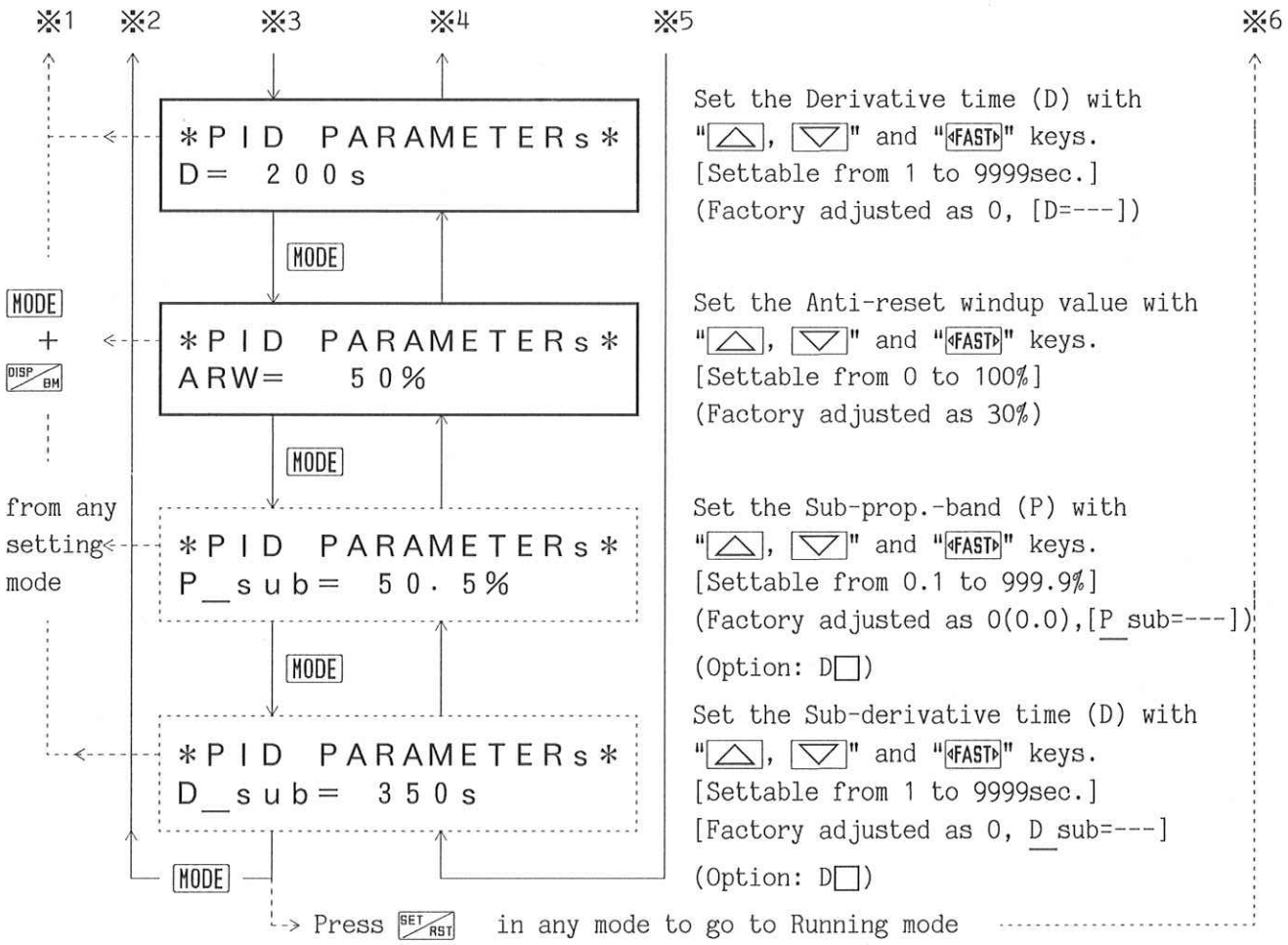
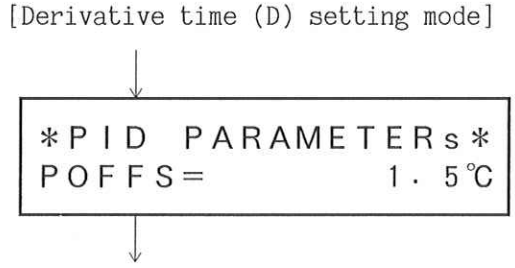


▪ Offset adjustment when PD controlling (*1)

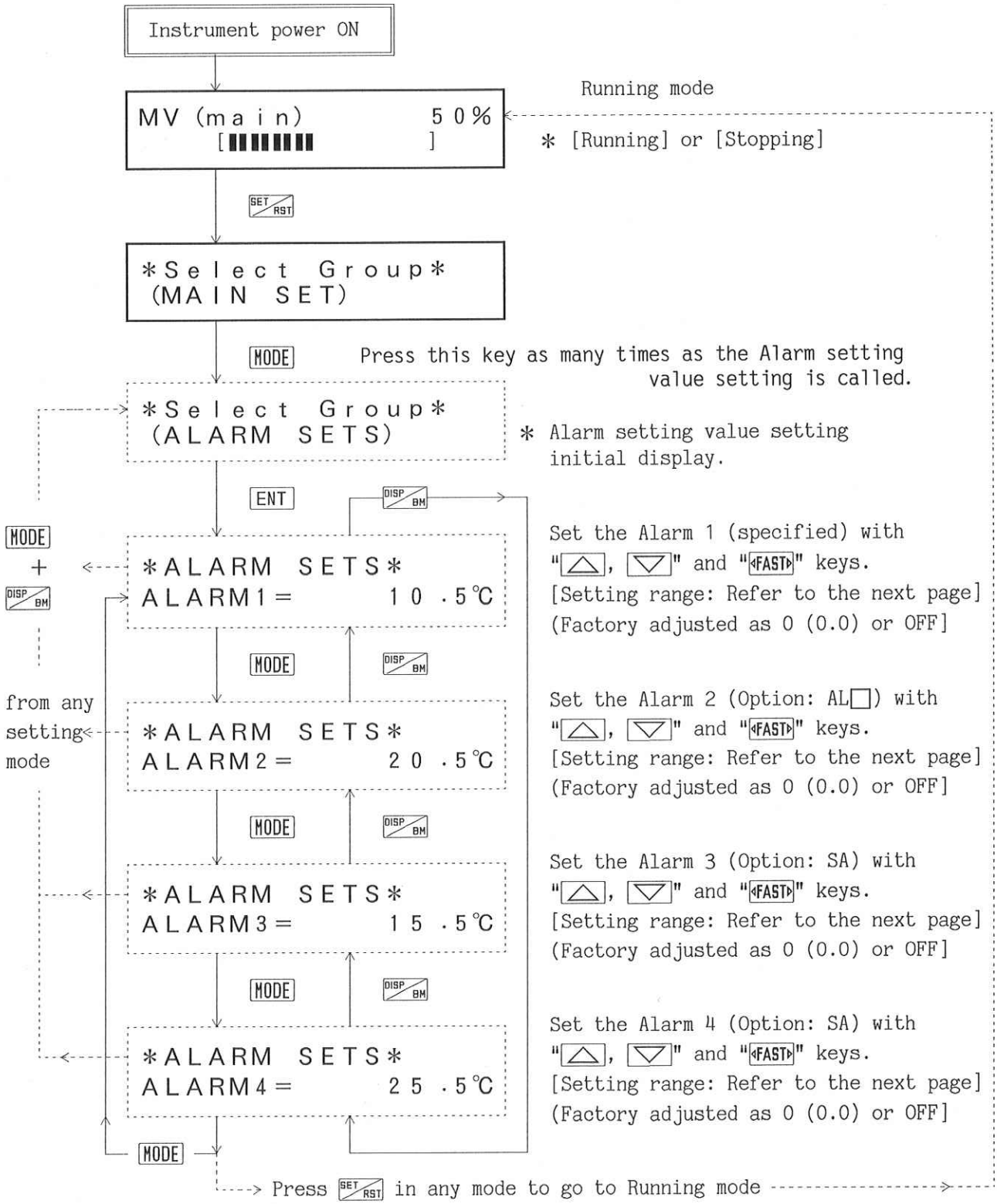


Adjust the Proportional band offset with "△, ▽" and "FAST" keys. [Settable from − Prop-band to+ Prop-band] [Factory adjusted as 0 (0.0)]

1-4 Alarm setting value setting (Option: H, AL□, AL□H, SA)

- It sets each parameter of the alarm setting value.
  If Alarm 1 (required to specify), Alarm 1 with standby function (Option: H), Alarm 2 (Option: AL□), Alarm 2 with standby function (Option: AL□H) or Alarm 3, 4 (Option: SA) is not designated, this item will not be called.
- All items are not required to set, set the only necessary items.
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Alarm setting value setting



