

Thank you for purchasing Samwontech production. Please use after read instruction manual for safety. Free to contact to our sales Div. for Production Inquiry and After Service.
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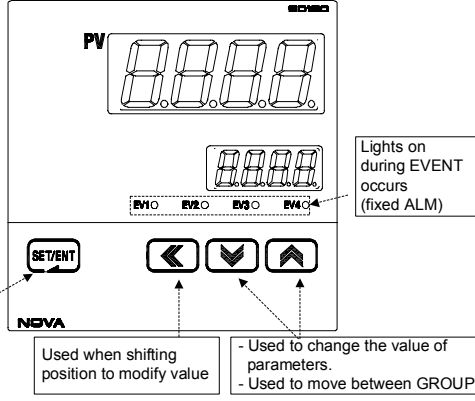
Safety Guide

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.

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 the source circuit breaker before wiring.
5. The power consumptions are 100-240V AC, 50/60Hz, 10VAmx 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.

Control Keys and Display



Type & Suffix Code

Model	Suffix Code	Description	Remark
SD160 / 190	- □ □	Digital Indicator	
Type	0	Standard	
Power	0	100 ~ 240V AC	
	1	24V DC	
Options	/RET	Retransmission Output	*note1
	/RS	RS422 / 485	*note1
	/ALM3	RELAY Output 1 Point	*note2
	/ALM4	RELAY Output 1 Point	*note1, *note2

*note1 : RET, RS, ALM4 to be purchased separately *note2 : It can't use at SD160

Specification

- PV/SP Data Display : each 4 digits
- Indication Accuracy : ±0.2% of FS
- Retransmission Output : 4 ~ 20mA DC (PV) or Loop power supply
- Communication Protocols : PC-Link, MODBUS(ASCII, RTU)
- Power Supply and Consumption : 100 ~ 240V AC, 50 ~ 60Hz / Max 6W below

Sensor

- PV Input : Universal Input(1 Point)
- Type of Input
T/C : K, J, E, T, R, B, S, L, N, U, W, Platinel II
RTD : Pt100, JPt100
DCV : -10 ~ 20mV, 0 ~ 100mV, 0.4 ~ 2.0V DC, 1 ~ 5V DC, 0 ~ 10V DC (4 ~ 20mA, 0 ~ 20mA, with external 250Ω, 500Ω)

Alarm

- Alarm Capacity : STD 1 Point, Max 4 Points *note3
- Alarm Type : 8 types(High/Low Temp Limit, Deviation Limit etc)

*note3 : SD160 - Max 2 Points

Safety & EMC

- Safety : EN61010-1, UL61010C-1, CAN/CSA-C22.2 No.10101-92, Category II
- EMC : EMI(Emission) - EN61326, ClassA
EMS(Immunity) - EN61326

PARAMETER Table

Standard Setting

Symbol	Parameter	Setting Range	Unit	Initial	Remark
AL-1	Set value of ALT1	EU(-100.0 ~ 100.0%)	EU	EU(100.0%)	Always
AL-2	Set value of ALT2	EU(-100.0 ~ 100.0%)	EU	EU(100.0%)	Always
AL-3	Set value of ALT3	EU(-100.0 ~ 100.0%)	EU	EU(100.0%)	Option
AL-4	Set value of ALT4	EU(-100.0 ~ 100.0%)	EU	EU(100.0%)	Option
BS	Bias Value	EUS(-100.0 ~ 100.0%)	ABS	0	Always
LOCK	Key Lock	-1, 0, 1	ABS	0	Always

Inner Setting

ALARM GROUP

Symbol	Parameter	Setting Range	Unit	Initial	Remark
ALT1	Alarm Type 1	refer to "Type of Alarm"	ABS	AH.F	Always
A1DB	Alarm 1 Hys	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Always
ALT2	Alarm Type 2	refer to "Type of Alarm"	ABS	AH.F	Always
A2DB	Alarm 2 Hys	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Always
ALT3	Alarm Type 3	refer to "Type of Alarm"	ABS	AH.F	Option
A3DB	Alarm 3 Hys	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Option
ALT4	Alarm Type 4	refer to "Type of Alarm"	ABS	AH.F	Option
A4DB	Alarm 4 Hys	EUS(0.0 ~ 100.0%)	EUS	EUS(0.5%)	Option

