DIGITAL power REGULATOR

USER'S MANUAL

-DPR Series-

PARAENT

ABOUT PRODUCTS & SERVICES

Preface

We appreciate your purchasing our Digital Power Regulator. To avoid any trouble and for your safety, please read this manual carefully before usage.

Charged Services

-Please read the manual in advance, as a service charge will be imposed for any service request on a product without defects.

When a defect occurs due to mishandling or improper repair.	• A defect because a user doesn't follow the instructions in the manual. • A defect caused by not following rating, current capacity, or using abnormal voltage or power. • A defect caused by using components that our company doesn't designate. • A defect caused by repair work of non-specialists. • Alternation of fuse and consumption goods. • A defect caused by natural calamities.

*** Term of guarantee of this product is 1 year from the purchase date.**

Product installation environments

- Install this product vertically to activate ventilation and do not use it in or around flammable, explosive, corrosive, and humid environments.

Symbol explanation

Mark	Name	Explanation
	Notice for electric shock	This symbol marks the parts where there is danger of electric shock. Power must be turned off for maintenance or repair of the product.
	Notice Warning Danger	This symbol indicates risk of death or serious injury. When the product is used incorrectly, it could cause property damage.
	Grounding	To prevent malfunction, you must operate grounding. To prevent electric shock or noise from the outside.

NOTICES FOR SAFETY

1. Install
   1) Before installing this machine, install main power circuit breaker (NFB) and Magnetic switch on the outside of the main body for safety.
   2) If, after transport or storage in humid conditions, equipment could fail to meet all the safety requirement, the install instruction shall 4 hour of operation to dry out the equipment and restore it to normal condition.
2. Ground type 1 grounding or special type 3 grounding in the exterior box of the machine to prevent electric shock.

3. Check that voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
   (It is recommended that you do not use a machine at over 70% of the rated current condition.)

4. Fuse
   1) To prevent fire and to protect the machine, use a fast-acting fuse,which is designated by our company. **(Refer to the product label)**
   2) Must turn off the main power to exchange the fuse.
   3) The fuse used must be of the specified rating (current, voltage, type) in order to prevent a fire hazard.

5. Environments
   1) Adjust ventilation and temperature so that temperature inside the control panel is not over 45˚C.
   2) Do not operate the machine where there is a risk of inflammability, explosiveness, corrosion or humidity. (RH 70% below at 40℃)
   3) The equipment must not be mounted on a surface of flammable material.
   4) Live parts may need to be accessible, a statement requiring the fitting of a residual current-opened circuit-breaker.

6. Disassembly or remodeling of the machine
   1) Never change components voluntarily with the exception of changes of fuse or thyristor.
   2) Our company can not guarantee operation of the machine when the volume of the machine or component is altered voluntarily. When a problem occurs, please contact our company's A/S Department.

7. Check and repair
   1) Before checking the machine, cut off the power and beware of electric shock.
   2) Check fastening condition of bolts and nuts of terminal parts.
   3) When bolts of terminal are loose, it could generate heat so wiring can be damaged or fire can occur. Check this condition periodically.

8. This manual could be revised without notification for improvements of functions of the machine.

9. Responsibilities and guarantee
   1) Must preserve notices for handling, maintenance, and repair of the machine.
   2) Our company is not responsible for damage, which occurs due to not following these instructions..

Must preserve notices during handling the machine to ensure safety.

10. Cleaning
   1) Do not spray water directly at the product. (A fire and electric shock will be occurred)
   2) Please unplug the product
   3) Do not use chemical liquid. Discoloration will be occurred.
   4) Appropriate decontamination is carried out if hazardous material is split onto or into the equipment.
   5) Cleaning and decontamination necessary as a safeguard when laboratory heating equipment and any accessories are maintained, required and transferred.

11. Protection against electric shock
   1) The hazardous live parts are supplied from a circuit protected by a residual current operated circuit-breaker which interrupts the supply at a differential current of 30mA or less, or the installation such a circuit-breaker.
   2) Conveyor belts, muffles, etc. which are conductive are connected to the protective conductor terminal.
   3) Please express clearly the necessary method to be carried for protection and method for protection on where operator or other personnel can be contacted such as rechargeable part or terminal connected to conductive circuit.
   (ex. Isolation tools, isolation cable)

12. A/S Request

A/S Department
TEL (053) 857 – 4470, 4471
FAX (053) 857 – 4474
mail : paratec@paratec.co.kr

Must preserve notices during handling the machine to ensure safety.

CONTENTS

1 IDENTIFICATION

1-1. Identification Code

- CODE

S P P 2 – 0 2 5 – 0 0 0 0 – 0 0 0 0

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

1. NO. OF PHASE	2. CONTROL METHOD	3. PRODUCT MODEL	4. RATED VOLTAGE
S. SINGE PHASE T. THREE PHASE	P. PHASE-ANGLE Z. ZERO-CROSSING	P. P TYPE X. X TYPE	1. 110V 2. 220V 3. 380V 4. 440V

5. RATED CURRENT	6. FEEDBACK OPTION	7. COMMUNICATION OPTION
25A~800A OVER 800A : PLEASE CONSULT US	I. CURRENT FEEDBACK V. VOLTAGE FEEDBACK W. POWER FEEDBACK	C. COMMUNICATION

8. PARTIAL LOAD FAILURE OPTION	9. OPTION	10~13. CUSTOMER'S REQUIREMENT
P. PARTIAL LOAD FAILURE	OTHER OPTION	CUSTOMER'S REQUIREMENT

Note

- **Identification code is attached to the outer side of the unit.**
- **Please make sure this unit is the same as what you ordered by referring to identification code.**

PARA-ENT , Republic of Korea **+82+53-857-4478**

Product **Power Regulator**
Model **TZP2-110**
Serial No **3G007**

Power Rating : **110A @ 220V 60Hz**
Input :
Firing Mode : **Zero Crossing**

Fuse : SIBA 20 282 04-125A
Any other fuse invalidates warranty

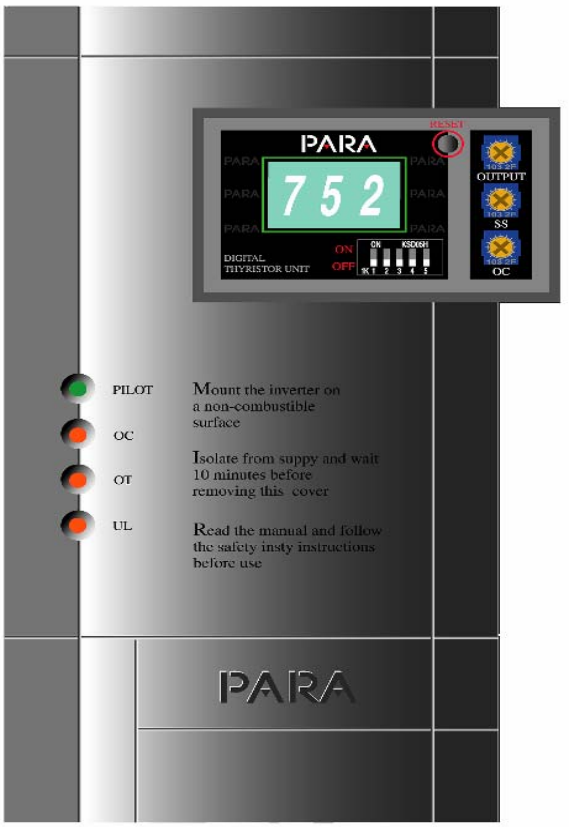
Made In Korea

H.page : www.paratec.co.kr , mail : paratec@paratec.co.kr A/S 053)857-4470

Must preserve notices during handling the machine to ensure safety.

2	CONTROL BOARD EXPLANATION

2-1. Lamp Signal



a. Normal operation
: Normal output and Normal status

Message	Lamp
PILOT	Green Lamp Blinking
OC	OFF
OT	OFF
UL	OFF

b. Warning Operation
: Normal output but attention is needed.
Lamps are blinking.

Message	Lamp
PILOT	Yellow Lamp Blinking
OC	Red Lamp Blinking
OT	OFF
UL	Red Lamp Blinking

c. Alarm Operation
: Abnormal status and output is off.
Lamps turn on.

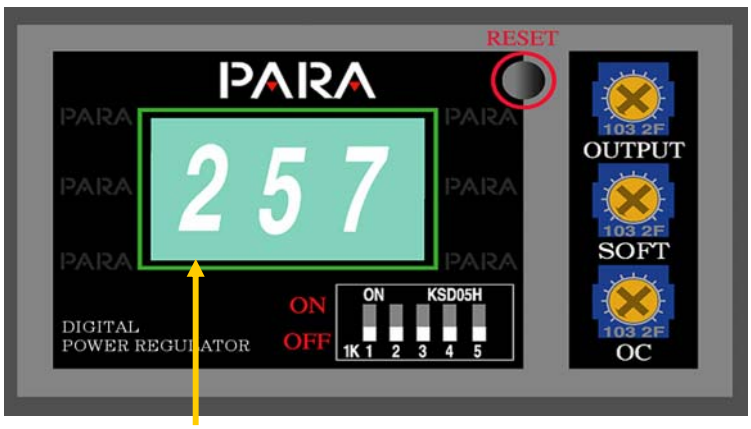
Message	Lamp
PILOT	Red Lamp ON
OC	Red Lamp ON
OT	Red Lamp ON
UL	Red Lamp ON

▪ Operation related terms I

Message	Explanation
PILOT	Operating status lamp
OC	Over Current
OT	Over Temp.
UL	Unbalanced Load

Please read carefully this user's manual before operation.
And consult an expert when you have any question related to this unit.
Wrong usage or operation may cause bad effect on the system and worker.

2-2. CONTROL Volume



Current Value

▪ Operation related terms II

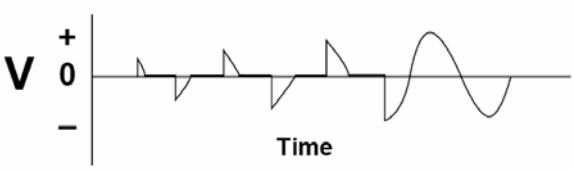
Volume	Explanation
RESET	RESTART : On Alarming status
OUT PUT	Select maximum output
SOFT	Time for Soft Start & Soft UP/DOWN
OC	Over Current prevention function

① Use RESET Button when you re-start the unit on the status of warning operation or alarm operation.

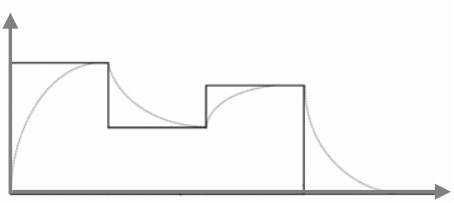
② OUTPUT Volume is used when selecting maximum output. FND shows figures 0~100(%), set up the figure you require by turning volume left and right. After setting up the figure you want, just push RESET BUTTON to complete selection.

③ Use SOFT Volume to adjust soft Start time(0~30sec). This setting time applies to soft up/down also. On the adjusting soft volume, display FND shows you 0~30 sec. Then you can select required time by turning volume switch left and right. After setting up the figure you want, just push RESET BUTTON to complete selection.

