SAMWON TECH

NOVA500℗ SERIES LIMIT CONTROLLER SL540℗ Instruction Manual

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.

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ST6565MD−R1

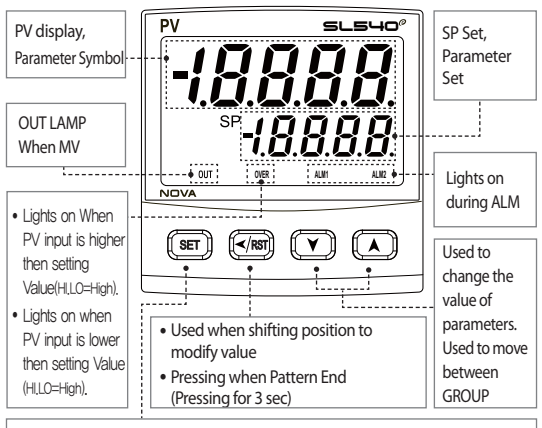
Safety Guide

The following safety symblos 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
1. Be sure to operate the controller installed on a panel to prevent electric shock.
2. Keep the input circuit wiring as far as possible away from power and ground circuit.
3. Do not mount front panel facing downward.
4. To prevent electric shock, be sure to turn off and the source circuit breaker before wiring.
5. 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)
6. No work in wet hands. (It caused electric shock)
7. Refer the way of grounding connection, however, keep away for grounding to Gas pipe, water pipe, lightening rod etc. No magnetic disturbances are caused.
8. Use the product in a place in 10~50 ℃(close to the maximum 40 ℃ 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(℃)	Temp.Range(℉)	Group	DISP
1	K1	−200 ~ 1370	−300 ~ 2500	T/C	TC.K1
2	K2	−200.0 ~ 1370.0	−300 .0~ 1900.0		TC.K2
3	J	−200.0 ~ 1200.0	−300 .0~ 1900.0		TC.J
4	E	−200.0 ~ 1000.0	−300.0 ~ 1800.0		TC.E
5	T	−200.0 ~ 400.0	−300 .0~ 750.0		TC.T
6	R	0.0 ~ 1700.0	32 ~ 3100		TC.R
7	B	0.0 ~ 1800.0	32 ~ 3300		TC.B
8	S	0.0 ~ 1700.0	32 ~ 3100		TC.S
9	L	−200.0 ~ 900.0	−300 ~ 1600		TC.L
10	N	−200.0 ~ 1300.0	−300 ~ 2400		TC.N
11	U	−200.0 ~ 400.0	−300 .0~ 750.0		TC.U
12	W	0 ~ 2300	32 ~ 4200		TC.W
13	Platinel II	0.0 ~ 1390.0	32 ~ 2500		TC.PL
14	C	0 ~ 2320	32 ~ 4200		TC.C
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

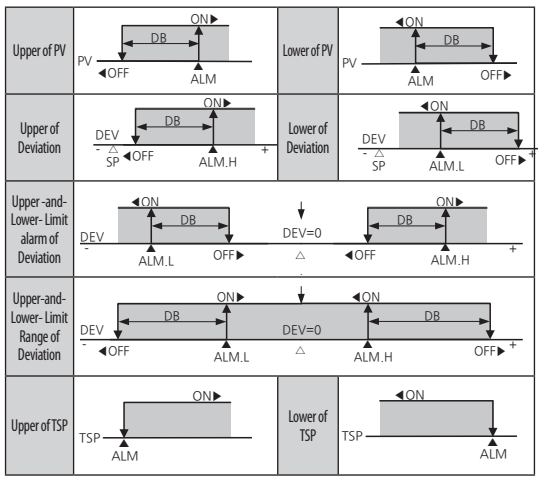
※ Display range : −5% ~ +105%

Type of Input Sensor

No.	Type	Output Direct For	Output Direct Rev	Standby Off	Standby On	Display
1	Upper of PV	○		○		AH.F
2	Lower of PV	○		○		AL.F
3	Upper of Deviation	○		○		DH.F
4	Lower of Deviation	○		○		DL.F
5	Upper of Deviation		○	○		DH.R
6	Lower of Deviation		○	○		DL.R
7	Upper-and-Lower-Limit alarm of Deviation	○		○		DO.F
8	Upper-and-Lower-Limit Range of Deviation	○		○		DI.F
9	Upper of PV		○	○		AH.R
10	Lower of PV		○	○		AL.R
11	Upper of PV	○			○	AH.FS