IN GROUP

Symbol	Parameter	Setting Range	Unit	Initial	Remark
IN-T	Input Type	refer to "Type of Input Sensor"	ABS	TC.K1	Always
IN-U	Display Range	℃, ℉	ABS	℃	T/C, RTD
IN.RH	Max. Value of Measurement Range	refer to "Type of Input Sensor" However, INRH > INRL	EU	EU(100%)	Always
IN.RL	Min. Value of Measurement Range		EU	EU(0.0%)	Always
IN.DP	Decimal Point Position	0 ~ 3	ABS	1	mV, V
IN.SH	Max Value of Input Scale	Within -1999 ~ 9999 however, INSH > INSL	ABS	100.0	mV, V
IN.SL	Min Value of Input Scale	The Decimal Point Position is relay on the value of IN.DP	ABS	0.0	mV, V
IN.FL	PV Filter	OFF, 1 ~ 120	sec	OFF	Always
BSL	BOU SEL	OFF, UP, DOWN	ABS	UP (DCV=OFF)	Always
RSL	RJC SEL	TC, TC.RJ, RJC	ABS	TC.RJ	T/C

CTL GROUP

Symbol	Parameter	Setting Range	Unit	Initial	Remark
PV.LO	PV MIN.Value	EU(-5.0~105.0%) : Read Only	EU	EU(100.0%)	Always
PV.HI	PV MAX.Value	EU(-5.0~105.0%) : Read Only	EU	EU(0.0%)	Always
M.CLR	MIN MAX CLEAR	OFF, ON	ABS	OFF	Always
DSP.H	Display High Limit	EU(-5.0 ~ 105.0%) : However, DSP.L < DSP.H	EU	EU(105.0%)	Always
DSP.L	Display Low Limit	EU(-5.0 ~ 105.0%) : However, DSP.L < DSP.H	EU	EU(-5.0%)	Always
INIT	Parameter Initialization	OFF, ON	ABS	OFF	Always

RET GROUP

Symbol	Parameter	Setting Range	Unit	Initial	Remark
RET	Select RET	LPS, PV	ABS	PV	Option
RETH	High-Limited Value of Retransmission	T/C, RTD : INRH ~ INRL mV, V : INSH ~ INSL	EU	INRH	When select RET=PV
RETL	Low-Limited Value of Retransmission		EU	INRL	

COMM GROUP

Symbol	Parameter	Setting Range	Unit	Initial	Remark
COM.P	Communication Protocol	PCC0, PCC1, MODBUS ASCII, MODBUS RTU	ABS	PCC0	Option
BAUD	Baud Rate	600,1200,2400,4800,9600, 19.2K	ABS	9600	Option
PRTY	Parity	None, Even, Odd	ABS	None	Option
SBIT	Stop Bit	1, 2	ABS	1	Option
DLEN	Data Length	7,8(SKIP in MODBUS)	ABS	8	Option
ADDR	Address	1 ~ 99(Max 31 can connect)	ABS	1	Option
RP.TM	Response Time	0 ~ 10(x10ms)	ABS	0	Option

