SMDT

SELECTIVE TYPE DIGITAL THERMOMETER

INSTRUCTION MANUAL

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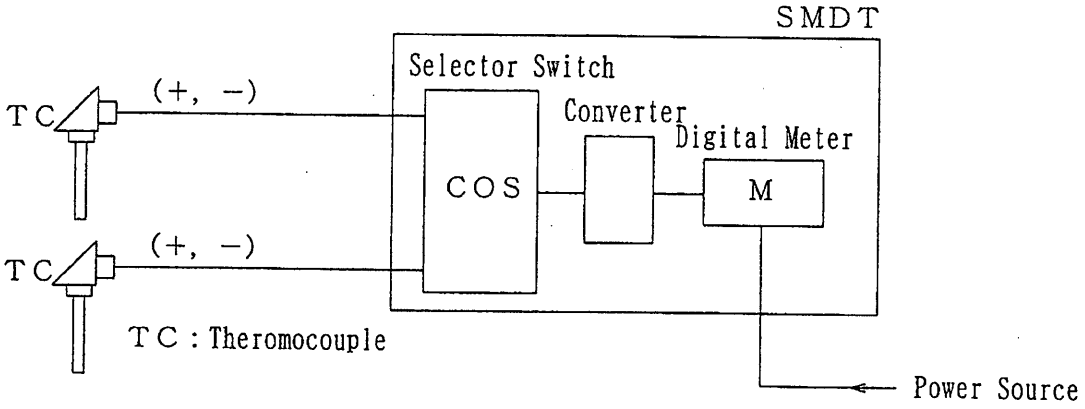
1. Composition

This equipment consists of as follows.



2. Particulars

This equipment can change and display two or more temperature sensor signals.
Refer to Instruction manual (model:3128-09) for Digital-Thermometer.

3. Fitting and Connections

Please take care following items at fitting of this device.

(1) At the fitting of the thermo sensors, it needs to select fitting ways to take temperature responsibility to transfer temperature variation speedily.

(2) At the connections of the cabling, there are no miss connections to confirm marks and polarities.
And at the cable end treatment, use compressions terminals as AMP and sleeves to connect firmly to be no troubles of open or short.

4. Measuring and Adjustment

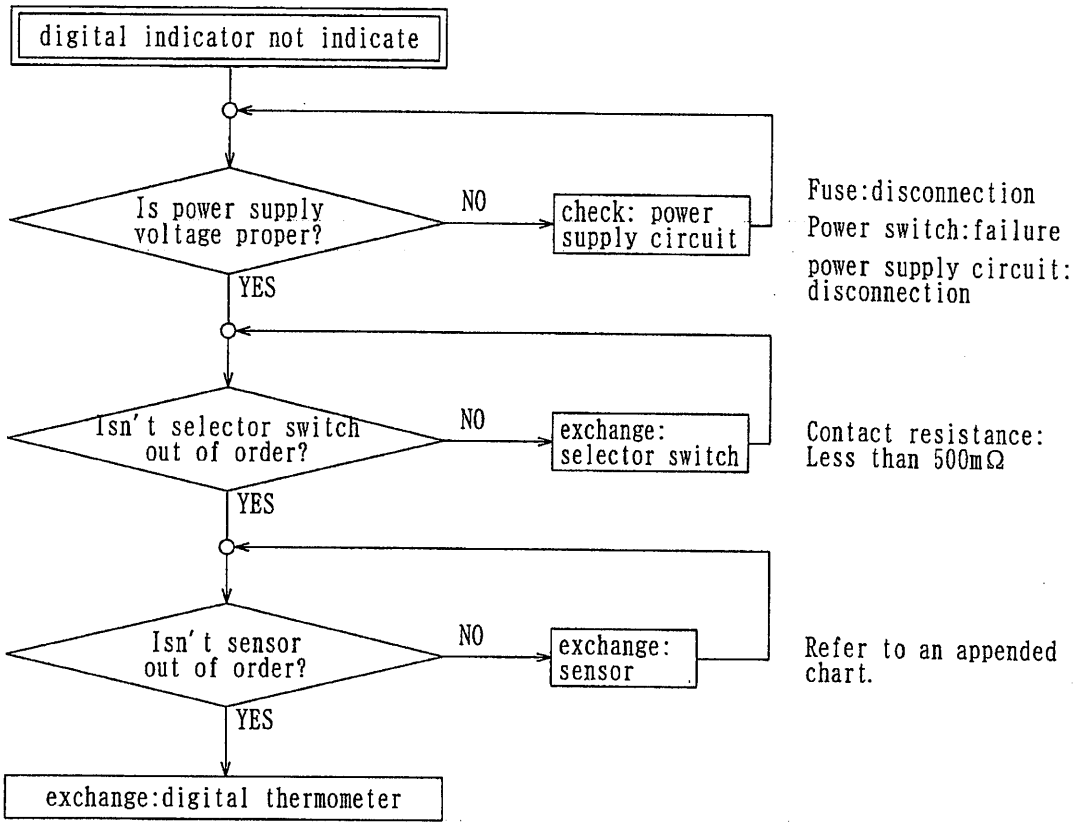
There needs no-adjustment on the spot, because this device had been adjusted correctly already by factory.
If there is a needs to adjustment unavoidably, do it after more than 10 minutes passed from when the source power on.