④ On selecting OC (Over Current) Volume, FND shows 0~max (maximum amperage will be shown), For example, OC volume is selected as 40 amp over current more than 52 amp(40amp X 1.3 normally 1.3 times of maximum amp. is the limit over current) flows, the unit notify the abnormal status and does not allow the output. (OC lamp : Red lamp on)



Soft Start

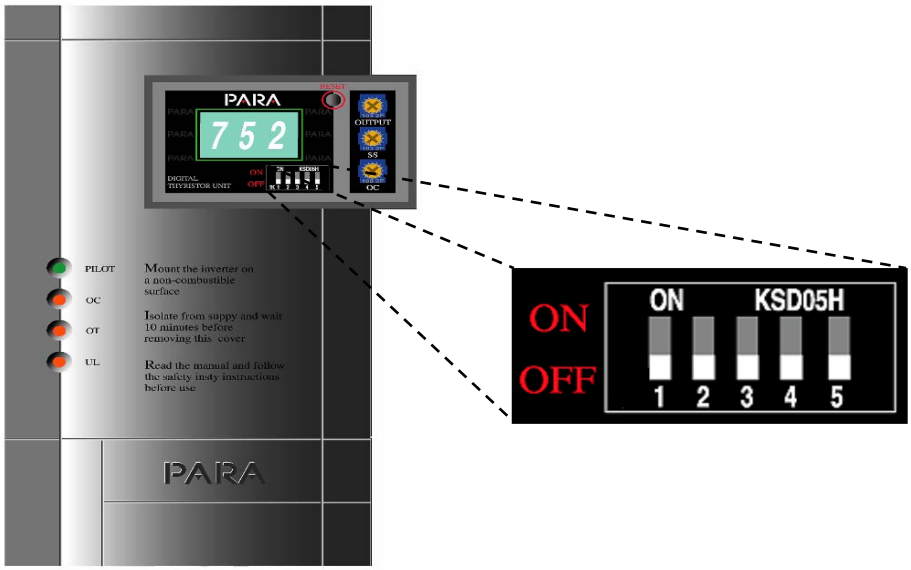


Soft UP/DOWN

Please read carefully this user's manual before operation.
And consult an expert when you have any question related to this unit.
Wrong usage or operation may cause bad effect on the system and worker.

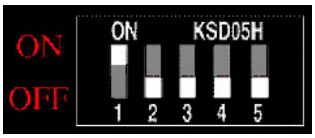
3	CONTROL MODE SELECTION

3-1. Phase-Angle Control



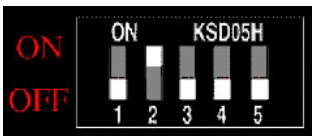
–Front Control Part–

A. Function to SW1 ON/OFF



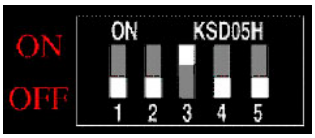
ON	OFF
Transformer Coupled Load	Resistive Load

B. Function to SW2 ON/OFF



ON	OFF
Soft UP/Down Operating	No Soft UP/DOWN operating

C. Function to SW3 ON/OFF

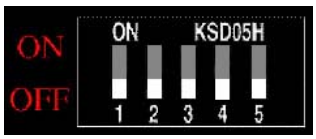


ON	OFF
Outer power volume operating	No operating outer power volume

Note : Please make sure SW2 is on when it is transformer coupled load.

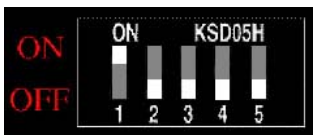
3-2.Zero-Crossing Control

A. 1 mode



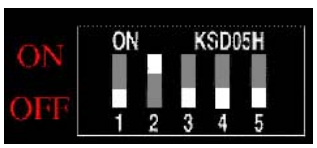
SW	ON/OFF
1	OFF
2	OFF
3	OFF
4	Option
5	Option

B. 4 mode



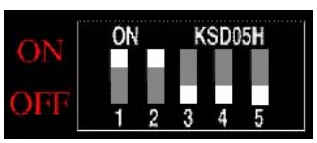
SW	ON/OFF
1	ON
2	OFF
3	OFF
4	Option
5	Option

C. 8 mode



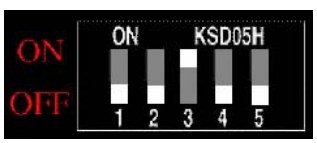
SW	ON/OFF
1	OFF
2	ON
3	OFF
4	Option
5	Option

D. 16 mode



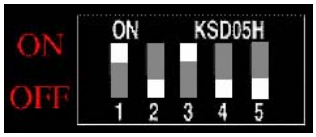
SW	ON/OFF
1	ON
2	ON
3	OFF
4	Option
5	Option

E. 32 mode



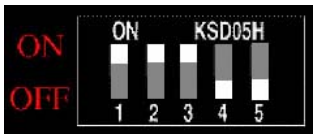
SW	ON/OFF
1	OFF
2	OFF
3	ON
4	Option
5	Option

F. 64 mode



SW	ON/OFF
1	ON
2	OFF
3	ON
4	Option
5	Option

G. 128 mode



SW	ON/OFF
1	ON
2	ON
3	ON
4	Option
5	Option

4-1. Technical Data

a. General Specifications

Voltage Rating :
200/220/240VAC, or 380/400/440VAC

Frequency : 50/60Hz(Auto-selectable)

Current Rating :
25A, 40A, 55A, 70A, 90A, 110A, 130A, 160A, 200A
250A, 320A, 400A, 500A, 570A, 800A, 1100A
(all based on an ambient temperature of 50˚C)

Input Signal :
4 to 20mADC, 1 to 5V, 0 to 5V

Output Range :
- Phase Angle Control

Current feedback
- 0 to 100% of current rating

Voltage feedback
- 0 to 98%(95%) of the voltage rating

Power feedback
- [0 to 98%(95%) of the voltage rating] X [0 to 100% of current rating]

Non Feedback
-0 to 98% of the voltage rating

- Zero Crossing Control
0 to 100% of voltage rating

(): In case of Three-Phase

Applicable Load :
- Resistive load or inductive load (transformer primary side control)

For Zero Crossing Control, only resistive load can be used.

Allowable Ambient Temperature :
- Performance guarantee range : 0 to +50˚C
- Operating guarantee range : -15˚C to +55˚C

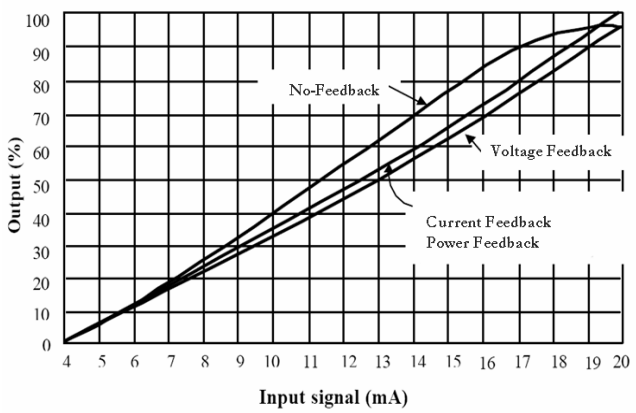
Cooling Method :
- Current rating of 70A or less : Natural convection
- Current rating of 90A(25A) or more : Fan Cooling as standard

