

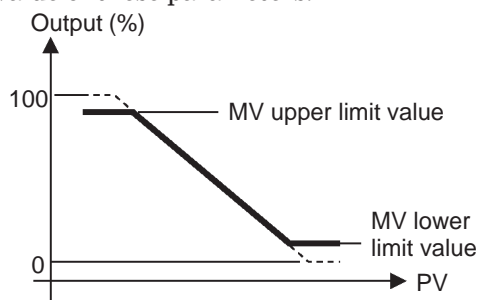
Operating Condition Restrictions

Manipulated variable restrictions

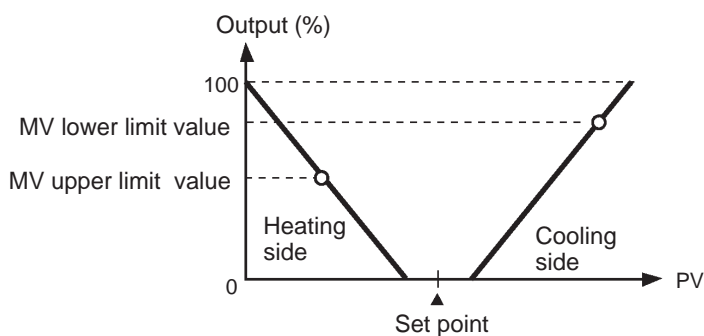
MV limiter

The upper- and lower-limit values of the manipulated variable can be restricted by the MV limiter, and the change rate of manipulated variable can be restricted by the MV change rate limiter.

The upper- and lower-limit values of the manipulated variable are set in the “MV upper limit” and “MV lower limit” parameters (level 2 mode). When the manipulated variable calculated by the E5CK-T is outside of the range of the MV limiter, actual outputs are dependent on the set value of these parameters.

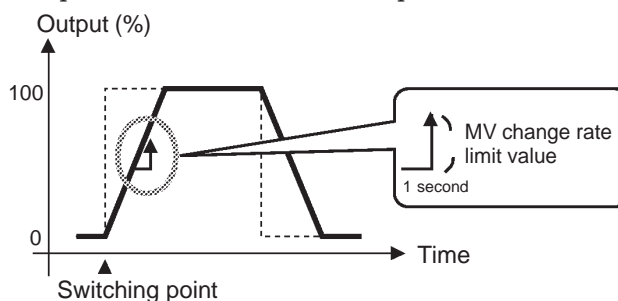


In heating and cooling control, the manipulated variable at the cooling side is treated as a negative value for the sake of convenience. The upper limit is set for the heating side (positive value), and the lower limit is set for the cooling side (negative value) as shown in the following figure.



MV change rate limiter

The “MV change rate limiter” parameter (level 2 mode) sets the maximum permissible change width per second of the manipulated variable. If a change in the manipulated variable exceeds this parameter setting, the value calculated by the E5CK-T is reached while changing the value by the per-second value set in this parameter.



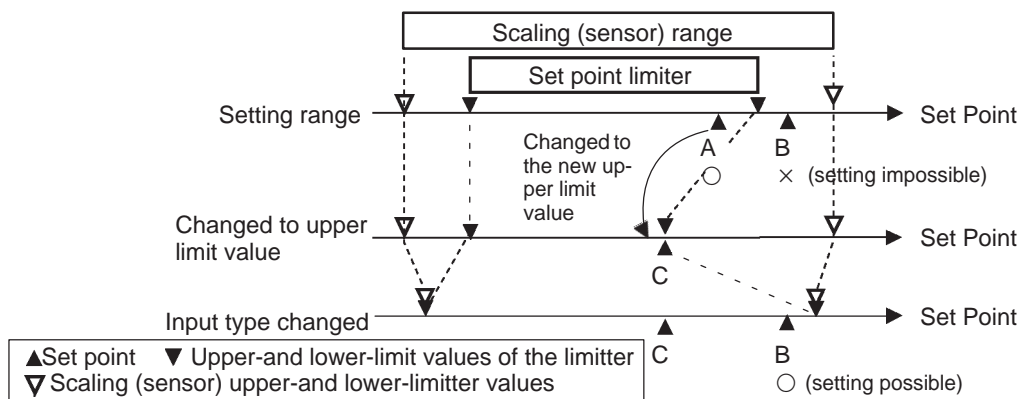
Limiter operation conditions

The limiters are disabled or cannot be set when any of the following conditions occurs:

- During ON/OFF control
- During AT execution (only by MV change rate limiter)
- During manual operation
- When operation is stopped
- When an error has occurred

Set point limiter

The setting range of the set point is limited by the set point limiter. The upper- and lower-limit values of this set point limiter are set in the “set point upper limit” and “set point lower limit” parameters (expansion mode), respectively. However, note that when the set point limiter is reset, the set point is forcibly changed to the upper- or lower-limit value of the set point limiter if the set point is out of the limiter range. Also, when the input type, temperature unit and scaling (sensor) range are changed, the set point limiter is forcibly reset to the scaling (sensor) range.



Parameters

Symbol	Parameter Name: Mode	Description
$\bar{O}L-H$	MV upper limit : Level 2	For limiting manipulated variable
$\bar{O}L-L$	MV lower limit : Level 2	For limiting manipulated variable
$\bar{O}r-L$	MV change rate limit : Level 2	For limiting manipulated variable
$SL-H$	Set point upper limit : Expansion	For limiting SP setting
$SL-L$	Set point lower limit : Expansion	For limiting SP setting
$\bar{O}Ut1$	Control output 1 assignment : Setup	For specifying control method
$\bar{O}Ut2$	Control output 2 assignment : Setup	For specifying control method
$\bar{O}r-Eu$	Direct/reverse operation : Setup	For specifying control method
$\bar{C}-db$	Dead band : Level 1	Heating and cooling control
$\bar{C}-SC$	Cooling coefficient : Level 1	Heating and cooling control
$\bar{M}v-r$	MV at reset : Level 2	Manipulated variable when control operation is stopped

Symbol	Parameter Name: Mode	Description
̃v-E	MV at PV error : Level 2	Manipulated variable when control operation is PV error
HYS	Hysteresis (heat) : Level 1	ON/OFF control
CHYS	Hysteresis (cool) : Level 1	ON/OFF control
Ctrl	PID / ON/OFF Expansion :	ON/OFF control