SDI

# NANO DIP

# ND-0407

## [ MANUAL ]

Contents




H060831S

SDI COMPANY.,LTD.

## 1 Introduction

<< NANO DIP ND-0407>> is a device to form the thin film on both sides simultaneously by extracting the material from the liquid in the tank.

This manual is a guide book to use << NANO DIP ND-0407>>.

Please read this manual and understand the content well ahead of the use.

We recommend you to have this manual on hand always when you are working with our product.

Please feel free to contact our company when you have any queries relating to our products or this manual.

### ⚠ About the use of this device

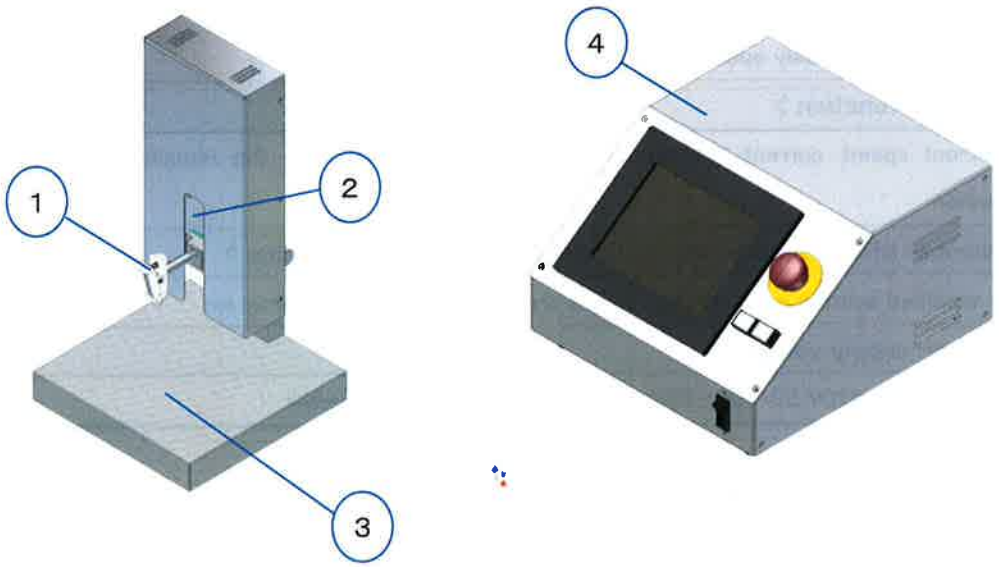
- This device is designed in consideration of safety, and manufactured. However, it is impossible to forecast all dangers and the wrong use. This manual must be perused, and the device must be driven safely.
- Please your company is put in the hand, and append Material Safety Data Sheet (MSDS) of the chemical used to this book when you use the drug solution with this device. Please understand the characteristic of the chemical used enough if you are related to driving and the maintenance work of this device. Please operate it after noting that neither a wrong operation nor the accident happens enough. The structure and the characteristic of the chemical change by pressure, the temperature, and static electricity according to these conditions, and it become dangerous in certain condition.
- Please observe established law and ordinance about the security of the worker who uses this device. Moreover, please observe the law and the ordinance that notes environmental preservation and relates when you process a used chemical, other materials, and by-products.
- It doesn't assume the responsibility of the damage caused by the situation in which our company of remodeling on the customer side, the resolution, the misuse, and the equipment environment such as incompleteness cannot take part

## 2 Composition and specification

<<NANO DIP ND-0407>> has the following compositions.

### ◆Device composition

① Material hanging part
② Upper and lower, driving part
③ Table
④ Control box




### ◆Connection of main body and controller

Connected connector (CN1A) of connected cable is connected with connected connector (CN1A) in the main body, and connected connector (CN1) is connected with connected connector (CN1) in the controller part.

Afterwards, please connect the power supply outlet.

