SAMWON TECH

**NOVA500° SERIES DIGITAL SIGNAL CONVERTER SS510° Instruction Manual**

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
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 24V DC, 3.2VA Max and operate without power switching in advance.
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.

Used when shifting position to modify value
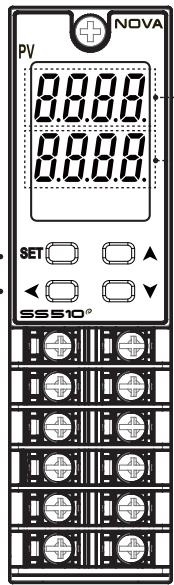
PV display, Parameter Symbol

Parameter Set

Used to change the value of parameters. Used to move between GROUP

Type of Input Sensor

No.	TYPE	Temp.Range(℃)	Temp.Range(℉)	Group	DISP
1	K1	−200~1370	−300~2500		TC,K1
2	K2	−199.9~999.9	0~2300		TC,K2
3	J	−199.9~999.9	−300~2300		TC,J
4	E	−199.9~999.9	−300~1800		TC,E
5	T	−199.9~400.0	−300~750		TC,T
6	R	0~1700	32~3100		TC,R
7	B	0~1800	32~3300	T/C	TC,B
8	S	0~1700	32~3100		TC,S
9	L	−199.9~900.0	−300~1600		TC,L
10	N	−200~1300	−300~2400		TC,N
11	U	−199.9~400.0	−300~750		TC,U
12	W	0~2300	32~4200		TC,W
13	Platinel II	0~1390	32~2500		TC,PL
14	C	0~2320	32~4200		TC,C
15	PTA	−199.9~850.0	−300~1560		PTA
16	PTB	−199.9~500.0	−199.9~999.9		PTB
17	PTC	−19.99~99.99	−4.0~212.0		PTC
18	PTD	−199.9~850.0	−300~1560	RTD	PTD
19	JPTA	−199.9~500.0	−199.9~999.9		JPTA
20	JPTB	−150.0~150.0	−199.9~300.0		JPTB
21	0.4 ~ 2.0V	0.400 ~ 2.000V(−1999 ~ 9999)			2V
22	1 ~ 5V	1.000 ~ 5.000V(−1999 ~ 9999)			5V
23	0 ~ 10V	0.00 ~ 10.00V(−1999 ~ 9999)	DCV	10V
24	−10 ~ 20mV	−10.00 ~ 20.00mV(−1999 ~ 9999)			20MV
25	0 ~ 100mV	0.0 ~ 100.0mV(−1999 ~ 9999)			100MV

※ Display range : −5% ~ +105%

Parameter Table

G.CTL(Control group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
PV.LO	PV low.Value	EU(−5.0 ~ 105.0%) (Reading area)	EU	EU(100.0%)	Always
PV.HI	PV high.Value	EU(−5.0 ~ 105.0%) (Reading area)	EU	EU(0.0%)	Always
M.CLR	Min max clear	OFF, ON	ABS	OFF	Always
US1	User screen	OFF, D−Register NO.(1~1299)	ABS	OFF	Always
US2	User screen	OFF, D−Register NO.(1~1299)	ABS	OFF	Always
DSP.H	Display high limit	EU(−5.0 ~ 105.0%) (DSP.L (DSP.H)	EU	EU(105.0%)	Always
DSP.L	Display low limit	EU(−5.0 ~ 105.0%) (DSP.L (DSP.H)	EU	EU(−5.0%)	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	−1999 ~ 9999 (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	Burnout 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	EU(100.0%)	Always
BS.P2	Reference bias point 2	EU(0.0 ~ 100.0%) IN.RL ≤ BS.P1 ≤ BS.P2 ≤ BS.P3 ≤ 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.RET(Retransmission group)

Symbol	Parameter	Setting Range	Unit	Initial	Remark
RT1.H	Retransmission1 high limit	T/C, RTD : INRH ~ INRL mV , V : INSH ~ INSL (RT1.H) RT1.L)	EU	INRH	Always
RT1.L	Retransmission1 low limit		EU	INRL	Always
RT2.H	Retransmission2 high limit	T/C, RTD : INRH ~ INRL mV , V : INSH ~ INSL (RT2.H) RT2.L)	EU	INRH	Option
RT2.L	Retransmission2 low limit		EU	INRL	Option

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

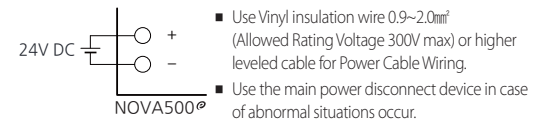### G.PLC (PLC group)

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

24V DC   + −   NOVA500°

- 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
- Be sure to keep +(Hot) and -(neutral) status connection. Otherwise, it may result for operation default and defect.
- To protect electric shock, be sure to turn off the NOVA 500° controller and the source circuit breaker before wiring.
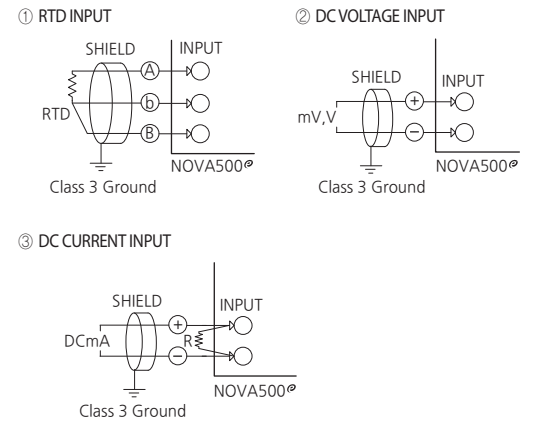- SS510° is available up to 10 connections for multi-connection.

