CONTENTS

1.   INTRODUCTION

CNC-210S is a series of COIL WINDING MACHINE CONTROLLER developed by TAILY AUTOMATION. It not only retains all the features of previous designs, it also has a low noise level and is less sensitive to external power fluctuation. Furthermore, it also includes a RS-485 network interface, making coil-winding operation easier to manage.

CNC-210S also features an integrated design: putting stepper motor driver, DC motor speed controller, brake and power supplier control circuits into one control box, simultaneously achieving size reduction, high performance and low cost.

In addition to the CNC-210S "Standard Model", CNC-210S Series also offers CNC-210EXD1"External Connection Model 1" and CNC-210EXD2 "External Connection Model 2", depending on whether a close-loop driver is provided for various applications.

◆ **CNC-210S**   ：With 1/2hp DC motor driver for winding spindle and 2A stepper motor driver for guiding traverse.

◆ **CNC-210EXD1**：With winding spindle control interface circuit and 2A stepper motor driver for guiding traverse.

◆ **CNC-210EXD2**：With winding spindle motor control interface circuit and guiding traverse stepper motor control interface circuit.

2.   MAIN FEATURES

◆ Microprocessor design, easy for program-setting handling. Memory capacity capable storing up to 1000 step with off-power memory retention.

◆ Nine winding parameters and five options can be independently assigned for each step.

◆ The proprietary design of our winding spindle shaft driver, with IR compensation and large torque, is suitable for various DC motors.

◆ Winding speed can be specified using the front panel keypad, resulting in easy programming of multi-step, multi-speed settings.

◆ Wire guiding traverse shaft stepper motor with a constant-current driver offering fast wire guiding speeds.

◆ Offering RS-485 interface for PC linking, making winding parameter management simple.

◆ Choice of versions for AC 110V, 220V and 240V power source at 50/60Hz.

3.   FRONT PANEL DESCRIPTION
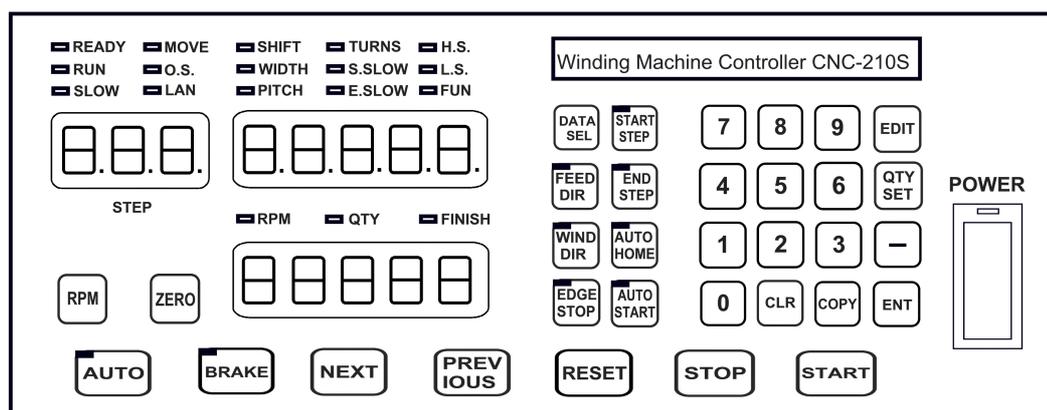
3.1. Power switch

Power supplier equipped, controls the AC power to the controller

3.2. Key pads

[0]~[9] ：10 key, for entering numerical values.

[EDIT] ： Enter into PARAMETER EDIT mode.

[QTY SET] ： Specify target production quantity.

[START STEP] ： Specify starting step in memory.

[END STEP] ： Specify ending step in memory.

[DATA SEL] ： During programming, select parameter to be programmed.

[FEED DIR] ： During programming, select guiding direction.

[WIND DIR] ： During programming, select winding direction.

[EDGE STOP] ： During programming, select whether or not to stop at the two edges.

[AUTO HOME] ： During programming, select whether to have auto-positioning function for the starting position.

[AUTO START] ： During programming, select whether to have auto-start function.

[−] ： During programming, reduce step number by one.

During ready mode, press this key and holding for two second, reduce PIECE COUNTER by one.

[CLR] ： During programming, clear current data to zero.

[COPY] ： During programming, copy the data of previous step into current step.

[ENT] ： During programming, write data into memory.

[RPM] ： Switch display to shows PIECE COUNT or RPM.

[ZERO] ： Reset PIECE COUNTER to zero.

[AUTO] ： To switch between AUTO and NON-AUTO mode.

[BRAKE] ： Select whether brake will be applied to the winding spindle during stopping.

NEXT ： During winding pause, skip current step and go to the next step.

During programming, make the guiding traverse shaft moving.

PREV IOUS ： During winding pause, discard current step and go to the previous step.

During programming, make the guiding traverse shafts moving.

RESET ： At any time, discontinues current operation and return to ready mode.

STOP ： Pause during winding.

START ： Restart during pause, or pause during winding.

3.3. Digital display

STEP DISPLAY：Show the current step number being wound or being programmed.

DATA DISPLAY：During programming, in combination with LED, shows the parameter being programmed. During winding or ready mode, show the current number of turns or show the guiding traverse shafts position.

PIECE COUNT DISPLAY：Shows PIECE COUNT or RPM.

3.4. Status indicators

☐ **READY :**　lit means in READY mode, flash means PAUSE mode ,not lit means winding or programming in progress.

☐ **RUN**　　**:**　lit means winding in progress; not lit means not in progress.

☐ **SLOW**　**:**　during winding, lit means low speed winding; not lit means high speed winding.

☐ **MOVE**　**:**　lit means guiding traverse is fixing the starting position for winding or is returning to the home position.

☐ **O.S**　　**:**　lit means winding operation is over speeding, guiding traverse and winding spindle shaft are out of synchronization.

☐ **LAN**　　**:**　lit means currently communicating with network.

☐ **FINISH :**　will lit when reaching the preset piece count.

☐ **RPM**　　**:**　lit means the PIECE COUNT DISPLAY shows RPM.

☐ **QTY**　　**:**　lit means the PIECE COUNT DISPLAY shows the piece count.

4.　MEMORY RANGE SELECTION

CNC-210S contains 1000 memory step. By defining the region, users can effectively manage the memory. Various winding parameter can be stored in different regions and can be retrieved instantaneously. After specifying the regions, programming and winding can be done in those regions; all un-selected regions will retain their original contents and unmodified.

4.1.　Specifying starting step

During ready mode, press [START STEP] [0~999] [ENT] to set. [Setting range 0 ~ 999].

4.2.　Specifying ending step

During ready mode, press [END STEP] [0~999] [ENT] to set. [Setting range 0 ~ 999].

