



DIGITAL INDICATOR CONTROLLER

MODEL SC-S21

COMPACT MULTI-PURPOSE CONTROLLER

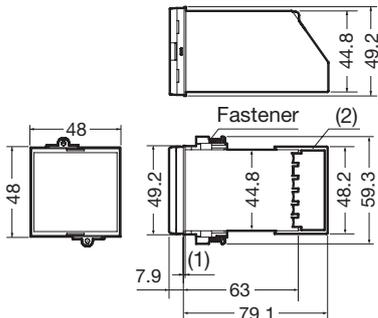
Features

Compact multi-purpose controller for a wide range of operations. Ideal for equipment automation and systems creation in many fields.

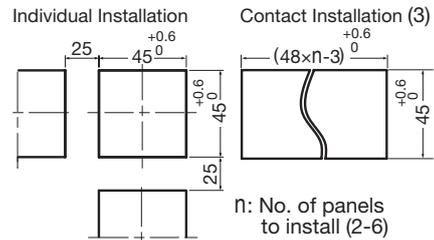
1. Compact size takes up little space.
2. New auto-tuning function enables excellent responsiveness and convergence.
3. Reduces auto-tuning initialization time with start-up tuning.
4. Four target settings can be stored in memory.
5. Communication method with host system can be selected via additional specifications.
6. Large and easy-to-read display (11-segment LCD)
7. Conforms with CE marking.



Dimensions



Units: mm



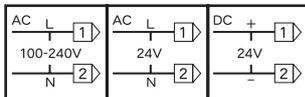
Weight:
Approx. 120 g

n: No. of panels
to install (2-6)

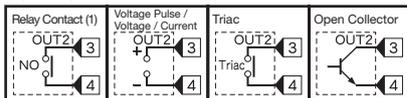
- (1) Rubber packing for case (when "Waterproof/Dustproof" specified)
- (2) Terminal cover (optional)
- (3) Not waterproof/dustproof for close contacted mounting. Rubber packing for case not required.

Wiring Terminals

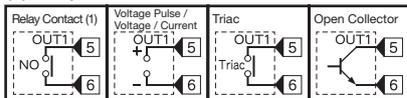
(1) Power Terminals



(2) Output 2 Terminals¹



(3) Output 1 Terminals¹

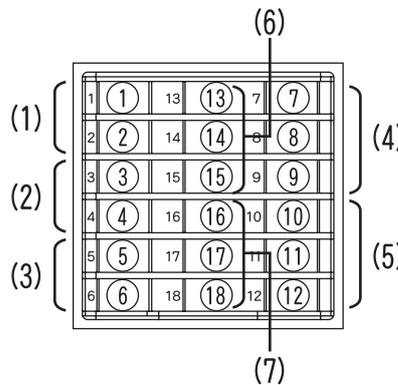


1. Output Assignment:

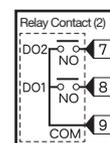
- Output (OUT1): - Control output only during PID control
- Heating output only during heating/cooling PID control
- Output (OUT2): - Can be used as transmission output for PID control (depends on specification when ordering)
- Cooling output only during heating/cooling PID control
- Can be specified as third alarm output

2. Digital Input Assignment:

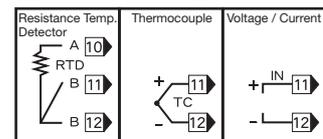
- The following functions can be assigned: SV selection, MAN/AUTO transfer, RUN/STOP transfer, Interlock release



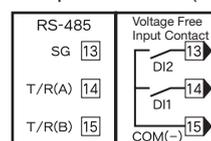
(4) Alarm Output Terminals (DO1, DO2)