**The power supply outlet must use the outlet with the earth.**

## ◆Device specification

| Device specification |
|---|
| < Coating material > |
| ・Material of maximum size (W) 50mm × (H) 50mm or 500g or less in weight |
| < Processing speed > |
| ・0.01 μm/sec～2000.00 μm/sec (It is possible to set it by the unit of 0.01 μm/sec. ) |
| < Effective processing stroke > |
| ・0.00 μm～50000.00 μm (It is possible to set it in 0.01 μm. ) |
| < Stop time > |
| ・0.1sec～999.9sec (It is possible to set it by the unit of 0.1sec. ) |
| < Repeated frequency > |
| ・1～998 times (It is possible to set it by the unit once. )<br>It keeps continuously operating when setting it to 999 times. |
| < Monitor function > |
| ・Current speed, current position, the remainder time, and with the remainder frequency display function |
| < Number of specified points and number of specified programs > |
| ・A specified point is eight points. ・Eight programs of a specified program. |
| < Power-supply voltage > |
| ・Single phase 220V 50/60Hz 200VA(outlet attachment with earth) |

## ◆System requirements

| System requirements |
|---|
| < Ambient temperature of use > |
| ・0℃～50℃ (There must not be freezing) control box is 40℃ or less. |
| < Use surroundings humidity > |
| ・35%～85% or less(There must not be dewy. ) |
| < System requirements > |
| ・There must be neither causticity gas nor dust.<br>・Neither water nor oil, etc. must splash directly. |

## 3 About the control box

<< NANO DIP ND-0407>> is an operation with the touch panel because it confirms the change in set data and operation. It explains the control box as follows.


Control box

| No | Name | Content |
|---|---|---|
| ① | Touch panel | It is a display panel for the operation.<br>It drives with the change of a set value and the point. |
| ② | Power-supply switch | It is a switch for the power supply. |
| ③ | Start switch | It is a beginning switch of driving.<br>Driving can be started error-free. |
| ④ | Stop switch | It is a temporary stop switch while driving.<br>The position of the arm while driving can be stopped.<br>It is possible to resume operations by releasing it while driving.<br>Driving can be reset by pushing the starting point return switch while stopping temporarily. |
| ⑤ | Emergency stop switch | It is a switch for the emergency stop.<br>When urgent stopping, it uses it.<br>After the emergency stop is released, operation while driving is reset. |

## 4 About the way of the operation

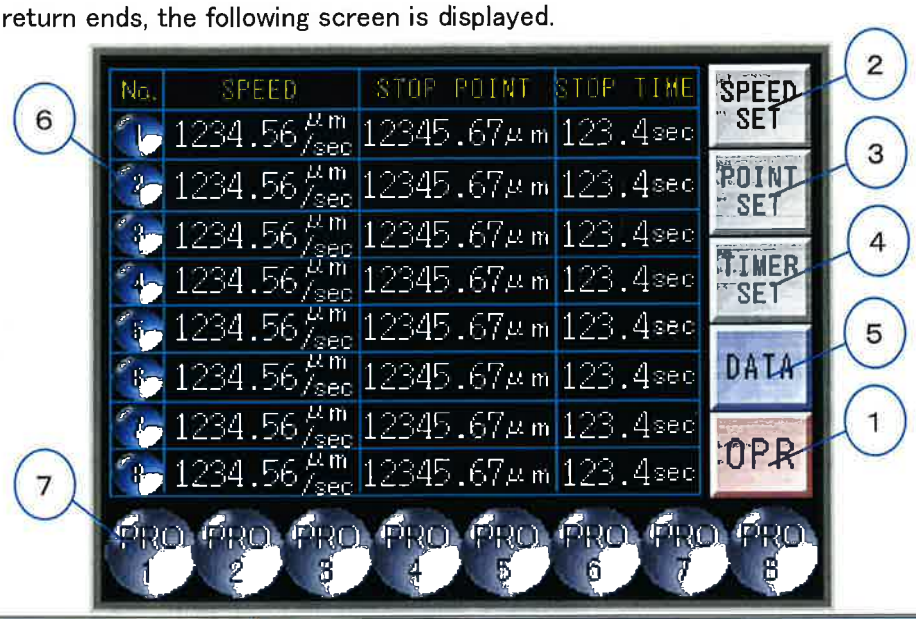
The start screen is displayed, and <<NANO DIP ND-0407>> is displayed the main screen and enters the state that can be driven if the switch of the mark of the language of the title screen switch (A Japanese mark or an English mark is selected) is pushed after the DIP arm starting point return ends if the power on/off switch is turned on. It explains the way of the operating as follows.

