

R Y T E C

# Jazz PLC Powerhouse XL Dual Drive Door

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## Operating Instructions



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## INTRODUCTION

The Rytec Corporation is using the Unitronics Jazz PLC to control the dual motors of the Powerhouse XL door. This guide will help explain the PLC functionality and programming capabilities.

**DO NOT INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS DRIVE AND CONTROL SYSTEM UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS IN THIS MANUAL.**

If you have any questions, contact your Rytec representative or call the Rytec Technical Support Department at 800-628-1909. Always refer to the serial number of the door that your control system is connected to when calling the representative or Technical Support. Refer to the installation manual or the owner's manual provided with your door for the location of the serial number plate.

The wiring connections and schematics in this manual are for general information purposes only. A wiring schematic is provided with each individual door, specifically covering the control panel and electrical components of that door. That schematic was shipped inside the cardboard box containing the control panel.

## HOW TO USE MANUAL

Throughout this manual, the following key words are used to alert the reader of potentially hazardous situations, or situations where additional information to successfully perform the procedure is presented:

### **WARNING**

**WARNING is used to indicate the potential for personal injury, if the procedure is not performed as described.**

### **CAUTION**

**CAUTION is used to indicate the potential for damage to the product or property damage, if the procedure is not followed as described.**

**IMPORTANT: IMPORTANT is used to relay information CRITICAL to the successful completion of the procedure.**

**NOTE: NOTE is used to provide additional information to aid in the performance of the procedure or operation of the door, but not necessarily safety related.**

## GENERAL OVERVIEW

The PLC uses input signals from the limit switches to indicate to the controller what position the door is in. When an activation input is sent the controller uses an output to energize either the open or close contactor to move the door, depending which direction the door is traveling, the corresponding limit switch will send an input signal to tell the door to stop when the limit switch is activated. The photo eye input is set up to reverse the door during closing. The PLC allows for programming additional (unused) inputs and outputs if required.

## WIRING CONSIDERATIONS

### **WARNING**

**The disconnect must be in the “OFF” position and properly locked and tagged before making electrical connections to the control panel or PLC.**

1. All examples and diagrams shown in this manual are intended to aid understanding. They DO NOT guarantee operation.
2. Only qualified service personnel should carry out installation or repairs.
3. Before using this control, check all documentation, such as the product's installation and owner's manuals for safety guidelines and other relevant information.
4. A technician or engineer trained in the local and national electrical codes should perform all tasks associated with the electrical wiring of the controller.
5. **DO NOT** lay input/output cables near high voltage power cables.
6. Allow for voltage drop and noise interference with input/output lines used over an extended distance. Use wire that is properly sized for the current load.
7. **Double-check** all wiring before turning on the power supply.

### **Onboard I/O's**

The controller offers an on-board I/O configuration. The configuration may contain analog and/or digital I/O's.

I/O connection points are provided by external connectors at the top and bottom of the controller. The connectors plug in, enabling quick, easy removal. They provide screw-type connection points for the power source, inputs, and outputs. The connection points are clearly labeled on the controller itself. The top connector generally provides connections for the power supply, analog and/or digital inputs.

## PROGRAMMING OR ACCESSING THE PLC—ENTERING THE PROGRAMMING

The bottom connector generally provides analog and/or digital output connection points.

### Connecting I/O's

1. Strip the wire to a length of 7mm (.250—.300 in.).
2. Unscrew the terminal to its widest position before inserting a wire.
3. Insert the wire completely into the terminal to ensure a proper connection.
4. Tighten enough to keep the wire from pulling free.

### Wire Size and specifications

- Wire the inputs and outputs using 26-14 AWG wire.

