



# **Quick Start Guide**

## **Liquid Nitrogen Dosing System**

### **Craft Custom Controller**



**Designed and Built by:**

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## Revision Log

Revision Level	Date	Description
A	08/01/2017	Original



## Preface

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### General

The Craft Custom controller provides Dynamic Dose Duration, Continuous Dose, Liquid Level control and Semi-Auto Purge.

### Product Highlights

- Dynamic Dose Duration is the process of sequential dosing allowing separate delay and duration set points for dose drop. This is crucial for linear fillers that fill multiple cans simultaneously. Each can is exposed to more oxygen than the one before. Ability to modify the dose amount per can creates consistency.

There are four Dynamic Dose recipes available; each recipe consists of ten steps which are independently configurable. A step consists of a delay set point and duration set point for up to ten containers. Step processes are initiated when the container trigger sensor is activated and will sequence through each step every time the container trigger is activated. The system only recognizes the step with a delay value greater than zero, if a step is set to zero then the controller ignores any consecutive steps.

- Continuous Dose is manually activated and provides a continuous dosing stream from the nozzle. Continuous Dose is toggled on/off from the controller mode select screen.
- Liquid Level Control allows the user to control how much liquid nitrogen is stored in the CryDoser FleX® LN<sub>2</sub> Dosing System vessel providing a high or low pressure dose. Liquid Level Control consists of a high set point and low set point set by the user. This is essentially a “SoftDose” system built into the controller.
- Semi-Auto Purge allows the user to purge from a single pushbutton on the controller screen. When the purge is enabled gas will flow into the dosing head removing any liquid nitrogen, water or ice buildup in the system. Purge is enabled and disabled from the controller mode screen.

### Quick Start Guide

This manual contains information regarding the setup and usage of the Craft Custom Controller. If at any time you have questions about setup or operation, please contact customer service at 1-800-371-3303.

### Terms

Throughout this manual safety precautions will be designated as follows:



**Note:** *A statement that contains information that is important enough to emphasize or repeat.*

### Acronyms / Abbreviations

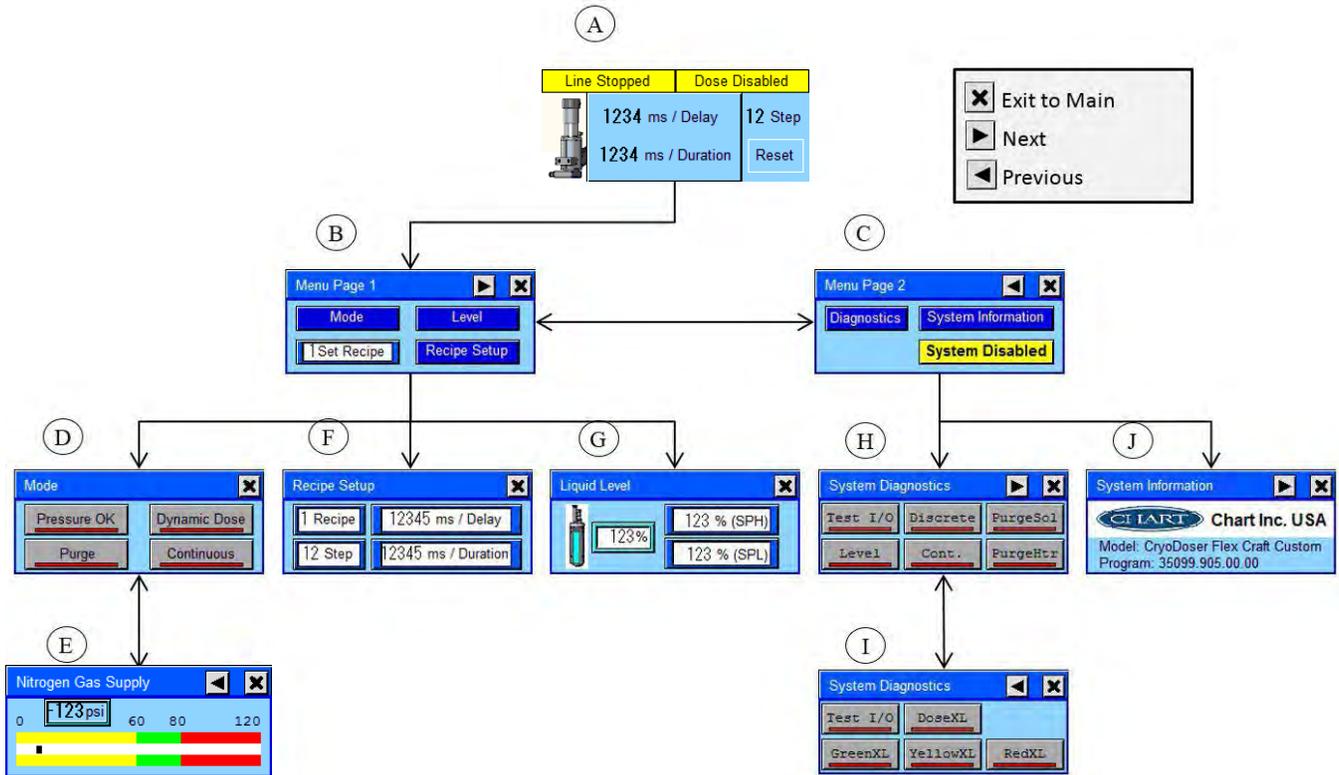
The following acronyms / abbreviations are used throughout this manual:

MS	Millisecond
XL	“Indicator”
SPH	Set Point High
SPL	Set Point Low
I/O	Input/Output
PSI	Pounds per Square Inch

# Quick Start Procedure

This section contains the instructions for proper setup of your Craft Custom Controller.

## Screen Overview

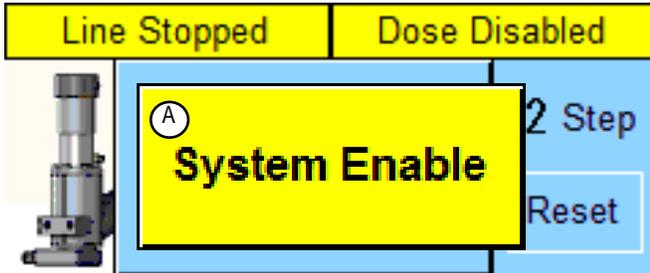


Item	Description
A	Main Screen
B	Menu Page 1
C	Menu Page 2
D	Mode Select
E	Supply Pressure Information

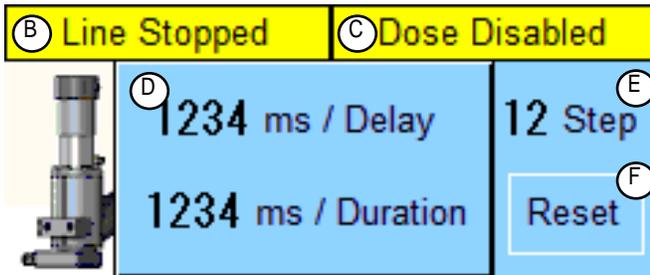
Item	Description
F	Recipe Setup
G	Liquid Level Control
H	System Diagnostics (Page 1)
I	System Diagnostics (Page 2)
J	System Information

### System Enable/Disable

When the system power is turned on, the control system will be in the disabled mode. When in the disabled mode the dose functions and liquid level control will not operate. Operators should always disable the system during maintenance operations.

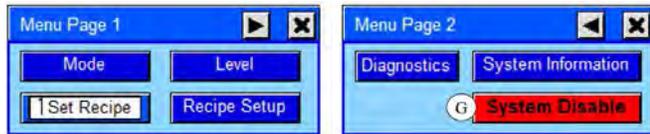


Enable the control system by pressing the “System Enable” button (A).



When the system is enabled the main screen will display the production line status (B), controller status (C), current step delay and duration times (D), current step count (E) and step “Reset” button (F).