When setting the STEP number, the Ending step number must be larger than the Starting step number, or the winding operation will not start. If during programming, the displayed STEP number is the desired number, just press the [ENT] key. If a wrong number is entered, simply press [CLR] to zero the value and reenter the correct number.

5.　PROGRAMMING WINGING PARAMETER

5.1.　Winding parameters definitions

☐**SHIFT**　: Starting position of the guiding traverse, measured from the home position of the guiding traverse.
　　　　　　　[Setting range from 0.00 ~999.99 mm].

☐**WIDTH**　: The traverse of the copper wire led by the traverse during winding. [Setting range from 0~ 999.99 mm].

☐**PITCH**　: Diameter of the copper wire. [Setting range from 0 to 9.999mm].

☐**TURNS**　: Total number of turns to be wound.
　　　　　　　[Setting range from 0.0 to 9999.9 or 0 to 99999 turns].

☐**S.SLOW** : Number of turns to be wound at low speed, when start winding.
　　　　　　　[Setting range from 0 to 999.9 turns].

☐**E.SLOW** : Number of turns to be done at low speed prior to stopping.
　　　　　　　[Setting range from 0 to 999.9 turns].

☐**H.S.**　　: High winding speed. [Setting range 0 ~99%].

☐**L.S.**　　: Low winding speed. [Setting range 0~99%].

☐**FUN**　　: Not used by the Standard mode; reserved for future special occasions.

5.2. Options definitions

`FEED DIR`：To select guiding direction, forward or reverse.

`WIND DIR`：To select winding direction, clockwise or counter-clockwise.

`EDGE STOP`：To specify whether to suspend winding when the guiding traverse moves to the two edges of the width.

`AUTO HOME`：To select whether guiding traverse returns to the starting position automatically or upon a manual pressing of the `START` key.

`AUTO START`：To select whether winding start automatically or upon manual pressing of the `START` key.

5.3. Programming winding parameter

In READY mode, press `EDIT` invokes the programming mode for the winding parameters. First, the START STEP number will shows at STEP DISPLAY, the parameter indicator SHIFT will lit, the starting position will shows at DATA DISPLAY. The starting position can be changed to the new position by pressing the numerical key followed by the `ENT` key or pressing the `ENT` key if no change is necessary.

After setting the starting position, the STEP number in the STEP DISPLAY will automatically increase by one. Continue with the starting position selection for the next step. When the STEP number larger then the END STEP number, the STEP number will restore to the START STEP number and the indicator light will change from SHIFT to WIDTH for user to proceed to specifying the width for each STEP. Repeat the same procedure using numerical keys and the `ENT` key, all winding parameters for each STEP can thus programmed.

The following functions are also available:

`CLR`：Clear the current value to zero.

`COPY`：Copy the content of the previous step to the current step；invalid when programming the first step.

`–`：Go back to the previous programming step.

`DATA SEL`：To scroll through different parameters.

`FEED DIR`：Change guiding direction for current step.

`WIND DIR`：Change winding direction for current step.

`EDGE STOP`：Change TWO-EDGE STOP selection for current step.

`AUTO HOME`：Change AUTO POSITIONING selection for current step.

`AUTO START`：Change AUTO START selection for current step.

Each time when change the PARAMETER or OPTIONS (the last five of the above function), `ENT` key must pressed to effect the change. The five options

can be changed during programming any parameter in current step.

Using the above procedure, all the winding PARAMETERS and OPTIONS of each step can be set and checked. When finishing programming, press [EDIT] key once and get out of programming mode and the guiding traverse will reposition the starting position and go into READY mode.

5.4. Clear all memory

In the READY mode, press [EDIT] [CLR] [−] [ENT] will clear all the winding parameter in the memory. Be cautious in using this function or all the data will be lost

6.　WINDING METHOD SELECTION

Prior to winding, the general winding principles are explained below so the operators can have a better understanding of the performance of the controller and make better use of it.

6.1. Absolute counting

Using absolute counting, winding spindle shaft is capable of fixed-point stopping. Upon each restart, the turn count will reset only the integer portion of the turn number to zero, with the decimal unchanged. For example, for a previous number of 100.3 turns, when restarting the next winding, the counting will start with 0.3 turn to avoid accumulation of spindle shaft free play error from consecutive windings.

This counting method may cause insufficient winding by one turn, (e.g., a new winding starting from **0.9**) Therefore, when starting from **0.5~0.9**, the winding spindle shaft will turn to the **0.0** before it starts counting.

6.2. Relative counting

This counting method zeros the counter upon each restart, therefore it is easy to understand and will not cause insufficient winding. However it is only suitable for usual applications such as audio coils and inductance coils but not suitable for fix-point tapping applications such as transformers.

6.3. Correct setting turns

◆ Preset method：

Set the E.SLOW to zero first and then set the TURNS to the desired number. Set proper parameters according to copper wire, bobbin, tension, etc, then press [START] to start winding. When finished, obtain the actual number of turns and calculate the number of overshot turns. Go into programming mode and subtract the number of the overshot turns from the TURNS to obtain the required setting.

This method has a higher throughput, however, the resulting stopping location may not be precise.

◆ **High-Low speed method**：

This method uses a combination of H.S./L.S. and E.SLOW to achieve the desired number of turns.

The L.S. should not be too high. The number of E.SLOW turns must be adequate to allow the spindle shaft to slow down to low speed before reaching the total number of turns. This can result in precise stopping location.

◆ **Double-brakes method**：

As the winding turns of the winding shaft reach the numbers of the E.SLOW, brake for a short period first. After the winding shaft stops, continue winding at low speed. Therefore the numbers of the slow speed may be reduced and the efficiency of winding may be increased.

6.4. Interlace wire-guiding

If the WIDTH of the step is zero, the wire guiding becomes interlace mode. When it begins winding, the wire-guiding will follow the wire direction to proceed two wire diameters and regress one wire diameters cyclically until the step of winding ends. This mode especially suits the inductor winding.

6.5. Non wire-guiding

Sometimes, the winding device may be used to winding adhesive tapes or copper foil. When the wire guiding is not needed, PITCH may be adjusted to zero and the wire guiding won't be move.

6.6. Continual mode

Before it begins winding, if that step SHIFT set as 999.99, then the starting position, the width, the wire-guiding direction and the winding direction won't be re-read. The values are not changed, that is, the wire guiding will continue guiding wires on the same position. The width and left-right margins are the same as the ones of the previous section. Both the wire-guiding and winding directions are not changed, either. This mode especially suits to winding which have the multiple drawing tops in the same sets of coils. (e.g., Transformer winding)

7.   WINDING EXECUTION

7.1. To start winding

After set up all data items, press [START]key， the winding process begins in accordance with the set-up content. Press the[STOP]key to pause winding.