## PROGRAMMING OR ACCESSING THE PLC ENTERING THE PROGRAMMING

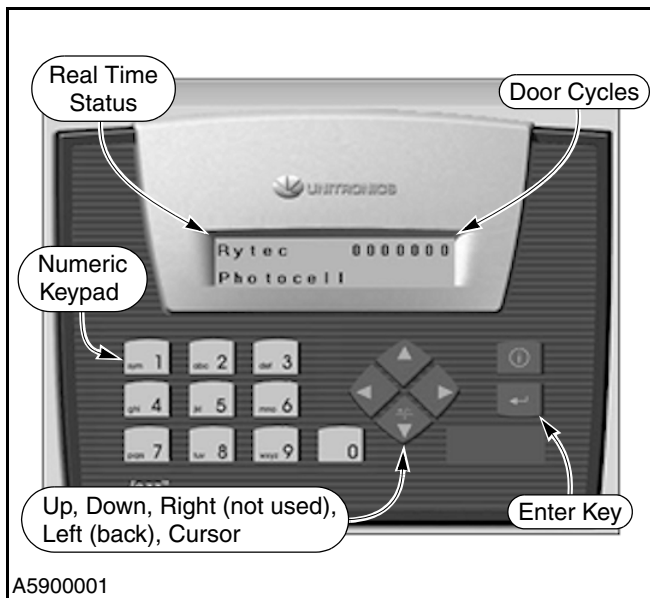


Figure 1

1. Push the enter key.
2. The display should read:

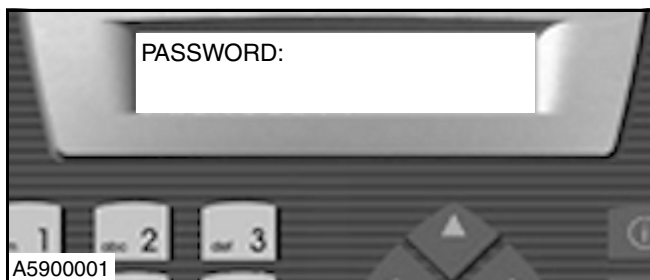


Figure 2

3. Enter code 514 and press the enter key.

4. The display will read for 2 seconds:

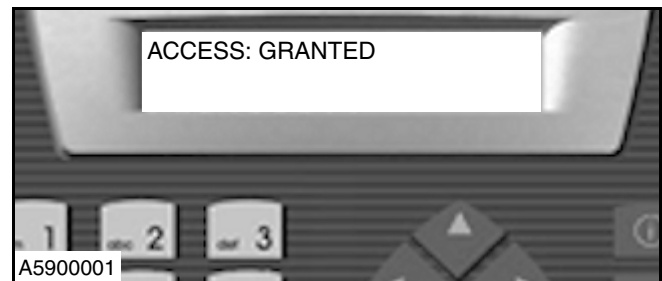


Figure 3

5. The display will now read:

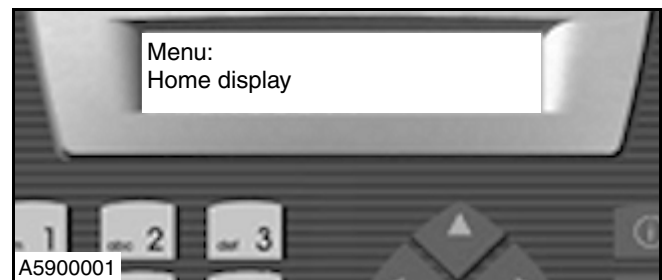


Figure 4

- a. Under the home display there are four available sub programs:
  - Status I/O
  - Timers
  - Door Function 1—4
  - Output Relay
- b. Scroll using the up or down arrow to view the different menus.
- c. The left arrow will take you back to the home display.

For example:

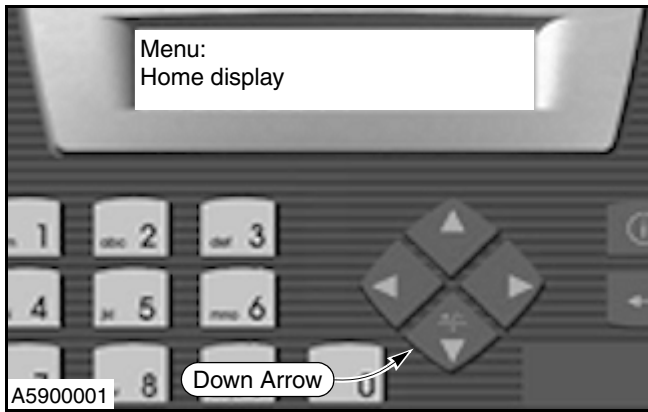


Figure 5

6. Push the down arrow.
7. The display now reads:

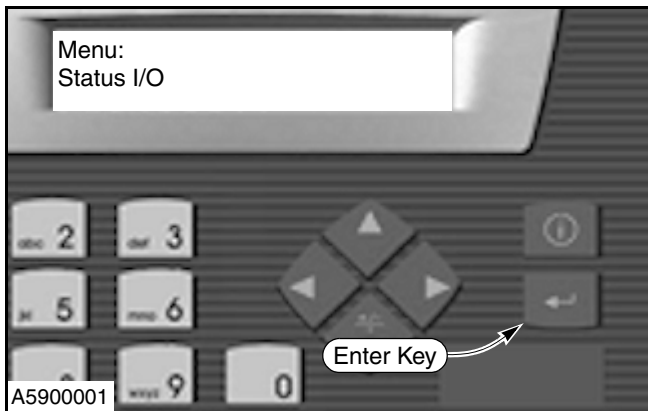


Figure 6

8. Push the enter key.
9. This display box appears:

*NOTE: The X represents the Input 1 status (0=open, NO) (1=closed, NC). I/O1: X Input 1, O00: X output 0 status.*

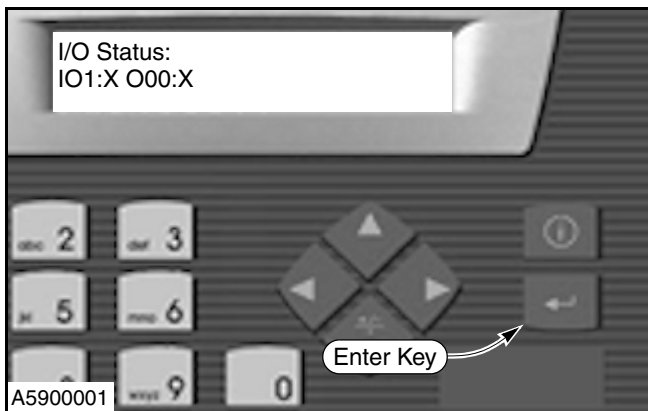


Figure 7

10. The right and left arrows allow you to navigate through the different I/O status up to 15.

*NOTE: Only Inputs 1-15 are used. Menu status only showing the current condition of the input or output, actual programming for the input or output performed under Menu: Door function (Inputs) or Menu: Output relay. See later in this manual.*

