

AE25-T1 OPERATION INSTRUCTIONS



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Document Control - Revision Notes

<u>Rev</u>	<u>Date</u>	<u>Technician</u>	<u>Revision Description</u>
R0	04/03/15	DJR	Operation Instructions Approved for Release

NOTICE, CAUTIONS, AND WARNINGS

NOTICE

This Bulletin contains important safety information and should be read and understood by all individuals who install, operate, or service this equipment.

Failure to follow the precautions and recommendations of these instructions may subject personnel and property to dangerous conditions.

All installations and applications of the AE25 Controller must adhere to applicable safety guidelines. The AE25 Controller is not an FM approved High Limit Controller and should not be used in this application.

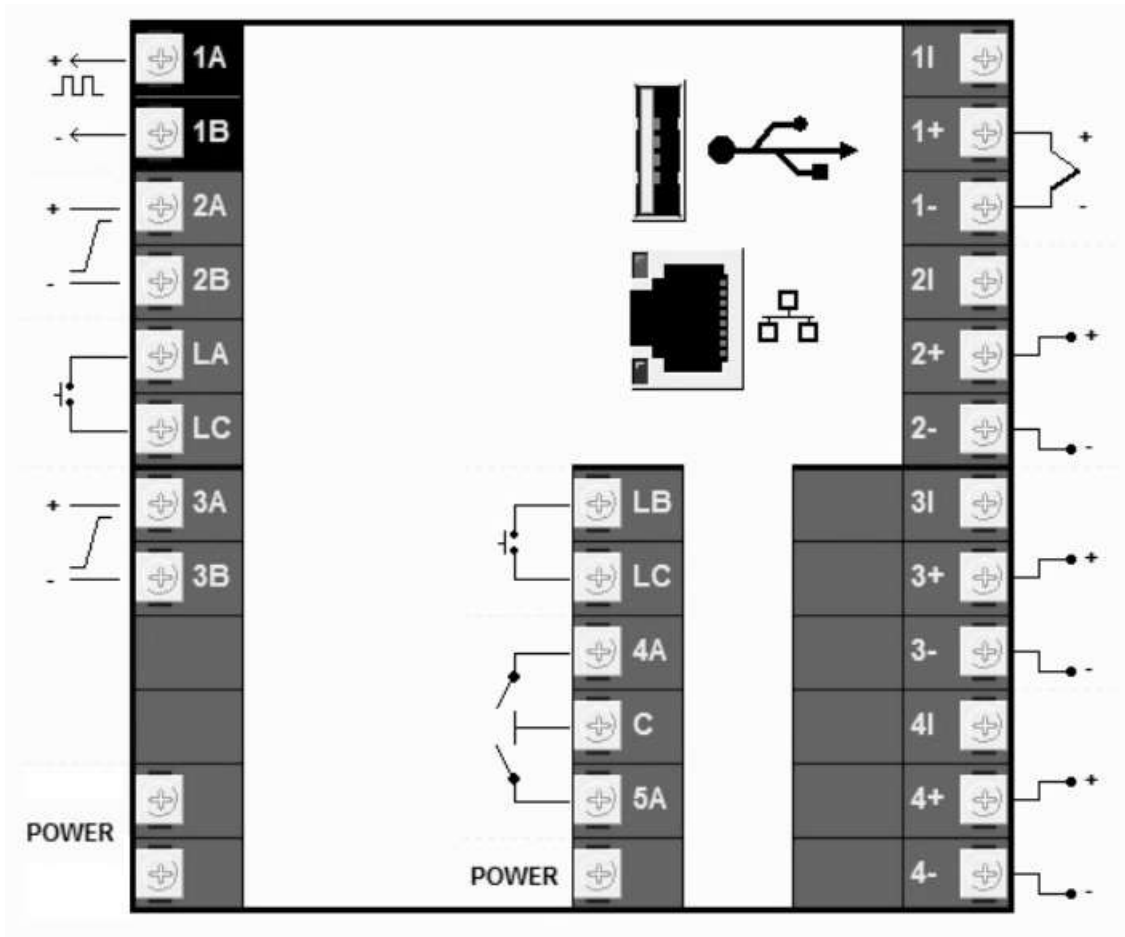
TECHNICAL ASSISTANCE

Contact Atmosphere Engineering with all questions or concerns regarding the installation, operation, and setup of the AEC AE25 Controller.

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CONTROLLER WIRING



Power

110VAC power, Neutral and ground wires.

I +/-

Thermocouple input (+/-)

IA / IB

4-20mA analog output signal for temperature control.

4A / C

Temperature deviation alarm relay output. Energized when alarm is OK. The common wire is shared with output 5A.

5A / C

Temperature control relay output. The common wire is shared with output 4A.

****Note**

The AE25 Controller is not an FM approved High Limit Controller and should not be used in this application. Contact AEC for information on the AE06-L High Limit Controller.

CONTROLLER NAVIGATION



Back Button

Used to go backwards in the program structure

Enter Button

Used to enter values in each screen of the program

Up / Down Arrows

Used to move through program lists / screens and change program values

TEMPERATURE CONTROL PANEL (HOME)



PV

Process variable for the temperature control PID loop, typically in °F. Minimum and maximum values are 0°F and 2000°F respectively.

WSP

Working set point for the temperature control PID loop, typically in °F. Minimum and maximum values are 0°F and 2000°F respectively.

Working Output

Output percentage for the temperature control PID loop. Minimum and maximum values are 0.0% and 100.0% respectively. At 0.0% output the analog output will be 4.00mA. At 100.0% output the analog output will be 20.00mA.

