Despatch LCD1-16NV-3 User Manual

Version of 2025-06-16.

1. Introduction

This user manual explains how to operate the Despatch LCD1 oven for the curing of bio-compatible polymer films

The oven allows to edit and run up to 8 different temperature profiles.

The current program reservation is displayed on the over front door. Make sure not to edit programs reserved by other users!

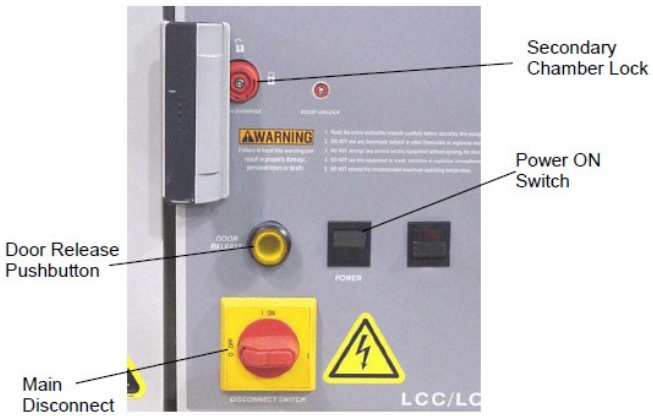
Desptach LCD1-16NV-3		
Program N°	Description	User
1		
2		
3		
4		
5		
6		
7		
8	Polyimide full curing	CMI

2. Login

- Login on the *"Z11 Despatch Industries LCD-16NV-3 – Oven 350°C"* with CAE on zone 11 accounting computer.

ℹ	Z11 Despatch Industries LCD1-16N-3 - Oven 350°C

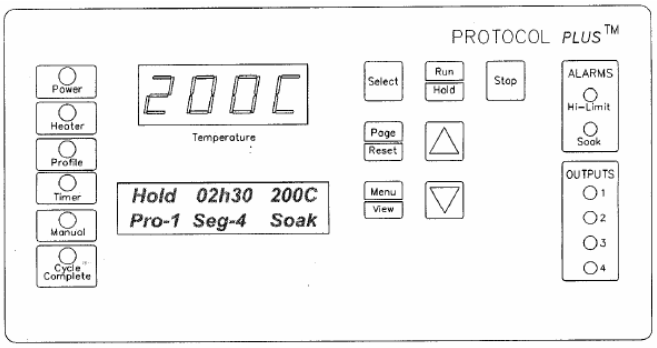
3. Power ON & loading samples



Lower Portion of Control Panel

- Power ON the oven with the *"Power"* switch (Main switch should always stay ON)
- The *"Door Release"* push button should be illuminated. Push on it to unlock the door.
- Load your wafers in the available metal cassette.
- Make sure to close the door correctly.

4. Basic operation & Operating Modes



The oven is operated with the PROTOCOL *PLUS* controller.

5 operating modes are available:

1. **Stopped Mode:** All control and relay outputs are off. Stopped Mode is integrated into each of the following four modes of operation.
2. **Manual Mode:** Control operates as a single setpoint control until Stopped mode is accessed.
3. **Timer Mode:** Control operates as a single setpoint control until preset time period has expired.
4. **Profile Mode:** Control operates as a ramp/soak profiling control until the end of the profile. 8 profiles are available with up to 8 ramp/soak segments in each profile.
5. **Auto Start Mode (optional):** Control may automatically start Manual, Timer, or Profile mode based on a preset time and day. *Requires the optional real-time clock feature.*

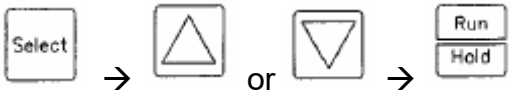
4 optional events (see below) outputs can be utilized during Manual, Timer, or Profile modes. The events are:

- Event 1: Cooling
- Event 2: End of cycle
- Event 3: N_2 purge (pulse)
- Event 4: N_2 maintain (constant flow)

<u>BASIC OPERATION:</u>

Upon initial power-up the control is in **Manual/Stopped Mode**. To activate any operating mode from Stopped Mode, press the "*Select*" key until the desired mode is displayed, then press the *"Run"* key.