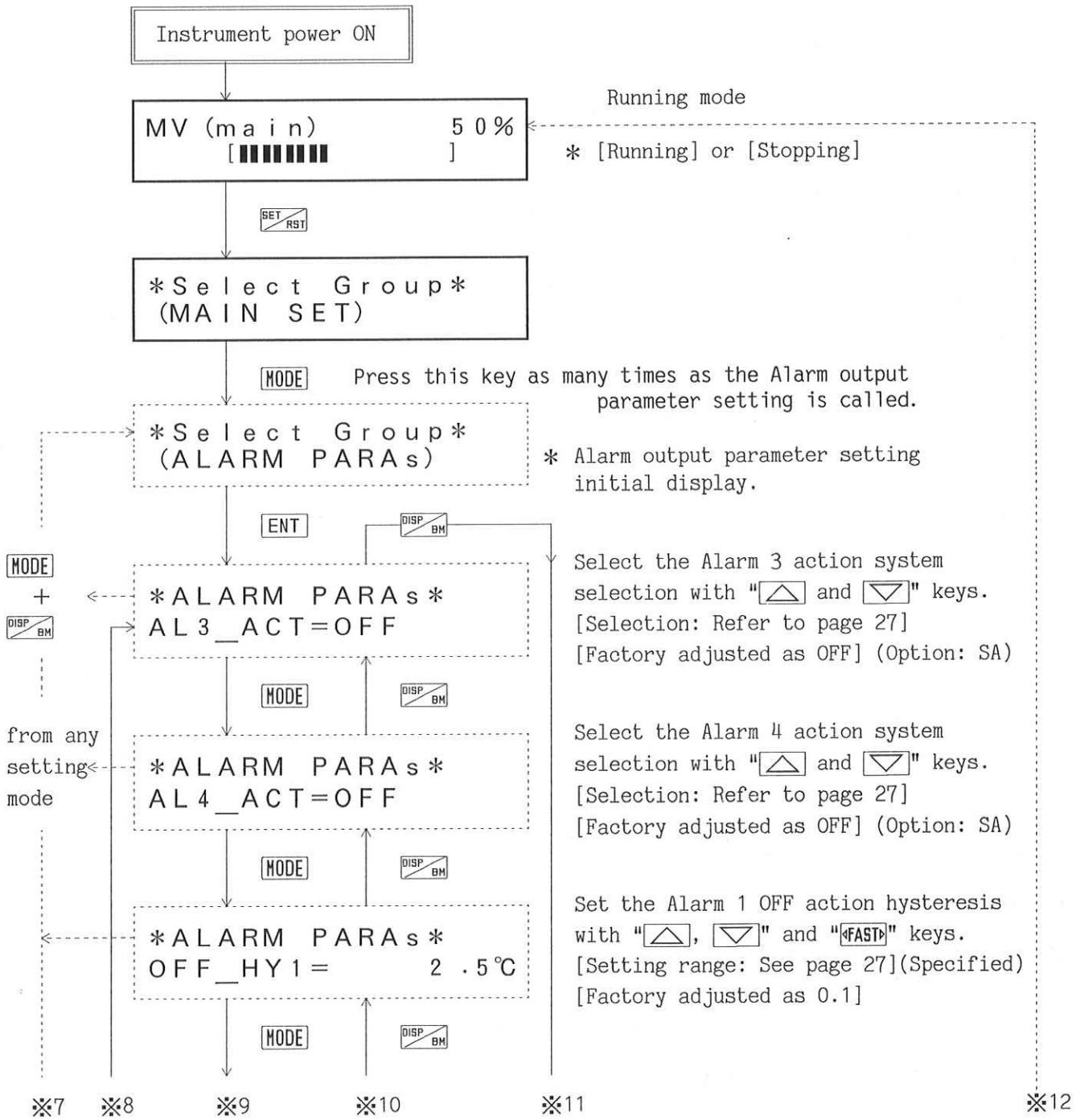
- Alarms settable range

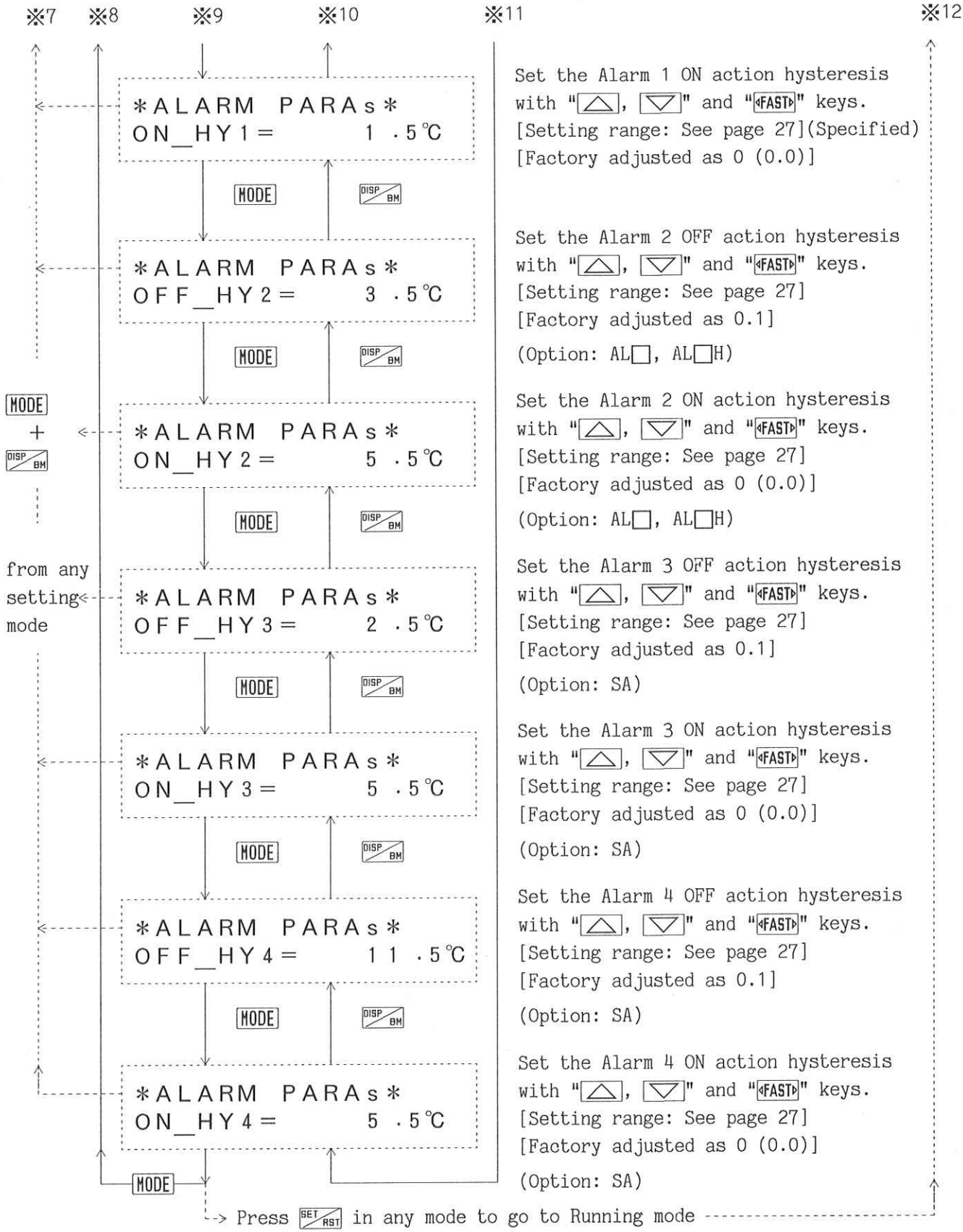
Alarm action	Settable range
High limit alarm	− scaling range span to + scaling range span
Low limit alarm	− scaling range span to + scaling range span
High/Low limit alarm	1 to scaling range span
High/Low limit range alarm	1 to scaling range span
High limit alarm w/standby	− scaling range span to + scaling range span
Low limit alarm w/standby	− scaling range span to + scaling range span
Hi/Lo limit alarm w/standby	1 to scaling range span
Process value alarm	Scaling from low limit to high limit setting value

1-5 Alarm output parameter setting (Option: H, AL□, AL□H, SA)

- It sets each parameter of the alarm output.
  If Alarm 1 (required to specify), Alarm 1 with standby function (Option: H), Alarm 2 (Option: AL□), Alarm 2 with standby function (Option: AL□H), or Alarm 3, 4(Option: SA) is not designated, this item will not be called.
- All items are not required to set, set the only necessary items.
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Alarm output parameter setting

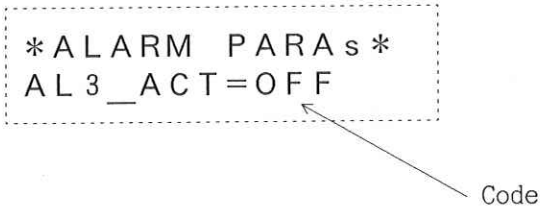



※7
※8
※9
※10
※11
※12
ALARM PARAs
ON_HY1= 1.5℃
MODE
DISP/BM
ALARM PARAs
OFF_HY2= 3.5℃
MODE
DISP/BM
MODE + DISP/BM
ALARM PARAs
ON_HY2= 5.5℃
MODE
DISP/BM
from any setting mode
ALARM PARAs
OFF_HY3= 2.5℃
MODE
DISP/BM
ALARM PARAs
ON_HY3= 5.5℃
MODE
DISP/BM
ALARM PARAs
OFF_HY4= 11.5℃
MODE
DISP/BM
ALARM PARAs
ON_HY4= 5.5℃
MODE
Set the Alarm 1 ON action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27](Specified)
[Factory adjusted as 0 (0.0)]
Set the Alarm 2 OFF action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0.1]
(Option: AL□, AL□H)
Set the Alarm 2 ON action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0 (0.0)]
(Option: AL□, AL□H)
Set the Alarm 3 OFF action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0.1]
(Option: SA)
Set the Alarm 3 ON action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0 (0.0)]
(Option: SA)
Set the Alarm 4 OFF action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0.1]
(Option: SA)
Set the Alarm 4 ON action hysteresis with "△, ▽" and "FAST" keys.
[Setting range: See page 27]
[Factory adjusted as 0 (0.0)]
(Option: SA)
→ Press SET/RST in any mode to go to Running mode

