



HCP7-v2 COMMISSIONING SETUP MANUAL

EX HEVAC defaults that can be user edited are as follows:

*****If these defaults & time clock region etc are suitable then there no adjustment needed.**

EX HEVAC DEFAULTS

- | | |
|---|--------------------------|
| 1.) Current Time, Date and Daylight saving status (DLS) | A.E.S.T +DLS |
| (Summer time start @ 1 st Sunday in October, Winter time @ 1 st Sunday in April) | |
| 2.) Number of "CO" & NO2 sensors to be connected to controller (1-42) | <u>4 X CO , 0 X NO2</u> |
| 3.) CO sensor manufacturers maximum CO measurement (10-500) | 100 (suits hevac HGS-CO) |
| 4.) NO2 sensor manufacturers maximum NO2 measurement (10-50) | 20 (suits hevac HGS-NO2) |
| 5.) Time switch set to FORCE on fan at 100% between the hours of 7-9am & 5-7pm | (subject to D3 & M link) |
| 6.) Idle run timer set to FORCE on fan for 10 minutes at 100% if fan hasn't started in the past 24 hours, but is inhibited from starting in this mode between the hours of 10pm to 9am. | |
| 7.) PreSet using "CUSTOM" mode to modify "UNOCCUPIED" settings to exceed AS1668.2 requirements as per Hevac's recommendations , SEE PAGE 4. | |
| 8.) Fan fault input "D1" set to respond to fault on connection (close) of contacts "D1" to "M". | |

HEVAC MAY HAVE MADE PRE COMMISSIONING CHANGES TO SUIT YOUR PROJECT BUT WILL BE NOTED BELOW

NOTES :

SPARE ME THE DETAILS : changing # of CO Sensors connected.

Generally the only item needing editing is the number of connected Hevac HGS-CO sensors. Follow the steps below to simply edit this value.

- 1.) Press the **ENTER** button to display the 1st menu : **SET CLOCK**
- 2.) Press the **DOWN** button till **CONFIGURE CONTROLLER** menu is displayed. press **ENTER**.
- 3.) Using the **UP, DOWN & ENTER** buttons enter the password number "####", press **ENTER**.
- 4.) **SET NUMBER OF SENSORS** menu will be displayed, press **ENTER**.
- 5.) **Number of CO Sensors** will be displayed & showing existing quantity (ex factory = 4)
- 6.) Use the **UP** or **DOWN** buttons to edit quantity of connected CO sensors , press **ENTER**.
- 7.) **Number of NO2 Sensors** will be displayed (ex factory = 0), press **ENTER** to accept.
- 8.) Press the **ESC(ape)** button to exit programming & resume normal automatic control.



Keypad, displays & settings.

The controllers fascia includes 4 push buttons , a 2x16 character LCD screen and five L.E.D's indicating Low & High fan speeds, Strobe and Siren operation, and a common Fault, Demo (led flashes) & system OK led. The controllers 4 push buttons have the following functions:

"**MENU/ENTER**" : To edit the controllers settings, press this button to enter the controllers menu list (some menus are password protected).

"**MUTE / ESC**" : Used to exit a menu or as a Siren Mute, (which can also be muted by an external push button connected between terminals M and D2).

"**TEST / UP**" : pressing the "TEST" button causes normal operation to stop and a 5 minute demo/test program to run that simulates CO levels increasing from 0ppm to 63ppm & returning to 0 to demonstrate the effect on outputs and displays at various CO levels, note normal delay times are bypassed or reduced.

"**STATUS / DOWN**" : pushing the "STATUS" button causes the display to show input and output status .Push the up or down buttons to see all pages of information.