Insulation Resistance : Over DC 500V 200MΩ between power terminal and case

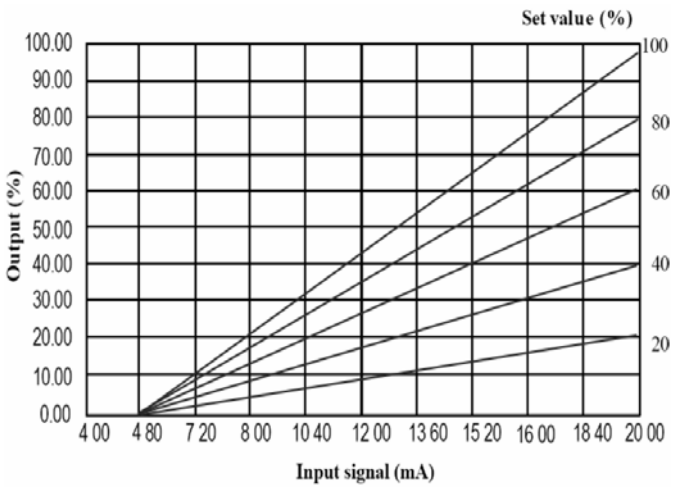
Mounting Method : Vertical Method

b. Characteristics

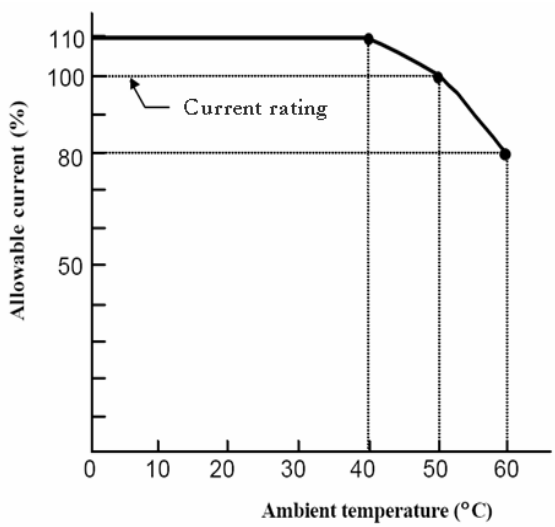
■ **Input/output characteristics**



■ **Gradient setting characteristics**

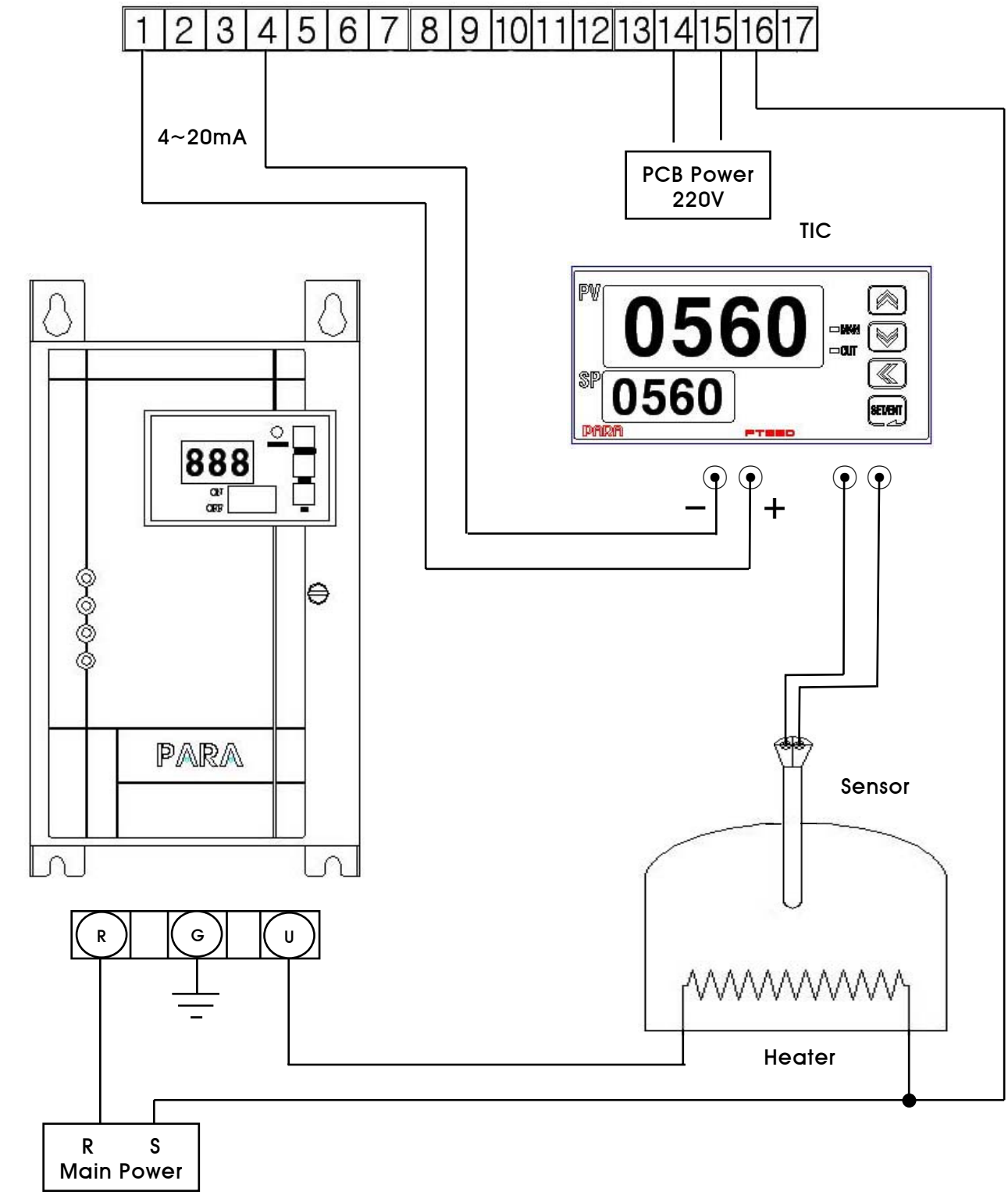


■ **Ambient temperature and allowable current**



4-2 . Wiring

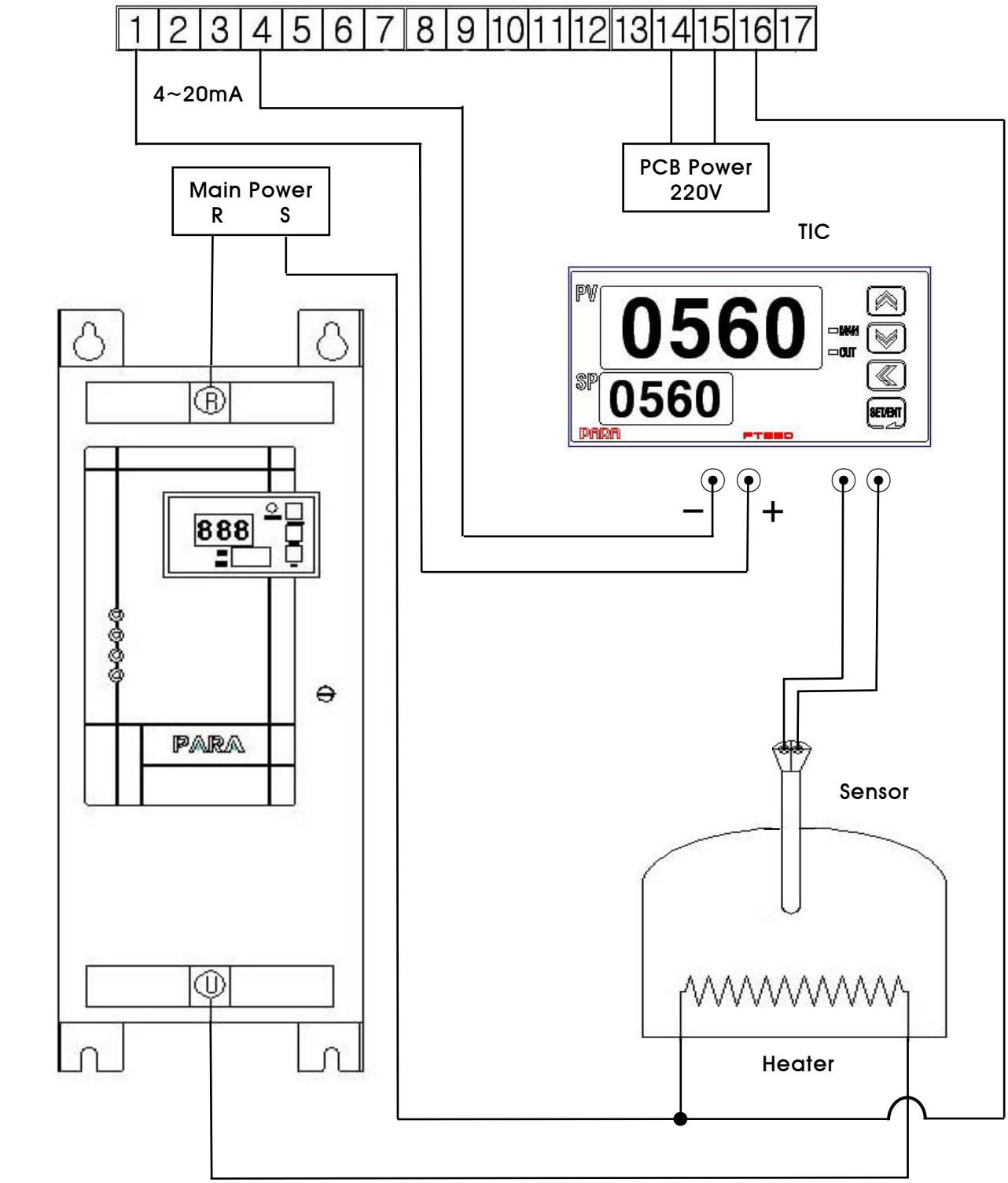
a) Single phase, 25A ~ 70A



Check the voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
(It is recommended that you do not use a machine at over 70% of the rated current.)

4-2 . Wiring

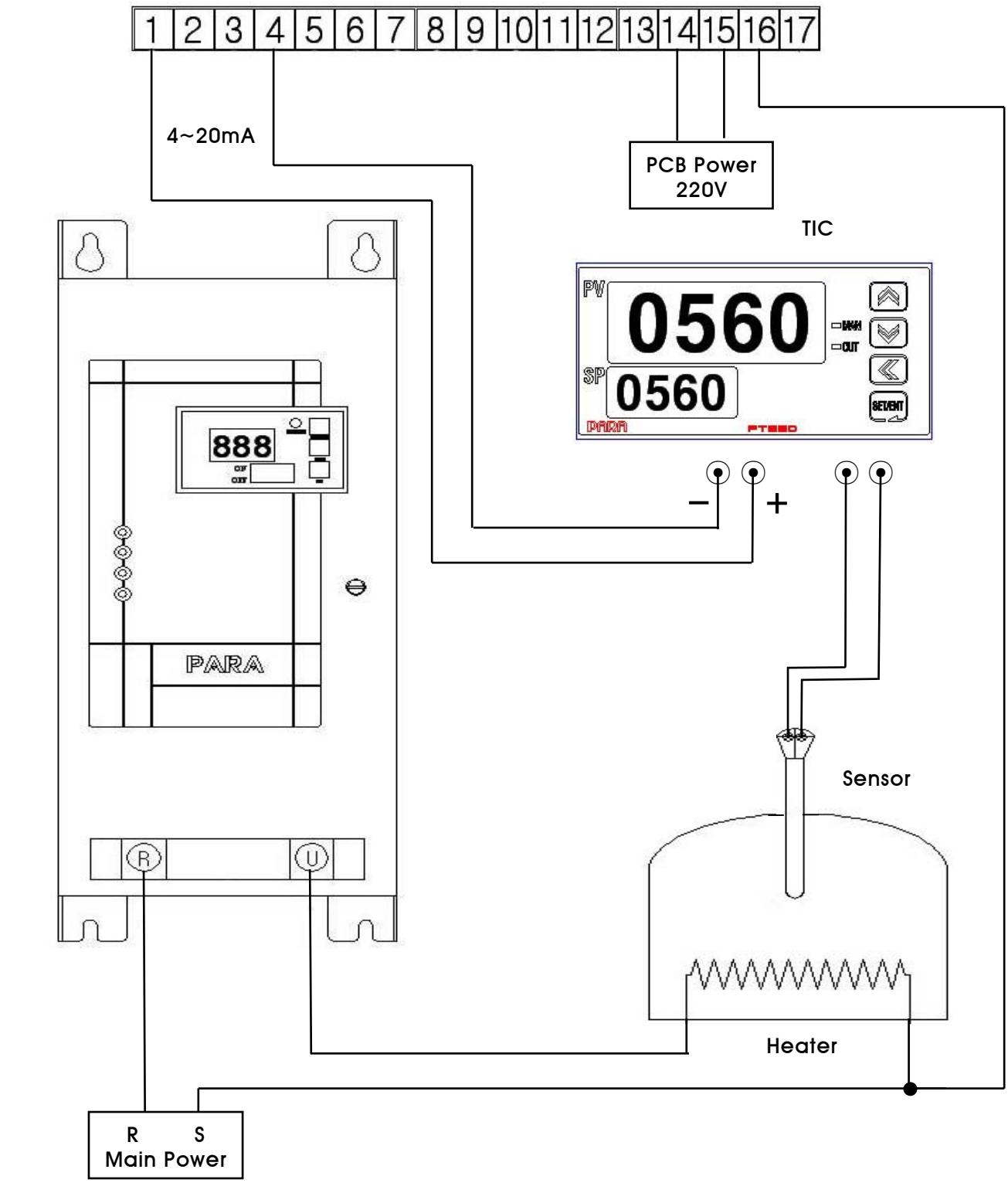
b) Single phase, More than 90A (A Type)



Check the voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
(It is recommended that you do not use a machine at over 70% of the rated current.)