Type of Input Sensor

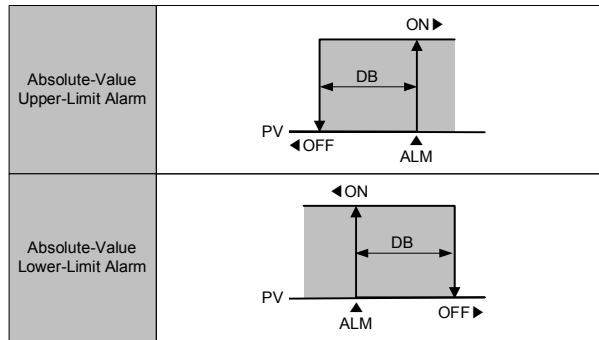
*display range : -5% ~ +105%

No.	TYPE	Temp.Range(℃)	Temp.Range(℉)	Group	DISP
1	K1	-200 ~ 1370	-300 ~ 2500	T/C	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		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	PIA	-199.9 ~ 850.0	-300 ~ 1560	RTD	PTA
15	PtB	-199.9 ~ 500.0	-199.9 ~ 999.9		PTB
16	PtC	-150.0 ~ 150.0	-199.9 ~ 300.0		PTC
17	JPtA	-199.9 ~ 500.0	-199.9 ~ 999.9		JPTA
18	JPtB	-150.0 ~ 150.0	-199.9 ~ 300.0		JPTB
19	0.4~2.0V	0.400 ~ 2.000V		DCV	2V
20	1~5V	1 ~ 5V			5V
21	0~10V	0 ~ 10V			10V
22	-10~20mV	-10 ~ 20mV		mV	20M
23	0~100mV	0 ~ 100mV			100M