The following key functions are available during PAUSE mode:

[PREV IOUS] ： Give up the numbers of the winding turns and regress one step.

[NEXT] ： Finish current step and proceed to next step.

[START] ： Continue winding.

[RESET] ： Give up winding and go back to the READY mode.

7.2. To switching the winding speed

During winding, press the [0] key, the winding speed can be switching between HI speed and LOW speed.

7.3. To changing the display mode

During winding or during PAUSE mode, press[DATA SEL]key, the DATA DISPLAY can be change the display mode between turns or guiding traverse position.

7.4. Piece count display

Upon turning on the POWER SWITCH, PIECE COUNT DISPLAY will shows the number of piece produced. During wining, each time the CONTROLLER goes from the START STEP to the END STEP, the piece counter will automatically increase by one.

7.5. Decrease piece counter

During READY or PAUSE mode, press [−]key and holding down for two second, the piece counter will decrease by one.

7.6. Reset piece counter

During READY or PAUSE mode, press[ZERO]key and holding down for two second, will set the piece counter to zero.

7.7. Preset piece counter

In READY mode, press[QTY SET]key once and key in desired values[0~99999]followed by the[ENT]key. When the PIECE COUNTER reaches the preset value, the FINISH led will lit. [Setting range 0~99999].

7.8. RPM display

Pressing[RPM]key will cause the PIECE COUNT DISPLAY to display the spindle shaft RPM without interrupting the counting. Pressing[RPM]again will change the PIECE COUNT DISPLAY back to displaying the piece count.

8.   CONFIGURATION SETTING

CNC-210S is a multi-purpose design, to meet various requirements; additional settings are configured to provide flexibility for additional applications.

In the READY mode, press the following keys combination as **(9.1. ~9.8.)**, the DATA DISPLAY will shows each parameter. If no change is necessary, press the ⌈ENT⌉key to back READY mode. Or press⌈−⌉key to get into change mode, then the parameter can be changed by pressing the numerical key followed by the⌈ENT⌉key.

8.1. Winding mode selection ⌈EDIT⌋ ⌈DATA SEL⌋ ⌈0⌋

In this function the STEP display and the DATA display will shows eight digits, representing eight winding mode selections respectively.

Press numerical keys as below can change each digit.
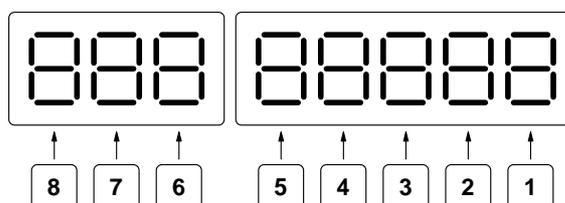
⌈1⌋ **Positioning speed**：The speed at which the guiding traverse is moving to the starting position or returning to the home position.

0 represents high speed**; 1** represents low speed.

Press ⌈1⌋ to select.

⌈2⌋ **Moving increment**：This is travel increment of the guiding traverse.

1 represents 0.01mm.

The guiding traverse moves 4 mm per revolution of the stepping motor.

2 represent 0.02mm.

The guiding traverse moves 8 mm per revolution of the stepping motor.

4 represent 0.04mm.

The guiding traverse moves 16 mm per revolution of the stepping motor.

Press ⌈2⌋ to select.

⌈3⌋ **Original Position**：select the zero point of the winding spindle shaft.

0 represents with zero point and using absolute counting mode.

1 represents without zero point, and using relative counting mode.

Press ⌈3⌋to select.

4 **Edge slow**：Slow down the winding speed before the guiding traverse reach to the two edges of the width.

0 represents not slow down; **1** represents to slow down.

Press 4 to select.

5 **Braking mode**：The SINGLE MODE is to brake until the end of each winding step. The DOUBLE MODE is to brake a short period when the turns number match the E.SLOW turns, then winding to the end by LOW speed, and brake another time to finish the step.

0 represents single brake mode; **1** represents double brake mode.

Press 5 to select.

6 **Counting unit**：you can choose 0.1 or 1 turns as your count unit. After you choose it, the TURNS, S.SLOW and E.SLOW, will use it as their basic unit.

0 represents **0.1**(0.0 to 9999.9 turns); **1** represents **1**(0 to 99999 turns).

Press 6 to select.

7 **Guiding traverse unit**：The Guiding traverse unit can be set by using mm or inch. After you choose it, the SHIFT, WIDTH and PITCH, will use it as their basic unit.

0 represents **mm; 1** represents **inch** (must using lead screw in imperial).

Press 7 to select.

8 **Starting mode**：There are two different mode to be select:

Single start mode: When press the foot switch, the motor start winding, and when you release the foot switch, the motor stop winding immediately.

Double start mode: When press the foot switch, the motor start winding, and if you want to pause the motor, you have to release the foot switch then press it again.

0 represents Single start mode; **1** represents Double start mode.

Press 8 to select.

The START key on the front panel always as the Double start mode.

8.2. Station number [EDIT] [DATA SEL] [1]

Set the station number of the winding machine controller. This number is used to identify the station when using RS-485 communication function. Up to 32 stations can be operated on the same bus. [Setting range 01 ~99].

8.3. Password [EDIT] [DATA SEL] [2]

This password is used to protect the setting data in memory. After you set this password, you cannot change any winding parameter and configuration data in normal sequence. You have to key in four numbers of password before press the [EDIT], [START STEP], [END STEP], [QTY SET] keys. If the password has been passed once, you can change any data in normal sequence until you turn off the power or press [RESET] key. You must to remember the password or you cannot change any data. [Setting range 0000~9999]. Set 0000 means no password.

8.4. Travel limit [EDIT] [DATA SEL] [3]

Set the maximum travel distance of guiding traverse. During winding if the guiding traverse reaches this position, the motor stop winding immediately, and the DATA DISPLAY shows error massage, then RESET and go back to the READY mode. [Setting range 000.00~999.99]. Set [999.99] means no limit.

8.5. Fixed location [EDIT] [DATA SEL] [4]

To set how often, must be correct the guiding traverse location. Each time when finish this number of product pieces, the guiding traverse will moves to the home position to correct the location before moving to starting position. [Setting range 00~99]. Set 00 means not to do this function.

8.6. Limited winding speed [EDIT] [DATA SEL] [5]

This value is to limited winding speed and make sure the winding spindle shaft and guiding traverse are in synchronization. The controller uses this value to calculate with wire PITCH of current step, and then to limited maximum winding speed of current step.
[Setting range 0~99999]. Set 0 means not to do this function.

8.7. Braking action time [EDIT] [DATA SEL] [6]

To set the holding times for brake. [Setting range 0.1 to 9.9 sec].

