COMPRESSOR CONTROLLER

Compressor Controller for Single and Duplex Pump Electric Compressors

Compressor Controller Quick Start Guide

Compressor Controller
Model **R100**

Compressor Controller
Model **R200**

Table of Contents:

READ AND FOLLOW ALL INSTRUCTIONS AND THE USER MANUAL BEFORE USING THIS PRODUCT

IMPORTANT - INDUSTRIAL USE ONLY: As owner/operator, you are fully responsible for proper installation, operation, and maintenance. Read all safety and liability information before proceeding. Consult the user manual (digital link provided), quick start guide, and installation videos for complete instructions. Comply with all regulations, including O.S.H.A. 1910.147: Lockout/tagout main power source and display service signage. Failure to comply may result in serious injury, death, or property damage. Manufacturer provides guidelines only and assumes no liability. Use of this product indicates acceptance of all terms and conditions. By using this product, you acknowledge that you have read, understood, and agree to these terms and terms on the last page of this document. you accept full responsibility for safe and proper use. **If you cannot ensure compliance, do not use this product.**

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The Compressor Controller, a SAM Controllers product
engineered and manufactured in Pittsboro, North Carolina
CompressorController.com

Introduction

What is the Compressor Controller?

The Compressor Controller is a digital add-on system for reciprocating piston air compressors over 2hp. It optimizes performance and efficiency using advanced sensing, feedback, and machine learning.

How Does It Work?

It integrates with existing compressor systems, using sensors to monitor pressure, temperature, and humidity. This data is used to precisely control compressor operation, including start/stop cycles, venting, and drainage.

What does it do?

- *Increases performance*
- *Reduces energy consumption and operating costs*
- *Improves air quality by reducing moisture content*
- *Enhances compressor reliability and longevity*
- *Provides detailed performance data for maintenance planning*
- *Allows for cascading multiple compressors for increased efficiency*

What does it <u>not</u> do?

- *Does not replace safety valves or other critical components*
- *Does not modify the compressor's mechanical systems*

Product Types and Difficulty Levels

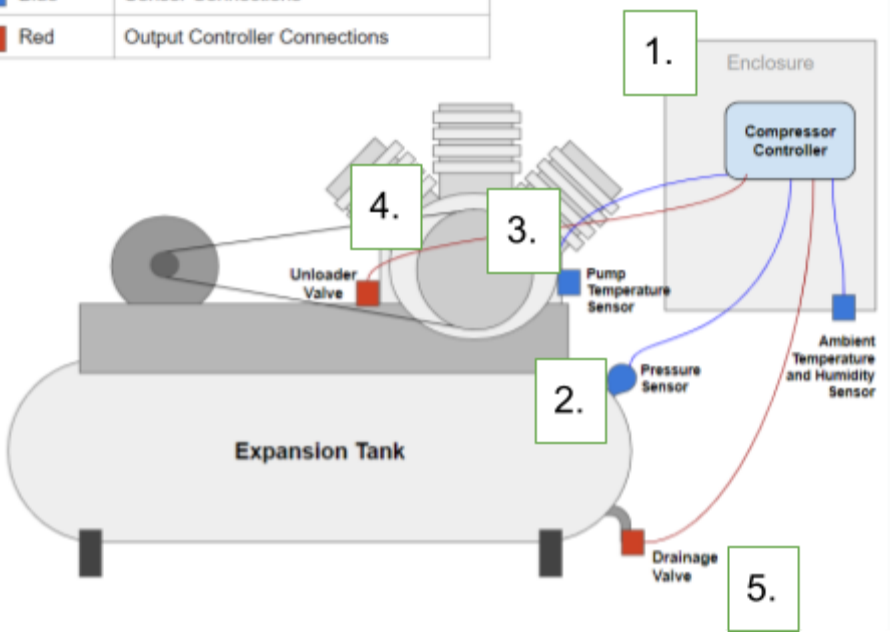
Product Type	***Components Included***	***Installation Difficulty***	***Technical Expertise Required***
Controller Kit (pictured on page 8)	*Controller and necessary sensors*	*High*	*Extensive - requires sourcing components and technical knowledge*
Components Kit	*Controller kit + components needed to assemble on most compressors*	*Moderate*	*Intermediate - requires some technical skills*
Pre-wired Kit	*Everything in the components kit, pre-wired and ready for direct integration*	*Low*	*Basic - designed for straightforward installation*