4-2 . Wiring

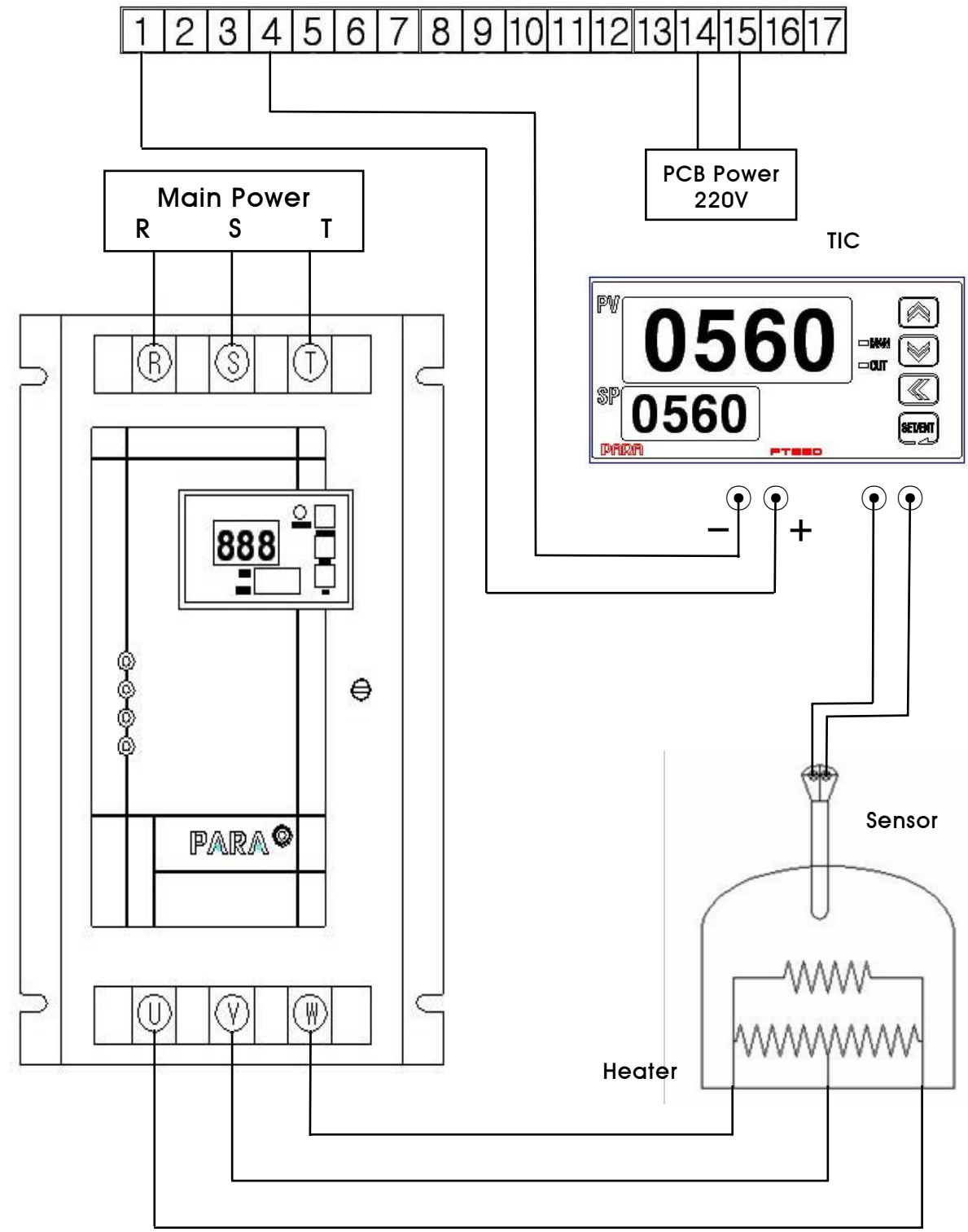
c) Single Phase, More than 90A(Type B)



Check the voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
(It is recommended that you do not use a machine at over 70% of the rated current.)

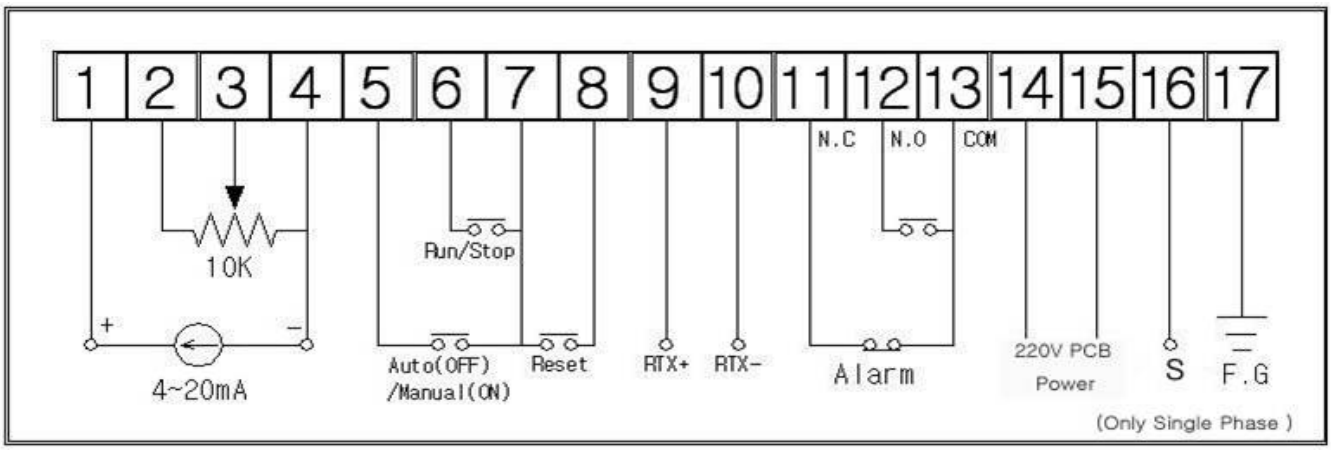
4-2 . Wiring

e) 3 Phase (all models)



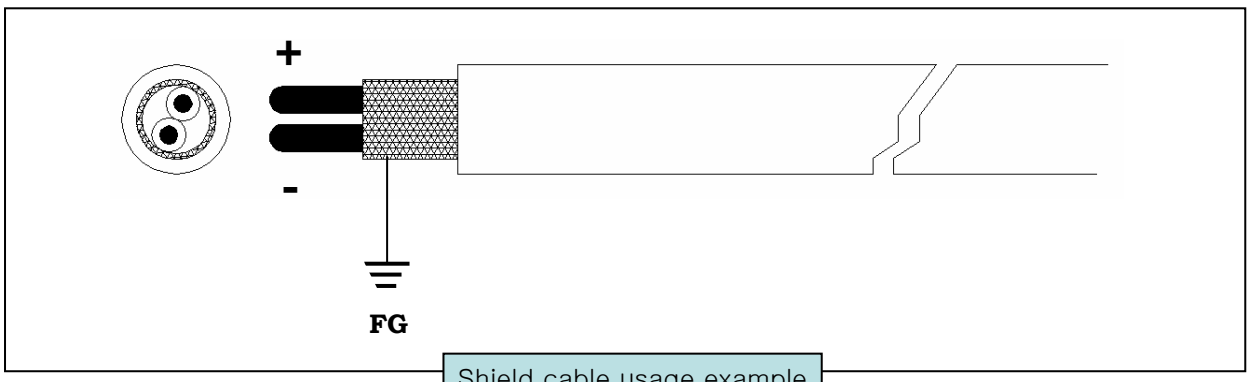
Check the voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
(It is recommended that you do not use a machine at over 70% of the rated current.)

4-3 . Control Terminal Arrangement



Note **Please refer to the control input wiring diagram, which is attached to the inside of the front panel or outside of case, to connect correct wires.**

1. The main power must be cut off to connect wires.
2. To prevent malfunctions by noise, use the twist shield cable for control input wiring. FIELD GROUND and SIGNAL GROUND must be operated.
3. Install wiring of the control input part far from the other power lines.



Shield cable usage example

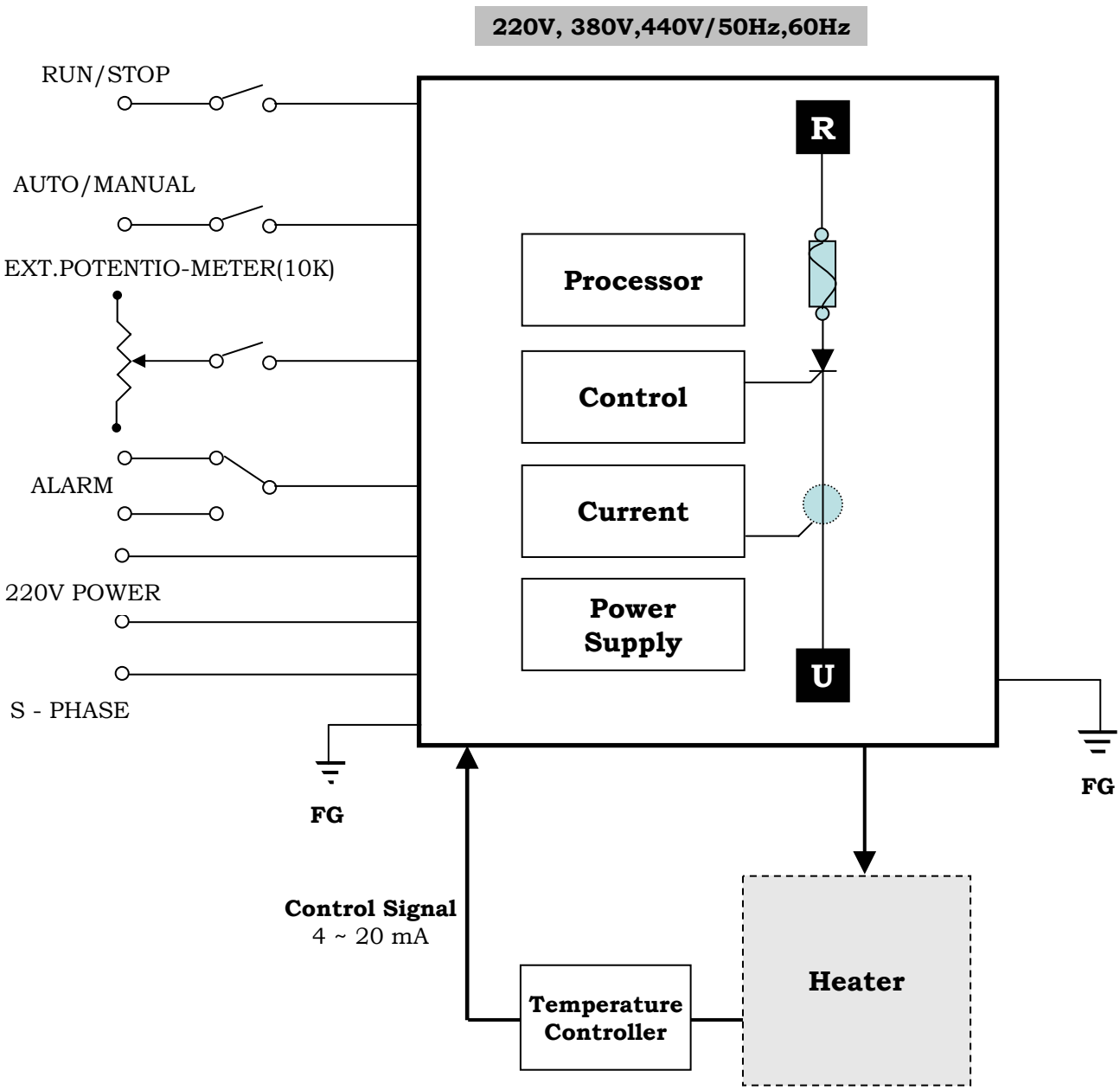
Danger, Warning/Notice

Danger, Warning : This symbol is displayed when there is risk of death or severe injuries.

