



Product Overview

The AX-PI-5X DIN rail mounted controller is a compact and cost effective solution for monitoring air or liquid temperature. The unit provides a 0-10V analogue heating and cooling output centred on 5V. A second inverted analogue outputs is also provided, along with remote setpoint potentiometer input, temperature sensor input, low limit sensor input and setback input. The outputs can be used to control various terminal devices ie. damper motors, valve actuators, step controllers, relay modules, etc.

Features

- 2 Analogue Outputs - Centred on 5V
- Proportional and Integral Control
- Remote Setpoint option
- Adjustable Setback
- 0-10V or 2-10Vdc Output
- Adjustable Proportional band
- Adjustable Integral time
- Output Voltage can be displayed
- Monitors Minimum & Maximum Temperatures
- DIN rail mounting

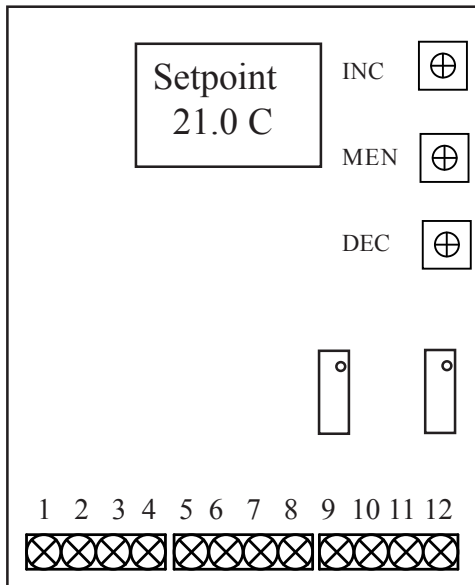
Product Specification

Power Supply:	24Vac +/- 10% 24Vdc +10/-0%
Power Consumption:	Typical 40mA (approx 120mA when LCD in use)
Inputs:	Control Temperature Low Temperature External Setpoint Setback
Output Signal:	Volt free contact or Open collector
LCD Display:	2 x 0-10Vdc or 2-10Vdc
Set Up Pushbuttons:	2 Line 8 digit LCD (backlight off after 12 secs of button use)
Set Up Values	Increase, Menu, Decrease
Setpoint	-10 to 110°C
Low Limit	Off, -20 to +20°C
Setback	0 to 30°C
Deadband	0 to 30°C
Proportional Band	1 to 30°C
Integral Time	Off, 1 to 500 secs
External Setpoint	None, +/-4°C, +/-20°C
Output Values	0 to 10V, 2 to 10V
Temperature Element:	10K3A1
Dimensions:	82 x 68 x 47mm
Weight:	85 gms
Terminals:	Terminals for 0.5 to 2.5mm ² cable
Ambient Range:	0 to 50°C
Country of Origin:	United Kingdom

Order Codes

AX-PI-5X - Modulating Output Temperature Controller - 5V Central

Connection:



	Outputs
Output 1	0-5V Cool, 5-10V Heat
Output 2	10-5V Cool, 5-0V Heat

Connections

- 1 24V
- 2 0V
- 3 Low temperature input (10K3A1)
- 4 Temp Common
- 5 Control temperature input (10K3A1)
- 6 External Setpoint
- 7 External Setpoint
- 8 Setback Common
- 9 Setback
- 10 Output 1
- 11 Output Common
- 12 Output 2

Operation

The **AX-PI-5X** is a controller designed for use as a temperature controller with voltage output to control dampers, or similar devices. The unit is fully configurable via three menu buttons. There is also the option to have some control inputs (such as setpoint offset and setback) located remotely.

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Control temperature

The control temperature measurement can be made using any of the standard range of 10K3A1 thermistor sensors. Most commonly used in this application are **AX-TE-RT**(space mounting), **AX-TE-DT**(duct temperature) and **AX-TE-FT**(flying lead), **AX-TE-IT** (immersion temperature).

Setpoint temperature

The setpoint temperature is the value around which the space is required to be controlled. It can be setup via the LCD display.

Remote Setpoint/ Offset

Set up the required range on the LCD (+/-4 or +/-20 -as an offset) and connect up a 1-11K remote setpoint to terminals 6 and 7 .

Setback function

The setback function provides the facility to adjust the setpoint temperature by a fixed amount. The amount by which the setback facility reduces the setpoint temperature can be varied between 0°C to 30°C via the LCD and set up buttons. For example,when heating mode is selected- if the setback is set at 5°C and the setpoint temperature pot is at 22°C, then when the setback is in effect the actual setpoint will be 17°C.

NB. During setback function cooling is disabled. If terminals 8 and 9 are short circuit, then setback is in operation. If terminals 8 and 9 are open circuit, then setback is not in operation.

To use the setback facility, connect either a volt-free relay or an open collector across terminals 8 and 9 (8 is the common terminal) Most common usage includes one or more of the following in series or parallel:

- External timer for setback
- Timer for night setback or Summer / Winter operation
- External occupancy sensor

Installation

Connect all the inputs and outputs, taking care to observe polarities where applicable. **NB** - If an AC supply is used, the 0v of the supply must be able to be grounded. Check to confirm that any other equipment which may be supplied from the same transformer secondary will **NOT** be affected or damaged by this.

