



INSTALLATION OPERATION SUPPLEMENT

Digital Scroll Compressor Control



PZA model shown



PZAT model shown

**DO NOT TURN THE POWER ON TO YOUR NEW LEGACY CHILLER
UNTIL THE ENCLOSED COMMISSIONING CHECKLIST HAS BEEN
COMPLETED BY A QUALIFIED TECHNICIAN.**

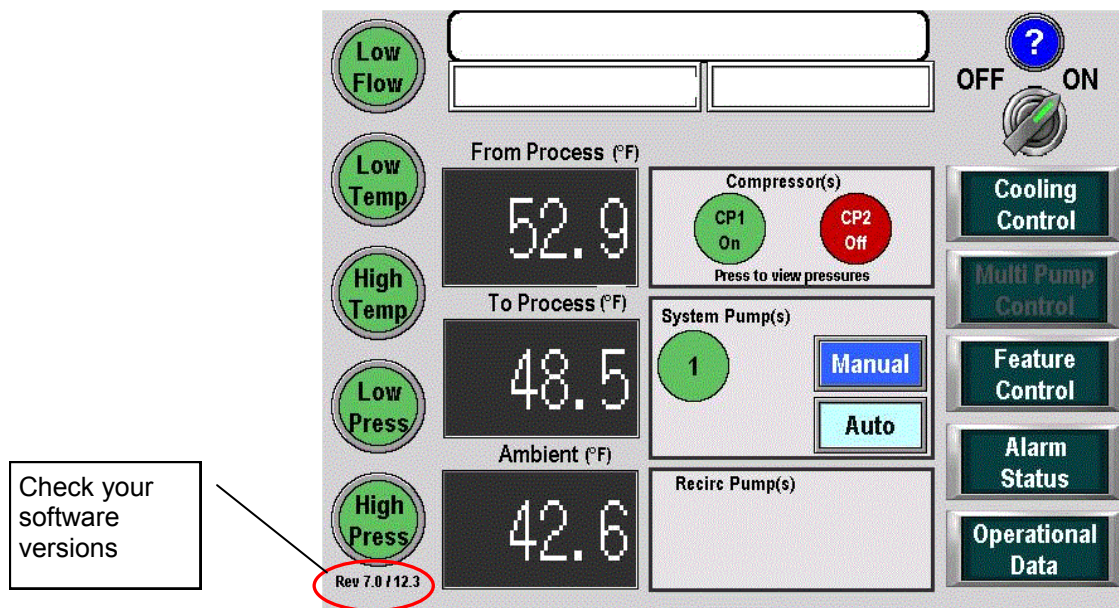
For up-to-date support first try our on-line Knowledgebase
AT: **<http://www.LegacyChillers.com/kb>**

Legacy Chiller Systems (USA)
P.O. Box 1120
Diamond Springs, CA 95619

Phone (toll free): 877-988-5464
Fax: 240-214-8303
Web site : www.LegacyChillers.com

IMPORTANT READ BEGINNING WORK

- THIS EQUIPMENT MUST BE INSTALLED BY QUALIFIED PERSONNEL IN ACCORDANCE WITH ALL LOCAL AND NATIONAL CODES.
- THE NEW CONTROL FEATURES DESCRIBED IN THIS SUPPLEMENT MAY REQUIRE A FIELD SOFTWARE UPDATE. BEFORE STARTING WORK, PLEASE MAKE A NOTE OF YOUR CURRENT CONTROL SOFTWARE REVISION LOCATED ON THE LOWER LEFT OF THE HOME SCREEN.
- IF YOUR CURRENT SOFTWARE REVISION VALUES ARE LOWER THAN 7.0/12.3 STOP, GO: <http://www.legacychillers.com/kb/default~action~detail~intID~280.asp> TO DOWNLOAD THE LATEST SOFTWARE AND PRINT OUT INSTRUCTIONS.



**Digital Scroll Compressor Control
ADDED TO HMI/PLC FIRMWARE REV
7.0/12.3**



Important!