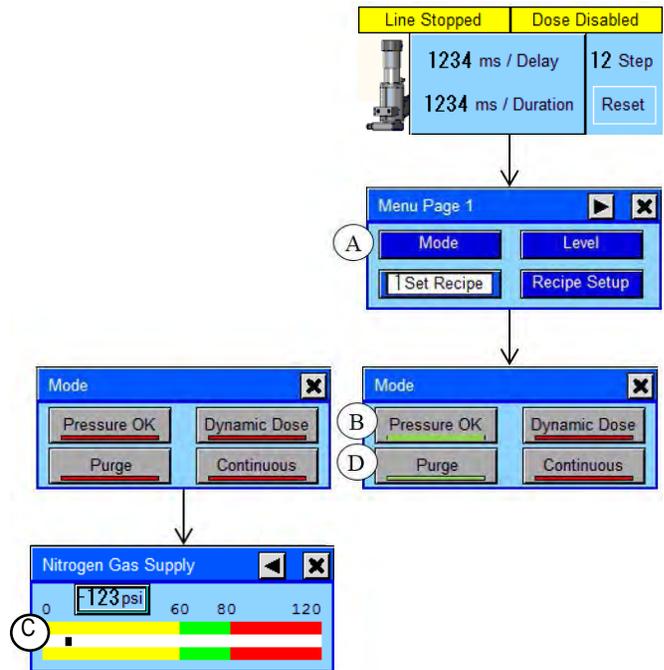
To open the menu screen touch within area (D).



To disable the control system go to Menu Page 2 and select the “System Disable” button (G). The System Disabled button will appear.

### Purge Select

The CryoDoser FleX® LN<sub>2</sub> Dosing System is provided with a semi-auto purging system. There are two versions available, Standard purge and ThermoPurge. ThermoPurge can be purchased with the CryoDoser FleX system, or it can be purchased as an upgrade at a later date. Standard purge supplies nitrogen gas to the dosing head removing any liquid or ice from the internal surfaces. ThermoPurge supplies heated nitrogen gas to the dosing head removing any liquid or ice from the internal surfaces quicker and more efficiently than a standard purge. If ThermoPurge is installed on the CryoDoser FleX system it will automatically heat the nitrogen gas when the purge is activated.



Open Menu Page 1 and select the “Mode” button (A).

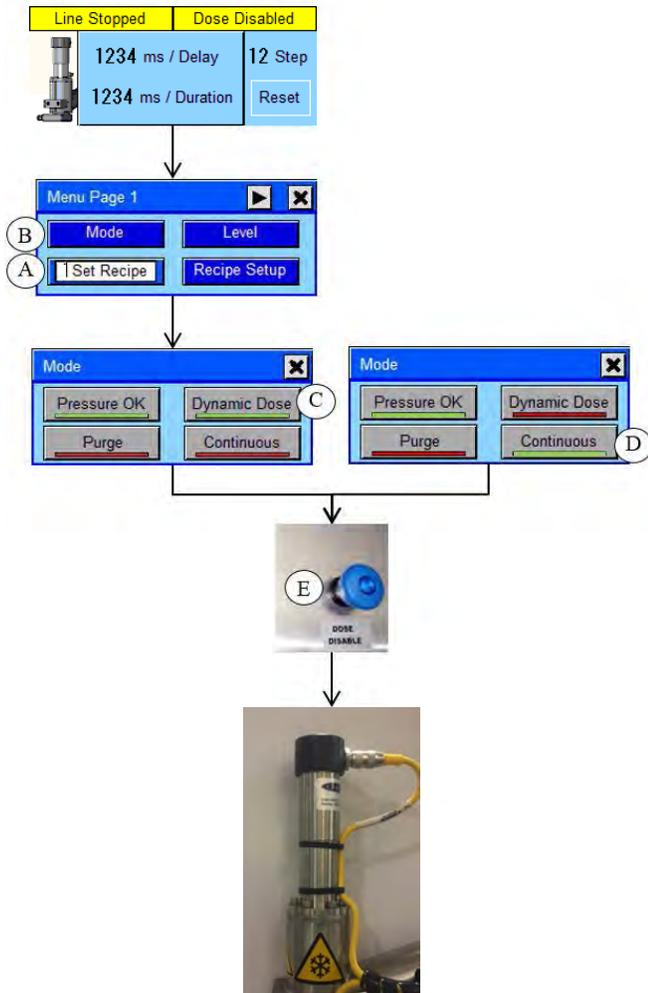
From the Mode screen verify the Pressure OK indicator (B) is green, if not press the “Pressure OK” button (B) to view the supply gas pressure (C). Pressure should be between 60 and 80 psi (system will not run if supply pressure is out of range). Select the back button to return to the Mode screen.