8.8. Reset all configuration data [EDIT] [CLR] [0] [ENT]

In READY mode press [EDIT] [CLR] [0] [ENT] keys, it will reset all the configuration data and replace by initial data. Be cautious in use this function.

9.   DATA TRANSFER

In READY mode press following keys combination, its will transfer each setting date to the other stations, by using RS-485 interface.

[00~99] Means stations number.

[EDIT] [COPY] [0] [00~99] [ENT] ：Transfer configuration setting to specify station.

[EDIT] [COPY] [1] [00~99] [ENT] ：Transfer winding parameters to specify station.

[EDIT] [COPY] [2] [00~99] [ENT] ：Transfer password to specify station.

It wills transfer from START STEP to END STEP, during Transfer winding parameters,

10.   ERROR MESSAGE

When a fault occurs during operation, the DATA DISPLAY shows error massage, stop winding and then RESET go back to the READY mode.

Err-0：The parameters or data in memory are fault.

Err-1：The SHIFT value sets over the limitation of Travel Limit.

Err-2：During winding, the guiding traverse moves over the limitation of Travel Limit.

Err-3：During winding, the guiding traverse moves over the Home Position.

Err-5：RS-485 communication error.

11.   ADJUSTMENT
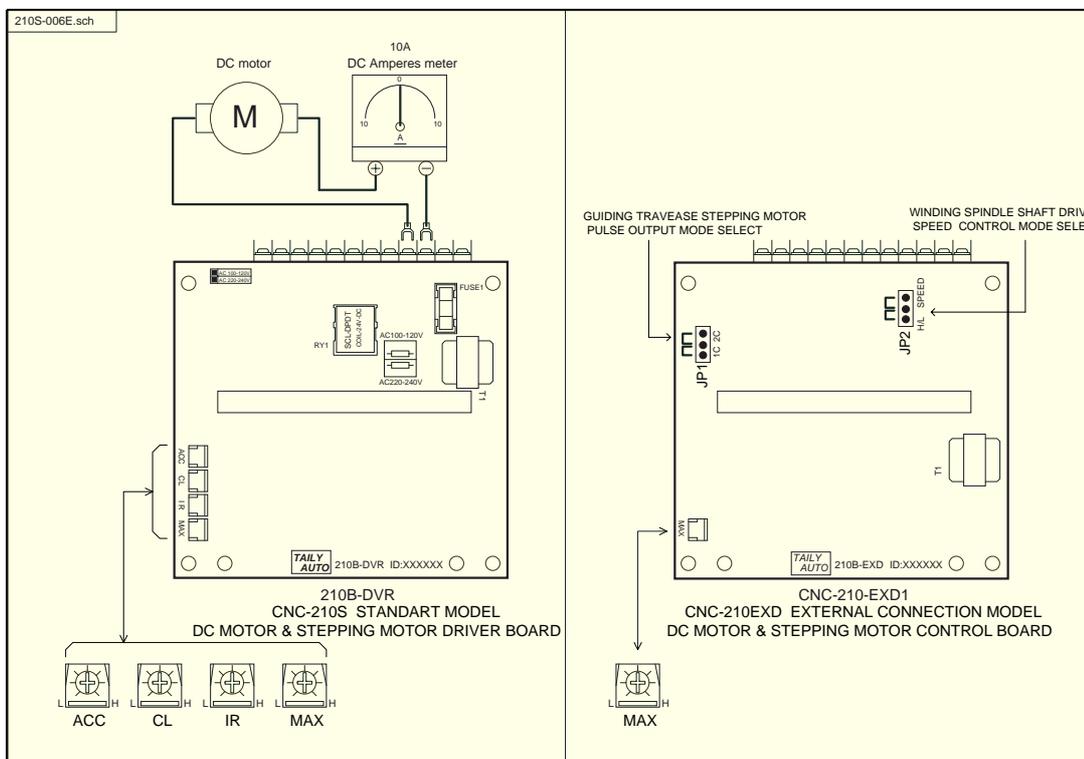
Figure-1

11.1. Adjustments for CNC-210S

◆ **ACC：Acceleration time.**

1. Accelerate times for the winding spindle DC motor.

◆ **CL：Maximum output current limit.**

1. Locking the winding spindle shaft, to make it cannot move; connect a DC Amperes meter between terminal and DC motor. (See Figure-1).

2. Rotate CL to the left end [L], set the winding parameter H.S. and L.S. in 50. Then press START key to start winding.

3. Rotate CL in clockwise to set limited current, show on Amperes meter.
(Limited current = 2A when using DC 180 volt motor).
(Limited current = 4A when using DC 90 volt motor).

   (The CL have been set by factory before delivery. Only adjust it when change DC motor and replace 210-DVR driver board.)

◆ **IR：Torque compensation.**

1. Set the winding parameter H.S. and L.S. in 20, and press RPM key to change the PIECE COUNT DISPLAY shows RPM.
Then press START key to start winding.

2. Rotate IR to make the winding in same speed (RPM), during the winding spindle shaft in full-load and unload.
Then press STOP key to stop winding.

◆ **MAX：Maximum winding speed.**

1. Set the winding parameter H.S., L.S. in 99, and press RPM key to change the DISPLAY shows RPM. Then press START key to start winding.

2. Rotate MAX potentiometer to make the winding speed (RPM) as you want.
Then press STOP key to stop winding.

11.2. Adjustments for CNC-210EXD1/EXD2

◆ **MAX：Maximum winding speed**. (Speed control mode must be select in SPEED mode).

1. Set the winding parameter H.S. and L.S. in 99, and press RPM key to change the PIECE COUNT DISPLAY shows RPM. Press START key to start winding.

2. Rotate MAX potentiometer to make the winding speed (RPM) as you want.

◆ **H/L-SPEED：Speed control mode**. Select by JP2 (see Figure-1).

1. H/L mode：Select HI-LOW output for speed control.(Open collector)

2. SPEED mode：Select DC 0~10V output for speed control.

◆ **1C/2C：Pulse output mode**. Select by JP1 (see Figure-1). 210EXD2 only.

1. 1C mode：PUS means pulse output, DIR means rotation direction output.

2. 2C mode：PUS means CW pulse output, DIR means CCW pulse output.

12. INSTALLATION AND WIRING

12.1. Requirement and Safety precautions

1. The controllers should be operated in an environment that is protected from moisture, corrosive gases, or liquid, and free from airborne dust, metallic particles, and magnetic noise.
2. Make sure that the power source supplies the correct voltage and is capable of supplying the required current to the controllers.
3. Do not connect or disconnect wires and connectors while power is applied to the controller.
4. Make sure the machine and controllers are properly grounded.
5. Make sure that the leads and connectors are connected correctly.
6. Normally operate under 10℃ ~ 50℃ environment; over 40℃ should perform under good ventilation, avoid heating.

