

Instruction Manual

SYL-2332 PID Temperature Controller (4-20mA) Quick Guide

Version 1.0 (September 30, 2025)



Caution

- This controller is intended to be used with proper safety equipment under normal operating conditions. Failure or malfunction of the controller may result in personal injury or damage to the equipment or other property, devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of or protect against failure or malfunction of the controller. To prevent harm to you and to the equipment, this item must be incorporated into and maintained as a part of the control system under the appropriate environment.
- Installing the rubber gasket supplied will protect the controller front panel from dust and water splash (IP54 rating). Additional protection is needed for higher IP rating.
- This controller carries a 90-day warranty. This warranty is limited to the controller only.

1. Specifications

Input Type	Thermocouple (TC): K, E, S, N, J, T, B, WRe5/ 26; RTD (Resistance Temperature Detector): Pt100, Cu50 DC Voltage: 0~5V, 1~5V, 0~1V, -100~100mV, -20~20mV, -5~5V, 0.2~1V DC current: 0~10mA, 1~10mA, 4~20mA. (Use external shunt resistor for higher current)
Input Range	Please see section 4.7 for detail.
Accuracy	± 0.2% Full scale: RTD, linear voltage, linear current and thermocouple input with ice point compensation or Cu50 copper compensation. ± 0.2% Full scale or ± 2 °C: Thermocouple input with internal automatic compensation. Note: For thermocouple B, the measurement accuracy of ± 0.2% can only be guaranteed when input range is between 600~1800 °C.
Response Time	≤ 0.5s (when FILT = 0)
Temperature Reading Resolution	1°C, 1°F; or 0.1°C
Control Mode	Fuzzy logic enhanced PID control; on/off control; manual control.
Control Output	4 – 20 mA at 12 VDC
Alarm Output	Relay Contacts (NO): 250VAC/1A, 120VAC/3A, 24V/3A
Alarm Function	Process high alarm, process low alarm, deviation high alarm, and deviation low alarm
Manual Function	Automatic/Manual bumpless transfer
Power Input	85 ~ 260 VAC / 50 ~ 60 Hz
Power Consumption	≤ 5 Watt
Ambient Temperature	0 ~ 50°C, 32 ~ 122°F
Dimensions	48 x 48 x 100 mm (W x H x D)
Mounting Cutout	45 x 45 mm

2. Wiring Terminals

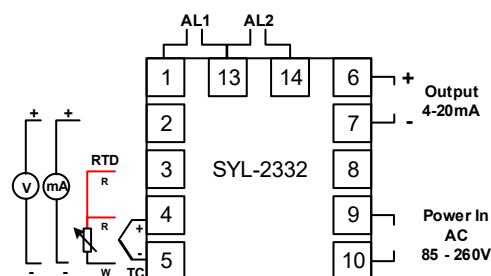


Figure 1. Wiring terminals of SYL-2332.

3. Front Panel

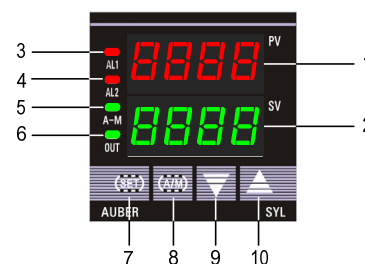


Figure 2. Front panel.

① PV window	Display the process value (PV) from the connected sensor.
② SV window	Display the set value (SV).
③ AL1 indicator	Turns on when the AL1 relay is activated.
④ AL2 indicator	Turns on when the AL2 relay is activated.
⑤ A-M indicator	Turns on when the controller is in manual mode. Pulses when the controller is auto-tuning.
⑥ Output indicator	Turns on or pulses when the controller is sending output.
⑦ SET key	- Toggle the display in the SV window between the SV and the output level in percentage. - Confirm selection or save new value. - Bring up the menu if long-pressed.
⑧ A/M key	- Shift left. - Toggle control mode between auto and manual if enabled.
⑨ Down arrow key (▼)	Decrease values.
⑩ Up arrow key (▲)	Increase values.

4. Getting Started

Before you start installing this controller or connecting any wires to it, please take time to review its terminal assignment and layout on the front. Check the stickers on each side to understand purpose of each terminal. Make wrong wire connections can not only cause confusion but also damages to the controller as well as to the operator.

In this section, we will briefly describe the steps to get this controller up and running in the following orders:

- Connect power to the controller.
- Set sensor input type and connect sensor.
- Set the set value (SV) and test the output.
- Connect the load.

4.1 Connect Power to the Controller

This controller accepts an AC power input in 85 – 260 V range. Check the stickers on the controller to identify the terminals for power input, which is 9 and 10. There is no polarity for power connection to 9 and 10, however, for the sake of consistency with the wiring example described later, we suggest you connect the hot wire to terminal 9 and neutral to 10.

