, -, x, ÷)
- 15 Analog ramp instructions
- 2 PWM instructions
- Shift instruction

OTHER POWERFUL FEATURES

- Retentive FLASH memory to safely store programs, no battery required
- Real-time clock/calendar with daylight savings mode
- Dual purpose analog 0-10V / DC digital inputs on DC power models
- Removable memory cartridge for program backup, transferring programs to multiple PLRs, or ship updates to onsite customers
- Optional "V" Series units include RS-485 Modbus port
- Snap-on expansion modules allow expansion up to 56 I/O depending upon base module and expansion configuration
- IP20 enclosed case (all but bareboard)
- Removable Spare Memory Cartridge Option
- 2 channel high-speed DC inputs (1 kHz) for single channel encoder or pulse catch
- PWM DC output, 1CH / 16-bit
- DIN-rail or panel mount

Maximum Expansion



Note: All SG2 "V-type", "H-type", and "K-type" units are expandable. Maximum expansion allows for 3 digital modules, 2 analog output modules, 2 analog input modules (1 each of SG2-4PT and SG2-4AI). When used, SG2-4AI must be installed last.

OP10 HMI

The TECO OP10 monochrome HMI offers a simple but powerful user interface for the SG2 (Ver 3) programmable Logic Relay. Monitor data registers in real time, change parameters, perform switching functions, list alarms, and transfer data between networked SG2's*.

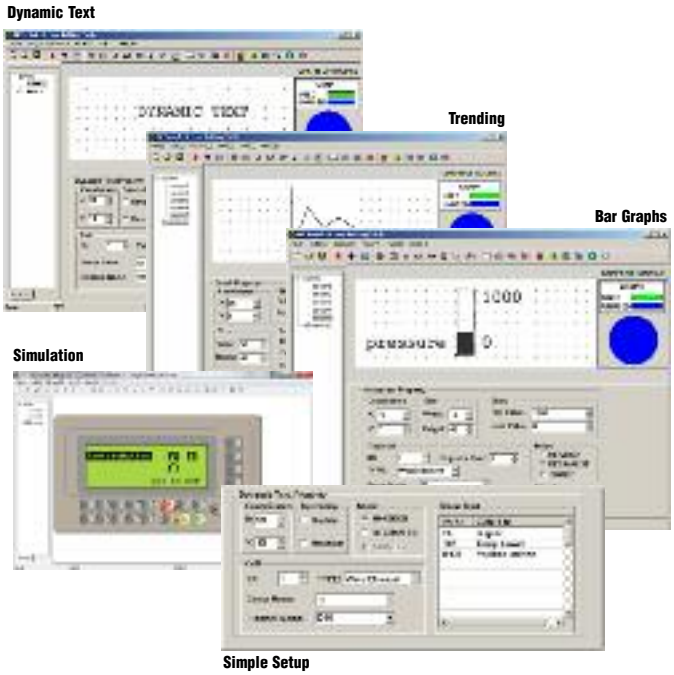
- 192 x 64 pixel display
- 24-key keypad
- Two serial ports:
  – COM1 supports programming and point-to-point communications
  – RS485 supports multi-drop networks
- Supports Modbus RTU
- Password protection
- Import bitmaps
- Offline program simulation
- Bar graphs, trend charts, alarm logging

$119

FREE Programming Software

Program the OP10 using simple fill-in-the-blank object windows. Establish network links to remote devices. Create dynamic text, trend charts, bargraphs, alarm logs, and more. View and verify your program in simulation mode.

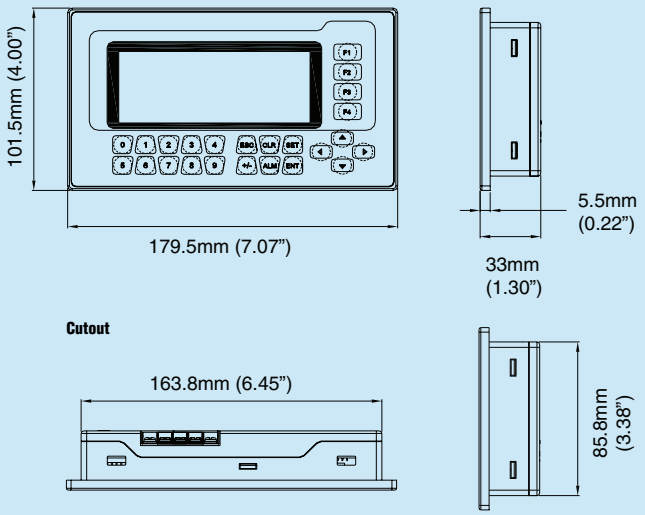
Download software free at **www.factorymation.com**.



Part Number	Description	Price
OP10	4.3" Monochrome Graphic Panel, 192 x 64 pixels, 4 Function Keys, Numeric Keypad, 2 serial ports, 24VDC input power	$119
OP10-PL01	Cable (9-pin Serial, PC to 9-pin Serial, OP10)	$14
SG2-PL01	SG2 to OP10 (COM 1) Communication Cable	$23
FM-USB232A	IOGEAR USB to Serial (DB-9 male) Converter Cable, 14 in. cable length	$35
SG2-SW	SG2 & OP10 Programming S/W. Available on CD or FREE via download.	$4
SG2-10PS-24	Power Supply, Output: 24VDC, 30 Watts (max); Input Voltage: 100-240VAC	$48

General Specifications	
Power	DC24V, -15% ~ +10%
Current Consumption	80mA Max
Approvals	UL, CE
Communication Interface	COM1: (9-pin, D-SUB, female) RS-232/422; RS485: terminal screws
Environmental Rating	IP65 (front of panel)
Maximum Devices	8 without repeater; 255 with repeater
Dimensions	179.5 x 101.5 x 33mm (7.07 x 4.00 x 1.30")
Weight	460g (~1 lb)
Environmental	
Operating Temperature	0°C ~ 55°C (32°F ~ 131°F)
Storage Temperature	-40°C ~ 70°C (-40°F ~ 158°F)
Relative Humidity	10% ~ 95%, non-condensing
Vibration	1.75mm displacement, 5 - 9Hz
Impact	15G, 11ms, vertical from X, Y, Z directions

Dimensions



Communication with one SG2 via programming port

Multi-drop Modbus communications over RS485 network

*SG2 must be V-series to communicate on RS485.

Handheld Transmitters

Linear's Xtended Range wireless receivers and transmitters are more than twice as powerful, 6 times more sensitive, and 3 times more immune to interference than the next best mid-range wireless equipment.

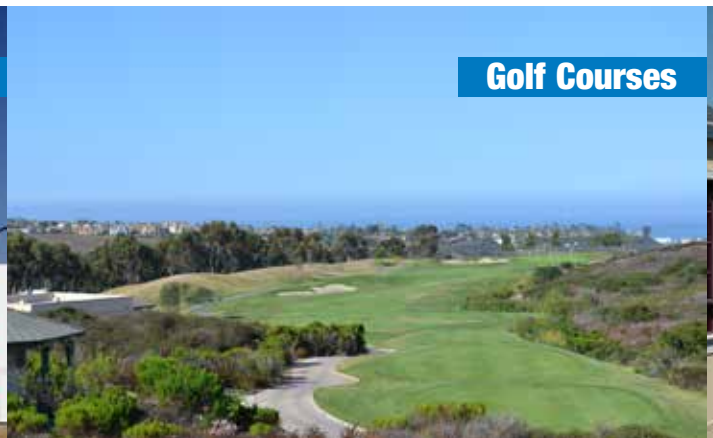
Handheld Transmitter Specifications

Frequency: 27.255 MHz ± .0025% (center frequency)
Bandwidth: 6 KHz
RF modulation: FSK ± 2 KHz nominal
RF output impedance: 50 Ohm nominal
Data encoding format: EMR
Power output: 2 watts minimum
Input voltage range: battery operated
Input current: .5 Amp transmitting, less than 1 µA standby
Reverse battery protection: yes
Batteries: 2-9 Vdc batteries
Antenna: 8-inch antenna (supplied)
Loop response time: 500 ms
Transmit time: 1 second
Code transmissions: alarm and low battery
Measured range: approximately 2 miles
Programming inputs:
- **System code select:** two, eight-position DIP switches (16 bits, 65,536 codes)
- **Rx channel select:** two DIP switch positions
- **Bank select:** two DIP switch positions

Buttons: tactile type
Button debounce time: buttons must remain stable for 150 ms for a transmission to begin
Indicators: one red LED lights when transmitter is pressed and flashes when power supply voltage falls below specified voltage
Temperature range: -20° to +60°C (-4° to +140°F)
Housing: grey, weather-resistant, high impact plastic
Connectors:
- **RF:** BNC

Size: 2.5 x 4.75 x 1.25 in (64 x 121 x 32 mm)
Weight: 1 lb (0.454 kg)
Regulatory: FCC Part 95, no license required

USES:



Stationary Transmitters

XT-1
1 Channel
Transmitter

XT-4
4 Channel
Transmitter

Stationary Transmitter Specifications

Frequency: 27.255 MHz ± .0025% (center frequency)
Bandwidth: 6 KHz
RF modulation: FSK ± 2 KHz nominal
RF output impedance: 50 Ohm nominal
Data encoding format: EMR
Power output: 10 watts minimum
Time out: built into the code format
Input voltage range: 11 to 15 Vdc (13.5 Vdc nominal)
Input current: 2 Amps maximum transmitting; 15 µA typical standby
Input current protection: fused with reverse polarity protection
Loop response time: 500 ms
Transmit time: 1 second
Code transmissions: alarm, restore, status, and low battery
Status report time frame: 70 minutes
Programming inputs:
- **System code select:** two, eight-position DIP switches (16 bits, 65,536 codes)
- **Rx channel select** (XT-1 only): two DIP switch positions
- **Bank select:** two DIP switch positions
- **Status select:** single DIP switch, ON-enabled, OFF-disabled
- **Auto-restore select:** single DIP switch, ON-enabled, OFF-disabled
- **N/O, N/C select:**
  XT-1: two-position jumper to select input type
  XT-4: four-position DIP switch to select input type

Test button: internal; transmitter sends a status signal when test button is pressed (if pressed and held, transmitter times out after 30 ±3 seconds
Indicators: one red LED lights when transmitter is pressed and flashes when power supply voltage falls below specified voltage; LED located underneath rear cover
Temperature range: -4° to +140°F (-20° to +60°C)
Housing: black, weather-resistant, anodized aluminum enclosure with removable end caps to provide wiring and programming access; end caps secured with screws
Connectors:
- **RF:** SO-239
- **External input:**
  XT-1: two-position screw terminals (input and ground)
  XT-4: eight-position screw terminals (input and ground per channel)
- **Power supply input:** two-position screw terminals (power and ground)

Size: 4.25 x 6.25 x 2.5 in (108 x 159 x 64 mm)
Weight: 1.0 lbs (0.454 kg)
Regulatory: FCC Part 95, no license required
Note: Requires ANT-2 antenna kit for proper operation

Stationary Receivers

Frequency: 27.255 MHz
± .0025% (center frequency)
RF modulation: FSK ± 2 KHz (nominal)
RF input impedance: 50 Ohm nominal
Receiver type: superheterodyne
Data input: alarm, restore, status, and low battery
Data decoding format: EMR
Common outputs
- **Status exception:** one open collector output per receiver, 20 Vdc @ 50 mA maximum
- **Status exception time frame:** 4 hours
- **Low battery:** one open collector output per receiver, 20 Vdc @ 50 mA max
- **Signal strength test point:** buffered signal strength output (0 to 5 V)

Common connectors
- **RF:** SO-239
- **Status and low battery:** XR-1 and XR-4, two-position screw terminals (status and low battery); XR-16, three-position screw terminals (status, low battery, and ground)
- **Power supply input:** two-position screw terminals (power and ground)

Sensitivity: -115 dBm (or better)
Selectivity: 8 KHz
Number of codes: 65,536
Code setting method: two, eight-position DIP switch programming
Image rejection: 50 dB minimum
Adjacent channel rejection: greater than 50 dB ± 9 KHz from Fc
Input voltage range: 11 to 15 Vdc (13.5 Vdc nominal)
Input current: reference specific receiver(s)
Input current protection: reverse polarity protection
Temperature range: -20° to +60°C (-4° to +140° F)
Housing: black, weather-resistant, anodized aluminum enclosure with removable end caps to provide wiring and programming access, end caps secured with screws; window on XR-1 and XR-4
Test Jumpers:
- **Audio output:** test jumpers on the printed circuit board
- **Signal strength output:** test jumpers on the printed circuit board (0 to 5 V)

Regulatory: FCC Part 95, no license required
Note: Requires ANT-1A or ANT-2 antenna kit

XR-1
1 Channel Receiver

XR-4
4 Channel Receiver

Size: 4.25 x 6.25 x 2.5 in (108 x 159 x 64 mm)
Weight: 1 lb (0.454 kg)
Current drain:
XR-1: 25 mA, typical standby; 65 mA alarm @ 12 Vdc
XR-4: 25 mA, typical standby; 185 mA alarm @ 12 Vdc
Programming inputs:
- **System code select:** two, eight-position DIP switches (16 bits, 65,536 codes)
- **Status select:**
  XR-1: one DIP switch position, ON-enabled, OFF-disabled
  XR-4: four DIP switch positions (by channel), ON-enabled, OFF-disabled
- **Channel select**
  XR-1 only: two DIP switch positions, select channel 1, 2, 3, or 4

Additional outputs:
- **Alarm:** Form "C" relay per channel, 1 A @ 32 Vdc (N/O, N/C, and common)

Additional connectors:
- **Alarm output:**
  XR-1: three-position screw terminals (N/O, N/C, and COM)
  XR-4: four sets of three-position screw terminals (N/O, N/C, and common)

Indicators: one red LED lights when there is RF activity and one green Power On LED; LEDs visible when rear cover is on the unit

XR-16
16 Channel Receiver

Size: 6.5 x 7.9 x 1.25 in (165 x 201 x 32 mm)
Weight: 1.5 lbs (0.680 kg)
Current drain: 300 mA maximum @ 12 Vdc
Programming inputs:
- **System code select:** two, eight-position DIP switches (16 bits, 65,536 codes)
- **Status select:** two, eight-position DIP switches, one position per channel, ON-enabled, OFF-disabled
- **Trouble disable:** jumper—remove to disable, trouble output on channel and trouble output relay

Additional outputs:
- **16 open collector:** (20 Vdc @ 50 mA, maximum), field programmable for either N/O or N/C operation
- **Channel and trouble output:** form "C" relay, 1 A @ 32 Vdc (N/O, N/C, and common); this output is activated when any output is activated (channel, status, or low battery)

Additional connectors:
- **Channel and trouble output:** three-position screw terminals (N/O, N/C, and common)
- **Channel outputs:** twenty-position screw terminals, 16 channel outputs, and four grounds

Indicators: three, seven-segment displays; provides alarm, status, and low battery indication by channel; RF activity displayed by the decimal point

When there's nothing but 10 miles of bad road (or no road) between you and a remote site, Xtended Range gets you there.

With the new Xtended Range family of products, we now offer one of the industry's longest range wireless transmitter-receiver activation systems, giving you up to 10 miles line-of-sight. In the right terrain and system conditions you may even be able to transmit 15 miles or more*. Linear's Xtended Range is the long-distance leader, beating nearly every comparable wireless transmission device on the market.

Linear Means Power: Increased output capability from 4 watts to 10 watts minimum per channel, enabling more than double the operating range than the competition.

Super Sensitivity: Crystal controlled, FM-based receivers operate in the CB band of frequencies at 27.255 MHz and offer sensitivity of -115 dBm or better.

Interference Immunity: Highly selective Xtended Range uses FSK rather than AM modulation, so it won't pick up stray signals. The absence of typical FM interference makes it a super-reliable long-distance link.

Compact & Reliable: Advanced circuit technology packs maximum capability into minimum space, significantly boosting reliability.

Fully Supervised: All Xtended Range products can perform automated checks to ensure that they are communicating properly – so you never have to worry about its status. The Xtended Range family offers hourly status reporting, low battery detection and reporting, and portal supervision for peace of mind. You also get field-selectable "Auto Restore" that triggers momentary receiver output when the transmitter input is activated.

Feature Rich: The Xtended Range product family offers Form C NO/NC relays on receivers, and the transmitters have internal RF test button and transmission indicator giving you visual verification of activity. Receivers have both power and RF activity indication and RF signal audio output, making the system easy to setup and configure.

Secure & Solid: Code clashes are unlikely as the Xtended Range has 64,000 available codes. Plus, receivers and transmitters are housed in time-tested weather-resistant cases with adjustable strain relief bushings to secure and shield wiring.

No FCC Licensing: Xtended Range receivers and transmitters do not require FCC licensing or registration, further easing customer installations.

Easy installation: Designed for quick setup and easy upgrades, DIP switches make system coding and mode changes fast, allowing for rapid addition or replacement of transmitters without having to visit the receiver and transmitter site.

*We field-tested the Xtended Range at distances of 20 miles, and the signal showed no sign of quitting.

Linear developed the Xtended Range suite of products with flexibility and variety in mind, so users can tailor long-distance links to their needs – remote monitoring, switching systems, networking, security, or remote control. Different models and channel combinations can be mixed and matched to accomplish your most sophisticated projects.

Accessories

ANT-1A 8-Inch Antenna
(for applications under one mile; for use with XR Receivers only)

ANT-2 3-Foot Whip Antenna
(for maximum range and difficult applications; required for XT-1, XT-4 Transmitters)

CON-90 Right Angle Antenna Connector for ANT-1A

T-1224DC Wall Mount Power Supply
(recommended for XT transmitters)

T-124.8DC Wall Mount Power Supply
(recommended for XR receivers)

Ordering Information

XT-1 Single-Channel Stationary Transmitter - Order number: SST00083

XT-4 Four-Channel Stationary Transmitter - Order number: SST00084

XT-1H Single-Channel Handheld Transmitter - Order number: SNT00395

XT-2H Two-Channel Handheld Transmitter - Order number: SNT00396

XT-4H Four-Channel Handheld Transmitter - Order number: SNT00397

XR-1 Single-Channel Stationary Receiver - Order number: SSR00068
(Form "C" alarm output)

XR-4 Four-Channel Stationary Receiver - Order number: SSR00069
(Form "C" alarm output per channel)

XR-16 16-Channel Stationary Receiver - Order number: SSR00066
(open collector alarm outputs)

WARNING: These products should not be used in life safety applications. FCC Rules allow unlicensed high-power transmissions at or near the operating frequency of these products, which may interfere with, or even disable, normal operation of the radios.

Specifications subject to change without notice.

Linear®
Building On Innovation.

Linear LLC | 1950 Camino Vida Roble | Suite 150 | Carlsbad, CA 92008 | 800.421.1587 | www.linearcorp.com P/N215858E

Industrial Modem RF115

Wireless async communication that stands up to extreme conditions—without sacrificing data quality or speed.

