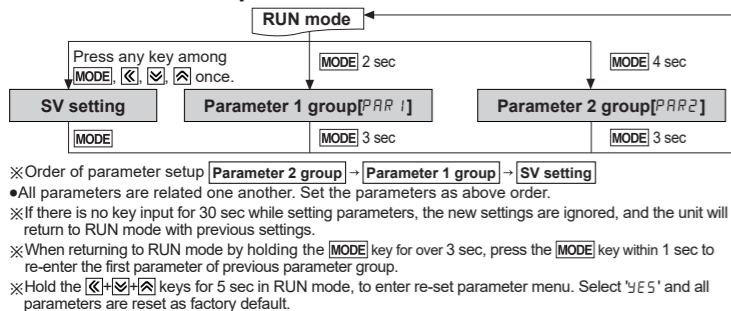


Parameter Groups



Parameter 2 group

Parameter 2 group settings and functions:

- Input sensor:** I N - b, IICRH (Setting range: Refer to 'Input Type And Range').
- Temp. unit:** UNIT (Setting range: Refer to 'Input Type And Range').
- Input correction:** I N - b (Setting range: -999 to 999°C/F).
- Input digital filter:** HRF (Setting range: 0.1 to 120.0 sec).
- SV low-limit value:** L-SV (Setting range: Within temperature range of each sensor).
- SV high-limit value:** H-SV (Setting range: Within temperature range of each sensor).
- Control output mode:** o-Ft, HEARt, CoaL.
- Control method:** C-Md, PId, SSRP, CyCL, PHAS.
- SSR drive output method:** SSR (Setting range: 4-20).
- Current output range:** CURR (Setting range: 0 to 200).
- Control cycle:** t (Setting range: 0.5 to 120.0 sec).
- AL1 operation:** AL-1, AL2A, AL2B, AL2C, AL2D.
- AL2 operation:** AL-2, AL2A, AL2B, AL2C, AL2D.
- Alarm output hysteresis:** HY5 (Setting range: 1 to 100°C/F).
- LBA monitoring time:** LbAR (Setting range: 0 to 9999 sec).
- LBA detection band:** LbAB, LbBB, LbCB (Setting range: 0 to 999°C/F).
- Trans. output low-limit value:** FS-L (Setting range: Refer to 'Input Type And Range').
- Trans. output high-limit value:** FS-H (Setting range: Refer to 'Input Type And Range').
- Comm. address:** AdRS (Setting range: 1 to 127).
- Comm. speed:** bPS (Setting range: 24, 48, 96, 192, 384 bps).
- Comm. parity-bit:** PRtY (Options: NoNE, EVEN, odd).
- Comm. stop-bit:** SttP (Options: 1, 2).
- Comm. response waiting time:** RS (Setting range: 5 to 99ms).
- Comm. write:** CoMH, ENR, diSR.
- Digital input key:** di-H (Options: 5t oP, RLRE, Rt, oFF).
- Control output MV for input break:** ERMV (Options: 00, 01, 02, 03).
- Lock:** Loc (Options: oFF, LoC1, LoC2, LoC3).

Parameter 1 group

Parameter 1 group settings and functions:

- AL1 temperature:** AL1 (Setting range: Deviation alarm(-F.S) to [F.S]).
- AL2 temperature:** AL2 (Setting range: Deviation alarm(-F.S) to [F.S]).
- Auto-tuning:** At (Options: oFF, oN).
- Proportional band:** P (Setting range: 0.1 to 999.9°C/F).
- Integral time:** I (Setting range: 0 to 9999 sec).
- Derivative time:** d (Setting range: 0 to 9999 sec).
- Manual reset:** RSt (Setting range: 0.0 to 100.0%).
- Hysteresis:** HY5 (Setting range: 1 to 100°C/F).

Alarm [AL-1/AL-2]

Alarm operation and options:

Mode	Name	Alarm operation	Description
AL0	-	-	No alarm output
AL1	Deviation high-limit alarm	OFF/ON transition at 100°C/110°C	If deviation between PV and SV as high-limit is higher than set value of deviation temperature, the alarm output will be ON.
AL2	Deviation low-limit alarm	ON/OFF transition at 90°C/100°C	If deviation between PV and SV as low-limit is higher than set value of deviation temperature, the alarm output will be ON.
AL3	Deviation high/low-limit alarm	ON/OFF transition at 100°C	If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be ON.
AL4	Deviation high/low-limit reserve alarm	OFF/OFF transition at 100°C	If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be OFF.
AL5	Absolute value high limit alarm	OFF/OFF transition at 90°C/100°C	If PV is higher than the absolute value, the output will be ON.
AL6	Absolute value low limit alarm	ON/OFF transition at 90°C/100°C	If PV is lower than the absolute value, the output will be ON.
SbR	Sensor break alarm	-	It will be ON when it detects sensor disconnection.
LbR	Loop break alarm	-	It will be ON when it detects loop break.

Alarm option

Option	Name	Description
AL0a	Standard alarm	If it is an alarm condition, alarm output is ON. If it is a clear alarm condition, alarm output is OFF.
AL0b	Alarm latch	If it is an alarm condition, alarm output is ON and maintains ON status. (Alarm HOLD)
AL0c	Standby sequence 1	First alarm condition is ignored and from second alarm condition, standard alarm operates. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, standard alarm operates.
AL0d	Alarm latch and standby sequence 1	If it is an alarm condition, it operates both alarm latch and standby sequence. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, alarm latch operates.
AL0e	Standby sequence 2	First alarm condition is ignored and from second alarm condition, standard alarm operates. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, standard alarm operates.
AL0f	Alarm latch and standby sequence 2	Basic operation is same as alarm latch and standby sequence 1. It operates not only by power ON/OFF, but also alarm setting value, or alarm option changing. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, alarm latch operates.