Commissioning

Ensure that all the connections are correctly made. Do not apply power until pre-commissioning is completed.

Make initial adjustments using the LCD and set up buttons

To enter SETUP menu, ensure the Display shows the Actual temperature, Hold the Menu Button down for 10 seconds, the Display will initially show Low Limit but will change to Prop Band after ten seconds.

	Factory Settings	Range
Setpoint	25°C	-10 to 110°C
Low Limit	Off	Off, -20 to +20°C
Setback	0°C	0 to 30°C (heating or cooling mode only)
Deadband	1°C	Off, 1 to 30°C
Prop. band	5°C	Off, 1 to 30°C
Integral time	60secs	0 to 500 secs
Remote setpoint	None	+/-4°C, +/- 20°C
Output Ranges	0-10vdc	0-10Vdc or 2-10vdc

When all settings are complete note the temperature of the media being measured, eg. space temperature. Adjust the setpoint using the LCD and set up buttons to be the same as the measured temperature. There should be no heating or cooling output. Adjust the setpoint to the required level. If the temperature is below the effective setpoint and the controller is set to heating mode there will be a corresponding voltage output, dependent on the setting of the P-band. If the temperature is above the effective setpoint and the controller is set to cooling mode there will be a corresponding voltage output, dependent on the setting of the P-band. Make any required changes to the P-band to achieve proportional control and that “hunting” does not occur. If hunting does occur, reduce the P-band value.

Setback operation

Ensure a short circuit exists between terminals 8 & 9. Confirm that the setpoint is now reduced by the amount set i.e. if the setpoint was 21°C without setback enabled and a setback value of 5°C is used, the setpoint will be 16°C when setback is enabled.

Simulating temperature changes

Changes in room temperatures can be simulated using a resistance box and the thermistor temperature v resistance curve.

Low Temperature Override

If Low temperature override is enabled, you must provide a sensor connected across terminals 3 & 4.

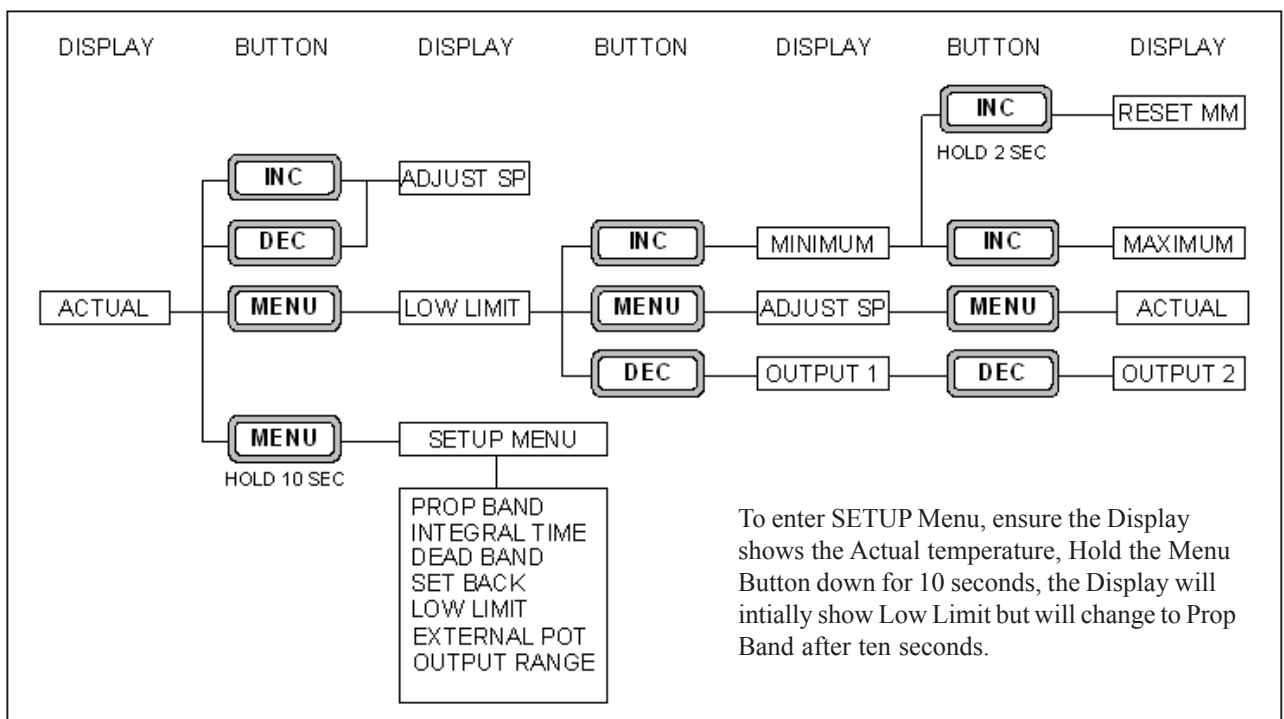
Heating mode:

Low temperature > Low limit setpoint = no effect
 Low temperature < Low limit setpoint = proportional control
 which overrides the normal temperature proportional control.

Cooling mode:

Low temperature > Low limit setpoint = no effect
 Low temperature < Low limit setpoint = output falls to 0V

Menu Overview:



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