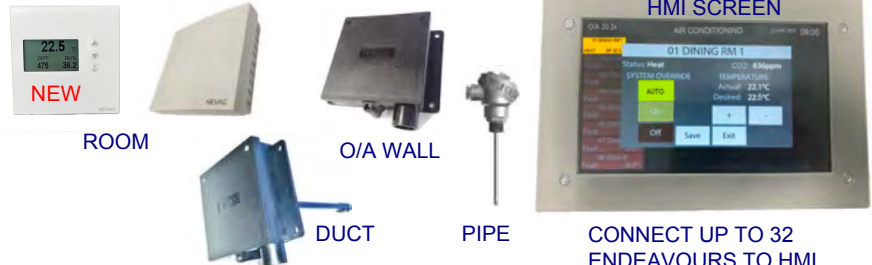


ENDEAVOUR v3 STAND ALONE or BMS ZONE A/C CONTROLLER

*** NOW WITH I.O.T ***

COMPATIBLE WITH A WIDE RANGE OF SENSORS



CONNECT UP TO 32
ENDEAVOURS TO HMI

Features

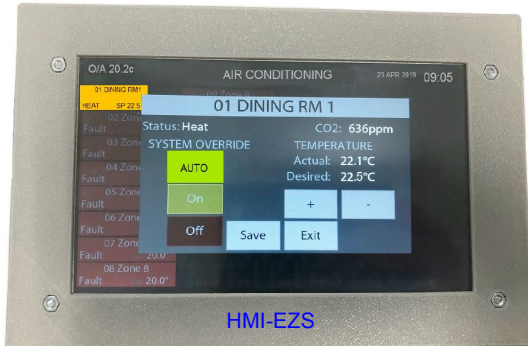
- ❖ **I.O.T Access for monitoring, override & setpoint control (ENDEAVOUR v3)**
- ❖ Scrolling LCD display showing all relevant information & current I/O status.
- ❖ Event Driven Time Switch programming allowing switching Past Midnight.
- ❖ 5 x Analogue + 4 x Digital inputs, 5 x (8A) Relays + 2 x Analogue outputs.
- ❖ Economy Cycle use for Cooling, Heating & CO2 control when Suitable.
- ❖ Programmable "Start By" 365 day Time Switch & /Run Timer Button or 24/7.
- ❖ Setpoint Shift due to Outside Air Temperature & Room Humidity
- ❖ Optional Remote Set Point inputs configurable as 10K, 0-10vDC or MODBUS.
- ❖ Sensor inputs configurable as Resistance (passive), or (Active)- Voltage or Current.
- ❖ Data Logger to aid in service & system performance analysis.
- ❖ Automatic Night Purge for building cool down when O/A conditions suitable.
- ❖ External Inputs for : Auto / Off / On, AHR & A/C Fault & Aux. Digital I/P status.
- ❖ 2nd Independent Control Loop (X4) : Temperature, Pressure, Humidity, ppm & Volts
- ❖ Preset for most Common application but easily Editable with intuitive Menu.
- ❖ CO2 Control of Relays or Analogue Outputs
- ❖ Modbus for Remote HMI or BMS Override Control & Monitoring.
- ❖ Set Point range 1- 99 celcius, analogue outputs set as P or P+ I, O/P deadbands +/- 20c

The **ENDEAVOUR** Universal controller is a programmable very flexible microprocessor based controller designed to control A/C & Fan Coil units via remote zone sensors with optional use of many internal & external features ie: 365 day Time Switch, Run Timer, Outside & Supply Air temperature sensors, CO2 sensor input, plus now with an assignable auxiliary universal control input (X4) for monitoring & control of a 2nd independent control loop, making this controller an ideal stand alone or BMS semi autonomous zone controller. The ENDEAVOUR is mainly 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. Four of the five relays are programmable for their mode of operation as Compressor, Heating or Cooling stages, CO2, Auxiliary Time Switch, or controlled by external 0-10vdc input with individual editable switching characteristics. The 5th relay is dedicated as a System Run (fan / time switch) relay which can be set for cycle or continuous operation whilst the system is enabled. The two Analogue 0-10vDC output signals can be programmed individually for start, range, P or P + I mode of operation. The controller is lockable in 3 levels plus includes a basic data event logger. Other notable new features & enhancements include : **I.O.T connectivity**, A/C fault input, Automatic setpoint reset based on outside temperature & room humidity & can now be set to operate as a 4 channel 365 day Time Switch only .



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 **or NEW to this latest version - now has optional I.O.T connectivity for remote monitoring & override.**



HSMO-DAQT

NEW DIGITAL
DISPLAY TEMP./
HUMIDITY & CO2
SENSORS +
SETPOINT & AHR
BUTTONS

8 VERSIONS OF HSMO
TO SUIT REQUIREMENTS

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 : (X3) Outside air temperature, (X4) Auxiliary input (passive or active) for auxiliary temperature monitoring (ie S/A) , (X7) CO2 sensor, Scalable auxiliary universal 0-10vdc input (alternative X4 use) to control spare relays, (D3) on/off A/C fault status & (D4) 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 12C).

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.

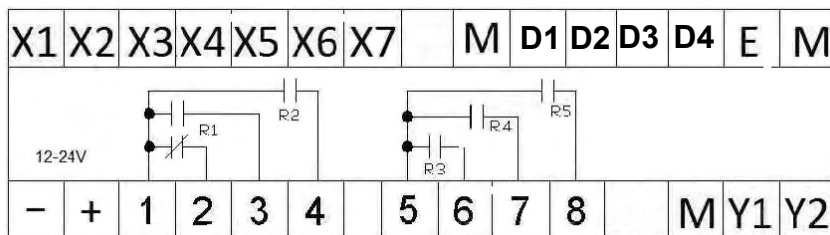
The **Auxiliary input (X4)** can be used to monitor & or control a 2nd independent control loop and display input as degrees C, volts, %, ppm, pa or no unit.