Notice : This symbol is displayed when there is a risk of property damage.

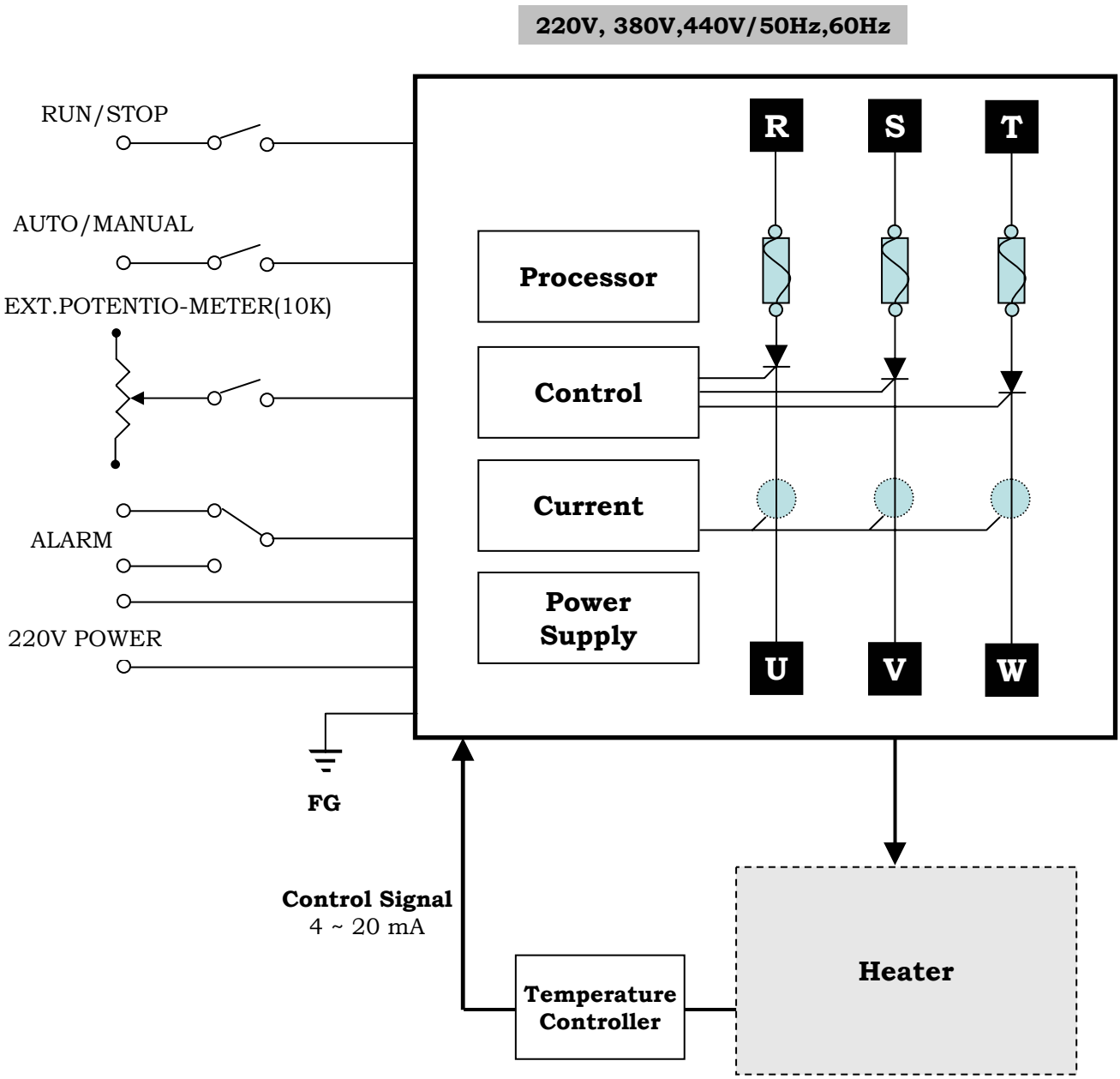
4-4 . System Block Diagram

a) Single Phase



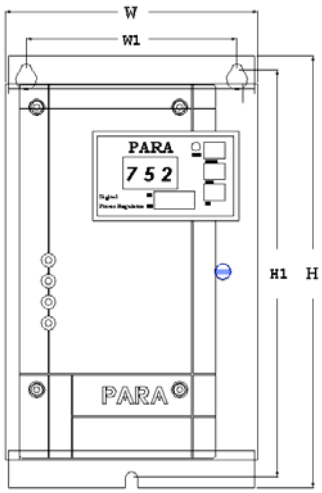
4-4 . System Block Diagram

b) Three Phase

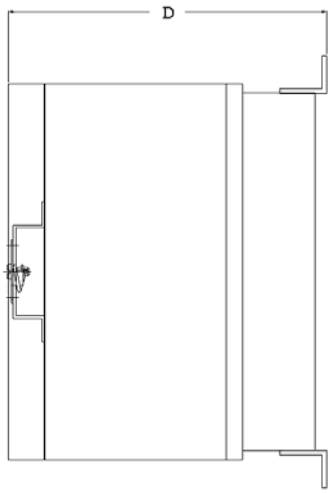


4-5 . Dimension

a) Single Phase

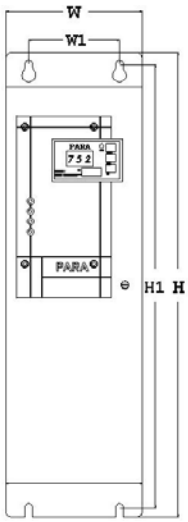


(Front-View)

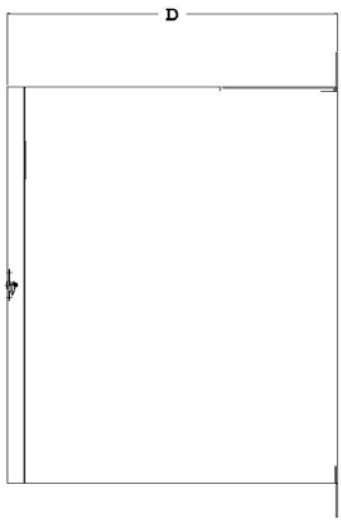


(Side-View)

- Models for less than 70 A -



(Front-View)



(Side-View)

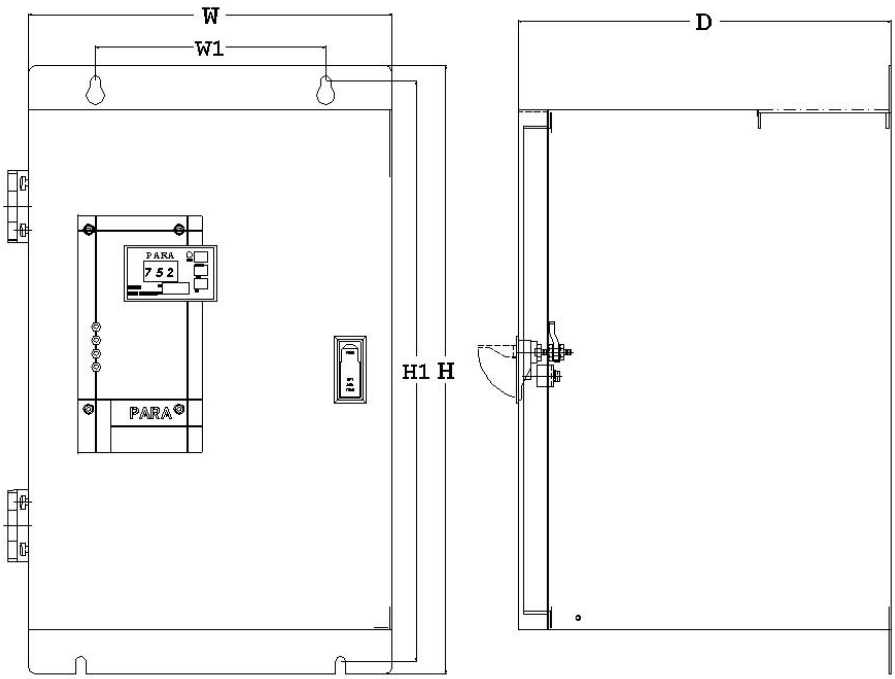
- Models for more than 90 A -

Model Type [A]	W		H	D	W1	H1	Mounting Bolt	Note
25, 40, 55, 70	108		195	150	90	185	4 mm	Terminal Block
90,110, 130	A	123	350	225	100	335	4 mm	BUS-BAR
	B	123	315	210	100	300		
160, 200, 250, 320	A	127	410	270	100	390	5 mm	BUS-BAR
	B	127	325	270	100	305		
400, 500	A	150	525	290	100	510	5 mm	BUS-BAR
	B	150	450	260	100	435		

Dimensions of the upper products could be changed without pre-notification for improving functions.
The sizes for A and B, please refer to page 12 and 13.

4-5 . Dimension

b) Three Phase



Model Type [A]	W	H	D	W1	H1	Mounting Bolt	Note
25, 40, 55, 70,	153	240	200	140	200	4 mm	Terminal Block
90, 110, 130, 160	196	350	235	170	335	5 mm	BUS - BAR
200, 250, 320	250	415	270	200	395	5 mm	BUS - BAR
400, 500	330	530	310	220	510	6 mm	BUS - BAR

Dimensions of the upper products could be changed without pre-notification for improving functions.