TECHNICAL DETAILS

POWER CONSUMPTION USING 24vAC	@ 10 VA (MAX)	COLOUR	GREY
"	"	MATERIAL	POLYCARBONATE
	24vDC @ 400mA	UV STABILISED	YES
MAX Y1 (VSD O/P) PERMISSIBLE LOAD	1 mA (>10K ohm)	FIRE RETARDANT	YES
MAX SENSOR INPUT CURRENT	0.07mA (Typically 0.02)	SIZE	L105 X W105 X D60mm
6 MODULE DIN MODULE ENCLOSURE			

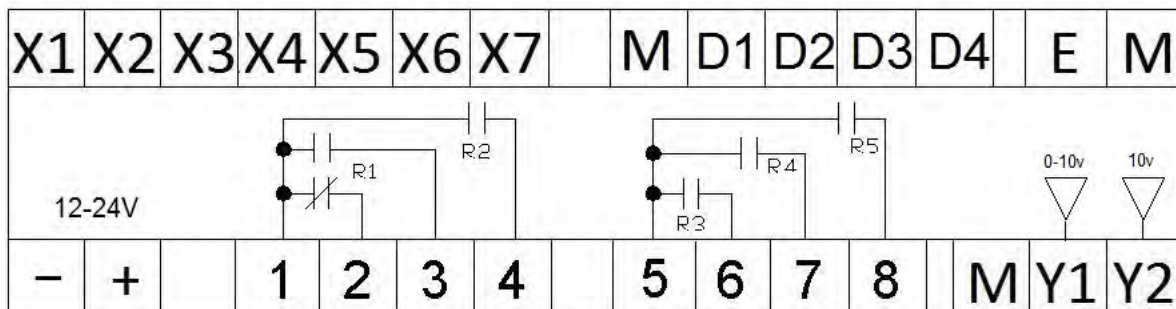
TERMINAL DESIGNATIONS

X1	GAS SENSOR INPUT 1		
X2	"	2	
X3	"	3	
X4	"	4	
X5	"	5	or MODBUS "A"
X6	"	6	or " " "B"
X7	"	7	or " " comms shield

M	GROUND TERMINAL
D1	FAN FAULT INPUT (can be set as open or close on fault)
D2	SIREN MUTE P.B INPUT
D3	ENABLE T/Sw. interlocked FORCED FAN RUN 2 SPEED
D4	NOT VSD FAN OPERATION

E	LOCAL BUS COMMS (to expansion module)
M	GROUND TERMINAL

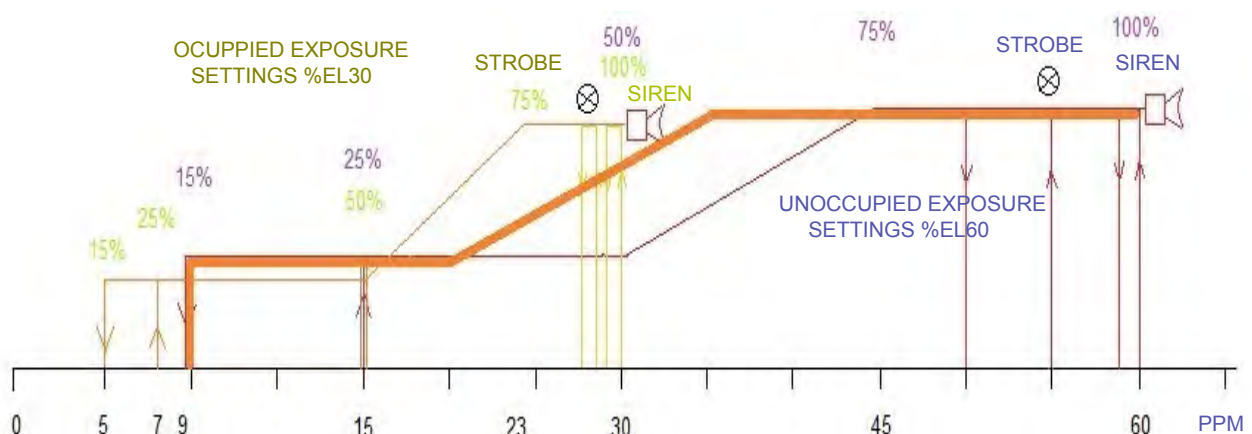
-	12-24v NEUTRAL / GROUND
+	12-24v ACTIVE (AC or DC)
1	COMMON for RELAYS 1 & 2
2	RELAY 1 N/C
3	RELAY 1 N/O- LOW SPEED
4	RELAY 2 N/O- HIGH SPEED
5	COMMON for RELAYS 3, 4 & 5
6	RELAY 3 N/O- STROBE
7	RELAY 4 N/O- SIREN
8	RELAY 5 N/O- I'M OK= CLOSED
M	GROUND TERMINAL
Y1	VSD 0-10vDC OUTPUT
Y2	FIXED 10vDC SIGNAL SOURCE