**SETTING TIMERS**

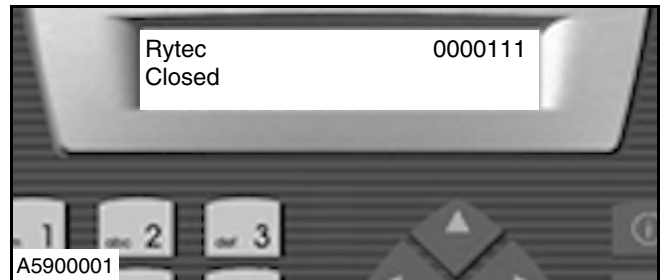


Figure 1

1. Push the enter key.
2. The display should read:

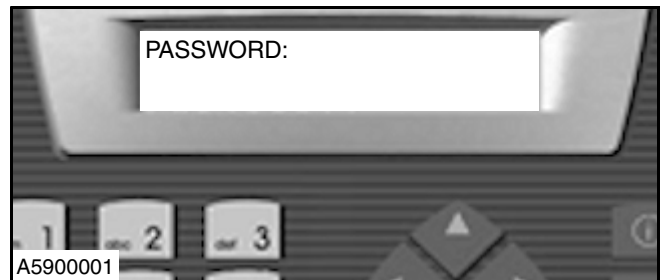


Figure 2

3. Enter code 514 and press the enter key.
4. The display will read for 2 seconds:

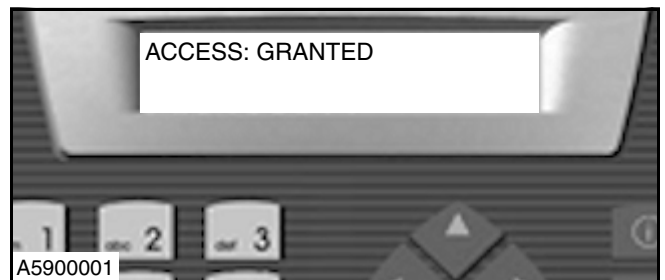


Figure 3

## PROGRAMMING OR ACCESSING THE PLC—SETTING TIMERS

5. The display will now read:

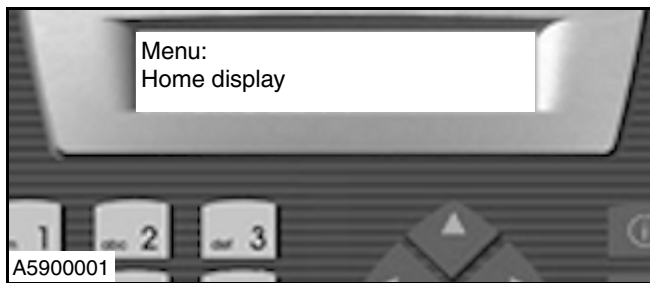


Figure 4

6. Press the down arrow until you reach.



Figure 5

7. Press the enter key.

8. The display will read:

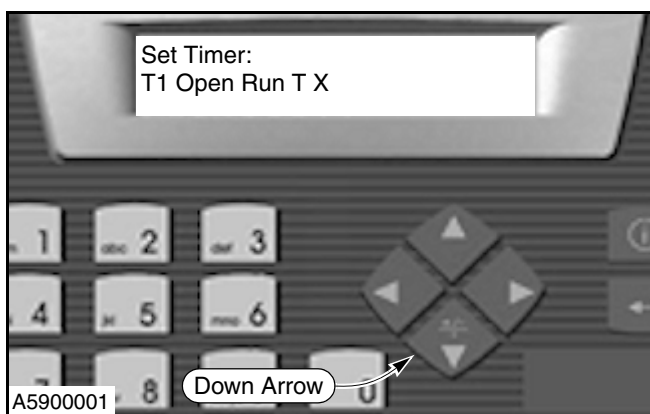


Figure 6

9. Press the enter key.

10. The display will read:

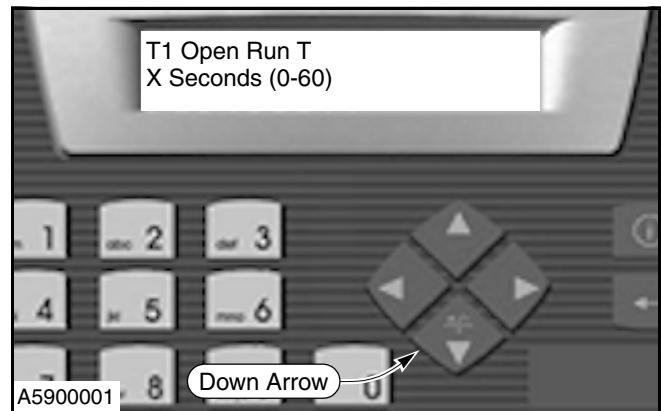


Figure 7

**IMPORTANT:** The open run timer is a backup timer for the opening, timer should be set, and any time it takes the door to open plus 2 additional seconds. "X" represents the second value you would like the timer set.

