Shimaden, Temperature and Humidity Control Specialists

°C
%RH
SHIMADEN

MICROPROCESSOR-BASED

DIGITAL INDICATORS

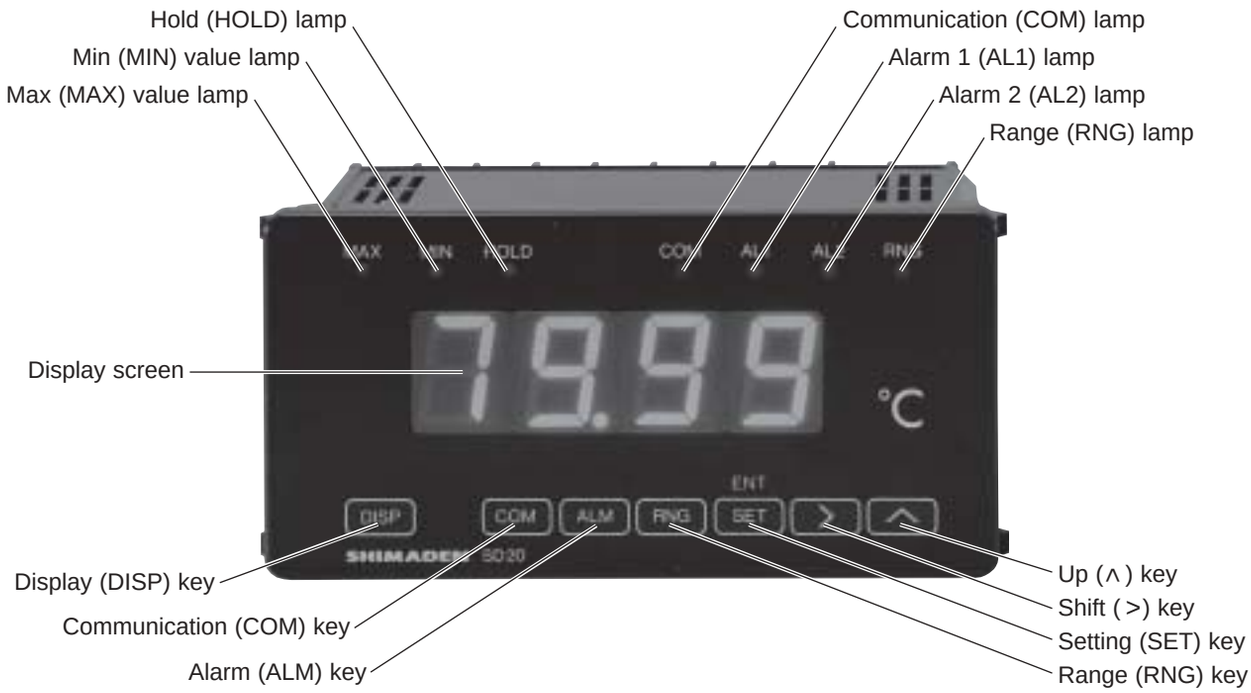
Series ***SD20***

CE & SP NRTL/C approved

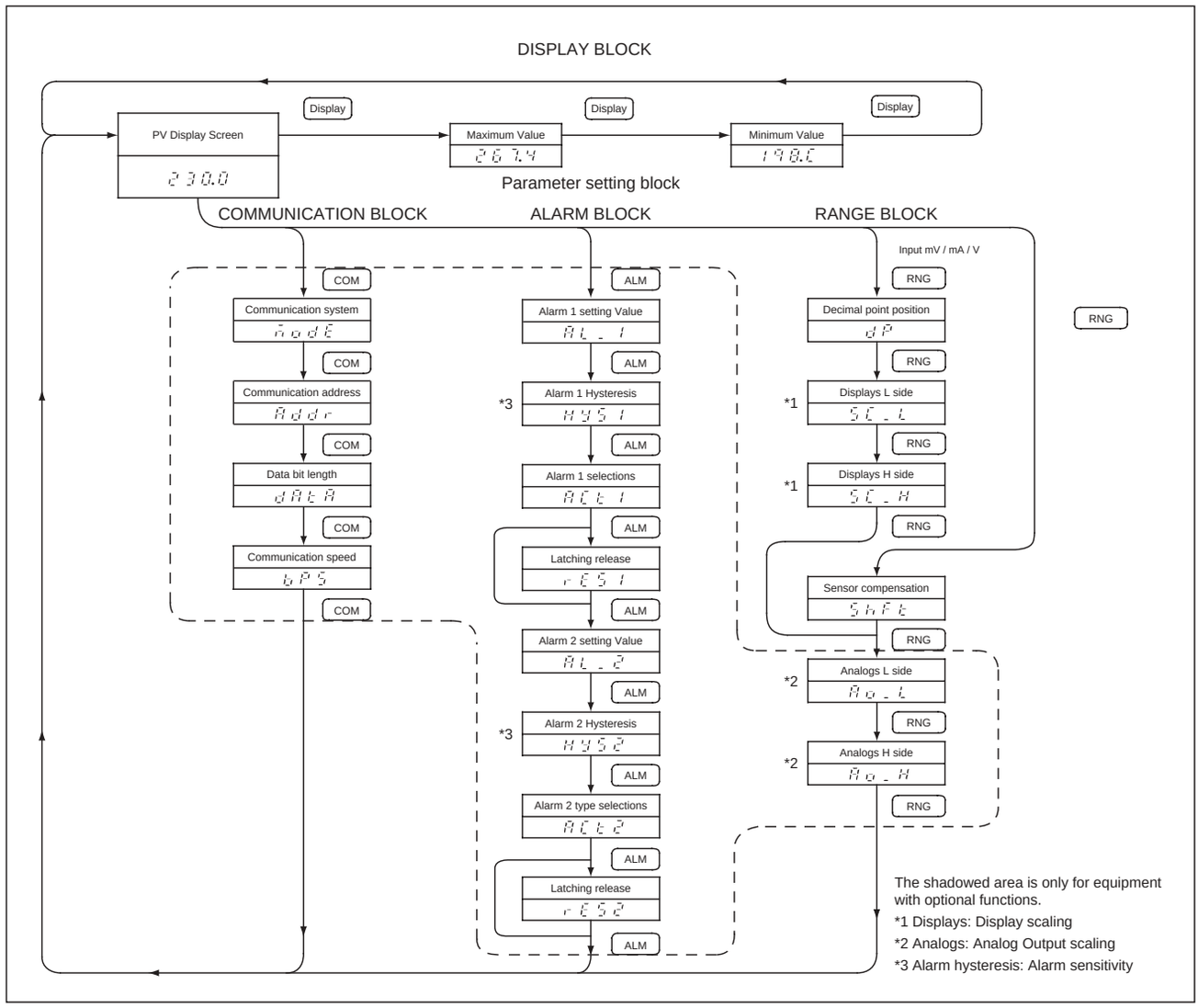
BASIC FEATURES

- ☐ *DIN Size 48 x 96 mm*
- ☐ *± 0.25% High Accuracy Indication*
- ☐ *User-Selectable Inputs (Thermocouples)*
- ☐ *User-Selectable Ranges*
- ☐ *Programmable Scaling (DC mV, DC mA)*
- ☐ *Power Supply (100~240V AC or 24V AC or 24V DC)*
- ☐ *Versatile Alarm Configurations*
- ☐ *Sensor Power Supply Available*
- ☐ *Interface RS-485, RS-422A or RS-232C*
- ☐ *Analog Output Scaling Available*

NAME & FUNCTION



FLOW CHART



Display

• Range Display:	7-segment LED (4-digit)
• Displays:	Measuring range, max., min., hold
• Display Accuracy:	±0.25%+1 digit of measuring range
• Display Cycle Range:	0.25 sec. or 2 sec. (by internal switch)
• Legend Change:	°C or °F (by internal switch)
• Monitor Display:	Max., min., hold, communication, alarm and range

Setting

• Setting Method:	By front key
• Setting Keys:	Display, Communication, Alarm, Range, Setting, Shift and Up
• Type of Setting:	Position of decimal point, display scaling, sensor compensation, analog output scaling, alarm, alarm sensitivity, latching OFF, communications (interface), etc.