THIS DOCUMENT IS INTENDED TO PROVIDE INFORMATION ON A NEW FEATURE RECENTLY ADDED TO LEGACY'S CHILLER CONTROL SYSTEM. REVIEW ALL INFORMATION IN THIS DOCUMENT BEFORE ACTIVATING THIS FEATURE. FAILURE TO REVIEW AND UNDERSTAND THE INFORMATION PROVIDED IN THIS DOCUMENT CAN RESULT IN PROPERTY DAMAGE, INJURY AND EVEN DEATH.

PRIOR TO STARTING WORK, PLEASE MAKE SURE YOUR CHILLER HAS BEEN FIELD UPDATED AND IS RUNNING THE LATEST SOFTWARE REVISION. TO GET THE LATEST SOFTWARE FOR YOUR CHILLER GO TO THE LINK BELOW.

<http://www.legacychillers.com/kb/default~action~detail~intID~280.asp>

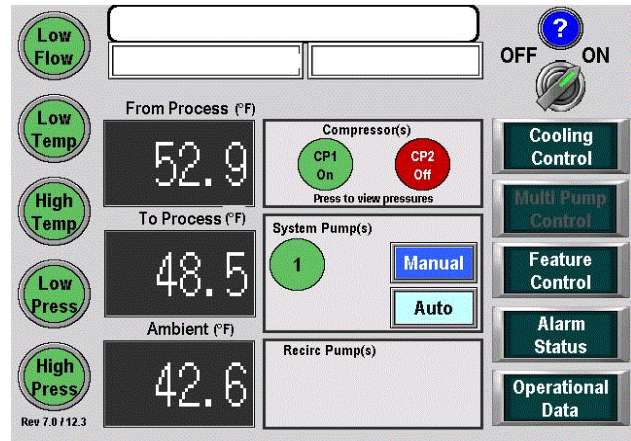
FIELD SOFTWARE UPDATE PROCEDURES CAN CHANGE. IT IS HIGHLY RECOMMENDED THAT YOU PRINT AND REVIEW THE ABOVE KB ARTICLE IN ITS ENTIRETY PRIOR TO PERFORMING A SOFTWARE UPDATE. IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT LEGACY TECHNICAL SUPPORT PRIOR TO COMMENCING WORK.

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The following provides information on how to enable and interface with this new HMI/PLC feature.

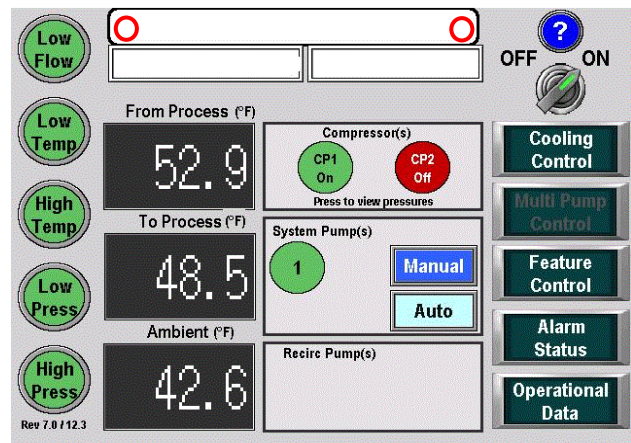
Standard home screen: By default, this feature is disabled. Prior to being able to use this feature, it must be enabled from the factory setup area. The image to the right shows an example of a standard home screen.

IMPORTANT: It is NOT recommended to provide end users with access to the chiller control systems factory screens.



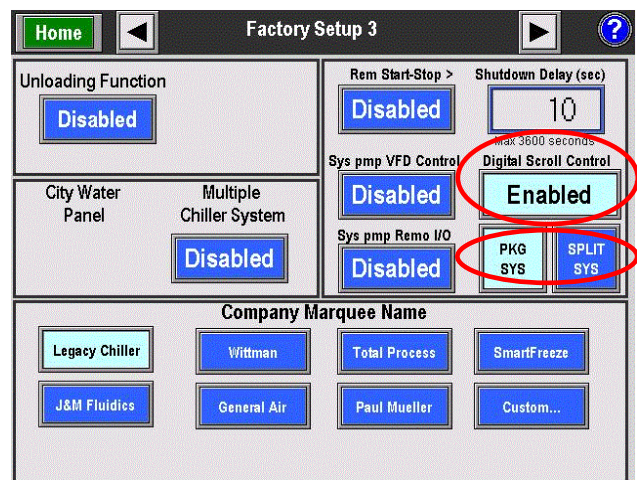
Enable Step #1: To the right and left of the home screen marquee, there are two hidden buttons. Using your finger, press and hold one of these buttons for 2-3 seconds. This will provide a popup keypad.