- There are six timers:

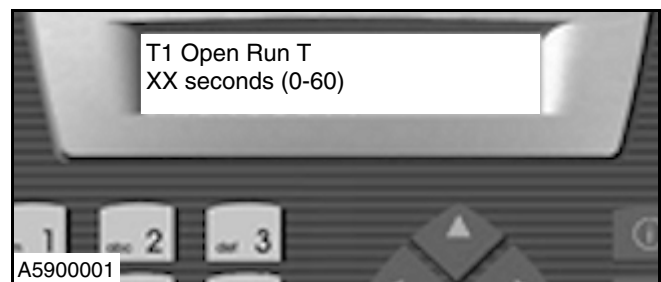


Figure 8

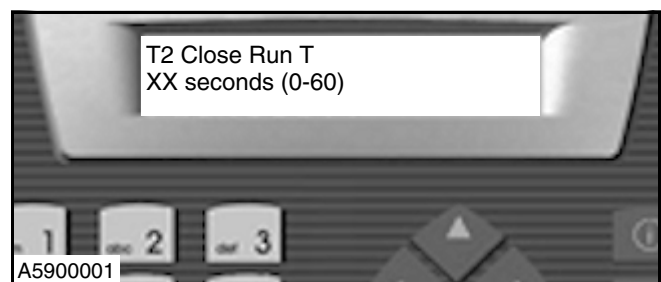


Figure 9



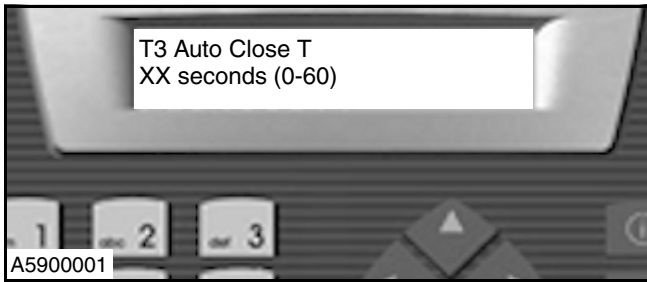


Figure 10

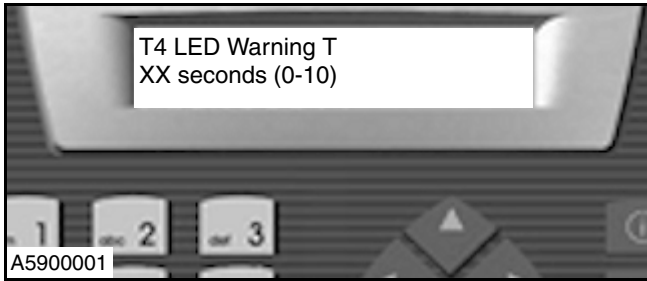


Figure 11

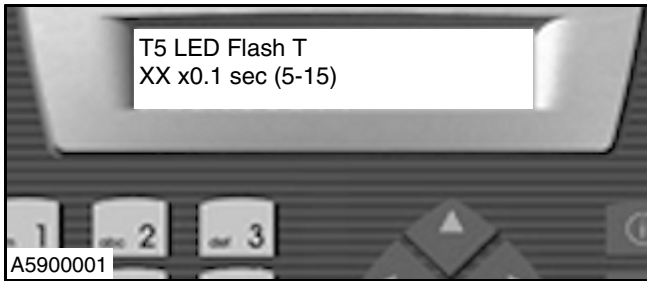


Figure 12

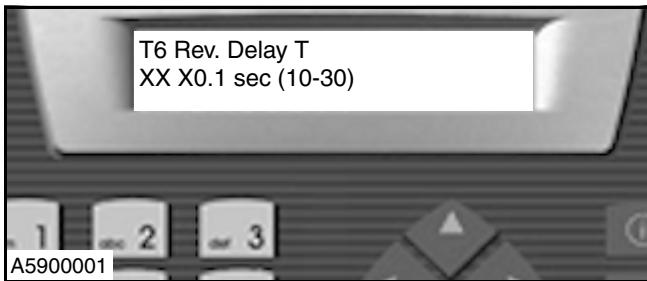


Figure 13

**NOTE:** T6 Rev. delay default 2 seconds.

*Use the up or down arrows to navigate the timer you would like to adjust. When you've reached the timer you would like to adjust press the enter button. The value in the bottom left will flash with the cursor. Enter the value you'd like and press enter. Number stops flashing and new value is set. Push the left arrow twice to exit the program mode.*

## DOOR FUNCTION

Set the function of inputs 13 (open) and 14 (close) option to run door with timer or without.