Input

• Sampling Cycle:	0.25 sec.
• Thermocouples:	T, J, E, K, R, S, B, WRe5-26, {U, L (DIN 43710)}
Kelvin Legend:	70.0~400.0k (available only T / C K, option)
Input Resistance:	500kΩ min.
External Resistance Allowable Range:	100Ω max.
Sensor Compensation:	±99.9 or ±999 Unit (depending on communication signal)
Burnout Scaling:	Up-scale (standard feature)
• R.T.D.:	JPt100 / Pt100 (DIN / JIS) changeable
Rated Amperage:	Approx. 0.5mA
Lead Wire Resistance:	5Ω max. per wire
Sensor Compensation:	±99.9 or ±9.99 Unit (depending on communication signal)
• Voltage:	0~10mV, 0~50mV or 0~100mV DC changeable 0~1V, 0~5V, 0~10V DC changeable
Input Resistance:	500kΩ min
• Current:	4~20mA or 0~20mA DC changeable
Receiving Resistance:	250Ω
• Display Scaling:	Only voltage and current inputs available (-1999~+9999, 100~10000 counts)
Setting Method & Decimal Point Position:	By front key
• Isolation:	Between input, system and various outputs

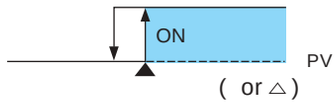
Optional Functions

Alarm

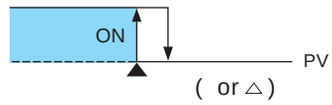
• Alarm Points:	2 Point
• Alarm Method:	Individual setting / individual output
• Type of Alarm	
Alarm 1:	Absolute value high limit or absolute value low limit (selectable)
Alarm 2:	Adsolute value high limit, absolute value low limit, deviation high limit, deviation low limit or deviation high / low limit (selectable) Deviation high limit, deviation low limit and deviation high / low limit alarm can be selected deviation for alarm 1.

● Alarm Mode

1. Absolute value high limit alarm

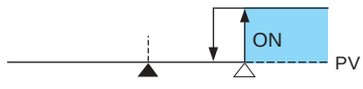


2. Absolute value low limit alarm



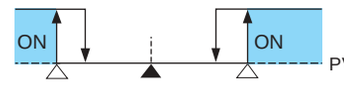
▲:Alarm 1 Setting Point
△:Alarm 2 Setting Point

3. Deviation high limit alarm



4. Deviation low limit alarm

5. Deviation high/low limit alarm



● Alarm Setting:

	Alarm 1	Alarm 2
Alarm Setting (Mode 1, 2, 3, 4)	-1999~9999	-1999~9999
Alarm Setting (Mode 5)		1~9999

- Alarm Sensitivity: 0.2~9.9 or 2~99 by front key
- Alarm Output: 1c contact, 250V AC, 2.5A / Resistive load
- Inhibit / Non-Inhibit: Selectable by internal switch
- Latching Alarm: Available as option

Analog Output

- Output: 0~10mV DC (output resistance: 10Ω)
  0~10V DC (load current: 2mA max)
  4~20mA DC (load resistance: 300Ω max.)
- Output Accuracy: ±0.25%FS of display value
- Resolution: Approx. 0.01%FS
- Isolation: Isolated between analog output, system and various outputs
- Output Scaling: By front key

Interface

- Type of Interface: RS-232C, RS-422A or RS-485
- Speed: 1200, 2400, 4800 or 9600 bps selectable
- Data Bit: 7-bit odd-parity or 8-bit non parity
- Address: 0~31
- Code: ASCII Code
- Isolation: Isolated between communication signal, system and various inputs and outputs

