

Contactor-less Magnetic Brake Controller

(TCBⅡ-series)



HANMI TECHWIN

TEL: +82-31-498-9270

FAX: +82-31-498-9275

1. INTRODUCTION

TCBII series developed by HANMI TECHWIN is a type of reducing maintenance problems, the old model has been containing seriously . On its stop condition, the electric power left in magnetic brake coil is fed back into the line and by doing so, promotes the efficiency of controller.

2. APPLICATION

TCBII series may be applied to all equipments in installing magnetic brake.

3. FEATURE

3.1 Constant Current Control by Hybrid Circuit

The control circuit comprises of hybrid circuit as a negotiation of strong point of analog that is against external noise, and that of digital that is capable of changing functions conveniently.

HANMI TECHWIN have designed the circuit as constant current control type of which the current is detected by AC-CT attached to the input.

3.2 Energy Saving

When turning on, this model controls starting and holding exciting current applied with four SCR, and saves energy loss. When turning off, this model saves energy efficiently by feeding back the energy left on the coil of magnetic brake via inverter mode of single full wave phase rectifier.

3.3 Fast Response

When turning on, old model applies half wave voltage, whereas new control applies full wave voltage that saves time of turn on at least two or three times. When turning off, the old model consumes the energy left on the coil of magnetic brake as joule energy by DR resistor. The new model feeds back instantly the excessive energy by the inverter mode of single phase full wave phase rectifier. When turning on, this new model control starting and holding exciting current applied with four SCR, and saves energy loss.

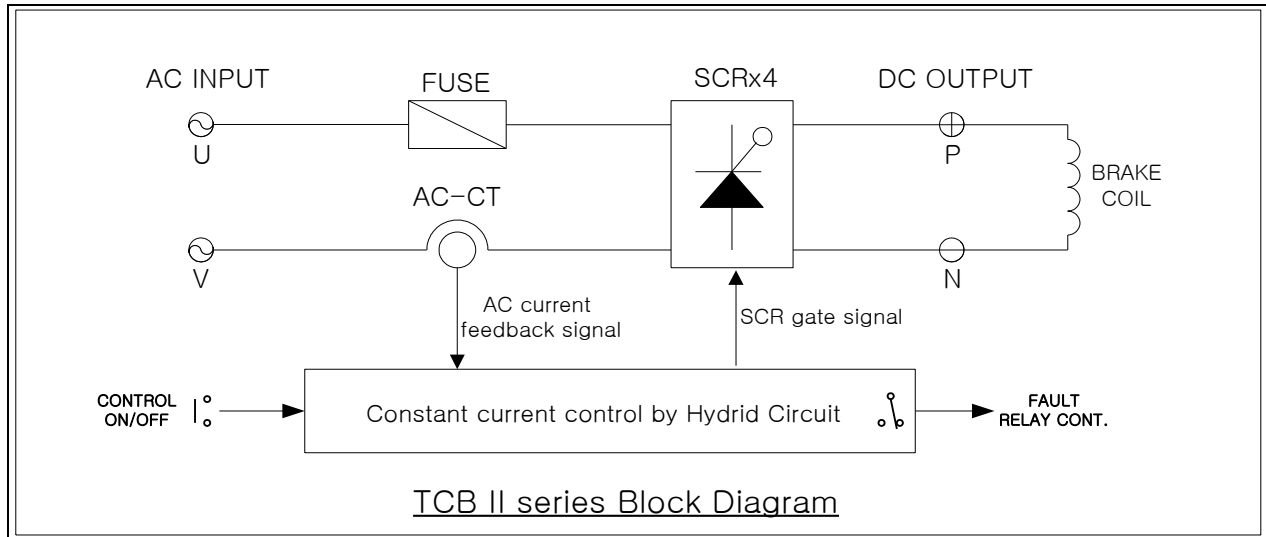
3.4 Improved Liability

The power circuit consisting of four SCR is simple in structure, modulated to one board, and principally solves mechanical problems.