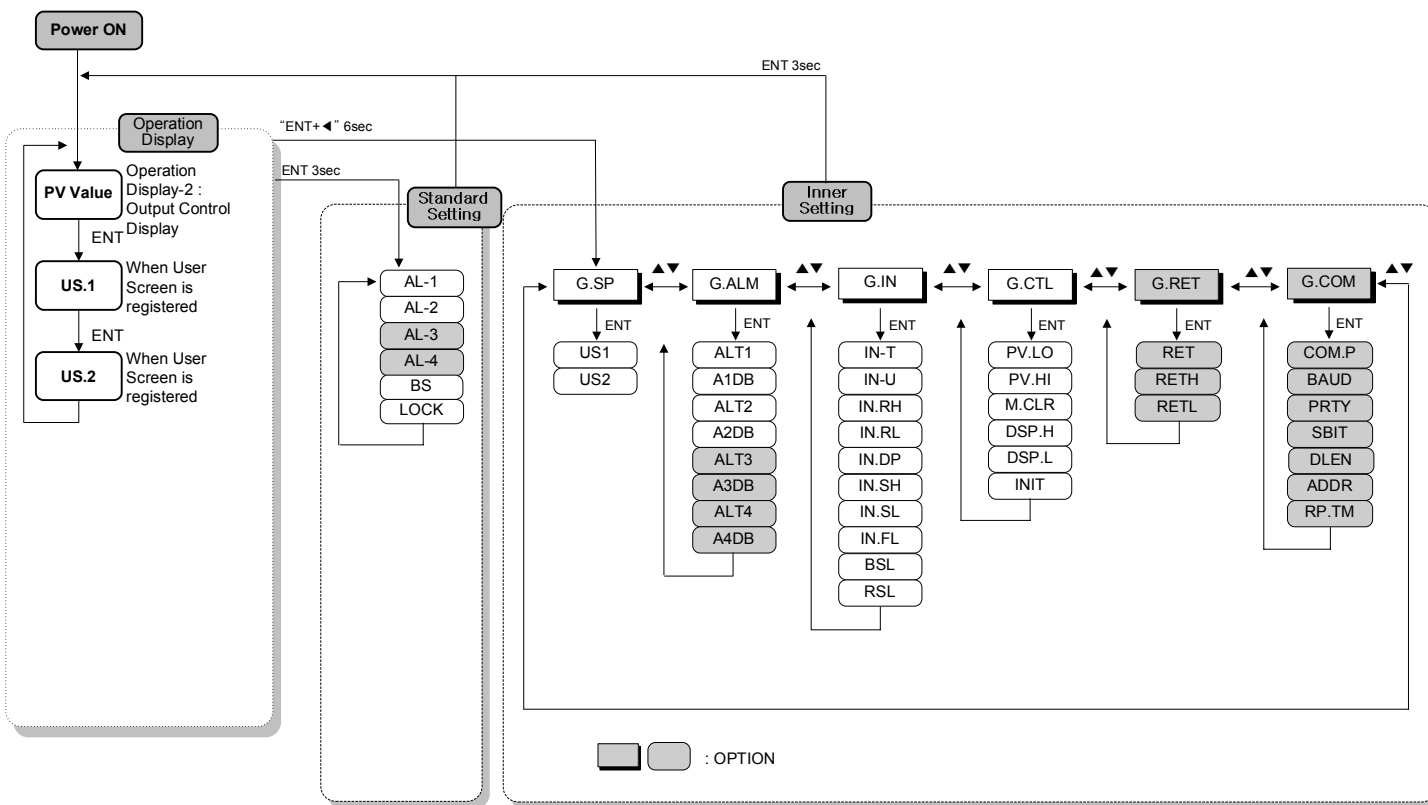
Type of Alarm

No.	Type	Output Direct		Standby		Display Data
		For	Ref	Off	On	
1	Absolute-Value Upper-Limit Alarm	○		○		AH.F
2	Absolute-Value Lower-Limit Alarm	○		○		AL.F
3	Absolute-Value Upper-Limit Alarm		○	○		AH.R
4	Absolute-Value Lower-Limit Alarm		○	○		AL.R
5	Absolute-Value Upper-Limit Alarm	○			○	AH.FS
6	Absolute-Value Lower-Limit Alarm	○			○	AL.FS
7	Absolute-Value Upper-Limit Alarm		○		○	AH.RS
8	Absolute-Value Lower-Limit Alarm		○		○	AL.RS

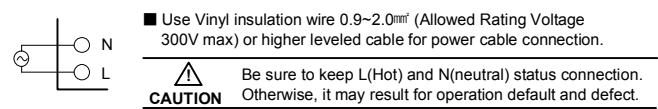
Alarm Operation



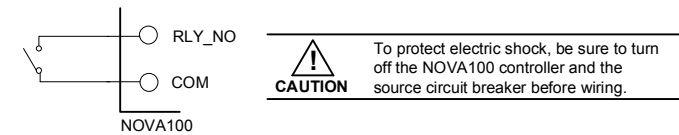
Parameter Map



Power Cable Connection



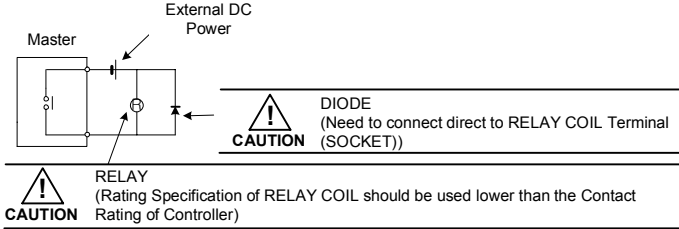
RELAY Connection



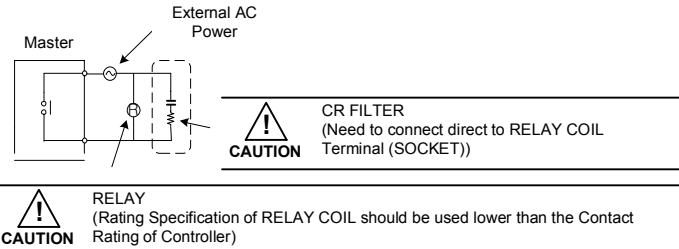
Use an Auxiliary RELAY

- 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 Eolectic Co.,Ltd : CR UNIT 953, 955 etc
 - ▶ Jiwool Electric Co.,Ltd : SKV, SKVB etc
 - ▶ Shinyoug Communications Co.,Ltd : CR-CFS, CR-U etc