Sensor break alarm

The function that alarm output will be ON when sensor is not connected or when sensor's disconnection is detected during temperature controlling. You can check whether the sensor is connected with buzzer or other units using alarm output contact. It is selectable between standard alarm [SbR] or alarm latch [LbR].

Functions

Input correction [N-b]: Controller itself does not have errors but there may be error by external input temperature sensor. This function is for correcting this error.

Input digital filter [HRF]: If current temperature (PV) is fluctuating repeatedly by rapid change of input signal, it reflects to MV and stable control is impossible. Therefore, digital filter function stabilizes current temperature value.

SSR drive output method (SSRP function) [SSRP]: SSRP function is selectable one of standard ON/OFF control, cycle control, phase control by utilizing standard SSR drive output.

Alarm operation: Set both alarm operation and alarm option by combining. Each alarm operates individually in two alarm output models.

Loop break alarm (LBA): It checks control loop and outputs alarm by temperature change of the subject. For heating control (cooling control), when control output MV is 100% (0% for cooling control) and PV is not increased over than LBA detection band [LbRb] during LBA monitoring time [LbRt], or when control output MV is 0% (100% for cooling control) and PV is not decreased below than LBA detection band [LbRb] during LBA monitoring time [LbRt], alarm output turns ON.

Major Products: Photoelectric Sensors, Fiber Optic Sensors, Door Sensors, Area Sensors, Proximity Sensors, Pressure Sensors, Rotary Encoders, Connector/Sockets, Switching Mode Power Supplies, Control Switches/Lamps/Buzzers, I/O Terminal Blocks & Cables, Stepper Motors/Drivers/Motion Controllers, Graphic/Logic Panels, Field Network Devices, Laser Marking System (Fiber, Co, Nd:Yag), Laser Welding/Cutting System.

Digital input key [di-H] [3 sec]

Digital input key function table:

Parameter	Operation
OFF	oFF: It does not use digital input key function.
RUN/STOP	5t oP: Pauses control output. Auxiliary output (except loop break alarm, sensor break alarm) except control output operates as setting. Hold the digital input keys for 3 sec to restart.
Clear alarm	RLRE: Clears alarm output by force. (Only when alarm option is alarm latch, or alarm latch and standby sequence 1/2.)
Auto-tuning	Rt: Starts/Stops auto-tuning. This function is same as auto-tuning [Rt] of parameter 1 group.

Control output MV for input break [ERMV]

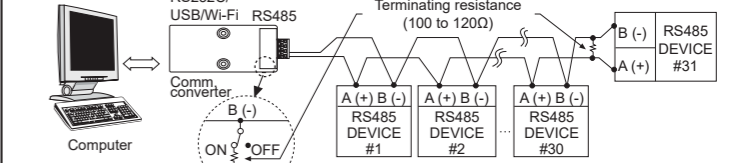
When input sensor is break, set control output MV. When control method [C-Md] of parameter 2 group is set as oN oF, set control output MV as 00 (OFF) or 01 (ON). When control method [C-Md] is set as PId, setting range for control output MV is 00 to 1000.

Communication Setting

Modbus RTU communication settings:

Comm. protocol	Modbus RTU	Comm. speed	4800, 9600 (default), 19200, 38400, 115200 bps
Connection type	RS485	Response waiting time	5 to 99ms (default: 20ms)
Application standard	EIA RS485 Compliance with	Start bit	1-bit (fixed)
Max. connection	31 units (address: 01 to 127)	Data bit	8-bit (fixed)
Synchronous method	Asynchronous	Parity bit	None (default), Odd, Even
Comm. method	Two-wire half duplex	Stop bit	1-bit, 2-bit (default)
Comm. effective range	Max. 800m		

Application of system organization



It is recommended to use Autonics communication converter: SCM-WF48 (Wi-Fi to RS485-USB wireless communication converter, sold separately), SCM-U481 (USB to RS485 converter, sold separately), SCM-381 (RS232C to RS485 converter, sold separately), SCM-US (USB to Serial converter, sold separately). Please use twisted pair wire, which is suitable for RS485 communication, for SCM-WF48, SCM-U481 and SCM-381.

Manual

For the detail information and instructions of communication setting and Modbus mapping table, please refer to user manual for communication, and be sure to follow cautions written in the technical descriptions (catalog, homepage). Visit our homepage (www.autonics.com) to download manuals.

Error

Display	Description	Troubleshooting
oPEN	Flashes when input sensor is disconnected or sensor is not connected.	Check input sensor status.
H H H H	Flashes when measured value is higher than input range.	When input is within the rated input range, this display disappears.
L L L L	Flashes when measured value is lower than input range.	

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Check the polarity of the terminals before wiring the temperature sensor.
- For RTD temperature sensor, wire it as 3-wire type, using cables in same thickness and length.
- For thermocouple (CT) temperature sensor, use the designated compensation wire for extending wire.
- Keep away from high voltage lines or power lines to prevent inductive noise.
- In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
- Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Do not apply excessive power when connecting or disconnecting the connectors of the product.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller.
- When changing the input sensor, turn off the power first before changing.
- After changing the input sensor, modify the value of the corresponding parameter.
- Do not overlapping communication line and power line.
- Use twisted pair wire for communication line and connect ferrite bead at each end of line to reduce the effect of external noise.
- Make a required space around the unit for radiation of heat.
- For accurate temperature measurement, warm up the unit over 20 min after turning on the power.
- Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power.
- Do not wire to terminals which are not used.
- This unit may be used in the following environments.

Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, Co, Nd:Yag)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRP/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse(Rate)/Meters
- Display Units
- Sensor Controllers

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