5. Maintenance

If an adhesion thing is in a temperature sensor, and slack is in a terminal connection, temperature may be unable to display correctry by poor heat conduction.
We recommend you the scheduled inspection about every six months.

6. Trouble Shooting

1)



2)

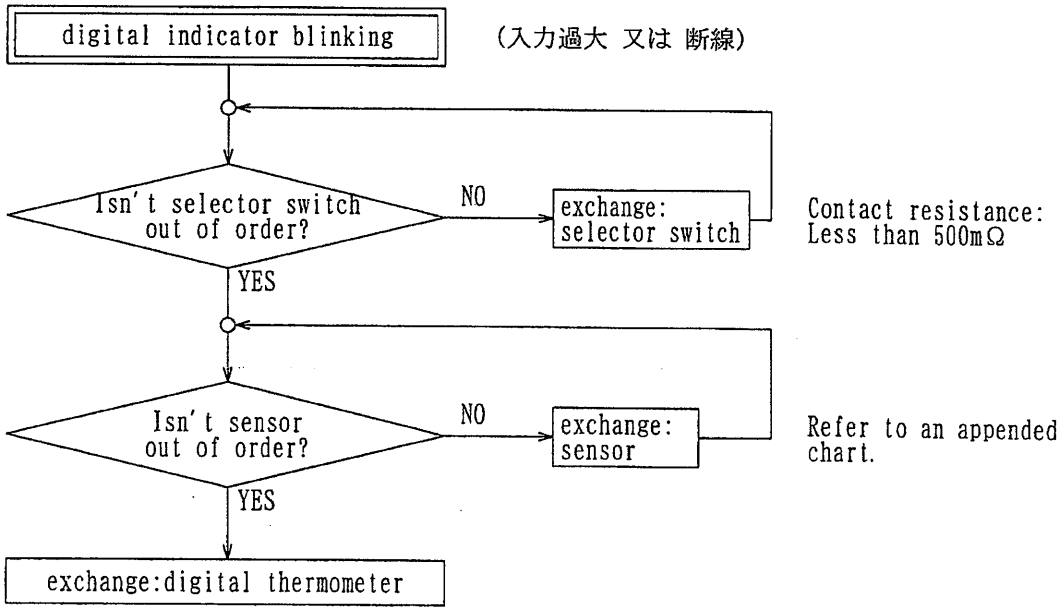


TABLE FOR K'S STANDARD THERMO-ELECTROMOTIVE UNIT : mV

TEMP ℃	0	10	20	30	40	50	60	70	80	90	100
-100	-3.554	-3.852	-4.138	-4.411	-4.669	-4.913	-5.141	-5.354	-5.550	-5.730	-5.891
-, 0	0	-0.392	-0.778	-1.156	-1.527	-1.889	-2.243	-2.587	-2.920	-3.243	-3.554
+, 0	0	0.397	0.798	1.203	1.612	2.023	2.436	2.851	3.267	3.682	4.096
100	4.096	4.509	4.920	5.328	5.735	6.138	6.540	6.941	7.340	7.739	8.138
200	8.138	8.539	8.940	9.343	9.747	10.153	10.561	10.971	11.382	11.795	12.209
300	12.209	12.624	13.040	13.457	13.874	14.293	14.713	15.133	15.554	15.975	16.397
400	16.397	16.820	17.243	17.667	18.091	18.516	18.941	19.366	19.792	20.218	20.644
500	20.644	21.071	21.497	21.924	22.350	22.776	23.203	23.629	24.055	24.480	24.905
600	24.905	25.330	25.755	26.179	26.602	27.025	27.447	27.869	28.289	28.710	29.129
700	29.129	29.548	29.965	30.382	30.798	31.213	31.628	32.041	32.453	32.865	33.275
800	33.275	33.685	34.093	34.501	34.908	35.313	35.718	36.121	36.524	36.925	37.326
900	37.326	37.725	38.124	38.522	38.918	39.314	39.708	40.101	40.494	40.885	41.276
1000	41.276	41.665	42.053	42.440	42.826	43.211	43.595	43.978	44.359	44.740	45.119
1100	45.119	45.497	45.873	46.249	46.623	46.995	47.367	47.737	48.105	48.473	48.838
1200	48.838	49.202	49.565	49.926	50.286	50.644	51.000	51.355	51.708	52.060	52.410
1300	52.410	52.759	53.106	53.451	53.795	54.138	54.479	54.819			

Instruction Manual

Digital Panel Meter Model 3128

I-02110

1. Preface

- Please take care that this instruction manual is certainly delivered to the person in charge of operating this instrument.
- Unpack the product and confirm that the following items are included.
  (1) 3128 main unit (2) This manual

For safe use of this product, please observe the following warning and caution.
In order to help the users' safe use of the products, the following symbol marks are used in this manual.