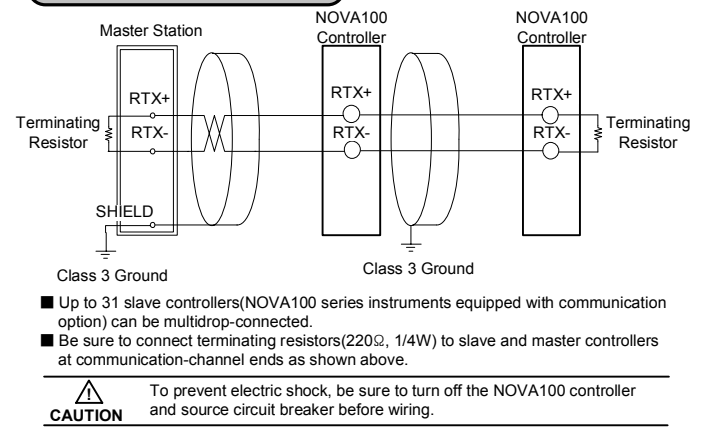
1. In case of DC RELAY



2. In case of AC RELAY



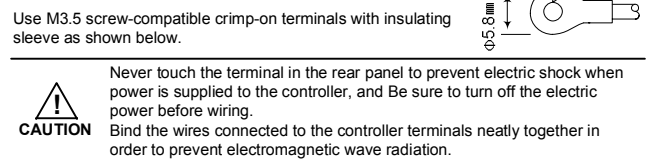
Communication Wiring (RS485)



Power Cable Specification

Vinyl insulated wire 0.9~2.0mm² (Allowed Rating Voltage 300V max)