AS1668.2 - 2012 COMPLIANCE

*****NOTE ***: AS1668.2-2012 Calls for CO ppm sensor response to be based on a Time Weighted Average (TWA) set over an 8 hour period, and with different O/P ppm trigger values depending on the space being used as an occupied or unoccupied CarPark.** Hevac has found that although the specified settings for unoccupied carparks satisfy the health & safety standards and conserve energy, they give poor comfort response to sudden build up of annoying fumes from an idling car or forklift etc, So as a reasonable compromise, Hevac has preset the HCP7 controller to exceed the AS1668.2 requirements, using the controllers "CUSTOM" programming menu to set outputs as follows : The **Fan Enable** relay (R1) is set to respond to "current value" (CV not TWA) with a 1 minute ON delay, the **VSD ramp** to start from **20ppm & ramp to 35ppm** (or if 2 speed on/off control selected the **High speed** relay to energize at **35ppm & off at 20ppm**), the **Strobe** light O/P also set to **CV** (not TWA) as an early warning of high CO or NO2 contaminants & the Audible Alarm O/P's set to use TWA measurement. We have also chosen to set the **TWA to average over 1 hour** not 8hrs. The site commissioning technician can change most settings (with the custom menu) or select one of the inbuilt preset occupied or unoccupied programs that fully comply to the standards, but compliance to meet minimum standards then shifts from HEVAC to the programmer. **Note** : AS1668.2-2012 no longer calls up the use of NO2 sensors, although HEVAC still recommends their system inclusion particularly when many diesel trucks or cars use the parking facilities. The "CONFIGURE" menu for editing is password protected. A 3rd party Modbus connected monitoring / data logging module c/w web interface is also available if required, although the controller does now include a simple 20 event data logger inbuilt. The standards call for the maximum distance between sensor locations not to exceed 25 meters with sensors mounted between 750mm & 1800mm above floor level. Please refer to the standards for other criteria that affect system compliance.

IT SHOULD BE NOTED THAT THE CODE DOESNT ACTUALLY CALL UP THE REQUIREMENT OF A STROBE LIGHT , THIS HAS BEEN A TRADITION THAT CONTROL SUPPLIERS HAVE ALSO SUPPLIED AND SET TO TRIGGER AS AN EARLY WARNING BEFORE THE REQUIRED SIREN TRIGGER POINT IS REACHED.



REQUIREMENTS IN A 24HR PERIOD. AS SUCH THE HCP7 INCLUDES AN IDLE TIMER THAT TRIGGERS FAN OPERATION FOR 10 MINUTES (ADJUSTABLE) IF THE FAN SYSTEM HASNT STARTED IN THE PREVIOUS 24HRS (ADJUSTABLE).