Select the “Purge” button (D) to toggle purge mode ON/OFF. Indicator will be green when active.

## Dose Enable

The CryoDoser FleX® Craft Custom dosing system is equipped with the Dynamic Dose feature. Dynamic Dose allows the system to dose several sequential containers with different delay and duration settings. The system is also provided with continuous dosing allowing the containers to be dosed with a constant stream of liquid nitrogen.

Open Menu Page 1



## Dynamic Dose

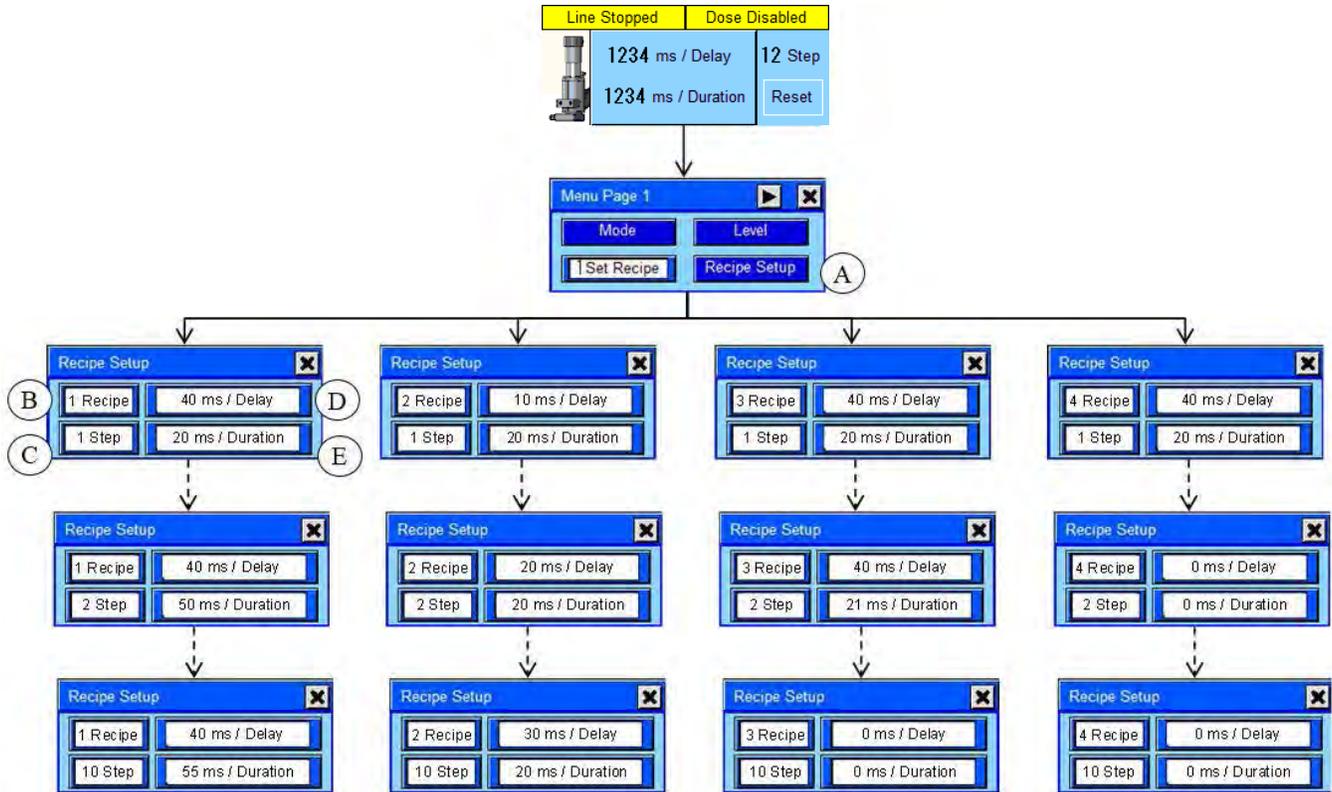
- Select the “Set Recipe” button (A), enter the recipe number you want to run
- Select the “Mode” button (B), verify the Pressure OK indicator is green
- Select the “Dynamic Dose” button (C), mode is active when indicator is green
- Pull out the “Dose Enable/Disable” pushbutton (E) to enable dosing, push in the “Dose Enable/Disable” pushbutton to disable dosing. Dosing is active when pushbutton blue indicator is on.