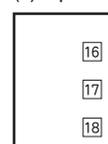
(5) Measurement Input Terminals



(6) Transmission or Digital Input Terminals (DI1, DI2)²



(7) Open Terminals



Specifications

Item		Description		
Measurement Input	Measurement Input Types (See next page for ranges)	Thermocouple	K (JIS, IEC), J (JIS, IEC), R(JIS, IEC), S (JIS, IEC), B (JIS, IEC), E (JIS, IEC), N (JIS, IEC), T (JIS, IEC), PLII (NBS), W5Re/W26Re (ASTM)	
		RTD	Pt100 (JIS/IEC/DIN), JPt100 (JIS)	
		Voltage	0 to 1 V DC, 0 to 5 V DC, 0 to 10 V DC, 1 to 5 V DC	
		Current	0 to 20 mA DC, 4 to 20 mA DC	
	Input Impedance	Temperature	Min. 1 MΩ	
		Voltage	Approx. 1 MΩ	
		Current	Approx. 250 Ω (external 250 Ω resistor supplied for current input)	
Sampling Period	250 ms			
Measurement Accuracy	See "Measurement Accuracy" table on page 3			
Influence of Ambient Temp. (5 to 40 °C)	Temperature	± 0.06 °C/°C		
	Voltage/ Current	± 0.06% of full scale/°C		
Display	Display Method	PV: 11 segment (4 digits) SV: 7 segment (4 digits) LCD display		
	Number of Memory Settings	4		
Control	Control Action Types	PID control (direct action / reverse action)		
	Control Output	Relay Contact Output	1a contact (contact rating / resistive load: 250 V AC / 3 A, 30 V DC / 1 A)	
		Voltage Pulse Output	0/12 V DC (Allowable load resistance: Min. 600 Ω (Max. 20 mA))	
		Current Output	Allowable load resistance: Max. 500 Ω	
		Triac Output	Zero-cross method, effective ON current: Rating 0.5 A (max. allowable ambient temperature: 40 °C), 0.3 A (60 °C)	
		Voltage Output	Allowable load resistance: Min. 1 kΩ	
		Open Collector Output	Allowable load current: 100 mA	
Alarm	Number of Alarms	Up to 3		
	Alarm Output	Relay contact output: 1a contact (contact rating / resistive load: 250 V AC / 3 A; 30 V DC / 1 A)		
	Delay Timer	0 to 600 s		
Transmission Output	Transmission Signals	Manipulated output value, measured value, set value		
	Accuracy	± 0.3% of full scale		
Digital Input	Input Method	Voltage free contact		
Communication	Communication Interface	Compliant with EIA RS-485		
	Communication Protocol	Proprietary communication protocol (ANSI based), MODBUS protocol		
General	Ambient Temperature Range	0 to 50 °C		
	Ambient Humidity Range	10 to 90% RH (non-condensing)		
	Voltage	Rating 100 to 240 V AC, 24 V AC, 24 V DC		
	Power Consumption	Max. 8.5 VA (at 240 V AC)		
	Specification of waterproof/ dustproof version	NEMA 4X, IP66 (with rubber packing, front face in individual panel installation)		

Alarm Types

Alarm type	Code	Alarm type	Code
No alarm	N	Deviation lower limit with re-standby	R
Deviation upper limit	A	Deviation upper/lower limits with re-standby	T
Deviation lower limit	B	Within deviation range (upper/lower limit individual settings)	U
Deviation upper/lower limits	C	SV upper limit	V
Within deviation range	D	SV lower limit	W
Deviation upper limit with standby	E	Deviation upper/lower limits (upper/lower limit individual settings)	X
Deviation lower limit with standby	F	Deviation upper/lower limits with standby (upper/lower limit individual settings)	Y
Deviation upper/lower limits with standby	G	Deviation upper/lower limits with re-standby (upper/lower limit individual settings)	Z
Measurement upper limit	H	Control look break alarm	2
Measurement lower limit	J	FAIL status	3
Measurement upper limit with standby	K	Monitor during RUN	4
Measurement lower limit with standby	L	Output of communication monitoring result	5
Deviation upper limit with re-standby	Q		

