

Thank you for purchasing Samwontech production. This product is temperature controller. Please use after read instruction manual for safety. Product consulting and technical advice, please contact our sales department. Tel : +82-32-326-9120 FAX : +82-32-326-9119
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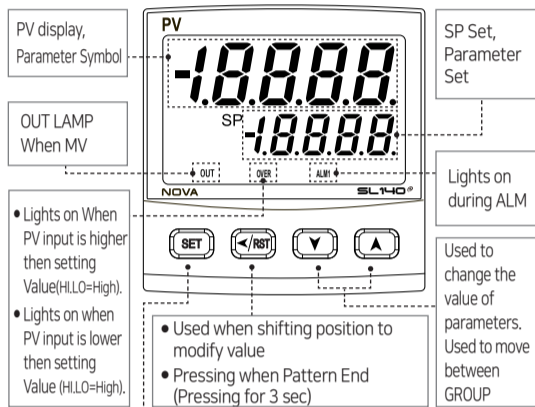
ST6593MF - R0

Safety Guide

The following safety symbols are used in this manual.

- CAUTION** If this symbol is marked on the product, the operator must investigate the explanation given in this manual to protect injury or death to personnel or damage to instrument.
- CAUTION**
- Be sure to operate the controller installed on a panel to prevent electric shock.
 - Keep the input circuit wiring as far as possible away from power and ground circuit.
 - Do not mount front panel facing downward.
 - To prevent electric shock, be sure to turn off and the source circuit breaker before wiring.
 - The power consumptions are 100~240V AC, 50/60Hz, 10VA Max and operate without power switching in advance. (DC Power : 24V DC, 3.9VA Max)
 - No work in wet hands. (It caused electric shock)
 - Refer the way of grounding connection, however, keep away for grounding to Gas pipe, water pipe, lightning rod etc. No magnetic disturbances are caused.
 - Use the product in a place in 10~50 °C (close to the maximum 40 °C during installation), 20~90% RH (no condensation).

Control Keys and Display



- Used in switching between parameters or registering parameter settings.
- Used to change Display screen from RUN screen.
- Pressing the SET key for 3 sec from the RUN screen. → Move to the SET screen.
- Pressing the SET key for 3 sec from the SET screen. → Move to the RUN screen.

Type of Input Sensor

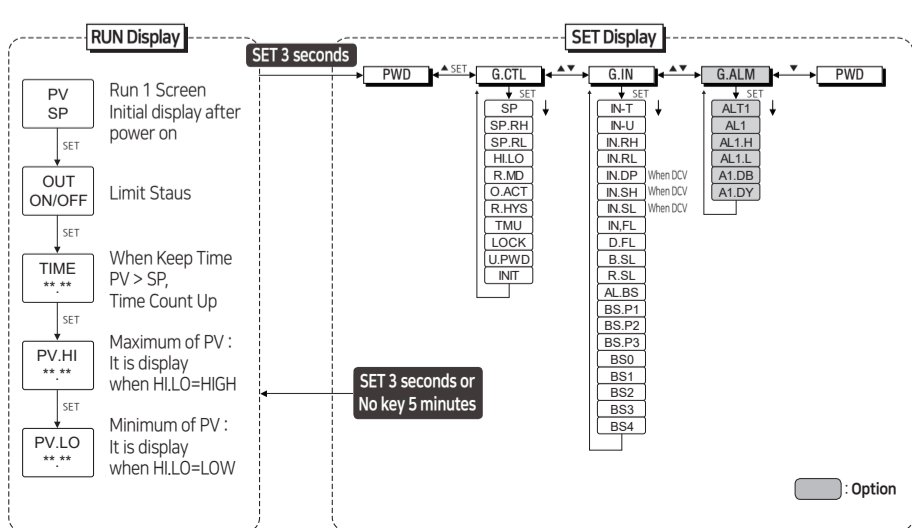
No.	TYPE	Temp. Range(°C)	Temp. Range(°F)	Group	DISP	
1	K1	-200 ~ 1370	-300 ~ 2500	T/C	TCK1	
2	K2	-200.0 ~ 1370.0	-300.0 ~ 1900.0		TCK2	
3	J	-200.0 ~ 1200.0	-300.0 ~ 1900.0		TCJ	
4	E	-200.0 ~ 1000.0	-300.0 ~ 1800.0		TCE	
5	T	-200.0 ~ 400.0	-300.0 ~ 750.0		TCT	
6	R	0.0 ~ 1700.0	32 ~ 3100		TCR	
7	B	0.0 ~ 1800.0	32 ~ 3300		TCB	
8	S	0.0 ~ 1700.0	32 ~ 3100		TCS	
9	L	-200.0 ~ 900.0	-300 ~ 1600		TCL	
10	N	-200.0 ~ 1300.0	-300 ~ 2400		TCN	
11	U	-200.0 ~ 400.0	-300.0 ~ 750.0		TCU	
12	W	0 ~ 2300	32 ~ 4200		TCW	
13	Platinel II	0.0 ~ 1390.0	32 ~ 2500		TC.PL	
14	C	0 ~ 2320	32 ~ 4200	TCC		
15	PTA	-200.0 ~ 850.0	-300.0 ~ 1560.0	RTD	PTA	
16	PTB	-200.0 ~ 500.0	-300.0 ~ 1000.0		PTB	
17	PTC	-50.00 ~ 150.00	-148.0 ~ 300.0		PTC	
18	PTD	-200 ~ 850	-300 ~ 1560		PTD	
19	JPTA	-200.0 ~ 500.0	-300.0 ~ 1000.0		JPTA	
20	JPTB	-50.00 ~ 150.00	-148.0 ~ 300.0		JPTB	
21	0.4 ~ 2.0V	0.400 ~ 2.000V(-10000 ~ 19999)			DCV	2V
22	1 ~ 5V	1.000 ~ 5.000V(-10000 ~ 19999)				5V
23	0 ~ 10V	0.00 ~ 10.00V(-10000 ~ 19999)				10V
24	-10 ~ 20mV	-10.00 ~ 20.00mV(-10000 ~ 19999)			20mV	
25	0 ~ 100mV	0.0 ~ 100.0mV(-10000 ~ 19999)		100mV		