⚠ WARNING This is the warning to avoid the danger when it is assumed that such danger as may cause fatal accident or severe injure to a user occurs in case that the product is mishandled.

⚠ CAUTION This is the caution to avoid the danger when it is assumed that such danger as may cause minor injure to a user or generate only physical obstacle occurs in case that the product is mishandled.

⚠ WARNING

- **There is no power on-off switch on the model 3128. It immediately starts to operate after turning the power.**
- **Do not touch terminals when turning the power on.**

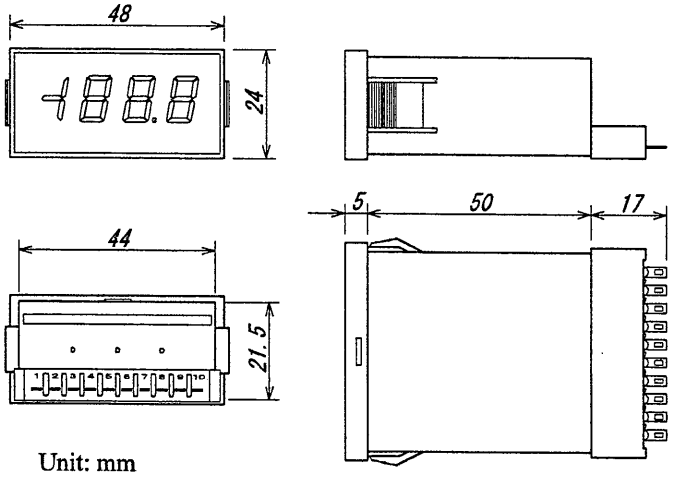
⚠ CAUTION

Preserve followings for your safety.

- **The rated data is, however, defines with more than 15 minutes warming-up times.**
- **When the product is installed in the cabinet, perform the appropriate heat radiation to keep less than 50 °C in it.**
- **Avoid the close-contacted mounting of the meter. The rise of internal temperature affects the life of product.**
- **Do not install under the following conditions.**
  - **Where it is exposed to direct sunlight, dust, corrosive gases, rain, etc.**
  - **Where ambient temperature or humidity is high.**
  - **Where it is exposed to excessive noise or static electricity.**
  - **Where there is constant vibration or shock**
- **Store the instrument within the specified temperature range for storage (-20~70°C).**
- **When the front panel or the case becomes dirty, wipe it with soft cloth.**

For heavy dirt, wipe it lightly with the soft cloth wetted with the neutral cleaner thinned by water, and finish the cleaning with dry cloth. Do not use organic solvent like benzene or paint thinner as they may deform or discolor the case.

2. Dimensions



Unit: mm

3. Specifications

3.1 Installation Specification

Power supply : DC 5V ~ 24V
Supply voltage tolerance : DC 4.75V ~ 26V
Power consumption

	Red LED	Green LED
DC 5V	Approx. 60mA	Approx. 90mA
DC 12V	Approx. 25mA	Approx. 40mA
DC 24V	Approx. 20mA	Approx. 25mA

Operating temperature : 0℃ ~ 50℃
Storage temperature : -20℃ ~ 70℃
Weight : Approx. 40g
Mounting : Snap-in type

3.2 General Specifications

Display : 0~1999 red or green LED (character height: 10mm)
Decimal Point : Programmable by the connector: (No isolation and measurement input)
scaling function : Full-scale display: -1999 To 1999 with setting function
Offset display :-1999 To 1999 with setting function
Hold function : Measurement data is held (No isolation and measurement input)
Resolution : 1/2000
Display cycle : 100ms, 400ms, 1s, 2s, 4s, 5s Selection of setting available
Zero suppress function : Selection of setting available
Over-range indication : During Over input, Display 1□□□ or -1□□□
By setting of the display □ᴗᴗᴗ or □ᴖᴖᴖ
can be changed (□:Blank display)
Over-display level : More than ± 1999 shows over-display
By setting, possible to change over-display if more than ± 130%, and ±100%
Offset fixing : Displace can be fixed to offset value when the input value is lower than the offset value. Selection of setting is available.
10^0 digit 0 fixing : If the input is unstable, 10^0 digit can be set to 0
Adjustment function : ZERO, fine adjustment of MAX value is possible
Initialization setting : The setting value is returned to factory setting. Moreover, adjustment mode also returns to factory setting.
Insulation resistance : More than DC500V 100MΩ
Withstanding voltage : Input terminals - Outer case AC1500V 1 minute
Power terminals - Outer case AC1500V 1 minute
Power supply terminals - Input terminals AC 500V 1 minute.