No.	Type	Output Direct For	Output Direct Rev	Standby Off	Standby On	Display
12	Lower of PV	○			○	AL.FS
13	Upper of Deviation	○			○	DH.FS
14	Lower of Deviation	○			○	DL.FS
15	Upper of Deviation		○		○	DH.RS
16	Lower of Deviation		○		○	DL.RS
17	Upper-and-Lower-Limit alarm of Deviation	○			○	DO.FS
18	Upper-and-Lower-Limit Range of Deviation	○			○	DI.FS
19	Upper of PV		○		○	AH.RS
20	Lower of PV		○		○	AL.RS
21	Upper of TSP	○		○		TSP.H
22	Lower of TSP	○		○		TSP.L

Alarm Operation



※ DEV : Deviation ※ DB : Hysterisis

Parameter Table

G.CTL(Control group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
SP	Setting point	EU(0.0 ~ 100.0%)	EU	EU(0.0%)	Always
SP.RH	Set point range high	EU(0.0 ~ 100.0%)	EU	EU(100.0%)	Always
SP.RL	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 hysterisis	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	TC.K1	Always
IN-U	Input unit	℃, ℉	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%) IN.RL ≤ BS.P1 ≤ BS.P2 ≤ BS.P3 ≤ IN.RH	EU	EU(100.0%)	Always
BS.P2	Reference bias point 2		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
ALT1	Alarm 1 type	Refer to Type of Alarm	ABS	AH.F	Always
AL1	Alarm 1 set value	EU(−100.0 ~ 100.0%)	EU	EU(100.0%)	Others deviation alarm
AL1.H	Alarm 1 set high deviation	EUS(−100.0 ~ 100.0%)	EUS	EUS(0.0%)	Deviation alarm
AL1.L	Alarm 1 set low deviation	EUS(−100.0 ~ 100.0%)	EUS	EUS(0.0%)	Deviation alarm
A1.DB	Alarm 1 hysterisis value	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Always
A1.DY	Alarm 1 delay time	0.00 ~ 99.59 mm.ss	TIME	0 sec	Always
ALT2	Alarm 2 type	Refer to Type of Alarm	ABS	AH.F	Option
AL2	Alarm 2 set value	EU(−100.0 ~ 100.0%)	EU	EU(100.0%)	Option
AL2.H	Alarm 2 set high deviation	EUS(−100.0 ~ 100.0%)	EUS	EUS(0.0%)	Option
AL2.L	Alarm 2 set low deviation	EUS(−100.0 ~ 100.0%)	EUS	EUS(0.0%)	Option
A2.DB	Alarm 2 hysterisis value	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Option
A2.DY	Alarm 2 delay time	0.00 ~ 99.59 mm.ss	TIME	0 sec	Option

G.RET(Retransmission group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
RET.T	Retransmission type	LPS, PV, SP	ABS	PV	Always
RET.H	Retransmission high limit	TC, RTD : IN.RL ~ IN.RH DCV : IN.SL ~ IN.SH (RET.L 〈 RET.H)	EU	IN.RH (TC, RTD) IN.SH (DCV)	Always
RET.L	Retransmission low limit		EU		Always

G.COM(Communication group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
COM.P	Communication protocol	PCC0, PCC1, MBS.A, MBS.R, P.OMR, P.MIT, P.LG, P.YKO, P.KEN, P.SIE	ABS	PCC1	Option
BAUD	Baud rate	9600, 19200, 38.4K, 57.6K, 115.2K	ABS	38.4K	Option
PRTY	Parity	NONE, EVEN, ODD	ABS	NONE	Option
S.BIT	Stop bit	1, 2	ABS	1	Option
D.LEN	Data length	7, 8	ABS	8	Option and COM.P = PCC0, PCC1
ADDR	Address	1 ~ 99 (Max 31 can connect)	ABS	1	Option
RP.TM	Response time	0 ~ 10 (x10ms)	ABS	0	Option