Digital Input Types

Digital input type	Code
None	N
SV1 to SV4 select	1
SV1 to SV2 select + RUN/STOP transfer	2
SV1 to SV2 select + MAN/AUTO transfer	3

Digital input type	Code
SV1 to SV2 select + Interlock release	4
RUN/STOP transfer + MAN/AUTO transfer	5
RUN/STOP transfer + Interlock release	6
MAN/AUTO transfer + Interlock release	7

Measurement Input Types & Ranges

Input Types	Input Range (°C)	Code	
K	0 – 200	K01	
	0 – 400	K02	
	0 – 600	K03	
	0 – 800	K04	
	0 – 1000	K05	
	0 – 1200	K06	
	-200 – +1372	K41	
	-199.9 – +400.0	K43	
	0.0 – 400.0	K09	
	0.0 – 800.0	K10	
J	0 – 200	J01	
	0 – 400	J02	
	0 – 600	J03	
	0 – 800	J04	
	0 – 1000	J05	
	0 – 1200	J06	
	-199.9 – +300.0	J07	
	-200 – +1200	J15	
	R	0 – 1769	R02
	S	0 – 1769	S02
	B	400 – 1800	B01
		0 – 1820	B02
	E	0 – 800	E01
		0 – 1000	E02
	N	0 – 1200	N01
0 – 1300		N02	
T	-199.9 – +100.0	T02	
	-100.0 – +200.0	T03	
	-199.9 – +300.0	T05	
	0.0 – 400.0	T06	

Input Types	Input Range (°C)	Code	
Thermocouple	PL II	0 – 1300 0 – 1390	A01 A02
	W5Re/W26Re	0 – 2000 0 – 2320	W01 W02
RTD	Pt100	-199.9 – +649.0	D01
		-199.9 – +200.0	D02
		-100.0 – +50.0	D03
		-100.0 – +100.0	D04
		-100.0 – +200.0	D05
		0.0 – 50.0	D06
		0.0 – 100.0	D07
		0.0 – 200.0	D08
		0.0 – 300.0	D09
		0.0 – 500.0	D10
RTD	JPt100	-199.9 – +649.0	P01
		-199.9 – +200.0	P02
		-100.0 – +50.0	P03
		-100.0 – +100.0	P04
		-100.0 – +200.0	P05
		0.0 – 50.0	P06
		0.0 – 100.0	P07
		0.0 – 200.0	P08
		0.0 – 300.0	P09
		0.0 – 500.0	P10
Voltage / Current	Voltage	0 – 1 V DC	301
		0 – 5 V DC	401
		0 – 10 V DC	501
		1 – 5 V DC	601
	Current	0 – 20 mA DC	701
		4 – 20 mA DC	801

Measurement Accuracy

Input Types	Input Range	Accuracy
K, J, T, E ¹⁾	< -100 °C	± (2.0 °C + 1 digit)
	-100 °C to < 500 °C	± (1.0 °C + 1 digit)
	≥ 500 °C	± (0.2% of reading + 1 digit)
N, R, S, PL II, W5Re/W26Re ²⁾	< 0 °C	± (4.0 °C + 1 digit)
	0 °C to < 1000 °C	± (2.0 °C + 1 digit)
	≥ 1000 °C	± (0.2% of reading + 1 digit)
B ²⁾	< 400 °C	± (70 °C + 1 digit)
	400 °C to < 1000 °C	± (2.0 °C + 1 digit)
	≥ 1000 °C	± (0.2% of reading + 1 digit)
Pt100, JPt100	< 200 °C	± (0.4 °C + 1 digit)
	≥ 200 °C	± (0.2% of reading + 1 digit)
Voltage/Current Input	± (0.2% of full scale + 1 digit)	

¹⁾ Accuracy is not guaranteed for less than -100 °C

²⁾ Accuracy is not guaranteed for less than 400 °C for input type R, S, B and W5Re/W26Re