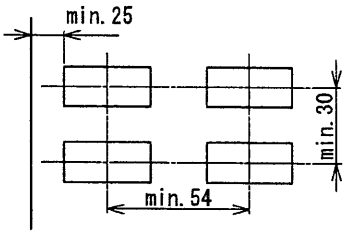
[Option]
10^0 digit off. : 10^0 digit display is turned off.
But display is turned on during setting mode and the adjustment mode.
Display of Absolute value : Display is turned off only during negative values.
Value of Scaling offset is set to zero.

4. Mounting

Remove the connector at the rear side of the case, then insert from the front panel.

Dimension of Panel cut : $45^{+0.5}/_{0} \times 22.2^{+0.3}/_{0}$ mm.
Thickness of Pane : 1 ~ 5 mm.

Mounting pitch



5. Terminal Arrangement and Explanation

■Terminal & Connector Arrangement

Termina	INHi	INLo	COM	HOLD	DP1	DP2	DP3	NC	−	+
1	1	2	3	4	5	6	7	8	9	10
Function	+	−	Commo	Hold	10^1dig	10^2dig	10^3dig	—	Power supply	
	Input		n		Decimal point					

Soldering type connector: CR23A10SA-4E

• Input terminals (INHi, INLo)
Pay attention to the polarity when wiring.
Connect input of higher electric potential to INHi.
Input and power line must be wired separately.
Otherwise, display may be unstable.

• Hold (HOLD)
Display can be held by connecting the Hold terminal and the Common terminal.
Active "L" $I_{IL} \leqq$-1mA, "L"=0 ~ 0.8V, "H"=3.5 ~ 5V
Note: Hold terminal is not isolated to the input.
Use a photo-coupler or switch to insulate.
It is essential when using the input floating.
And each meter of shall be insulated when plural mounting.

• Decimal point (10^1dig.~10^3dig.)
Decimal point is programmable. Connect and short-circuit the desired decimal point terminal and the common terminal.
Active "L", $I_{IL} \leqq$-1mA, "L"=0 ~ 0.8V, "H"=3.5 ~ 5V
Note: Those terminals are not isolated to the input.
Use a photo-coupler or switch to insulate.
It is essential when using the input floating.

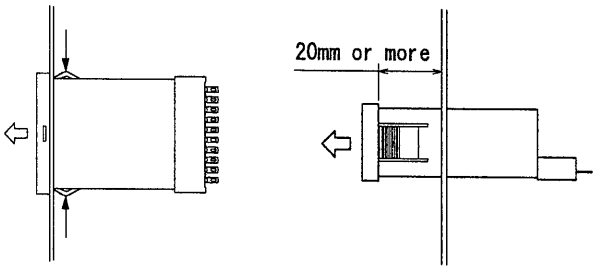
• Common (COM)
For Hold and Decimal point terminals.

• Power supply (+, -)
Use within the range from DC 4.75 to 26V.

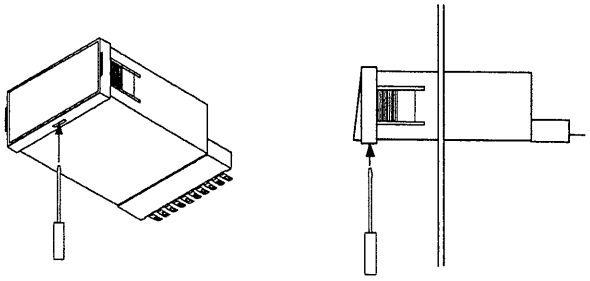
6. Removal method of the front panel

Remove the front panel according to the following procedure

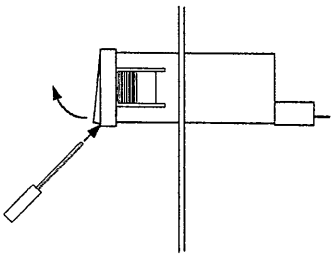
1) Switch off Power
2) Push the case stopper toward the body and take the body out 20mm or more. Away from the face of the board.



3) Use a small flat-bladed screwdriver (tip width: 3.0mm or less) to press the hole located under the case and push out the front panel.

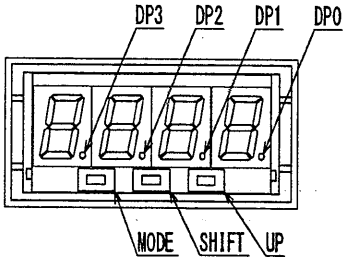


4) Insert the screwdriver between the front panel and case, and remove the front panel.