3.5 Practical Design

The operating status of brake is displayed on ten LED in front of unit, and operation time for starting exciting current, value of starting and holding exciting current are decided by three variable resistances.

4. TCBII SERIES OVERVIEW



Division	A Company	B Company	C Company	HANMI TECHWIN
	1 Generation	2 Generation	3 Generation	4 Generation
Power Circuit				
Structures	1.Magnetic Contactor 2.Timer 3.Diode 4.Series, Parallel R	1.Magnetic contactor 2.SCR 3.Diode 4.Parallel R	1. Ø3 Diode 2. Condenser 3. IGBT 4. DC-CT	1. SCR 2. AC-CT
Control method	A half wave voltage control by resistance	A half bridge phase control	DC Chopper control	Full bridge phase control
Regeneration	NO	NO	YES (Through condenser)	YES (Feedback to lines)
The rate of power(%)	100	30	20	10
The rate of Maintenance(%)	100	50	20	10
Reliability Life Time	Low	Low	High	Very High
Life Time	50,000 (Only if a periodic maintenance)	50,000 (Only if a periodic maintenance)	Semi permanent (Depend on condenser)	Semi permanent (No maintenance)

5. SPECIFICATION

5.1 Explanation on the type

T C B II - □ □ □ - □ □

AC input voltage ⇒ 1:OPTION, 2:220V, 3:380V, 4:440V, 5:480V

The place to install ⇒ I: Indoor

FRAME NO

Class ⇒ None : Series & Parallel, II : Contactorless

CONTROL BOX

ELEMA PRODUCTS

5.2 Electrical Features

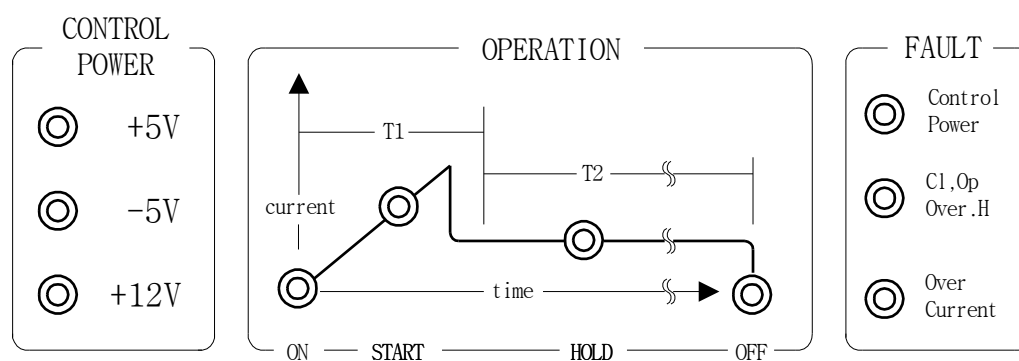
Division	Content
Input voltage	Standard : AC 440V [-15~ +10%] [Order : AC 220V, AC 380V, AC 480V]
Input Frequency (Hz)	50 / 60[±5%]
The time of starting current(sec)	0.3 ~ 3
The value of starting current (%)	0 ~ 120
The value of holding current (%)	0 ~ 20
Ambient atmosphere	No GAS
Operating temperature (°C)	-20 ~ +85
Keeping temperature (°C)	-20 ~ +85
Humidity	Below 80% RH (Over dew point)
Insulated Resistance	Over DC 500[V] 5 MΩ