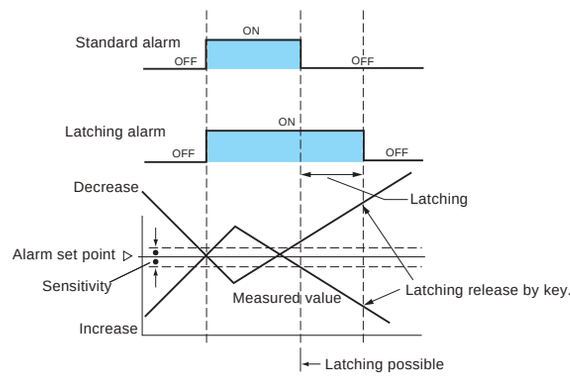
Sensor Power Supply

- Output Rating: 24V DC (±3V) 50mA

Others

- Data Storage: By non-volatile memory
- Operating Ambient Temperature / Humidity Range: -10~50°C / 90% RH max. (no dew condensation)
- Applicable Standard: Safety: IEC1010-1 and EN61010-1
  EMC: EN50081-2 (EMI/emission)
  EN50082-2 (EMS/immunity)
  During EMC testing, the apparatus continues to operate at a measurement accuracy within ±10% of the range
- Power Supply: 100~240V AC 50/60Hz, 24V AC or 24V DC
- Power Consumption: 100~240V AC: 14 VA max.
  24V AC: 8 VA max.
  24V DC: 5W max.
- Insulation Resistance: 500V DC 20MΩ between input terminal and earth terminal
  500V DC 20MΩ between power supply terminal and earth terminal
- Dielectric Strength: One minute at 1000V AC between input terminal and earth terminal
  One minute at 1500V AC between power supply terminal and earth terminal
- External Dimensions: 48 (H) x 96 (W) x 110 (D) mm
- Weight: Approx. 300g

● Latching Alarm



ORDERING INFORMATION

ITEMS	CODE	SPECIFICATIONS	
SERIES	SD20-	48 × 96 DIN Size Digital Indicator	
INPUT	1	Thermocouple T, J, E, K, S, R, B, WRe5-26, U, L (DIN 43710) multiple input	
	2	R.T.D. JPt100 / Pt100 (IEC) multiple range	
	3	Voltage (mV) 0~10, 0~50, 0~100mV DC	Multiple input programmable range Scaling range -1999~9999
	4	Current (mA) 4~20, 0~20mA DC	
	6	Voltage (V) 0~1, 0~5, 0~10V DC	
	8	Kelvin scale (only K thermocouple) Measuring range 70.0~400.0K	
POWER SUPPLY	90-	100~240V AC±10% 50 / 60Hz	
	02-	24V DC ±10%	
	10-	24V AC ±10% (50 / 60Hz)	
ALARM	00	None	
	10	Individual setting, individual output 2 points (1c contact) Contact capacity: 250V AC 2.5A / resistive load	
	11	Ditto with latching function	
ANALOG OUTPUT OR INTERFACE	00	None	
	03	0~10mV DC Output resistance: 10Ω	Scaling possible (within measuring
	04	4~20mA DC Load resistance: 300Ω max.	
	06	0~10V DC Max. load current: 2mA max.	
	15	RS-485	Note: Sensor DC power supply can not be
	16	RS-422A	
	17	RS-232C	
SENSOR DC POWER SUPPLY * (WHEN USING HUMIDITY SENSOR OR UNGROUNDED SENSOR)	00-	None	
	24-	24V DC 50mA (capable of driving two sensors H71 / TH71)	
FRONT PANEL INFORMATION	J	In Japanese	
	E	In English	
REMARKS	0	Without (for CE Marking)	
	9	With (for remarks other than CE Marking)	

*When 24V AC or 24V DC is selected, sensor DC power supply can not be selected.

STANDARD RANGE & USER-PROGRAMMABLE SCALING

Since the Series SD20 has been designed for user-selectable inputs, user-selectable ranges and user-programmable scaling, the unit will be shipped with one factory-set standard range.
If a range selection other than the standard is required, user-selectable inputs (T / C's) and user-selectable ranges (T / C's & RTD) are available as listed below at the specific application.

Standard Range (Factory-set When shipped)

Input	Standard / Rating	Ranges
Thermocouple	JIS (K)	-100.0~800.0°C
R.T.D	Pt100-DIN	-199.9~600.0°C
DC Voltage	0~10mV	0.0~100.0 No Legend
DC Current	4~20mV	0.0~100.0 No Legend
DC Voltage	0~1V	0.0~100.0 No Legend

CODING EXAMPLES

Example 1) SD20-190-100300-E0

Thermocouple input

Example 2) SD20-390-100300-E0

mV input (0~10mV input)

