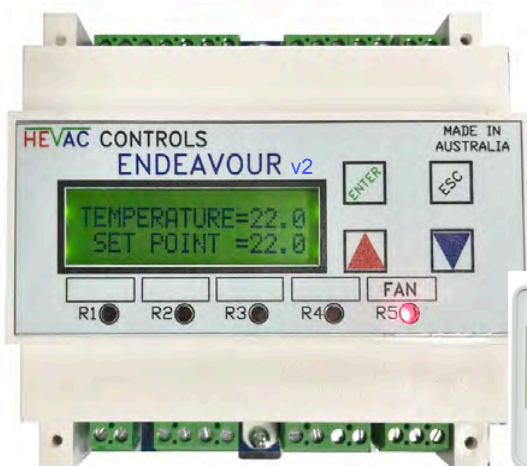


ENDEAVOUR^{v2}

PROGRAMMABLE TEMPERATURE CONTROLLER C/W YEARLY PROGRAMMABLE TIME SWITCH

COMPATIBLE WITH A WIDE RANGE OF SENSORS



ROOM



DUCT



O/A WALL



PIPE



CONNECT UPTO 32 TO HMI

Features

- ❖ Scrolling LCD display showing all relevant information & current I/O status.
- ❖ Event Driven Time Switch programming allowing switching Past Midnight.
- ❖ 5 x Analogue + 4 x Digital inputs / 5 x (8A) Relays + 2 x Analogue outputs.
- ❖ Economy Cycle use for Cooling, Heating & CO2 control when Suitable.
- ❖ Programmable "Start By" Internal 365 day Time Switch & /or Push Button triggered Run Timer & or Manual On/Off System Switch.
- ❖ Optional Remote Set Point inputs configurable as 10K, 0-10vDC or MODBUS.
- ❖ Data Logger to aid in service & system performance analysis.
- ❖ Automatic Night Purge for building cool down when O/A conditions suitable.
- ❖ Ext. Inputs for : Auto / Off / On, AHR & A/C Fault & Aux. digital I/P status.
- ❖ LED Indication of Relay Outputs.
- ❖ Preset for most Common application but easily Editable with intuitive Menu.
- ❖ Optional use CO2, Outside & Supply Air Temperature Sensors inputs.
- ❖ Modbus for Remote HMI or BMS Override Control & Monitoring.
- ❖ Mounts in most M.C.B din rail enclosures.

The **ENDEAVOUR** Temperature (/ CO2) controller is a fully programmable microprocessor based module designed to control via remote zone sensors with optional use of many internal & external features: 365 day Time Switch, Run Timer, Outside & Supply Air temperature sensors & CO2 sensor input, making this controller an ideal stand alone or BMS semi autonomous zone A/C controller. The ENDEAVOUR is primarily intended for applications where On/Off control of Heating and Cooling stages and / or modulating control of actuators, compressors or fans is required. The controller is suitable for mounting in a mechanical services switchboard or the A/C units control cubicle, and connected to remote measuring sensors & optional override switches by 2 or 3 wire screened cable. Four of the five relays are programmable for their mode of operation as Compressor, Heating, Cooling stages or new (with this latest update) as a CO2 or Auxiliary Time Switch relay, with individual editable switching characteristics. The 5th relay is dedicated as a System Run (fan / time switch) relay which can now also be set to cycle or for continuous operation whilst the system is enabled. The two Analog 0-10vDC output signals can be programmed individually for start, range, P or P + I mode of operation. The controller is now lockable in 3 levels & includes a basic data event logger. Other notable new features & enhancements include : A/C fault input, on/off relay or modulating CO2 control, can be set to operate as a Time Switch only (other functions inhibited), Min/Max limitation of analogue O/P's & keyboard override of any remote setpoints temporarily returning Setpoint to local control to aid quick A/C testing & service.

EXTERNAL OVERRIDES & OPTIONAL CONNECTIONS

Upto 32 ENDEAVOUR controllers can be connected via 2 wire shielded RS485 MODBUS to the Hevac **HMI-EZS** colour touch screen master control panel (can be wall or panel mounted) for centralised control and monitoring, or up to 247 controllers as a semi autonomous zone controller to a 3rd party BMS system.



HMI-EZS



EXAMPLE ROOM SENSOR
C/W SETPOINT & SYS. SW.



SRT-D-BAP
NEW DIGITAL
DISPLAY SENSOR
WITH SETPOINT
ADJUSTMENT
(& COMING SOON
AHR FUNCTION)

Remote System **AUTO / OFF & AHR** operation can be easily added by simply connecting a N/O switch & or push button in parallel with the main temperature sensor (X1 & M) wires in the field either in the form of a room sensor c/w switches or as separate switches mounted where convenient. Momentarily shorting the sensor wires results in triggering a run timer function (typically as an after hours run function) or constant shorting of these wires results in a system **OFF** function. These functions & more are also alternatively duplicated at the controller using the D1, D2 & M terminals for **AUTO / OFF / ON & AHR** overrides.