The MDR1000A-R4 has a fixed-whip antenna but can also be used with an optional RF antenna.

TECH SPECS

Speed — Up to 115.2 kbps half-duplex (up to 57.6 kbps full-duplex)
Protocol — Async, Modbus RTU support
Distance — Up to 20 miles (32.2 km) line-of-sight, depending on environment, geographic conditions, and optional antenna; up to 60 miles (96.6 km) with 2 repeaters
Hopping Code — 15 orthogonal user-selectable pseudorandom algorithms
Occupied Bandwidth — 230 KHz
Spreading Function — Frequency-hopping 112 channels (96 channels international)
Word Length — 10-/11-bit maximum
Radio Frequency — 902- to 928-MHz spread spectrum; No FCC license required
RF Output Power — 1/10 to 1 watt (selectable in 1/10 increments)
Interface — RS-232 (can support 2- or 4-wire RS-485 with the optional RS-485 Modules)
Connectors — RS-232: DB9; Antenna: Standard-thread SMA F; RS-485: 2- or 4-wire screw terminal strip
Indicators — P (Power), C (Carrier), I (Data In), O (Data Out)
Operating Environment — -40 to +167°F (-40 to +75°C)
Relative Humidity Tolerance — Up to 95%, noncondensing
Power — 12 VDC (24 VDC available as special order); 115- or 230-VAC wallmount transformer included
Size — 1.4"H x 5"W x 7.8"D (3.6 x 12.7 x 19.8 cm)
Weight — 1.8 lb. (0.8 kg)

Item	Code
Industrial Modem RF115	**MDR100A-R4**
RS-485 RF Modem Module	
2-Wire	**MD3310-R2**
Optional RF Antennas	
Omnidirectional with Bracket Mount	
10-ft. (3.0-m) Cable	**MDR151-0010-R2**
25-ft. (7.6-m) Cable	**MDR151-0025-R3**
50-ft. (15.2-m) Cable	**MDR151-0050-R3**
100-ft. (30.4-m) Cable	**MDR151-0100-R3**
Yagi (Unidirectional) with Bracket Mount	
50-ft. (15.2-m) Cable	**MDR152-0050-R4**
100-ft. (30.4-m) Cable	**MDR152-0100-R4**
You may also need…	
DB9 Extension Cable with EM/RFI Hoods	**EDN12H**
Standard SMA Male to "N" Type Male Adapter Cable	**MDR153**

SUPER LUBE® SILICONE DIELECTRIC GREASE

SUPER LUBE® SILICONE DIELECTRIC GREASE

Super Lube® Silicone Dielectric Grease is a non curing Silicone compound ideal for sealing, protecting and insulating electrical components and connectors.

Super Lube® Silicone Dielectric Grease is waterproof and protects against moisture and other contaminants in electrical connections.

Super Lube® Silicone Dielectric Grease is translucent white, clean and clear in appearance and exhibits high dielectric strength and is compatible with most plastics.

Part No.	Description
91003	3oz Tube
91005	5# Pail
91015	400gr Cartridge
91016	400gr Can
91030	30# Pail
91400	400# Drum

Super Lube® Silicone Dielectric Grease

Typical Properties

- Lubricates and moisture proofs
- Protects battery cables, spark plugs, distributor caps
- Cable connections
- Terminal strips and disconnects

Synco Chemical Corporation - Super Lube®
24 DaVinci Drive, Bohemia, NY 11716
Tel: (631) 567-5300 / Fax:(631) 567-5359
Email: info@super-lube.com / www.super-lube.com

Technical Support
(877) 495-0144
www.smartenit.com

Quick Start Guide - Harmony Gateway

Home Automation Gateway

Product Brief

Your Harmony Gateway is a stand-alone home automation gateway that gives you control of your ZigBee HA, INSTEON and X10 devices from any computer on your local network or any computer connected to the Internet.

The built-in web server allows you to store timers and macros that will run without the need to keep your computer on.

With the newly designed Harmony GUI, setup and control of your devices has never been easier!

Installation

1. Using the Ethernet cable provided, plug one end into your Ethernet switch/router and the other end into the bottom of your Harmony Gateway.

   Note: If you need a longer cable, use a straight-through patch cable, not a cross-over cable.

2. Plug your Harmony Gateway directly into an A/C outlet, preferably away from any low voltage transformers, surge protectors, or other line-noise causing devices.

Set-up

1) Find the IP address of your Harmony Gateway on your home network

- For your convenience, a free Discovery tool to aquire the IP address of your Harmony Gateway is available.
  - Navigate to **http://harmonygateway.com/discover**
  - The local IP is the address you'll be taking note of.

2) Connect to your Harmony Gateway via our Web or Mobile Application Interface

- To connect with the web application, navigate to the HarmonyGUI - **HTTP://HARMONYGATEWAY.COM**

1. Enter a personalized name for your Harmony Gateway in the "Server Name" field or leave as is
2. Enter the IP address of your gateway in the "Hostname/URL" field
3. Ensure the TCP Port is **50333**
4. Enter the default Password : **Smartenit** (case sensitive)
5. Click the "Save" button to save settings
6. Click the "Sign In" button to log into your Harmony Gateway.

- The "SmartenIt" mobile application is available in the and Android Market.
- For detailed instructions on how to connect with a our mobile app, refer to our Wiki:

For more information, please visit our Wiki
http://wiki.simplehomenet.com

Technical Support
(877) 495-0144
www.smartenit.com

Web Application Interface Basics

Adding devices

Step 1

Click anywhere in the dotted area in the ZBCID Coord box to open the details menu for the Harmony Gateway to add a ZigBee device.

Step 2

In the details menu, click anywhere in the dotted area to start the ZigBee network.

Step 3

Click anywhere in the dotted area to start discovering devices.

Follow the “joining” instructions of your devices to join them to the network

Resources

For more information visit our wiki - http://wiki.simplehomenet.com

For web application specifically - http://wiki.simplehomenet.com/index.php?title=web_app

For mobile application specifically - http://wiki.simplehomenet.com/index.php?title=mobile_app

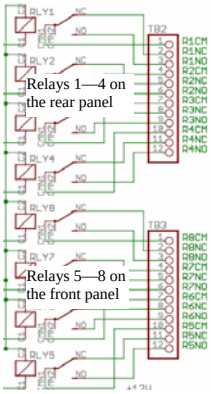
SimpleHomeNet Inc. changed its name to Smartenit, Inc. A new name, plus additional smart solutions for energy management and home/building controls! See our products in action at http://video.Smartenit.com

Quick-Start Guide EZIO8SA 7-Input/8-Relay INSTEON/X10 Controller - Model #EZIO8SA

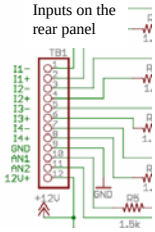
Your EZIO8SA puts control and monitoring of external loads and signals where you need it, thus simplifying your wiring. The unit has 8 SPDT relays rated 3 Amps @ 120VAC/24VDC to control AC or DC loads with INSTEON or X10 commands. Timers can be enabled to individually turn the relays off automatically after 1-255 seconds or minutes. External signals such as those from contact closures, voltage, and temperature values can send INSTEON messages on their on and off transitions to cause INSTEON events only limited by your imagination. External sensing flexibility is provided by four opto-isolated, two analog/digital and one digital-only set of inputs. A dedicated connector may be used for monitoring sensors via the Dallas Semiconductor 1-Wire bus. This input is pre-programmed for a DS18B20 temperature sensor. EZIO8SA requires a SmartLabs, Inc. PLM as a power source and to communicate with other INSTEON and X10 devices over the power lines.

Installation

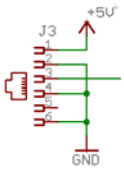
- Select a suitable power outlet that is close to the loads and sensors to be connected. Avoid exposure to moisture. If installing outdoors, use only an approved outdoor weather-proof enclosure.
- **Connection of the Output Relays:** Follow the picture on the label and note the naming (CM for common, NC for normally closed, and NO for normally closed) for the relays. Note that each relay acts as a switch (rated 3A at 24VDC or 120VAC.) Connect the controlled loads (e.g. valve motors, curtain actuators, door lock solenoids, garage door switches, etc.) to relay terminals as desired. Each relay is individually controlled by either direct or group INSTEON messages, or by X10 commands. A subsequent section of this guide describes how to link an INSTEON sender or X10 controller to each relay. Using INSTEON, it is also possible to take a "snapshot" of the state of the relays for single command "recollection" of the snapshot as part of a scene.



- **Connecting the Inputs:** Two sets of inputs to your EZIO8SA are available through the same terminal connector pictured and described separately below. Notice also that separate terminals are provided for +12VDC (unregulated, 50 mA. maximum) and Ground.
  - **Opto-Isolated Inputs:** Inputs I1 - I4 can be used in a way that the signal source is totally isolated from the EZIO8SA, as may be the requirement for certain alarm panel monitoring. In this case, the input must provide a voltage between 3 and 30 VDC, connected between the positive (Ix+) and negative (I1– or I2-) terminals. If isolation is not required, these inputs can easily be connected to "dry" contact closures such as those from external relays, proximity detectors or door closure sensors. In this case, connect the positive (I1+ or I2+) terminal to the +12V terminal, and the contact closure between the negative (I1- or I2-) terminal and the GND terminal.



  - **AN1 and AN2 as Digital Inputs:** As configured by default, inputs AN1 and AN2 can be used to monitor voltage levels that have distinct thresholds (0—1VDC for ON, and 2.5—5VDC for OFF.) These are the levels typically produced by digital devices such as a control output from a liquid level detector or telephone answering device. Keep in mind that the device output can not be of the "dry" type; in other words, the output connecting to the EZIO8SA AN1 or AN2 inputs must provide a voltage level required to cause a change that the EZIO8SA can recognize. If needed, a "pull-up" resistor can be connected between AN1 or AN2 and a +3.3VDC source.
  - **AN1 and AN2 as Analog Inputs:** A software program such as our free utility or a home automation program may be used to configure AN1 and AN2 as inputs that respond to and measure the level of voltages between 0 and 3.3VDC. Typical uses for this type of monitoring could be light, temperature, pressure, humidity, or other slowly and discretely varying levels. The value of the voltage at each of the inputs is internally converted to a number between 0 and 1023 (10 bits) which can be read via INSTEON commands or used to trigger alarm conditions. Alarms are simply events when the EZIO8SA sends a group message to the INSTEON network. Using this facility, an alarm can be set to send an INSTEON OFF group command when the voltage on the given input goes over a certain level, and an INSTEON ON group command when the voltage falls below a different level. This allows many possibilities for closed-loop control such as for maintaining the level of a pool, the temperature in a room, the humidity in a greenhouse, etc.
  - **1-Wire Input:** Your EZIO8SA accommodates the versatile Dallas Semiconductor 1-Wire bus for interfacing sensors. The RJ12 connector permits the use of either a 6-pin connector (RJ12) or 4-pin connector (RJ11). The unit comes pre-programmed to support one DS18B20 temperature sensor. Other sensors will be supported in the future or units may be custom-programmed at the factory. The sensor is set for 8 bits of resolution (values range from 0 to 255 degrees centigrade) and alarms may be set for both low to high and high to low trip points. This programmability allows a simple thermal controller to be easily implemented. If so desired, this input can be used as a regular digital input. An internal pull-up resistor is provided so the input can accommodate a "dry" contact.



Plug your EZIO8SA PLM into an AC outlet. The LED on the PLM will flash on and off rapidly a few times, then turn on and off for about 1 second (indicating successful internal diagnostics), and finally glow steadily.

Programming Your EZIO8SA

EZIO8SA can be set up as a "Sender" that sends INSTEON group commands or broadcast messages upon changes on any of its inputs (OFF to ON or ON to OFF), or as a "Responder" that activates one or both of its relays in response to a command from a controller such as a KeypadLinc or ControlLinc. The relays on the EZIO8SA can also be controlled with INSTEON direct commands.

The many features of the EZIO8SA are best exploited with an automation PC/Server application or our free Windows-XP configuration and setup utility. The PC application can be used to alter the behavior of the inputs, such as, what command is sent on the detection of an OFF or ON condition, the INSTEON group number, a timer to delay the input OFF response, and/or the alarms on the 1-Wire and Analog inputs.

The unit is usable out-of-the-box manually as described below. Please note that a "Press and Hold" refers to pushing and holding, then releasing the set-button on the side of the PLM attached to the EZIO8SA. A "Tap" refers to gently and rapidly depressing and releasing the button.

Controlling One or Multiple INSTEON Devices with Signals on the Inputs

1) Put the EZIO8SA PLM in linking mode by pressing the set-button and releasing it after **10-12** seconds. The PLM will turn off its LED indicating it is waiting to be told which input is to be used for this link.
2) Tap the set-button on the PLM a number of times corresponding to the input to be used for control (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the PLM and release it after **3-4** seconds. Its LED will begin to flash about once per second indicating it is listening for an INSTEON device to link with.
3) On the INSTEON device to be controlled, press its set-button and release it after 3-4 seconds (or use method specific to device.) A successful link will be indicated by a flash of the LED on the controlled device (device

specific) and by the LED on the EZIO8SA PLM flashing, then continuing to blink about once per second.
4) Continue to link additional INSTEON devices using step 3 above, or end the linking session by holding the set-button on the EZIO8SA PLM for **3-4** seconds.

Stopping (Unlinking) an INSTEON Responder Device from being controlled by the EZIO8SA

1) Put the EZIO8SA PLM in unlinking mode by pressing its set-button and releasing it after **10-12** seconds. The PLM will turn off its LED indicating it is waiting to be told which input the INSTEON device is to be unlinked from.
2) Tap the set-button on the EZIO8SA PLM a number of times corresponding to the input to be unlinked (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the PLM and release it after **18-20** seconds. Its LED will begin to flash about once per second indicating it is listening for an INSTEON device to unlink from.
3) On the INSTEON device to be unlinked, press its set-button and release it after **3-4** seconds (or use method specific to device.) A successful unlink will be indicated by a flash of the LED on the controlled device (device specific) and by the LED on the EZIO8SA PLM turning on solidly.

Triggering EZIO8SA Inputs from another INSTEON Controller

1) Put controller in linking mode by holding the button to be used for controlling until it indicates linking mode (4-10 seconds depending on controller.) Usually its LED will blink or a light connected to it will flash.
2) Hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. The LED on the EZIO8SA PLM will turn off when the link is established with the controller. The controller will also give an indication of a successful link by flashing its LED or a load connected to it.
3) The EZIO8SA must be told which input to link by tapping the set-button on its PLM a number of times corresponding to the input number (e.g. once for input 1, twice for input 2, etc.) After the last tap, press the set-button on the EZIO8SA PLM and release it after **10-12** seconds. Its LED will turn on solidly indicating the end of the linking process.

Controlling the Relays with an INSTEON Controller

1) Put controller in linking mode by holding the button to be used for controlling until it indicates linking mode (4-10 seconds depending on controller.) Usually its LED will blink or a light connected to it will flash.
2) Hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn off when the link is established with the controller. The controller will also give an indication of a successful link by flashing its LED or a load connected to it.
3) To link the current status of all the relays (status snapshot) to be recalled by a command from the controller, hold the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn on solidly indicating the end of the linking process.
4) Alternatively to step 3 above, an individual relay is linked by tapping the set-button on the EZIO8SA PLM a number of times corresponding to the relay number (e.g. once for relay 1, twice for relay 2, etc.) After the last tap, press the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will turn on solidly indicating the end of the linking process.

Unlinking the Relays from an INSTEON Controller

1) Follow the instructions specific to the INSTEON controller in use to place it in unlinking mode.
2) Press the set-button on the EZIO8SA PLM and release it after **3-4** seconds. Its LED will flash briefly and then go solid indicating a successful unlink. The LED on the controller will also go solid.

About the Links Database

The EZIO8SA maintains an internal table of up to 128 links where the information on each linked device is stored. The database can be accessed and altered with the use of our PC utility such that links can be entered, modified or deleted without having to use the "press and hold" method described earlier.

Controlling the Relays with X10 Controllers

EZIO8SA allocates all 16 units of a house code. Relays 1 through 8 respond to commands on X10 units 1 through 8. To setup the unit to respond to X10 commands follow these steps:

1) Press and hold the set-button on the EZIO8SA PLM and release it after about 4 seconds—the LED will now blink at a low rate;
2) Enter an ON (or OFF for disabling) command from your X10 controller—the LED will stop flashing indicating X10 enabling or disabling was successful. The outputs will now respond to X10 ON and OFF commands.

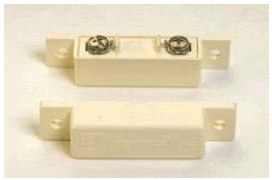
- To **disable X10 control**, substitute an OFF command in step 2 above.

Restoring All Parameters to Default Values (Factory Reset)

To restore all settings to their original factory values and to reset the links database, unplug your EZIO8SA PLM for about 10 seconds. Then, plug it back in WHILE HOLDING ITS SET-BUTTON for about 10 seconds. Upon release of the set-button, the unit will go through the normal power on sequence, and all parameters will be reset.