### 4. 1 About the touch panel

・After the power supply is turned on, the following start screens are displayed.


A Japanese mark or an English mark is selected.

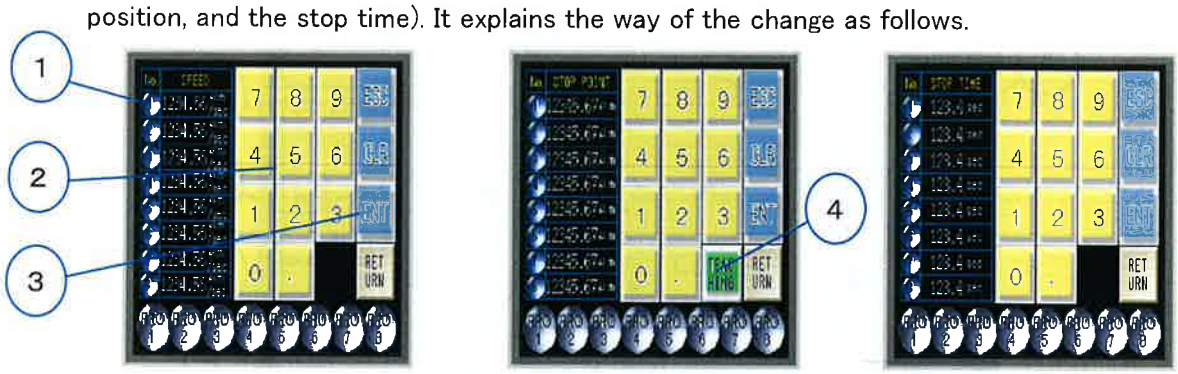
- When the language switch is pushed after the start screen is displayed, and the starting point return ends, the following screen is displayed.



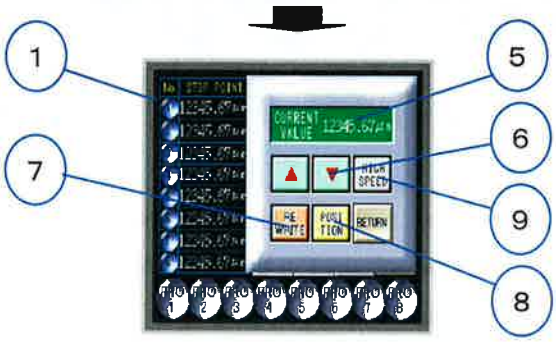

| No | Name | Content |
|---|---|---|
| ① | OPR | The starting point returns to the position at 0.00 μm when current point in the material hanging part is at the positions other than 0.00 μm. |
| ② | SPEED SET | It changes into the screen where the speed that moves to each point is set. The useful range of a set value is 0.01 μm/sec～2000.00 μm/sec. |
| ③ | POINT SET | It changes into the screen where the stop position in each point is set.<br>The useful range of a set value is 0.00 μm～50000.00mm. |
| ④ | TIMER SET | It changes into the screen where the stop time after the point moves is set.<br>The useful range of a set value is 0.1sec～999.9sec. |
| ⑤ | DATA | It changes into the screen where the point movement of the set value while displaying or driving is confirmed. |
| ⑥ | ①～⑧ | It is a switch that decides the point data used.<br>Red lights when the point is selected, and blue lights when the point is non-selected. It blinks while driving when the specified point works.<br>Please select it by the way of processing material. |
| ⑦ | PRO1①～⑧ | Eight program data or less can be memorized.<br>Please set the point data after selecting the program. |

## 4. 2 About set data

・<< NANO DIP ND-0407>> can change three points (processing speed, the point stop position, and the stop time). It explains the way of the change as follows.




