



# IMPROX AC

## ImproX (AC) Advanced Controller INSTALLATION MANUAL

### SPECIFICATIONS

#### Working Environment

XAC900-1-0-GB-XX .....	The IP rating for the Controller Motherboard assembly is equivalent to the selected Cabinets rating.
XAC904-1-0-GB-XX .....	Designed to work in an indoor (dry) environment similar to IP30. The Controller is, therefore, NOT sealed against water.

**Input Voltage** ..... 10 V DC to 30 V DC.

#### Power Requirements

	<b>Current (mA)</b>	<b>Power (W)</b>
Supply Voltage 10 V DC		
Indicators all ON.....	81	0.81
Supply Voltage 30 V DC		
Indicators all ON.....	31	0.93

#### Memory

RAM (Non-volatile).....	2 MBytes standard, 8 MBytes maximum.
Flash ROM .....	128 KBytes.
Battery Backup (for RAM)	
Battery Type .....	1 x 3 V, CR2032, Lithium cell Battery.
Battery Life .....	5 Years (with power OFF).

#### Installer Interfaces

LCD Display Cover (Optional Extra)	
Characters .....	16 Characters by 4 lines.
Character Sets.....	English, Katakana.
Contrast.....	Preset.
Back-lighting .....	Turned on and off via the Communications Protocol.

#### LED Indicators

Power-on Indicator .....	Red LED (internally visible).
Incoming RS485 Data ....	Flashing Green LED (internally visible).
Outgoing RS485 Data ....	Flashing Red LED (internally visible).

# INSTALLATION INFORMATION

## Accessories

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Find the following when unpacking the XAC900-1-0-GB-XX (Motherboard ONLY):

- An ImproX AC Controller Motherboard assembly, fitted with two Memory Modules.
- A 3 V, CR2032, Lithium cell Battery.

Find the following when unpacking the XAC904-1-0-GB-XX:

- An ImproX AC Controller, fitted with two Memory Modules. The ImproX AC is supplied housed in a Black, powder coated, Aluminium extruded Cabinet. The Cabinet will consist of a Top Cover and a Base sealed at each end with a Mild Steel End Plate, secured with 5 Thread Cutter Screws (M3 x 8 mm).
- A 3 V, CR2032, Lithium cell Battery.
- Four Wood Screws (3.5 mm x 25 mm).
- Four Wall Plugs (7 mm).
- An extra Fixed Address Label.

## General

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Remember the following when installing your ImproX AC Controller:

**CAUTION: DO NOT connect Power Supply cables to Port 1 and Port 2 terminals, as this will cause serious damage to the Controller.**

## Communications Distance

The RS485 communications distance between the ImproX AC Controller and the LAST ImproX Unit in a cable run, MUST NOT exceed 1 km (1 090 yd). Achieve this by using good quality screened twisted 2-pair, twisted pair cable, EARTHED on one side.

## Termination Resistors for RS485 Bus Communications

Long transmission lines or multiple “star” connections, may cause communication problems. Placing the Terminating Resistor Jumper Link in the LAST UNIT AT THE END OF THE CABLE RUN should solve the problem (depending on the bus).

## EARTH Connection

Connect the ImproX AC Controller to a good EARTH point. Using either of the RS485 Ports, connect the EARTH Lead to the “ETH” Terminal. Mains EARTH can be used, but electrical noise may exist. The EARTH Lead to the ImproX AC Controller should have a minimum cross-sectional area of 1 mm<sup>2</sup> (0.001 in<sup>2</sup>) and can be either solid or stranded.

## FCC Compliance

For FCC compliance:

- Ensure the comms cable is routed through a separate grommet to the power cable.
- Ensure that you use a CE approved Power Supply Unit.

## Installing the Battery

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### First Time Use

**CAUTION:** Insert the Battery into the Battery Holder BEFORE powering up the ImproX AC Controller.

The Battery Holder is located in the top left-hand side of the ImproX AC Controllers Printed Circuit Board (PCB), directly below the LCD Ribbon Cable Connector.

1. Remove the Controllers Top Cover.
2. Slide the supplied 3 V, CR2032, Lithium cell Battery under the metal clip of the Battery Holder, with the "+" Terminal facing UP.
3. Pull the plastic clip horizontally AWAY from the Battery Holder and press the Battery firmly into the Battery Holder.
4. Attach the Controllers Top Cover.