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
X3	O/A sensor input (Passive or Active) (Optional connection)	D2	Manual System ON Override <i>&/or</i> AHR trigger input
X4	Auxiliary input for monitoring or relay control (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 |

HEVAC AVAILABLE SENSORS

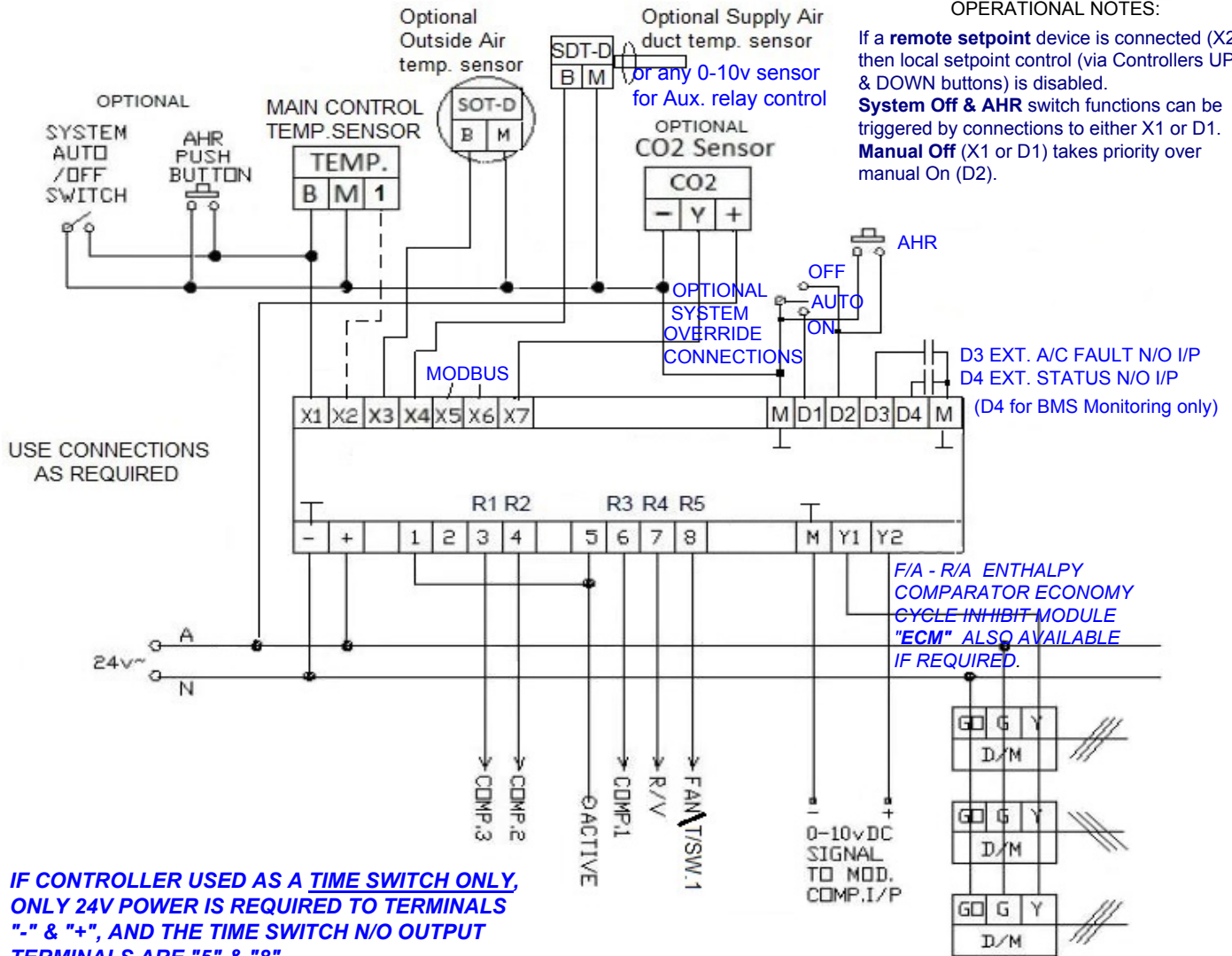
	SRT-D	ROOM TEMPERATURE SENSOR	2 WIRE
	SRT-DSW	" + ON/OFF SWITCH	2 WIRE
	SRT-DSP	" C/W SETPOINT POT.	3 WIRE
	SRT-DSPSW	" C/W S/P + ON/OFF SW.	3 WIRE
NEW	HSMO-DA	C/W DIGITAL DISPLAY & S/P BUTTONS	4 WIRE
NEW	HSMO-DAQT	C/W TEMP/HUMID/CO2 + S/P & AHR BUTTONS	
	SDT-D	DUCT TEMPERATURE SENSOR	2 WIRE
	SOT-D	OUTSIDE 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

ALSO NOTE: 3rd party 4-20mA TYPE SENSORS CAN NOW ALSO ALTERNATIVELY BE USED FOR INPUTS X1-X4. PHYSICAL RELOCATION OF INPUT JUMPER REQUIRED.

COMING SOON : COMBINED TEMP./ HUMIDITY / CO2 / AHR BUTTON & ADJ. SETPOINT ROOM SENSOR C/W DISPLAY

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 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.