Terminal Specification
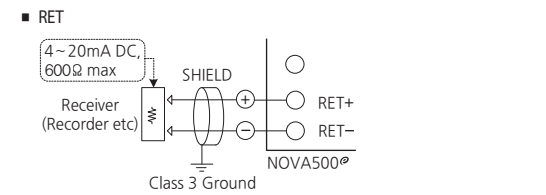

Φ3.0mm or less   3.0mm or over

- 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

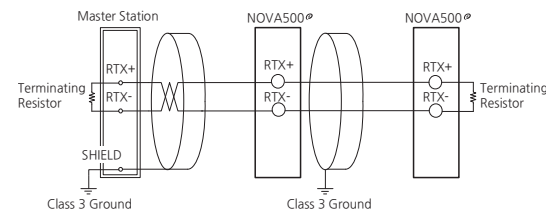

Retransmission Wiring

■ RET

4~20mA DC, 600Ω max

⚠ 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.

Display Error and Correction

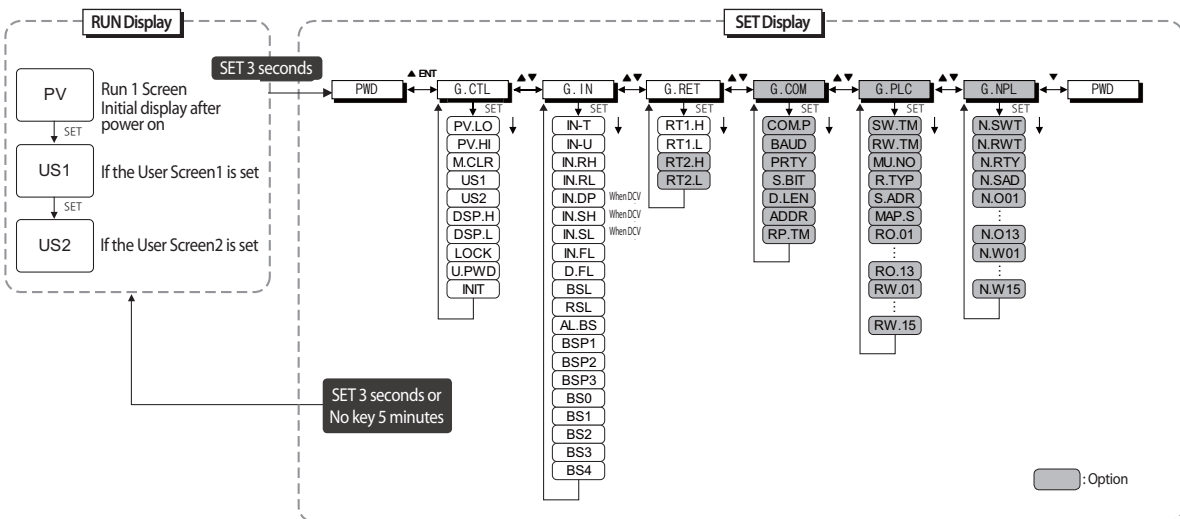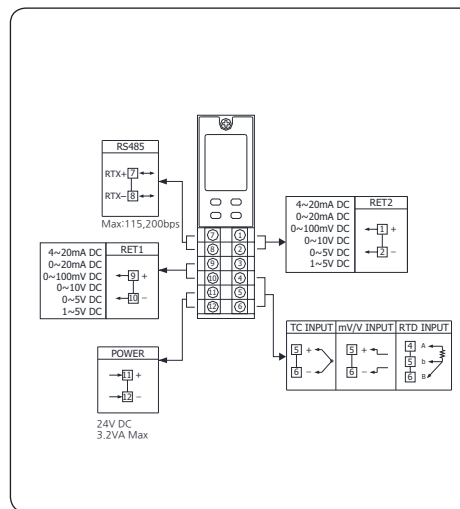| Display ERROR	ERROR Contents	Correction
E.SYS	EEPROM, DATA Loss	Ask repair
E.RJC	RJC SENSOR Failure	Ask repair
Flash Decimal point of Parameter	Communication Failure	Comm Cable CHECK
S.OPN	SENSOR Open	SENSOR CHECK

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

RUN Display

PV Run 1 Screen Initial display after power on
US1 If the User Screen1 is set
US2 If the User Screen2 is set

SET 3 seconds or No key 5 minutes

SET Display

SET 3 seconds

PWD — G.CTL — G.IN — G.RET — G.COM — G.PLC — G.NPL — PWD

G.CTL: PV.LO, PV.HI, M.CLR, US1, US2, DSP.H, DSP.L, LOCK, U.PWD, INIT

G.IN: IN-T, IN-U, IN.RH, IN.RL, IN.DP (When DCV), IN.SH (When DCV), IN.SL (When DCV), IN.FL, D.FL, BSL, RSL, AL.BS, BSP1, BSP2, BSP3, BS0, BS1, BS2, BS3, BS4

G.RET: RT1.H, RT1.L, RT2.H, RT2.L

G.COM: COM.P, BAUD, PRTY, S.BIT, D.LEN, ADDR, RP.TM

G.PLC: SW.TM, RW.TM, MU.NO, R.TYP, S.ADR, MAP.S, RO.01, RO.13, RW.01, RW.15

G.NPL: N.SWT, N.RWT, N.RTY, N.SAD, N.O01, N.O13, N.W01, N.W15

☐ : Option

Terminal Arrangement and External wiring

Dimension and Panel Cutout

28   100   100