※ Display range : -5% ~ +105%

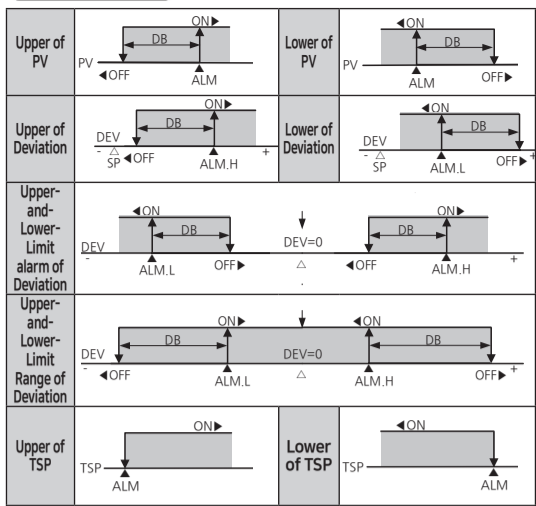
Type of Input Sensor

No.	Type	Output Direct For Rev	Standby Off On	Display	No.	Type	Output Direct For Rev	Standby Off On	Display
1	Upper of PV	○	○	AHF	12	Lower of PV	○	○	ALFS
2	Lower of PV	○	○	ALF	13	Upper of Deviation	○	○	DH.FS
3	Upper of Deviation	○	○	DHF	14	Lower of Deviation	○	○	DL.FS
4	Lower of Deviation	○	○	DLF	15	Upper of Deviation	○	○	DH.RS
5	Upper of Deviation	○	○	DHR	16	Lower of Deviation	○	○	DL.RS
6	Lower of Deviation	○	○	DLR	17	Upper-and-Lower-Limit alarm of Deviation	○	○	DO.FS
7	Upper-and-Lower-Limit alarm of Deviation	○	○	DOF	18	Upper-and-Lower-Limit Range of Deviation	○	○	DLFS
8	Upper-and-Lower-Limit Range of Deviation	○	○	DLF	19	Upper of PV	○	○	AHRS
9	Upper of PV	○	○	AHR	20	Lower of PV	○	○	ALRS
10	Lower of PV	○	○	ALR	21	Upper of TSP	○	○	TSPH
11	Upper of PV	○	○	AHFS	22	Lower of TSP	○	○	TSP.L