4-6 . Display Message

a) Main Message on FND Window

Display Message	Description
	TRANSFORMER COUPLED LOAD
	RESISTIVE LOAD
	OVER CURRENT
	OVER TEMPERATURE
	HEAT FAILURE OR ALARM MESSAGE FOR ABNORMAL STATUS OF POWER SYSTEM
	FUSE FAILURE
	PARTIAL LOAD FAILURE (OPTION) (MAXIMUM 6 LOADS FOR SINGLE PHASE)
	OPERATING
	SCR FAILURE
	MAIN POWER CUT-OFF

b) Display to Each Optional Function

Display Message	Description
	Standard Type (Display Current – Unit : A)
	Current Feedback Type (Display Current– Unit : A))
	Voltage Feedback Type (Display Voltage – Unit : V)
	Power Feedback Type (Display Power – Unit : Kw)

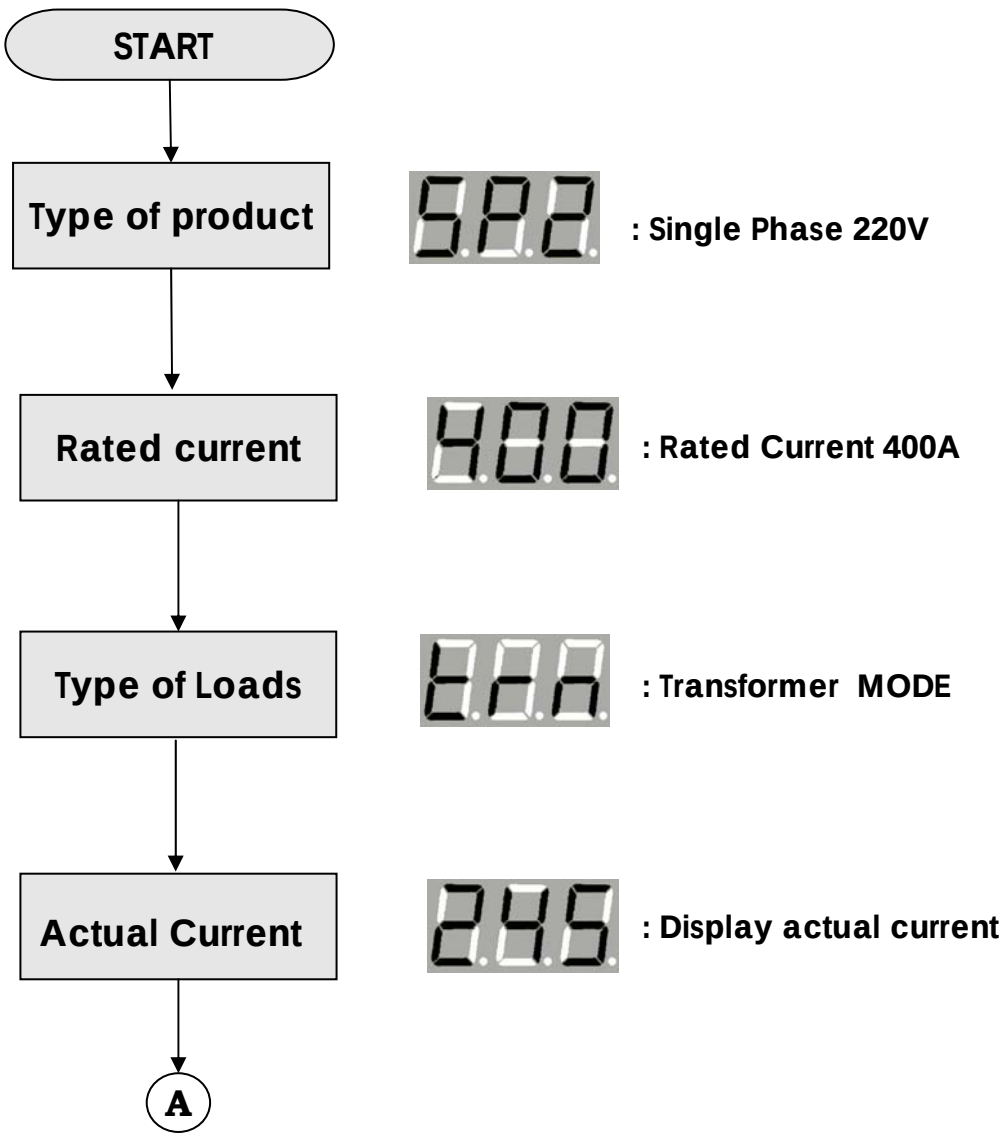
RMS current value is displayed for Phase–Angle control and Average current value is displayed for Zero–Crossing control.

4-6 . Display Message

c) Display Example

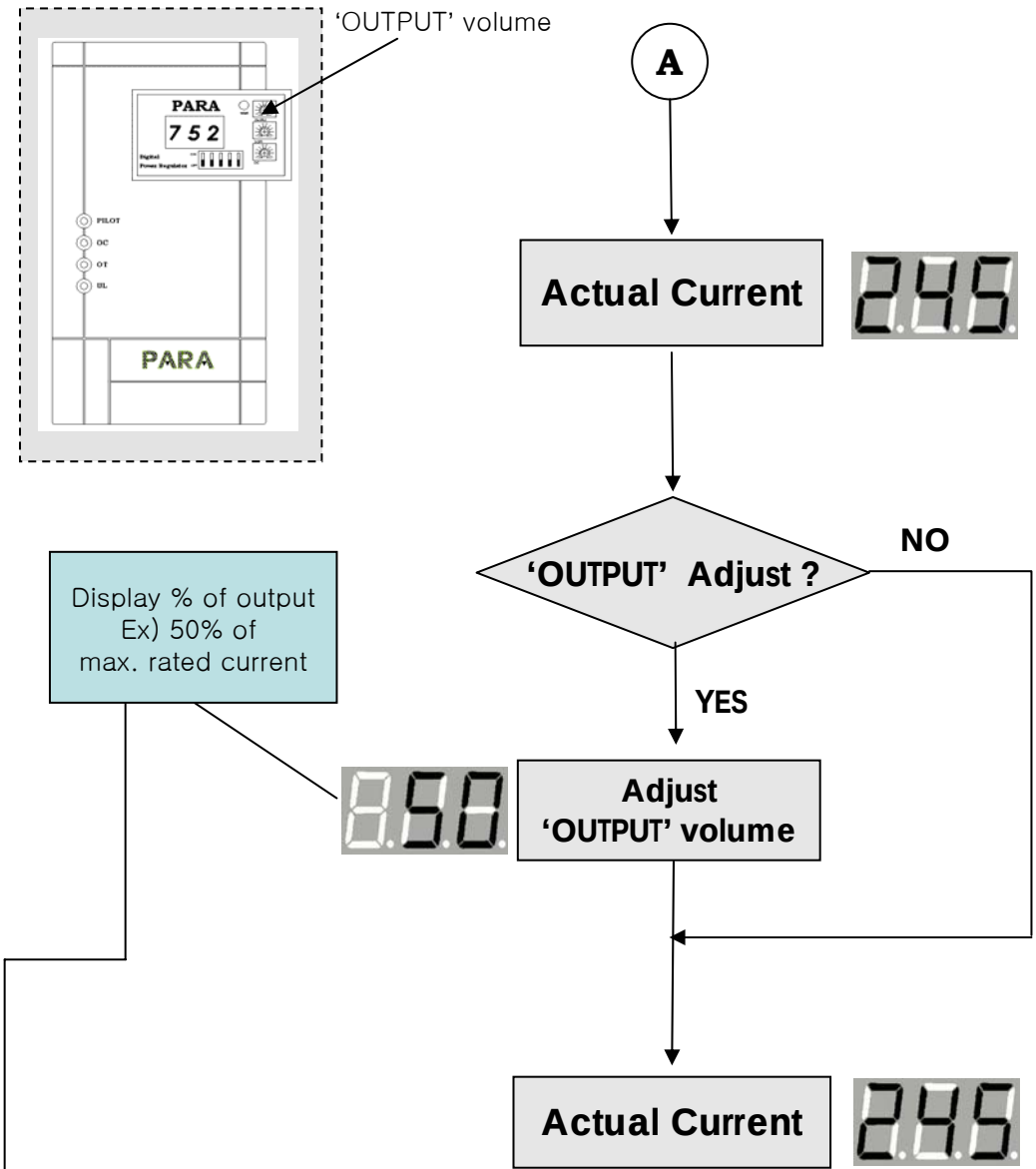
① While initial starting

Example) Single Phase **220V 400A display Message.**



4-6 . Display Message

② On adjusting 'OUTPUT' power volume



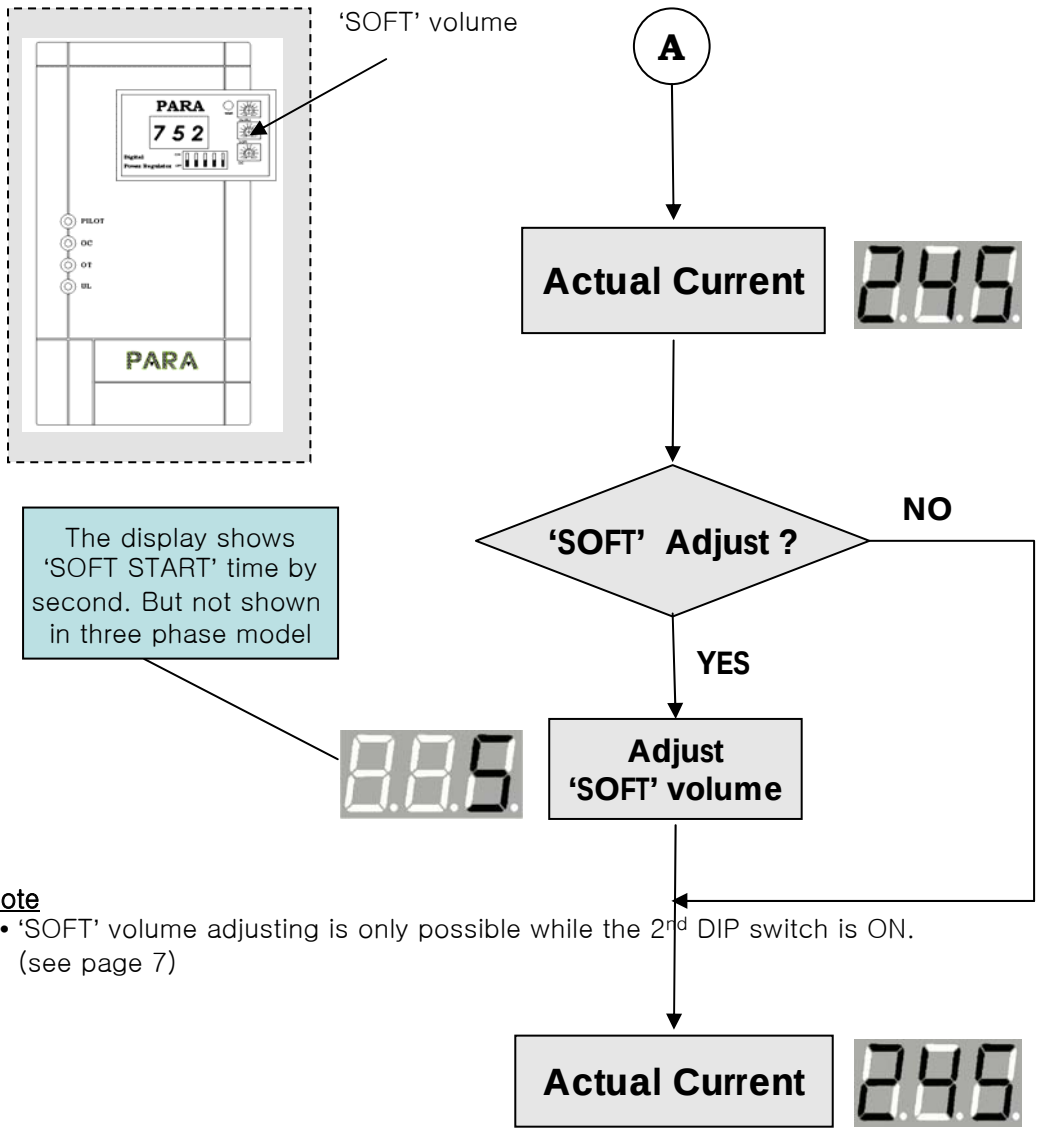
OUTPUT Volume is used when selecting maximum output. FND shows figures 0~100(%), set up the figure you require by turning volume left and right. When it is a feed-back type of product, display message varies from minimum to maximum current (voltage or power against full input signal according to adjusting output volume.