MEASURING RANGE CODES & LEGEND CODES

	INPUT		RANGE			
	Type	CODE	°C	CODE	°F	CODE
Thermocouple	∗1 B	1B	0 ~1800	A47	32 ~ 3272	A65
	R	1R	0 ~1700	A46	32 ~ 3092	A64
	S	1S	0 ~1700	A46	32 ~ 3092	A64
	K	1K	-200 ~1200	A74	-328 ~ 2192	A79
			-100.0 ~ 800.0	A27	-148 ~ 1472	A72
	E	1E	0.0 ~ 700.0	A09	32 ~ 1292	A63
	J	1J	-100.0 ~ 600.0	A26	-148 ~ 1112	A71
	T	1T	-199.9 ~ 200.0	A30	-328 ~ 392	A77
	WRe5 / 26	1W	0 ~2300	A49	32 ~ 4172	A66
	U	1U	-199.9 ~ 200.0	A30	-328 ~ 392	A77
	L	1L	0.0 ~ 600.0	A08	32 ~ 1112	A62
	∗2 K	1K	70.0 ~ 400.0	A67		
R.T.D	JPt100 (JIS)	2J	-199.9 ~ 600.0	A31	-328 ~ 1112	A78
			0.00 ~ 99.99	A02	32.0 ~ 212.0	A61
	Pt100 (JIS / IEC)	2F	-199.9 ~ 600.0	A31	-328 ~ 1112	A78
			0.00 ~ 99.99	A02	32.0 ~ 212.0	A61
mV	0~10mV	32				
	0~50mV	34				
	0~100mV	36				
mA	0~20mA	41				
	4~20mA	42				
V	0~1V	62				
	0~5V	64				
	0~10V	66				

Scaling Range: -1999~9999
Span : 100~10000 count

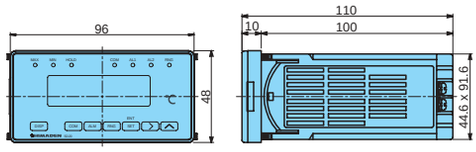
Note 1) *1 Thermocouple (B): Accuracy guarantee not applicable temperature below 400°C or 750°F
*2 Thermocouple (K): 70.0~400.0K (Kelvin Legend Only)

LEGEND	CODE	LEGEND	CODE
No legend	00	l / min	30
°C	01	l / h	31
°F	02	m^3 / min	32
%RH	03	m^3 / h	33
%	04	Nm^3 / min	34
K	05	Nm^3 / h	35
mV	06	mm / s	36
V	07	m / s	37
mA	08	m / min	38
A	09	m / h	39
W	10	m / s^2	40
μS / cm	11	rpm	41
mbar	12	mm	42
bar	13	cm	43
psi	14	m	44
psig	15	mm^3	45
Pa	16	cm^3	46
kpa	17	m^3	47
mmH_2O	18	in	48
mH_2O	19	lb	49
inH_2O	20	g	50
mmHg	21	kg	51
cmHg	22	t	52
inHg	23	l	53
l / s	24	ppm	54
kg / h	25	pH	55
kg / cm^2	26	cal	56
kgf / cm^2	27	kcal	57
Torr	28	Blank	58
mmAq	29	Blank	59

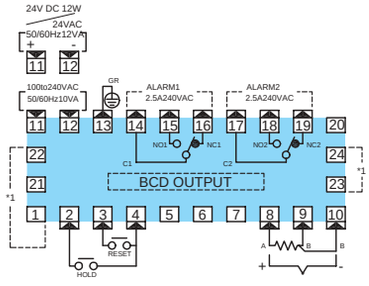
∗Codes 58 and 59 are for customers to fill out.

EXTERNAL DIMENSIONS & TERMINAL ARRANGEMENT

• External Dimensions



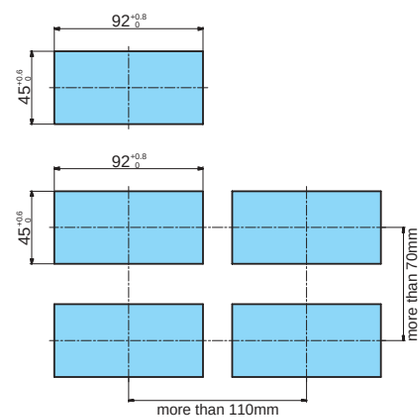
• Terminal Arrangement



*1 SPECIFICATION	TERMINAL				
	1	21	22	23	24
A-OUTPUT		-	+		
RS-232C	SG	SD	RD		
RS-422A	SG	SD-	SD+	RD-	RD+
RS-485	SG	-	+		
DC OUTPUT (24V DC 50mA)				-	+

A-output (Analog output)

• Panel Cutout



(Unit : mm)

PO Box 60
Thompson Ridge, NY 10985
Website: www.vespo.com

Phone: (800) 49 - VESPO
Fax: (800) 36 - VESPO
email: controls@vespo.com