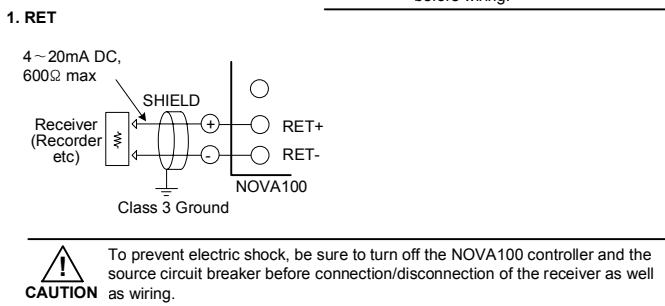
Terminal Specification



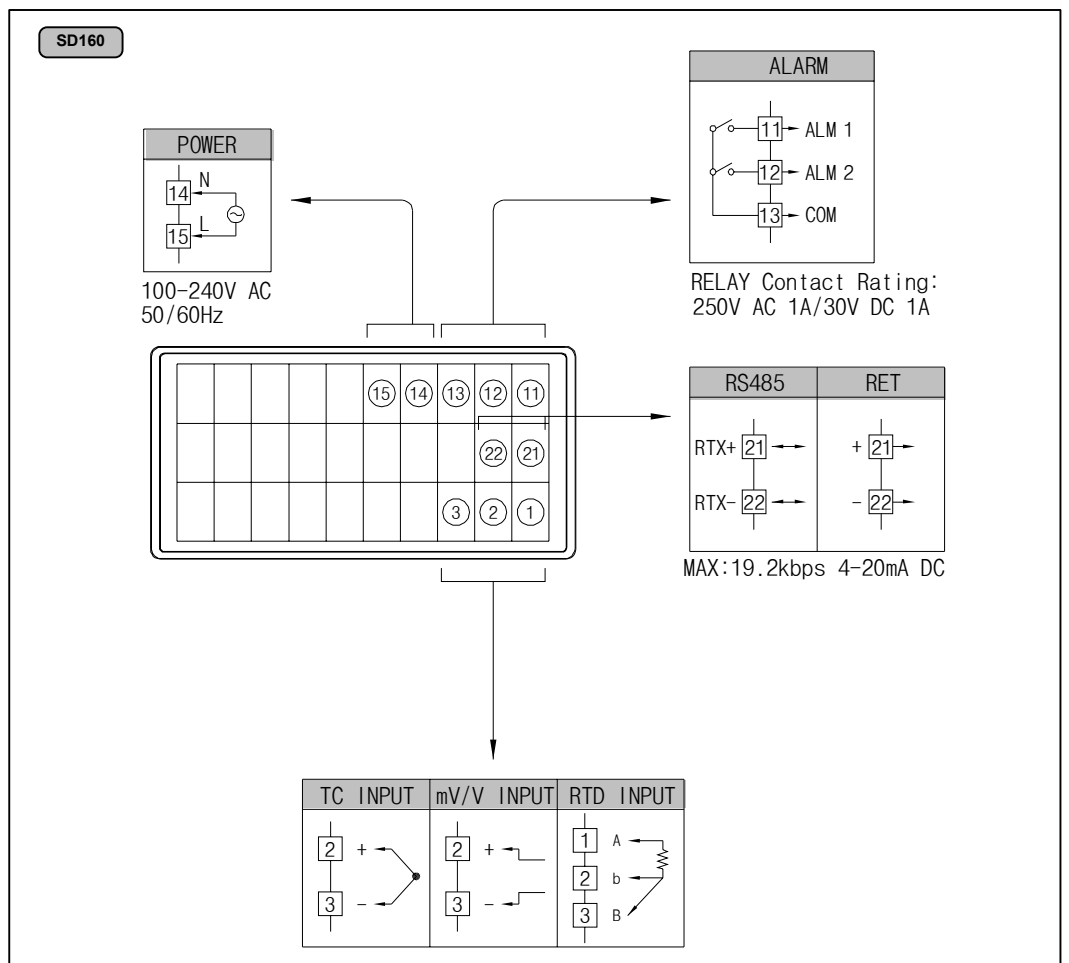
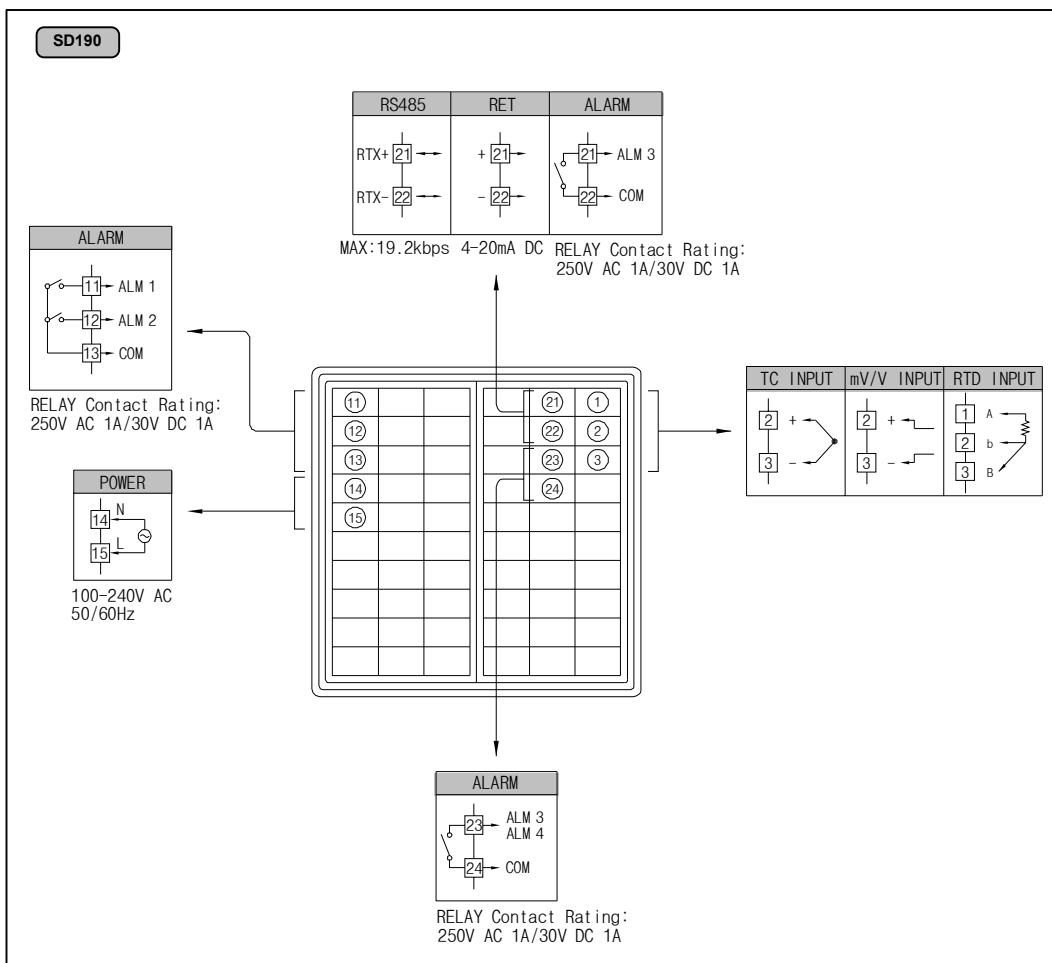
Display Error and Correction