Example

When it is SPP2-040-I (220V, 40A, CURRENT FEEDBACK), display message shows you from 0A to 40A according to adjusting output volume.

4-6 . Display Message

③ On adjusting 'SOFT' volume



Note
- 'SOFT' volume adjusting is only possible while the 2nd DIP switch is ON. (see page 7)

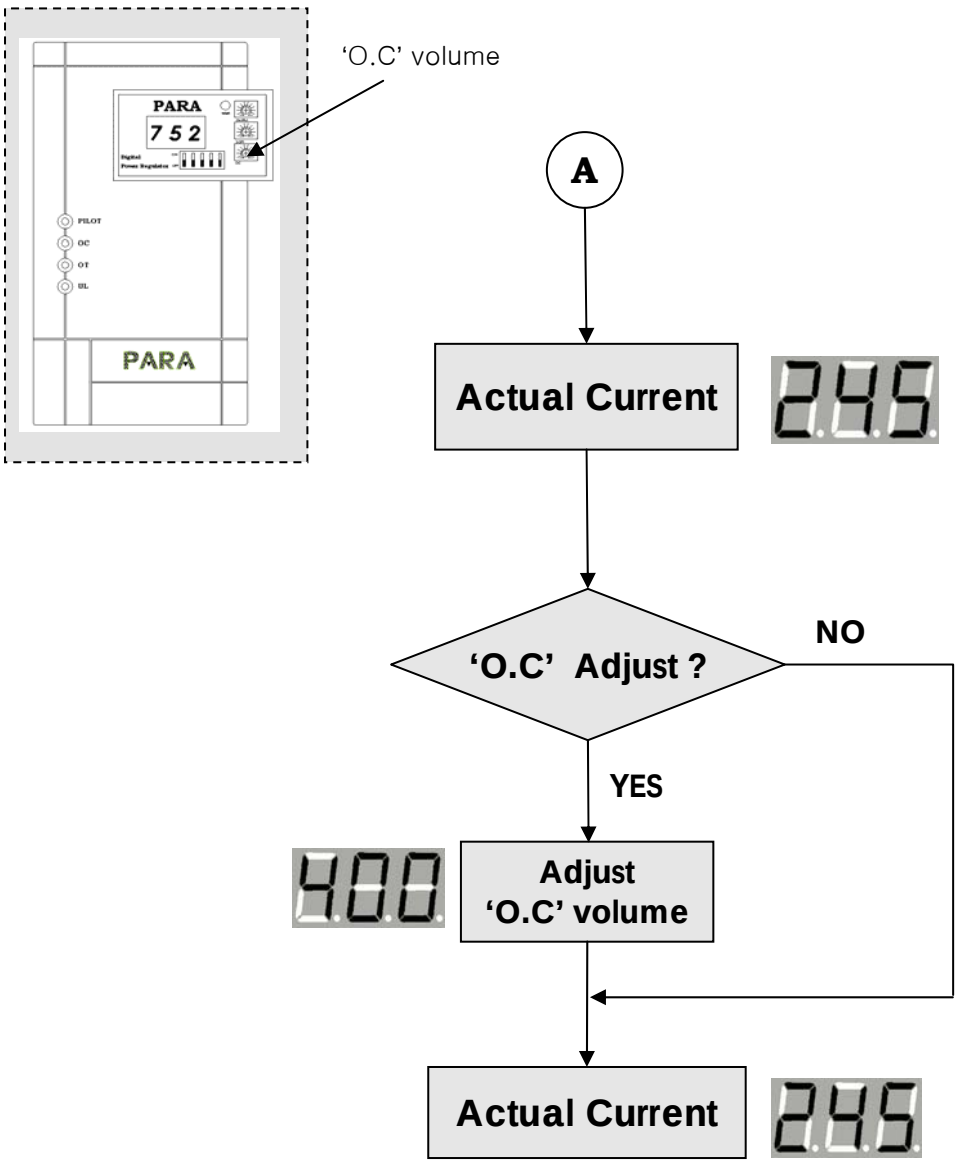
Use SOFT Volume to adjust soft Start time(0~30sec). This setting time applies to soft up/down also. On the adjusting soft volume, display FND shows you 0~30 sec. Then you can select required time by turning volume switch left and right.

Note

- 'SOFT' volume adjusting is only possible while the 2nd DIP switch is ON. (see page 7)

4-6 . Display Message

④ On adjusting O.C. (over current) volume



On selecting OC (Over Current) Volume, FND shows 0~max (maximum amperage will be shown), For example, OC volume is selected as 40 amp over current more than 52 amp(40amp X 1.3V normally 1.3 times of maximum amp. Is the limit over current) flows, the unit notify the abnormal status and does not allow the output. (OC lamp : Red lamp on)
It is recommended to adjust O.C value should be 1.1 times than load ampere.

5	OPERATION

5-1 . Notices During Operation

1) Please watch out power supply terminals otherwise electric shock will cause.

2) Do not touch any of components in the unit because of high temperature. Especially watch out not to put your finger or any stick in the cooling fan which turns too fast and cause you any harm.

3) Do not operate or turn on the unit without load which results in over voltage and damages transformer in unit.

4) Use only shield cable when wiring control terminal block.

5) Must not allow more than DC 5V or DC 20mA as input signal.

6) Installation Circumstances
① Mount this unit in the place where it ventilates well.
② Do not operate the machine where there is a risk of inflammability, explosiveness, corrosion or humidity.

7) Ground type 1 grounding or special type 3 grounding in the exterior box of the machine to prevent electric shock.

8) Check that voltage of provided power is same as the voltage of the machine and the rated current is not exceeding proper capacity of load current. Then, provide the power.
(It is recommended that you do not use a machine at over 70% of the rated current condition.)

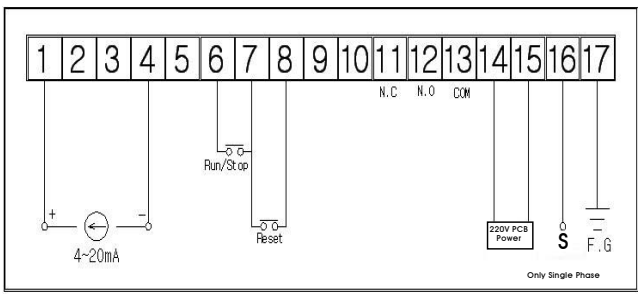
9) FUSE
① To prevent fire and to protect the machine, use a fast-acting fuse which is designated by our company. **(Refer to the product label)**
② Must turn off the main power to exchange the fuse.

10) Disassembly or remodeling of the machine
① Never change components voluntarily with the exception of changes of fuse or thyristor.
② Our company can not guarantee operation of the machine when the volume of the machine or component is altered voluntarily. When a problem occurs, please contact our company's A/S Department.

11) Check and repair
① Before checking the machine, cut off the power and beware of electric shock.
② Check fastening condition of bolts and nuts of terminal parts.
③ When bolts of terminal are loose, it could generate heat so wiring can be damaged or fire can occur. Check this condition periodically.

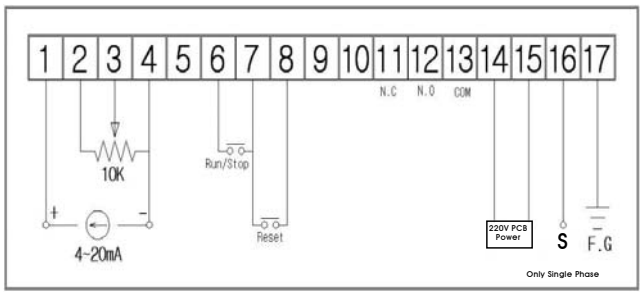
5-2 . Wiring Control Terminal Block

1. 4~20mA (Auto Mode)

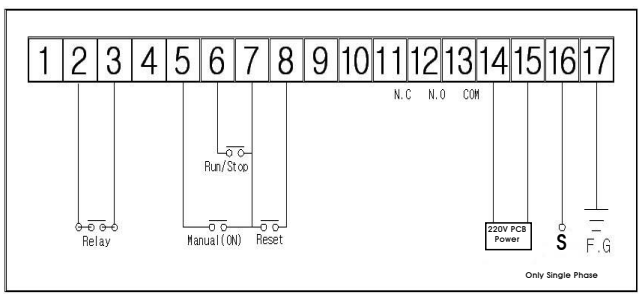


2. 4~20mA, Outer Power Volume

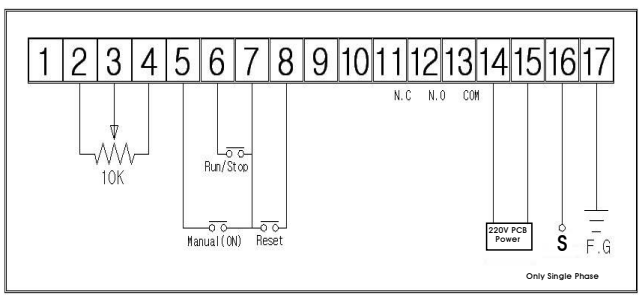
*** Dip SW3 ON for Outer Power Volume**



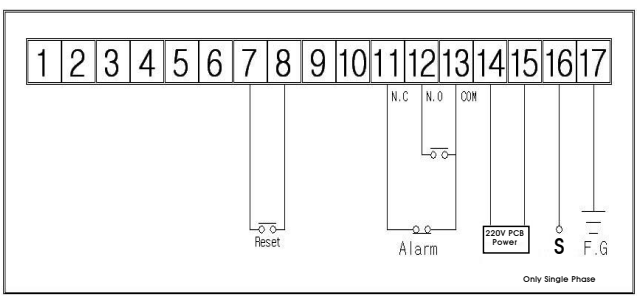
3. Relay Switch ON/OFF



4. Manual Only



5. Reset, Alarm Wiring



6 REPAIR

FUSE Exchange

. The main power must be turned off to change the fuse.
. A fuse designated by our company must be used.
. Check that the fuse is fastened correctly after it is changed.

SCR Exchange

. The main power must be turned off to change the SCR element.
. An SRC designated by our company must be used.
. Check that the SCR is fastened correctly after changing it.

PCB UNIT

. The main power must be turned off to check PCB UNIT.
. PCB UNIT is manufactured through our company's precise inspections.
When a problem occurs in the PCB UNIT, please contact our company's A/S Department.

Danger, Warning/ Notice

Danger, Warning: This symbol is displayed when there is risk of death or serious injury.
Notice: When the product is used incorrectly, it could cause property damage.

7 INSPECTION

. The main power must be turned off to operate periodic inspection.
There is a risk of defect, electric shock, or fire.

Periodic Inspection

Please operate the periodic inspection, the following items, once every 6 months to maintain the best condition and functions of the machine.

1. Cleaning

Dust may come from the outside. When there is dust, such as iron powder, insulation is worse and causes inferiority of operation. So please clean the attached materials.
Remove the dust, on the components, using a soft brush or air.