### Replacement

**CAUTION:** DO NOT disconnect Power from the ImproX AC Controller during this operation. Disconnecting the Power could result in the RAM losing data.

1. With the Controller powered up, remove the Top Cover. DO NOT disconnect the Ribbon Cable Connector.
2. Remove the Battery from the Battery Holder, by pulling the plastic retaining clip horizontally AWAY from the Battery Holder. The Battery Holder is spring-loaded, and will raise the Battery out of the Holder.
3. Slide the new 3 V, CR2032, Lithium cell Battery under the metal clip of the Battery Holder, with the "+" Terminal facing UP.
4. Pull the plastic clip horizontally AWAY from the Battery Holder and press the Battery firmly into the Battery Holder.
5. Attach the Controllers Top Cover.

### Installing Extra Memory Modules (Optional Extra)

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Add additional Memory Modules for applications where additional memory is required:

**CAUTION:** It is very important that the Memory Modules are inserted correctly. Pin 1 as indicated on the Memory Module must correspond with Pin 1 on the ImproX AC Controller.

1. Remove the power from the ImproX AC Controller.
2. Remove the Controllers Top Cover and the LCD Display Cover (if installed).
3. Carefully insert the Memory Modules into the positions JP3 to JP8 as indicated on the ImproX AC Controller.
4. Re-attach the Controllers Top Cover and if necessary the LCD Display Cover and re-apply power to the Controller.
5. On power-up a diagnostic test will run on the inserted Memory Modules added to the system. The diagnostic test will display on the LCD Display Cover (if installed).

## **Mounting the LCD Display (Optional Extra)**

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1. Remove the power from the ImproX AC Controller.
2. Remove the Controllers Top Cover.
3. Insert the Ribbon Cable Connector from the LCD Display Cover into the Box Header labelled LCD1 on the ImproX AC Controller.
4. Place the LCD Display Cover over the ImproX AC Controller so that the mounting holes in the Cover align with the securing holes on the Controllers Base.
5. Secure the LCD Display Cover to the standoffs using the supplied screws, washers and nuts (supplied with XAC903-0-0-GB-XX).
6. Re-attach the Controllers Top Cover.
7. Re-apply power to the Controller.

## **Mounting the Controller**

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**CAUTION: Make certain that you mount the Controller on a vibration-free surface.**

Select the mounting position of the ImproX AC Controller, considering accessibility and routing of wires.

Secure the Controller to the mounting surface, using four suitable screws and wall plugs (supplied), nuts and bolts or rivets.

Blank Space

# ELECTRICAL CONNECTIONS

## Connecting the ImproX AC Controller

Figure 1 shows the positions of various components in the ImproX AC.