5.3 Standard Specification

TYPE	TB- AN Brake										TYPE	TB-DN Brake									
	DC 100V					DC 200V						DC 110V					DC 220V				
	Starting		Holding		Brake Coil (Ω)	Starting		Holding		Brake Coil (Ω)		Starting		Holding		Brake Coil (Ω)	Starting		Holding		Brake Coil (Ω)
	V	A	V	A		V	A	V	A			V	A	V	A		V	A			
AN 132	100	6.9	15	1	14.5	200	3.4	30	0.5	58.1	DN 178	110	7.6	15	1	14.5	220	3.8	30	0.51	58.1
AN 160	100	10.7	15	1.6	9.3	200	5.4	30	0.8	37.1	DN 213	110	10.4	15	1.4	10.6	220	5.2	30	0.7	42.6
AN 180	100	9.4	15	1.4	10.6	200	4.7	30	0.7	42.6	DN 250	110	28.9	15	3.5	4.25	220	12.9	30	1.8	17
AN 200	100	15.8	15	2.4	6.3	200	7.9	30	1.2	25.2	DN 308	110	28.2	15	3.8	3.9	220	14	30	1.9	15.7
AN 225	100	15.8	15	2.4	6.3	200	7.9	30	1.2	25.2	DN 336	110	40.7	15	5.6	2.7	220	20.2	30	2.8	10.9
AN 250	100	14.7	15	2.2	6.8	200	7.4	30	1.1	27.1	DN 403	110	36.7	15	5	3	220	18.3	30	2.5	12
AN 280	100	23.5	15	3.5	4.3	200	11.8	30	1.8	17											
AN 315	100	25.6	15	3.8	3.9	200	12.7	30	1.9	15.7											
AN 355	100	37	15	5.6	2.7	200	18.3	30	2.8	10.9											
AN 400	100	33.3	15	5.0	3	200	16.7	30	2.5	12											
AN 527	100	34.7	15	5.2	2.9	200	17.4	30	2.6	11.5											

6. EXPLANATION ON DISPLAY

6.1 LED Function



Function	LED	Content	Trouble Shoot
CONTROL POWER	+5V	PCB control power	1. 3LEDs light off→AC input→input fuse is checked 2. One or two light off of out three LEDs →contact us
	-5V		
	+12V	External control power	
OPERATION	ON	Light on when signal on is given from outside	If it works improperly, contact us
	START	Light on for the time of starting current runs	
	HOLD	Light on when holding current runs	
	OFF	If an external off signal is given, light becomes on a second and then off	
FAULT	Control Power	Lamp lights on in case of fault of control power	Contact us
	Cl, Op Over.H	Lamp light on in case the temperature of unit is over 85°C	If temperature goes down, push reset button and it works again
	Over Current	Over current	Check the coil in brake and short test. Continuously over current runs, contact us

6.2. PARAMETER Function

Function	Unit	Content
STARTING TIME(T1)	SEC	Set the time of starting current
STARTING CURRENT	%	Set the value of starting current
HOLDING CURRENT	%	Set the value of holding current

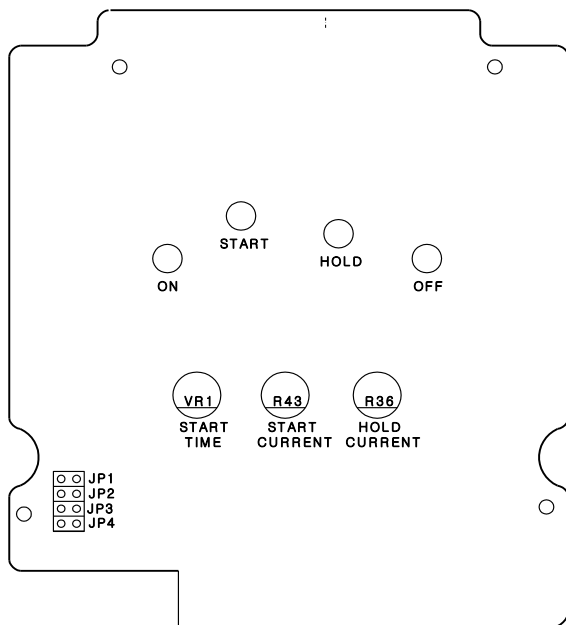
7. JUMPER PIN SETTING & VARIABLE RESISTANCE FOR SETTING

(Specification are described before forwarding)

