



HTC-DIGITAL-LCD

PROGRAMMABLE TEMPERATURE CONTROLLER c/w YEARLY PROGRAMMABLE TIME SWITCH

COMPATIBLE WITH A WIDE RANGE OF SENSORS



ROOM



O/A WALL



DUCT



PIPE

Features

- Measure & Control Temperature & CO2 levels with analog & digital I/O
- Temperature Inputs can be Thermistors or 0-10vDC
- Five 8 Amp (2.5) Relays . 4 Freely Configurable
- Two 0-10VDC Analog Configurable Outputs
- LED Indication of Relay Outputs
- O/A Temp. Input to Allow use of Fresh Air for Cooling or Heating if Suitable
- Preset for most Common Usage but easily Editable with intuitive Menu
- Mounts in most M.C.B din rail enclosures
- Event Driven Time Switch allowing switching **Past** Midnight.
- Optional connect CO2 & O/A sensors to override Economy cycle Dampers.
- Programmable Start by Internal 365 day T/Switch **& or** Push Button triggered Run Timer **& or** Manual On/Off Switch.
- **Modbus** for Remote BMS Override Control & Monitoring.
- Auto / Off / On & AHR optional override inputs

The **HTC-DIGITAL-LCD** is usually mounted in the mechanical services switchboard and connected to remote measuring sensors by a 2 or 3 wire screened cable (or alternatively can be located in the air conditioning control cabinet). The Controller is a fully programmable microprocessor based Temperature Controller with optional use of an internal 365 day Time Switch & / or Run Timer facility all in the one model. The Controller is intended for applications where On/Off control of Heating and Cooling stages and / or control of modulating actuators is required. Four of the five relays are programmable for their mode of operation (as heat or cool stages or as both) and individual switching characteristics. The 5th relay is dedicated as a System Run (fan/time switch) relay. Two Analog 0-10vDC output signals can also be programmed individually for start, range and mode of operation. Outside Air Temperature and Room (or R/A duct) CO2 sensors can also be optionally connected to override motorized modulating economy cycle damper operation. Use of fresh air intake (Economy Cycle Damper operation) due to high CO2 levels can be limited on low & high outside air temperatures (adjustable) so as not to inhibit normal temperature control.

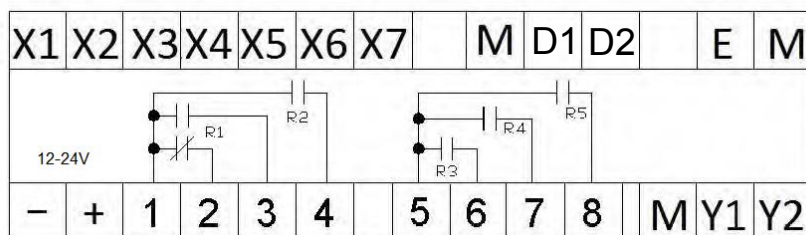
This controller via MODBUS would also make an ideal low cost semi independent stand alone A/C controller supervised, overridden & monitored by a BMS system.

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
	Colour	Grey
Housing	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	10 k Ohms Remote set Point (Optional connection)	D1	System OFF &/or AHR trigger input
X3	O/A sensor for Econ.Cycle (Optional connection)	D2	Manual System ON (T/SW.) Override
X4	CO2 Room or R/A Duct sensor (Optional connection)	E & M	Expansion O/P to slave module
X5	MODBUS RS485 - A Terminal		
X6	MODBUS RS485 - B Terminal		
X7	MODBUS SHIELD (GND)		

