

LACO TECHNOLOGIES

CONTROLLER SOFTWARE GUIDE

VC-3000 | HC-3000

The software in LACO's VC-3000 (**V**acuum **C**ontroller - vacuum control only) and HC-3000 (**H**eat **C**ontroller - vacuum and temperature control) Vacuum System Controllers enable flexible and convenient control of your vacuum system through simple, user-programming that enables control over evacuation, vent, hold, and thermal conditions. Our software configuration of multiple recipes, enables users to input and save any sequence needed for their process. With additional features such as data logging and live trending, our controllers are a cost-effective and powerful tool to operate your vacuum system.

CONTROLLER SOFTWARE FUNCTIONALITY	
UNIQUE RECIPES	20
MAX. RECIPE STEPS	100
RECIPE STEP TRIGGERS	<ul style="list-style-type: none"> Vacuum Level Temperature Level* Pause End
VACUUM CONTROL OPTIONS	EVAC, VENT, PURGE, HV [†] , VENT [†] , NONE
TEMPERATURE CONTROL*	HEAT (HT), COOL (CL), NONE
MANUAL CONTROL	Interlocked system control, password protected
DISPLAY SCREENS (MAJOR)	<ul style="list-style-type: none"> Main/Test Recipes Manual Advanced Parameters Faults
STANDARD INPUTS/OUTPUTS	
INPUTS (DIGITAL OR ANALOG)	<ul style="list-style-type: none"> Vacuum Transducer(s) (Analog) Temperature (2 Analog)* Turbo Speed & Faults[†] Start, Stop
OUTPUTS	<ul style="list-style-type: none"> Rough Valve Vent Valve Gate Valve[†] Foreline Valve[†], Turbo Pump
DATA LOGGING SETUP	<ul style="list-style-type: none"> Stored on 8 Gb SD Card Configurable Logging Interval Serial interface streaming
DATA LOGGING PARAMETERS	<ul style="list-style-type: none"> Date Time Foreline & Chamber Vacuum Temperature (1)* Temperature (2)*
COMMUNICATION INTERFACES	
RS232	<ul style="list-style-type: none"> Stream logged data Remote control
ETHERNET	<ul style="list-style-type: none"> Data Access and Retrieval Webserver

*HC-3000 only [†]High Vacuum systems only

KEY FEATURES

FLEXIBLE PROGRAMMING SEQUENCES

- Set up and control the sequence of events of vacuum level, temperature, and time in your vacuum system
- Save up to 20 "recipes" of sequences for repeated use.
- Run recipes automatically or control each step in manual mode for maximum safety and convenience.

CONFIGURE MULTIPLE I/O

Monitor and control signals from multiple inputs and outputs including vacuum gauges, thermocouples, pumps, circulator heater/chillers, and other key components of your system.

DATA LOGGING

- Log essential data to a 8 Gb SD card and/or streaming via the RS-232 serial port
- Customize data tracked and control frequency, output, and logging intervals

TRENDS

- View either vacuum or temperature trend screens. Runs in auto mode, scroll-enabled.
- Use custom data point intervals.

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Save up to 10 custom recipes. Each step in your recipe consists of up to 3 variables with modifiers: a vacuum control command with a setpoint, a trigger to initiate the next step, a hold time, and a temperature control command combined with a set temperature.

Vacuum Command tells the system what to do, i.e., EVAC, VENT, and PURGE

Set Point determines vacuum level

RECIPE #	SHORT TV	LACO				
ST#	VACUUM	S.P.	TRIGGER	HLD TIME	TEMP	
0	EVAC	0.30	VAC	00:00:10	HT	22.0
1	HV	0.00	VAC	00:01:00	NA	0.0
2	HV	0.00	TEMP	01:00:00	HT	75.0
3	HV	0.00	TEMP	01:00:00	HT	60.0
4	HV	0.00	TEMP	01:00:00	HT	-35.0

Use triggers such as Vacuum level, Temperature level, Time or Pause to let the system know when to move on to the next step. When your process is finished, use the trigger End to bring the system to atmospheric pressure and safe temperature to reload parts or restart the next sequence.

Each recipe can have up to 100 steps in any order that can be saved for later use.

Take control of your vacuum system with the custom management and live feedback our controllers provide.

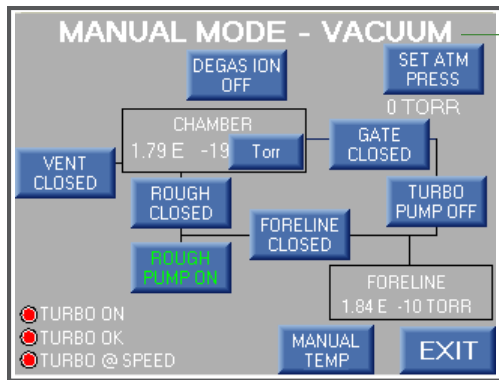
Data logged at the interval in the setup:

- Process Step
- Time
- Chamber Pressure
- Foreline Pressure
- Temperature Setpoint
- Heater Temperature
- Part Temperature
- Turbo at Speed

Data logged at the initial setup:

- Time Stamp
- Recipe Name

Figure 1. Recipe screen in Auto Mode



Operate in automatic or manual mode. Software is password protected with full interlocks for maximum safety and ease of use.

Set frequency, output and intervals for data output of your vacuum system. Data logging is an essential tool for evaluating the performance of your vacuum system, troubleshooting, and tracking faults.

DATA LOG SETUP

ENABLE CSV/EXCEL DATA LOGGING: YES

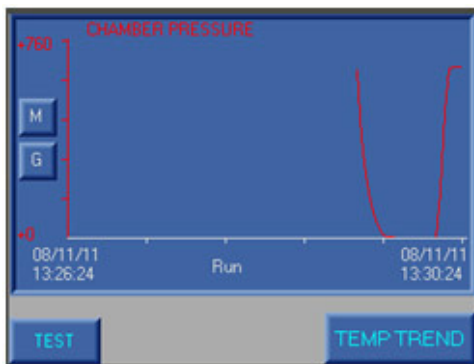
DATA LOG INTERVAL: 00:15

ENABLE SERIAL DATA STREAM: NO

SERIAL SEND INTERVAL: 00:15.00

EXIT

Figure 3. Data Logging Setup Screen



Receive live feedback of your vacuum system with dual trend screens showing chamber pressure and temperature trends.

Temperature samples at 10 second intervals with 750 maximum samples

Vacuum samples at 10 second intervals with 2000 maximum samples

Figure 4. Vacuum Trend Screen

Figure 5. Temperature Trend Screen