Parameter Map



Alarm Operation



Parameter Table

Symbol	Parameter	Setting Range	Unit	Initial	Remark
SP	Setting point	EU(0.0 ~ 100.0%)	EU	EU(0.0%)	Always
SPRH	Set point range high	EU(0.0 ~ 100.0%)	EU	EU(100.0%)	Always
SPRL	Set point range low	EU(0.0 ~ 100.0%)	EU	EU(0.0%)	Always
HI.LO	High or low select	LOW, HIGH	ABS	HIGH	Always
R.MD	Restart mode	OFF, ON	ABS	OFF	Always
O.ACT	Output direction actuator	REV, FWD	ABS	REV	Always
R.HYS	Reference hysteresis	EUS(0.0 ~ 10.0%)	ABS	EUS(0.5%)	Always
TMU	Time unit	HH:MM, MM:SS	ABS	HH:MM	Always
LOCK	Key lock	OFF, ON	ABS	OFF	Always
U.PWD	User password	0 ~ 9999	ABS	0	Always
INIT	Parameter initialization	OFF, ON	ABS	OFF	Always

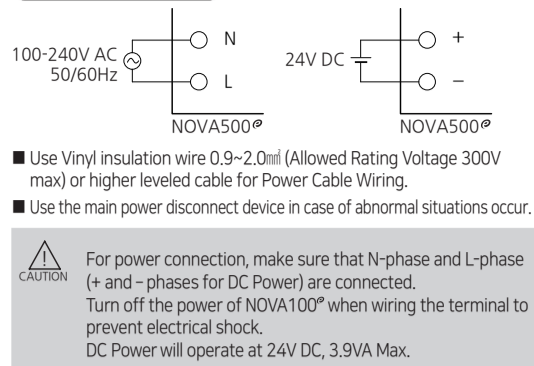
G.IN(Input group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
IN.T	Input sensor type	Refer to Type of Input Sensor	ABS	T.CK1	Always
IN.U	Input unit	℃, F	ABS	℃	IN-T = TC or RTD
IN.RH	Input range high	Refer to Type of Input Sensor (IN.RH > IN.RL)	EU	EU(100.0%)	Always
IN.RL	Input range low		EU	EU(0.0%)	Always
IN.DP	Input dot position	0 ~ 3	ABS	1	IN-T = DCV
IN.SH	Input scale high	-10000 ~ 19999 (IN.SH > IN.SL)	ABS	100.0	IN-T = DCV
IN.SL	Input scale low		ABS	0.0	IN-T = DCV
IN.FL	Input sensor filter	OFF, 1 ~ 120	ABS	OFF	Always
D.FL	Display filter	OFF, 1 ~ 120	ABS	OFF	Always
B.SL	Burn out select	OFF, UP, DOWN	ABS	UP	Always
R.SL	RJC select	OFF, ON	ABS	ON	IN-T = TC
AL.BS	All bias value	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always
BS.P1	Reference bias point 1	EU(0.0 ~ 100.0%)	EU	EU(100.0%)	Always
BS.P2	Reference bias point 2	IN.RL ≤ BS.P1 ≤ BS.P2 ≤ IN.RH	EU	EU(100.0%)	Always
BS.P3	Reference bias point 3		EU	EU(100.0%)	Always
BS0	Bias value for IN.RL point	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always
BS1	Bias value for BS.P1 point	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always
BS2	Bias value for BS.P2 point	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always
BS3	Bias value for BS.P3 point	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always
BS4	Bias value for IN.RH point	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Always

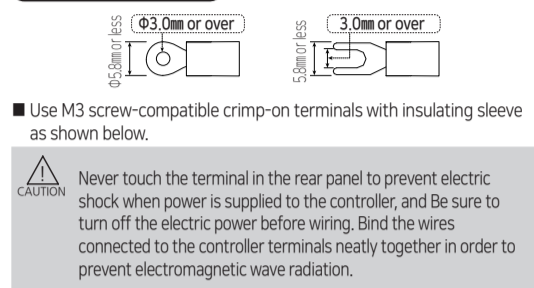
G.ALM(Alarm group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
AL.T1	Alarm 1 type	Refer to Type of Alarm	ABS	AHF	Always
AL.1	Alarm 1 set value	EU(-100.0 ~ 100.0%)	EU	EU(100.0%)	Others deviation alarm
AL.1.H	Alarm 1 set high deviation	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Deviation alarm
AL.1.L	Alarm 1 set low deviation	EUS(-100.0 ~ 100.0%)	EUS	EUS(0.0%)	Deviation alarm
A1.DB	Alarm 1 hysteresis value	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Always
A1.DY	Alarm 1 delay time	0.00 ~ 99.99 mm:ss	TIME	0 sec	Always