SPI / Mode / Man. OP

Settable parameters used for the temperature control PID loop. SPI will change the working set point of the loop. In Auto mode the loop will change the working output automatically to maintain the temperature set point. In Manual mode the working output can only be changed manually with the Man.OP parameter, and the output will not respond to the temperature set point.

Procedure for Parameter Changes

- 1.) While on the “Temperature Control Panel” screen press the *Enter* button.
- 2.) Scroll through the parameters with the *up/down* arrow keys.
- 3.) Press the *Enter* button while the desired parameter is highlighted.
- 4.) Change the parameter value using the *up/down* arrow keys.
- 5.) Press the *Enter* button to save the parameter value.
- 6.) Press the *Back* button to exit.

PROMOTE LIST PARAMETERS (DEFAULT SETTINGS LISTED IN PICTURE)



Promote List	
Control P-Value	20.0 °F
Control I-Value	360 sec
Control D-Value	60 sec
Deviation Alarm	15 F
Dev Delay (h:m:s)	00:00:10
Temp Control AO (mA)	20.00
Cycle Time (Cycle/4)	5.00 sec

Control P-Value

Proportional band setting for the temperature control loop. The P value determines the response proportional to the error signal. Increasing the P value will decrease the speed of the control loop response.

Control I-Value

Integral time setting for the temperature control loop. The I value gradually adjusts the control loop output to achieve zero steady state error. Increasing the I Value will decrease the speed of the control loop response.

Control D-Value

Derivative time setting for the temperature control loop. Determines the strength of the response to the rate of change of the process variable (temperature.) The D Value can cause instability if implemented on a noisy control signal, in which case it should be set to 0.

Deviation Alarm / Dev Delay (h:m:s)

“Deviation Alarm” sets the temperature band in which the deviation alarm output will de-energize. “Dev Delay (h:m:s)” sets the amount of delay time that the deviation alarm output will de-energize. When the difference between the temperature PV and SP are less than the deviation alarm, the deviation alarm output will be energized.

Temp Control AO (mA)

Shows the mA signal for the temperature control output. This is a non-writable value (display only).

Cycle Time (Cycle/4)

Sets the cycle time for the temperature control digital output. The set point is equal to the total desired cycle time / 4. If a 20 second cycle time is desired then the set point will be equal to $20 / 4 = 5.00\text{sec}$.

Procedure for Parameter Changes

- 1.) While on the “Promote List Panel” screen press the *Enter* button.
- 2.) Scroll through the parameters with the *up/down* arrow keys.
- 3.) Press the *Enter* button while the desired parameter is highlighted.
- 4.) Change the parameter value using the *up/down* arrow keys.
- 5.) Press the *Enter* button to save the parameter value.
- 6.) Press the *Back* button to exit.

TEMPERATURE AUTO TUNE PROCEDURE

- 1.) Press the *Back* button until the menu screen appears.
- 2.) Scroll to the “Log In” button using the *up/down* arrow keys
- 3.) Press the *Enter* button
- 4.) Select the “Engineer” access using the *up/down* arrow keys
- 5.) Press the *Enter* button
- 6.) Press the *Enter* button
- 7.) Enter a value of “100” for the engineering password using the *up/down* arrow keys and *Enter* button
- 8.) Press the *Back* button
- 9.) Select “Yes” using the *up/down* arrow keys
- 10.) Press the *Enter* button
- 11.) Select “Loop” using the *up/down* arrow keys
- 12.) Press the *Enter* button
- 13.) Select “1” using the *up/down* arrow keys
- 14.) Press the *Enter* button
- 15.) Select “Tune” using the *up/down* arrow keys
- 16.) Press the *Enter* button
- 17.) Select “Tune Enable” using the *up/down* arrow keys
- 18.) Press the *Enter* button
- 19.) Select “On” using the *up/down* arrow keys
- 20.) Press the *Enter* button
- 21.) Press the *Back* button until the menu screen appears.
- 22.) Select “Log Out” using the *up/down* arrow keys
- 23.) Press the *Enter* button
- 24.) Press the *Back* button until the “TempPID” screen appears

The temperature controller will now be in “Auto Tune” mode. During this process the PID output will go to 0% and 100% output to watch the response of the temperature. After the process is complete the P-Value, I-Value and D-value parameters of the loop will be adjusted appropriately. The “Auto Tune” feature will then be turned off automatically and the controller will operate using the new tuning settings.

THERMOCOUPLE TYPE SETUP PROCEDURE

- 1.) Press the *Back* button until the menu screen appears.
- 2.) Scroll to the “Log In” button using the *up/down* arrow keys
- 3.) Press the *Enter* button
- 4.) Select the “Engineer” access using the *up/down* arrow keys
- 5.) Press the *Enter* button
- 6.) Press the *Enter* button
- 7.) Enter a value of “100” for the engineering password using the *up/down* arrow keys and *Enter* button
- 8.) Press the *Back* button
- 9.) Select “Yes” using the *up/down* arrow keys
- 10.) Press the *Enter* button
- 11.) Select “Channel” using the *up/down* arrow keys
- 12.) Press the *Enter* button
- 13.) Select “1” using the *up/down* arrow keys
- 14.) Press the *Enter* button
- 15.) Select “Main” using the *up/down* arrow keys
- 16.) Press the *Enter* button
- 17.) Select “Lin Type” using the *up/down* arrow keys
- 18.) Press the *Enter* button
- 19.) Select The appropriate Thermocouple type using the *up/down* arrow keys
- 20.) Press the *Enter* button
- 21.) Press the *Back* button until the menu screen appears.
- 22.) Select “Log Out” using the *up/down* arrow keys
- 23.) Press the *Enter* button
- 24.) Press the *Back* button until the “TempPID” screen appears