

## LNN-101 Operators Notes

### **1. General.**

The LNN-101 liquid nitrogen controller allows convenient control of a vacuum coating plant meissner coil.

This document summarises the LNN-101 operation.

### **2. Operating Modes.**

The LNN-101 has two operating modes, Normal and Program. The PROG button is used to toggle between the two modes.

### **3. Normal Operating Mode.**

In the Normal mode the left hand LED is off and the left hand digit is blank.

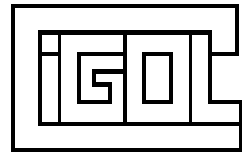
The display indicates the measured temperature in °C.

The right hand LED indicates the state of controller as follows.

- |      |                  |   |
|------|------------------|---|
| 3.1. | LED = Off        | Meissner coil is off  |
| 3.2. | LED = On         | Meissner coil is being cooled                               |
| 3.3. | LED = Fast flash | Meissner coil is being warmed - not yet ready for venting   |
| 3.4. | LED = Slow flash | Meissner coil is being warmed - system is ready for venting |

The push buttons are used as follows.

- |      |           |   |
|------|-----------|---|
| 3.5. | OFF/STEP  | Turn off meissner coil (stops liquid N <sub>2</sub> and / or warming) |
| 3.6. | WARM/UP   | Start meissner warming by compressed air.                             |
| 3.7. | COOL/DOWN | Start meissner cooling using liquid N <sub>2</sub>                    |
| 3.8. | PROG      | Change to Program mode  |



#### **4. Program Operating Mode.**

In the Program mode the left hand LED flashes and the left hand digit shows either an upper or lower horizontal bar according to which set point is being adjusted.

The display indicates one of the two programmable set point temperatures in °C. The cold set point is the value at which the liquid N<sub>2</sub> valve is de-energised. This is indicated by the lower bar on the left hand digit. The warm set point is the value at which the liquid N<sub>2</sub> valve is re-energised as the meissner coil starts to warm up. The LNN-101 does not allow the warm set point to be set to a value less than or equal to that set for the cold set point.

The push buttons are used as follows.

- |     |           |                             |
|-----|-----------|-----------------------------|
| 4.1 | OFF/STEP  | Change to other set point   |
| 4.2 | WARM/UP   | Increase value of set point |
| 4.3 | COOL/DOWN | Decrease value of set point |
| 4.4 | PROG      | Change back to Normal mode  |