

# Chirp



## Operational Manual

**YOU MUST READ THIS MANUAL BEFORE USE**

October 2025

# Table of Contents

<b>Section 1: Overview</b>	<b>3</b>
<b>Section 2: Construction</b>	<b>4</b>
<b>Section 3: Unpacking and Inspection</b>	<b>5</b>
<b>Section 4: Installation</b>	<b>6</b>
Quick Start	6
<b>Section 5: Operation</b>	<b>8</b>
<b>Section 7: Servicing</b>	<b>10</b>
<b>Section 8: Calibration</b>	<b>12</b>
<b>Section 9: Understanding Torr</b>	<b>13</b>
<b>Section 10: Specifications</b>	<b>15</b>
<b>Section 11: Terms of Use, Limited Warranty, and Liability Waiver</b>	<b>16</b>

## Section 1: Overview

The DIGIVAC Chirp is an active gauge compact digital vacuum sensing instrument that is reliable, calibrateable, cleanable and simple to use. It works in conjunction with a DC powered Vacuum Gauge tube to produce a linear and RS-232 output proportional to the sensed vacuum. The gauge tube is easily removed and replaced.

The DigiVac Chirp operates when the unit's vacuum gauge tube produces a millivolt output proportional to its temperature rise above ambient. This millivolt signal is amplified and conditioned by the microprocessor. A control algorithm in the processor adjusts the excitation of the gauge tube so as to hold the tube at an essentially constant temperature. The pressure is communicated with the user as a number on the digital display, a signal on the unit's serial port, and as an analog voltage.

Consult the DigiVac website [www.DigiVac.com](http://www.DigiVac.com) for information about other DigiVac vacuum controllers and gauges.



## Section 2: Construction

The Chirp consists of a display controller, and the gauge tube.

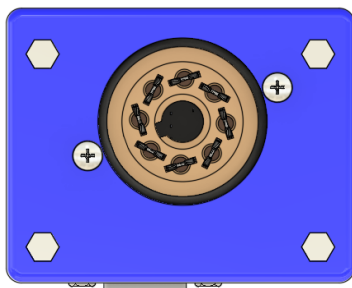
The gauge tube houses the various thermocouple sensing, heating and compensating elements and terminates in an octal connector. Regulating circuitry in the compact controller provides proper current for gauge tube excitation, and thus compensates for resistance in the probe leads.

The Chirp option includes a .62 x 1.49 inch LCD screen that provides a digital readout of real time vacuum pressure.

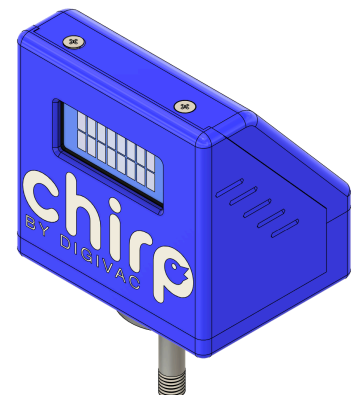
Back



Bottom



Side



## Section 3: Unpacking and Inspection

After the DIGIVAC Chirp is received, it should be carefully unpacked and inspected for damage during shipment and for completeness. In the event of a loss shipment, a claim should immediately be made to the common carrier or the postal service, as applicable. The DigiVac warranty pertains only to the instrument, and does not cover losses in shipping. For more information regarding our warranty visit [www.digivac.com](http://www.digivac.com)

### Each Chirp comes with:

- A vacuum gauge controller
- A thermocouple vacuum gauge tube (vacuum sensor)
- An AC adapter that runs on 100-230VAC, 50/60 Hz with line cord adapter
- Pre-tested under actual vacuum against a NIST standard



## Section 4: Installation

The instrument should be mounted into a clean, dry part of a vacuum system.