This controller consumes less than 5 Watts of power. You can use thin wires in the range between 18 and 26 AWG to supply the power.

Once the controller received 120V or 240V AC power, it will power up, show its boot up screens briefly, and then standby in its normal operating mode.

By factory default settings, the controller is configured to read Type K thermocouple. When there is no sensor connected, the controller will flash "2393" and "ORAL" in the top PV window, where "2393" is the maximum temperature reading that can be detected from a Type K sensor and "ORAL" is the "out of range alarm". The lower SV window will flash between "ORAL" and "50", where "50" is the default set value.

4.2 Get Familiar with the Controller

From the controller's normal operating mode, a user can do the following:

- Change the set value (SV).
- Check the output level.
- Bring up the system menu to check or change parameters.

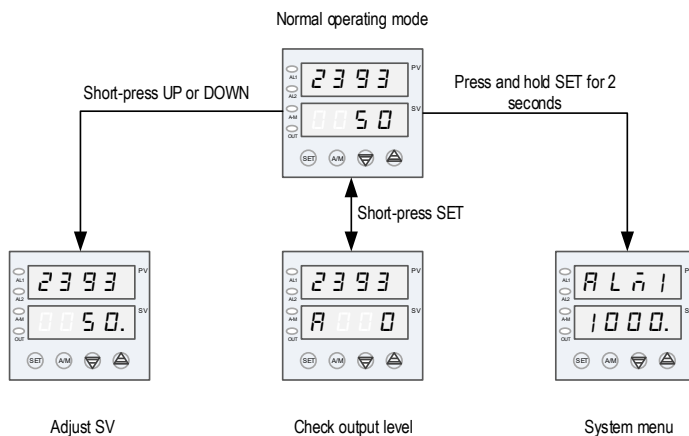


Figure 3. Access different modes in the controller.

- **Edit the set value (SV).** Short-press either the UP or the DOWN arrow key will bring up a flashing dot at the lower right corner of the lower display window. The flashing dot indicates this digit can be edited using the UP (▲) or the DOWN (▼) arrow key. Use A/M key to shift the flashing dot to other positions to edit other digits. The flashing dot will disappear if no key is pressed for 3 seconds. The new SV will be automatically registered without pressing the SET key.



Figure 4. How to adjust the set value (SV).

- **Check the output level:** Short-press the SET key will toggle the lower display window between SV and the current output level as a percentage number "A X", where "A" means automatic mode and the rest of the number is a percentage value between 0% to 100%.

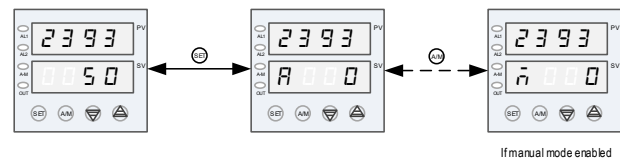


Figure 5. How to check the output level.

- **Access the system menu:** Press and hold the SET key for 2 seconds to bring up the system menu. Please don't change any parameters yet if you are not familiar with the controller yet. Short-press the SET key to go to the next parameter. To exit from the menu, simply wait about 10 to 15 seconds, or press the A/M key first and then press the SET key.

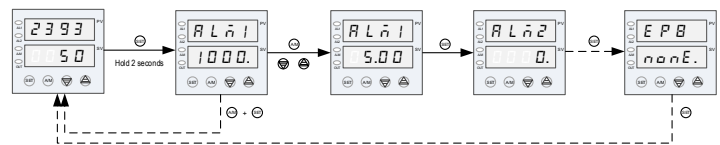


Figure 6. How to access parameters in system menu.

4.3 Connect a Sensor

Identify the sensor type to be used with this controller and connect the sensor to the corresponding terminals on the controller. Terminals 2 to 5 are for sensor input. For thermocouples (TCs), milliamp input, or voltage input sensors, please make sure the sensor is connected in correct polarity.

4.4 Set the Input Sensor Type

If the sensor to be used is not Type K thermocouple, then the parameter "Sn", input sensor type, need to be adjusted to match the sensor type. Please refer to Table 2 for the accepted sensor type and the corresponding code.

4.5 Adjust the Set Value (SV)

Adjust the SV from the factory setting "50" to the desired SV for your application.

4.6 Check the Output Status

The output status is indicated by the OUT indicator on the front panel. The OUT diode can be off (no output), pulsing (output between 0% to 100%), or solid (100%). A user can also check the output percentage by short-pressing the SET key to toggle the SV window to show the current output percentage.

For example, when a user checks the output level by pressing SET key, the lower window shows "A 60", it means the currently output level is at 60%, the OUT indicator should be turning on for 60% of the control cycle and turning off for 40% of the control cycle. The output amperage should be at 13.6 mA (which is the 60% mark at the 4 - 20 mA range).

4.7 Testing the Output

A user needs a multimeter with mA testing function. The voltage of the linear output is 12 VDC.