*** NOTE : THE CONTROLLER IS DELIVERED PRESET USING SETTINGS FROM THE "CUSTOM" MENU AS PER HEVAC RECOMMENDATIONS & EXCEED AS1668.2 REQUIREMENTS NO2 SETTINGS ARE BASED ON HEVAC RECOMMENDATIONS.**

UNOCCUPIED MODE FACTORY FIXED SETTINGS (using 8Hr TWA) (as per AS1668.2)

FIXED PRESET SETTINGS FOR 2 SPEED FAN OUTPUT (LOW / HIGH)

RELAY 1 TWA LOW SPEED ON > 15 ppm OFF < 9ppm CO / ON > 2ppm OFF <1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 2 TWA HIGH SPEED ON > 45 ppm OFF < 30ppm CO / ON > 3ppm OFF < 2.5ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 TWA STROBE ON > 55 ppm OFF < 50ppm CO / ON > 3.5ppm OFF <3ppm NO2 / 1 Min. ON DELAY
 RELAY 4 TWA SIREN ON > 60 ppm OFF < 55ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY

FIXED PRESET SETTINGS FOR VSD CONTROLLED FANS

RELAY 1 TWA VSD ENABLE ON > 15 ppm OFF < 9ppm CO / ON > 2ppm OFF < 1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 Y1 0-10v TWA VSD RAMP 100% > 45 ppm - Min < 30 ppm CO / 100% >3ppm - Min < 2ppm NO2 / + Integral time = 60 Minutes
 RELAY 2 TWA ON > 60 ppm OFF < 55ppm CO / ON > 3ppm OFF < 2.5ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 TWA STROBE ON > 55 ppm OFF < 50ppm CO / ON > 3.5ppm OFF < 3ppm NO2 / 1 Min. ON DELAY
 RELAY 4 TWA SIREN ON > 60 ppm OFF < 55ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY

OCCUPIED MODE FACTORY FIXED SETTINGS (using 8Hr TWA) (as per AS1668.2)

RELAY 1 TWA LOW SPEED ON > 9 ppm OFF < 7ppm CO / ON > 2ppm OFF <1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 2 TWA HIGH SPEED ON > 23 ppm OFF < 15ppm CO / ON > 3ppm OFF < 2ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 TWA STROBE ON > 28 ppm OFF < 26ppm CO / ON > 3.5ppm OFF < 3ppm NO2 / 1 Min. ON DELAY
 RELAY 4 TWA SIREN ON > 30 ppm OFF < 28ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY

FIXED PRESET SETTINGS FOR VSD CONTROLLED FANS

RELAY 1 TWA VSD ENABLE ON > 9 ppm OFF < 7ppm CO / ON > 2ppm OFF < 1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 Y1 0-10v TWA VSD RAMP 100% > 23 ppm - Min < 15 ppm CO / 100% >3ppm - Min < 2ppm NO2 / + Integral time = 60 Minutes
 RELAY 2 TWA ON > 30 ppm OFF < 28ppm CO / ON > 3ppm OFF < 2.5ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 TWA STROBE ON > 28 ppm OFF < 26ppm CO / ON > 3.5ppm OFF < 3ppm NO2 / 1 Min. ON DELAY
 RELAY 4 TWA SIREN ON > 30 ppm OFF < 28ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY

*** CUSTOM MODE EX HEVAC DEFAULT SETTINGS (exceeds AS1668.2)**

Note : TWA changed to 1hr (not 8hr), & FAN ENABLE & STROBE O/P's SET TO USE "CV" (not TWA) .

FIXED PRESET SETTINGS FOR 2 SPEED FAN OUTPUT (LOW / HIGH)

RELAY 1 CV LOW SPEED ON > 15 ppm OFF < 9ppm CO / ON > 2ppm OFF < 1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 2 TWA HIGH SPEED ON > 35 ppm OFF < 20ppm CO / ON > 3ppm OFF < 2.5ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 CV STROBE ON > 55 ppm OFF < 50ppm CO / ON > 3.5ppm OFF < 3ppm NO2 / 1 Min. ON DELAY
 RELAY 4 TWA SIREN ON > 60 ppm OFF < 55ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY




FIXED PRESET SETTINGS FOR VSD CONTROLLED FANS

RELAY 1 CV VSD ENABLE ON > 15 ppm OFF < 9ppm CO / ON > 2ppm OFF < 1.5ppm NO2 / 1 Min. ON DELAY/ 5 Min OFF DELAY
 Y1 0-10v TWA VSD RAMP 100% >35 ppm - Min < 20ppm CO / 100% >3ppm - Min < 2ppm NO2 / + Integral time = 60 Mins.
 RELAY 2 TWA ON > 60 ppm OFF < 55ppm CO / ON > 3ppm OFF < 2.5ppm NO2 / 2 Min. ON DELAY/ 5 Min OFF DELAY
 RELAY 3 CV STROBE ON > 55 ppm OFF < 50ppm CO / ON > 3.5ppm OFF < 3ppm NO2 / 1 Min ON DELAY
 RELAY 4 TWA SIREN ON > 60 ppm OFF < 55ppm CO / ON > 4ppm OFF < 3ppm NO2 / 4 Min. ON DELAY

*****CHANGING EX HEVAC SETTINGS SHIFTS RESPONSABILITY FOR COMPLIANCE TO AUSTRALIAN STANDARDS FROM HEVAC TO THE COMMISSIONING PERSONAL***. Using "CUSTOM" mode most settings are user adjustable.**

(NOTE : UNDER VSD CONTROL, RELAY 2 INTERNALLY TAKES ON RELAY 4 TRIGGER SETTINGS AS AN OPTIONAL ALARM OUTPUT i.e. as an override fixed speed input into the VSD)

MAIN MENU

PRESS  **to enter main menu to alter settings, Use**  **or**  **to scroll up or down through menus.**

Under menu called [SET CLOCK-](#) SET SYSTEM CLOCK, DATE & DAYLIGHT SAVING
[for D3 FAN RUN](#)

Under menu called [SET TIME SWITCH-](#) SET TIMES & DAYS that allow the D3 & M link to
force fan run operation.

Under menu called [VIEW EVENT ON HISTORY-](#) VIEW EVENTS that trigger an output "ON" response
UPTO 20 EVENTS RECORDED THAT OVER WRITE OLDEST RECORD

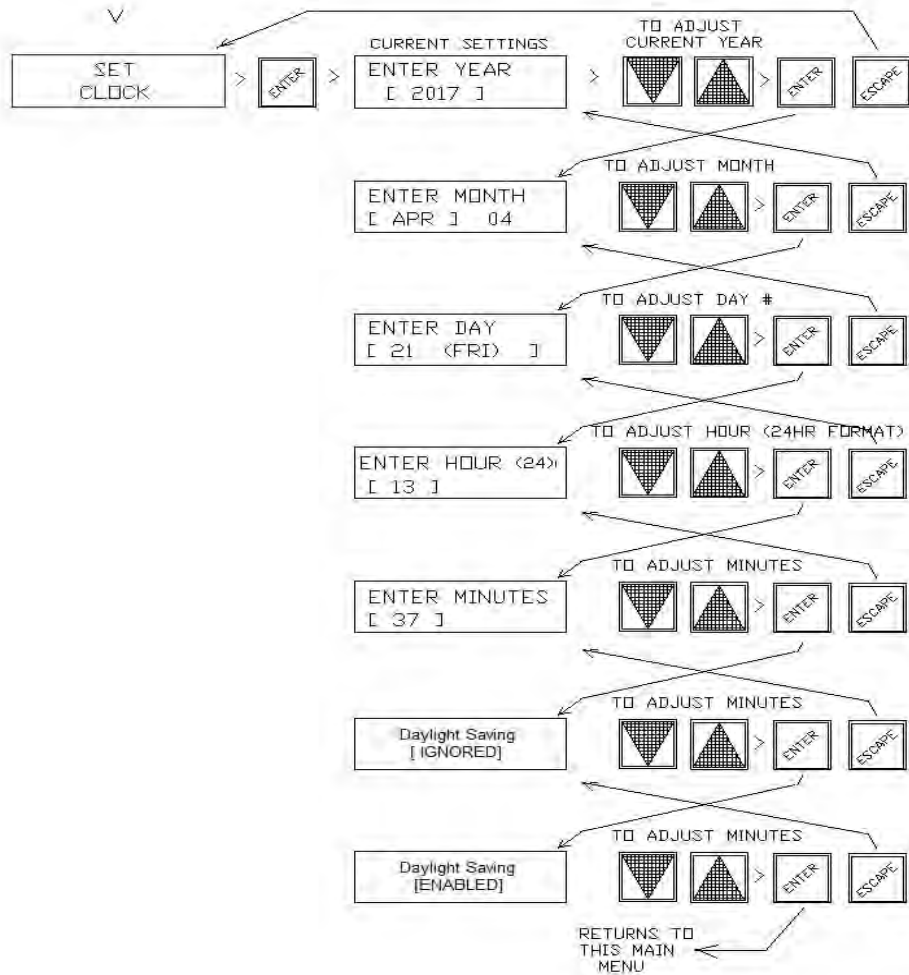
Under menu called [CONFIGURE CONTROLLER-](#)