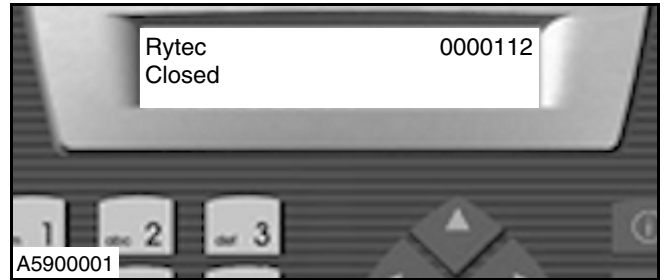


Figure 1

1. Push the enter key.
2. The display should read:

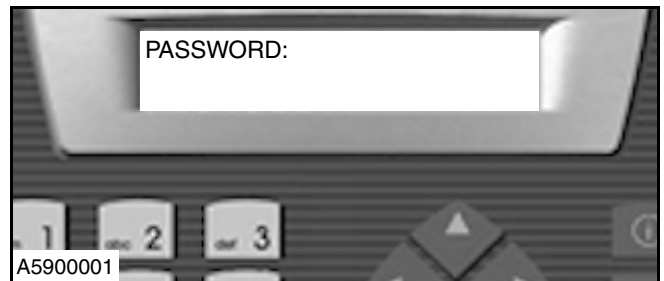


Figure 2

3. Enter code 514 and press the enter key.
4. The display will read, for 2 seconds:

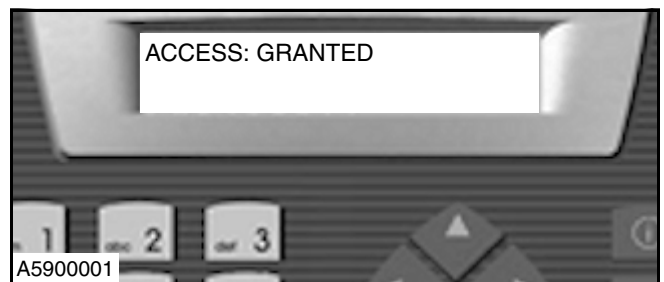


Figure 3

5. The display will now read:

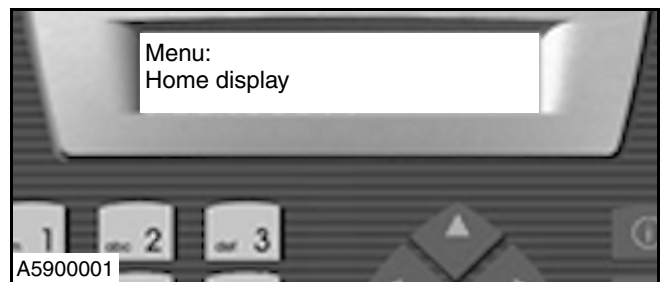


Figure 4

## PROGRAMMING OR ACCESSING THE PLC—OUTPUT RELAY

6. Press the down arrow until you reach.

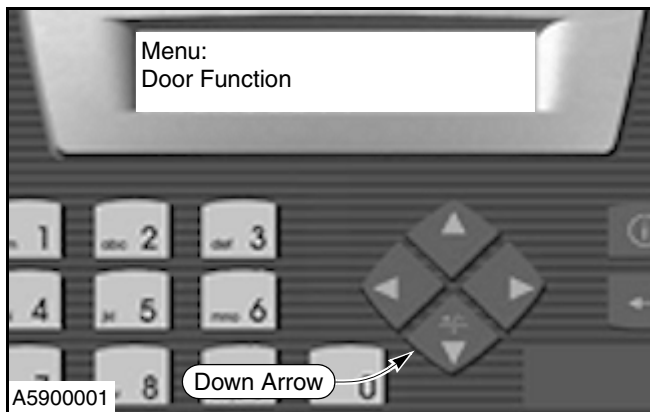


Figure 5

7. Press the enter key.

*NOTE: Under the door function there are four available options:*

- 0: Hold Open/Close** - This requires constant pressure on the open or close button to operate door.
- 1: Impulse Open/Hold Close** - Requires momentary contact to open, constant pressure to close.
- 2: Impulse Open/Close** - Requires momentary contact to open, momentary contact to close.
- 3: Impulse Open/Timer Close** - Requires momentary contact to open, timer to close.

### OUTPUT RELAY

Powerhouse XL control has a CR1 relay available to monitor door or warning device, e.g. horn and lights.