4.8 Connecting the Load

Connect the load that requires a 4 - 20 mA linear input to the terminals 6 and 7 of the controller, 6 is the positive pin and 7 is the negative pin. Turn off the power to the controller when you wire the load to screw terminals.

5. System Parameters and Acceptable Sensor Types.

For detailed explanation of each parameter, please refer to the user manual.

Important Note: * For this model, SYL-2332 with 4-20mA linear output, the parameter "OP-A" must be set at "1". Please do NOT change its value.

Table 1. Parameters in System Menu.

Name	Code	Description	Setting Range	Initial Setting
ALM1	AL1	Process high alarm	-1999 ~ +9999°F/C	1000
ALM2	AL2	Process low alarm	-1999 ~ +9999°F/C	0
Hy-1	HY-1	Deviation high alarm	0 ~ +9999°F/C	9999
Hy-2	HY-2	Deviation low alarm	0 ~ +9999°F/C	9999
Hy	HY	Hysteresis Band	0 ~ 200°F/C or 0 ~ 2000 for linear input	0.3
At	At	Auto tuning	0~3. Set to 1 or 2 to start Auto tuning	3
I	I	Integral time	0 ~ 9999	1000
P	P	Proportional Constant	1 ~ 9999%	500
d	d	Derivative Time	0 ~ 2000	120
t	t	Cycle time	2 ~ 125	2
Sn	Sn	Input type	0 ~ 37	0
dP	dP	Decimal point position	0 ~ 3	0
P-SL	P-SL	Display low limit	-1999 ~ +9999°F/C	-100
P-SH	P-SH	Display high limit	-1999 ~ +9999°F/C	2500
Pb	Pb	Input offset	-1999 ~ +4000°F/C -1999 ~ +9999	0.0
OP-A	OP-A	Output mode *	0 ~ 2	1
OUTL	OUTL	Output low limit	0 ~ 100%	0
OUTH	OUTH	Output high limit	0 ~ 100%	100
AL-P	AL-P	Alarm output definition	0 ~ 31	17
COOL	COOL	System function selection	0 ~ 15	10
Addr	Addr	Communication address	0 ~ 20	1
bAud	bAud	Communication baud rate	0 ~ 19200	9600
FILt	FILt	PV input filter	0 ~ 20	0
A-M	A-M	Automatic/Manual status	0. Manual 1. Automatic 2. Manual suppressing	2
Lock	Lock	Configuration privilege	0 ~ 9999	808

EP1 - EP8	EP1 - EP8	Field parameter definition	nonE ~ A-M	nonE
-----------	-----------	----------------------------	------------	------

Table 2. Code for Sn, the corresponding sensor type, and the temperature range.

Sn	Input Type	Display range (°C)	Display range (°F)	Wiring Pins
0	K (thermocouple)	-50 ~ 1300	-58 ~ 2372	4, 5
1	S (thermocouple)	-50 ~ 1700	-58 ~ 3092	4, 5
2	WRe (5/26) (thermocouple)	0 ~ 2300	32 ~ 4172	4, 5
3	T (thermocouple)	-200 ~ 350	-328 ~ 662	4, 5
4	E (thermocouple)	0 ~ 800	32 ~ 1472	4, 5
5	J (thermocouple)	0 ~ 1000	32 ~ 1832	4, 5
6	B (thermocouple)	0 ~ 1800	32 ~ 3272	4, 5
7	N (thermocouple)	0 ~ 1300	32 ~ 2372	4, 5
20	Cu50 (RTD)	-50 ~ 150	-58 ~ 302	3, 4, 5
21	Pt100 (RTD)	-200 ~ 600	-328 ~ 1112	3, 4, 5
26	0 ~ 80 Ω	-1999 ~ 9999, defined by user with P-SL and P-SH		3, 4, 5
27	0 ~ 400 Ω			3, 4, 5
28	0 ~ 20 mV			4, 5
29	0 ~ 100 mV			4, 5
30	0 ~ 60 mV			4, 5
31	0 ~ 1000 mV			4, 5
32	200 ~ 1000 mV, 4 ~ 20 mA (w/ 50Ω Resistor)			4, 5
33	1 ~ 5 V 4 ~ 20 mA (w/ 250Ω Resistor)			2, 5
34	0 ~ 5 V			2, 5
35	-20 ~ +20 mV			4, 5
36	-100 ~ +100 mV			4, 5
37	-5 ~ +5V			2, 5

(END)

Auber Instruments Inc.
5755 North Point Parkway, Suite 99,
Alpharetta, GA 30022
www.auberins.com
Email: info@aubersins.com

Copyright © 2025 Auber Instruments Inc. All rights reserved.
No part of this datasheet shall be copied, reproduced, or transmitted in any way without the prior, written consent of Auber Instruments. Auber Instruments retains the exclusive rights to all information included in this document.