Carefully enter: 6115 then press ENT. Helpful tip, when entering password, make sure you place your finger directly over each digit as you enter the pass code. As you press each digit, make sure it's showing up on the upper right of the screen.



Enable Step #2: Once you are in the factory area, press the RIGHT arrow at the top of the screen until you see the screen that looks like the image on the right. Once you get to the screen, press the button indicated. This will change feature status from Disabled (Dark Blue) to Enabled (Light Blue).

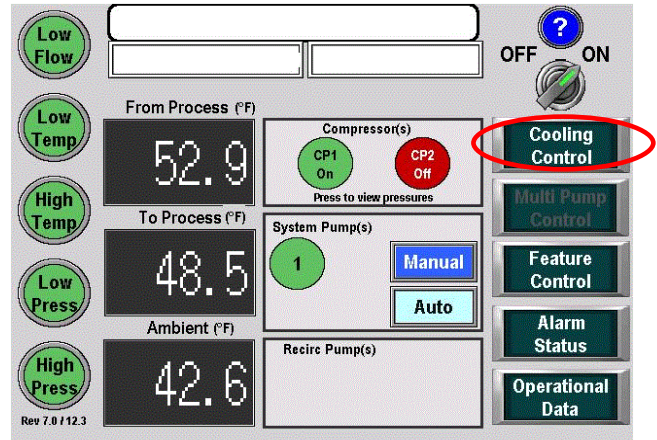
When this feature is enabled, you will see two additional boxes appear. For this feature, the user needs to declare if the subject equipment is a PACKAGE type, meaning the chillers condenser is located in the same cabinet, or SPLIT meaning the chillers condenser is remote mounted.



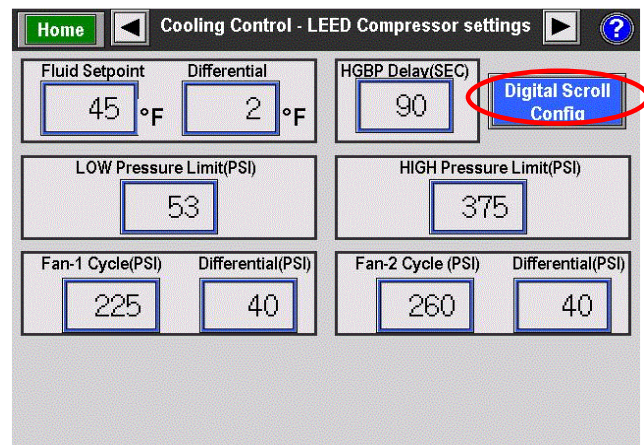
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Once you have enabled this feature in the factory setup area, press the HOME button on the upper left of your screen.

Next, press the :Cooling Control button as indicated in the image to the right. .

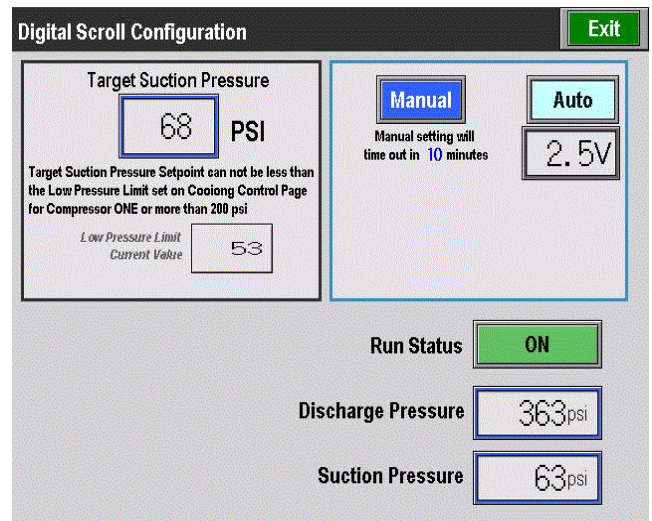


In the cooling control area, press the right arrow until you get to the “Cooling Control - LEED Compressor settings” screen. On the “Cooling Control - LEED Compressor settings” screen, you will see “Digital Scroll Config” button that has now appeared since this feature has been enabled. By pressing this button you will have access to this features settings.