7. Setting method of each function

Figure of the front panel

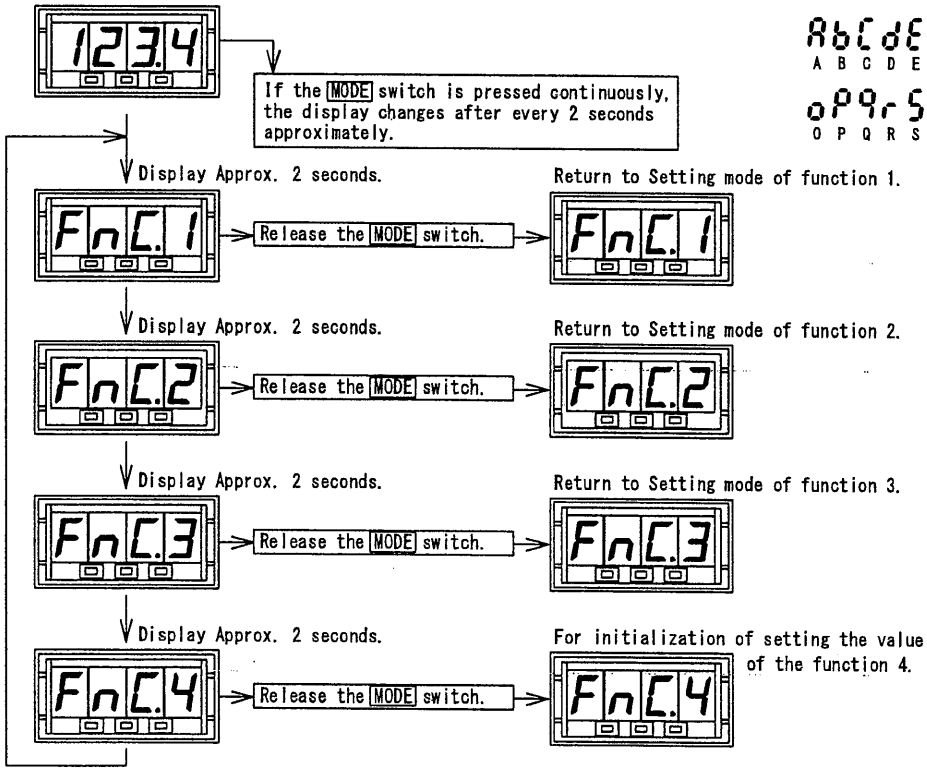


Switch operation
Switch is located at the back side. If it is difficult to push the switch, press lightly with a small flat-bladed screwdriver.

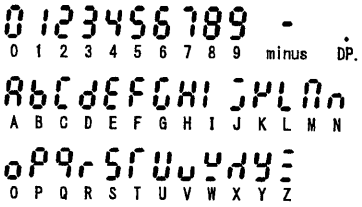
7.1 Items of the setting mode

Items	Name of the function	Display content	Initial setting at factory before delivery
FnC.1	Off setting	-1999～1999	0000
FnC.1	Full scale	-1999～1999	1999
FnC.1	Display cycle	SP. 1 (100ms) SP. 2 (400ms) SP. 3 (1s) SP. 4 (2s) SP. 5 (4s) SP. 6 (5s)	SP. 2 (400ms)
FnC.2	Zero suppress	ZS. 0 (Disable) ZS. 1 (Enable)	ZS. 0 (Disable)
FnC.2	Fixed-offset	oF. 0 (Disable) oF. 1 (Enable)	oF. 0 (Disable)
FnC.2	10^0 digit 0 fixing	Z0. 0 (Disable) Z0. 1 (Enable)	Z0. 0 (Disable)
FnC.2	Over Display	ou. 0(1 □□□,-1□□□) ou. 1(□ᵘᵘᵘ,□ⁿⁿⁿ)	ou. 0 (1 □□□,-1□□□)
FnC.2	Over Display level	oL. 0 (±1999) /oL. 1 (±130%) /oL. 2 (±100%)	oL. 0 (±1999)

