

Operator Pushbuttons and Indicators

ISO 9001 Certified Quality Construction and Reliability

Manufactured with SMT and verified with long burn-in times and temperature cycling, the 8003 is guaranteed for reliability and long, maintenance-free service.

Lower Display

(3 Orange 7-Segment LEDs)
For setpoint value. During configuration, shows code of the selected parameter.

FUNC

Scrolls parameter display forward and saves previous parameter value.

SMART

- Enables SMART Self Tuning
- Scrolls back parameters without saving them

Programming Security Levels

Access to programmed parameters is protected by 4 security levels:

Level 1 Setpoint and SMART self-tuning

Level 2 All control parameters and alarm setpoint with optional user defined security code

Level 3 Main configuration level

Level 4 Special functions configuration



NEMA 4X Splashproof

Front Faceplate

Upper Display

(3 Green 7-Segment LEDs)
For process temperature. During configuration, shows the

Indicators

MAIN

Red LEDs

Main Control Output is on

AL1/COOL

Cooling Output is on or Alarm 1 is on

AL2

Alarm 2 is on

SMART

SMART tuning is active

Large Target Pushbuttons Simplify Operator Adjustments



- Decrease/Increase Parameter Values
- Press together to reinitiate default control parameters

Operator Parameters

Push the FUNC pushbutton. The lower display shows the cue, the upper display shows the value of the selected parameter.

Cue	Description
SP	Control Setpoint, range from "rL" to "rH".
nnn	Software key for parameter protection set in Conf mode P18.
A1	Alarm 1 Setpoint, range from Conf mode P2 to P3.
A2	Alarm 2 Setpoint, range from Conf mode P2 to P3.
H1	Alarm 1 hysteresis (deadband) 0.1 to 10.0% of alarm span.
H2	Alarm 2 hysteresis (deadband) 0.1 to 10.0% of alarm span.
Pb	Proportional Band, range from 1.0 to 99.9% of span for heating output, 1.5 to 99.9% of span for heating/cooling output. If Pb = 0, ON/OFF control is enabled and ti, td, C, C2, rC, OLP, OLH and tOL are not displayed.
HS	Hysteresis (deadband) for ON/OFF control (active if Pb = 0), range 0.1 to 10.0% of span.
ti	Integral time (automatic reset), range 1 minute and 20 seconds to 20 minutes and 00 seconds, or if blank integral is disabled.
td	Derivative (rate), range 1 second to 9 minutes and 59 seconds. If 0, derivative is disabled.

Cue	Description
C	Heating cycle time, range 1 to 200 seconds (30 seconds or greater recommended for relay outputs).
C2	Cycle Time for Output 2 (heat/cool control selected), range 1 to 200 seconds (30 seconds or greater recommended for relay outputs).
rC	Relative cooling gain (for heat/cool) control range 0.20 to 1.00.
OLP	Overlap/Deadzone (for heat/cool). Positive value is amount of overlap; negative value is separation between heat and cool Pbs, range -20 to 50% of Pb.
rL	SP minimum value (low limit)
rH	SP maximum value (high limit)
rP	Ramp on setpoint changes, range 1 to 100 degrees/minute or blank (step change).
OLH	Output power max. value, range 0 to 100% heating, -100 to 100% heat/cool, limits power on startup per tOL settings or continuously (tOL = blank).
tOL	Time interval for OLH power output limit, range 1 to 100 minutes or if blank infinite. The timer starts if the actual temperature is less than P15 (threshold value).

Configuration Codes

P1 = Input Type and Standard Range

	Range
0 = TC type L	0 / +800 °C
1 = TC type J	0 / +800 °C
2 = TC type K	0 / +999 °C
3 = TC type N	0 / +999 °C
4 = RTD type Pt 100	-199 / +500 °C
5 = RTD type Pt 100	-19.9 / +99.9 °C
8 = TC type L	0 / +999 °F
9 = TC type J	0 / +999 °F
10 = TC type K	0 / +999 °F
11 = TC type N	0 / +999 °F
12 = RTD type Pt 100	-199 / +999 °F

P2 = Initial Scale Value

Not present when P1 = 5

The initial and full scale values are used by the PID algorithm to calculate the input span.

P3 = Full Scale Value

Not present when P1 = 5

The initial and full scale values are used by the PID algorithm to calculate the input span.