Possible Applications for your EZIO8SA

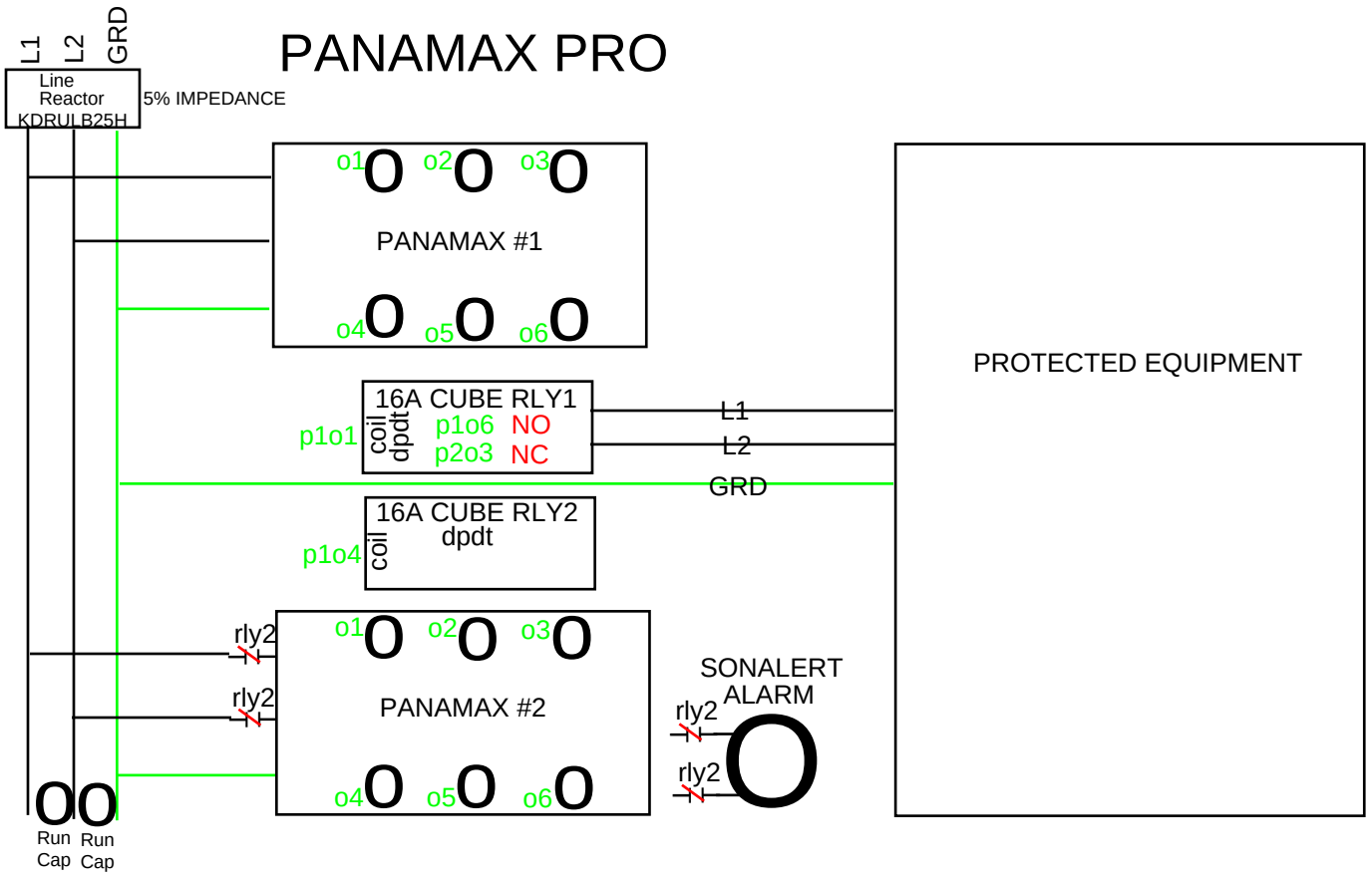
Given its ability to send INSTEON commands in response to events, and to cause actions upon receiving X10 or INSTEON messages, the possible applications for your EZIO8SA are practically limitless. The complement of relays, digital inputs, analog inputs, and temperature sensor bus allow for a wide variety of applications. The following are summaries of some possibilities. Please note that these are given as possibilities and Simplehomenet makes no claims as to the suitability or accuracy on the implementation of these ideas:



Complete Garage Manager: In this example the EZIO8SA is used to monitor the state of a garage door (open or closed) and to control the manual switch that activates the door opener. EZIO8SA is set up to send an INSTEON ON group command to a set of devices when the door is open, and an OFF command some minutes later. The door open detection can also be programmed to send a command to close the door through one of the EZIO8SA relays some minutes later if the door is detected to be open. A readily available magnetically activated sensor (reed switch type) is used as a door open/close sensor. This switch simply closes when next to a magnet, and opens when away from the magnet. Our setup PC utility is used to modify the device input parameters. Set up the unit as follows:

1. The picture on the right shows a typical magnetically activated sensor/switch. Some may come with wires already terminated, and others, as the one pictured, come with screw terminals. Connect I1+ to the +5V terminal and I1– to one wire of the door sensor. Connect the other sensor wire to the GND terminal.
2. Connect the two wires from the opener pushbutton to the R1CM and R1NO terminals on the EZIO8SA.
3. Link INSTEON devices to respond to door open or close events by following the steps in the section "**Controlling One or Multiple INSTEON Devices with Signals on the Inputs".** It is possible to link one or several INSTEON devices (lights, sirens, telephone dialers, etc.) that will be given commands when the door opens or closes.
4. If needed, use the set up utility to set the ON to OFF (door opening) and/or OFF to ON (door closing) commands to be sent. INSTEON commands are 13 00 for "Rapid OFF" and 11 FF for "Rapid ON".
5. **Programming Relay 1 to Activate the Door Opener Switch:** Use the setup utility to a) set the output timers in seconds; b) program the output 1 timer to 2 seconds; and c) establish a link to have relay 1 respond to group 1.

Greenhouse Manager: The unit could be set up to monitor the greenhouse temperature through a 1-Wire temperature sensor. An alarm would be set to send a group command upon the temperature reaching a certain threshold. Another alarm point would be set for when the temperature falls below a certain point. An INSTEON responder switch to control a heating element would activate upon receipt of the first group command and turn off upon receiving the second alarm from the temperature sensor. This would create a basic temperature controller to maintain the greenhouse at an optimum point. Any of the EZIO8SA relays could be used to control the heating element, or for controlling ancillary items such as window shutters, sunlight reflectors, fogging systems, irrigation valves, air baffles, etc., in response to other conditions. Some of the digital inputs could be used for checking the state of doors, light conditions, etc.



BEST SURGE PROTECTION AND JUST $289

Contactors and Overloads (cont'd)

LS Industrial Systems

Metasol Contactors (9 - 800A)

Metasol

75 - 100 Amp

Removable Aux Contacts

130 - 150 Amp

Removable Aux Contacts

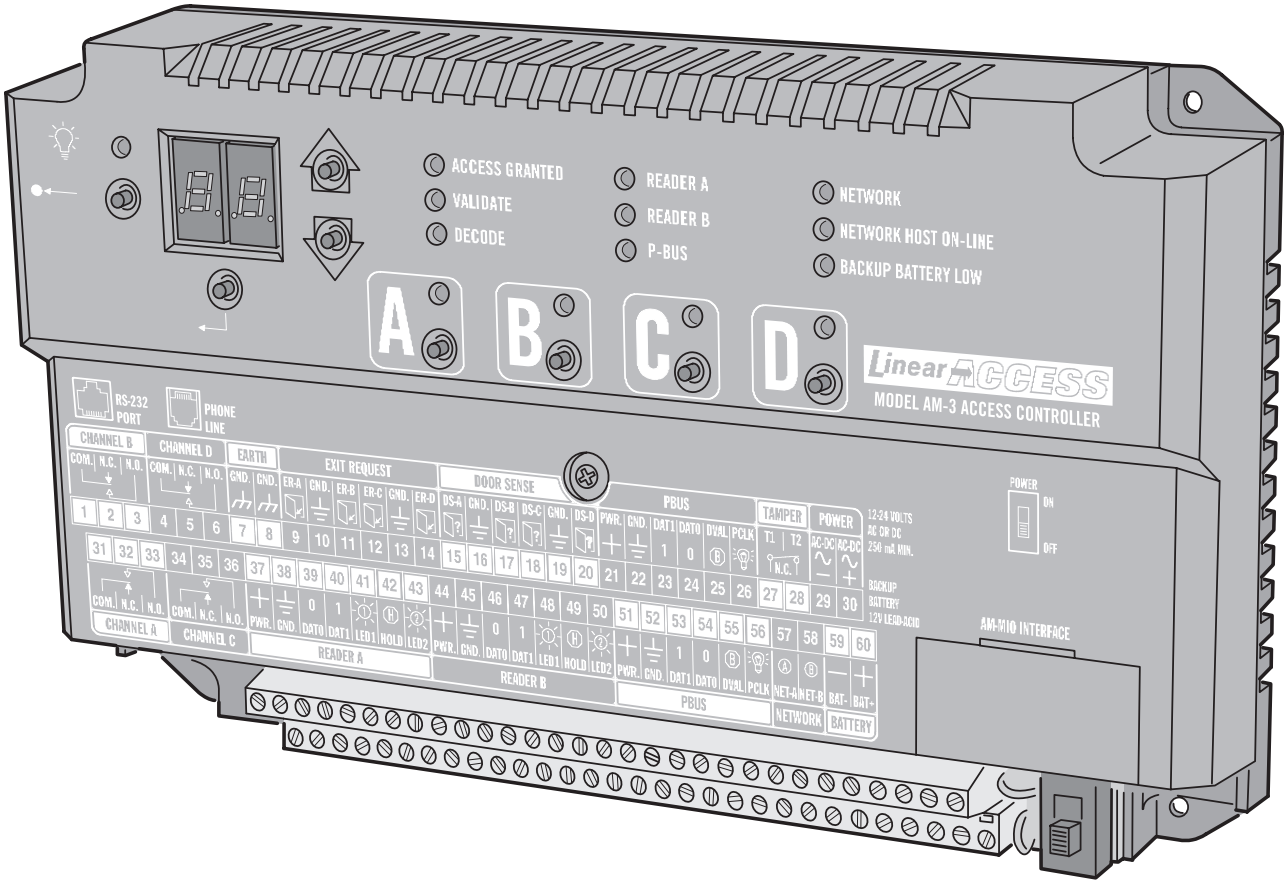
185 - 225 Amp

500 - 800 Amp

Part Number	Price	Coil Voltage	Aux. Contacts	Resistive Load (AC1)	UL HP Ratings (AC3 Motor Load)						Optional Overload Relay
					Single Phase		Three Phase				
					115V	230V	200V	230V	460V	575V	
100 Amp Frame, Box Lug Terminals											
MC-75A-22-AC24	$60	24VAC (50/60Hz)	2 N.O. 2 N.C.	110	5HP (56A)	15HP (68A)	25HP (78A)	30HP (80A)	50HP (65A)	60HP (62A)	MT-95
MC-75A-22-AC120	$60	120VAC (50/60Hz)									
MC-75A-22-AC208	$60	208VAC (60Hz)									
MC-75A-22-AC230	$60	230VAC (50/60Hz)									
MC-75A-22-AC480	$60	480VAC (60Hz)									
MC-75A-22-DC24	$69	24VDC									
MC-85A-22-AC24	$61	24VAC (50/60Hz)	2 N.O. 2 N.C.	135	7.5HP (80A)	15HP (68A)	30HP (88A)	40HP (104A)	60HP (77A)	75HP (77A)	MT-95
MC-85A-22-AC120	$61	120VAC (50/60Hz)									
MC-85A-22-AC208	$61	208VAC (60Hz)									
MC-85A-22-AC230	$61	230VAC (50/60Hz)									
MC-85A-22-AC480	$61	480VAC (60Hz)									
MC-85A-22-DC24	$76	24VDC									
MC-100A-22-AC24	$125	24VAC (50/60Hz)	2 N.O. 2 N.C.	160	10HP (100A)	20HP (56A)	30HP (88A)	40HP (104A)	75HP (96A)	75HP (77A)	MT-95
MC-100A-22-AC120	$125	120VAC (50/60Hz)									
MC-100A-22-AC208	$125	208VAC (60Hz)									
MC-100A-22-AC230	$125	230VAC (50/60Hz)									
MC-100A-22-AC480	$125	480VAC (60Hz)									
MC-100A-22-DC24	$150	24VDC									
150 Amp Frame, Box Lug Terminals											
MC-130A-22-AC24	$193	24VAC (50/60Hz)	2 N.O. 2 N.C.	160	10HP (100A)	20HP (88A)	40HP (120A)	40HP (104A)	75HP (96A)	75HP (77A)	MT-150
MC-130A-22-AC120	$193	120VAC (50/60Hz)									
MC-130A-22-AC230	$193	230VAC (50/60Hz)									
MC-130A-22-AC480	$193	480VAC (50/60Hz)									
MC-130A-22-DC24	$315	24VDC									
MC-150A-22-AC24	$221	24VAC (50/60Hz)	2 N.O. 2 N.C.	210	15HP (135A)	25HP (110A)	40HP (120A)	50HP (130A)	100HP (124A)	75HP (77A)	MT-150
MC-150A-22-AC120	$221	120VAC (50/60Hz)									
MC-150A-22-AC230	$221	230VAC (50/60Hz)									
MC-150A-22-AC480	$221	480VAC (50/60Hz)									
MC-150A-22-DC24	$352	24VDC									
225 Amp Frame, Screw Terminals											
MC-185A-22-AC/DC24	$294	24VAC/24VDC	2 N.O. 2 N.C.	230	15HP (135A)	30HP (136A)	60HP (177A)	60HP (154A)	125HP (156A)	125HP (125A)	MT-225
MC-185A-22-AC/DC100-200	$294	100-240VAC/100-220VDC									
MC-185A-22-AC500	$294	440-575VAC									
MC-225A-22-AC/DC24	$356	24VAC/24VDC	2 N.O. 2 N.C.	275	15HP (135A)	40HP (176A)	60HP (177A)	75HP (192A)	150HP (180A)	150HP (144A)	MT-225
MC-225A-22-AC/DC100-200	$356	100-240VAC/100-220VDC									
MC-225A-22-AC500	$356	440-575VAC									
400 Amp Frame, Screw Terminals											
MC-265A-22-AC/DC100-200	$471	100-240VAC/100-220VDC	2 N.O. 2 N.C.	300	N/A	N/A	75HP (221A)	100HP (248A)	200HP (240A)	200HP (192A)	MT-400
MC-265A-22-AC400	$471	380-450VAC									
MC-265A-22-AC500	$471	440-575VAC									
MC-330A-22-AC/DC100-200	$489	100-240VAC/100-220VDC	2 N.O. 2 N.C.	350	N/A	N/A	100HP (285A)	125HP (312A)	250HP (302A)	250HP (242A)	MT-400
MC-330A-22-AC400	$489	380-450VAC									
MC-330A-22-AC500	$489	440-575VAC									
MC-400A-22-AC/DC100-200	$530	100-240VAC/100-220VDC	2 N.O. 2 N.C.	450	N/A	N/A	125HP (359A)	150HP (360A)	300HP (361A)	300HP (289A)	MT-400
MC-400A-22-AC400	$530	380-450VAC									
MC-400A-22-AC500	$530	440-575VAC									
800 Amp Frame, Screw Terminals											
MC-500A-22-AC/DC100	$1,107	100-127VAC/100-110VDC	2 N.O. 2 N.C.	580	N/A	N/A	150HP (414A)	200HP (480A)	400HP (477A)	400HP (382A)	MT-800
MC-500A-22-AC/DC200	$1,107	200-240VAC/200-220VDC									
MC-500A-22-AC500	$1,107	440-575VAC									
MC-630A-22-AC/DC100	$1,149	100-127VAC/100-110VDC	2 N.O. 2 N.C.	660	N/A	N/A	200HP (552A)	250HP (602A)	500HP (590A)	500HP (472A)	MT-800
MC-630A-22-AC/DC200	$1,149	200-240VAC/200-220VDC									
MC-630A-22-AC500	$1,149	440-575VAC									
MC-800A-22-AC/DC100	$1,216	100-127VAC/100-110VDC	2 N.O. 2 N.C.	900	N/A	N/A	200HP (552A)	300HP	600HP	600HP	MT-800
MC-800A-22-AC/DC200	$1,216	200-240VAC/200-220VDC									
MC-800A-22-AC500	$1,216	440-575VAC									

LinearACCESS™

AM3Plus
Access Controller



Installation Instructions

Linear®

(760) 438-7000 • FAX (760) 438-7043
USA & Canada (800) 421-1587 & (800) 392-0123
Toll Free FAX (800) 468-1340
www.linearcorp.com

Contents

Throughout this manual, multiple-unit networks are referenced. Depending on the programming method used, networks can contain the following model units:

NETWORK MODEL OPTIONS	
With AccessBase2000 Programming	**With AXNET Programming**
AM3Plus	AM3Plus
AE1000Plus	AE1000Plus
AE2000Plus	AE2000Plus
AM-3	
AE-1000	
AE-2000	

Introduction

The AM3Plus Access Controller is designed for use as a primary access control device for gated communities, parking garages, office buildings, apartments, dormitories, hotels/motels, commercial buildings and recreational facilities.

Housed in a lockable, plastic enclosure, the AM3Plus features a 2-digit LED display, nine status indicators, four relay indicators with four relay activation pushbuttons. Three programming buttons, a reset button, and a power indicator are present. The enclosure is monitored with a magnetic "tamper" switch.

The system controls its four output relays by responding to various input devices that react to proximity cards, transmitters, and entry codes. The four relay output channels can be programmed to control electric door strikes, magnetic locks, door & gate operators, or barrier gates.

Access is granted or denied depending on the current user's authorization to gain access and system settings that control groups of users or all users. Complete access control event logging, access time restriction, access location restriction, and administration functions are also available to manage the installation.

The AM3Plus is network ready. Multiple units can be interconnected on a 3-wire RS-485 network or through modems. The AM3Plus can be used in mixed networks with its sister products, the AE1000Plus and AE2000Plus.

Two sets of Wiegand inputs are available for connection to 26, 30, or 31-bit Wiegand devices (card readers, etc.). Two sets of PBUS inputs are available for connection to Linear's line of remote accessories.

The AM3Plus can be powered from a 12-24 Volt AC or DC source. DC power can be obtained from the access device or AC power from a separate power transformer. The system supports and charges a 12-volt backup battery for operation during power outage. Low battery detection circuitry monitors the backup battery's condition. The EEPROM memory retains all entry codes and programming, even without power.

Operation

In a typical installation, the unit's memory would be programmed with each resident's name and entry code number. Arriving visitors would use a remote keypad to enter their entry code. Also proximity receivers, swipe card readers, and other remote devices can be used with the system.

Block coded MegaCode® transmitters can be used to gain access through a remote radio receiver connected to the AM3Plus PBUS. Each transmitter can be individually suspended or re-activated.

The system's clock/calendar can control access based on specific times and dates. Automatic relay activation can be scheduled. Access can be restricted to certain times and dates. Holiday access can be scheduled.

The system's event log records system activity for future reference.

Programming and Cardholder Maintenance

Two programming methods can be used with the system: Linear's AXNET or AccessBase2000. Each has its advantages, but only one must be chosen at the onset for each installation. Once a unit is programmed with one method, all programming data will be lost if a decision is made to switch to the other method.

Linear's AXNET software is built into each unit. It allows connecting to the unit using common browser software from any PC at any location. Each unit's database is stored in the unit's memory.

Linear's AccessBase2000 software installs in one dedicated PC and is designed with many extra features usually for large network installations. The database for the entire system is stored in the dedicated PC.