12.2. Counting system assembly

◆ The counting disc and the turns counter **CNTB-03B/03C** must be assembly as below.
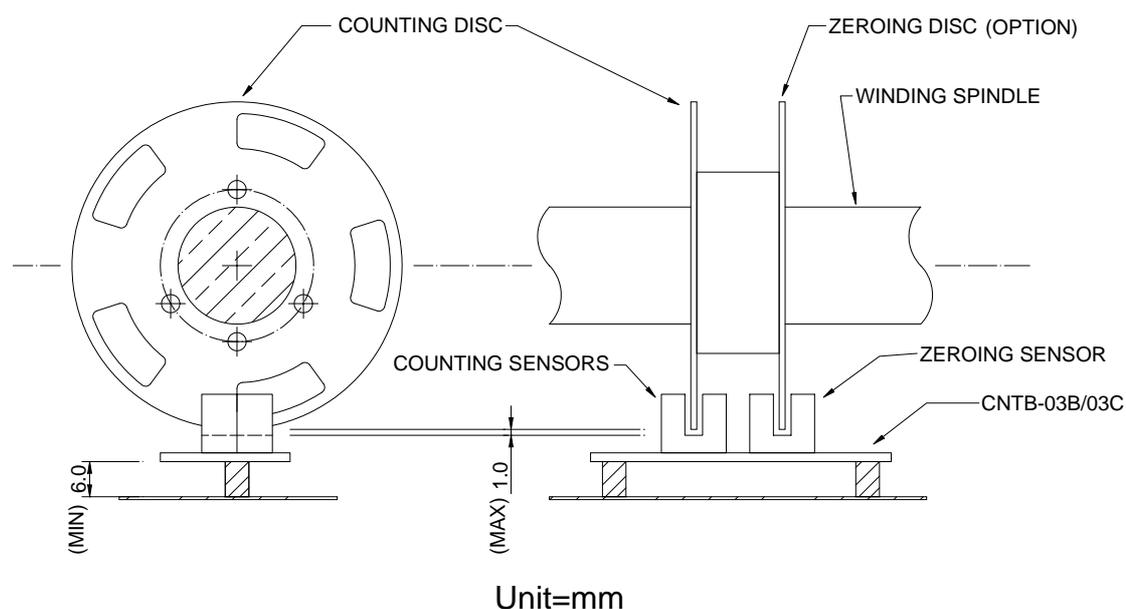
Unit=mm

◆ The zeroing disc is not served with the controller. If you need a zero point for the winding spindle, you have to make a zeroing disc as below, and assemble it with counting disc as above.
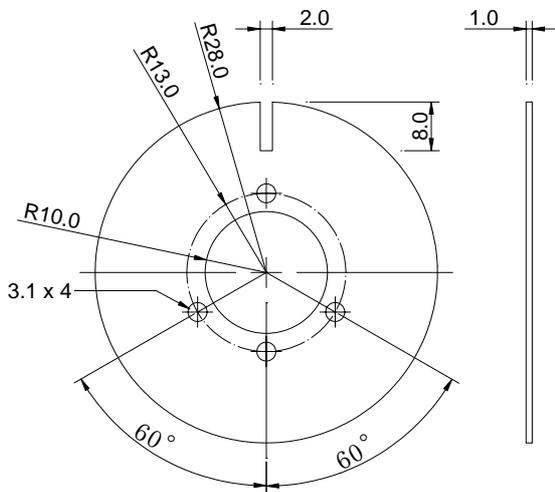
ZEROING DISC