NOTE : this menu is password protected.

- 1.) SET NUMBER OF SENSORS
 - # of CO sensors
 - # of NO2 sensors
- 2.) EDIT SENSOR FULL SCALE (VALUE)
 - CO sensor full scale
 - NO2 sensor full scale
- 3.) SET OCCUPANCY TYPE
 - occupied : loads settings to suit occupied mode
 - unoccupied : loads settings to suit unoccupied mode
 - custom : allows user to manually set most settings
- 4.) EDIT OUTPUT DELAY TIMERS
- 5.) SET AVERAGING TIME WINDOW TWA
- 6.) SET IDLE PERIOD AUTO FAN RUN TIMER
- 7.) SET D1 (fan) FAULT MODE STATE
- 8.) EDIT FORCED FAN D3/IDLE SPEED
- 9.) CONFIGURE MODBUS
- 10.) RESTORE FACTORY DEFAULTS

SET CLOCK (factory preset with eastern standard +daylight saving trigger dates)

From the running screen press the **ENTER** button to display the 1st main sub menu "**SET CLOCK**" to check or edit the controllers time, date and day light saving enable or disable settings. Daylight saving (if enabled) starts on the 1st Sunday in October (at 2am) and finish on the 1st Sunday in April (3am)



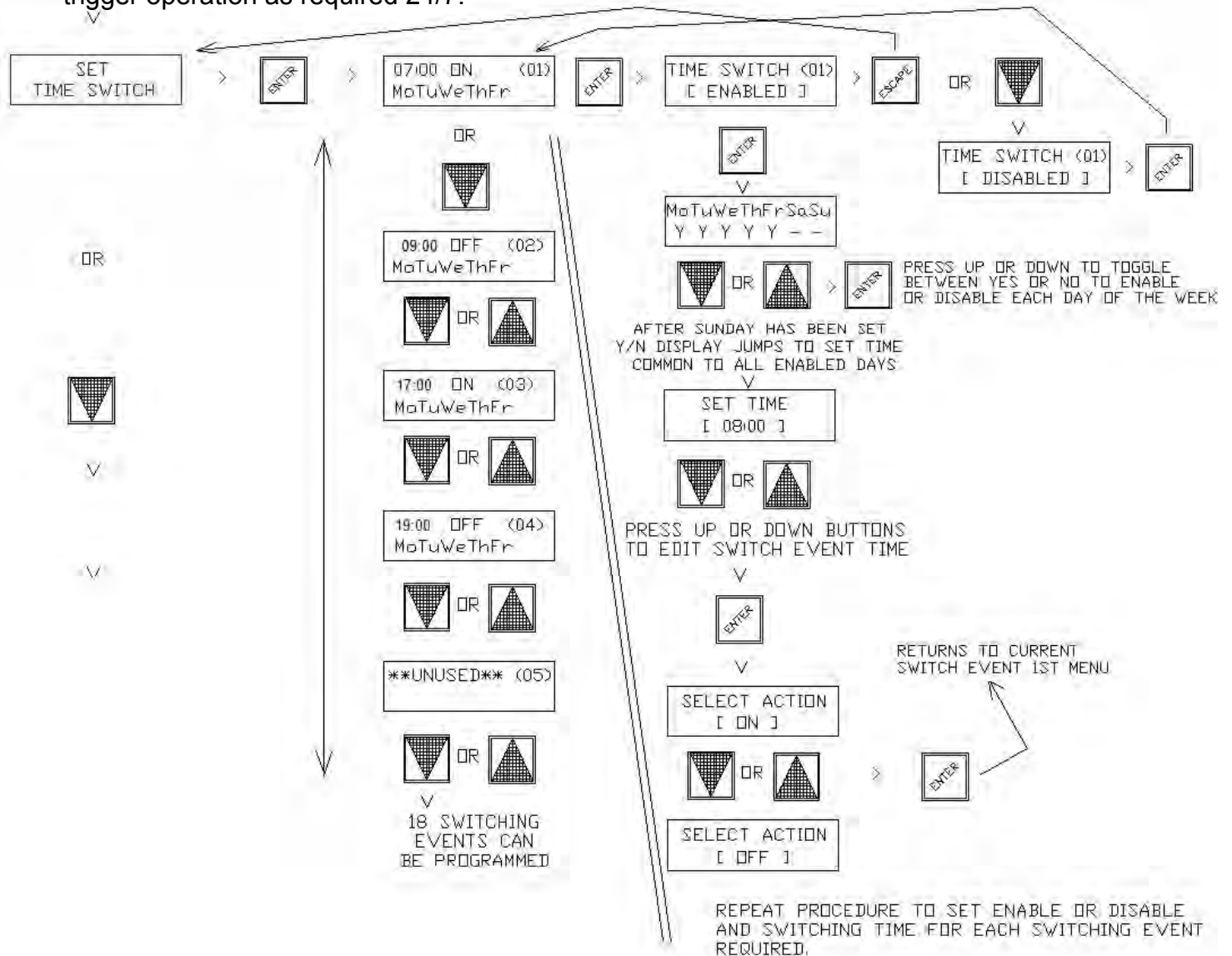
SET TIME SWITCH for D3 (INTERLOCK) FAN RUN

The controllers internal time switch to force ON fan operation (enabled by also fitting a link between terminals D3 & M) can be easily programmed for multiple ON/OFF switching times per day. The controller comes factory preset for forced fan ON operation to cover the typical peak traffic times for morning & evening - monday to friday from 7am (event 01) till 9am (event 02) & from 17:00pm (event 03) till 19:00 (event 04). This application requires a permanent link to be fitted between terminals D3 & M.

SET TIME SWITCH for D3 FAN RUN CONTINUED

To edit settings, from the normal running screen, Press the fascia button labeled “**ENTER**”. Scroll down through the menu tree with the “**DOWN**” arrow button till “**SET TIME SWITCH for D3 FAN RUN**” is displayed. Press the “**ENTER**” button to open this menu. The existing detail for switching event 1 is displayed. Unlike other time switches, this controller has very flexible unassigned switching events (instead of fixed sequential ON then OFF routines). Time switching events can be set to switch (change state) at any time & day/s, and set as a switching ON event or OFF event. With this method, multiple ON / OFF events can be set on individual days or groups of days (crossing midnight is no issue). 18 switching events are available.

Alternatively the D3 & M link can be used as an external manual forced fan ON input from some other device, ie manual switch, thermostat or a movement sensor (c/w built in run on timer). It can be interlocked with time switch times to allow external forced operation during programmed times or if no time switch OFF time entered the external interlock can trigger operation as required 24/7.