### The electrical connections can be made as follows:

- Pin 1 No connection
- Pin 2 RS232 Transmit Output (9600 N81)
- Pin 3 No connection
- Pin 4 Analog Output
- Pin 5 Power and Signal ground
- Pin 6 No connection
- Pin 7 No connection
- Pin 8 No connection
- Pin 9 See packing list. (24 volts)

### Installation Guide:

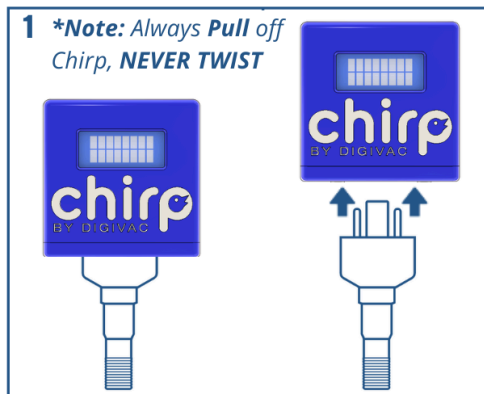
1. The Gauge Tube should be installed stem down in a clean, dry vacuum system to facilitate drainage
2. The axis of the tube should be vertical, although angles of up to 45 degrees are generally well tolerated. The unit should not be mounted directly on a vacuum pump
3. It is best to avoid mounting the unit where it will be subjected to excessive vibration or oil vapors
4. If it must be placed close to a vacuum pump, it is desirable to have at least two 90 Degree turns in the piping, this way, there will be no direct optical path for oil vapors, and gauge tube life and calibration will be maximized
5. The vacuum sensor has a 1/8 pipe thread connection. If any significant torque is to be applied to this connection, Use a 7/16 open-end wrench
6. Do not use the body of the instrument as a wrench!

## Quick Start

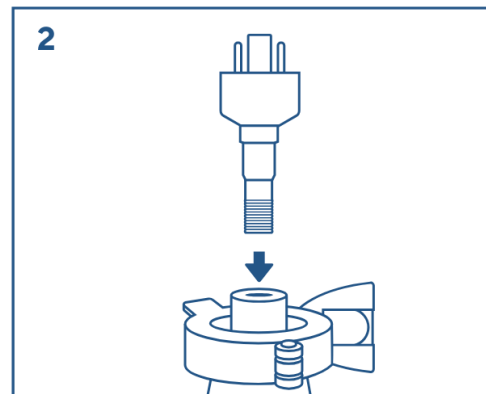
Refer to the Quick start on the following page for more installation instructions.

# Quick Start Guide

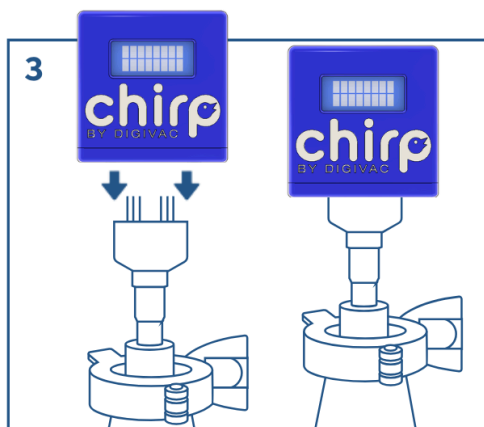
**chirp**  
BY DIGIVAC



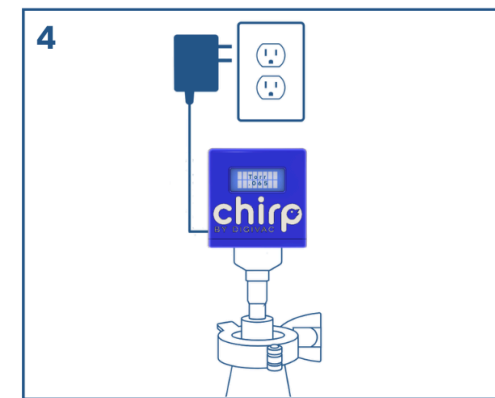
Unpack and remove Chirp display from gauge tube.



Plumb the vacuum gauge tube into your vacuum system



Connect the Chirp display to the vacuum tube



Run the AC adapter wire provided to the gauge, plugin to power on and read vacuum!

## Section 5: Operation

After installation, the instrument is ready for immediate operation. The unit consists of the instrument housing with interface connector and a Vacuum Gauge tube. It can be powered by an external source of 5.0V or with the included external 115/230 VAC power adapter.