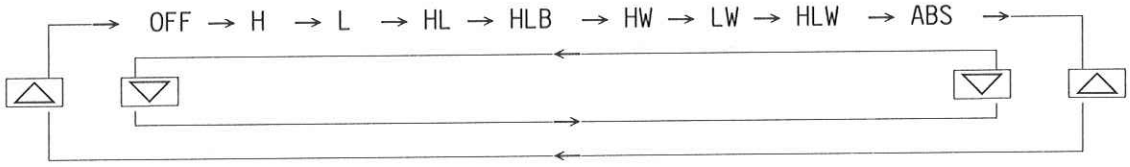
- Alarm 3 and Alarm 4 action system selection

Alarm action	Code	Alarm action	Code
No alarm action	OFF	High limit alarm w/standby	HW
High limit alarm	H	Low limit alarm w/standby	LW
Low limit alarm	L	Hi/Lo limit alarm w/standby	HLW
High/Low limit alarm	HL	Process value alarm	ABS
High/Low limit range alarm	HLB		

- Alarm 3 and Alarm 4 action system selection on LCD



Note: Selecting code changes with "△ or ▽" keys.

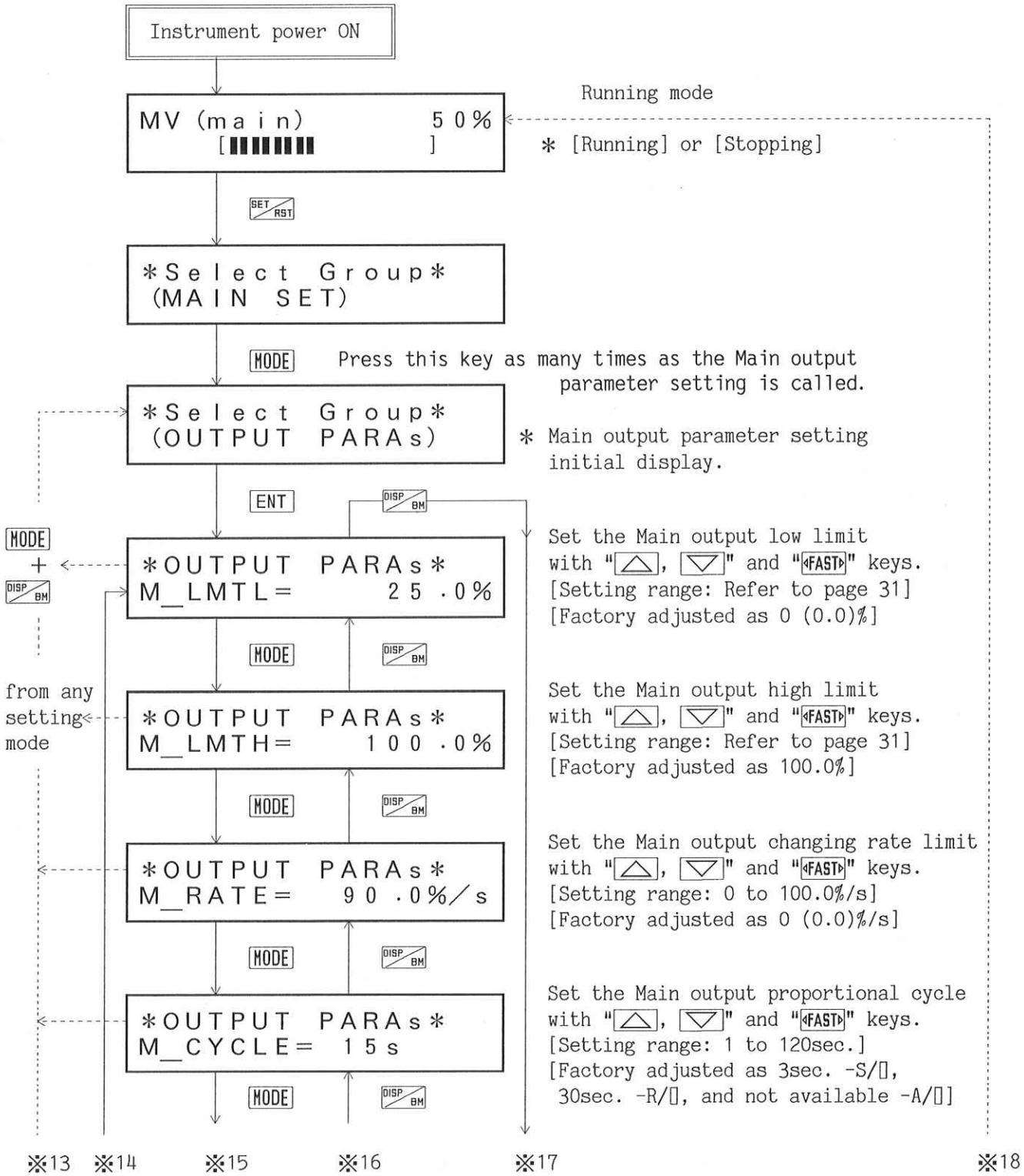


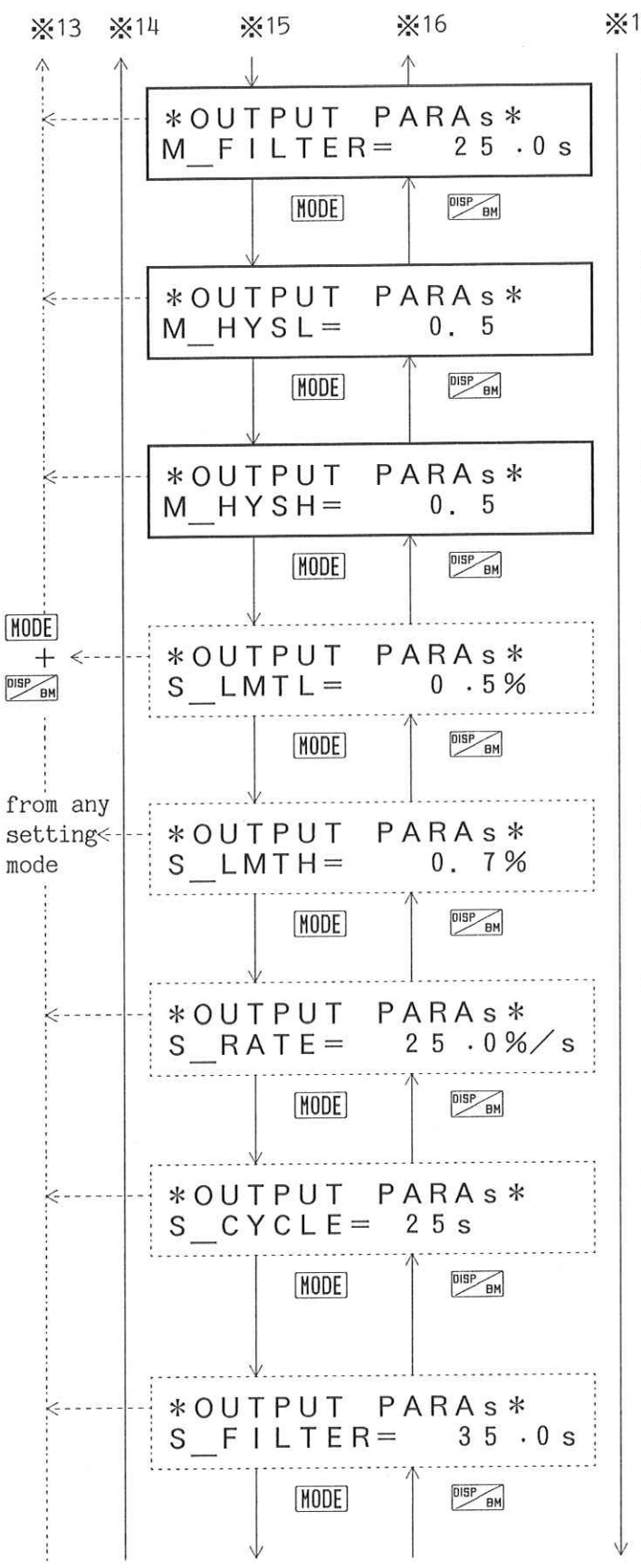
- Alarm setting range: 0 to 999 for DC voltage or current
  0.0 to 99.9 or 0 to 99 for Thermocouple or RTD
  (Decimal point is to be specified)

1-6 Main output parameter setting

- It sets each parameter of the main output.
- All items are not required to set, set the only necessary items.
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Main output parameter setting





Set the Main output filter time constant with "△", "▽" and "FAST" keys.
[Setting range: 0 to 100.0sec.]
[Factory adjusted as 0.1sec.]