Hardware Features

- ✓ **FOUR FORM "C" (N.O. & N.C) RELAYS**
  Each relay has 3-amp @ 24-volt rating with a status indicator and relay latching pushbutton
- ✓ **FOUR REQUEST-TO-EXIT INPUTS**
  Activates access device for exiting using a hardwired switch
- ✓ **FOUR SENSING INPUTS**
  For sensing door position to control door-ajar and alarm features, or for access inhibit timer
- ✓ **NINE STATUS INDICATORS**
  Display access, reader, and system information
- ✓ **OPTIONAL MODEM**
  Compatible with the Model ACM-1 plug-in modem for telephone communications with system
- ✓ **RS-232 COMMUNICATIONS PORT**
  RS-232 port for direct connection to printer or computer
- ✓ **NETWORK SUPPORT**
  Multiple units can be connected together to share data
- ✓ **EXPANSION INTERFACE SUPPORT**
  Model AM-MIO accessory adds additional input and outputs to the AM3Plus
- ✓ **ON-BOARD CLOCK/CALENDAR CIRCUIT**
  Stamps the event log data as it is stored in the system's memory
- ✓ **WIEGAND INPUTS**
  Two Wiegand format card reader inputs for connection to external devices
- ✓ **LINEAR PBUS SUPPORT**
  Two PBUS input/output ports for connection to Linear accessories
- ✓ **BACKUP BATTERY SUPPORT**
  Built-in backup battery charging circuit
- ✓ **POWER FAILURE MONITOR**
  AC power input is monitored, power outages are recorded in the event log

Software Highlights

- ✓ **COMPUTER PROGRAMMABLE**
  No dedicated programmer required, program with a computer and a modem
- ✓ **LARGE ENTRY CODE CAPACITY**
  Up to 20,000 entry codes can be used for gaining access
- ✓ **2-8 DIGIT ENTRY CODE LENGTH**
  Flexible code length for different applications
- ✓ **LARGE TRANSMITTER CAPACITY**
  Up to 45,600 block coded and 20,000 individually enrolled Linear transmitters can be used for gaining access
- ✓ **TRANSMITTER FACILITY CODE SUPPORT**
  Identifies wireless transmitters by installation
- ✓ **LARGE CARD CAPACITY**
  Up to 45,600 block coded and 20,000 individually enrolled cards can be used for gaining access
- ✓ **FOUR INDEPENDENT RELAY CHANNELS**
  Each output's action is programmable
- ✓ **PROGRAMMABLE TIME SCHEDULED RELAY ACTIVATION**
  Activation for up to four time periods for each of the 31 system time zones
- ✓ **PROGRAMMABLE TIME ZONE ACCESS VALIDATION**
  Validation during four time periods for each of the 31 system time zones
- ✓ **PROGRAMMABLE VALIDATION DAYS**
  Select days of the week access is allowed
- ✓ **PROGRAMMABLE HOLIDAY DAYS**
  Select up to 24 expiring & 24 non-expiring holidays for access restriction
- ✓ **OBSTACLE TRANSMITTER SUPPORT**
  Compatible with Linear's Model MGT transmitter
- ✓ **EVENT LOG**
  Stores up to 20,000 system events in memory for record keeping
- ✓ **DELETED CARDHOLDER DATABASE**
  System logs deleted cardholders for future identification
- ✓ **TIMED OR TRUE ANTI-PASSBACK**
  Options to temporarily disable a cardholder's credentials after access for a preset time or depending on the cardholder's access direction

Feature Overview

Relay Outputs

Four 3-amp dry contact relay outputs are provided to activate four access devices, such as door strikes, magnetic locks, automatic doors, barrier gates, and automatic sliding gates. The relay outputs can also be used for alarm contact shunting, operator obstacle triggering, and alarm activation. Each of the four relays can also be manually activated from buttons on the front of the AM3Plus. LED indicators display the status of each relay.

Request-to-Exit Inputs

Each relay channel has a request-to-exit input. These inputs are supplied for hardwire activation of the access devices. Typically a request-to-exit input is wired to a pushbutton inside of the access controlled area. When a person desires to exit, pressing the pushbutton will activate the output relay channel and trigger the access device. A loop detector for automatic gate operation can be connected to a request-to-exit input.

Sensing Inputs

The sensing inputs connect to door switches that monitor whether the controlled door is open or closed. The sensing inputs may alternately be programmed as "access inhibit" inputs for use with an external timer or service switch.

Optional Modem

A modular connector is provided for telephone line connection to the unit's optional 33.6K baud modem. The system can be accessed remotely for programming and control over the standard telephone system using a personal computer with a modem. For system backup, a computer connected through the modem can store and retrieve the AM3Plus memory data.

RS-232 Communications Port

A modular connector is provided for the bi-directional 38.4K baud RS-232 port. The AM3Plus RS-232 port connects to a personal computer's COM port. System programming can be performed locally with a computer connected to the RS-232 port.

Obstacle Detection

Linear's Model MGT safety edge transmitter is compatible with the AM3Plus. The MGT detects and transmits obstacle events to a remote receiver connected to the AM3Plus.

Programming Memory

The AM3Plus flash memory retains all entry codes, transmitter information, card access, and programming, even without power.

Battery Backup

The system supports a 12-volt battery backup for operation during power outage. The system will charge the backup battery when AC power is present.

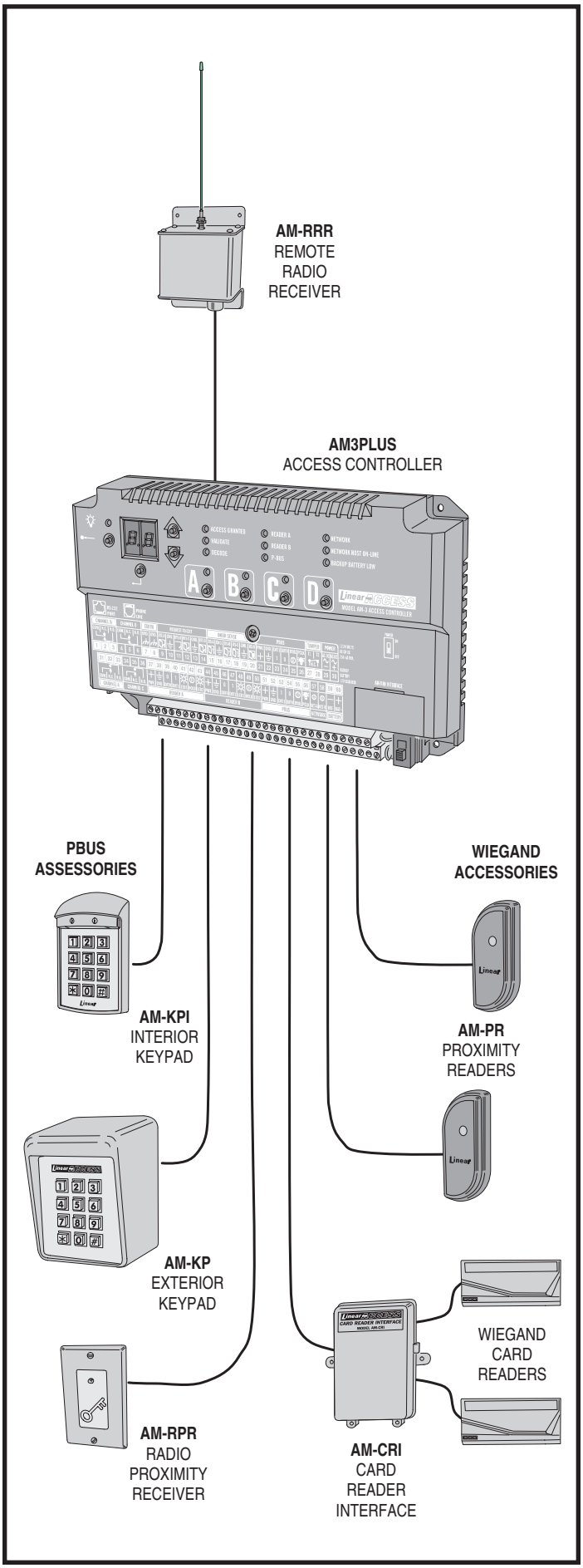
Network Support

Multiple AE1000Plus, AE2000Plus, & AM3Plus units can be networked together via three-wire RS-485 cables or through modems allowing information sharing between the units. A common event log is retained for all of the networked units.

Linear PBUS Ports

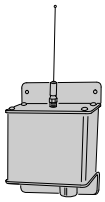
Two 6-wire Linear PBUS input/output ports are available to connect to several accessories (keypads, proximity readers, remote receivers). A typical application for a remote keypad or reader would be to control additional doors or gates.

Accessory Overview

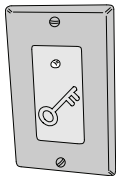


PBUS Accessories

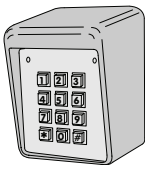
Several compatible accessories are available to connect to the two 6-wire communications "PBUS" inputs. Up to six PBUS accessories can be used with each AM3Plus unit.


AM-RRR

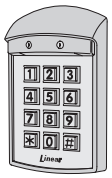
AM-RRR Remote Radio Receiver
For wireless transmitters, connect the Model AM-RRR high-gain superheterodyne UHF receiver. The receiver is housed in a weather-resistant enclosure and can be mounted indoors or outdoors. Gaskets and a weather-tight wiring strain relief seal the unit from the elements.


AM-RPR

AM-RPR Remote Proximity Receiver
The Model AM-RPR functions as a remote device that supplies localized radio reception for the AM3Plus In a typical installation, the AM-RPR would be mounted in a plastic single-gang electrical box next to the controlled opening. When the user requires access, their transmitter must be activated within three inches of the AM-RPR faceplate.


AM-KP

AM-KP Exterior Keypad
The Model AM-KP is housed in a rugged cast aluminum enclosure designed for exterior installations. The die-cast keys have bright, easy-to-read yellow graphics. The keypad can be mounted to a pedestal or directly to a wall. A keylock secures the keypad to the mounting backplate.


AM-KPI

AM-KPI Interior Keypad
The Model AM-KPI keypad is housed in a rugged, plastic enclosure designed to be mounted indoors in a standard single-gang electrical box. Tamper resistant screws secure the keypad to its mounting plate. The die-cast keys have bright, easy-to-read yellow graphics and is illuminated with white LEDs. The keypad is supplied with a satin-chrome bezel and three interchangeable colored bezels (white, ivory, & bronze) to customize the keypad appearance for the installation.


AM-CRI

AM-CRI Card Reader Interface
The Model AM-CRI expands the standard two AM3Plus Wiegand inputs by supporting one or two additional 26-bit Wiegand input devices per AM-CRI interfaces used.

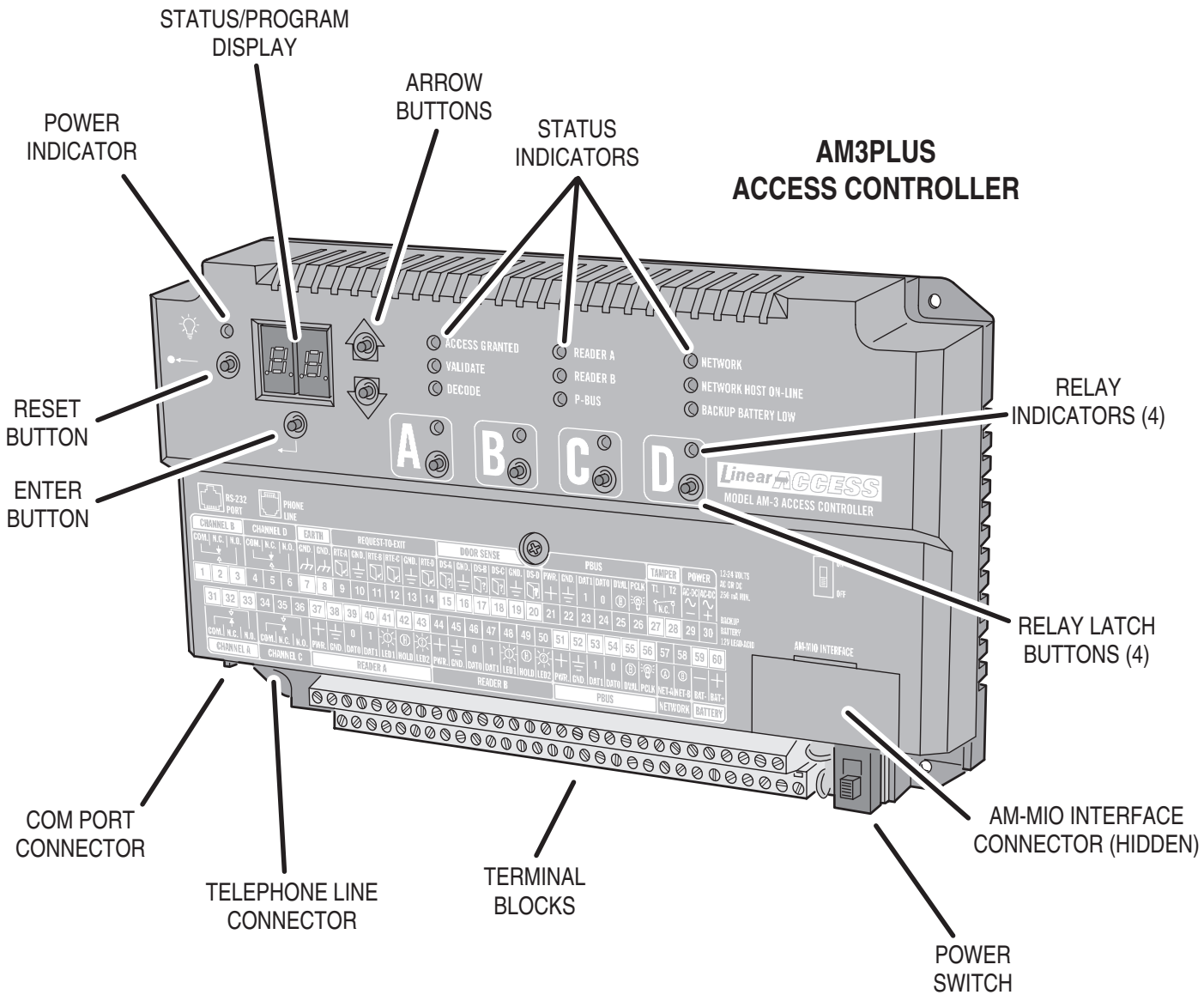
Wiegand Accessories

The two WIEGAND format inputs connect WIEGAND devices to the AM3Plus. Linear offers a Wiegand format proximity reader. Most other manufacturer's 26, 30 & 31-bit WIEGAND output devices can also be used with the AM3Plus.

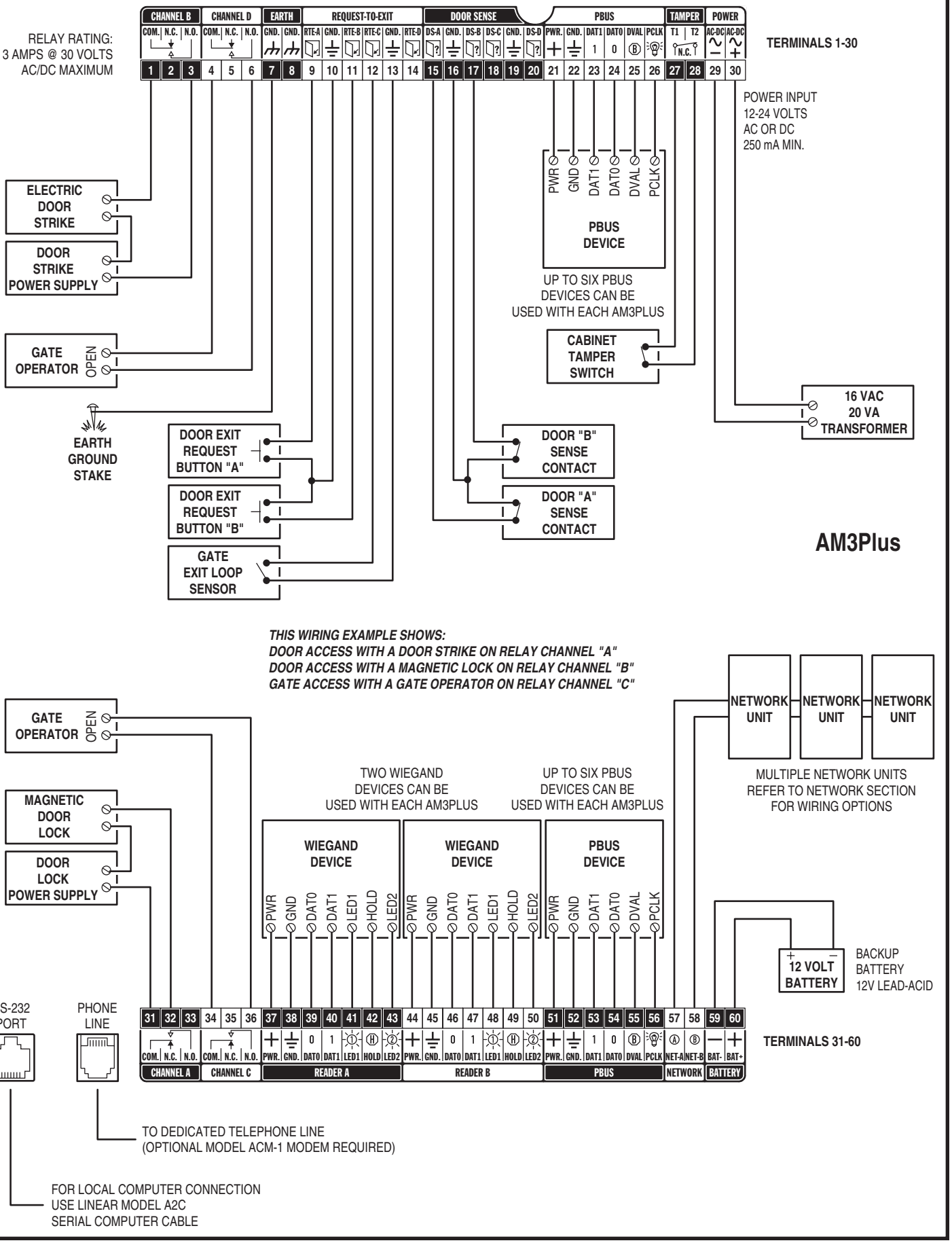

AM-PR

AM-PR Proximity Reader
The Model AM-PR is a radio-based reader that works with either proximity tags (Model AM-PT) or proximity cards (Model AM-PC), both of which are slotted to attach to key rings. Upon reading a user's tag or card, the reader sends the entry data via a Wiegand output to the AM3Plus. An integral LED confirms to the user that access is granted.

Component Locations



Wiring Diagram



Important Mounting Requirements

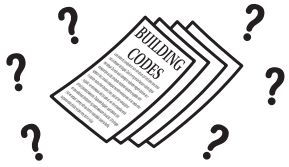
The AM3Plus Access Control System can be installed for public or private use. The mounting requirements for remote keypads will vary depending on the installation. Review the following information before starting the installation.

Mounting Environment

Consider the environmental factors at the desired mounting location. Although the exterior keypads are designed for direct outdoor installations, it is necessary to protect the AM3Plus from extreme exposure to sun, driving rain, or snow. Mounting the unit in a kiosk can provide extra environmental protection. Use a Model CAB-3 (P/N ACP00913) cabinet for mounting the AM3Plus outdoors.

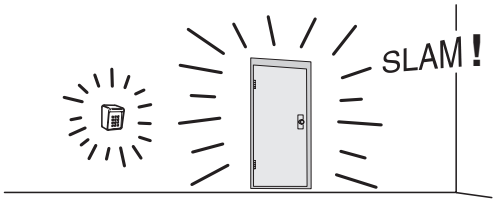
Follow Building Codes

Check all local building codes and ordinances prior to installing the system. Proper installation of the AM3Plus conforming to the local building codes for access control equipment is a regulatory requirement. The AM3Plus and remote keypad installation is an extremely important and integral part of the overall access control system.