ACTUAL TERMINAL LAYOUT



-	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

Abbreviations & Definitions

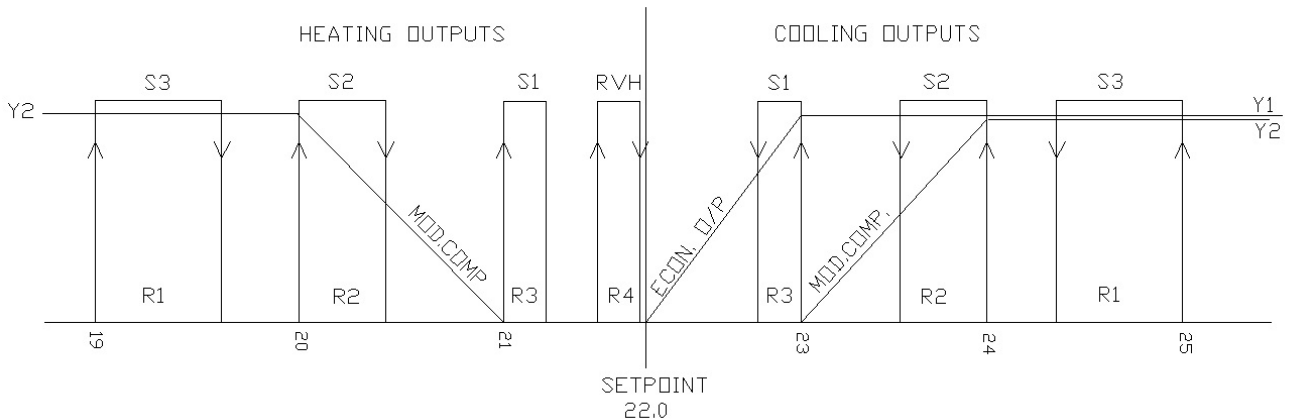
DB	Dead Band in Degrees Celsius
SD	Switching Differential in Degrees Celsius
PB	Proportional band in Degrees Celsius
TD	Time Delay in minutes & seconds
I	Integral Time in minutes & seconds
MODE	H = <u>HEAT</u> ONLY MODE
	C = <u>COOL</u> ONLY MODE
	B = <u>BOTH</u> HEAT & COOL MODE

Pre Loaded Program

FACTORY DEFAULT SETTINGS

3 Stage Reverse Cycle A/C Unit
 Y1 Set as Economy Cycle o/p (Cool only) (P only mode)
 Y2 Set as Modulating Compressor output (P only mode)
 O/A sensor input Disabled (enable if on O/A sensor connected) jumper set for passive
 CO2 sensor Input Disabled (enable if CO2 sensor to be connected)
 Start / Stop Mode via Time Switch Operation Mon-Fri 8:00-17:30
 After hours / Run Timer set for 2 hours

RELAY	MODE	DB	SD	PB	I	TD	USE
R1	B	3.0	1.0			3.0	HEAT & COOL STAGE 3 (COMP.3)
R2	B	2.0	0.7			2.0	HEAT & COOL STAGE 2 (COMP.2)
R3	B	1.0	0.3			1.0	HEAT & COOL STAGE 1 (COMP.1)
R4	H	0.5	0.4			0.1	REVERSING VALVE HEAT MODE
R5							FIXED AS SYSTEM ON RELAY (FAN)
Y1	C	0.1		1.0	OFF		ECONOMY CYCLE DAMPER O/P
Y2	B	1.0		1.0	OFF		MODULATING COMPRESSOR O/P