7.1 JP1~JP4 are set for the value of starting current

Starting current[A]	5	10	15	20	30	40	90
Jumper pin short	All Open	JP1	JP2	JP1 JP2	JP1 JP3	JP1 JP2 JP3	JP1 JP2 JP3 JP4

Fuse capacity classified by Brake Type	
FUSE	TB-AN TYPE
2 A	132 ~ 160
4 A	180 ~ 225
6 A	250
10 A	280 ~ 315
16 A	355 ~ 527



※ Brake controller jumper pin setting
(INPUT: AC440V, OUTPUT : DC200V)

Jumper pin Brake type	ALL Open	JP 1	JP 2	JP 1 JP2	JP 1 JP 3	JP 1 JP 2 JP3	JP 1 JP 2 JP 3 JP 4
AD type		132~200	225, 250	280, 315	400	355~527B1	527B2
MD type		132~200		225~280	315	355, 400	
DC type			178, 213, 250F	250	308	308F, 336F, 403	336, 403F, 527F
DD type		178	213, 250	250	308	336, 403	527
AN type	132~200	180~250	280, 315	355~527			
DN type	178, 213	213	250, 308	336, 403	336		

7.2 START TIME SET (VR1)

Starting current which runs on magnet coil takes time in a range from 0.3 to 3 sec

7.3 START CURRENT SET (R43)

For setting the value of starting current, this current, set by JP1 ~ JP4, is acknowledged 100%, and the range is from 0 to 120%.

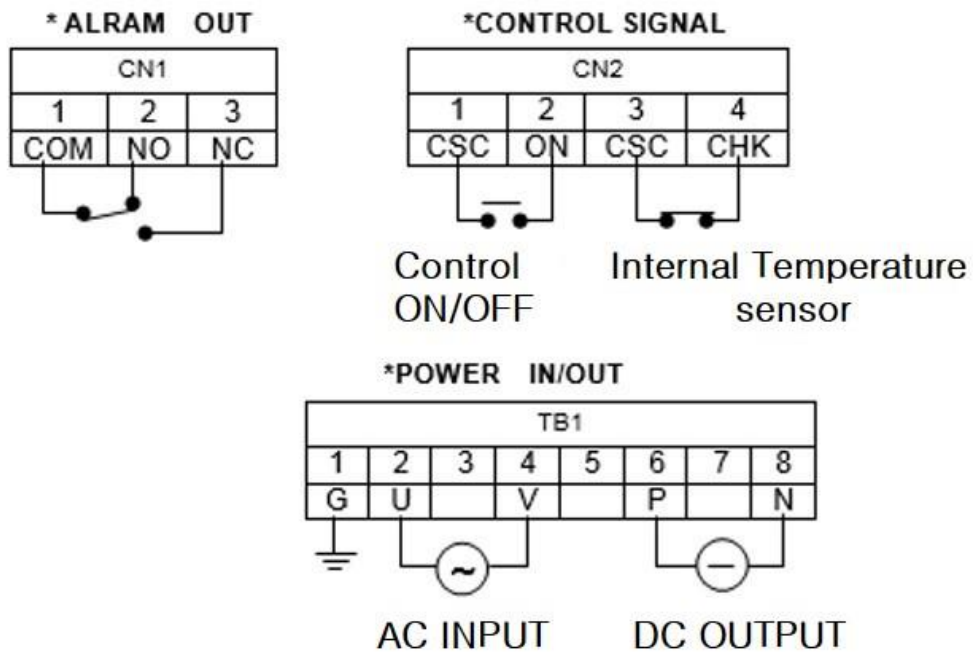
7.4 HOLD CURRENT SET (R36)

For setting the value of holding current, this current, set by JP1 ~ JP4, is acknowledged 100%, and the range is from 0 to 20%.

(※ Fuse of input side is set about 75% for the value of starting current.)