Resource links

Name	*Link / URL*	*QR Code*
Installation Video	**compressorcontroller.com/resources/installation-video**	
Expert Installation Network	***compressorcontroller.com/professional-installation***	
Owners Manual	**compressorcontroller.com/download/manual**	
Connection and Wiring Diagrams	**compressorcontroller.com/download/diagrams**	
Support Tickets	**compressorcontroller.com/support**	
(This document): Quick Start Guide	**compressorcontroller.com/download/quickstart**	

Connections type

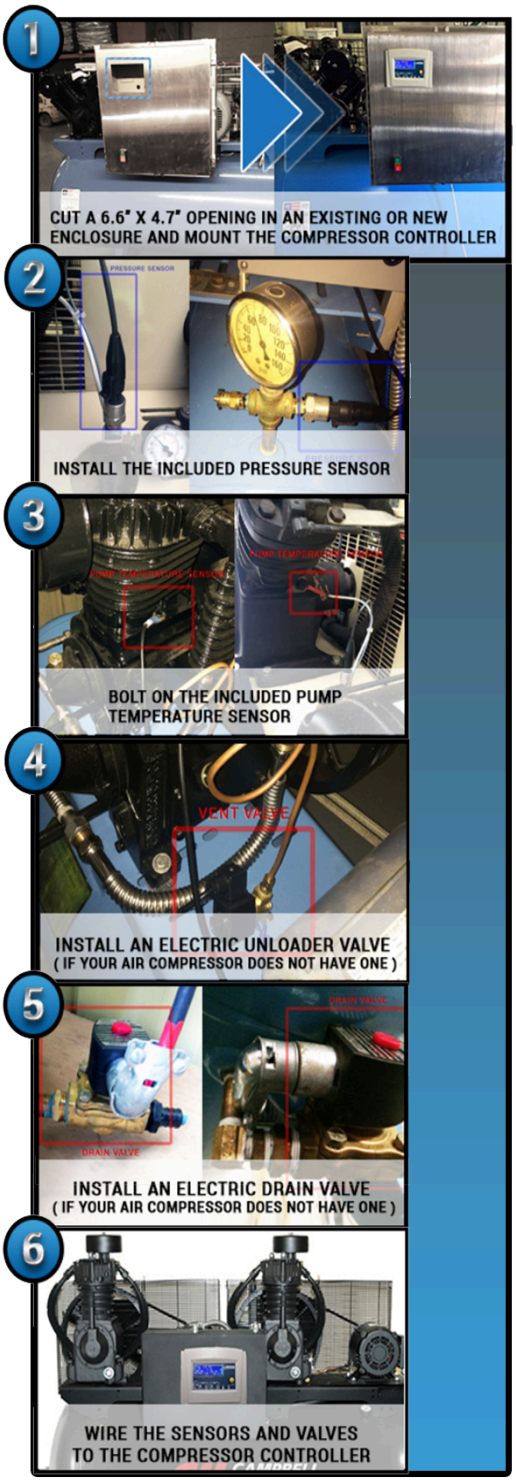
Color	Function
Blue	Sensor Connections
Red	Output Controller Connections