※ For the communication settings to apply, turn off and on device

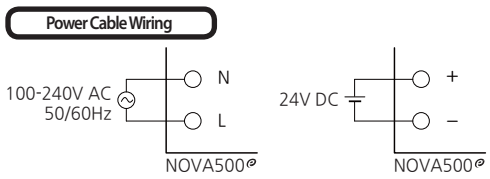
G.PLC (PLC group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
SW.TM	Send delay time	0~50	ABS	10	COM.P = PLC
RW.TM	Receive delay time	500~1000	ABS	1000	COM.P = PLC
MU.NO	Max number of connections	1~31	ABS	1	COM.P = PLC
R.TYP	Register type	0~3	ABS	0	COM.P = PLC
S.ADR	Start address	0~FFFF	ABS	03E8	COM.P = PLC
MAP.S	Data map select	MAS.M, LOC.M	ABS	MAS.M	COM.P = PLC
RO.01	Read address 01	OFF, 0~200	ABS	151	COM.P = PLC
⋮	⋮	⋮	⋮	⋮	⋮
RO.13	Read address 13	OFF, 0~200	ABS	OFF	COM.P = PLC
RW.01	Write address 01	OFF, 0~150	ABS	1	COM.P = PLC
⋮	⋮	⋮	⋮	⋮	⋮
RW.15	Write address 15	OFF, 0~150	ABS	OFF	COM.P = PLC

G.NPL (Now PLC Read group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
N.SWT	Now send delay time	Reading area	ABS	0	COM.P = PLC
N.RWT	Now receive delay time	Reading area	ABS	0	COM.P = PLC
N.RTY	Now register type	Reading area	ABS	0	COM.P = PLC
N.SAD	Now start address	Reading area	ABS	0	COM.P = PLC
N.O01	Now read address 01	Reading area	ABS	OFF	COM.P = PLC
⋮	⋮	⋮	⋮	⋮	⋮
N.O13	Now read address 13	Reading area	ABS	OFF	COM.P = PLC
N.W01	Now write address 01	Reading area	ABS	OFF	COM.P = PLC
⋮	⋮	⋮	⋮	⋮	⋮
N.W15	Now write address 15	Reading area	ABS	OFF	COM.P = PLC

Power Cable Wiring



- Use Vinyl insulation wire 0.9~2.0㎟ (Allowed Rating Voltage 300V max) or higher leveled cable for Power Cable Wiring.
- Use the main power disconnect device in case of abnormal situations occur.

CAUTION
- For power connection, make sure that N-phase and L-phase (+ and – phases for DC Power) are connected.
- Turn off the power of NOVA500℗ when wiring the terminal to prevent electrical shock.
- DC Power will operate at 24V DC, 3.9VA Max.

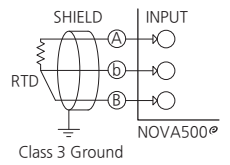
Terminal Specification

- Use M3 screw-compatible crimp-on terminals with insulating sleeve as shown below.

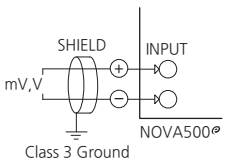
CAUTION Never touch the terminal in the rear panel to prevent electric shock when power is supplied to the controller, and Be sure to turn off the electric power before wiring. Bind the wires connected to the controller terminals neatly together in order to prevent electromagnetic wave radiation.

Analog Input Wiring

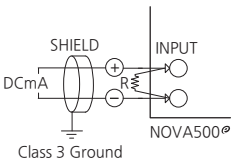
① RTD INPUT



② DC VOLTAGE INPUT

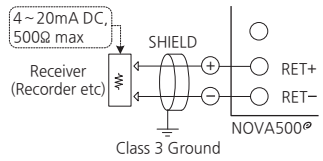


③ DC CURRENT INPUT



Retransmission Wiring

■ RET

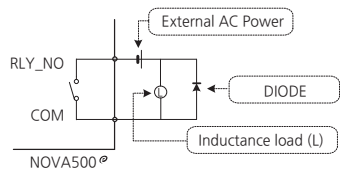


CAUTION To prevent electric shock, be sure to turn off the NOVA500℗ controller and the source circuit breaker before connection/ disconnection of the actuator, receiver as well as wiring.