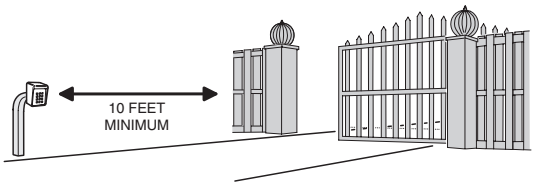
Mounting Location

If the AM3Plus is used to control a door or pedestrian gate, locate the remote keypad as near as practical to the entry point. If the unit is mounted on or in a wall adjacent to the entry point, be sure the wall is sturdy. The repeated shock and vibration from a slamming access door or spring-loaded pedestrian gate must be isolated from the keypad. **NEVER MOUNT THE KEYPAD DIRECTLY TO A MOVING DOOR OR GATE!**



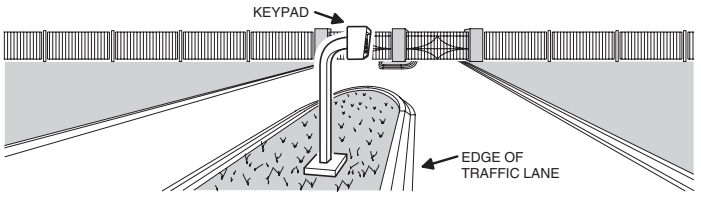
Gate Installations

If the AM3Plus is used to control a gate operator connected to a vehicular gate, the remote keypad MUST be mounted AT LEAST 10 feet away from the gate (open and closed) and gate operator. **AT NO TIME SHOULD A PERSON BE ABLE TO TOUCH THE GATE OR GATE OPERATOR AND THE KEYPAD AT THE SAME TIME.**



Vehicle Traffic

Do not mount the remote keypad where it extends into any traffic lane. Locate the gooseneck pedestal or entry kiosk so all parts of the keypad are outside the traffic lane. Locate the keypad clear of any turn-around lanes vehicles use when access is denied.



Americans with Disability Act (A.D.A.) Requirements

THE FOLLOWING WHEELCHAIR ACCESS REQUIREMENTS ARE FOR PUBLIC DOOR CONTROL INSTALLATIONS ONLY.

1. If the clear floor space allows only forward approach to the keypad, the maximum high forward reach allowed is 48" above grade to the top of the keypad.
2. If the high forward reach to the keypad is over an obstruction of greater than 20" but less than 25", the maximum high forward reach allowed is 44" above grade to the top of the keypad.
3. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach shall be 54" above grade to the top of the keypad.
4. If the high side reach is over an obstruction of 24" or less, the maximum high side reach allowed is 46" above grade to the top of the keypad.

AM3Plus Mounting

Standard Cabinet

The AM3Plus cabinet is designed to be mounted directly to a wall or flat surface.

Wiring access for power, telephone, earth ground, control output must be available at the mounting location. For easier wiring, choose a well lit location. Wiring access for remote accessory cables must also be available at the mounting location.

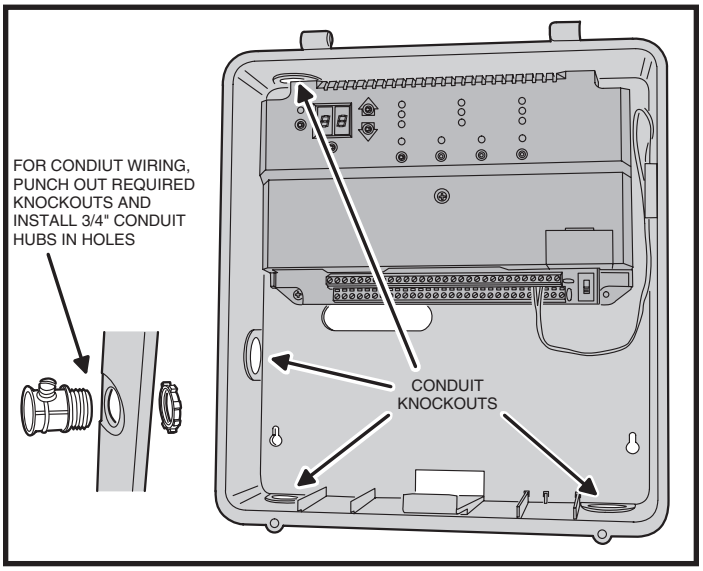
1. Flip the cabinet's cover up to unlock the hinges and remove the cover from the case.
2. To make cabinet mounting easier, the AM3Plus can be removed from the cabinet (optional).
3. If using conduit for wiring, punch out the selected cabinet wiring knockouts.
4. Use the cabinet as a template and mark the locations for the four cabinet mounting screws in the keyhole slots.
5. Mark the wiring access slot if the wiring is being routed from behind the cabinet.
6. Use a hole saw to cut out the location for the wiring access slot (if used).
7. Use four screws and appropriate screw anchors to mount the cabinet to the wall.
8. If the AM3Plus was removed to mount the cabinet, replace the AM3Plus.
9. After the installation's wiring and programming are complete, replace the cabinet's cover and secure it with the two screws provided.

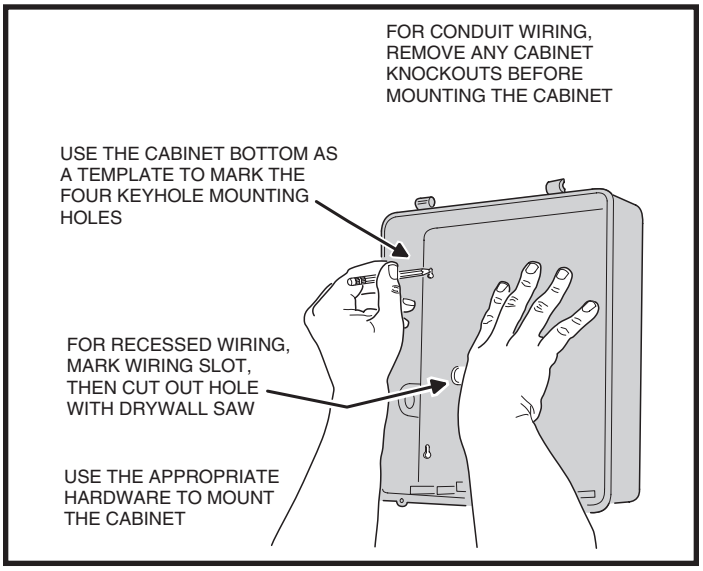
Outdoor Cabinet

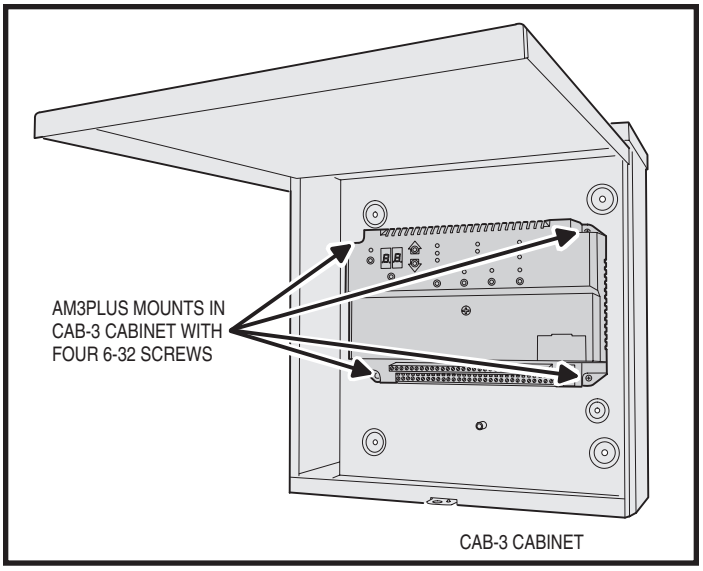
To protect the unit outdoors, the AM3Plus can be mounted inside a Linear Model CAB-3 (P/N ACP000913) outdoor metal cabinet.

Wiring access for power, telephone, earth ground, control output must be available at the mounting location. For easier wiring, choose a well lit location. Wiring access for remote accessory cables must also be available at the mounting location.

1. Open the cabinet's cover and push it in to latch it open.
2. Punch out the selected cabinet wiring knockouts.
3. Use the cabinet as a template and mark the locations for the four cabinet mounting screws.
4. Use four screws and appropriate screw anchors to mount the cabinet to the wall.
5. Mount the AM3Plus inside the cabinet with four 6-32 screws.
6. After the installation's wiring and programming are complete, lower the cabinet's cover and secure it with a lock.







Relay Output Wiring

Any of the four relay outputs channels (A-D) can be used to control access devices on doors or gates.

Door or Pedestrian Gate Control

1. Install a low voltage electric door strike or magnetic lock as a locking device for the door or pedestrian gate.
2. Install the power supply or transformer for the locking device. **DO NOT POWER THE AM3Plus FROM THIS POWER SUPPLY.**
3. Connect one wire from the power supply to one wire from the locking device.
4. Route two wires between the locking device and the AM3Plus. Connect one wire to the remaining wire of the locking device. Connect the other wire to the remaining wire of the power supply.

5A. For a door strike, connect the wires to the AM3Plus relay **COM** & **N.O.** terminals.

5B. For a magnetic lock, connect the wires to the AM3Plus relay **COM** & **N.C.** terminals.

Gate Control

1. Route two wires between the gate and the AM3Plus.
2. Connect the gate operator's **OPEN** terminals to the AM3Plus relay **COM** & **N.O.** terminals.

✦ ***NOTE:*** *For operator wiring specifics, refer to the gate operator's wiring diagram.*

Request-to-Exit Inputs

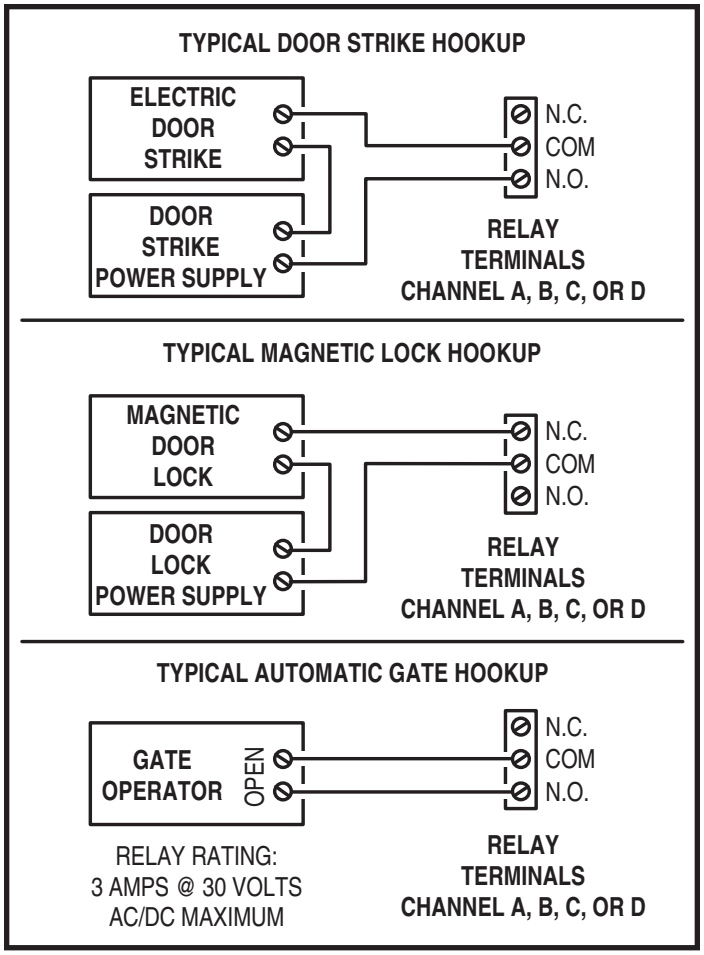
Each of the four relay outputs has a request-to-exit input terminal. Grounding this terminal will activate the associated relay. Exit request inputs are typically used with push bars, loop sensors, or pushbuttons.

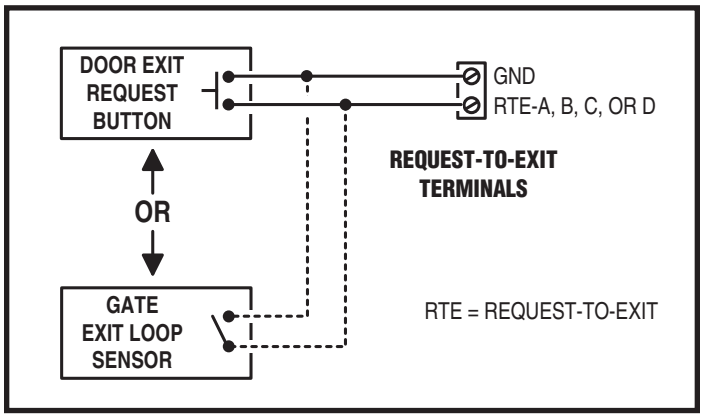
1. Install the pushbutton or device to signal an exit request.
2. Route two wires from the device to the AM3Plus.
3. Connect the device's normally open output to the wires.
4. To activate a relay channel, connect the wires to the associated relay request-to-exit terminal (**RTE-A, RTE-B, RTE-C,** or **RTE-D**) and a **GND** terminal.

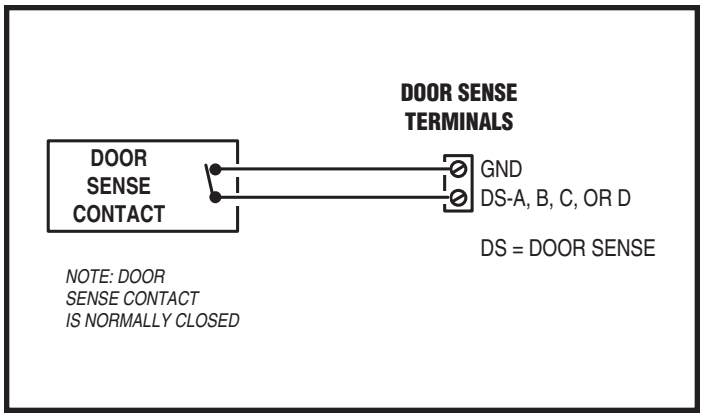
Sensing Inputs

The sensing inputs can connect to a door switch that monitors whether the controlled door is open or closed.

1. To use the door sense feature to detect forced entry or door ajar conditions, install a normally closed door switch on the door or pedestrian gate and route two wires from the switch to the AM3Plus.
2. Connect the sensing device wires to the associated relay sensing terminal (**DS-A, DS-B, DS-C,** or **DS-D**) and a **GND** terminal.





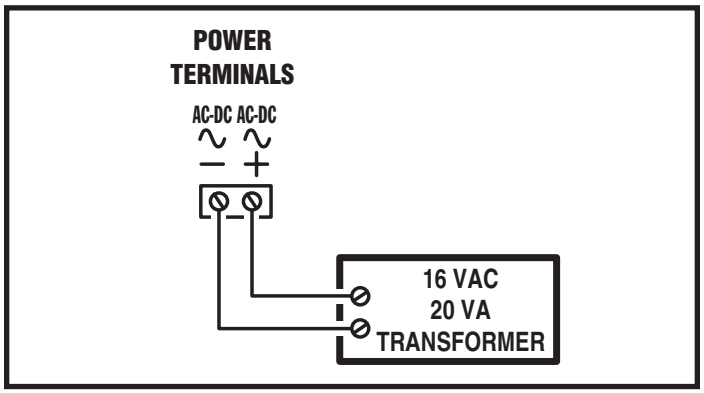


Power, Battery, & Ground Wiring

Power Wiring

✦ ***NOTE: DO NOT APPLY POWER UNTIL THE INSTALLATION IS COMPLETE. TURN MASTER POWER SWITCH OFF BEFORE WIRING.***

1. Route two wires between the AM3Plus and the power transformer.
   - For power wire runs up to 100 feet, use 18 AWG, 600-volt insulated wire.
   - For power wire runs up to 200 feet, use 16 AWG, 600-volt insulated wire.
2. Connect the wires to the transformer. Connect the other end of the wires to the AM3Plus **AC1** & **AC2** terminals.



Backup Battery

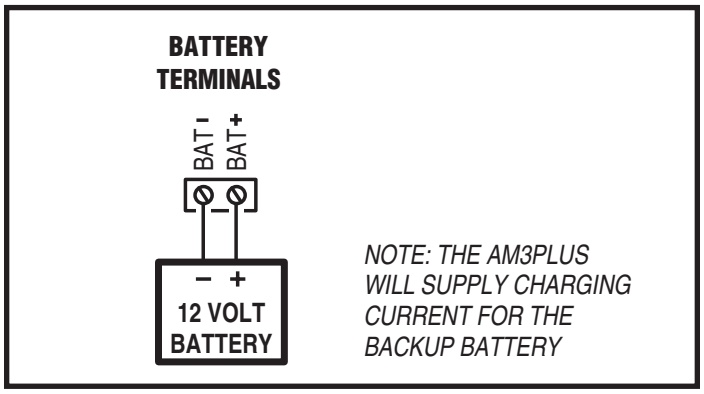
Use of battery backup is optional. It will allow the AM3Plus to operate for short periods of time without AC power. The door or gate access device must use some type of battery backup of its own for the entire system to be functional.

Use a 12-volt gel-cell type battery. Up to a 7-amp/hr. battery will fit into the AM3Plus cabinet. Do not use a 6-volt battery.

✦ ***NOTE:*** *A backup battery is not required to maintain the AM3Plus clock/calendar and programming memory during power outages.*

1. Route two battery leads between the AM3Plus and the backup battery.
2. Connect the Battery positive to the AM3Plus **BAT+** terminal and the negative to the **BAT-** terminal.

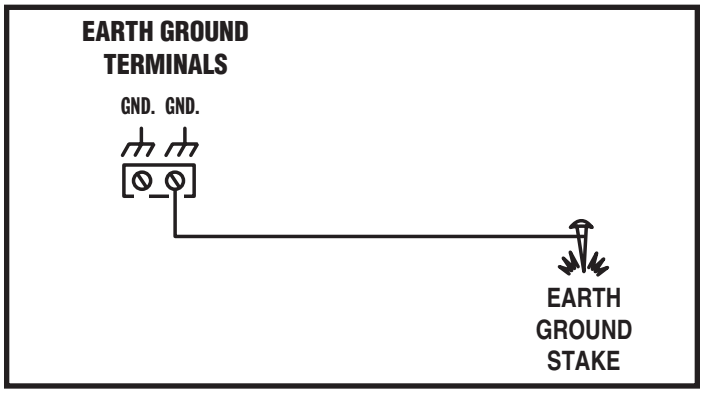
✦ ***NOTE:*** *The AM3Plus supplies battery charging current. An external battery charger is not required to maintain the battery.*



Earth Ground

For the best ground, use size 12 gauge solid wire or larger to connect the to an 8-foot copper ground rod. Locate the ground rod next to the Power and Telephone company rods and bond the rods together with a new clamp. Do not disturb the clamps installed by the Power or Telephone Company. Alternately, connect to a metallic cold water pipe for the earth ground.