### Analog Output

The unit has an analog output, which can be used to transmit vacuum to external equipment such as PLC's or chart recorders. This analog output is normally scaled by 5V5T volts. LBD volts are also available, as described below.

The settings are scaled, linear-by-decade, as follows:

- 0.0 to 0.999 volts = 0 to 999 millitorr
- 1.1 to 1.99 volts = 1.0 to 9.9 torr
- 2.1 to 2.99 volts = 10.0 to 99 torr
- 3.1 to 3.76 volts = 100 to 760 torr

Torr	Display	Scale	LBD Volts	5V5T Volts
.000	0 0 0	0	0.000	0.000V
.100	1 0 0	0	0.100	0.100V
.200	2 0 0	0	0.200	0.200V
.500	5 0 0	0	0.500	0.500V
.925	9 2 5	0	0.925	0.925V
1.00	1.0 0	1	1.100	1.000V
2.20	2.2 0	1	2.200	2.200V
5.18	5.1 8	1	1.518	5.000V
8.86	8.8 6	1	1.886	5.000V
11.9	11. 9	2	2.119	5.000V
34.7	34. 7	2	2.347	5.000V
55.3	55. 3	2	2.553	5.000V
71.9	71. 9	2	2.719	5.000V
96.4	96. 4	2	2.964	5.000V
110	110	3	3.110	5.000V
340	340	3	3.340	5.000V
550	550	3	3.550	5.000V
760	760	3	3.760	5.000V

## Section 6: Chirp vs Model 22w

**Model 22w Replacement:** The Chirp is a redesign of the original DigiVac model 22w which is now discontinued. It covers the same range, but uses a higher voltage and the visual display has been updated. We still support this model for calibration and repair, however Chirp will be the alternative product offering if your existing model 22w needs replacing. Existing customers can read the Model 22w manual [here](#).

Below are some differences

	Chirp	22W
Power	100-240VAC 50/60 Hz CE Rated	
DSub Input/Jack	24 VDC	5 VDC
Display Viewing	Front - 90°	Top - 180°
Dimensions	2.17" 2.7" x 2.73"	1.8" x 2.4" x 1.6"
Range	0.001 to 760 Torr	
Sensor	VGT 500 Thermocouple Plus (531 & 536 compatible)	
Accuracy	+/- 30%	
Display	16 Digit character display	
Mount	Sensor mounted including KF or NPT	
Vacuum interface	Vacuum Interface: 1/8" Male NPT or KF/NW	
Wetted Parts	Nickel, Copper, Constantan	
Units	Order as: Torr, Micron, Millitorr, or mbar	
Analog output	(if applicable): 0-5 Volts linear or linear by decade	
Calibrateable?	Yes	
<b>Chirp Advantages</b>		
Better screen orientation for reading		
Screen orientation encourages proper sensor installation orientation		
Sturdier packaging		
Additional noise immunity		
Easier integration through 24VDC power		



## Section 7: Servicing

### GAUGE TUBE SERVICING

In many cases, a gauge tube may become fouled with oil or other foreign matter. It is often possible to restore the functionality of contaminated probes with cleaning. If the contaminant is known, the tube should be filled with a fluid that is known to be a solvent to that contaminant. As an example, Acetone is often effective in removing residues of some oils. Commercial carburetor cleaners are very powerful solvents and are highly effective against some contaminants.

After cleaning with solvents, the gauge tube should be completely dried or flushed with a volatile solvent to assure that it is dry prior to re-installing it. If this is not done, it may result in contamination of the system.

### MAINTENANCE

Your vacuum instrument should give you many years of trouble free service. There are no regularly scheduled maintenance intervals. If consistent accuracy is required, it is recommended that the gauge, tube and power supply be returned for a yearly calibration check.

### FACTORY REPAIR AND CALIBRATION

The vacuum gauge assembly is designed to provide years of trouble-free service, and the liberal internal use of plug-in components make it easily repairable. No field servicing of the unit is recommended, other than replacement of the gauge tube, but factory servicing and calibration are available at a nominal cost and fast turn-around times.