Unit=mm

12.3. CN1-CN6 wiring diagram for CNC-210S/EXD1/EXD2
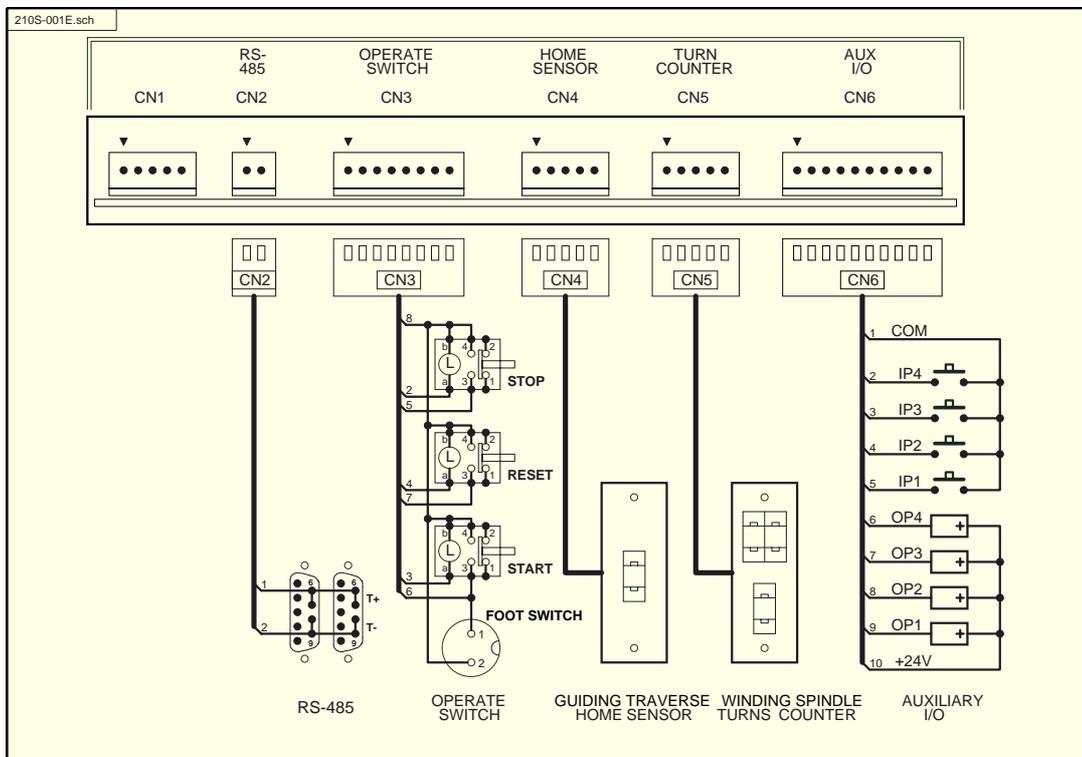
Figure-2

12.4. Terminal wiring diagram for CNC-210S

```
210S-002E.sch
```

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

EARTH   AC   AC   A+   A-   +   -   A   A-   B   B-

EARTH   AC 110/220V   0.5 HP DC MOTOR   DC24V 12W   2PHASE 6V 1A
                        Winding spindle motor   BRAKER   Traver shaft stepper motor
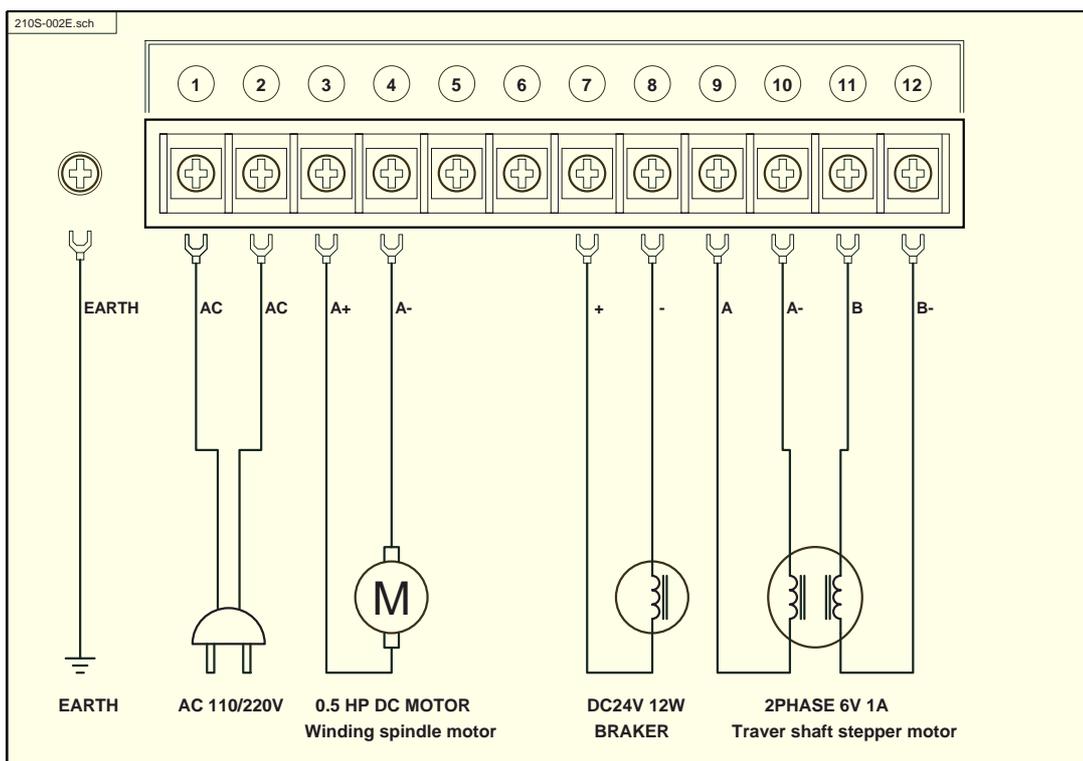
Figure-3

12.5. Terminal wiring diagram for CNC-210EXD1

```
210S-003E.sch
```

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

EARTH   AC   AC   COM   CW   CCW   SPEED   +   -   A   A-   B   B-
                     (0V)

Winding spindle motor
DRIVER

EARTH   AC 110/220V   Winding spindle motor   DC24V 12W   2PHASE 6V 1A
                                                 BRAKER   Traver shaft stepper motor
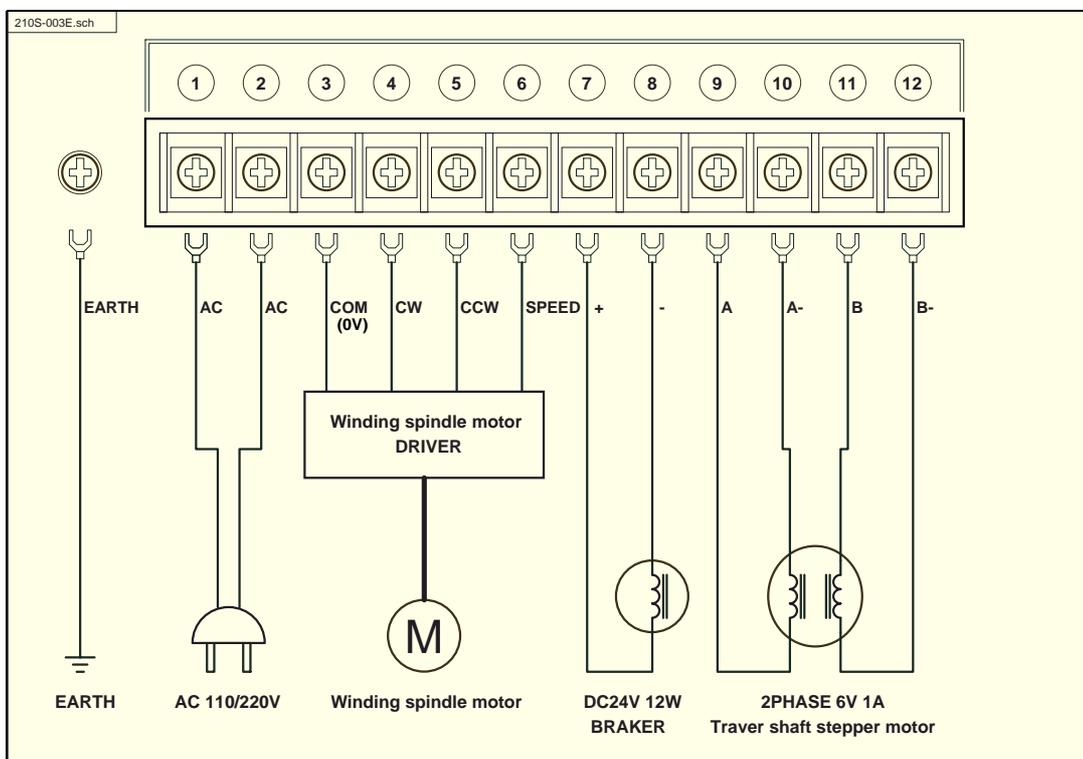
Figure-4