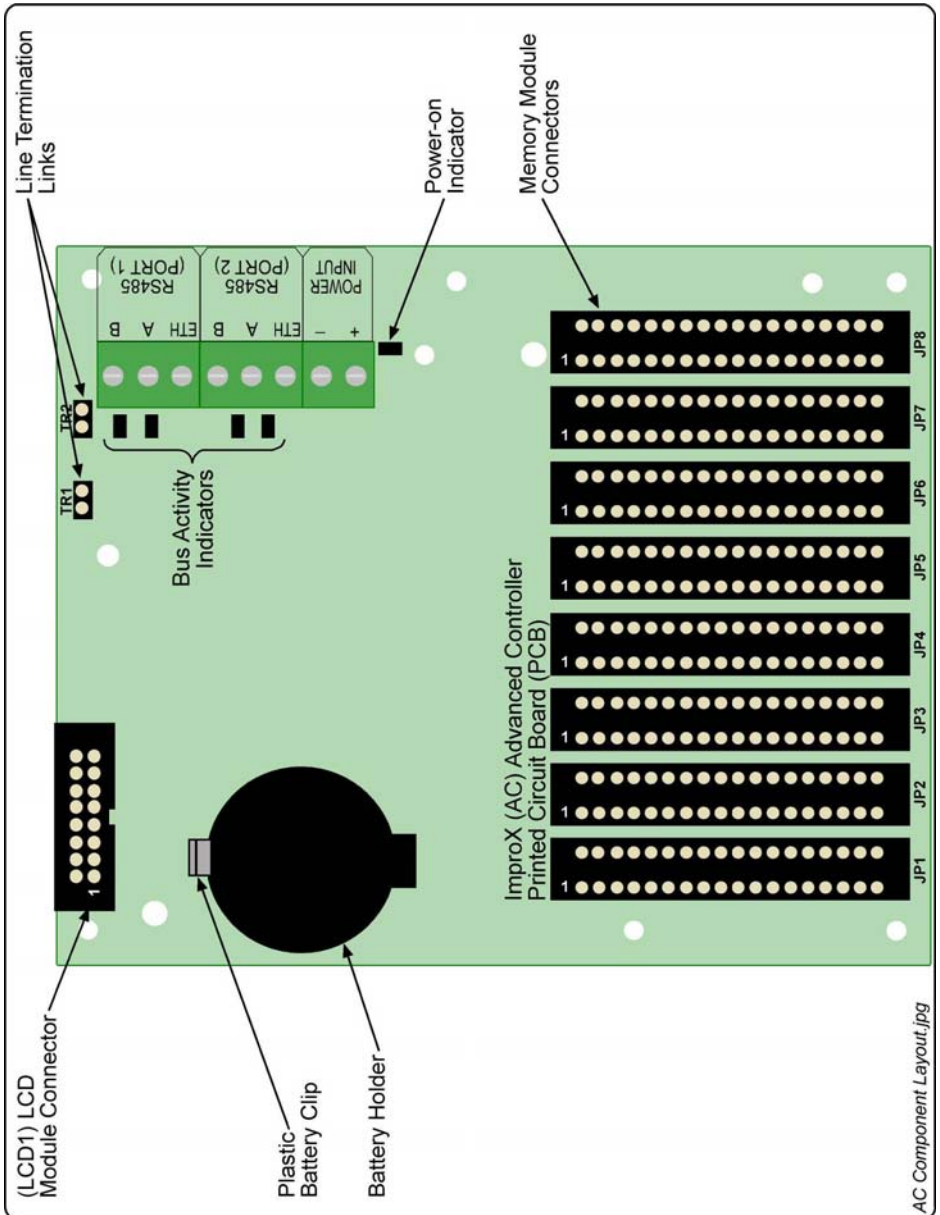
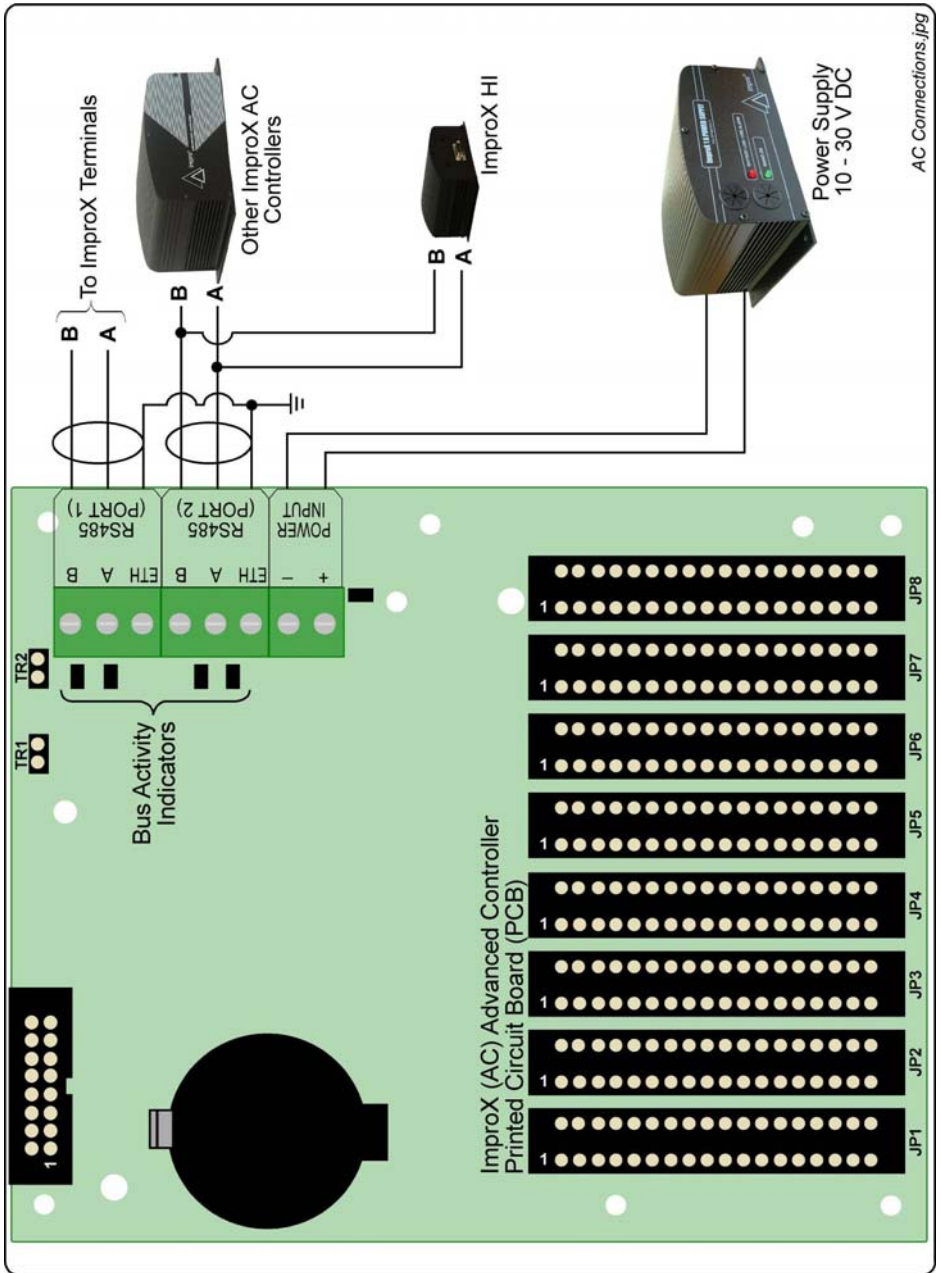