When the **Profile Mode** is accessed, press the *"Arrow"* keys until the desired Profile number is displayed, then press the *"Run"* key.

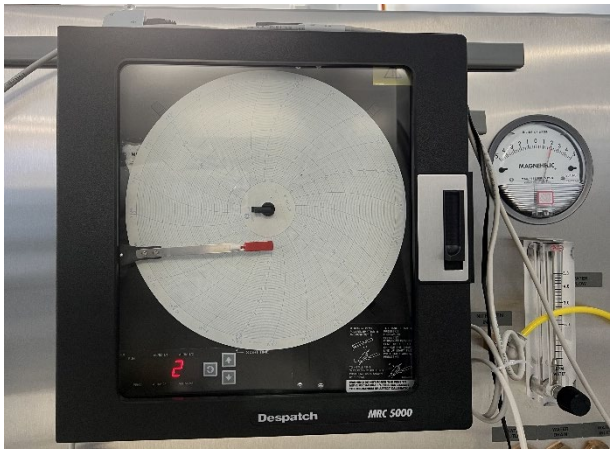


Press *"Stop"* to return to **Stopped Mode.**

5. Checking N_2 flow and temperature monitoring

Make sure to check the N_2 flow during in the steps with Event 4 active. Two flowmeters are located on the right side of the oven.

Temperature profiles can be recorded using a traceable time vs temperature rotating paper disk.



Please check with the staff if you want to use the recording system.

6. Programming profiles edition

To edit the temperature profiles, users should first enter in the **Setup Mode**. Press the following buttons:

1. Select until **Setup Mode** is displayed
2. Page / Reset **Security** is displayed
3. Menu / View **Password** is displayed
4. ▲ or ▽ to set the password to **"2"**
5. Page / Reset + Page / Reset to enter **Setup Mode** with the correct password

Users should then access the **Program Page** by pressing the following buttons:

1. Page / Reset until **Program Page** is displayed
2. Menu / View to enter in the **Program Page**
3. ▲ or ▽ to select the program N° for edition
4. Menu / View to cycle through each program parameter

Each program consists in a series of segments:

- One segment contains a **Ramp Time**, a **Soak Temperature** (target) and a **Soak Time** (duration of the plateau)
- Both ramp and soak steps can have any of the 4 events activated.

The program parameters are arranged in a sequence. Here is the list and description of all parameters:

- **Profile #** There are eight profiles available.
- **Segment#** Recipe segments 1 through 8 may be programmed, each with its own set of events, ramp and soak times, and soak temperature.
- **Ramp Time** The time required to ramp from one setpoint up to another setpoint. Values between 0 and 99:59 are allowable. In the Protocol Plus controller, the profile ramp and soak times are stored without units. Units are set as either hours and minutes (HH:MM) or minutes and seconds (MM:SS). The setpoint will automatically increment from the actual temperature to the soak temperature.
- **EV1 through 4** From 1 to 4 events may be programmed into the ramp time portion of each segment here. These typically involve actuating/disabling relays to close/open valves or perform other relay-controlled functions.
- **Soak Temp.** The temperature setpoint of a particular segment is entered here; it can range from -18 to 540 degrees C (0 to 1000 degrees F).
- **Soak Time** The duration of soak is entered here; the value can range from 0 to 99:59.
- **EV1 through 4** From 1 to 4 events may be programmed into the soak portion of each segment here. These typically involve actuating/disabling relays to close/open valves or perform other relay-controlled functions.
- **Hi Limit SP** The high limit setpoint may be entered here; if the temperature exceeds this value, the hi-limit will alarm and shut off the heater.
- **Loop From** Values are No, Seq-1 to Seq-8.
- **Loop To** Values are No, Seq-1 to Seq-8.