7.2 Flow of the setting mode



7.3 LED Display



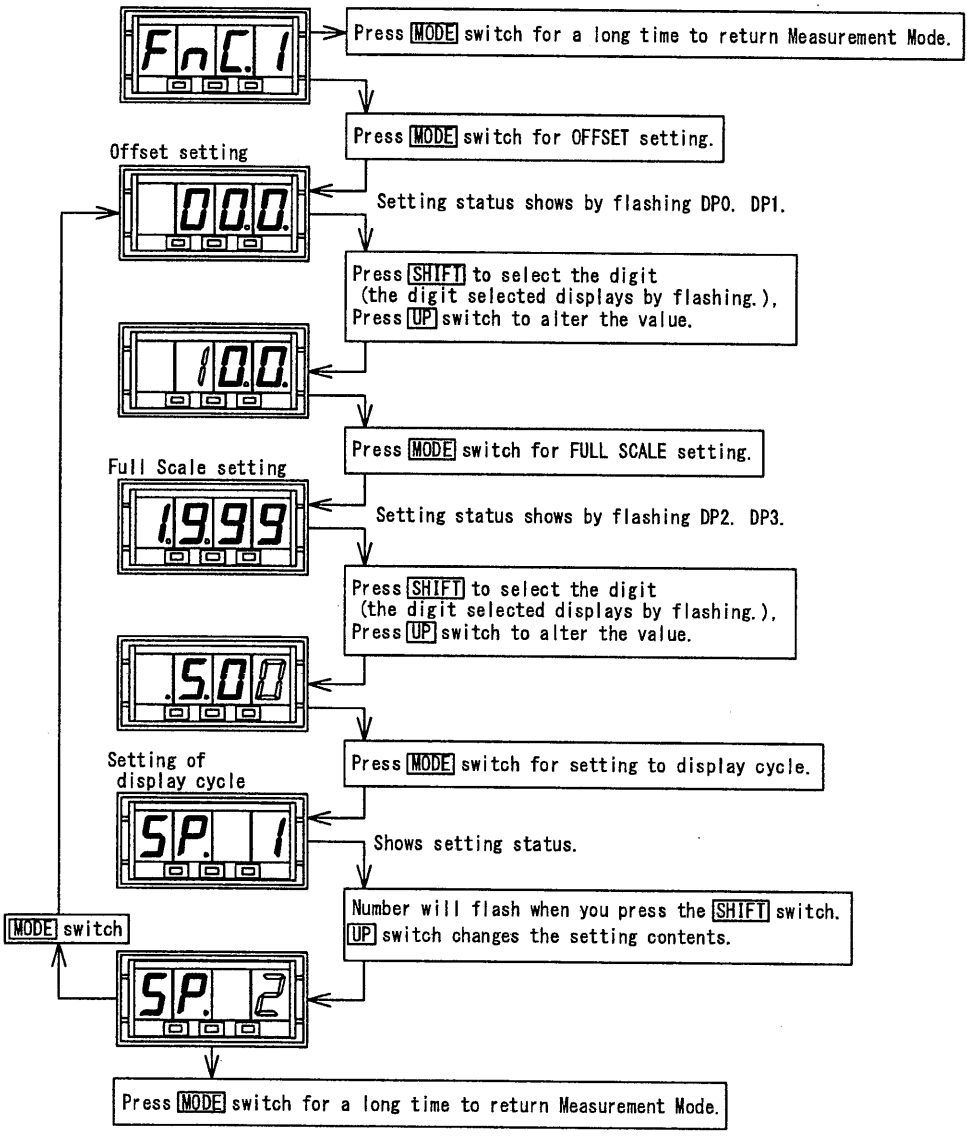
7.4 Each setting mode

If the MODE switch is pressed for a long time (Approx. 3 sec) during the setting mode, it stores the setting values and returns to measurement MODE.

[Setting Mode of Function 1]

Example of change

Offset	: 0 → 100
Full scale	: 1999 → 500
Display cycle	: SP1 → SP2



Up count of OFFSET, Full scale setting.