12.6. Terminal wiring diagram for CNC-210EXD2
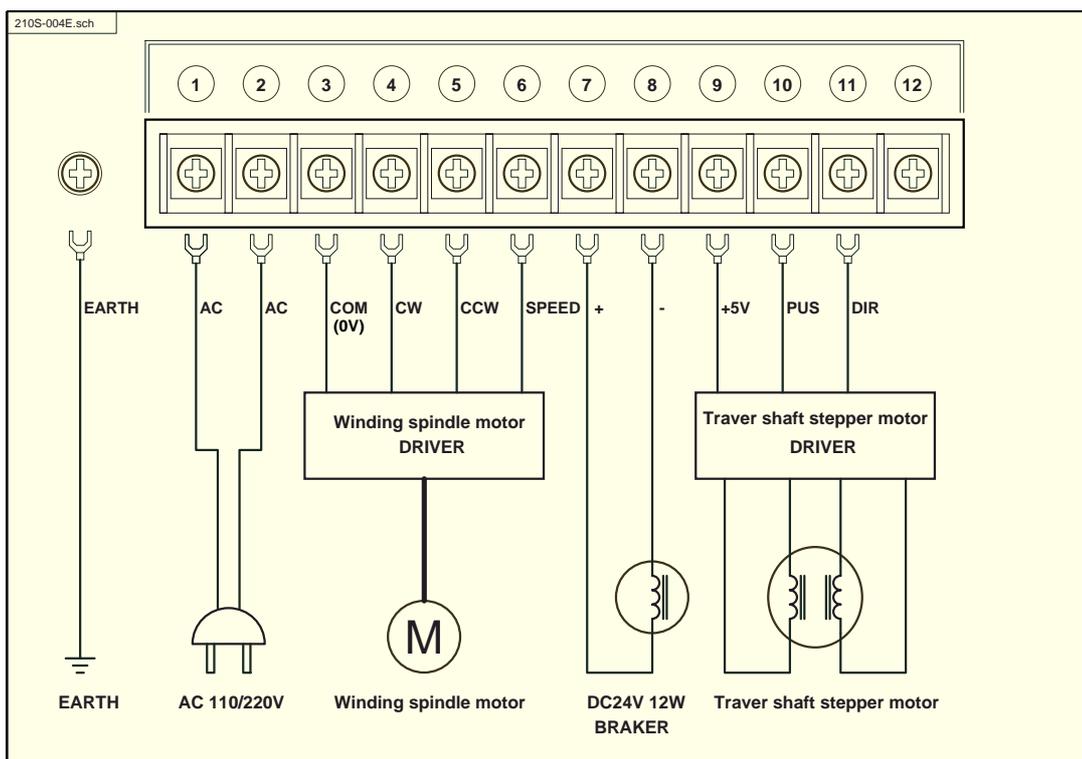
Figure-5

12.7. Internal wiring diagram for CNC-210S/EXD1/EXD2
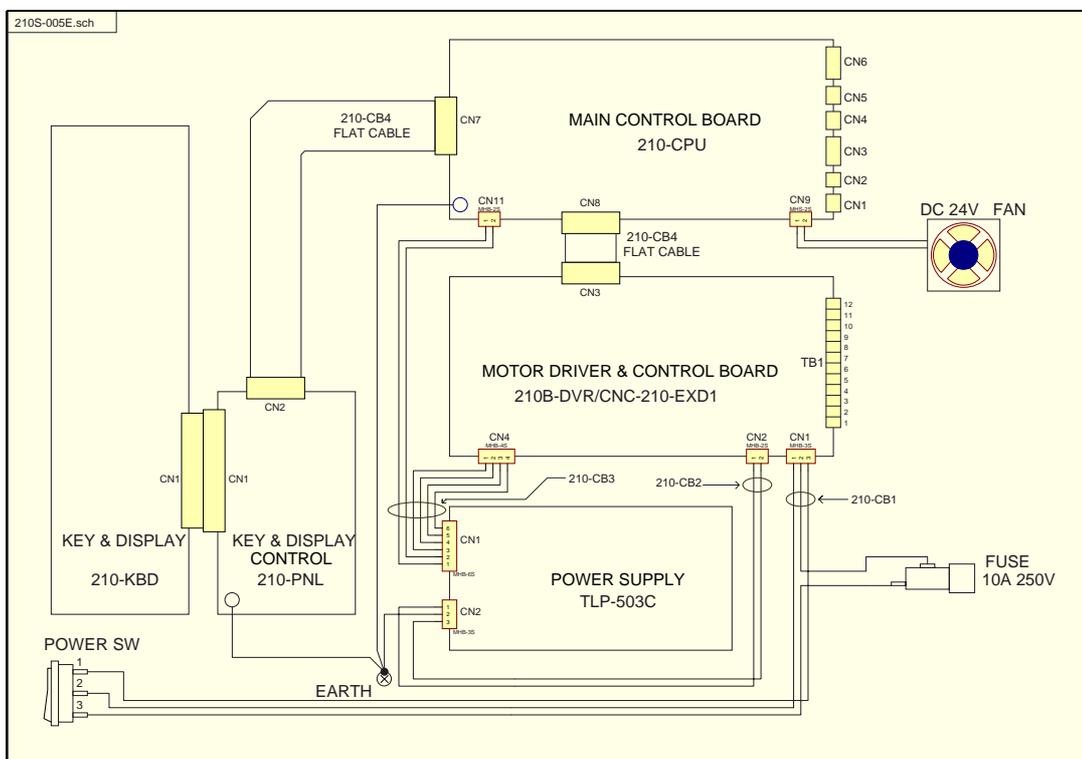
Figure-6

13. MAINTAIN AND TROUBLESHOOTING

13.1. Periodically maintain

The following parts must be maintained or changed periodically as list below. If any part is found faulty, it must be changed immediately even when it has not yet reached the end of its life, which depends on the operating method and environmental condition. For parts replacement, please contact your sales representative.

NO	Parts name	Life guideline
1	Winding spindles Turns counter **CNTB-03B/03C**	2 years
2	Guiding traverses **HOME SENSOR**	2 years
3	**COOLING FAN** (DC 24V 6cm)	10,000 hours
4	**RELAY** (on the 210B-DVR driver board, it used to switching the winding direction)	100,000 times
5	Carbon **BRUSH** in the DC motor	1 year

13.2. Troubleshooting

This section provides information to guide the user in understanding different fault condition and their general troubleshooting procedures, and with their possible solutions.

NO	Fault Description	Corrective Action
1	Power ON, but the power lamp not lit.	a. Check AC power input. b. Check the fuse on back panel. c. Check the fuse on 210B-DVR board. d. Check power switch and wire connections between 210B-DVR and power switch.
2	Fuse failure	a. Replace fuse. b. Replace 210B-DVR/210-EXD1.
3	Power ON, and lamp lit. But the display shows nothing,	a. Check LED on theTLP-503C power supply. If not lit, replace TLP-503C. b. Replace 210-CPU, c. Replace 210-PNL.
4	Power ON, and lamp lit. But the display shows confusion massage,	a. Check wire connections between 210-PNL and 210-CPU. b. Replace 210-CPU. c. Replace 210-PNL.