Set the Main output ON-OFF action hysteresis low limit with "△", "▽" and "FAST" keys.
[Setting range: See page 30 *1]
[Factory adjusted as 0.5]

Set the Main output ON-OFF action hysteresis high limit with "△", "▽" and "FAST" keys.
[Setting range: See page 30 *1]
[Factory adjusted as 0.5]

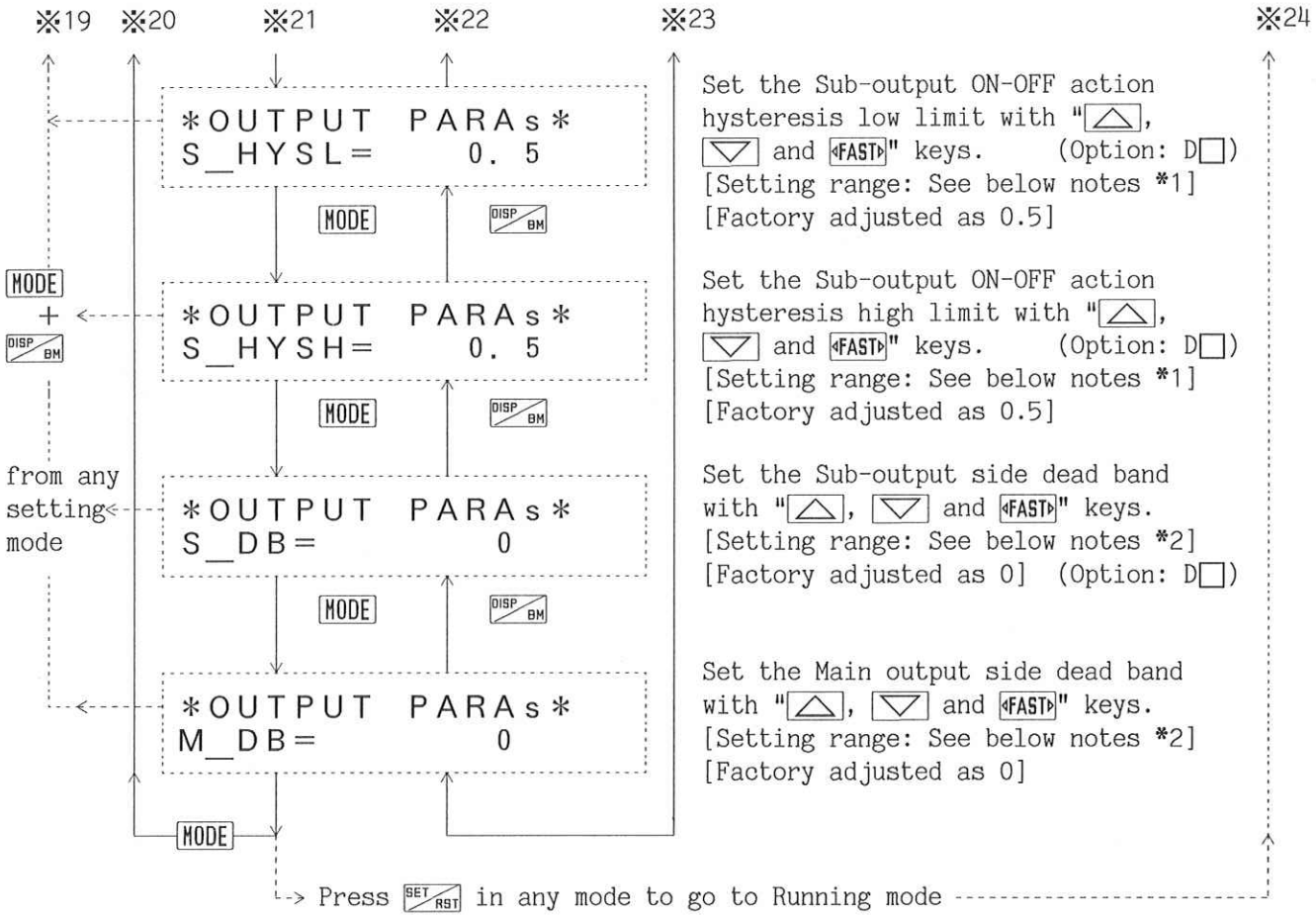
Set the Sub-output low limit with "△", "▽" and "FAST" keys.
(Option: D□)
[Setting range: Refer to page 31]
[Factory adjusted as 0 (0.0)%]

Set the Sub-output high limit with "△", "▽" and "FAST" keys.
(Option: D□)
[Setting range: Refer to page 31]
[Factory adjusted as 100.0%]

Set the Sub-output changing rate limit with "△", "▽" and "FAST" keys.
(Option: D□)
[Setting range: 0 to 100.0%/s]
[Factory adjusted as 0%/s]

Set the Sub-output proportional cycle with "△", "▽" and "FAST" keys.
(Option: D□)
[Setting range: 1 to 120sec.]
[Factory adjusted as 3sec. (DS), 30sec. (DR), and not available for (DA).

Set the Sub-output filter time constant with "△", "▽" and "FAST" keys.
(Option: D□)
[Setting range: 0 to 100.0sec.]
[Factory adjusted as 0.1sec.]



Notes: Setting range

(*1), High and Low limit hysteresis of Main output and Sub-output ON-OFF action,
when the input is thermocouple or RTD, 0.0 to 99.9
when another input, 0 to 999

(*2), Dead band of Main output and Sub-output,
when the input is thermocouple or RTD, -99.9 to 99.9
when another input, -999 to 999

*Decimal point is to be specified.

- Main output low limit setting range

  (The setting range differs from the type of main control output.)

Output type	Setting range
Current (A)	— 5.0 to Main output high limit setting value (%)
Non-contact voltage (S)	0(0.0)to Main output high limit setting value (%)
Relay (R)	0(0.0)to Main output high limit setting value (%)

- Main output high limit setting range

  (The setting range differs from the type of main control output.)

Output type	Setting range
Current (A)	Main output low limit setting value to 105.0%
Non-contact voltage (S)	Main output low limit setting value to 100.0%
Relay (R)	Main output low limit setting value to 100.0%

- Sub-output low limit setting range

  (The setting range differs from the type of sub-control output.)

Output type	Setting range
Current (A)	— 5.0 to Sub-output high limit setting value (%)
Non-contact voltage (S)	0(0.0)to Sub-output high limit setting value (%)
Relay (R)	0(0.0)to Sub-output high limit setting value (%)

- Sub-output high limit setting range

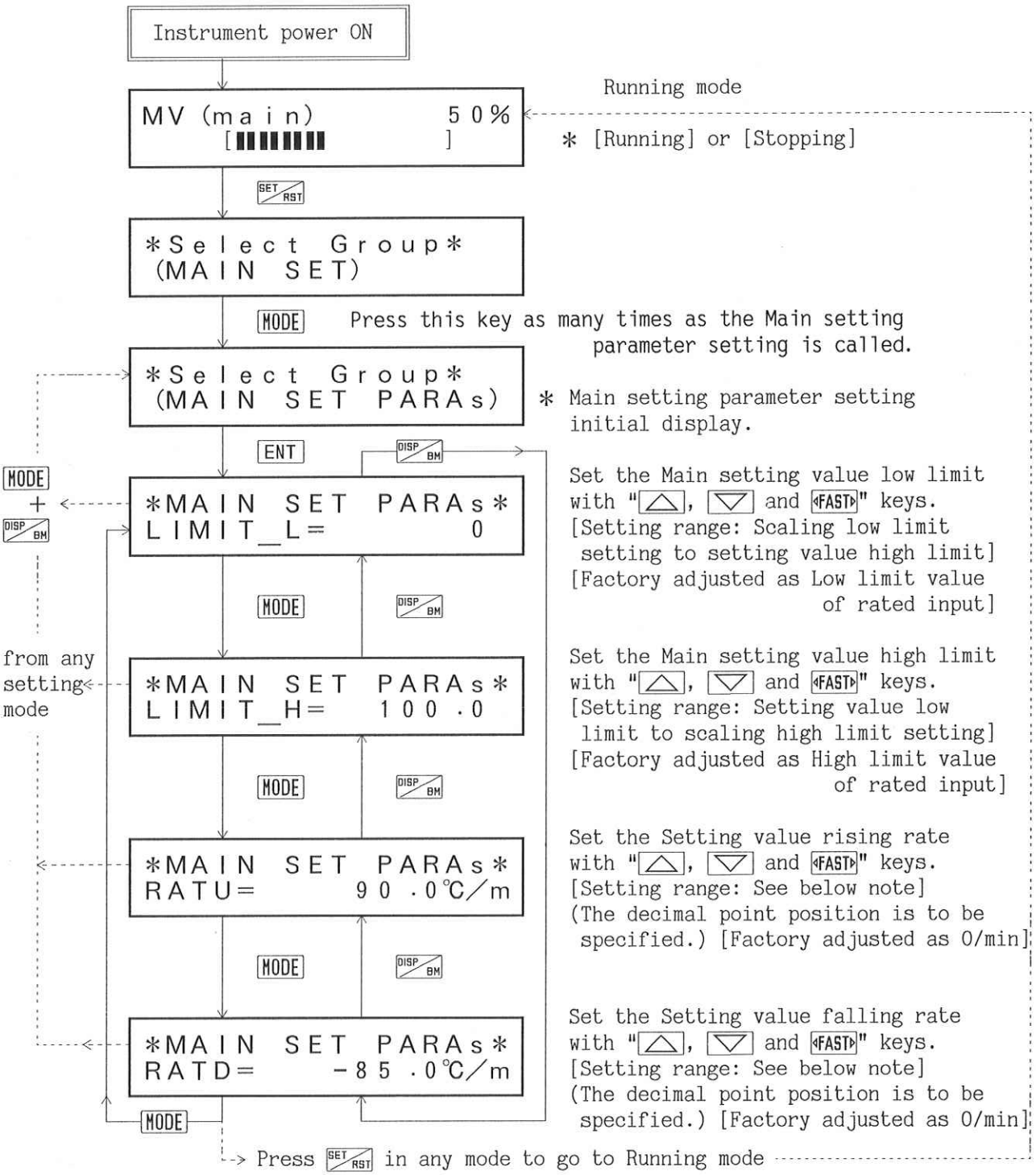
  (The setting range differs from the type of sub-control output.)