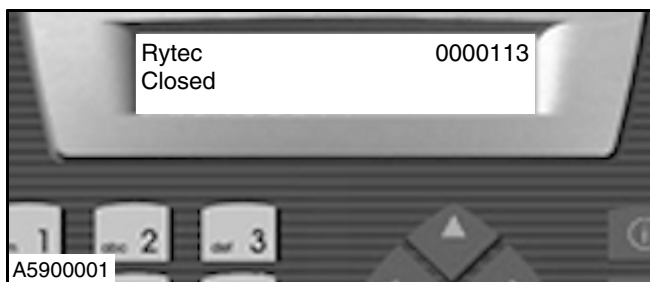


Figure 1

1. Push the enter key.
2. The display should read:

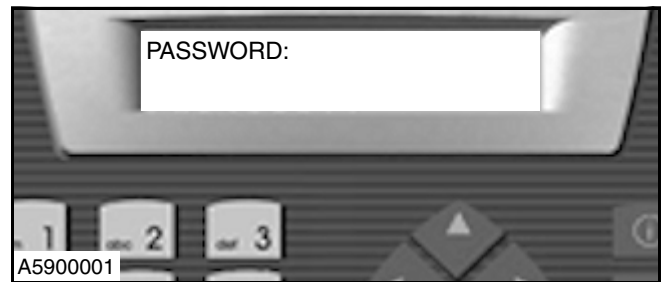


Figure 2

3. Enter code 514 and press the enter key.
4. The display will read for 2 seconds:

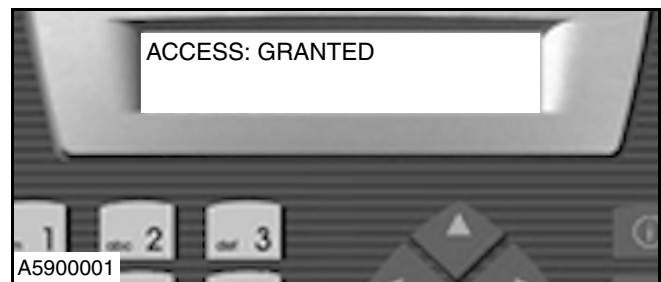


Figure 3

5. The display will now read:

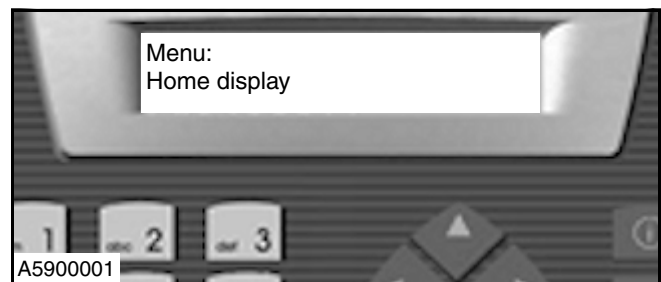


Figure 4

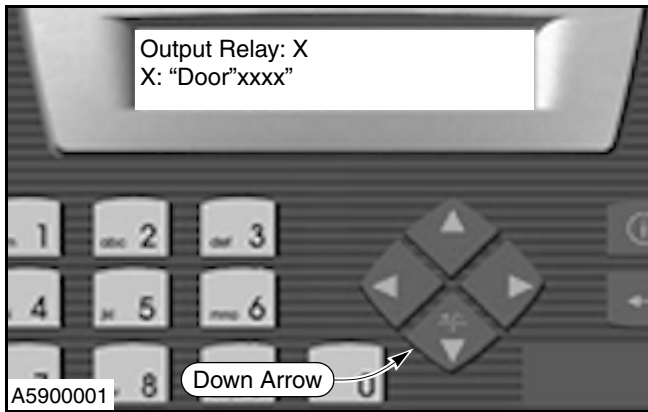
6. Press the down arrow until you reach.



Figure 5

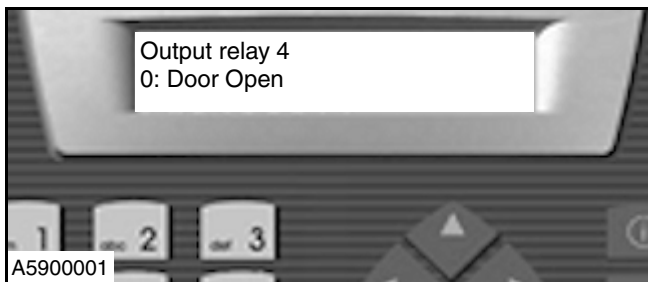
7. Press the enter key.

8. The display will read:

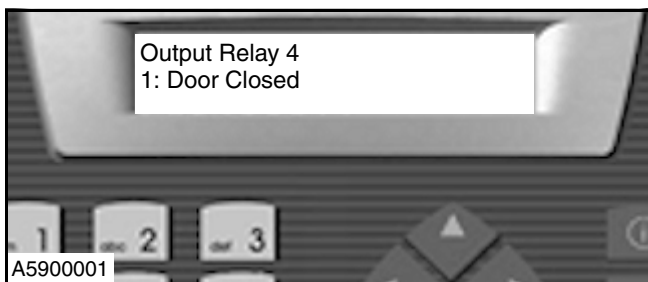


**Figure 6**

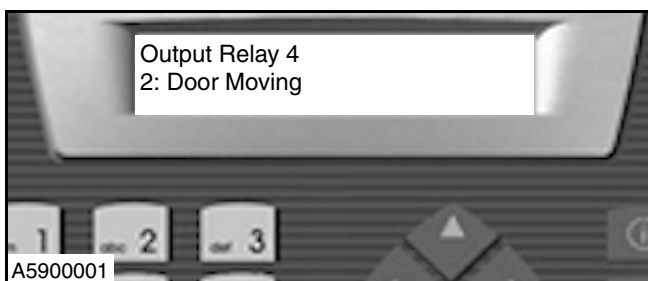
**IMPORTANT:** The relay (CR1) has 5 options available as to when CR1 will be active: X represents the number of the function 0-5 (skips 3) and the “xxxx” message displayed, examples below:



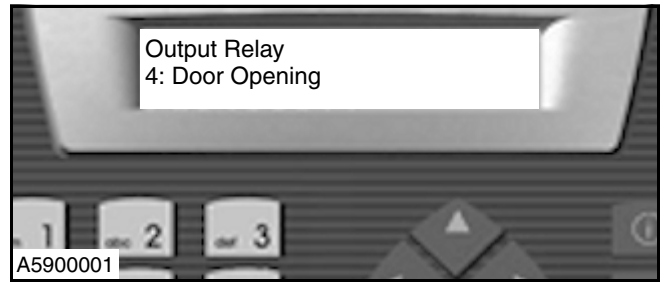
**Figure 7**



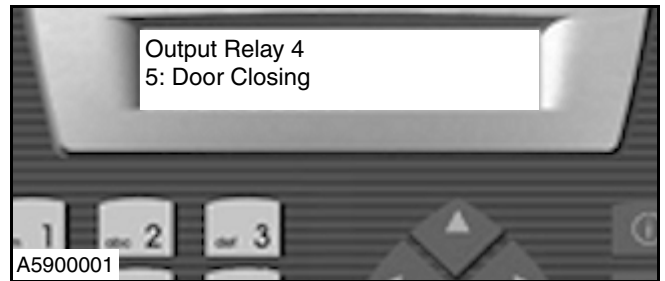
**Figure 8**



**Figure 9**



**Figure 10**



**Figure 11**

9. Press the left arrow twice to exit programming.

**ALARM CONDITIONS**

All alarm conditions will be indicated by an illuminated yellow push button. Press the yellow button to reset the controller. If the yellow light doesn't go out, then the alarm condition has not been corrected. Read the message on the display and perform the listed corrective actions. See alarm conditions below.