P4 = Output Configuration

H = Heating

HC = Heating / cooling

P5 = Heating Output Type

rEL = Relay

SSr = SSR

P6 = Cooling Element

Available only when P4 = HC

Air = Air

OIL = Oil

H2O = Water

P7 = Alarm 1 Type

Available only when P4 = H

0 = None

1 = Process alarm (absolute)

2 = Band alarm (+ and - deviation)

3 = Deviation alarm

P8 = Alarm 1 Operation

Available only when P7 is different from 0

H = High Alarm (outside if band alarm)

L = Low Alarm (inside if band alarm)

P9 = Alarm 1 Inhibit

Available only when P7 is different from 0.

OFF = inhibit disabled

ON = inhibit enabled

P10 = Alarm 2 Type

0 = Not provided 2 = Band alarm

1 = Process alarm 3 = Deviation alarm

P11 = Alarm 2 Operation

Available only when P10 is different from 0.

H = High Alarm

L = Low Alarm

P12 = Alarm 2 Inhibit

Available only when P10 is different from 0

OFF = Inhibit disabled

ON = Inhibit enabled

P13 = Type of OFFSET Applied to the Measured Value

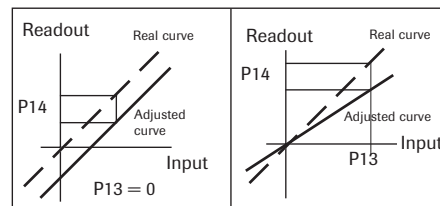
P13 = 0 = constant OFFSET (P14) all over the range

P13 different from 0 = P13 shows the application point of the offset value set by P14 parameter.

P14 = OFFSET Value

When P13 = 0, P14 is programmable, in engineering units, from -20 % to +20 % of the input range.

When P13 is different from 0, P14 is programmable from -20 % to +20 % of P13 value.



P15 = Threshold of the "Soft Start" Function

Enter the threshold value, in °F or °C, for the automatic start of the "Soft Start" function (output power limit). The range of this setting is determined by the range of the sensor selected in P1 (i.e., if type J T/C °F is selected in P1, range is 0-999).

If the unit powers-up below the threshold value, the "Soft Start" function is enabled and limits the power output to "OLH" for "tOL" minutes. "OLH" and "tOL" are setup in the Operator Mode.

P16 = Not used

P17 = Not used

P18 = User Defined Security Code

0 = Security lock disabled (all Operator Mode parameters may be adjusted)

1 = Security lock enabled (only setpoints may be adjusted)

From 2 to 499 = SP parameter may be modified via "nnn," other Operator Mode parameters may be accessed.

From 500 to 999 = SP, A1 and A2 parameters may be modified via "nnn," other Operator Mode parameters may be accessed.

- When configuration is completed, the instrument shows "----" on both displays.

End of Configuration

- Push the FUNC pushbutton. The instrument will return to the beginning of the configuration procedure.

Advanced Configuration

- Push the ▲ or ▼ pushbutton and set the "217" code on the upper display.
- Push FUNC. The following advanced configuration parameters, P19-P29 will be displayed.

P19 = Main Output Action, Reverse or Direct

P20 = Not Used

P21 = Alarm 1 Relay Action

P22 = Alarm 2 Relay Action

P23 = Automatic Adjustment of "Relative Cooling Gain"

P24 = Output Maximum Rate of Change

P25 = Protected Parameter Viewing

P26 = SMART Pushbutton Enabled/Disabled

P27 = Proportional Band Maximum Limit is Adjustable

P28 = Proportional Band Minimum Limit is Adjustable

P29 = Proportional Band Minimum Value is Adjustable

SMART Function

SMART automatically determines the best PID control parameters for your application.

To enable the SMART function, push the SMRT pushbutton. The SMRT LED will light or flash according to the algorithm automatically selected.

When the SMART function is enabled, it is possible to display, but not to modify, the control parameters (PB, TI, TD and rC).

When the traditional PID control is desired, push the SMRT pushbutton again. The instrument maintains the last set of SMART PID control parameters and enables parameter modification.

Notes:

- When ON/OFF control is programmed (PB = 0), the SMART function is disabled.
- The SMART enabling/disabling is protected by security code.