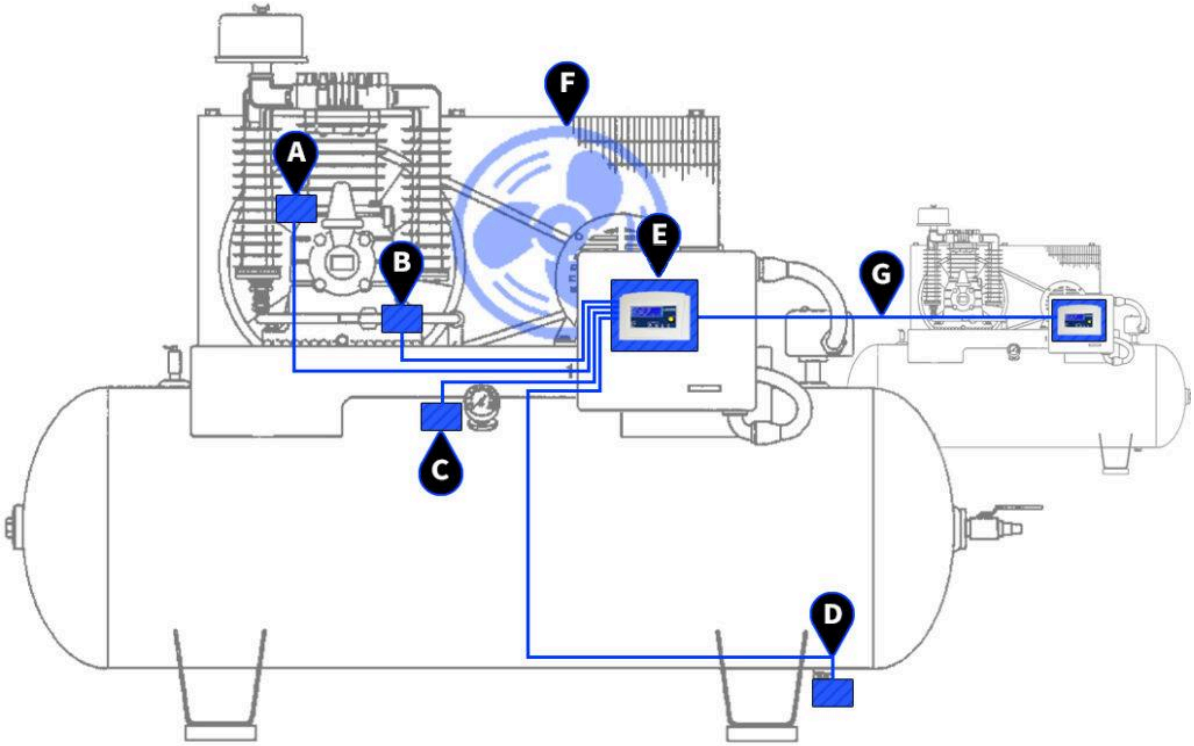
What is included in each type of kit

A. Controller Only: Controller & All Sensors
B. Components Kit: Controller & All Sensors + valves, enclosure and fittings.
C. Pre-wired Kit: Everything in the components kit + wiring harness

Installation Process



Connections and function diagram



A. Pump Temperature Sensor – Measures the pump temperature and performance. For Dual pump air compressors there are two of these sensors.
B. Unloader Valve – an electrically (NO) actuated valve that is added to the existing unloader valve.
C. Digital Pressure Sensor – 304 Stainless steel body digital pressure sensor with 1% accuracy and long-term stability: Less than 0.1%FS/year.
D. Drain Valve – an electrically (NC) actuated valve that is added to the drain valve and automatically controlled.
E. Compressor Controller - installed into an enclosure.
F. Intercooler Fan Output – NO and NC output for an auxiliary fan, and can be optionally installed to improve intercooler performance in two-stage air compressors.
G. Compressor-City link – Connection to other Compressor Controllers to scale air compressors for higher CFM and/or increased redundancy.

Connections details

Sensor Connections The compressor controller uses the digital pressure sensor, pump temperature sensor and ambient temperature and humidity sensors, both are included with the compressor controller and all need to be properly installed

Name / Function	Required / Location	Typical Installation
Pressure Sensor Mesures real-time pressure	Yes, Located typically where the mechanical switch is installed onto the tank	Installed on the air tank with a tee that connects to the manual pressure release valve and pressure gauge.
Pump Temperature Sensor Is a ring cable shoe thermocouple that Measures the real-time temperature of the air compressor pump	Yes. Tightened down by a bolt on the compressor pump(s) connection of the piston housing and pump base	Installed on to compressor pump head
Ambient Temperature and Humidity Sensor Measures the real time environmental temperature and humidity	Yes, Installed within an enclosure that is near the air compressor intake, protected from direct sun and rain	Installed at the bottom of the enclosure

Pressure settings The (low/on and high/off) pressure cut on / off settings are digitally set by user, on the back panel of the compressor controller and it can be set anywhere between the range of minimum and maximum, the standard Compressor Controller ships with the following pressure ranges:

Standard Pressure Range:	Minimum: **40 PSI** Maximum: **160 PSI**

Other ranges are available as custom order options, please contact us via ticket system for more information.