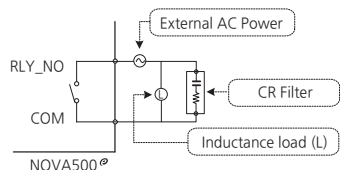
External Contact Output Wiring

- When using an auxiliary relay or inductance load (L) such as solenoid, be sure to insert a CR filter(for AC) or diode (for DC) in parallel as a surge-suppressor circuit to reject sparks, preventing malfunction or damage.
- 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
  - ▶ Shinyoug Communications Co.,Ltd. : CR-CFS, CR-U etc

① In case of DC Power



② In case of AC Power

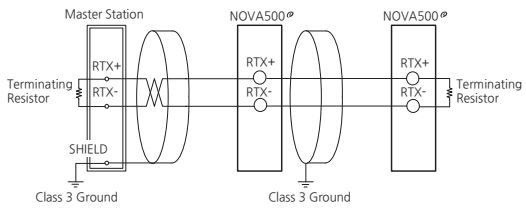


CAUTION
- To protect electric shock, be sure to turn off the NOVA500℗ controller and the source circuit breaker before wiring.
- DIODE, CR FILTER connection
  Need to connect direct to INDUCTANCE(L) Terminal (SOCKET)
- Auxiliary RELAY connection
  Auxiliary Rating Specification of RELAY COIL should be 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
Flash Decimal point of SP	Communication Failure	Comm Cable CHECK
S.OPN	SENSOR Open	SENSOR CHECK

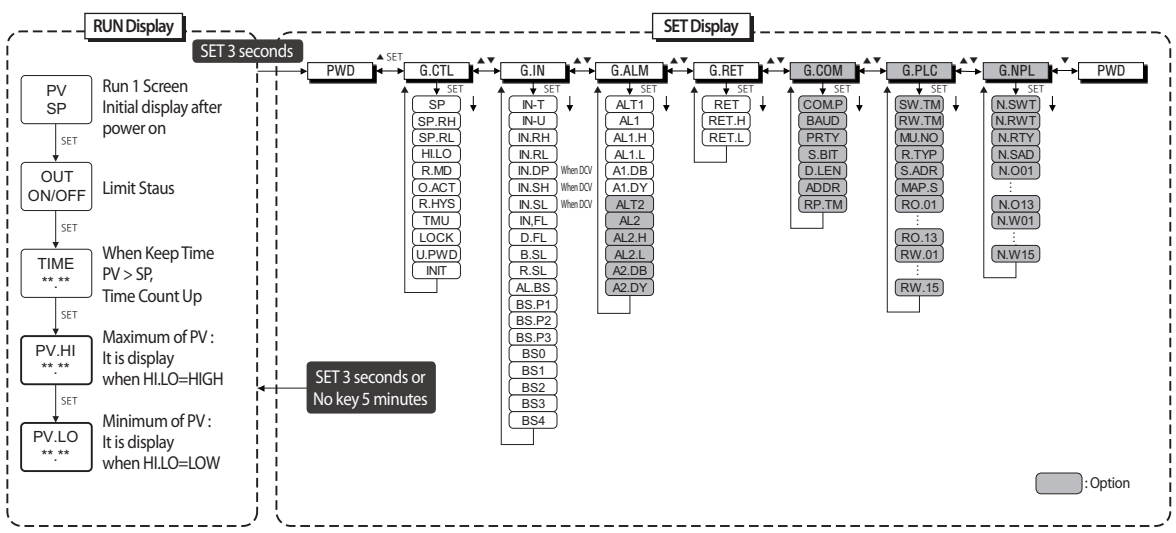
Communication Wiring (RS485)



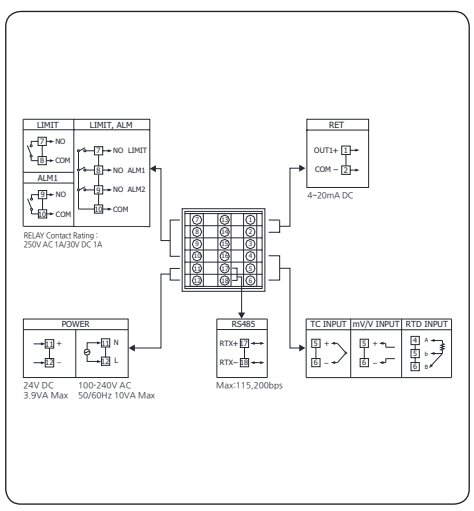
- Up to 31 slave controllers(NOVA500℗) series instruments equipped with communication option) can be multidrop-connected.
- Be sure to connect terminating resistors(220Ω, 1/4W) to slave and master controllers at communication-channel ends as shown above.

CAUTION To prevent electric shock, be sure to turn off the NOVA500℗ controlle and source circuit breaker before wiring.

Parameter Map



Terminal Arrangement and External wiring



Dimension and Panel Cutout