Speed setting　　Point setting(Ten keys writing)　　Stop time setting




Point setting(Teaching)

### ◆Directly with ten keys about writing

- On a set each screen, a set change pushes the point① that wants to do. The display frame blinks while possible to be changed.
- Next, ten keys② are pushed and the numerical value is input. The numerical value changes by pushing the ENT key③ after it inputs it.

### ◆About the point teaching

- When the teaching④ is pushed, the teaching screen is displayed.
- The point① that wants to change is chosen (It lights red when selecting it, and light to blue when non-selecting it), the upper and lower movement switch⑥is pushed while confirming current position, and it is moved to the stop position that wants to be set. The speed of an upper and lower movement can be changed with high speed/low speed/Inting JOG switch⑨. (Become high-speed JOG 2mm/sec and low-speed JOG 0.5mm/sec and Inting JOG 0.01 μm/sec. )
- It writes, the data of the point① writes the position⑦ by pushing after it moves, and it changes.
- To push a positional confirmation⑧ after data is changed, it moves to the position by the automatic operation.

## 4. 3 About an automatic driving

<Preparation before start of processing of material>

1. Please set the stop position by hanging the same degree of the one as the material processed with the tank not set in the table, and writing the teaching or ten keys.

2. Please change the processing point data to an appropriate value when the value of the point data is neither a position nor a speed of appropriateness to the tank and the processed material.

3. Please hang the material processed to the arm part, and confirm whether the descending soaking position and the position of the tank are appropriate.

<Flow of material processing>

1. The starting point automatically returns to the arm part after turning on the power supply.

2. The material processed to the arm part is set.

3. The start switch is turned on, and it drives according to the processing point data that the processed material specified.

4. After driving all the specified processing points is ended, it stops.

**When the temporary stop switch is pushed when driving starts, and the speed and the point data are changed, the setting from the following point becomes effective. The data under the movement cannot be changed.**

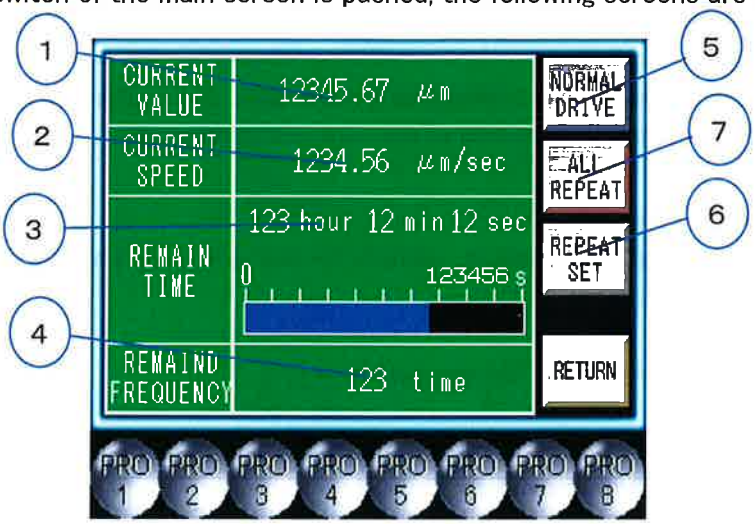
**The processing point data is used by one point or more. One point or less cannot be specified. The point data is sequentially used for 1～8. Use that flies a point data number on the way cannot be done. Red lights when the point is selected, and blue lights when the point is non-selected.**

## 4. 4 About other functions

•<< NANO DIP ND-0407>> can confirm the monitor of the setting the whole and continuous to drive and to drive the part continuously and the speed, current point, and the processing time now. It explains the way of the change as follows.