Output Connections Normally Open and Normally Closed Relay outputs
Maximum Ratings AC/DC: (250VAC 2A / 24VDC up to 0.3A)

Name / Function	Required / Location	Typical Configuration
Unloader Valve, Controls unloader valve based on pump feedback	Yes. Located typically where your mechanical unload valve is installed Located typically at the compressor pump output line and the compressor tank - can be manual or electrically actuated.	Normally open solenoid valve with an orifice (see manual for details) that provides depressurization of pump output, used for each pump.
Drain Valve, Controls drain to minimize moisture content	Yes. Located at the bottom of the tank	Normally closed solenoid valve, with a line out to drain the compressor tank moisture content. (follow the appropriate disposal procedures & rules)
Compressor motor Control, On/Off compressor pump motor.	Yes. Located in an enclosure near / attached to the compressor.	Connected to a Solid State Relay (SSR), Magnetic starter or Variable Frequency Drive (VFD) that actuates the electric motor.
Auxiliary Fan, Controls Fan to provide additional cooling to the pump	Optional. Location: Pump or intercooler.	Connected to a Solid State Relay (SSR) or Magnetic starter that actuates an electric fan.

See the manual for further information about the Output Connections, Sensors and other connections: *power input, enclosure fan, buzzer / alarm, Compressor Citty connection, compressor run connection, aux. cooling fan connection and external halt / stop signal inputs.*

Controller contents

The controller kit forms the core of our offering and is included in all package types. For customers requiring a more comprehensive solution, we offer additional packages that include the necessary accessories for a complete compressor installation. These expanded packages feature components such as the enclosure, valves, and fittings, all of which are essential for proper setup and operation of the compressor system.

R100 Single (Single Tank, Single Pump)
Controller kit includes:

- ❑ 1x: R100 single Compressor Controller
- ❑ 1x: Pressure sensor
- ❑ 1x: Temperature / humidity sensor
- ❑ 1x Main power rocker switch
- ❑ 1x: Pump temperature sensor
- ❑ 1x: Buzzer
- ❑ 1x: Power supply

R200 Duplex (Single Tank, Dual Pump)
Controller kit includes:

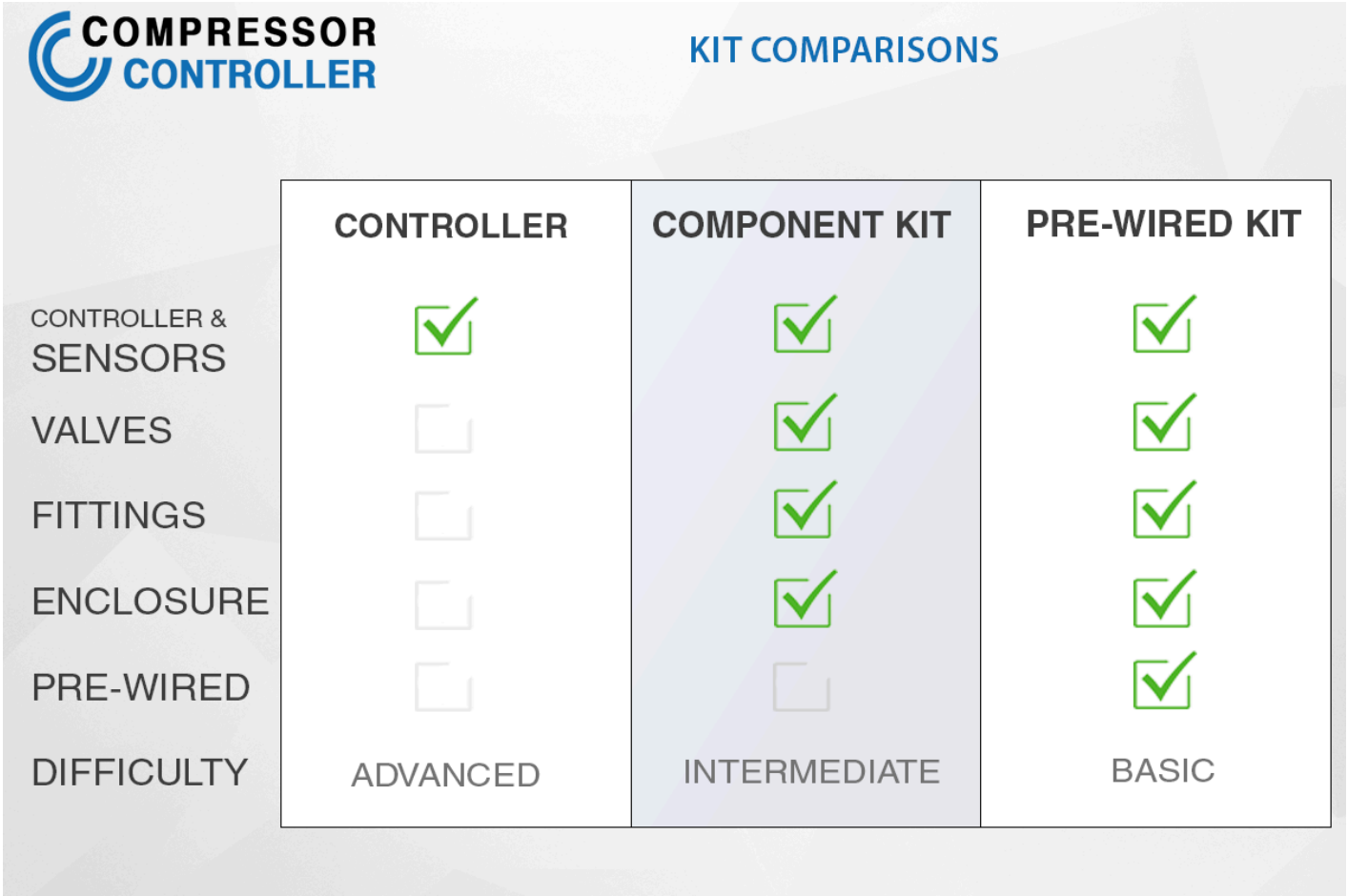
- ❑ 1x: R200 duplex Compressor Controller
- ❑ 1x: Pressure sensor
- ❑ 2x: Pump temperature sensor
- ❑ 1x: Ambient temp/humidity sensor
- ❑ 1x Main power rocker switch
- ❑ 1x: Buzzer
- ❑ 1x: Power supply

The Compressor Controller is offered in three kit configurations to suit different customer needs and technical skill levels:

The Controller Kit (pictured on page 8) is the core offering, containing the R100 or R200 Compressor Controller unit along with essential sensors and components like the pressure sensor, temperature/humidity sensor, pump temperature sensor(s), power switch, buzzer, and power supply. This kit is designed for customers with extensive technical knowledge who can source additional components and perform complex installations.

The Components Kit builds on the Controller Kit by including additional parts needed to assemble the system on most compressors. While still requiring some technical skills, this kit reduces the complexity compared to the basic Controller Kit by providing more of the necessary hardware.

The Pre-wired Kit is the most comprehensive and user-friendly option. It contains everything in the Components Kit, but with all elements pre-wired and ready for direct integration into the compressor system. This kit is designed for straightforward installation, requiring only basic technical skills. It's the ideal choice for customers seeking the easiest possible setup process while still benefiting from the advanced capabilities of the Compressor Controller.



R100 CONTROLLER COMPONENTS KIT CONTENTS

The Components Kit contains the Compressor Controller, sensors, and all the essential elements needed to integrate the controller with your air compressor system.