Output type	Setting range
Current (A)	Sub-output low limit setting value to 105.0%
Non-contact voltage (S)	Sub-output low limit setting value to 100.0%
Relay (R)	Sub-output low limit setting value to 100.0%

1-7 Main setting parameter setting

- It sets each parameter of the Main setting.
- All items are not required to set, set the only necessary items.
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Main setting parameter setting



Note: Main setting rising or falling rate setting range

Rising : Thermocouple or RTD input, 0 to 9999.9/min. or 0 to 9999/min.
Another input, 0 to 99999/min.

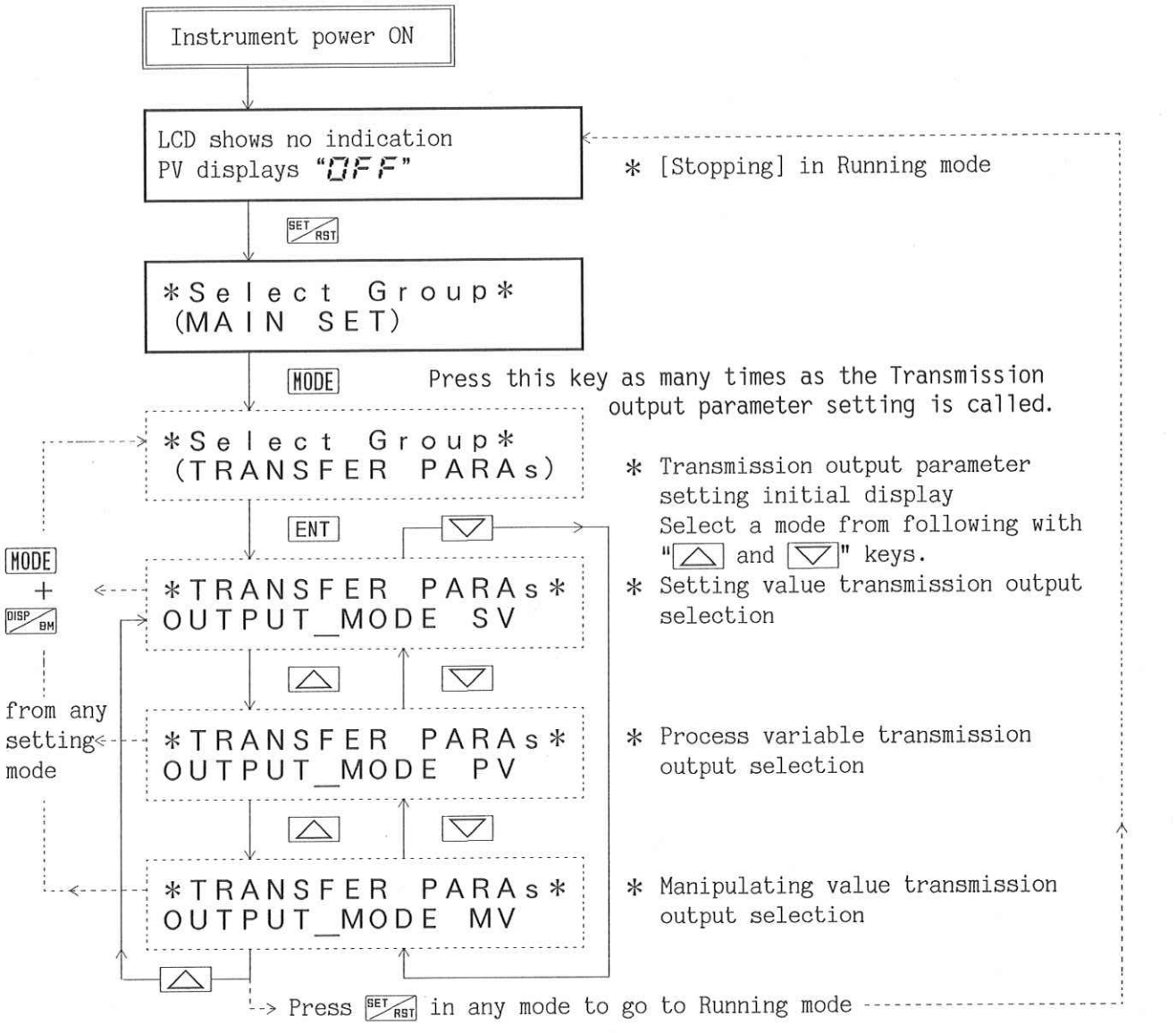
Falling: Thermocouple or RTD input, -9999.9 to 0/min. or -9999 to 0/min.
Another input, -99999 to 0/min.

*Decimal point is to be specified.

1-8 Transmission output parameter setting: Option code [SVT□, PVT□, MVT□]

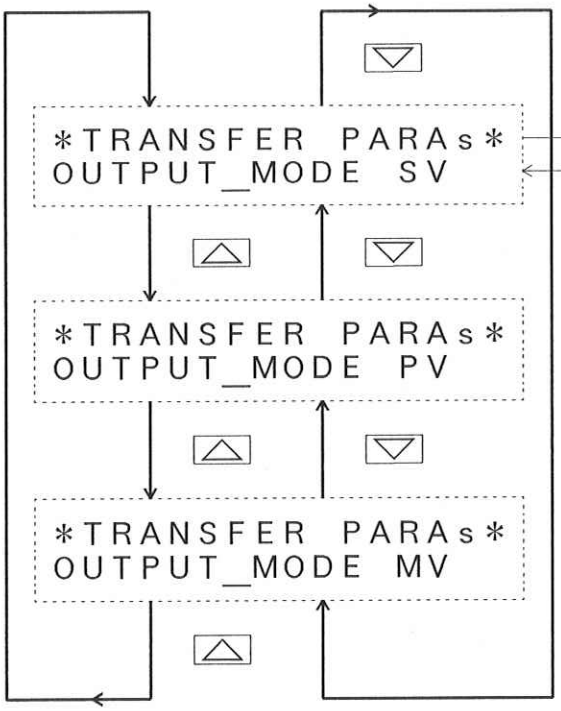
- Set each parameter of transmission output.
  [Operate this setting, when using the controller by the output excepting ordered one.]
  If the option: Setting value transmission output (current) [Option: SVTA], Setting value transmission output (voltage) [Option: SVTV], Input value transmission output (current) [Option: PVTA], Input value transmission output (voltage) [Option: PVTV], Manipulating value transmission output (current) [Option: MVTA] or Manipulating value transmission output (voltage) [Option: MVTV] is not designated, the option cannot be called.
- All items are not required to set, set the only necessary items.
- Operate the setting in Running mode [Stopping].
  (In Running mode [Stopping], there are 3 kinds of indication See page 52, 53, in this manual, it is described as LCD shows no indication and PV displays "OFF".)
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Transmission output parameter setting

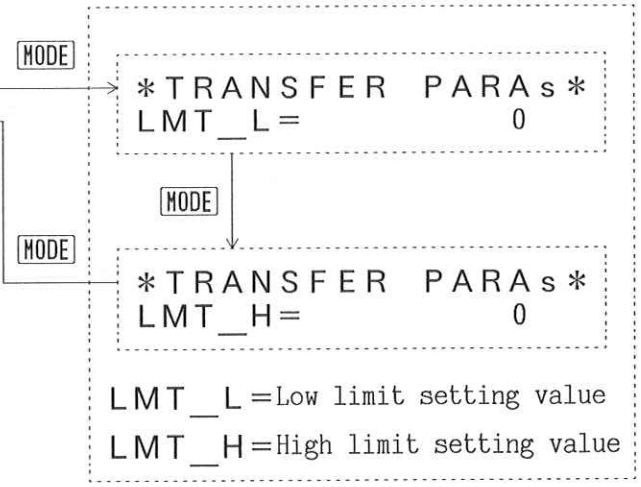


* See the next page for the value setting.

- Output kind selection



- Setting value high and low limit setting (Common display)



Notes: 1. LCD indications are common to the setting for Setting value transmission output (SV), Process variable transmission output (PV) and Manipulating value transmission output (MV).