<About the driving monitor>

When the data switch of the main screen is pushed, the following screens are displayed.




| No | Name | Content |
|---|---|---|
| ① | CURRENT VALUE | The current point of the DIP arm is displayed. |
| ② | CURRENT SPEED | The current passing speed of the DIP arm is displayed. |
| ③ | REMAIN TIME | The processing remainder time of the program set when beginning to drive is displayed. The maximum display time is 59 seconds of 999 hours and 59 minutes.<br>**When data is changed on the way, it doesn't measure it again.** |
| ④ | REMAIND FREQUENCY | The remainder frequency when repeatedly driving is displayed. |
| ⑤ | NORMAL/ REPEAT DRIVE | It is a switch that selects whether to drive or to drive repeatedly usually. Please select it before driving begins. The frequency and the processing operation set by the frequency setting repeatedly when driving is repeatedly specified are repeated. |
| ⑥ | ALL REPEAT/ PART REPEAT | It repeatedly changes into a set screen of a setting and a partial repetition of the frequency. |
| ⑦ | ALL DRIVE/ PART DRIVE | It is a switch that selects whether to repeat the entire program or to repeat one part of the program. It doesn't operate repeating the switch of ⑤ if it repeats and driving is not selected. When a partial repetition is done, the remainder time is not displayed. |

<About the frequency of the repetition and the part of the repetition>

It explains the setting to operate repeatedly in one program.

When the repetition setting of driving data monitor is pushed, the following screens are displayed.

The point of a repetition frequency and partial repetition when repeatedly driving is set.

The useful range of the frequency is up to 1～998 repeatedly times.

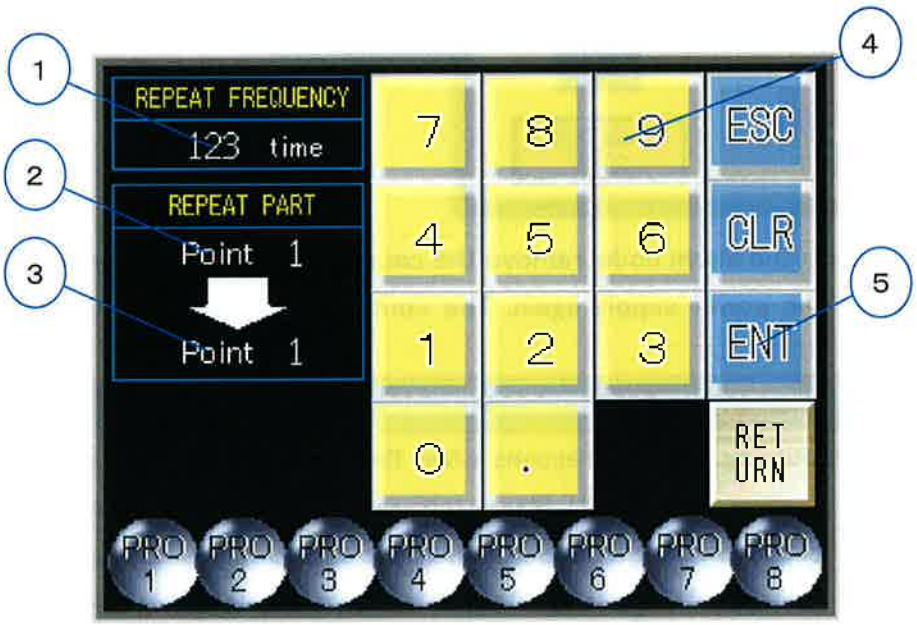
1～7 and the end point are 2～8. The beginning point an effective point of a partial repetition

When a numeric display is set to 999 times, it repeats and it keeps driving.

**It is not possible to change while driving.**

**The number of end points below the number of beginning points cannot be set.**

**When the frequency is repeatedly set to 999 times, a partial repetition becomes invalid.**




Frequency setting of repetition

◆About the way of the setting

- On a set each screen, a set change pushes numeric display ①or②or③ that wants to do. The setting change is possible and the display frame blinks.
- Next, ten keys ④ are pushed and the numerical value is input. The numerical value is changed by pushing ENT key ⑤ after it inputs it.