NO	Fault Description	Corrective Action
5	READY LED lit, but cannot edit parameters.	**a.** Key in 4 numbers password before edit. (If the password has been set). **b.** Press STOP key to get into READY mode.(if the step motor is moving). **c.** Replace 210-PNL. **d.** Replace 210-KBD.
6	Power ON, but STEP MOTOR not moving to the home position, and READY LED not lit, cannot edit parameters.	**a.** Press STOP key to get into READY mode. **b.** Replace HOME SENSOR. **c.** Replace 210B-DVR/210-EXD1.
7	Power ON, but STEP MOTOR cannot stop moving, and READY LED not lit, cannot edit parameters.	**a.** Press STOP key to stop the step motor and get into READY mode. **b.** Check the parameter 『SHIFT』 setting value of START STEP, **c.** Replace HOME SENSOR.
7	DC motor or stepping motor cannot work.	**a.** Check wire connections between 210B-DVR /210-EXD1 and 210-CPU. **b.** Replace 210B-DVR/210-EXD1.
8	Display shows Err-0, then reset, and get into READY mode.	**a.** Replace battery (BT1 on 210-CPU). **b.** Replace 210-CPU.
9	Display shows Err-1, then reset, and get into READY mode.	**a.** Check winding parameters SHIFT and WIDTH setting value. **b.** Check configurations TRAVEL LIMIT setting value.
10	Display shows Err-3, then reset, and get into READY mode.	**a.** Check winding parameters SHIFT and WIDTH setting value. **b.** Replace HOME SENSOR.
11	Display shows Err-5.	**a.** Check wire connections between 210-CPU and RS-485 connector **b.** Check wire connections between two stations.
12	Brake failure.	**a.** Replace brake. **b.** Replace 210B-DVR/210-EXD1
13	Winding spindle can not switching winding direction.	**a.** Replace RELAY on 210B-DVR. **b.** Replace 210B-DVR/210-EXD1.
14	Counting failure.	**a.** Replace turns counter CNTB-03B/03C. **b.** Replace 210-CPU.

NO	Fault Description	Corrective Action
15	Guiding traverse moves half pitch or double pitch.	**a.** Check Configurations Moving increment setting.
16		

14. SPECIFICATIONS

Model	CNC-210S	CNC-210EXD1	CNC-210EXD2
Control system	HD647180 Microcomputer		
Keyboard	33 keys key pad		
Display	13 digits 7-segment display, 27 LED lamps.		
Memory	1000 STEP with battery backup		
Communication	RS-485 interface		
Winding Parameter — SHIFT	0.01~999.99mm		
Winding Parameter — WIDTH	0.01~999.99mm		
Winding Parameter — PITCH	0.001~9.999mm		
Winding Parameter — TURNS	0.1~9999.9turns/1~99999turns		
Winding Parameter — S.SLOW	0.1~999.9turns		
Winding Parameter — E.SLOW	0.1~999.9turns		
Winding Parameter — H.S.	1~99%		
Winding Parameter — L.S.	1~99%		
Winding Parameter — FUN	Special occasions		
Winding Parameter — Options	FEED DIR, WIND DIR, EDGE STOP, AUTO HOME, AUTO START		
Winding spindle shaft — Output	0.5HP DC motor driver With CW/CCW control	RUN, HI/LOW, SPEED Signal output	
Winding spindle shaft — Counting	A,B,C, 3 phase, with Absolute/Relative counting		
Winding spindle shaft — Braking	DC24V/12W brake control output		
Guiding traverse — Output	2 phase 5V 1A stepping motor driver	PUS, DIR output	
Guiding traverse — Unit	Moving increment 0.01/0.02/0.04mm		
Input function	RESET、STOP、START		
Output signal	RESET、STOP、START lamp control(DC24V 0.1A)		
AUX I/O	4 input (DC24V) and 4 output (DC24V 0.1A)		
AC Power	AC 110V/220V/240V(50/60 HZ, 700VA)		
Ambient temperature	10℃~50℃		
Dimension	270(W) ×248 (D)× 113(H)		
Weight	5.0kg		

15. DIMENSIONS
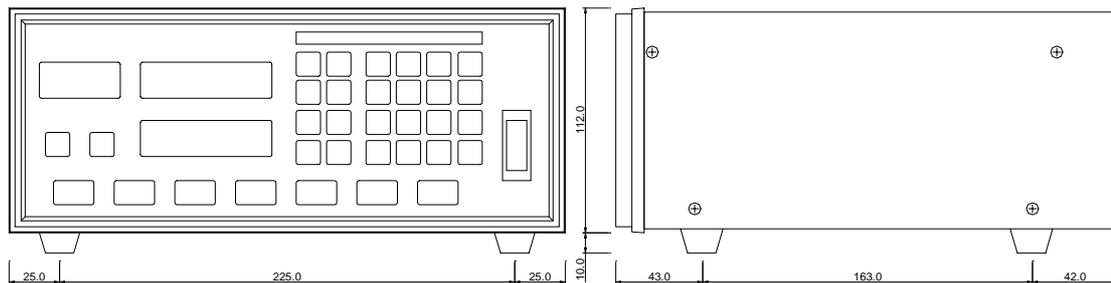
CNC-210S/EXD1/EXD2
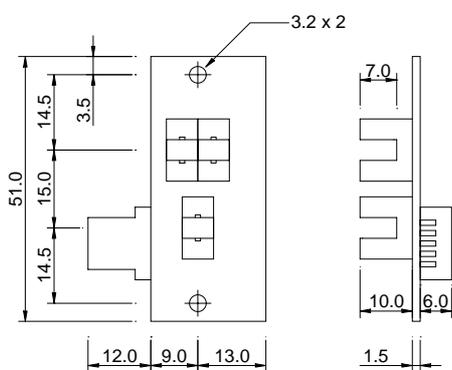
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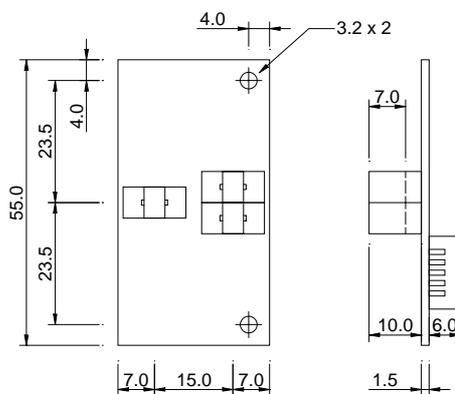
CNTB-03C
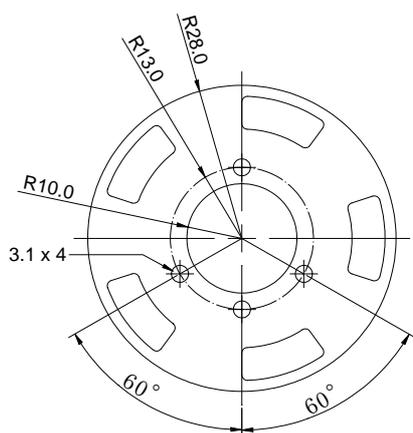
COUNTING DISC

HOME SENSOR

16. NOTES

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