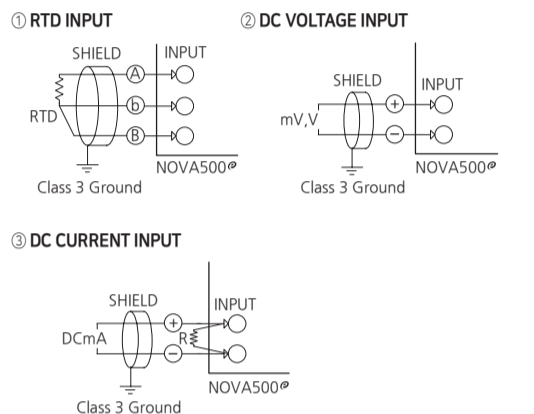
Power Cable Wiring



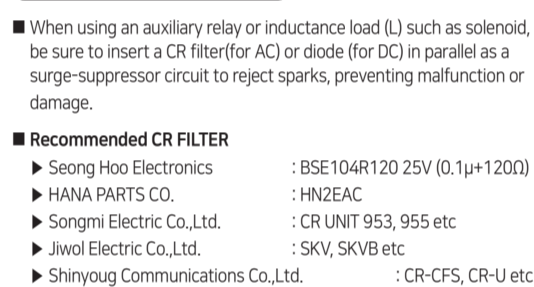
Terminal Specification



Analog Input Wiring



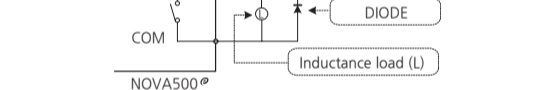
External Contact Output Wiring



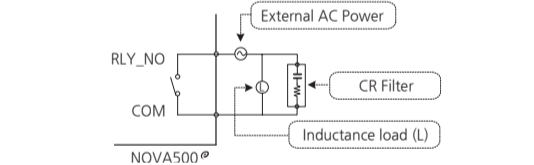
Recommended CR FILTER

- Seong Hoo Electronics : BSE104R120 25V (0.1μ+120Ω)
- HANA PARTS CO. : HN2EAC
- Songmi Electric Co.,Ltd. : CR UNIT 953, 955 etc
- Jiwol Electric Co.,Ltd. : SKV, SKVB etc
- Shinyoung Communications Co.,Ltd. : CR-CFS, CR-U etc

In case of DC Power



In case of AC Power



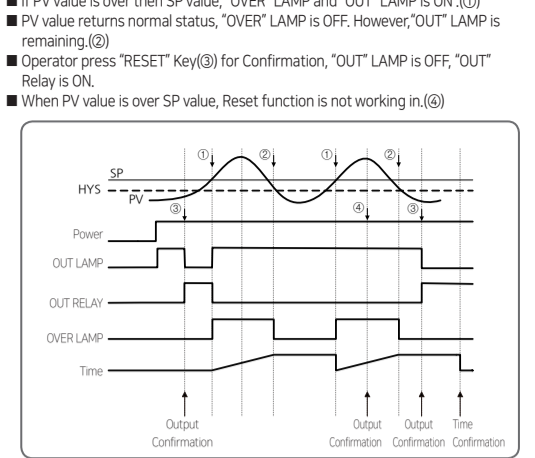
CAUTION To protect electric shock, be sure to turn off the NOVA100° controller and the source circuit breaker before wiring. DIODE, CR FILTER connection Need to connect direct to INDUCTANCE(L) Terminal (SOCKET)

Auxiliary RELAY connection Auxiliary Rating Specification of RELAY COIL should be used lower than the Contact Rating of Controller (RELAY Contact Rating : 250V AC 1A/30V DC 1A)

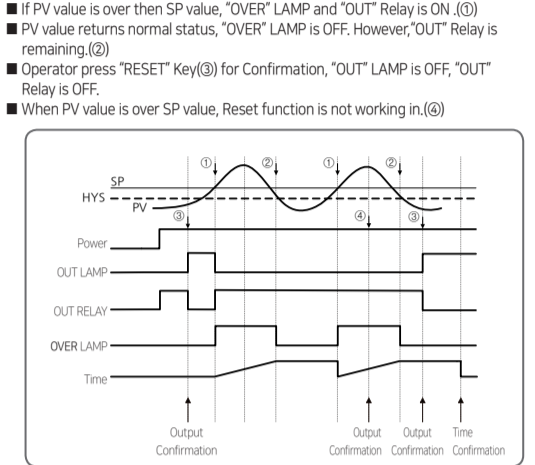
Display Error and Correction

Display ERROR	ERROR Contents	Correction
E.SYS	EEPROM, DATA Loss	Ask repair
E.RJC	RJC SENSOR Failure	Ask repair
S.OPN	SENSOR Open	SENSOR CHECK