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
E.AT	AT Time Out (27h over)	PROCESS CHECK

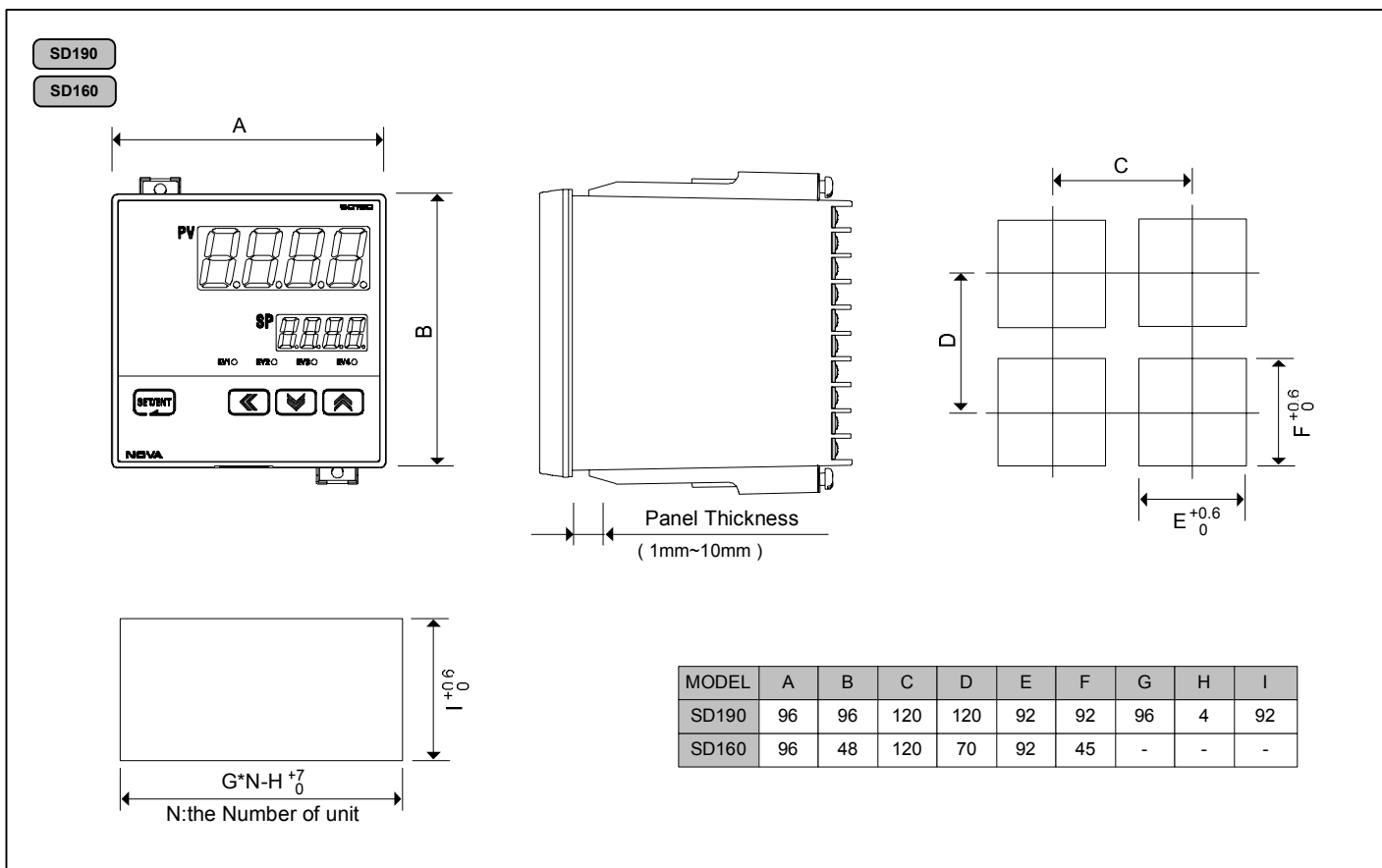
ANALOG OUTPUT Connection



Terminal Arrangement and External wiring



Dimension and Panel Cutout



How to install Mount