### FIELD CALIBRATION

Each DigiVac vacuum gauge controller is calibrated to the particular vacuum gauge sensor that is shipped with the unit. While changing the gauge tube is possible, it will result in a slightly different reading as all gauge tubes are not created equal. Although it is preferable that all calibration be performed at DigiVac, field calibration can be accomplished.

Before re-calibrating the instrument, it should be ascertained that the instrument is in fact incorrect. In many cases, the problem will be with a tube that is fouled, or a system

that is operating improperly. It is recommended that a spare tube be kept on hand and stored in a clean, dry place. Then, in cases of suspect readings, the tube should be changed before proceeding further.

**Calibration:** The unit arrives at the factory calibrated, and re-calibrations are best performed by the DigiVac Company. User calibrations are possible, however using the following procedure:

## Section 8: Calibration

The instrument is calibrated in nitrogen, which has thermal properties virtually identical to air. Other gasses will affect the readings by an amount proportional to the thermal conductivity of the gases. In most cases, the gases present in a vacuum system will be air, nitrogen, or oxygen, and no appreciable errors will occur.

Certain other gases, however, have thermal conductivity significantly greater than air and will cause the instrument to read higher than the actual amount of pressure. Examples of such gasses are water vapor, fluorocarbon refrigerants, and acetone. Conversely, other gasses have thermal conductivity significantly lower than air and will cause the instrument to read lower than actual pressure. Examples of such gasses include helium, oxygen and to a lesser extent, CO<sub>2</sub>.

When interpreting readings using gasses other than air, it should be borne in mind that the DIGIVAC Chirp reads Torr, which is a measure of absolute pressure - that is the opposite of vacuum. Thus, a lower numerical reading actually is a higher level of vacuum. For more information, refer to section 8.0. When in doubt, consult DigiVac.

## Section 9: Understanding Torr

The DIGIVAC vacuum instrument and many similar instruments are calibrated in microns or "milliTorr." It is appropriate to discuss what microns are and to relate microns to other measures of pressure and vacuum. Microns are not really a measure of vacuum at all, but rather of absolute pressure. It will be recalled that the pressure of the atmosphere is 14.696 or approximately 14.7 pounds per square inch at sea level. This pressure is due to the weight of all of the air in the earth's atmosphere above any particular square inch. This 14.696 psi is equivalent to the pressure produced by a mercury column of approximately 29.92 inches high or .76 meters (about 3/4 of a yard) or 760 millimeters of mercury. Atmospheric pressure varies greatly with altitude. It decreases approximately 1 inch of mercury per thousand feet of altitude. It also varies widely with local weather conditions. (Variations of one half inch in a single day are common.)

The word vacuum means pressure lower than atmospheric or "suction," but, in describing negative pressure, the atmosphere is only a satisfactory reference if we are dealing with values of vacuum down to about 27 inches of mercury. Below that, it is much more useful to talk in terms of absolute pressure, starting from absolute zero.

The Chirp measures from 1 micron ( $1 \times 10^{-3}$  Torr) all the way up to 760,000 Microns (760 Torr) or Atmosphere. Since this gauge measures through the full range of rough vacuum, you can easily pinpoint either gross or fine process errors or leaks.

One TORR, a commonly used unit, is an absolute pressure of one millimeter of mercury. A milliTorr is equal to one thousandth of a TORR. A MICRON is the same as a milliTorr.

### **SPECIAL REQUIREMENTS**

It is the policy of the DigiVac Company to customize instruments for specialized requirements whenever it is economically feasible to do so. We encourage inquiries about your special needs.

**For repair or recalibration, return gauges to:**

**The DigiVac Company**

1020 Campus Drive

Morganville, NJ 07751

Ph: 732.765.0900

Fax: 732.765.1800

E-mail: Direct from our website [www.digivac.com](http://www.digivac.com)

The DigiVac Company manufactures a complete line of vacuum gauges and computers. Contact us or your distributor if you wish for further information.