- ☑ CONTROLLER KIT
- ☑ IP67 ENCLOSURE
- ☑ MOUNTED SENSORS
- ☑ FITTINGS
- ☑ UNLOADER / DRAIN
- ☑ 220V VALVES

R200 CONTROLLER COMPONENTS KIT CONTENTS

The Components Kit contains the Compressor Controller, sensors, and all the essential elements needed to integrate the controller with your air compressor system.

- ☑ CONTROLLER KIT
- ☑ IP67 ENCLOSURE
- ☑ MOUNTED SENSORS
- ☑ FITTINGS
- ☑ UNLOADER / DRAIN
- ☑ 220V VALVES

Compressor Controller Pre Wired Kit:

Thank you *for choosing the Compressor Controller for your air compressor system. We greatly appreciate your trust in our product and are confident it will optimize your compressor's performance, efficiency, and longevity. Your purchase not only supports our commitment to innovation in compressed air technology, but also contributes to more sustainable industrial practices. We stand behind the quality of our product and are dedicated to ensuring your satisfaction. Should you need any assistance with installation, operation, or maintenance, our support team is always ready to help. Thank you again for your business – we look forward to helping you achieve superior compressed air management for years to come.*

Important safety information

DANGER

IMPORTANT SAFETY AND LIABILITY INFORMATION

WARNING: THIS PRODUCT CAN CAUSE SERIOUS INJURY OR DEATH IF NOT USED IN ACCORDANCE WITH THE FOLLOWING SAFETY INSTRUCTIONS. THE MANUFACTURER CANNOT ANTICIPATE EVERY POSSIBLE CIRCUMSTANCE THAT MIGHT INVOLVE A POTENTIAL HAZARD. THE WARNINGS, CAUTIONS, DANGERS, AND SAFETY SUGGESTIONS ARE THEREFORE NOT ALL-INCLUSIVE. AS THE OWNER, YOU ARE RESPONSIBLE FOR THE SAFE OPERATION OF THIS EQUIPMENT. THIS IS AN INDUSTRIAL PRODUCT INTENDED FOR USE BY TRAINED PROFESSIONALS ONLY. NOT FOR HOME OR CONSUMER USE.

The compressor controller has a maximum standard pressure set at 160 psi. The pressure band (low/on and high/off) can be digitally set via the adjustment screw on the back panel at the top left corner, anywhere between the range of minimum 40 psi to a maximum of 160 psi. This maximum pressure setting is in place because most standard reciprocating air compressors are not designed for pressures above this threshold and may cause safety issues if exceeded. For higher maximum pressure set-points, contact customer support. A written liability release and factory servicing of the compressor controller are required.

Use proper electrical power. Connect the unit to a dedicated circuit of the proper voltage, with a properly rated circuit breaker, and wired with the proper wire size and number of conductors. Use supply wires suitable for 110°C. Ensure all connections are properly tightened. This machine must be connected in accordance with the National Electric Code (NEC) Article 422-4 - Ed-31, except as provided for in NEC 90-4. A ground connector screw should be fastened into the chassis to facilitate supplemental grounding as permitted by NEC 250-91. Obtain all necessary permits, inspections, UL field inspections and certifications required for industrial equipment in your jurisdiction. UL, CE, or other agency approvals and compliance are the sole responsibility of the owner/operator for their specific installation and application.

DANGER: Do not connect any other equipment to the electrical circuit serving this unit. Do not replace a fuse or circuit breaker with one of a higher rating without ensuring the wire size is adequate for the increased electrical load. Keep all electrical connections dry and off the ground. Observe all local and national codes for installation and use of this equipment.

For wire selection, use at least the same size wire for 0-25 feet from the main power source, one wire size larger for 25-50 feet, two sizes larger for 50-100 feet, and three sizes larger for 100-150 feet. Undersized wires can cause voltage drop, leading to motor overheating or failure. Maintain a safe working environment, including proper ventilation, safety barriers, and personal protective equipment for operators. Wear proper protective clothing and equipment, including full eye protection (preferably a face shield). The pressurized spray from the air compressor can cause severe eye injury and may contain irritants, particles, or caustic chemicals.