Other **Optional use Inputs** include : Outside & Supply Air temperature sensors (passive or active), CO2 sensor, on/off A/C fault status & a general use external on/off status monitoring BMS input (ie: S/A fan proving via on/off pressure switch).

With an optional **O/A temperature sensor** connected (X3), the Economy cycle damper operation for temperature control can be interlocked for free heating, cooling or both when the outside air temperature conditions are favorable. The fresh air sensor is compared to the room (or return air) temperature sensor and if outside air temperature is measured to be more suitable than using recycled air for free temperature control the motorized damper output signal will modulate per room temperature demand. The use of outside air for temperature control can also be inhibited if the outside air temperature falls below an adjustable minimum temperature (factory set at 16C).

With an optional **CO2 sensor** connected (X7) , the economy cycle dampers will be also be proportionally driven to the fresh air mode to reduce high CO2 levels. The maximum damper output signal for CO2 control can be restricted in extreme O/A temperatures so as not to lose temperature control, all settings are user adjustable.

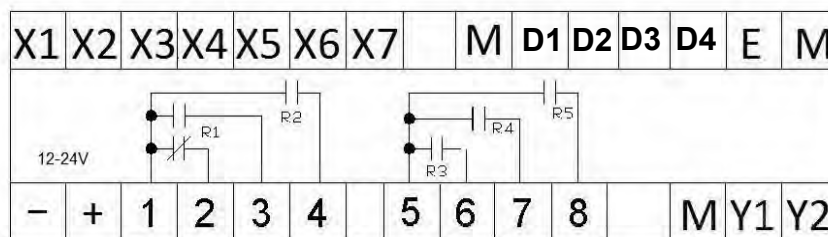
The Auxiliary **Supply Air** temperature input (X4) is only used for monitoring but may in the future be used for Room-S/A cascade control or for supply air limiting if there is interest.

A **Remote Set Point** device (passive or active) can be connected to X2 on the controller. **If** a passive (default setting) adjuster is connected , the controller will automatically detect and hand over set point adjustment authority to the remote device (then ignoring the controllers UP & DOWN buttons for set point adjustment). The passive remote set point potentiometer can be built into a room temperature sensor (SRT-DSP) or as a separate stand alone device (SPA-D). The range of the passive remote setpoint is fixed at 18 to 25 degrees over 0 to 10K or if an active 0-10V remote setpoint is used, 0v can be set to = -/+ 5c & full scale (10v) is adjustable up to 100c.

Environmental Conditions	Operation	
	Ambient Temperature	0...45oC
	Humidity	< 85 % RH (Non Condensing)
	Storage and Transport	
	Ambient Temperature	-5...65oC
	Humidity	< 90 % RH (Non Condensing)
Product Standards	COMPLIES TO ALL RELEVANT AUSTRALIAN STANDARDS including 6mm segregation between high & low voltage connections	
Weight	Including Packaging	600 grams
Housing	Colour	Grey
	Material	ABS POLYCARB
	UV Stabilised	YES
	Fire Retardant	YES
	Size	L105mm x W105mm x D60mm
	Mounting Method	35mm Din Rail Mountable

Terminal Designations

X1	Main Temperature Sensor Input (Passive or Active)	M	Common sensor & signal ground
X2	Remote S/P input (Passive or Active) (Optional connection)	D1	Manual System OFF &/or AHR trigger input
X3	O/A sensor input (Passive or Active) (Optional connection)	D2	Manual System ON Override (T/Sw. override)
X4	S/A Monitoring Sensor (Optional connection)	D3	External FAULT I/P (for indication)
X5	MODBUS RS485 - A Terminal	D4	External On/Off status I/P for BMS monitoring
X6	MODBUS RS485 - B Terminal	E & M	future Expansion module comms.
X7	CO2 (default) or MODBUS SHIELD (GND)		



- | | | | |
|---|---|----|-----------------------------------|
| - | 12-24 Volt Supply Neutral (internally connected to terminals M) | 5 | Relay 3,4 & 5 Common |
| + | 12-24 Volt AC or DC Supply Active | 6 | Relay 3 Normally Open |
| | 1 Relay 1 & 2 Common | 7 | Relay 4 Normally Open |
| | 2 Relay 1 Normally Closed | 8 | Relay 5 Normally Open (FAN) |
| | 3 Relay 1 Normally Open | M | Signal ground |
| | 4 Relay 2 Normally Open | Y1 | Analog Modulating Output 0-10 vDC |
| | | Y2 | Analog Modulating Output 0-10 vDC |