**Figure 12**

## ALARM CONDITIONS—SAFETY LIMITS

### SAFETY LIMITS

Safety Limits will illuminate when the door has passed its primary sensor and is within one inch of the safety backup limit. (See Figure 13.)

**IMPORTANT:** *The backup sensor is the alarm for taking immediate corrective action. Do not operate door until this condition is repaired.*

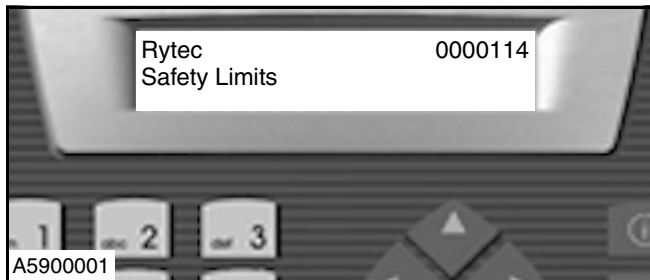


Figure 13

#### Corrective Action:

- Check limit settings.
- Check safety backup limits.
- If the motor/gearbox brake appears to be slipping, replace the assembly.
- Check for frayed or broken sensor wires.
- Press the yellow button to reset the controller.

### PHOTOCELL

The photo eyes are a safety device that protect personnel and transportable items from accidental door closures. The PLC will display the following messages when there is an issue with one of the photo eyes. (See Figure 14.)

**IMPORTANT:** *The photo eye sensors are a vital safety device for proper door operation. Do not operate door until this condition is repaired.*

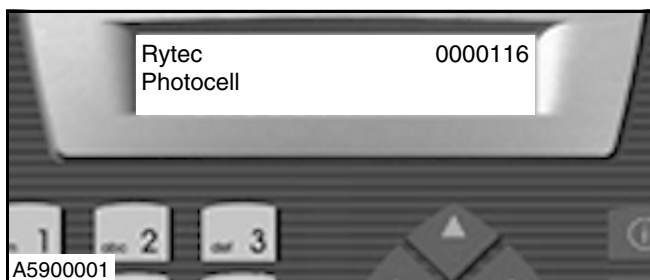


Figure 14

#### Corrective Action:

- One or both sensors maybe out if alignment.
- One or both sensors may be need replacing.
- Check for frayed or broken sensor wires.
- Press the yellow button to reset the controller.

### CHAIN HOIST

The drive motor has red and green handles hanging from the bottom of the motor. When the green handle is pulled or in the lowest position, the drive motor is engaged to run on electrical power. When the red handle is pulled or in the lowest position, electrical power has been disengaged and manual door operation is required, using the chain. Also, when the red handle is pulled, a sensor is engaged and will not allow electrical power to the door. The PLC will display the following messages only when the red handle has been pulled. (See Figure 15 and Figure 16.)

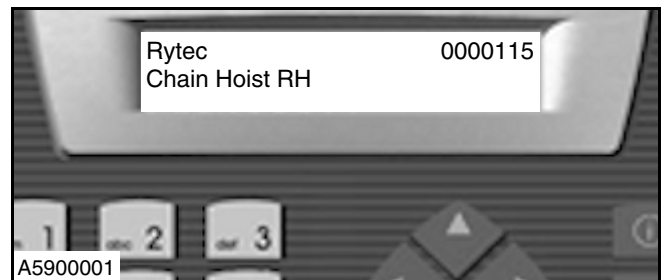


Figure 15

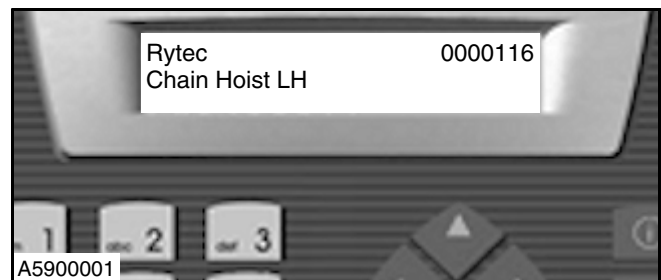


Figure 16

#### Corrective Action:

- Pull green handle to engage electrical power.
- Use door in manual mode using the chain hoist.
- Press the yellow button to reset the controller.

**CHAIN PROXIMITY SENSOR**

The chain proximity sensors are part of an emergency stop circuit. If a chain breaks the proximity sensor opens the emergency stop circuit and the controller stops the door. There is one on each side if there are dual motors or one for a single. The PLC will display the following messages if a chain has possibly broken. (See Figure 17 and Figure 18.)

*NOTE: These proximity sensors may come loose over time and need to be readjusted.*



Figure 17



Figure 18

**Corrective Action:**

- Check for broken drive chain.
- Sensors may be out of adjustment. (See PROXIMITY SENSORS in the Powerhouse XL Owner’s manual for proper adjustment).
- Check for frayed or broken sensor cable.
- Press the yellow button to reset the controller.