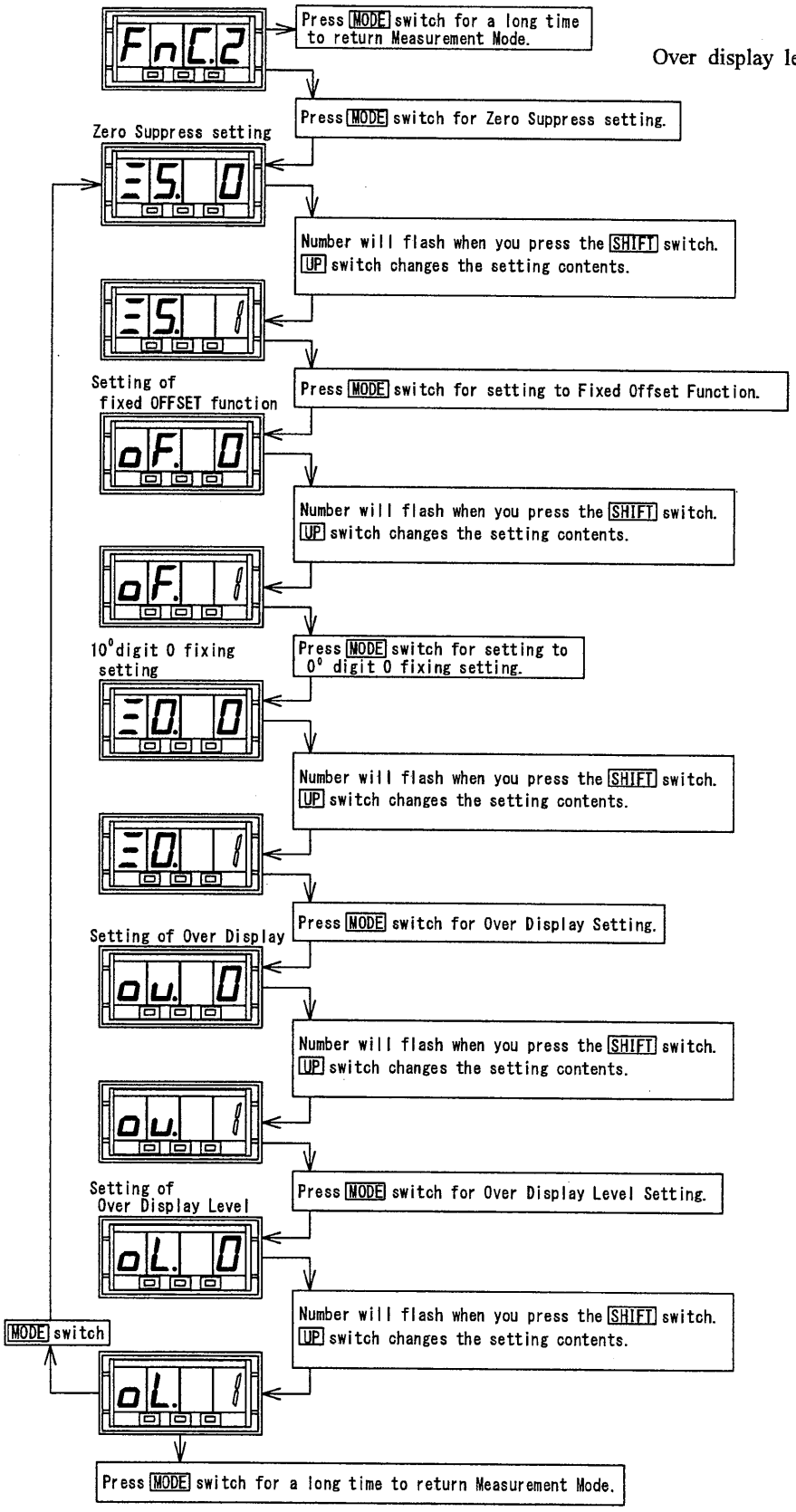
10^3digit 0 → 1 → -1 → - → 0

Other 0 → 1 → 2 →·····→ 8 → 9 → 0

[Setting Mode of Function 2]

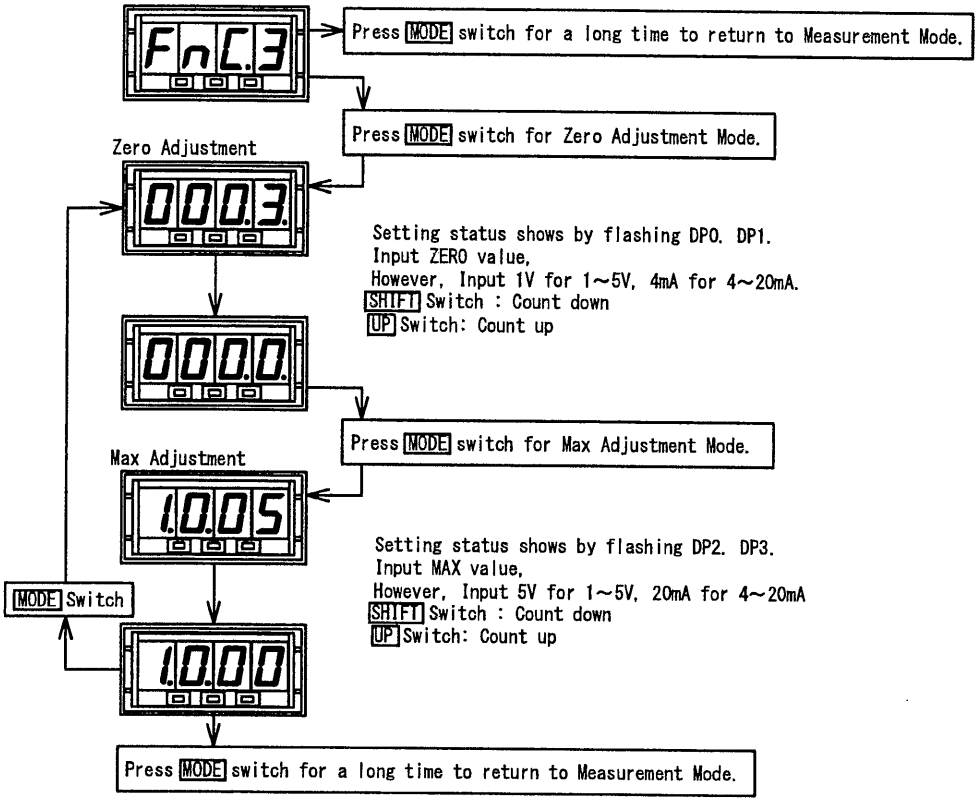
Example of Change

Zero-Suppress	: Disable →Enable
OFFSET fixing	: Disable → Enable
10^0 digit 0 fixing	: Disable → Enable
Over display	: 1□□□,-1□□□
Over display level	: ±1999→±130%