Information provided on the Digital Scroll Configuration Screen

1. **Target Suction Pressure:** By pressing within the square, you can input your desired target suction pressure. Once entered, when a call for cooling occurs, the chillers controller will modulate the Scroll to maintain this target suction pressure.
2. **Manual / Auto buttons:** We have provided a way for the service provider to manually operate the Digital Scroll for testing purposes. When in Manual mode, the user can press the PID value (below the Auto Button) to manually enter a value between 0v and 5.0v. ***** Please see FAQ section of this document for more information on running a digital scroll in Manual mode.**



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Digital Scroll Operational Information

Setting your target suction pressure: Once the “Target Suction Pressure” has been entered, the chillers control system’s PID loop will constantly update the DC output signal to the Digital Scroll controller in order to maintain the target pressure.

Output signal: The VDC output signal will range from 0 VDC (Compressor OFF) to 5.0 VDC (Compressor at maximum capacity). The output signal is displayed in real-time on the Digital Scroll Configuration screen.

Minimum operating conditions: As with most refrigeration compressors, oil is always circulating within the system during compressor operation. In order to assure proper oil return to the compressor, a minimum refrigerant gas velocity must be maintained at all times.

Minimum operating condition for PACKAGE Chillers: For package chillers, the interconnected piping between the chillers various refrigeration components tends to be short. In these systems, the controller will allow Digital Scroll operation down to 40% or 2.5vdc.

Minimum operating condition for SPLIT Chillers: For split chillers, the interconnected piping between the chillers various refrigeration components tends to be longer. In these systems, the controller will allow Digital Scroll operation down to 50% or 3.0vdc.

Initial compressor startup PID delay: For a period of 20 seconds, controller will output approximately 4 vdc to the scroll controller on startup. This will ramp the compressor up to about 70% capacity. This initial startup time will allow any oil that may be out in the system to return back to the compressor. After the 20 second timer expires, control of the Digital Scroll is automatically turned over to the controllers PID loop.

Minimum target suction pressure: At no time will the chiller control system allow the operator to set the Digital Scroll target suction pressure below the low pressure safety limit. We have included a box on the setup screen indicating the current LP safety limit settings. In order to drop the Scrolls target pressure lower, the operator must first lower the LP safety limit.

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FAQ READ BEGINNING WORK

Frequently Asked Questions (FAQ): The information below is intended to answer common questions specific to this feature. Should you have any questions that you do not see provided in this document, PLEASE contact Legacy Technical Support department for help at 877-988-5464.

1. Operating Digital Scroll in Manual mode: Manual operation of a Digital Scroll should only be used by experienced refrigeration technicians. Dropping the signal output below 2.5v for package chillers and 3.0 v for split chillers can create compressor oil return problem leading to damage. It is recommended to NEVER operate a Digital Scroll compressor in manual mode unattended.

Digital Scroll Configuration Exit

<p>Target Suction Pressure</p> <p>68 PSI</p> <p>Target Suction Pressure Setpoint can not be less than the Low Pressure Limit set on Cooling Control Page for Compressor ONE or more than 200 psi</p> <p>Low Pressure Limit Current Value 53</p>	<p>Manual Auto</p> <p>Manual setting will time out in 10 minutes</p> <p>2.5V</p>
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Run Status **ON**

Discharge Pressure **363psi**

Suction Pressure **63psi**

FAQ READ BEGINNING WORK

2. How to verify controller output to the Digital Scroll controller: Using a digital DC volt meter, a qualified technician can measure the output to the Copeland Compressor Controller at the C1 and C2 terminals.