Figure 1: ImproX AC Component Layout Diagram

Figure 2 shows various connection options for the ImproX AC Controller.



**Figure 2: Typical ImproX AC Electrical Connections**

## Power-on Self-test

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The Power-on Self-test tests the RAM, Flash-ROM checksums and RTC.

The results of the Self-test are made available as diagnostic information via the protocol to the associated Controller or PC.




If any parameter in the Self-test fails, the Controller displays the fault on the LCD Display Cover (if installed).




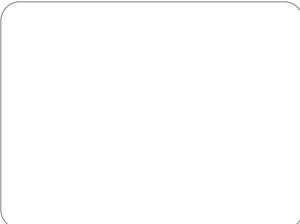
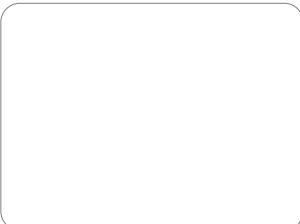
## Fixed Address Label

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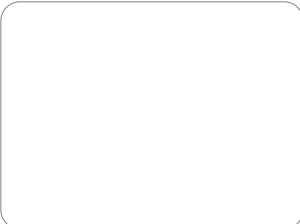
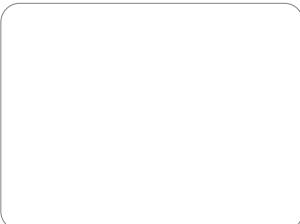
Once the ImproX AC Controller is installed attach the additional loose Fixed Address Label (packaged with the Controller) in position on the Unit Location Chart. When the system installation is complete and all the units are represented on the Unit Location Chart by their Fixed Address Labels, file the document for future reference.

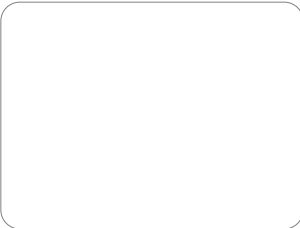
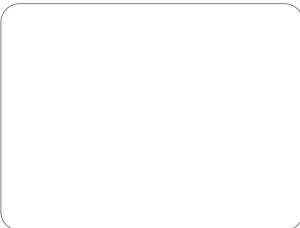
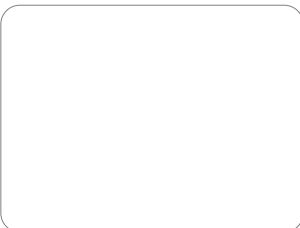
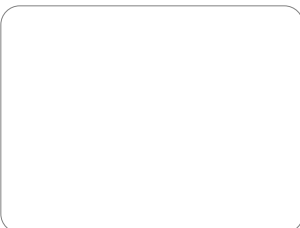
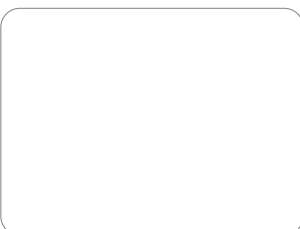
## Unit Location Chart