Do not operate with protective covers or guards removed, or with any electrical panels or covers open. The compressor controller may start and stop the air compressor, drain, or release valve automatically. Contact with high-powered electrical equipment could result in serious injury or death. Implement and enforce appropriate safety protocols and procedures for your specific application.

Do not operate this unit with any safety controls bypassed or modified. If any parts appear dysfunctional, immediately contact a qualified technician. Do not operate or install components rated less than the maximum operating pressure of the air compressor.

The pressurized spray from drain valves, unloader valves, and the air compressor can cause serious injury or death if directed at people, animals, or living things. It can inject air and/or harmful particles and chemicals into soft tissues. If such an accident occurs, seek immediate medical attention, even for apparently minor injuries.

Unplug or disconnect the unit before cleaning or servicing. Follow lockout/tagout procedures as per OSHA Regulation 29 CFR 1910.147. Only qualified personnel should attempt electrical repairs or troubleshooting. Never modify or alter this unit. Do not exceed factory pressure or temperature ratings. Ensure all accessory equipment and system components meet or exceed the unit's specifications.

Do not operate the unit with damaged or worn hoses, fittings, clamps, or spuds. Replace damaged items with those meeting or exceeding original equipment specifications. Never remove hoses or fittings while the unit is on.
Do not operate near flammable or combustible materials or in locations with fire or explosion hazards. Always relieve air pressure in the entire system before removing any air lines or receiver connections.

Have receiver tanks inspected periodically for corrosion or damage. Drain tanks daily or after each use. Replace any leaking receivers or air lines immediately due to explosion risk. All pressure vessels should be inspected at least annually by certified inspectors.

Do not permit untrained personnel to maintain or repair this unit. Keep the area free of loose parts, rags, tools, and other foreign matter to prevent entanglement or high-speed ejection.

Always wear hearing protection when operating or working near the unit to avoid hearing loss.

Never leave an operating machine unattended. Always shut off the machine and relieve system pressure before leaving.For portable equipment, do not expose to rain and store indoors. For stationary equipment, use indoors only. Do not use below garage floor or grade level.

Never allow children or unauthorized persons to operate the unit. Keep all persons at a safe distance during operation.

Never exceed pressure ratings of air tools, spray guns, accessories, tires, or other inflatables. Follow manufacturer recommendations and never exceed maximum allowable pressure ratings.

BY USING THIS PRODUCT, YOU ACKNOWLEDGE THAT YOU HAVE READ, UNDERSTOOD, AND AGREE TO THESE TERMS. IF YOU DO NOT AGREE, DO NOT USE AND RETURN THIS PRODUCT.

WARNING: FAILURE TO FOLLOW THESE SAFETY INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH. THE MANUFACTURER CANNOT ANTICIPATE EVERY POSSIBLE CIRCUMSTANCE THAT MIGHT INVOLVE A POTENTIAL HAZARD.

Returns Policy

1. 30-DAY RETURN WINDOW: We offer a 30-day return policy on most items, with exceptions noted below.
2. RETURN PROCESS:
    a. Submit a ticket through our support system
    b. Obtain a Return Material Authorization (RMA) number
    c. Follow the provided return instructions
3. PACKAGING: We recommend keeping all original packaging and manuals until you're certain you want to keep the product.
4. SHIPPING: We accept returns shipped via UPS, FedEx, or USPS.
5. RESTOCKING FEE: A 25% restocking fee applies to all returns.
6. EXCEPTIONS: a. Custom-built systems may have different return policies and potential fees. b. Report any damaged or missing items within 15 days of delivery. c. Some defective items may need to be handled according to the original manufacturer's warranty policies. d. Items marked as clearance are non-refundable.
7. NON-REFUNDABLE ITEMS: We cannot provide refunds for items that have been tampered with, including opened units or modified components.
8. INCORRECT ORDERS: If you receive an incorrect order, please contact us immediately for resolution.

For any questions about our return policy or for assistance with complicated situations, please contact our Guest Services team.