*See [www.digivac.com](http://www.digivac.com) for our latest offerings*

## Section 10: Specifications

<b>Range</b>	.000-760
<b>Units</b>	Torr or mbar
<b>Vac Interface</b>	1/8 inch MNPT or KF/NW
<b>Sensor</b>	Thermocouple plus, Agilent 531 or 536
<b>Display</b>	16 digit character display
<b>Dimensions</b>	2.17" 2.7" x 2.73"
<b>Analog Output</b>	0-5 VDC
<b>Power</b>	100-240VAC 50/60Hz CE rated

### ACCURACY

<b>.000 to .015 Torr</b>	±4 millitorr or 20 %
<b>.016 to 4 Torr</b>	±30 %
<b>300 Torr to 760 Torr</b>	±20%

## Section 11: Terms of Use, Limited Warranty, and Liability Waiver

**THE DIGIVAC COMPANY ("DIGIVAC")** offers all of its products with the following terms and conditions and notices as follows. By accepting and/or using a DIGIVAC product, you hereby acknowledge and agree to the following terms and conditions, and acceptance of these terms and conditions are a condition precedent to any purchase/sale agreement between you and DIGIVAC.

**Exclusive Obligation:** The DIGIVAC product you are purchasing has been designed for a specific use within a set of suitable operating conditions, as set forth in its User Manual, or as indicated otherwise by DIGIVAC. Any use of the DIGIVAC Product for any purpose or under any conditions, other than those specified, shall render any limited warranty void, and shall expressly invalidate any liability of DIGIVAC for damages as a result of such misuse.

**User limitation:** You may not modify, copy, distribute, transmit, display, perform, reproduce, publish, license, create derivative works from, transfer, or sell, any information, software, products or services obtained from or created by DIGIVAC to any third party, without the express written consent of DIGIVAC to do otherwise. Any violation of this provision shall give rise to an indemnification of DIGIVAC by you, for any third party claims arising out of such violation.

**THIRTY (30) DAY LIMITED Warranty:** All DIGIVAC products are warranted against any manufactured defect for a period of thirty (30) days from date of purchase, unless such product is a custom-work for you and not a standard DIGIVAC product. Any product qualifying as a custom-work shall not be warranted against any defects for any purpose, and your acceptance of such custom-work shall relieve DIGIVAC of any liability for any purpose. WITH THE EXCEPTION OF THE LIMITED WARRANTY ABOVE, YOU AGREE ANY DIGIVAC PRODUCT IS PROVIDED AS IS, EXCLUSIVE OF ANY WARRANTY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED.

**Limitation Of Liability:** You agree and acknowledge, DIGIVAC shall have no liability to you whatsoever for any direct, indirect, punitive, incidental, special consequential damages arising out of or connected with the use or misuse of its products. In particular, given the nature of DIGIVAC products, you agree and acknowledge, under no circumstances whatsoever shall DIGIVAC be liable to you for any consequential damages for damage to any non-DIGIVAC product or service, arising from the failure, use or misuse of a DIGIVAC product, including, but not limited to, any vacuum system, engine, vehicle, factory, or the like. In the event, a court of law with proper jurisdiction finds DIGIVAC liable to you for any purpose, you agree and acknowledge DIGIVAC's maximum liability shall not exceed the purchase price of one unit of product giving rise to such liability, or \$250.00, whichever is greater.

**Entire Obligation:** These terms and conditions express the entire obligation of DIGIVAC with respect to its products. If any part of these terms and conditions are deemed void, invalid, unenforceable or illegal, including, but not limited to, the warranty disclaimers, liability disclaimers and liability limitations set forth above, then the unenforceable clause or sentence may be disregarded with the remainder of these terms and conditions valid and enforced. In the event the unenforceable clause or sentence leaves a void in these terms and conditions, a provision closely matching the intent of the unenforceable provision should be deemed inherent within these terms and conditions, slightly modified to render such provision valid and enforceable. General: These terms and conditions are governed by the laws of the State of New Jersey, USA. You hereby consent to the exclusive jurisdiction and venue of the Courts of New Jersey, in all disputes arising out of or relating to the use of this product. Use of this product is unauthorized in any jurisdiction that does not give effect to all provisions of these terms and conditions.

**Modification of Terms and Conditions:** DIGIVAC reserves the right to change the terms, conditions, and notices under which their products are offered.