1. Connect the wire from the earth ground to the AM3Plus **EARTH GROUND** terminal.



Telephone Wiring

For programming, the AM3Plus connects to a standard telephone line.

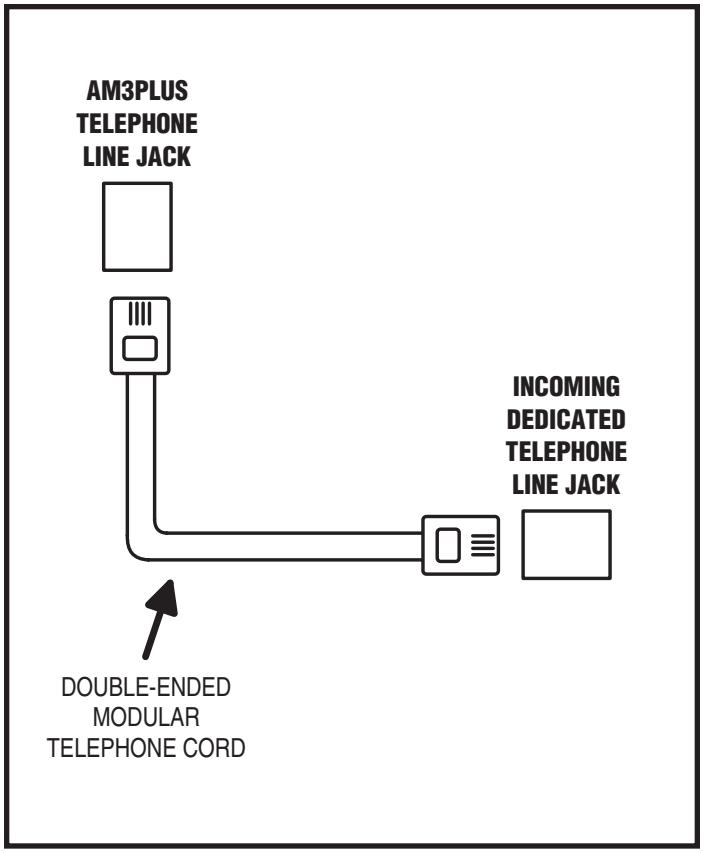
✦ ***NOTE:*** *The optional Model ACM-1 modem is required for telephone communications to the AM3Plus controller.*

Important Telephone Wiring Tips

- **DO NOT ROUTE TELEPHONE AND AC WIRING INSIDE THE SAME CONDUIT.** Route all telephone wires inside a dedicated conduit that is at least six inches away from any AC line wiring.
- All telephone wiring must be made on the "building" side of the telephone company's demarcation device (the terminal block where the telephone line connects to the building).
- If any security system or personal alert system at the installation is connected to the telephone line, be sure that it is connected to the line ahead of the AM3Plus using a RJ-31X interface.
- Use only high-quality telephone wire. All telephone wire should be twisted-pair with a minimum size of 24 AWG.

Typical Telephone Wiring

1. Connect a double-ended modular cable between the AM3Plus's **PHONE LINE** jack and the modular telephone jack wired to the installation's telephone line.



PBUS Accessories

Up to six accessories (keypads, proximity readers, remote receivers) can be connected to the two PBUS input/output ports. A typical application for a remote keypad would be to control a second door or gate.

Linear's PBUS devices compatible with the AM3Plus are:

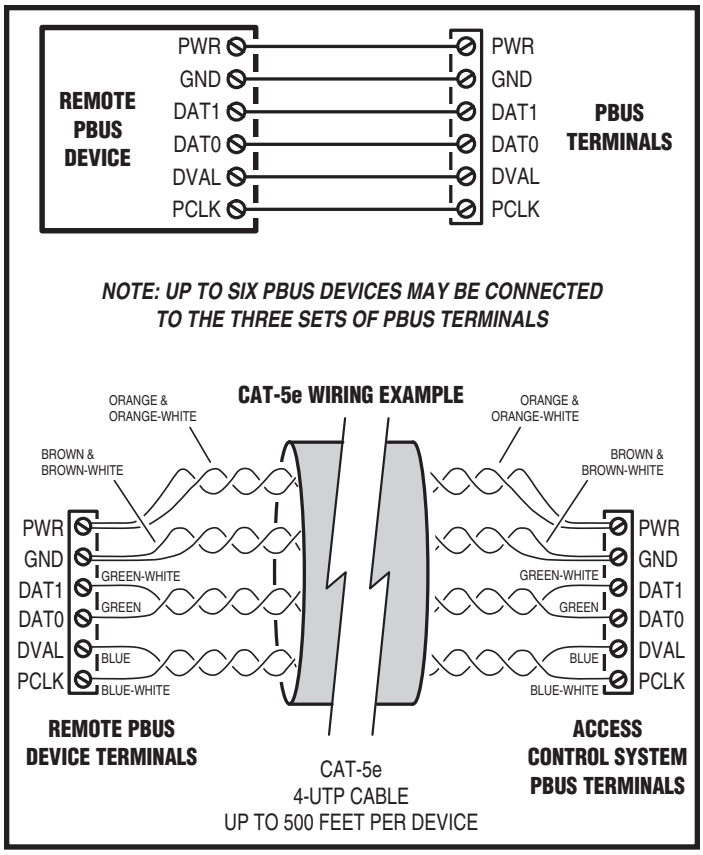
- AM-RRR Remote Radio Receiver
- AM-RGR Remote Radio Receiver
- AM-RPR Radio Proximity Receiver
- AM-KP Exterior Keypad
- AM-KPI Interior Keypad
- AM-CRI Card Reader Interface

Conventional cable or commonly available Cat-5e Ethernet cable can be used to connect PBUS remote devices to the AM3Plus. When using Cat-5e cable, note that the PWR and GND connections use two wires each to enhance the current carrying capacity for powering the remote device.

Cable choices:

- Cat-5e Ethernet cable for wire runs up to 500'.
- 24 AWG Belden Type 9931 or equivalent for wire runs up to 300'.
- 20 AWG Weico Type 9405 or equivalent for wire runs up to 600'.

1. Mount and install the accessory as described in its instructions.
2. Route cable from the AM3Plus to the accessory.
3. Set the **DEVICE ADDRESS** rotary switch in the accessory to a unique address number. When programming the system, the device address number will identify each PBUS accessory to the AM3Plus.
4. Connect the cable to the accessory and the AM3Plus (see PBUS wiring diagram).



Wiegand Accessories

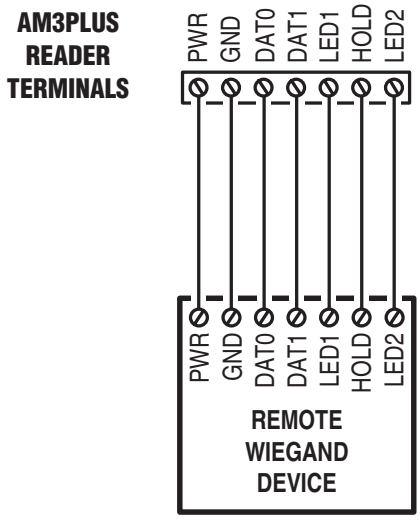
The two AM3Plus Wiegand inputs (READER A & B) can connect to a large variety of 26, 30, and 31-bit Wiegand output accessories. The Wiegand format is a common standard for access control equipment. A typical application would be to add swipe card or proximity readers to the system.

- ✦ ***NOTE:*** *Depending on the Wiegand accessory used, the LED1, LED2, and HOLD connections may not be required.*
- LED1 output is switched to ground during non-access time.
- LED2 output is switched to ground for one second during access time.

1. Mount and install the Wiegand accessory as described in its installation instructions.
2. Route a cable from the AM3Plus to the accessory.

- For wire runs up to 300 feet use 24 AWG Belden 9931 or equivalent.
- For wire runs up to 500 feet use 20 AWG Weico 9405 or equivalent.

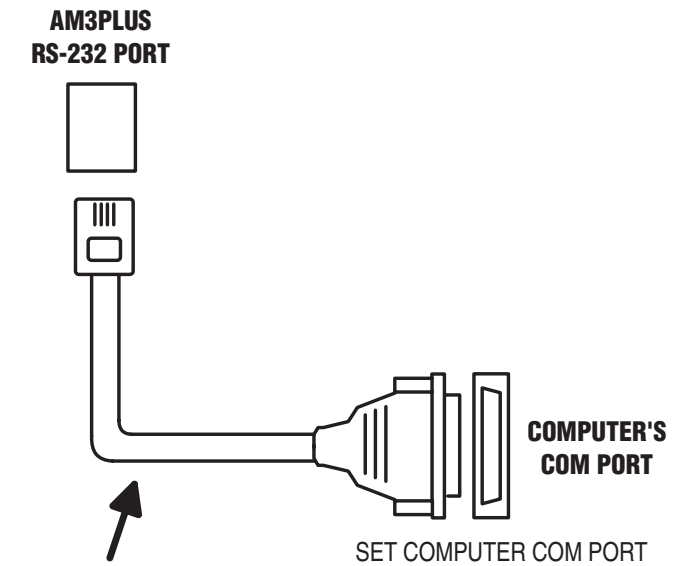
3. Connect the cable to the accessory and the AM3Plus as shown in the figure.



NOTE: THE LED1, LED2, AND HOLD CONNECTIONS MAY NOT BE REQUIRED DEPENDING ON THE WIEGAND DEVICE USED

RS-232 Port

A modular connector is provided for the bi-directional 38.4K baud RS-232 port. The AM3Plus RS-232 port connects to a personal computer's COM port. System programming can be performed locally with a computer connected to the RS-232 port.



NOTE: USE A DB-25 TO DB-9 CABLE ADAPTER IF REQUIRED

Optional Network Connections

Linear's AM3Plus, AE1000Plus, & AE2000Plus Access Control Systems can be connected together in a network. A network will allow sharing programming and user information between the systems. Program each unit to a different network Node Address (see Page 16).

- ***IMPORTANT COMPATIBILITY NOTE:*** *Linear's previous access control Models AE-1000, AE-2000, & AM3 can be used in networks with the Models AE1000Plus, AE2000Plus, & AM3Plus* ***only using AccessBase2000 software****. The built-in AXNET Browser Interface included in the "Plus" models is only compatible with the Models AM3Plus, AE1000Plus, and AE2000Plus.*

Network Configurations for AXNET Programming

If the system is going to be programmed using Linear's AXNET Browser Interface, units can communicate with each other on the network through modems or RS-485 cable connections.

Refer to the figure below for details of the 11 supported AXNET network hardware configurations and associated Network Configuration Numbers. After choosing a network layout that best suits the installation, note the Network Configuration Number. This number is required to be entered during setup of the AXNET Browser Interface in the Global Settings for Networking area.

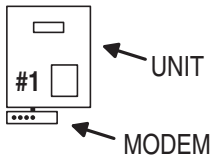
AXNET COMPATIBLE NETWORK CONFIGURATIONS

MASTER UNIT #1 ALWAYS REQUIRES A MODEM FOR REMOTE PROGRAMMING

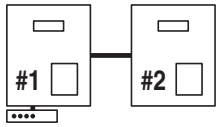
RS-485 CABLE CONNECTION

MODEM TELEPHONE CONNECTION

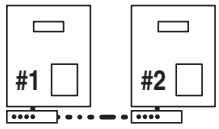
NETWORK CONFIGURATION #1
SINGLE UNIT (NODE)



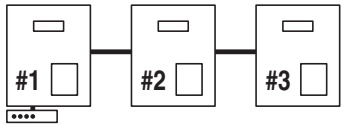
NETWORK CONFIGURATION #2
TWO RS-485 NODES



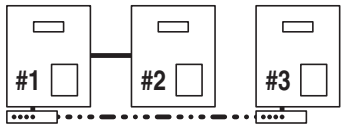
NETWORK CONFIGURATION #3
TWO MODEM NODES



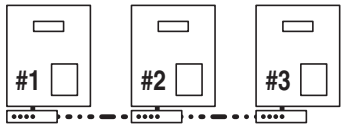
NETWORK CONFIGURATION #4
THREE RS-485 NODES



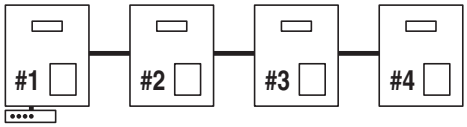
NETWORK CONFIGURATION #5
TWO RS-485 NODES, ONE MODEM NODE



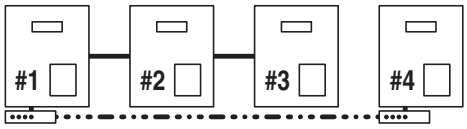
NETWORK CONFIGURATION #6
THREE MODEM NODES



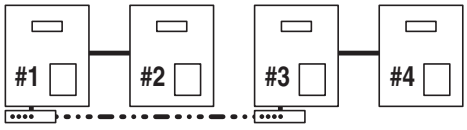
NETWORK CONFIGURATION #7
FOUR RS-485 NODES



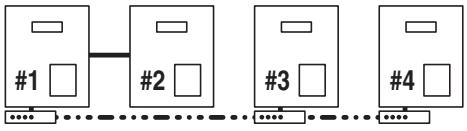
NETWORK CONFIGURATION #8
THREE RS-485 NODES, ONE MODEM NODE



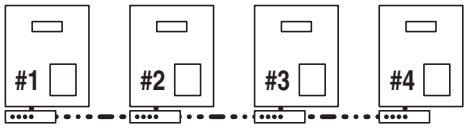
NETWORK CONFIGURATION #9
2X TWO RS-485 NODES, TWO MODEM NODES



NETWORK CONFIGURATION #10
TWO RS-485 NODES, TWO MODEM NODES



NETWORK CONFIGURATION #11
FOUR MODEM NODES



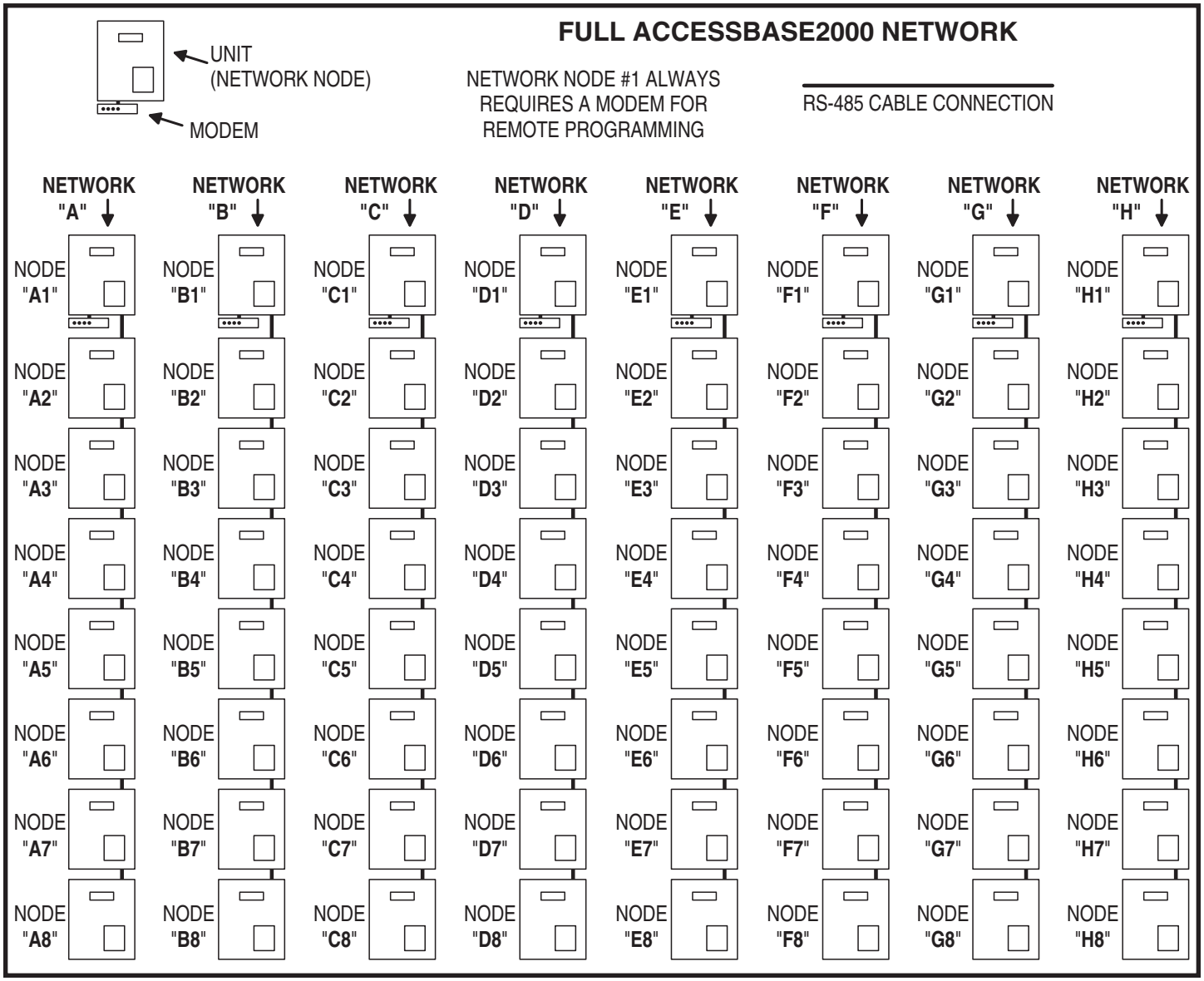
Optional Network Connections (Continued)

Network Configuration for AccessBase2000 Programming

If the system is going to be programmed using Linear's AccessBase2000 software, units communicate with each other on the network through RS-485 cable connections.

AccessBase2000 does not support unit-to-unit network communications through modems, only RS-485 cable. AccessBase2000 does support modem communications from the PC to the eight Node #1 "master" units on an AccessBase2000 network.

Refer to the figure below for design details of a fully implemented AccessBase2000 network. The figure shows eight networks, each with eight nodes, for a total of 64 units.