This Returns Policy ("Policy") governs the terms and conditions under which customers ("Customers") may return products purchased from Compressor Controller ("Company"). The Policy provides for a 30-day return window from the date of delivery, subject to certain conditions and exceptions. All returns require prior authorization and are subject to a 25% restocking fee. The Company reserves the right to refuse returns for items that have been tampered with, opened, or modified. Custom-built systems, clearance items, and certain other categories may be subject to different return policies or may be non-refundable. This Policy does not affect any statutory rights that Customers may have under applicable consumer protection laws. The Company reserves the right to modify this Policy at any time without prior notice. Customers are advised to review the full Returns Policy for complete details and procedures.

Warranty Information

This Limited Warranty ("Warranty") is provided by Compressor Controller for the Compressor Controller Model R100 and/or R200 ("Product"). The Warranty covers defects in materials and workmanship for a period of (90) days from the date of purchase, for both new and factory refurbished products. The Company's sole obligation under this Warranty shall be to repair, replace, or refund the purchase price of the defective Product, at the Company's discretion. This Warranty is transferable but does not extend the original warranty period. The Warranty excludes damage resulting from improper use, maintenance, or installation, as well as damage to non-Company branded products and consumable parts, except where such damage results from defects in the Product's materials or workmanship. THE COMPANY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, TO THE EXTENT PERMITTED BY LAW, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE COMPANY'S TOTAL LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE ORIGINAL PURCHASE PRICE OF THE PRODUCT. This Warranty gives Customers specific legal rights, and Customers may have other rights which vary by jurisdiction.

1. COVERAGE: Compressor Controller warrants that the Compressor Controller Model R100 and/or R200 ("Product") will be free from defects in materials and workmanship for one year from the date of purchase.
2. APPLICABILITY: This warranty applies to both new and factory refurbished products.
3. REMEDY: If the Product fails to conform to this warranty, Compressor Controller will, at its discretion: a. Repair the defective Product or component b. Replace the defective Product or component c. Accept its return for a refund of the original purchase price
4. WARRANTY PERIOD FOR REPAIRED/REPLACED PRODUCTS: Any repaired or replaced Product will be covered for 60 days from the date of delivery or for the remainder of the original warranty period, whichever is longer.
5. TRANSFERABILITY: This warranty is transferable, but the warranty period will not be extended for subsequent owners.
6. WARRANTY CLAIM PROCESS: a. Submit a support ticket at compressorcontroller.com/support during the warranty period b. Describe the alleged failure c. Follow the provided return shipping instructions
7. SHIPPING COSTS: Compressor Controller will cover return shipping costs to the owner. The owner is responsible for shipping costs to Compressor Controller.
8. EXCLUSIONS: This warranty does not cover: a. Products marked as samples or sold "as is" b. Products subjected to improper use, maintenance, installation, or Acts of God c. Non-Compressor Controller branded products d. Consumable parts, unless damage is due to defects in the Product's materials or workmanship
9. DISCLAIMER: Compressor Controller disclaims all other warranties, express or implied, including merchantability and fitness for a particular purpose, to the extent permitted by law.
10. LIABILITY LIMITATION: Compressor Controller's total liability under this warranty is limited to the original purchase price of the Product.

This warranty gives you specific legal rights, and you may have additional rights that vary by jurisdiction. For a full description of your legal rights, refer to the laws in your jurisdiction or contact a consumer advisory service.The aforementioned Safety Information, Returns Policy, and Limited Warranty form part of the complete Terms and Conditions of Sale and Service ("Terms"). By purchasing or using our products or services, you acknowledge and agree to be bound by these Terms in their entirety. The full and current version of the Terms, which may be updated from time to time, can be found at https://compressorcontroller.com/terms-of-use-service-privacy-policy-conditions-of-sales-and-delivery/ ("Website"). You are responsible for regularly reviewing the Terms on the Website. Your continued use of our products or services following any changes to the Terms constitutes your acceptance of such changes. If you do not agree to the Terms in their entirety, you must immediately cease use of our products and services.