2. ▪ Select the setting items (SV), (PV) and (MV) with "△ and ▽" keys.
▪ Change the mode from selection to setting with "MODE" key.
(If "MODE" key is pressed after the high limit value is set, the mode turns to transmission output kind selection.)
▪ Set each setting values with "△, ▽ and ◁FAST▷" keys.

3. Settable range
▪ (SV) and (PV): Scaling span
▪ (MV) : 0 (0.0) to 100.0%
However, in case of Current output type (MV), it is −5.0 to 105.0%

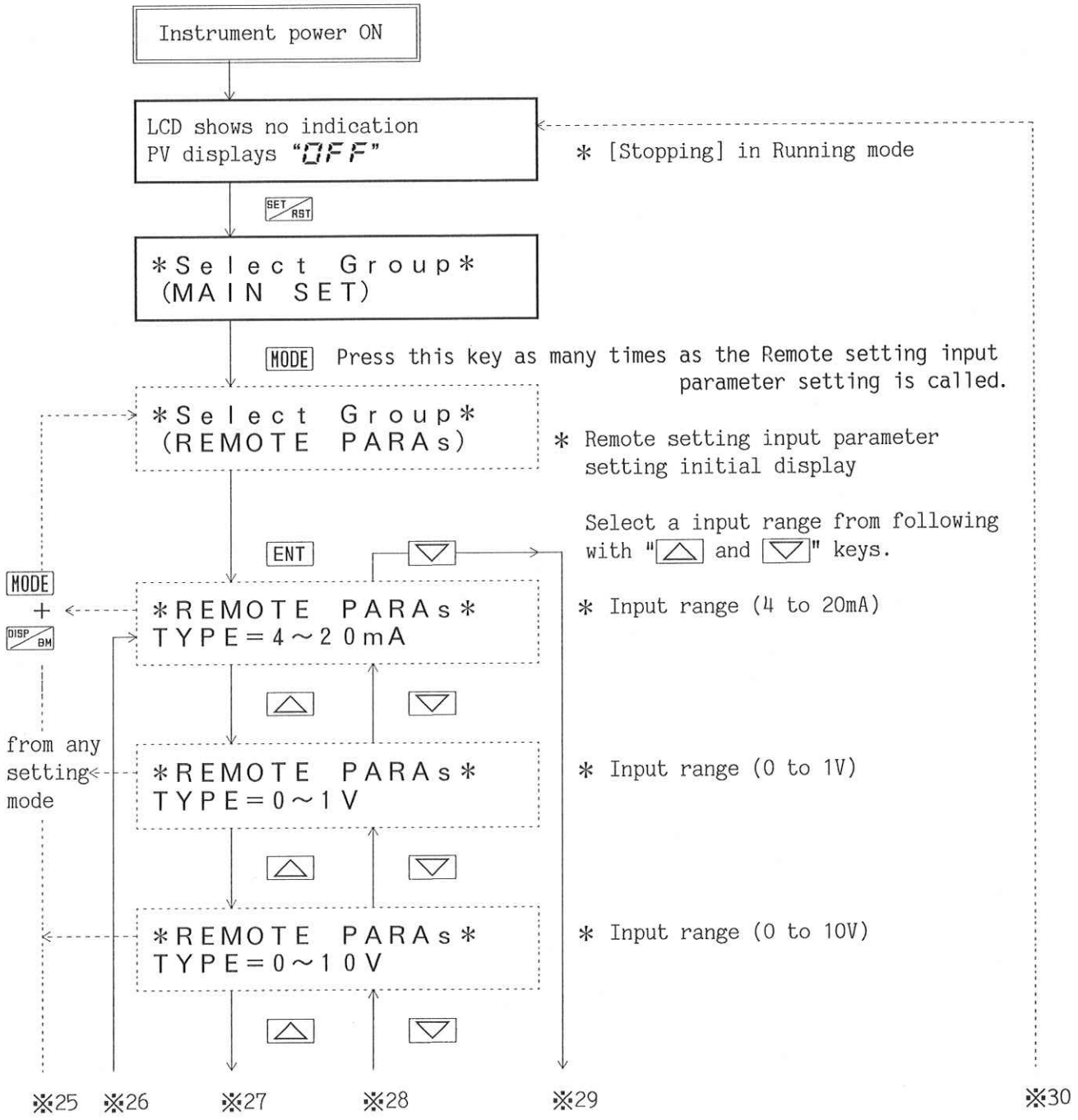
4. Factory adjusted as specified. [whichever SV, PV or MV]

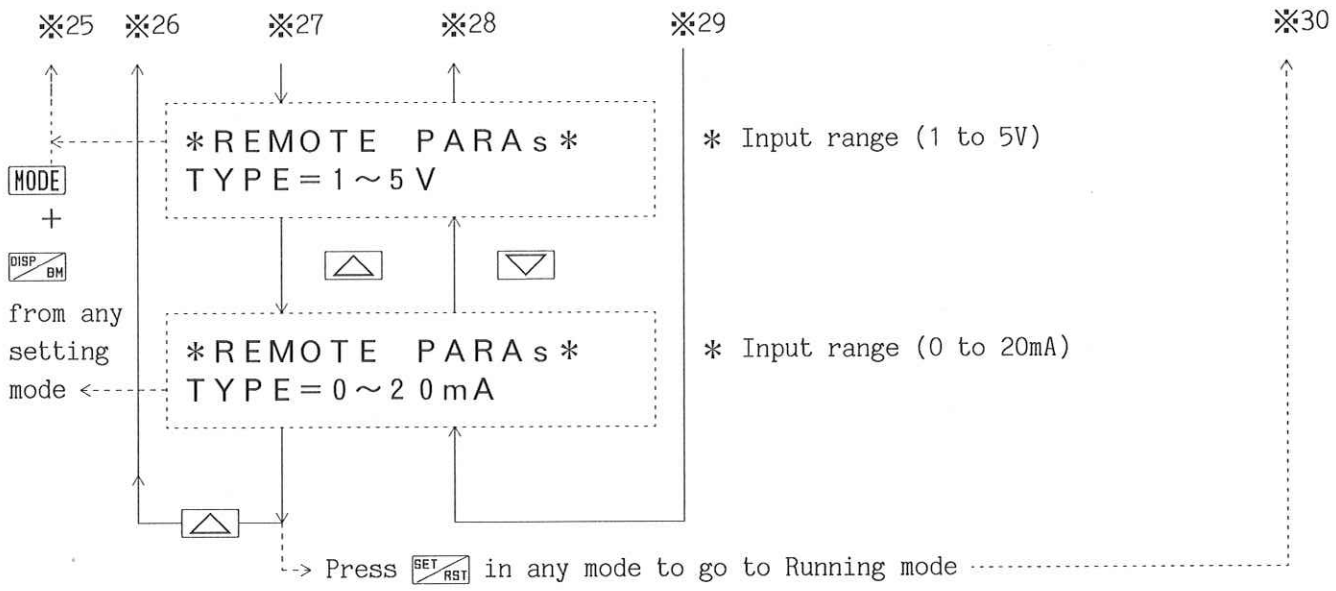
Type	Transmission output low limit value setting	Transmission output high limit value setting
SV	Rated low limit value	Rated high limit value
PV	Rated low limit value	Rated high limit value
MV	0%	100.0%

1-9 Remote setting input parameter setting (Option code: E□)

- Set each parameter of external (remote) setting input [Input range selection, Input range low limit value setting and Input range high limit value setting].
  [Operate this setting, when using the input range excepting ordered one.]
- All items are not required to set, set the only necessary items.
- Operate the setting in Running mode [Stopping].
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

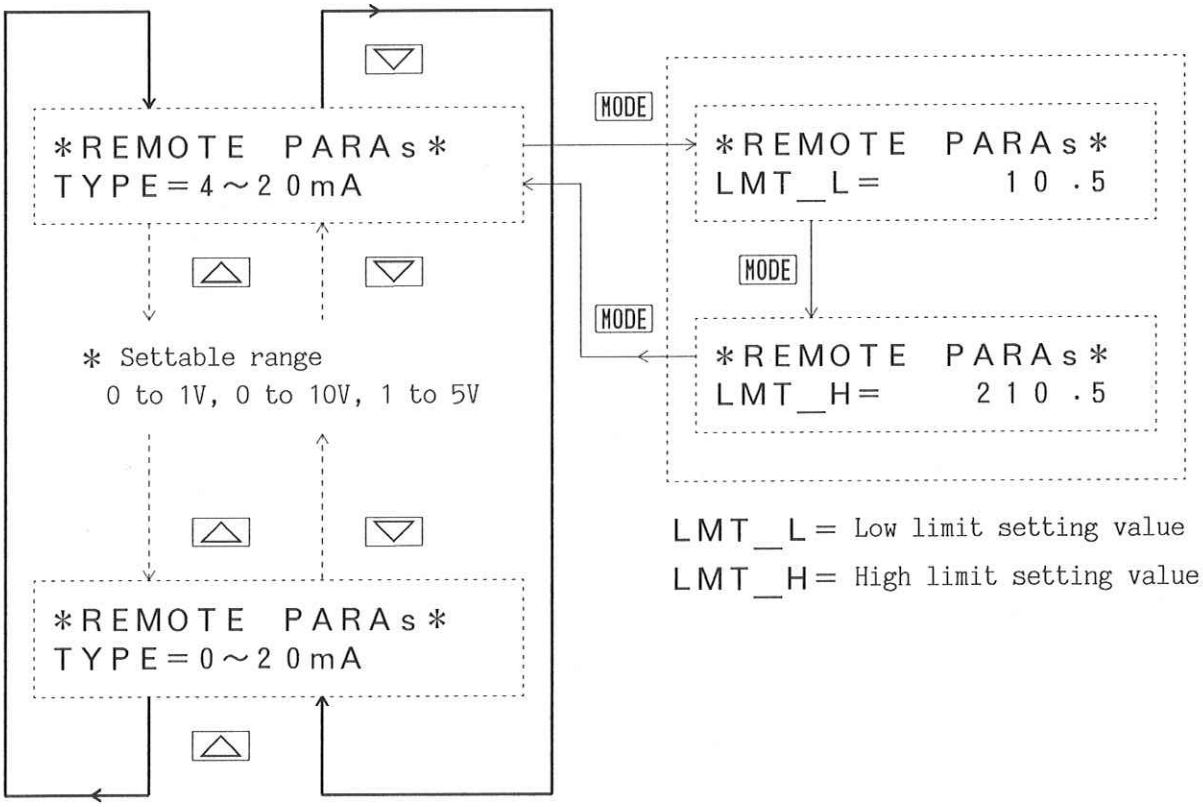
● Remote setting input parameter setting