## Continuous Dose

- Select the “Mode” button (B), verify the Pressure OK indicator is green
- Select the “Continuous” button (D), mode is active when indicator is green
- Pull out the “Dose Enable/Disable” pushbutton (E) to enable dosing, push in the “Dose Enable/Disable” pushbutton to disable dosing. Dosing is active when pushbutton blue indicator is on.

## Recipe Setup

The user can set up to four Dynamic Dose recipes. Each recipe can have up to ten steps which each have delay and duration set points. Each step corresponds to the number of sequential containers to be dosed.



Open Menu Page 1 and select the “Recipe Setup” button (A).

1. From the Recipe Setup screen, select the recipe button (B) and enter the recipe number to edit.
2. Select the Step button (C) and enter the step number to edit.
3. Select the Delay button (D) and enter the container trigger to dose head delay value (1 millisecond increments)
4. Select the Duration button (E) and enter the dose duration value (1 millisecond increments)

Repeat steps 2 through 4 for each sequential container.

## Liquid Level Control

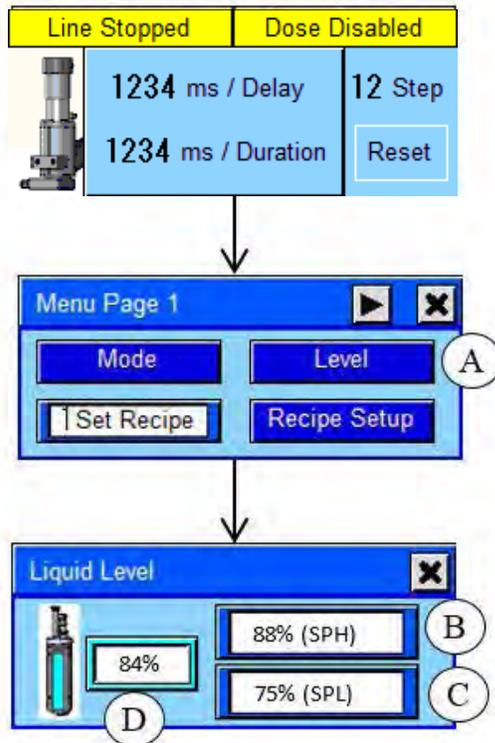
The CryoDoser FleX® LN<sub>2</sub> Dosing System allows the user to set the liquid nitrogen level to specific depth in the holding tank. Reducing the liquid level depth will reduce the dose nozzle liquid pressure providing a softer dose. Filling the liquid level to maximum depth will increase the dose nozzle liquid pressure providing a higher volume with a lower duration.

Open Menu Page 1 and select the “Level” button (A)

Select the Set Point High (SPH) button (B) and enter the high level percentage (0% to 100%).

Select the Set Point Low (SPL) button (C) and enter the low level percentage (set at least 20% less than high level).

Indicator (D) displays the current liquid level.