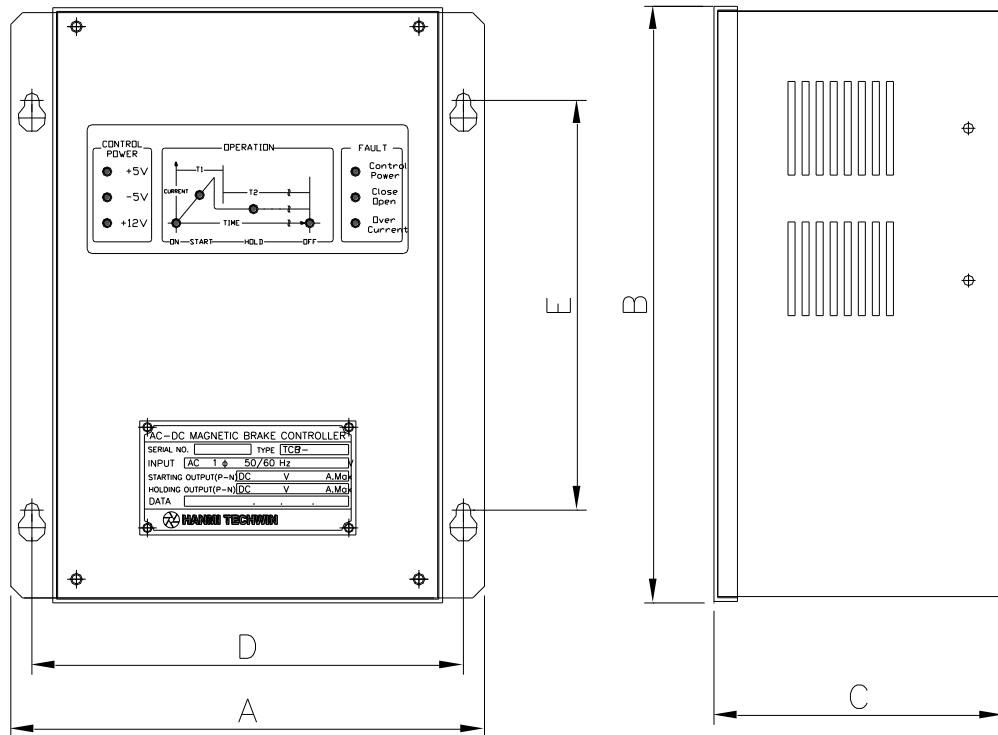
(※ Electric current does setting using by Current Meter instrument when setting.)

8. CONNECTION DIAGRAM



Number		Terminal name	Name	Function	Rate
CN1	1	COM	COMMON	ALARM OUT : On faults	AC 125V / 1A
	2	NO	NORMAL OPEN		
	3	NC	NORMAL CLOSE		
CN2	1	CSC	CONTROL SIGNAL COMMON	Brake driving signal ·CLOSE : ON ·OPEN : OFF	
	2	ON	START SIGNAL		
	3	CSC	CONTROL SIGNAL COMMON	OPTION terminal (Default : over heat)	
	4	CHK	CHECK		
TB 1	1	G	EARTH	Case earth terminal	
	2	U	AC INPUT	Single phase AC input terminal	
	3				
	4	V	AC INPUT		
	5				
	6	P	DC Output (+)	BRAKE COIL(+) terminal	
	7				
	8	N	DC Output (-)	BRAKE COIL(-) terminal	

9. DIMENSION



	132~280	315~527
A	202	273
B	254	304
C	124	165
D	184	256
E	175	200

10. ELECTRIC WIRING DIAGRAM

10.1 Caution of when wiring

1. Input source connects directly N.F.B output.
(Do not use Brake Open M/C.)
2. CN1 terminal is displayed signal at unit Brake down.
(Is consisted of point of contact on inside.)
3. Brake unit is operated according to that point of contact signal comes for CN2 terminal.
(Do not supply power absolutely.)

10.2 Outside wiring diagram

(POWER SOURCE)