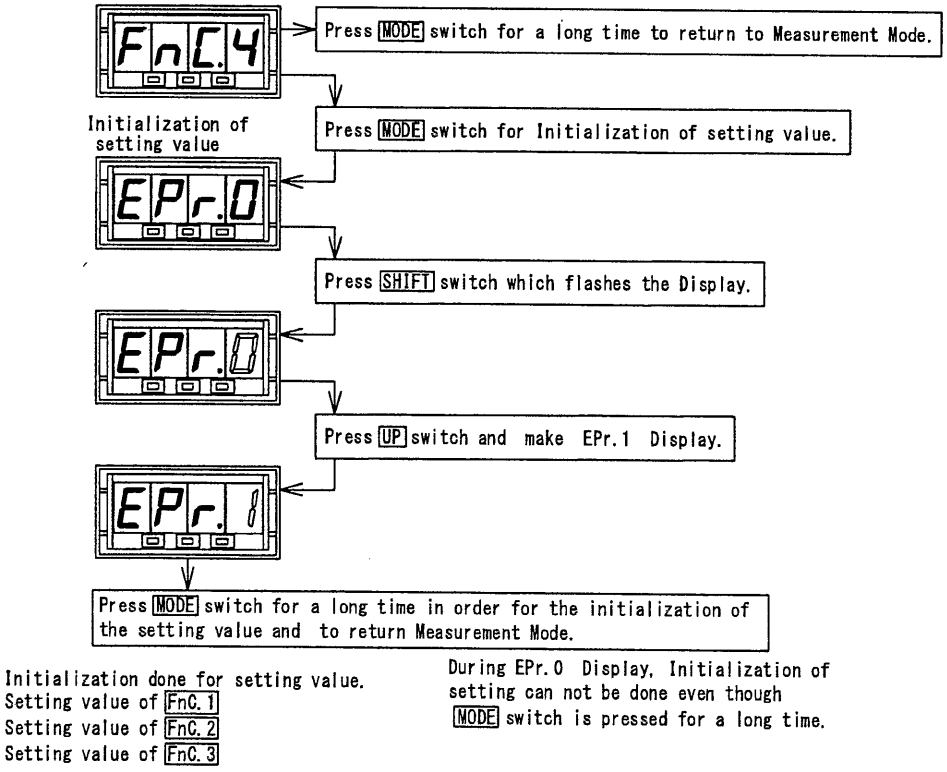


[Adjustment Mode of Function 3]

Example of change ZERO adjustment : 0003 → 0000
MAX adjustment : 1005 → 1000



[Initialization of setting value of the function 4]



8. Model designation

Model 3128-□-□-□
1 2 3

1 Measurement Input

Code	Measurement range	Input resistance	Accuracy ※1	Overload
02	±199.9mV	1MΩ	± (0.1% of rdg.+1digit)	DC ±100V
03	±1.999 V	6MΩ	± (0.1% of rdg.+1digit)	DC ±250V
04	±19.99 V	10MΩ	± (0.2% of rdg.+1digit)	DC ±250V
05	±199.9 V	10MΩ	± (0.2% of rdg.+1digit)	DC ±500V
09	1 ～ 5 V	5MΩ	± (0.2% of rdg.+2digit)	DC ±250V
V0	0 ～100mV	1MΩ	± (0.2% of rdg.+1digit)	DC ±100V
V1	0 ～ 1 V	1.3MΩ	± (0.2% of rdg.+1digit)	DC ±250V
V2	0 ～ 5 V	5MΩ	± (0.2% of rdg.+1digit)	DC ±250V
V3	0 ～10 V	10MΩ	± (0.2% of rdg.+1digit)	DC ±250V
12	±199.9 μA	1kΩ	± (0.2% of rdg.+1digit)	DC ± 2mA
13	±1.999 mA	100 Ω	± (0.2% of rdg.+1digit)	DC ± 50mA
14	±19.99 mA	10 Ω	± (0.2% of rdg.+1digit)	DC ±150mA
15	±199.9 mA	1 Ω	± (0.2% of rdg.+1digit)	DC ±500mA
16	±1.999 A	0.1 Ω ※2	± (0.3% of rdg.+1digit)	DC ± 3 A
19	4 ～ 20 mA	10 Ω	± (0.2% of rdg.+2digit)	DC ±150mA
A1	0 ～ 1 mA	200 Ω	± (0.2% of rdg.+1digit)	DC ± 30mA

※1 Accuracy : 23℃±5℃, at specified RH : 45～75%
Coefficient of temperature : ±200ppm/℃, At specified Operating Temperature Range : 0～50℃
※2 Rated shunt resistance : ±1.999A [-16]
External input connector : 0.1Ω

2 Color of display

Code	Descriptions
R	Red LED
G	Green LED

3 Option

Code	Function
Blank	N/A
A01	10^0 digit off
A02	absolute value display