**LOAD SENSOR**

The load sensors are part of the power circuit. The PLC will momentarily display the following messages when there is excessive consumption of power to operate the door properly. (See Figure 19 and Figure 20.)

*NOTE: This message will only appear briefly on the display. The overload that tripped the alarm condition will have a red light which is located on the inside of the control panel. Be sure to check all incoming three phase power lines for voltage. The yellow light will also be illuminated on the control panel.*



Figure 19



Figure 20

There are 4 overloads for a dual drive XL, two for each motor. The overload has a small red light on it and will illuminate when tripped. (See Figure 21 and Figure 22.)

**IMPORTANT: The overloads have a dial range of 10–100%. This range is on the 0– 20 amp scale. For example, if the dial is at 50% the overload is set at 10 amps.**

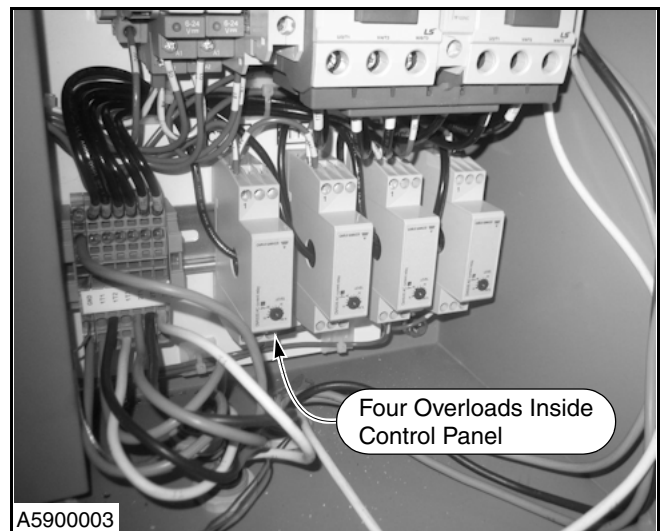


Figure 21

*NOTE: The overload will reset itself.*

## ALARM CONDITIONS—WIRELESS REVERSING EDGE

The adjustment percentages for the Powerhouse XL doors:

- 220 VAC 55%
- 460 VAC 30%
- 575 VAC 25%

**NOTE:** These are factory set. Before increasing the factory set percentage, contact Rytec Technical Support at 1-800-628-1909. Making any changes to the percentage dial could cause irreparable damage to the controller or electric motors.

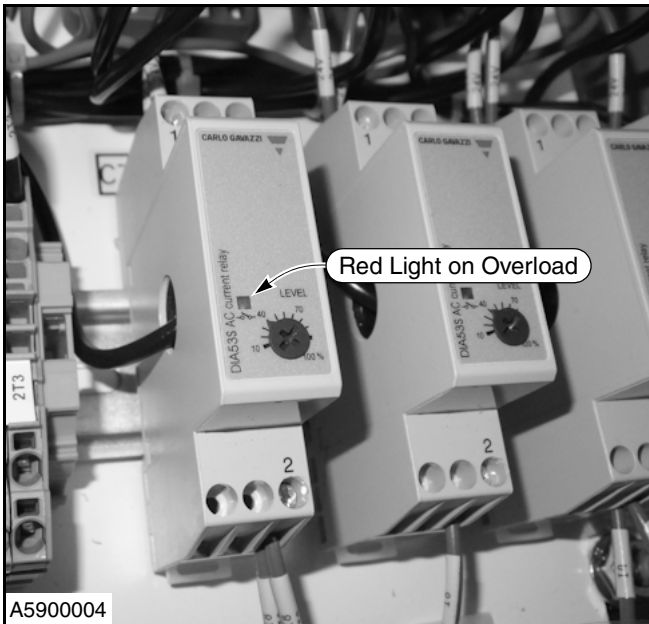


Figure 22

### Corrective Action:

- Check door operation.
- Check for excessive dirt in moving areas.
- Check for door panel binding or dragging in the side columns.
- Check that the door panel is in the side column.
- Check for grinding noises coming from the motor/gearbox.
- Check bearings for lubrication.
- Press the yellow button to reset the controller.

## WIRELESS REVERSING EDGE

While the door is running through the down cycle, strike the bottom of the reversing edge. If the reversing edge is operating properly, the door should immediately reverse and run to the full-open position. Press the control panel down key to close the door after the inspection is complete.

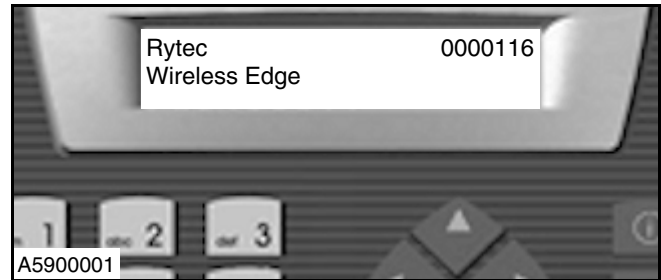


Figure 23

### Corrective Action:

- Check for tripped sensors.
- Check proper door communications are working.
- Check battery in the bottom bar.
- Press the yellow button to reset the controller.

**If there are any questions, please call the Rytec Technical Support at 1-800-628-1909 with the door serial number.**