▪ Input range selection

▪ High/Low limit setting value setting



LMT_L= Low limit setting value

LMT_H= High limit setting value

Notes:

1. Select the input ranges with "△ and ▽" keys.
2. Select the setting items (LMT_L, LMT_H) with "MODE" key.
3. Set the setting values (LMT_L, LMT_H) with "△, ▽ and ◁FAST▷" keys.
4. Settable range [Common to the setting items Low and High limit setting value]

   from Scaling low limit setting value − Input scaling range span/2
   to Scaling high limit setting value + Input scaling range span/2

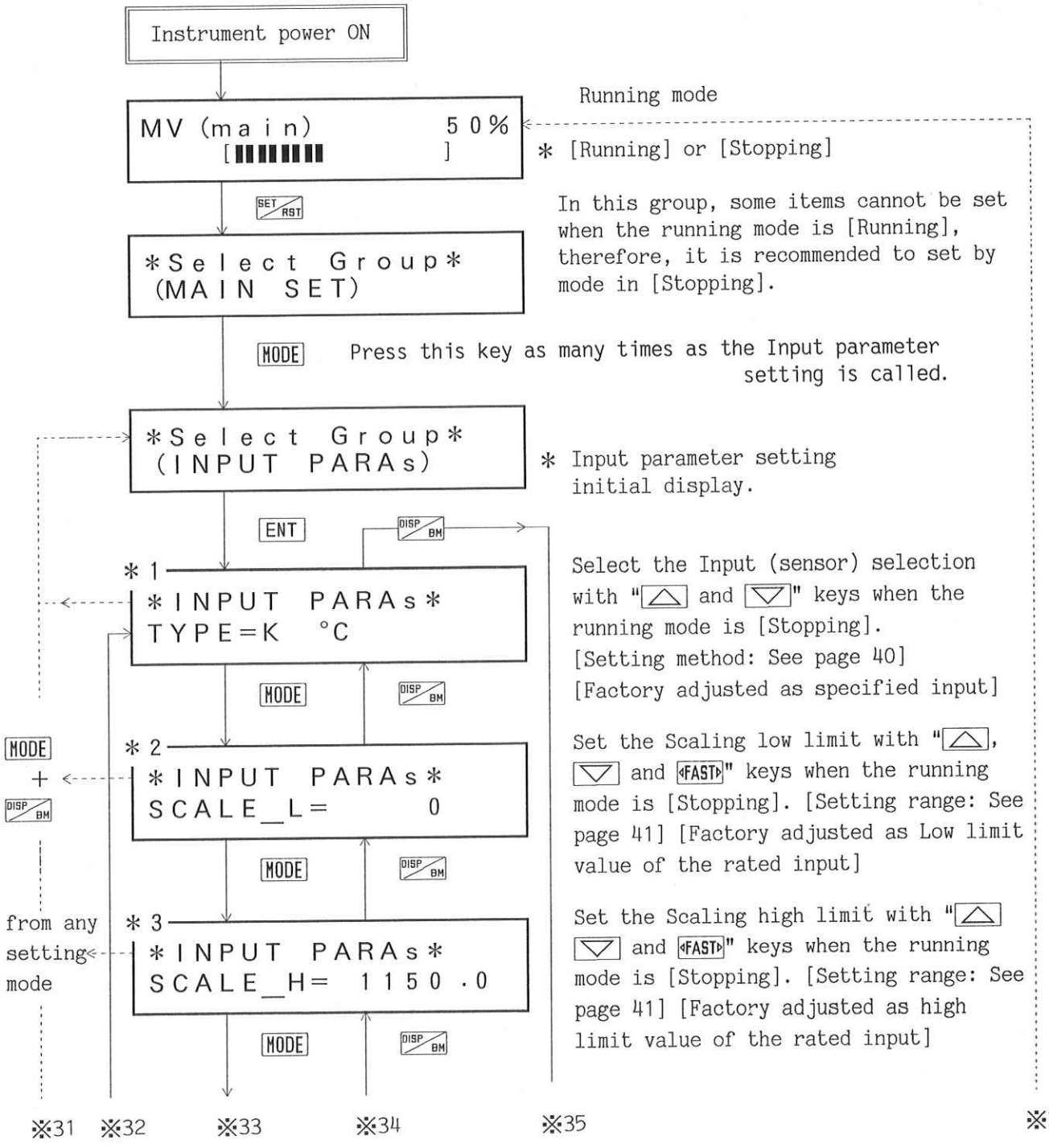
   * However, the minimum value is −19999.
   * LCD indication: When setting low limit, LMT_L=setting value
     When setting high limit, LMT_H=setting value
   * When changing the input range (mA ⇔ V), DIP switch change is required.
     (See page 5)
5. Factory adjusted as,
   Input range : 4 to 20mA (If not specified.)
   Low limit setting value : Low limit value of rated input.
   High limit setting value: High limit value of rated input.
6. Each input range is common to setting value (LMT_L, LMT_H) setting LCD and setting methods.
7. External analog signal should be matched to the input range selected. For example, in case input range is 0 to 1V, connect the analog signal in DC voltage according to 0V (min.) to 1V (max.) to the terminals ⑭ (+) and ⑮ (−).
8. This option (E□) cannot be applied together with the option (CC) [Cascade control].

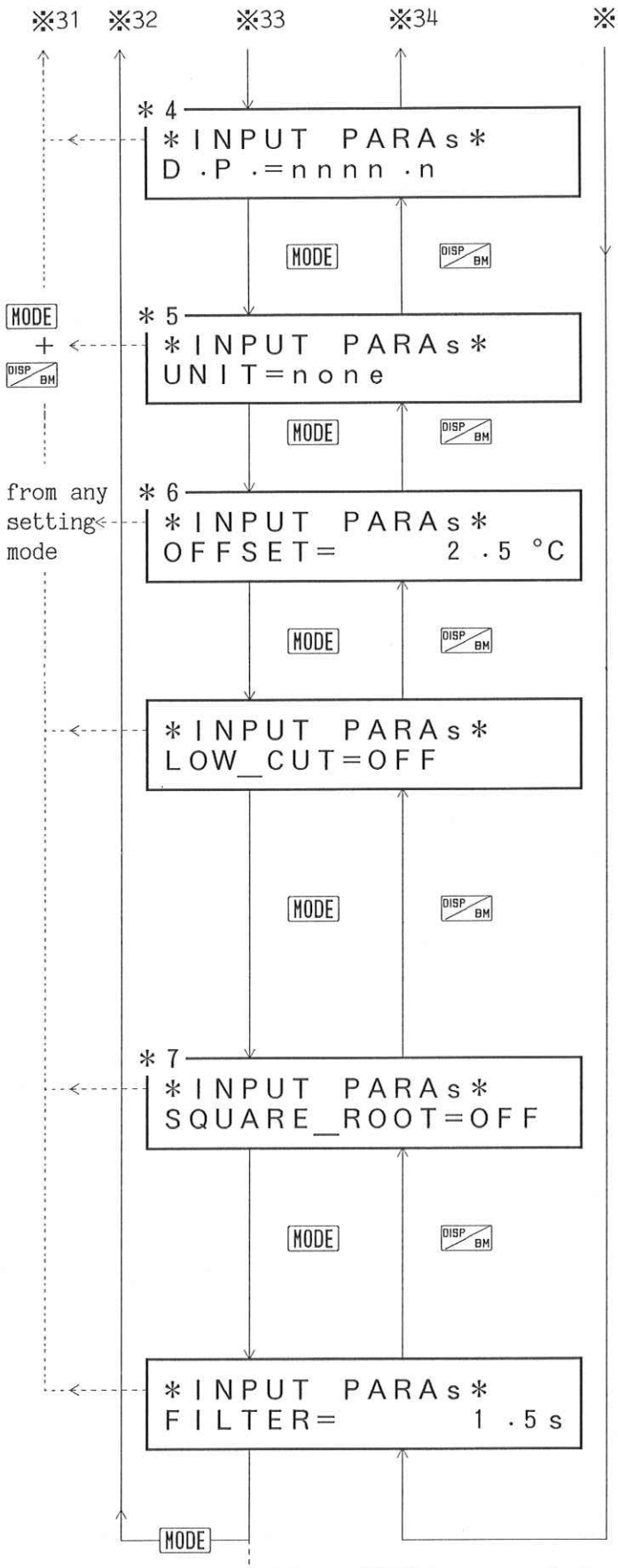
1-10 Input parameter setting

＊ This setting is applied when using the input excepting ordered one.