HI.LO = HIGH, R.MD = OFF, O.ACT = REV

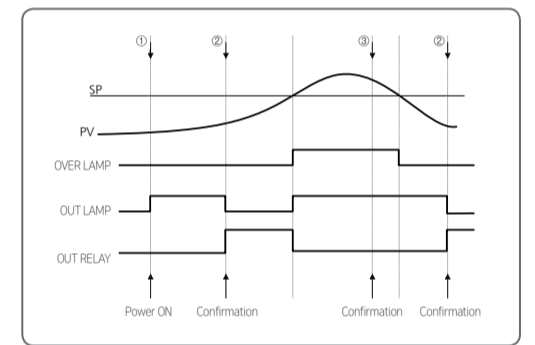


HI.LO = HIGH, R.MD = OFF, O.ACT = FWD



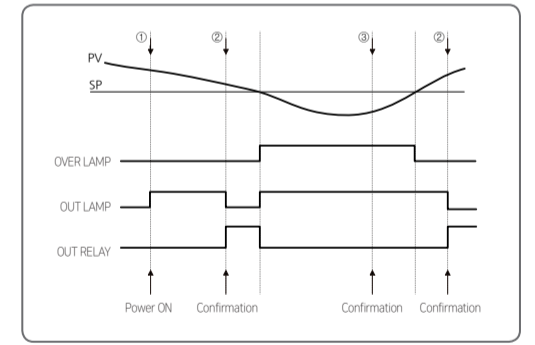
Power ON, Operation When PV < SP (Manual reset, When HI.LO = HIGH)

- ① When Power ON
- The status of OVER LAMP is OFF.
 - The status of OUT LAMP is ON.
 - The status of OUT RELAY is OFF.
- ② Confirmation(Manual Reset)
- When OVER LAMP OFF, Press Manual Reset OUT RELAY is ON.
- ③ When OVER LAMP ON, Press Manual Reset OUTRELAY is not ON.



Power ON, Operation When PV > SP (Manual reset, When HI.LO = LOW)

- ① When Power ON
- The status of OVER LAMP is OFF.
 - The status of OUT LAMP is ON.
 - The status of OUT RELAY is OFF.
- ② Confirmation(Manual Reset)
- When OVER LAMP OFF, Press Manual Reset OUT RELAY is ON.
- ③ When OVER LAMP ON, Press Manual Reset OUTRELAY is not ON.



Confirmation Operation

OVER status is not the only possible action by the return of OUT RELAY "RESET" KEY.

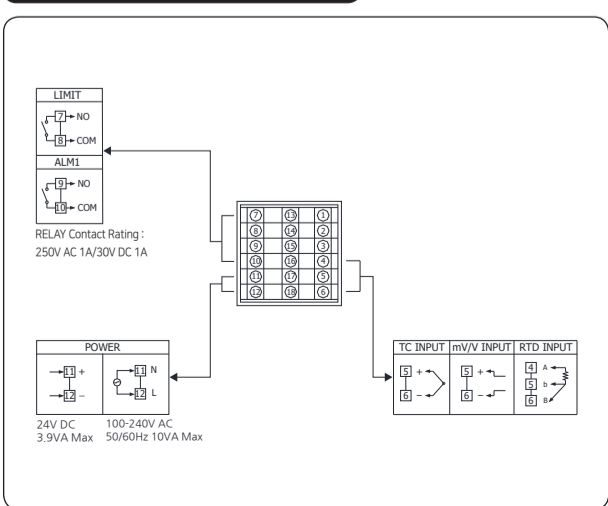
Time Operation

- When PV value is over SP value, it counts and displays the Time.(Third operation display)
- Time Count will be clear when power on or press "Reset" key in Time display, and "0.0" displays in LED until PV value is over SP value.
- It can not be cleared TIME when PV value is over the SP value.
- Display Range : 0.0 ~ 999.9 MIN

MIN, MAX Function

- It is initialized by pressing "RESET" Key in "MIN, MAX" display.
- It is initialized for MIN/MAX value when Power on, and it is remaining MIN, MAX value in initial PV value.

Terminal Arrangement and External wiring



Dimension and Panel Cutout