Optional Network Connections (Continued)

RS-485 Network Wiring

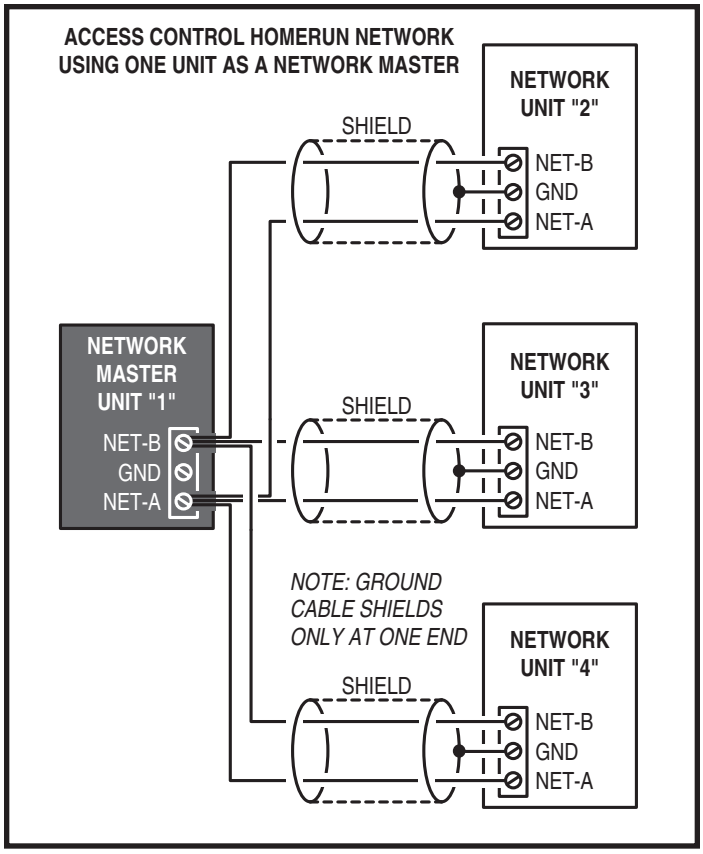
Network wiring conforms to 3-wire RS-485 electrical specifications. Units connected in the network can be wired using one unit as a "hub" or by wiring from one unit to the next in "daisy-chain" fashion. See the figures for wiring options.

- Use Belden 9925 or Carol C0600 shielded cable or equivalent. Maximum wire run distance is 4000 feet.

✦ ***NOTE:*** *Be sure to connect the cable's shield to one of the* **GND** *terminals.*

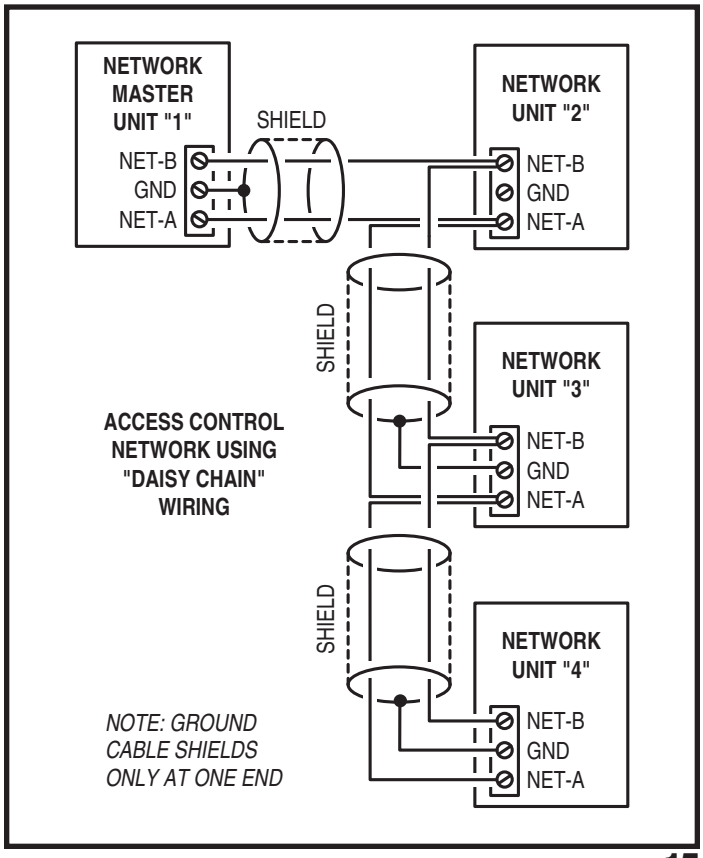
Network Wiring with Hub

1. Mount and install the units for the network.
2. Choose one unit to be the Network Hub. Usually this would be a centrally located or "master" unit.
3. Route 3-conductor shielded cable from the hub unit to one of the other units. Repeat this step to connect the hub unit to each of the other units.
4. Connect the 3-conductor cable to each unit's **NETWORK** terminals.



Network "Daisy-chain" Wiring

1. Mount and install the units for the network.
2. Route 3-conductor shielded cable from one unit to the next unit until there is cabling run to all of the units.
3. Connect the 3-conductor cable to each unit's **NETWORK** terminals.



System Controls

Pushbuttons

Refer to the figure for the location of each of the eight pushbuttons.

- **UP** button adds one to the value on the STATUS/PROGRAM display.
- **DOWN** button subtracts one from value on the STATUS/PROGRAM display. Press with the UP button for one second to enter Programming Mode.
- **ENTER** button accepts the value on the STATUS/PROGRAM display during programming, clears an indication during the supervisory display.
- **RELAY "A" LATCH** press to latch relay "A", press again to unlatch.
- **RELAY "B" LATCH** press to latch relay "B", press again to unlatch.
- **RELAY "C" LATCH** press to latch relay "C", press again to unlatch.
- **RELAY "D" LATCH** press to latch relay "D", press again to unlatch.
- **SYSTEM RESTART BUTTON** will reboot the system's microcontroller. NO SYSTEM INFORMATION WILL BE ERASED.

Display

The STATUS/PROGRAM display will shows the current system conditions and is used for system setup.

Power-up

When power is applied, the display will show the current mode of operation (AXNET "Ax" or AccessBase2000 "Ab") and the version number of the firmware installed. The default mode of operation is AccessBase2000.

Program Mode

Program Mode uses the display and the UP, DOWN, and ENTER pushbuttons. The setting the network node address, operation mode, and clearing the memory can be performed in Program Mode.

Refer to the following steps to change the system settings:

1. To enter Program Mode, press and hold the UP and DOWN pushbuttons together for one second. While in Program Mode, both decimal points on the display are lit.
2. The display shows the current network node number setting.
3. Press the UP or DOWN button to cycle the display through the options that can be selected (see Program Mode Display Table).
4. When the desired option is displayed, press the ENTER button to select the option.

✦ ***NOTE:*** *In network installations, a unique network address (1-8 for AccessBase2000, 1-4 for AXNET) must be set before communicating with network.*

✦ ***NOTE:*** *If using AXNET for programming the system, select the Ax programming option, for AccessBase2000 select Ab.*

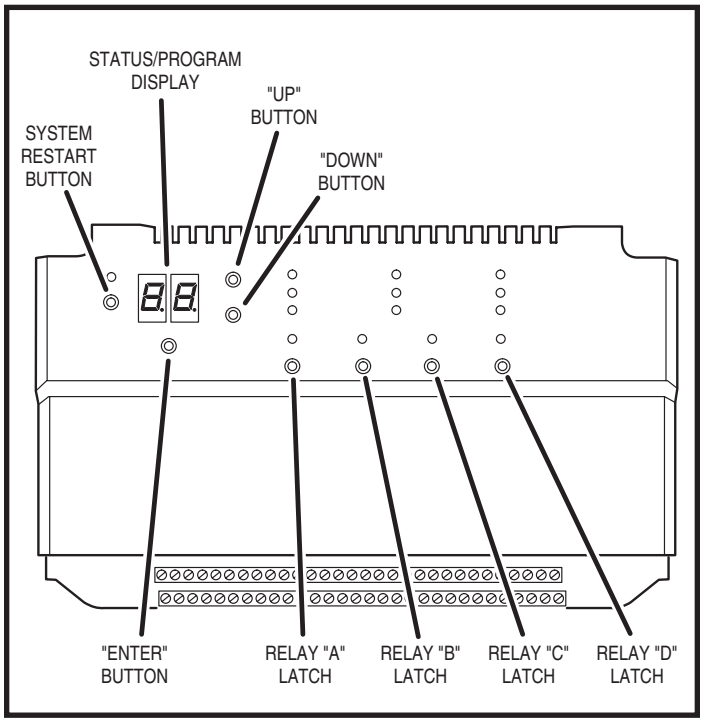
After the option is selected, the system will restart.

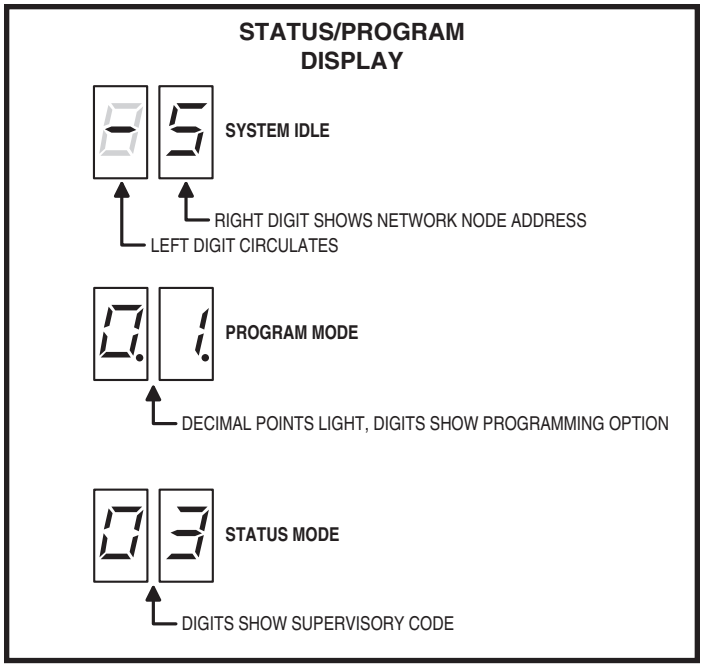
Status Mode

While the system is running, the display will show the current system status. Normally the left digit will show a moving pattern and the right digit will show the unit's Network Node number.

When a supervisory condition exists, the display will cycle to show the condition(s). When an item is displayed, press the ENTER button to clear the display (clears the display only, the condition may still exist). Refer to the following table for the supervisory condition display codes.

STATUS MODE DISPLAY	
DISPLAY	**CONDITION**
01	MGT TRANSMITTER STATUS EXCEPTION
02	MGT TRANSMITTER LOW BATTERY
03	MGT TRANSMITTER TAMPER
04	AC POWER FAIL (BACKUP BATTERY REQUIRED)
05	CHANNEL "A" LOCKED CLOSED
06	CHANNEL "B" LOCKED CLOSED
07	CHANNEL "C" LOCKED CLOSED
08	CHANNEL "D" LOCKED CLOSED
09	MODEM FAILURE





PROGRAM MODE DISPLAY		
AccessBase2000 MODE	**AXNET MODE**	**FUNCTION**
0.1.	0.1.	SET UNIT TO NODE #1
0.2.	0.2.	SET UNIT TO NODE #2
0.3.	0.3.	SET UNIT TO NODE #3
0.4.	0.4.	SET UNIT TO NODE #4
0.5.		SET UNIT TO NODE #5
0.6.		SET UNIT TO NODE #6
0.7.		SET UNIT TO NODE #7
0.8.		SET UNIT TO NODE #8
Ax.	Ab.	SWITCH OPERATION MODE
bL.	bL.	RESERVED (DO NOT USE)
CL.	CL.	CLEAR UNIT'S MEMORY

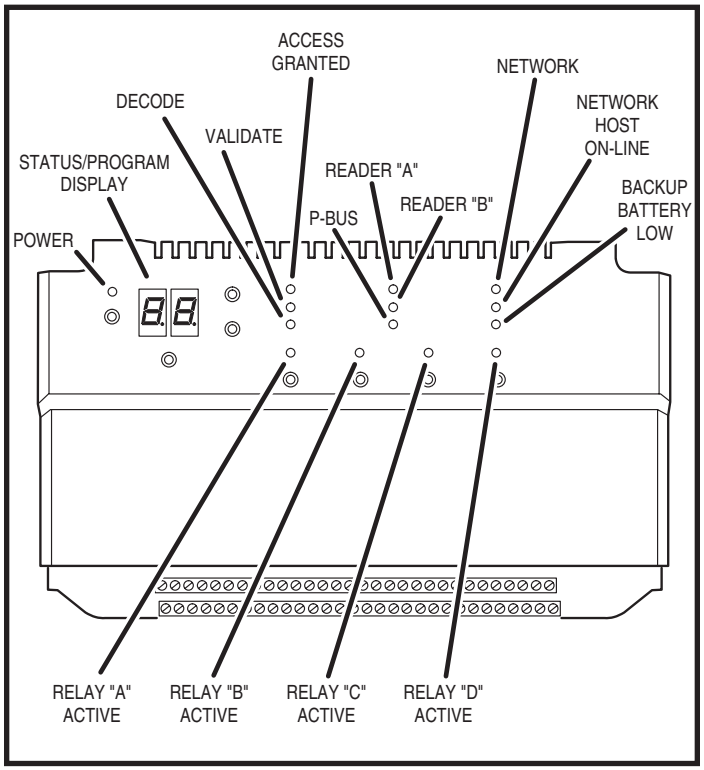
System Diagnostics

Several indicators on the AM3Plus are for monitoring the system during operation. When calling for technical assistance, Linear's Technical Services Department may ask the installer to use these indicators to diagnose the system.

Indicators

15 LED indicators are on the AM3Plus. Refer to the figure for the location of each indicator.

- **POWER** lights when AC or DC power is present.
- **STATUS/PROGRAM DISPLAY** shows supervisory and status conditions, also used for some local programming.
- **DECODE** lights when a credential has been successfully decoded.
- **VALIDATE** lights when a credential is determined to be valid.
- **ACCESS GRANTED** lights when a credential is validated and access is granted.
- **PBUS** blinks when any PBUS device is successively decoded.
- **READER "A"** flashes when Wiegand A device is successively decoded.
- **READER "B"** flashes when Wiegand B device is successively decoded.
- **NETWORK** flashes in response to network traffic.
- **NETWORK HOST ON-LINE** lights when the Host PC is connected to the Master Node.
- **BACKUP BATTERY LOW** lights when backup battery measures low.
- **RELAY "A" ACTIVE** lights when the Channel "A" relay is energized.
- **RELAY "B" ACTIVE** lights when the Channel "B" relay is energized.
- **RELAY "C" ACTIVE** lights when the Channel "C" relay is energized.
- **RELAY "D" ACTIVE** lights when the Channel "D" relay is energized.



Specifications

MECHANICAL

Case dimensions: 11.5" W x 12.5" H x 3.5" D

ELECTRICAL

Voltage: 16-24 Volts AC or 12-24 Volts DC
Current: 850 mA maximum @ 12 Volts DC
Backup Battery: 12 Volt DC
Outputs: Relay Channels A-D
Form "C" 3 Amps @ 30 Volts maximum
Inputs: Four normally closed door sense inputs
Four normally open request-to-exit inputs
Two WIEGAND reader inputs
Two PBUS inputs
Network: Three-wire network

ENVIRONMENTAL

Temperature: -22°F to 149°F (-30°C to 65°C)
Humidity: 5% to 95% non-condensing

Troubleshooting

System completely dead

1. No power from transformer. Check voltage at AM3Plus transformer terminals.

System will not answer an incoming call

1. Automatic telephone answer disabled.
2. AM3Plus telephone line trouble.
3. ACM-1 Modem not installed or not installed correctly (check that all the modem pins are correctly in the modem socket).

Entry code will not activate relay

1. Entry code not set up for proper relay.

Remote PBUS device does not work

1. Check remote device address switch setting.
2. Check remote device for power.

Remote keypad will not activate a relay

1. Entry code is not assigned.
2. Keypad may be in lockout from too many incorrect attempts. Wait one minute for lockout to clear and try again.

Transmitter does not activate relay

1. Transmitter button setting programmed to "no relay" (would effect all transmitters).
2. Transmitter block not enrolled.
3. Specific transmitter is deactivated in the system.

Linear Limited Warranty

This Linear product is warranted against defects in material and workmanship for twenty-four (24) months. This warranty extends only to wholesale customers who buy direct from Linear or through Linear's normal distribution channels. Linear does not warrant this product to consumers. Consumers should inquire from their selling dealer as to the nature of the dealer's warranty, if any. **There are no obligations or liabilities on the part of Linear Corporation for consequential damages arising out of or in connection with use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation, or reinstallation.** All implied warranties, including implied warranties for merchantability and implied warranties for fitness, are valid only until the warranty expires. **This Linear Corporation Warranty is in lieu of all other warranties express or implied.**

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-421-1587 for an RPA# and other important details.

FCC Notice

Changes or modifications not expressly described in this manual or approved by the manufacturer could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

SYSTEM EXTENSION DEVICES

"Missing Link" Wiegand Data System

ML100/MLK100/MLRPT

Single Module ML100

Keypad MLK100

Repeater System MLRPT

WIRELESS WIEGAND

Introducing a new age of flexibility and scalability in design, development, integration and installation of Wiegand-based access control systems.

The "Missing Link" has been designed to eliminate the need for costly structured cabling connecting your system's Wiegand components. "Missing Link" products offer a simple, inexpensive, yet extremely sophisticated solution for implementation of a self-healing wireless network that can handle perimeters and facility footprints covering large areas, with choices of installation to meet any needs, starting from single entry, to 16-channel wireless, to discrete modules, up to an unlimited number of active access points, and single or multiple control receivers – all without signal crashing or interference issues.

Completely wireless, these devices allow for the utmost in flexibility in the initial design, with scalability to meet enterprising project demands.

"Missing Link" just takes minutes to connect. Simply attach any 3-wire Wiegand device (card reader, keypad, biometric, receiver, transceiver, barcode scanner or controller) to the input terminals on the "transmit" unit, and connect any 3-wire Wiegand control device to the output terminals on the "receive" unit, and you will have established a wireless path for your Wiegand signal, regardless of the bitstream protocol. Due to this patent-pending protocol, which automatically adjusts the devices to any version of Wiegand signal, the Missing Link requires no adjustment of any kind to fit the system.

- Eliminates All Structured Cabling
- Long Range yet Ultra-Low Power Consumption
- Available in Point-to-Point, Multi-Channel and Multiplexed
- Immune to Lightning
- Highly Encrypted Communication Technology

CHAMBERLAIN®
LiftMaster®

WIRELESS ACCESS AND COMMUNICATION SYSTEMS

ML100/MLK100/MLRPT

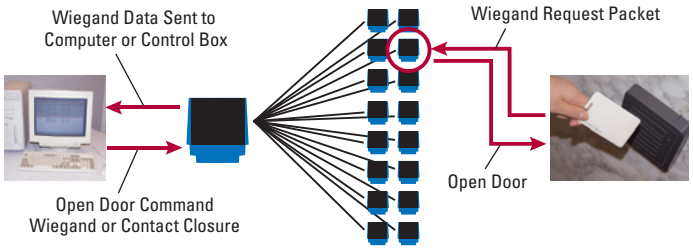
STANDARD SPECIFICATIONS

"Missing Link" opens doors. Simply attach the 2-wire relay output from your control source to the input terminals on the "receive" unit, and attach your 2-wire relay input from your access point (door strike, maglock, door opener, gate operator, barrier gate operator, crash barrier, turnstile or man-trap) to the output terminals on the "transmit" unit, and you will have completed your control loop for a single access point in minutes! An unlimited number of access points can be enrolled into the network, and repeaters can be used to create "self-healing" redundancies that will cover footprints up to 1.5 square miles.