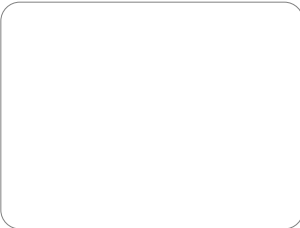
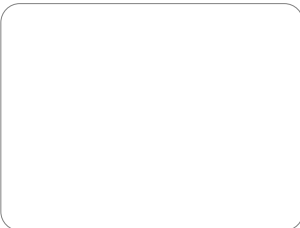
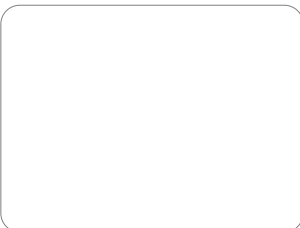
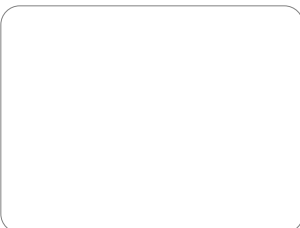
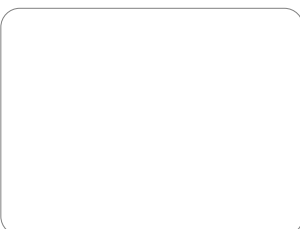
Fixed Address Label	Unique Location Description
	
	
	

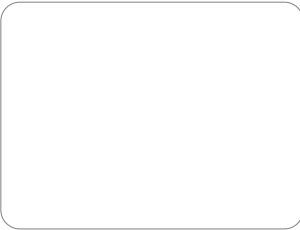
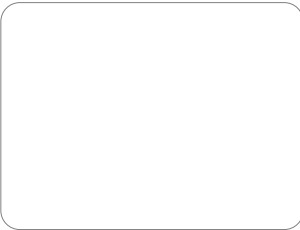


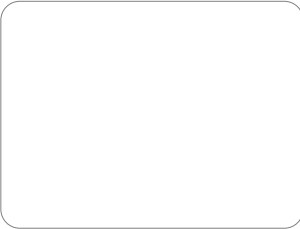
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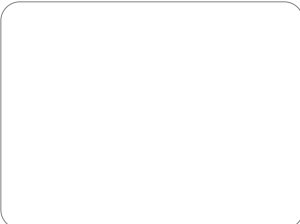
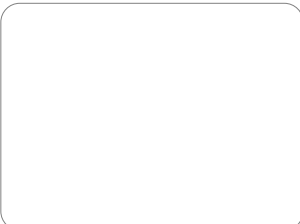





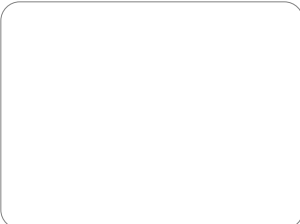
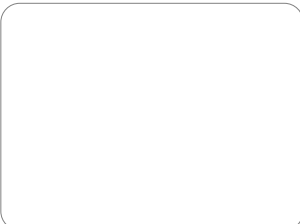
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Fixed Address Label	Unique Location Description
	
	
	
	
	

Fixed Address Label	Unique Location Description
	
	

**Table 1: Unit Location Chart**

## **GUARANTEE OR WARRANTY**

This product conforms to our Guarantee or Warranty details placed on our Web Site, to read further please go to [www.impro.net](http://www.impro.net).

## **USER NOTES**



This manual is applicable to the ImproX (AC) Advanced Controller, XAC900-1-0-GB-01 and XAC904-1-0-GB-01. (The last two digits of the Impro stock code indicate the issue status of the product).

XAC300-0-0-GB-04

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