2. Components fastening condition

Check the screw fastening condition of each connection part. The screw could be loosened with time.
Fastened screw could cause damage by heat so it could cause control instability or defects.
So periodic inspection is necessary to keep the normal condition.

3. Wiring condition check

Must check abnormality or modification of insulating covering of input and output wires of the machine. When there is abnormality, please change the part.

4. Other check items

Must check the fastening and connection condition of connector and terminals in the machine.

Danger, Warning/ Notice

Danger, Warning: This symbol is displayed when there is risk of death or serious injury.
Notice: When the product is used incorrectly, it could cause property damage.

DIGITAL
power
REGULATOR

USER'S MANUAL

COMMUNICATION MANUAL

-DPR Series-
(Appendix)

PARAENT

Contents

1. Summary of Communication

Fig.1 Connection to DPR

DPR Series is operated by Half-Duplex method controlled by RS485. And maximum 31 units of DPR series can be connected to supervisory system for communication through adopting prepared Protocol.

2. Wiring Diagram

Wiring between supervisory system and power controller is as below

- Multi-access is available to maximum 31 units.
- Connect resistance(200Ω 1/4W) at the end of the each terminal

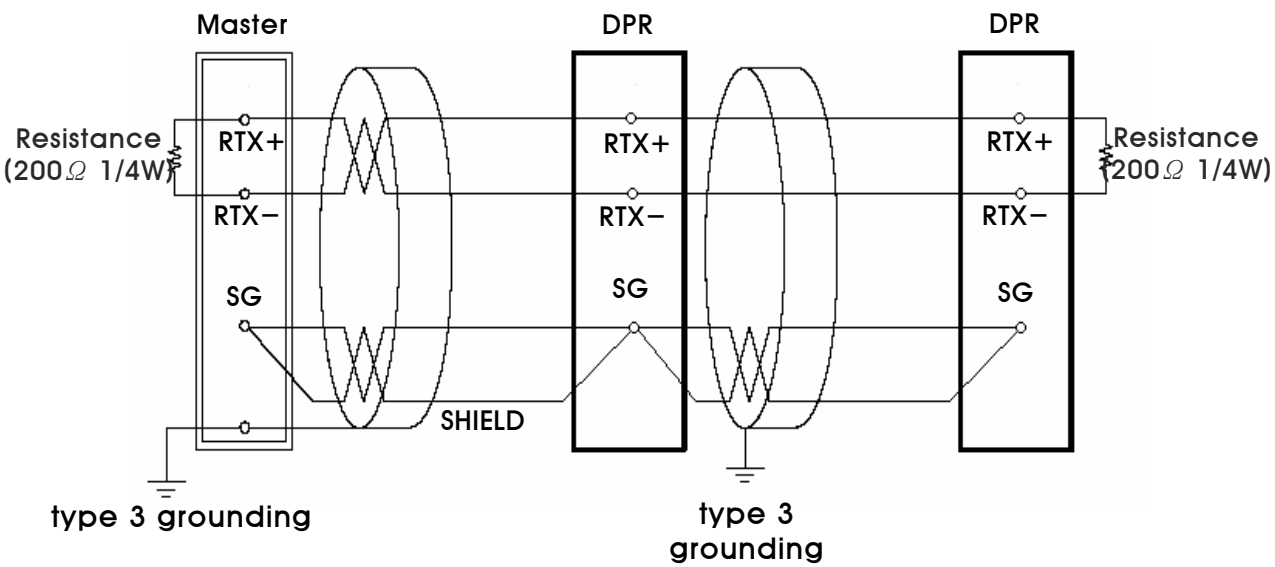


Fig.2 Wiring Diagram

3. Communication Parameter

3. 1 Contents of Parameter

Parameters to select condition of communication are as below.

Parameter	Signification	Setting Value	Content	Default
COM.P	Select Protocol	0 1	Standard Protocol Standard Protocol + Check sum	O X
BAUD	Baud Rates	2 1 0	19200bps 9600bps 2400bps	O X X
PTRY	Parity Bit	NONE EVEN ODD	No Parity. Even Parity Odd parity	O X X
SBIT	Stop Bit	1 2	1bit 2bits	O X
DLEN	Data Length	7 8	7bits 8bits	X O
ADDR	Address	0~127	Select Address	1
RPTM	Response Time	0~10	Processing Time + RTPM+ 10msec	O

Table 1 Communication Parameter

3. 2 Selection Guide

3.2.1 Baud Rates Selection (Speed of Comm.)

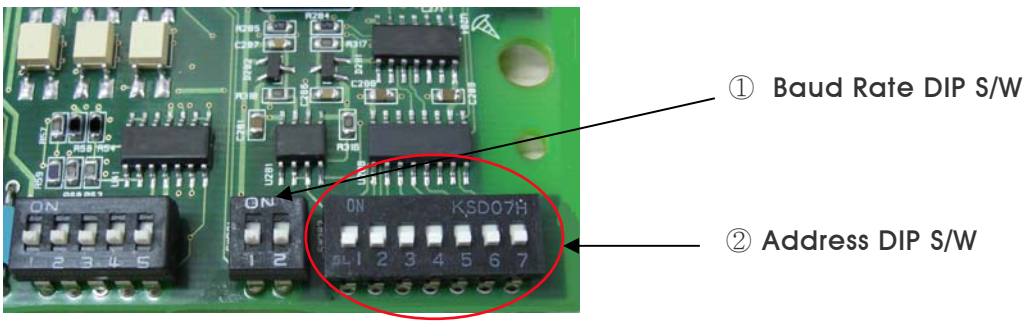


Fig.3 DIP Switch Selection

Select ① Baud Rate DIP Switch in Fig.3 as below.

Baud Rate	Select	Remark
2400 bps		1 : OFF 2 : OFF
9600 bps		1 : ON 2 : OFF
19200 bps		1 : OFF 2 : ON

Fig.4 Selecting Baud Rate

3.2.2 Selection ADD for DPR

Select ② ADD DIP Switch in Fig.3 as below.

Example) Selecting address 1 (Refer to **Fig .5)**

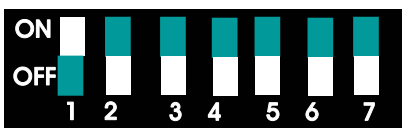
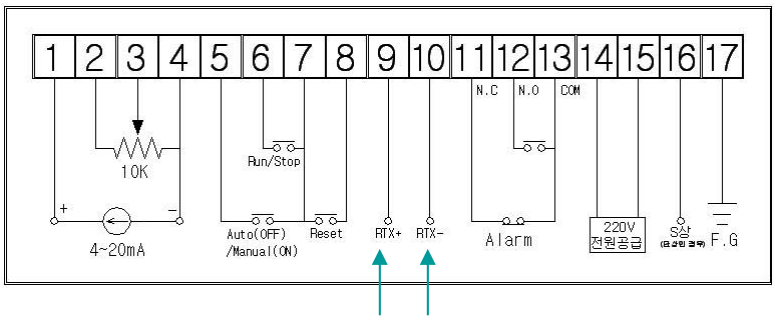


Fig.5 Address Selection
(EX : Selected as ADD 1.)

3.2.3 RS 485 COMMUNICATION PORT.



③ RS 485 Connection Port

Fig.6 RS 485 Communication Port

4. Standard Protocol

Standard Protocol Communication is accomplished by ASCII and known by fixed command. There are two protocols selected by parameter. Standard Protocol is "0" and starts with STX(0x02) and ends with LF(0X0A). "SUM" Protocol is standard protocol added by check sum as an error check code.

(a) Standard Protocol Frame

STX	ADDRESS	COMMAND	DATA	CR	LF
0x02	0~127	Refer to each Command		0x0D	0x0A

Table 2. Standard Protocol Frame

(b) Standard Protocol + SUM Frame

STX	ADDRESS	COMMAND	DATA	SUM	CR	LF
0x02	0~127	Refer to each Command		Check Sum	0x0D	0x0A

Table 3. Standard Protocol + SUM Frame

Check Sum indicates 1Byte as sixteenmo digit (2Digits, 2Bytes) among ASCII code added by 1 byte from the character next to Frame to the just before of Error Code.

4. 1 COMMUNICATION COMMAND

General Commands to notify the error in machinery are as below.

4.1.1 General Command

Command	Content	Remark
NF	Requesting Alarm Status of Machinery.	Host → Client
NN	No Transmitting data.	Host → Client
AF	Requesting Current Amperage and Alarm Status of Machinery	Host → Client
AN	Requesting only Current Amperage.	Host → Client
VF	Requesting Current Voltage and Alarm Status of Machinery.	Host → Client
VN	Requesting only Current Voltage.	Host → Client
NE	Re-requesting command signal.	Client → Host

Table 4. General Command

4.1.2 Error Response

Bytes	1	3	2	6	2	1	1
Frame	STX	ADDRESS	NE	NULL	SUM	CR	LF

Table 5. Error Response

SUM is used for only Protocol is '1'.

4. 2 Command Signal

4.2.1 General Command

① Requiring current ampere value and alarm status.

• Host → Client

Bytes	1	3	2	2	1	1
Frame	STX	ADDRESS	AF (Command)	SUM	CR	LF

* SUM is used for only Protocol is '1'.

Table 6. General Command Host → Client

• Client → Host (Response message construction)

Bytes	1	3	2	6	2	1	1
Frame	ACK	ADDRESS	AF (command)	DATA	SUM	CR	LF

* SUM is used for only Protocol is '1'.

6 Bytes	1	1	1	1	1	1
ASCII	30	32	35	9F	000	Alarm State
Value	0	2	5	,	Null	Refer to Code Table

Table 7. General Command Client → Host

• Explanation Of DATA Sphere

- DATA sphere is composed of total 6Bytes.
- Each ASCII code becomes actual DATA.
- For the Alarm status, please refer to Alarm Code Table in (8Page).

4.2.2 Alarm Status Signal

Description	LINE	FUSE	O.T.	O.C.	FAULT	DATA	REMARK
Status	0	0	0	0	0	0	Fault 0: Normal. 1: Abnormal. **Example)** FUSE Abnormal, Over Temp.. (O.T), Over Current (O.C). : Transmitting DATA = 15 Binary digit of 15 is 1111
	0	0	0	1	1	3	
	0	0	1	0	1	5	
	0	0	1	1	1	7	
	0	1	0	0	1	9	
	0	1	0	1	1	11	
	0	1	1	0	1	13	
	0	1	1	1	1	15	
	1	0	0	0	1	17	
	1	0	0	1	1	19	
	1	0	1	0	1	21	
	1	0	1	1	1	23	

Table 8. Alarm Status Signal

Head Office :15 Naeri, Jinryang, Gyungsan City, Gyungbook, Korea
TEL : +82-53-857-4478 A/S : +82-53-857-4471
FAX : +82-53-857-4474
Suwon Office : 302, Sungshin Technopark, 509-7, Maetan-3Dong,
Yeongtong-Gu, Suwon City, Kuoungki-Do, Korea
TEL : +82-31-211-4478
FAX : +82-31-212-4478

Home Page : www.paratec.co.kr
E-mail : paratec@paratec.co.kr

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