## System Information & Diagnostics

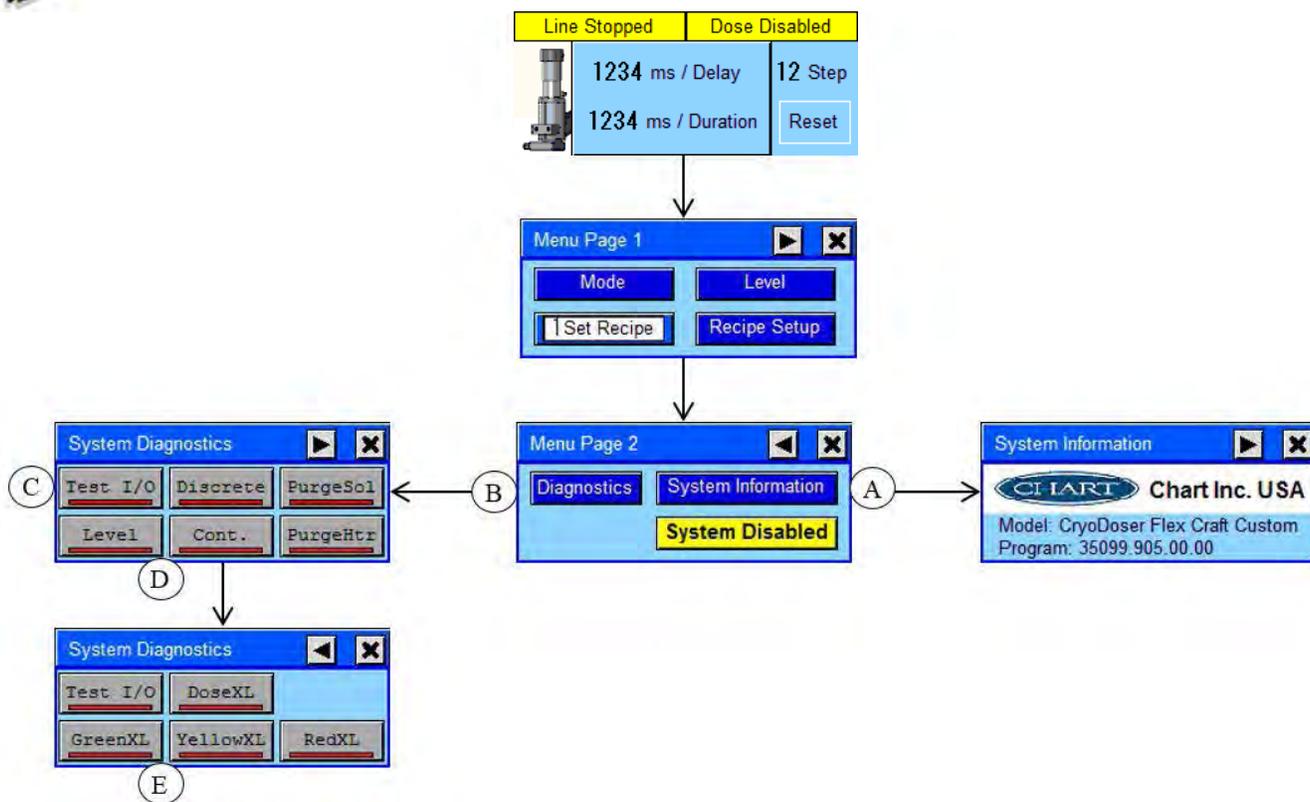
The system information screen displays the Doser model and installed controller program number and version. System diagnostics screens are provided to test the CryDoser Flex® LN<sub>2</sub> Dosing System devices.



**Note:** These are manual operations and all devices will remain ON or OFF as long as the Test I/O button or individual device button is active.



**Note:** Normal operation will not function while Test I/O is active.



### System Information

Open Menu Page 1 and go to Menu Page 2. Select the “System Information” button (A).

### System Diagnostics

Open Menu Page 1 and go to Menu Page 2. Select the “Diagnostics” button (B).

Select the “Test I/O” button (C) to enable manual control.

- Select the “Level” button (D) to toggle the liquid level control actuator open/close
- Select the “Discrete” button or “Cont.” button (D) to toggle the dose actuator open/close
- Select the “PurgeSol” button (D) to toggle the purge gas solenoid on/off
- Select the “PurgeHtr” button (D) to toggle the ThermoPurge controller on/off
- Select the “XL” buttons (E) to toggle indicators on/off