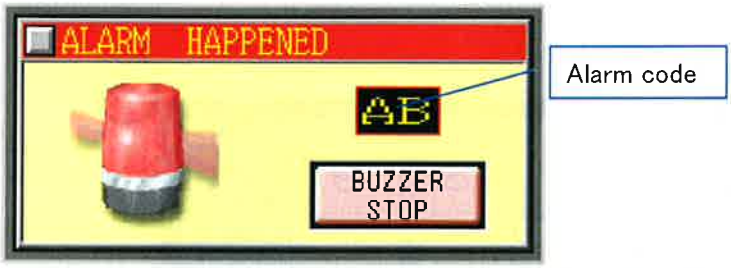
## 5 About emergency stop/alarm

Please push the emergency stop switch when you want to urgent stop.

When the emergency stop switch is pushed, the following screens are displayed.


Please push the warning release switch after releasing the emergency stop switch (The emergency stop switch is turned in a right direction of RESET). It returns to the start screen to push the reset switch after warning is released.

Warning is displayed when abnormality occurs in the device and the screen following ringing is displayed.




Please confirm the alarm code, remove the cause of the alarm after releasing warning, and turn on the power supply again. The content of the alarm is the following four points.

| Code | Name | Action method |
|---|---|---|
| 01 | Positioning unit alarm | It happens when the error occurs in the positioning unit of CPU. Please turn on the power supply again. |
| 02 | Bound pair position overrunning | It happens when the position of the arm exceeds the upper bound sensor or the lower bound sensor. Please move it to the position in which the sensor comes off by JOG driving. |
| 03 | Motor driver overheating | It happens when the motor for an upper and lower drive is an overload or the temperature of the driver becomes 70 degrees or more. Please turn on the power supply again after it turns off power, and time passes to some degree. |
| 04 | The backup battery is abnormal | When the backup battery for the driving data preservation of sequencer CPU is consumed, it warns. Please exchange the backup batteries of CPU. |

## 6 About maintenance and the check

### ◆Attention when maintaining and checking

Please execute the daily check and the periodic check to use this device at ease for a long term.

⚠ Danger

- Please execute the periodic check after cutting power off, and removing the outlet. A part of the electric shock and the body might be damaged.
- Please do not maintain and do not check excluding the person who has a mechanical, electric knowledge.

### ◆About the part longevity

There is longevity in the battery of the backlight and the controller who has used it for the main body actuator part and the touch panel used for this product. It is influenced about each life expectancy according to use conditions, and thinks the standard, please.

| Part name | Life expectancy |
|---|---|
| For upper and lower drive actuator | Ratings longevity about 20000km to the maximum speed<br>Longevity time about 180000h to the maximum speed |
| Backlight for touch panel | Time about 20000h when longevity and brightness of backlight are reduced by half |
| Battery for CPU | About five years under the normal temperature(+25℃) environment.<br>About two years under the high temperature(+40℃) environment.<br>When the batteries are exchanged, it energizes for ten minutes or more and the power supply is turned off. |

## ◆About the check item

It explains the item of the daily check and the periodic check in normal use conditions.

### ■Daily check

Is the system requirement in the specification?

Are there neither abnormal vibrations nor an abnormal sound from the main body and control box?

Isn't there nasty smell from the control box?

Has not the foreign body invaded in the main body and the control box?

Isn't the connector connection part does not come off and loose?

Have not the wiring cable in the main body and the control box etc. been damaged?

Is there neither adhesion nor dirt of the drug solution in the clip?

Is the power-supply voltage normal?

### ■Periodic check(three months)

Has not the main body been damaged?

Has not the driving data been changed?

Is not controller's battery (battery) consumed?

Isn't there abnormal vibration from driving part of the main body?

Are there neither abnormal vibrations nor an abnormal sound of the fan in the control box?

Has not wiring been damaged?

Has not the spring of the clip been broken?

Isn't there loosening in the screw of driving joint (DIP arm etc. of the main body)?

▲ Warning

・Please resolve or neither repair nor remodel it.

・Please return to our company and receive the repair when breaking down.

**Manufacturer/ Selling agency**

SDI COMPANY.,LTD.

Room 324,No.4.KYOTO RESERCH PARK
Chudoji,Awata-cho 93,Shimogyo-ku,
Kyoto.600-8815,Japan
TEL 81-(0)75-323-0236 FAX 81-(0)75-323-0237
http://www.sdicompany.com