Typical Wiring Connections

AVAILABLE SENSORS

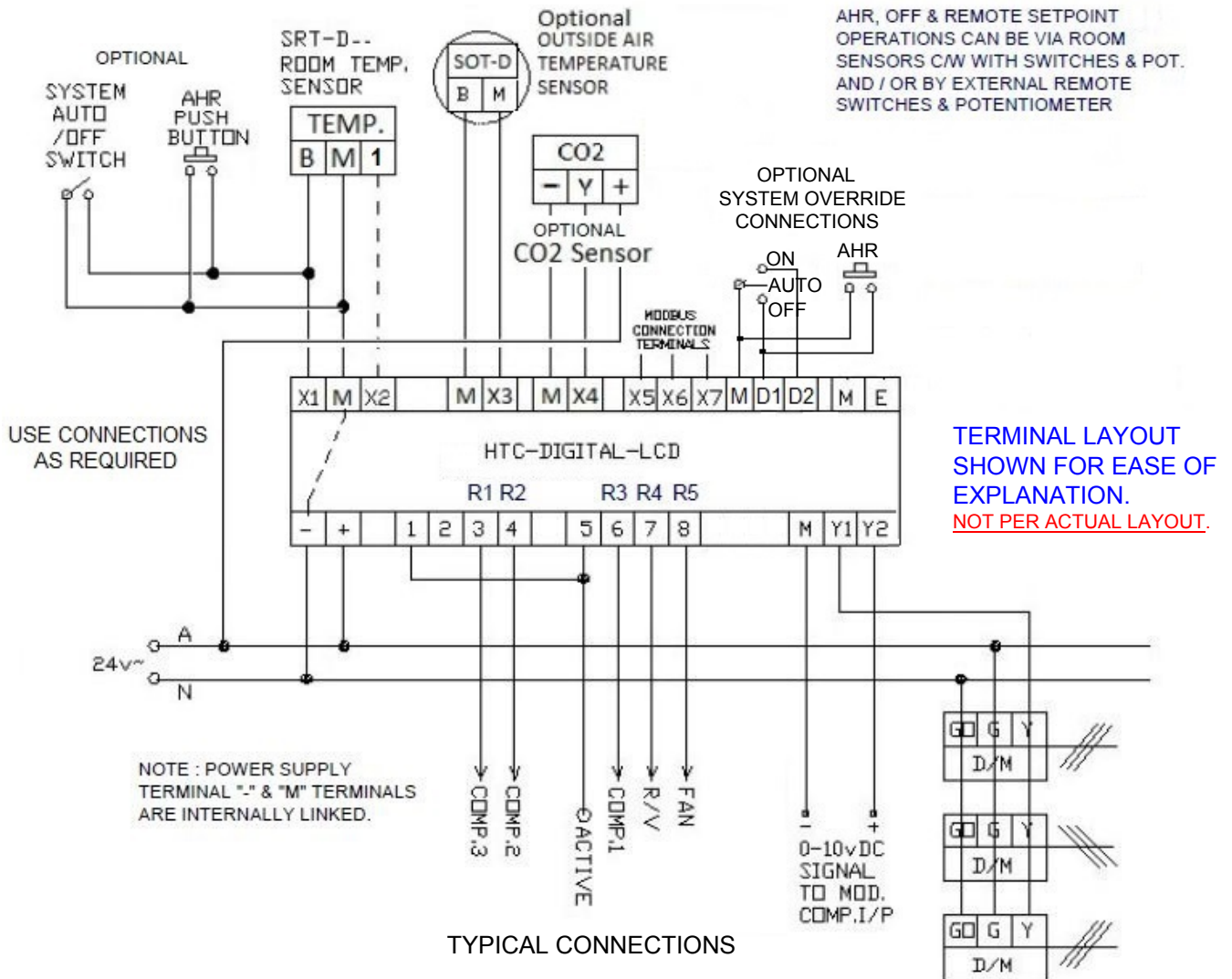
SRT-D	ROOM TEMPERATURE SENSOR	2 WIRE
SRT-DSW	" + ON/OFF SWITCH	2 WIRE
SRT-DSP	" C/W SETPOINT POT.	3 WIRE
SRT-DSPSW	" C/W S/P + ON/OFF SW.	3 WIRE
SDT-D	DUCT TEMPERATURE SENSOR	2 WIRE
SOT-D	OUTSIDE AIR SENSOR (PASSIVE)	2 WIRE
OSAO	OUTSIDE AIR SENSOR (ACTIVE)	3 WIRE
CDT-2N40	ROOM CO2 SENSOR	3 WIRE
CDT-2N44	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.