- Set the input parameters (Scaling low limit value, Scaling high limit value, Decimal point place, Input [sensor] selection, Unit selection, Sensor correcting value, Low level cut off function, Square root extraction function and Input filter time constant).
- All items are not required to set, set the only necessary items.
- DIP switch change may be required by the selection of the input kind. (See page 5)
- Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Input parameter setting





Set the Decimal point place with "△ and ▽" keys when the running mode is [Stopping].
[Setting method: See page 42]
[Factory adjusted as nnnn._n]

Select the Unit selection with "△ and ▽" keys when the running mode is [Stopping].
[Setting method: See page 43]
[Factory adjusted as none]

Set the Sensor correction value with "△, ▽ and FAST" keys when the running mode is [Stopping] or [Running].
[Settable: ±10% of scaling span]
[Factory adjusted as 0]

Set the Low level cut off function with "△, ▽ and FAST" keys when the running mode is [Stopping] or [Running].
[Setting range: 0 to 25.00%] When setting the value less than 0.01, it indicates OFF.
＊ This item is called only when the input is selected as DC Voltage or Current.
[Factory adjusted as OFF]

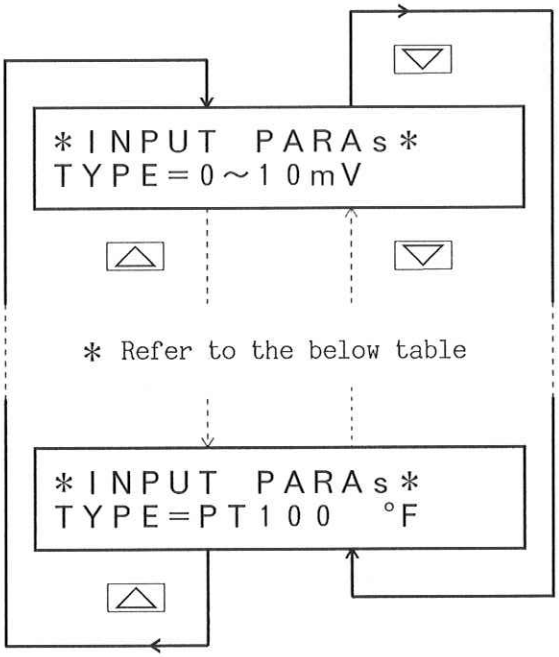
Designate the Square root extraction function with "△ and ▽" keys when the running mode is [Stopping] or [Running].
[Setting method: See page 43]
＊ This item is called only when the input is selected as DC Voltage or Current.
[Factory adjusted as OFF]

Set the Input filter time constant setting with "△, ▽ and FAST" keys when the running mode is [Stopping] or [Running].
[Settable: 0.1 to 100.0sec.]
[Factory adjusted as 0 (0.0)sec.]

■ Setting range, Setting method and Selecting method (Common to the Cascade control: CC)

① Input (Sensor) selecting method(*1)

＊ The initial display is as specified.



DC voltage (0 to 10mVdc) input

RTD (Pt100) input, Unit: ℉

Kind of sensor	Range, Unit
Thermocouple (K)	℃
Thermocouple (J)	℃
Thermocouple (R)	℃
Thermocouple (S)	℃
Thermocouple (PL-Ⅱ)	℃
Thermocouple (B)	℃
Thermocouple (E)	℃
Thermocouple (T)	℃
Thermocouple(W/Re5-26)	℃
Thermocouple (N)	℃
Thermocouple (K)	℉
Thermocouple (J)	℉
Thermocouple (R)	℉
Thermocouple (S)	℉
Thermocouple (PL-Ⅱ)	℉
Thermocouple (B)	℉

Kind of sensor	Range, Unit
Thermocouple (E)	℉
Thermocouple (T)	℉
Thermocouple(W/Re5-26)	℉
Thermocouple (N)	℉
RTD (Pt100)	℃
RTD (Pt100)	℉
DC voltage	0 to 10mV
DC voltage	0 to 100mV
DC voltage	-10 to 10mV
DC voltage	0 to 1V
DC voltage	0 to 10V
DC voltage	-1 to 1V
DC voltage	1 to 5V
DC current	0 to 20mA
DC current	4 to 20mA

＊ Between DC voltage (0 to 10mVdc) and RTD (Pt100), "△" key feeds the item forwardly and "▽" key backwardly.

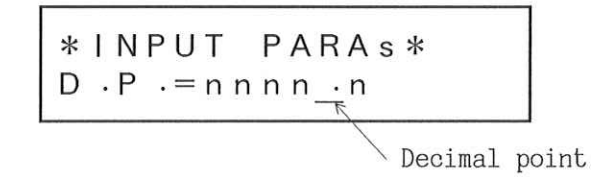
＊ DIP switch change may be required when changed the input kind. (See page 5)

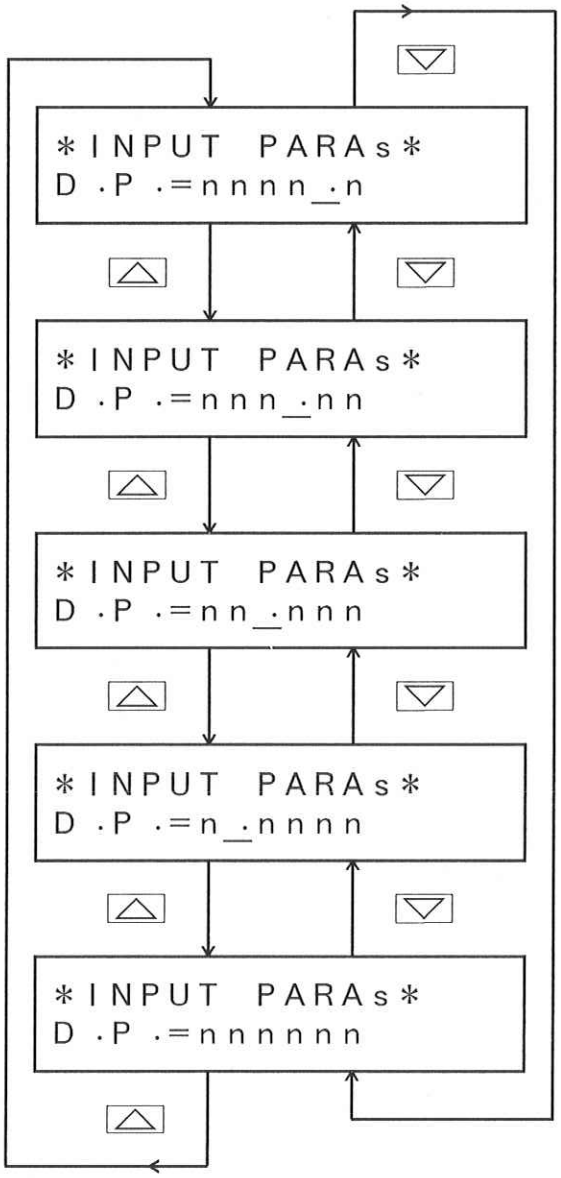
② Scale range (Scaling low limit setting value, Scaling high limit setting value) (*2, *3)

- The range differs from the input (sensor) kinds.
- The scaling is changeable to no decimal point when the input type is selected the thermocouple or RTD.
- The decimal point place is changeable when the input type is selected DC current or voltage.

Kind of sensor	Scaling range	
Thermocouple K	0 to 1370.0℃	0 to 2500.0℉
Thermocouple J	0 to 1000.0℃	0 to 1800.0℉
Thermocouple R	0 to 1760.0℃	0 to 3200.0℉
Thermocouple S	0 to 1760.0℃	0 to 3200.0℉
Thermocouple PL－Ⅱ	0 to 1390.0℃	0 to 2500.0℉
Thermocouple B	0 to 1820.0℃	0 to 3300.0℉
Thermocouple E	0 to 1000.0℃	0 to 1800.0℉
Thermocouple T	-270.0 to 400.0℃	-450.0 to 750.0℉
Thermocouple W/Re5-26	0 to 2315.0℃	0 to 4200.0℉
Thermocouple N	0 to 1300.0℃	0 to 2300.0℉
RTD Pt100	-200.0 to 850.0℃	-200.0 to 1500.0℉
DC current, DC voltage	-1999.9 to 2000.0	

③ Decimal point place designating method (*4)





* This decimal point place cannot be selected when the input type is selected Thermocouple or RTD.

* The same as the above.

* The same as the above.

"△" key feeds the item forwardly and "▽" key backwardly.