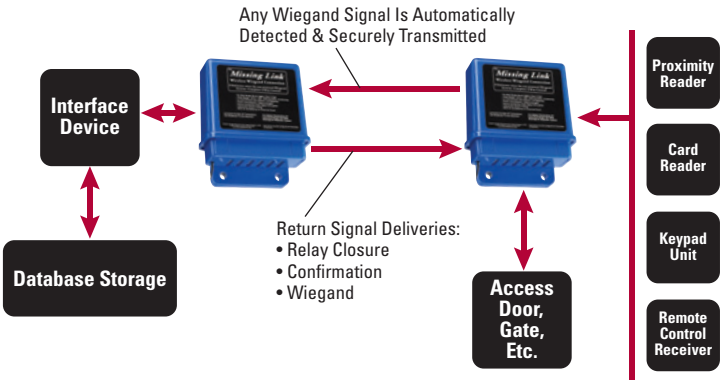
"Missing Link" is also available in this 16-channel configuration, with 16 outputs which wire to the control unit and 16 units to receive "door open" commands from the controller and automatically and wirelessly send such commands to the appropriate entrance.

"Missing Link" is the only product made which automatically determines the protocol and parameters of the inputs, lessening installer error.

MULTIPLEXED, MULTI-ENTRY TO SINGLE UNIT CONFIGURATION



POINT-TO-POINT CONFIGURATION



"MISSING LINK" REPEATER TECHNOLOGY IS OPTIONALLY USED TO:

- Increase Range by up to ½ Mile
- Penetrate Walls and Obstacles
- Generate a "Self-Healing" Network
- Increase Robustness
- Offer Additional Radio Penetration Paths
- Make the System Further Immune to Noise
- Up to 8 Repeaters Can Be Easily Programmed and Installed per Site
- System Covers up to a 2 Square Mile Area Using 8 Repeaters
- Operates on External 8~24V AC or DC or Internal AA Batteries for up to 2 Years; Batteries May Also Be Used As Power Backup
- Repeaters Are Fully Supervised and Report Low Battery Conditions

ADDITIONAL DATA

- **Environmental:** -40 to 176°F (-40 to 80°C), 100% Humidity, Condensing
- **Stability:** 5 PPM in the Stated Temperature Range with Less Than 5 PPM Aging per Year
- **Power:**
  - Repeaters: External 8~24V AC/DC or Internal 4 AA Alkaline or Photo Lithium 1.5V Batteries, 150uA Averaged
  - ML Modules: 10~24V AC/DC or Internal 4 AA Alkaline or Photo Lithium 1.5V Batteries, 100uA Averaged
  - ML-16 Board: 8~24V AC/DC, 30mA Averaged
- **Radio:** Unlicensed 905-930MHz, 125 Channels, Narrowband and Automatic Channel Selection; Fully Digital
- **Security:** Proprietary Digital Security Algorithms with Code Changing 60-Bit Security Protocol

MLK100 KEYPAD SPECS

- Completely Wireless
- No Onboard Relay
- Operates for up to 2 Years on (4) AA Batteries
- UV Hardened ABS Enclosure
- Pedestal or Surface Mount
- Invisible to Lightning
- Backlight on Motion
- Protocol "Cloning"
- Audible Confirmation
- Integrated Transceiver with ½ Mile Range
- Secure Digital Encryption
- Field Adjustable Wiegand Bit Format
- USA Designed and Made

SOLAR FRIENDLY

CHAMBERLAIN® LiftMaster®

THE CHAMBERLAIN GROUP, INC.
845 Larch Avenue • Elmhurst, IL 60126
www.liftmaster.com

Long-Range RFID

Ultra Long Range, Hands-Free Reader

RFID solutions for Vehicle, Asset and Personnel Tracking

The PureRF Ultra Long Range RFID Reader is used for receiving status messages from the PureRF Tags. Range adjustable antennas can be discretely hidden to identify and track Tag activity.

Readers can operate individually for small applications or as a network of Readers for covering wide areas.

The PRF-RDR-101 is an intelligent, small Long Range RFID Reader with an integrated protocol converter. The protocol converter supports various standard interfaces such as 26 bit Wiegand format, serial RS-232, serial RS-485 or LAN protocols, which can be utilized in various solutions.

PRF-RDR-101

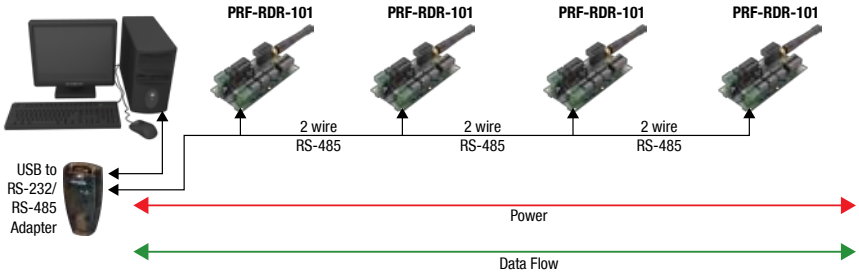
Main Features

- Simultaneous multiple active Tag read capability. Up to 255 serial Readers can be linked via CAT 5 cabling
- Wiegand, Serial or LAN protocols
- Integration with WiFi modules is enabled
- Small, lightweight, with low power draw
- AutoLocate™ Dynamic Tag Tracking
- Three onboard relays configured for Tag read, tamper, and low battery indications
- Adjustable Tag read range .5 to 500 feet (0.15tt to 150m)
- Proprietary algorithm oversees communication between Tags and Readers
- Sensitivity adjustments are programmable via PC
- Both Omni-Directional and Directional antennas are available

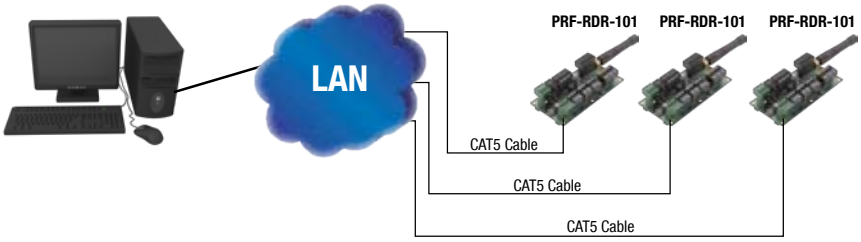
Shown below is a four zone vehicle lot protected by PureRF Reader and Tags.

The read zones show the large areas that can be monitored with a PureRF system. One of the most dynamic features of PureRF products is that Readers do not interfere with other Readers if their zones overlap.

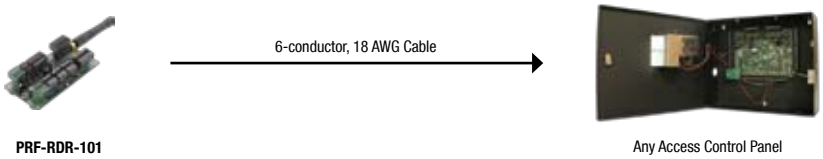
Basic Serial Configuration



Basic Ethernet Configuration



Basic Wiegand Configuration



VUANCE
Validate Your World

Long-Range RFID

Ultra Long Range, Hands-Free Reader

RFID solutions for Vehicle, Asset and Personnel Tracking

Specifications

Rx Frequency
433.92 MHz

Power
11VDV - 16VDC, 500mA

Operational Temperature
-40 °F to +176 °F
(-40 °C to +80 °C)

Storage Temperature
-40 °F to +176 °F
(-40 °C to +80 °C)

Humidity
5% to 90% (non-condensing)

PRF-RDR-101 (OEM - without antenna)

Size	59mm x 108mm x 20mm
Weight	113 grams
Enclosure	Adjustable per application IP54, IP65 and others

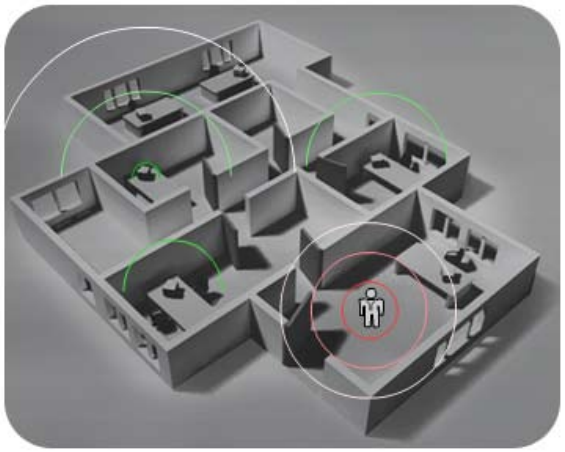
Ethernet Interface Physical

Size	69mm x 44mm x 24mm
Weight	Approximately 25 grams

Certification
FCC

Zone Control RFID Tracking in an Office Environment

PureRF Tags and Reader provide an accurate, real-time and dynamic means to detect, track, control, and monitor assets, vehicles, and personnel. This technology can be applied to operations and processes in all types of industries.



Parts and Ordering Information

PureRF Ultra Long Range Readers	
PRF-RDR-101	Serial (RS-232/RS485) and Wiegand (26 bit) long range Reader and intelligent converter. Includes PC Software for adjustable Reader's parameters such as range (0.5' to 500' / 0.15 to 150m), Reader's name, etc.
PRF-LAN-101	TCP/IP module for LAN communications with the PRF-RDR-101 Reader
PRF-RDR Reader API (and Programming Kit)	
PRF-API	Application Programming Interface with a friendly GUI and Cable Kit for PRF-RDR-101 parameters' settings such as Range Programming
Contact sales to discuss antenna options	

VUANCE
Validate Your World

DS00020

9817 S. 13th Street, Oak Creek, WI 53154 Tel: 1-888-488-2623, Fax: 414-304-5604 www.vuance.com infona@vuance.com

THERMOTEC™ 151 Series - 2500 BTU

Thermoelectric Air Conditioner

- 2500 BTU/HR Cooling
- Supplemental Heating Capability Available
- NEMA 4X (Indoor/Outdoor) Applications
- Vertical or Horizontal (Top) Mounting
- 120 VAC Power (240 VAC & DC Voltages Optional)
- 23-1/2" H x 19-1/2" W Mounting Flange
- Made in USA

Description

EIC's 2500 BTU thermoelectric air conditioning units are designed to cool your electronic and electrical controls, instruments, computer terminals, printers, telecommunications equipment, surveillance devices, cameras, laser and optical equipment and many other electronics in variety of environments. Our thermoelectric cooling systems are designed for use with a wide range of enclosures and transit cases. Models are available for both indoor and outdoor use in AC and DC power configurations. Coolers feature corrosion-resistant powder coated aluminum construction. All are available with a variety of options.

Features

- Extremely reliable solid state construction with long life span
- Maintenance free design with no moving components (other than fans)
- No compressor, refrigerant or filters
- Convenient to install and operate
- NEMA 4X construction (powder coated aluminum) for indoor or outdoor use
- Standard models to 140°F (High ambient models avail.)
- Through-mount or flush-mount installation
- Suitable for vertical or horizontal (top) mounting
- AC or DC power configurations, adjustable thermostat
- Built-in condensate drip pan with fittings and drain tubing (vertical mount)
- Mounting gasket and stainless steel fasteners included
- Complete 12 month warranty

Options

- Supplemental heating capability
- Condensate drip pan with fittings and drain tubing (horizontal mount)
- Extension frame for flush mounting on outside of cabinet
- Rain shroud - vertical or horizontal mount
- Digital temperature controller (remote mount)
- Gray, White, Olive Drab, Desert Tan (and other) colors

EIC SOLUTIONS

EIC Solutions, Inc.
700 Veterans Way, Suite 200
Warminster, PA 18974 USA

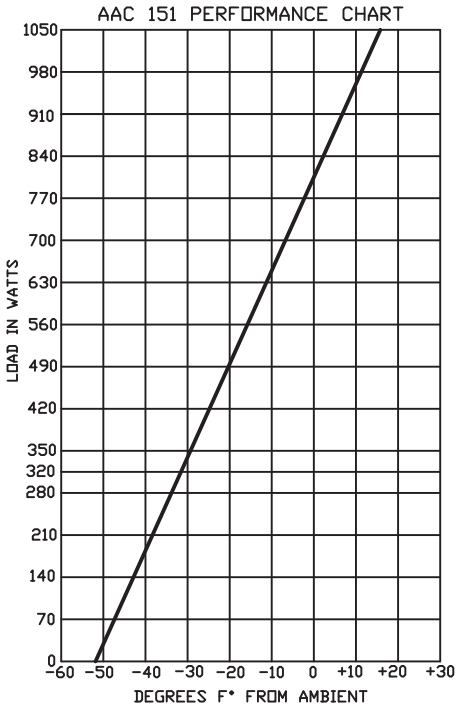
Toll Free: 1-800-497-4524 • Fax: 1-800-726-7592
Phone: 215-443-5190 • Fax: 215-443-9564
www.eicsolutions.com • info@eicsolutions.com

ThermoTEC™ 151 Series - 2500 BTU Thermoelectric Air Conditioner

Specifications

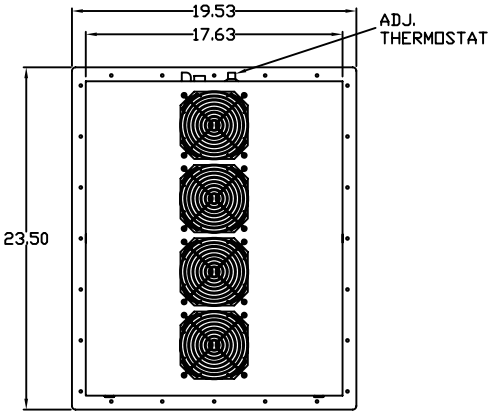
Capacity	2500 BTU/HR
Type	Through-mount (flush-mount optional)
Rating	NEMA 4X
Construction	Stainless steel (covers and mounting flange)
Size	21-5/8"H x 17-5/8"W x 8 3/8"D body 23-1/2"H x 19 1/2"W flange
Operating Range	Up to 140 degrees F (high ambient models available)
Temperature Control	Adjustable thermostat
Power	120 VAC, 50/60 Hz @ 9.5 AMPS 240 VAC, 50/60 Hz @ 4.6 AMPS optional DC voltages optional
Features	Integral power supply and circuit breaker
Includes	Mounting hardware, gasket and manual
Weight	78 lbs
Warranty	One year

Thermal Performance

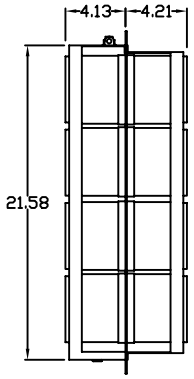


Based on ambient temp of 120° F

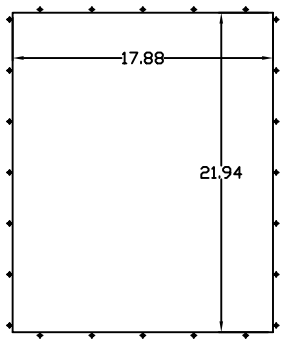
Drawings



COLD SIDE VIEW
(INTERIOR)



RIGHT SIDE VIEW



ENCLOSURE CUTOUT

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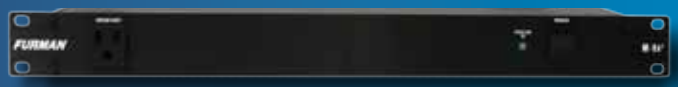
PRODUCTS AND ACCESSORIES FOR ADDITIONAL APPLICATIONS

M-8x²

Rack Mountable Protection for Equipment Racks

15A POWER CONDITIONER

• 15 amp, 9 power outlets (8 switched outlets on back, 1 front panel convenience outlet).• Surge Protection. • Noise Filtration. • Protection OK indicator LED. • Wall wart spacing between outlets. • 6 ft. 14 AWG power cord.



D10-PFP

Rack Mountable Protection for Equipment Racks

CIRCUIT-BREAKER PROTECTED POWER DISTRIBUTOR

• 15 amp, 10 power outlets on rear panel. • Heavy duty 6 ft., 14 AWG power cord.
• Circuit-breaker protected. • Wall-wart spacing between outlets.

MIP-15LT / MIP-20LT

Digital Equipment - High Speed Multi-functional Copiers

HIGH END NOISE FILTRATION & PROTECTION

• 15 / 20 amp, 2 always on power outlets.
• Patented Automatic Voltage Monitoring (AVM) Circuitry for under & over voltage shutoff & auto reset.
• Two - 2 wire Signal Perfect Tel connectors.
• Two LAN connectors RJ 45.
• 8 ft. power cord.

GNL2415 / GNL2420

220 Volt - In-Line Products Specifically Designed to Protect 208-240V High-Speed Copiers and Office Machines

MAX® IN-LINE 15 / 20 AMP STRAIGHT BLADE

• Designed for 208-240v single or split phase.
• Panamax Signal Line Module compatible.

GEC1410

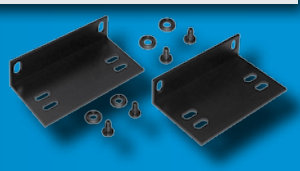
EXTENSION CORD

• Length 10 ft.
•14 AWGX3C.

GRM2204

RACK MOUNT KIT - DOUBLE

• Use to mount M5100-PM in standard 19" rack.



121-2590

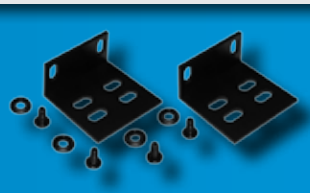
MAX® FLAT PLUG

• Right angle, low profile will not interfere with the backs of furniture or wall mounted displays.
• Heavy duty molded design.
• Length: 24 in.

GRM2205

RACK MOUNT KIT - SINGLE

• Use to mount M4300-PM in standard 19" rack.



SEP-200

For Major Appliances

SURGE PROTECTIVE DEVICE (SPD)
Residential & Light Commercial Use

• For use before or after the main disconnect for optimum lightning protection.
• Rated for split/single phase panels up to 400 Amps.
• Meets ANSI C62.41 Requirements.
• 700V L-N / 800V N-G Voltage Protection Rating, UL 1449 3rd Edition
• Install Indoors or Outside

PLUGLOCK-PFP

Secure Solution to the "Wall Wart" Problem

• Outlet spacing for bulky transformers.
• Clamps securely lock wall warts in place (regular plugs as well).
• Mounts safely out of sight in rear of rack.
• 5 ft, 14 AWG power cord.
• Circuit-breaker protected.
• Rated 15 Amps.

Please visit www.panamax.com or www.furmansound.com for more information on the products and accessories for additional applications.