Typical Wiring Connections

AVAILABLE SENSORS

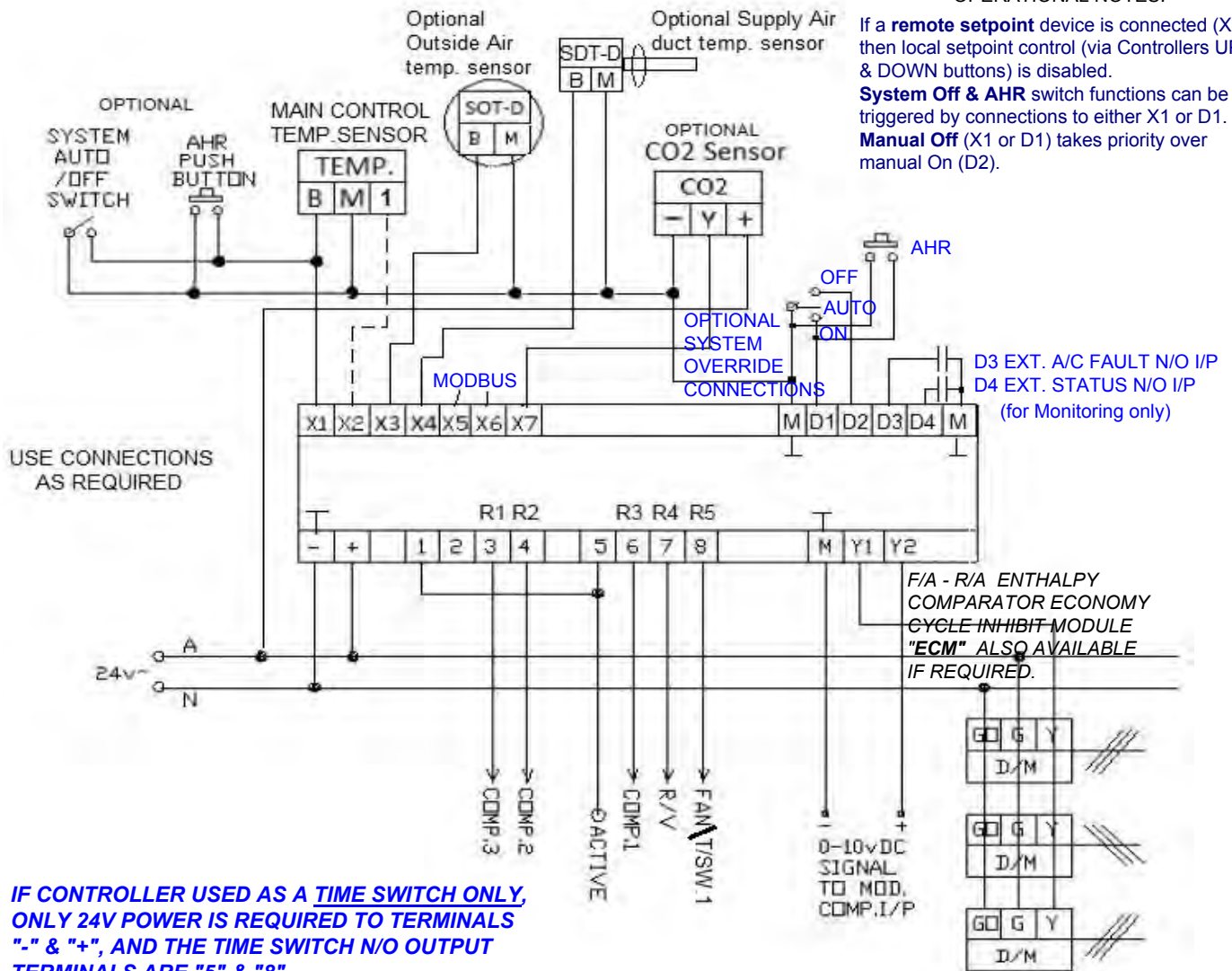
	SRT-D	ROOM TEMPERATURE SENSOR	2 WIRE
	SRT-DSW	" + ON/OFF SWITCH	2 WIRE
	SRT-DSP	" C/W SETPOINT POT.	3 WIRE
	SRT-DSPSW	" C/W S/P + ON/OFF SW.	3 WIRE
NEW	SRT-D-BAP	C/W DIGITAL DISPAY & S/P BUTTONS	4 WIRE
	SDT-D	DUCT TEMPERATURE SENSOR	2 WIRE
	SOT-D	OUTSIDE AIR SENSOR (PASSIVE)	2 WIRE
	OSAO	OUTSIDE AIR SENSOR (ACTIVE)	3 WIRE
	HCRW5	as ROOM CO2 SENSOR only	3 WIRE
	HCRW5	ROOM TEMP. & CO2 SENSOR	4 WIRE

OPERATIONAL NOTES:

If a **remote setpoint** device is connected (X2) then local setpoint control (via Controllers UP & DOWN buttons) is disabled.

System Off & AHR switch functions can be triggered by connections to either X1 or D1.

Manual Off (X1 or D1) takes priority over manual On (D2).



Wiring Considerations

Supply Voltage	The Controller requires either a 12-24Volt AC or DC Supply. This diagram assumes a 24 Volt AC connection. Note terminals "M" & "-" are internally connected so as to allow a common ground reference.
Cabling Requirements	Its is recommended to connect remote input devices using twisted pair screened cable. Screened cable shield should be grounded to a good Earth at the controller end only.