- **Loop Number** Values are 0 - 99. These values enable the operator to jump from a certain step to another step of the recipe a preset number of times.
- **Profile Link** Values are STANDBY/STOP/HOLD/1 - 8. When the profile ends, the profile can hold the temperature setpoint while keeping the events active, turn the heater off, hold the temperature setpoint at the end of the profile, or jump to another specified profile.
- **Guaranteed Soak Band** If the process temperature deviates from the setpoint by more than this value, the soak timer is placed in a hold condition. The timer continues when the process temperature falls within range.

Parameters are arranged in the following order:

Menu Item	Display	Description
Ramp Time Seg 1	Pro-# Seg-1 Ramp Time	Ramp time for segment 1 of profile
Event 1 Set Value*	Pro-# Seg-1 Ramp Event 1	Event 1 setting for segment 1 ramp of profile
Event 2 Set Value*	Pro-# Seg-1 Ramp Event 2	Event 2 setting for segment 1 ramp of profile
Event 3 Set Value*	Pro-# Seg-1 Ramp Event 3	Event 3 setting for segment 1 ramp of profile
Event 4 Set Value*	Pro-# Seg-1 Ramp Event 4	Event 4 setting for segment 1 ramp of profile
Soak Temp Seg 1	Pro-# Seg-1 Soak Temp	Soak temperature for segment 1 of profile
Soak Time Seg 1	Pro-# Seg-1 Soak Time	Soak time for segment 1 of profile
Event 1 Set Value*	Pro-# Seg-1 Soak Event 1	Event 1 setting for segment 1 soak of profile
Event 2 Set Value*	Pro-# Seg-1 Soak Event 2	Event 2 setting for segment 1 soak of profile
Event 3 Set Value*	Pro-# Seg-1 Soak Event 3	Event 3 setting for segment 1 soak of profile
Event 4 Set Value*	Pro-# Seg-1 Soak Event 4	Event 4 setting for segment 1 soak of profile
(repeat for segments 2-8, until ramp or soak time = 00:00)		
High Limit Setpoint	Pro-# Hi-Lim SP	High limit setpoint for profile**
Loop From	Pro-# Loop From Seq	To start a loop action in a profile
Loop To	Pro-# Loop To Seq	To end a loop action in a profile
Loop Count	Pro-# Loop Number	Number of times to execute loop
Profile Link	Pro-# Link To Pro	To jump from this profile to another
Guaranteed Soak	Pro-# Guar Band	Guaranteed soak band for profile

7. Example: polyimide curing profile

Pro-8 Seg-1 Ramp Time	01h00	Segment 1 @ 200°C
Pro-8 Seg-1 Ramp Events	OFF	
Pro-8 Seg-1 Soak Temp	200°C	
Pro-8 Seg-1 Soak Time	01h00	
Pro-8 Seg-1 Soak Events	OFF	
Pro-8 Seg-2 Ramp Time	00h05	Segment 2: N_2 purge & maintain
Pro-8 Seg-2 Ramp Event 3	ON	
Pro-8 Seg-2 Soak Temp	200°C	
Pro-8 Seg-2 Soak Time	00h01	
Pro-8 Seg-2 Soak Event 4	ON	
Pro-8 Seg-3 Ramp Time	02h30	Segment 3 @ 300°C
Pro-8 Seg-3 Ramp Event 4	ON	
Pro-8 Seg-3 Soak Temp	300°C	
Pro-8 Seg-3 Soak Time	01h00	
Pro-8 Seg-3 Soak Event 4	ON	
Pro-8 Seg-4 Ramp Time	03h00	Segment 4: cooling down to 150°C
Pro-8 Seg-4 Ramp Event 4	ON	
Pro-8 Seg-4 Soak Temp	150°C	
Pro-8 Seg-4 Soak Time	00h01	
Pro-8 Seg-4 Soak Events	OFF	
Pro-8 Seg-5 Ramp Time	00h00	CYCLE END
Hi-Lim SP	355°C	
Loop From Seg	No	
Loop To Seg	No	
Loop Number	0	
Link To Pro	Stop	STOP
Guar Band	OFF	