VIEW EVENT ON HISTORY

The controller now has a simple 20 event data logger that records input events that cause an output response to help diagnose alarm causes and system behavior. Note : After 20 events are recorded new events overwrite the oldest event.

To access the logger, press the fascia ENTER button to open the menu system, using the DOWN button, scroll down through the menu until "VIEW EVENT ON HISTORY" is displayed.

Press the ENTER button to open this menu & view the 1st (if any) ON event triggers.

The LCD display shows the event # starting at 01, followed by the event description and the sensor input number that caused the event. On the bottom line is recorded the time and date that the triggered the event.

DISPLAYED SCREEN INDICATING
A SENSOR FAULT HAS OCCURED

EVENT #	EVENT DESCRIPTION	SENSOR #
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01 :	CO FAULT	#4
23/05/2018		09:20

EVENT DATE & TIME

The 1st event is the newest, followed by older events up to a maximum of 20 events.

To erase the event history scroll up from the 1st event and the LCD screen will display a message asking to "ERASE WHOLE HISTORY" ?, Press ENTER to delete history or press the ESC button to exit event history leaving history intact. Other event screens are shown below.

DISPLAYED SCREEN WHEN
NO EVENTS HAVE BEEN
RECORDED

No event history		
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DISPLAYED SCREEN INDICATING
SYSTEM STARTED BY IDLE RUN
TIMER




05 :	IDLE RUN TIMER	
23/05/2018		11:35



DISPLAYED SCREEN INDICATING
TIME SWITCH FORCED RUN IS
SWITCHED ON + THE D3 & M
LINK WAS MADE(connected)

02 :	T/Sw. + D3	
23/05/2018		09:00


CONFIGURE CONTROLLER (+ SUB MENU'S)

To alter controller configuration , scroll to the main menu called "**CONFIGURE CONTROLLER**" & press 

The controller will request a 4 digit password which is "####" use  or  &  buttons to set.

Press  or  Buttons

to scroll through sub menus &

press  to edit


- SET NUMBER OF SENSORS > # of CO sensors , # of NO2 sensors
- EDIT SENSOR FULL SCALE > Scale of CO sensors, Scale of NO2 sensors
- SET OCCUPANCY TYPE > Unoccupied, Occupied, Custom (> various sub menus)
- EDIT OUTPUT DELAY TIMERS (delay on & run on timer settings per relay)
- SET AVERAGING TIME WINDOW (sensor averaging time window TWA)
- SET IDLE PERIOD FAN RUN TIMER (time gap & run duration)
- EDIT FORCED FAN D3/IDLE SPEED (speed setting for forced fan run override)
- CONFIGURE MODBUS (RS485 modbus comms settings)
- RESTORE FACTORY DEFAULTS (clear memory & return controller to defaults)

-SET NUMBER OF SENSORS

Press  to open the "**SET NUMBER OF SENSORS**" sub menu.




NUMBER OF CO SENSORS menu opens displaying current setting.


In the "**NUMBER OF CO SENSORS**" menu Press  or  buttons to alter the quantity of connected CO sensors.

Press  to accept # of connected CO sensors & jump to number of NO2 sensors connected

In the "**NUMBER OF NO2 SENSORS**" menu Press  or  buttons to alter the quantity of connected sensors.

Press  button to accept the # of connected NO2 sensors and return to this main sub menu.

Press  or  button to Scroll through the other Configure Controller sub menus, & select using 


or press  to escape to the main running screen

-EDIT SENSOR FULL SCALE




Press  to open the "**EDIT SENSOR FULL SCALE**" sub menu.

"CO SENSOR FULL SCALE" menu opens displaying current setting.

In the "**CO SENSOR FULL SCALE**" menu Press  or  buttons to alter the maximum CO sensor Value.

Press  accept the scale value of connected CO sensors & jump to scale setting for connected NO2 sensors





In the "**NO2 SENSOR FULL SCALE**" menu Press  or  buttons to alter the maximum NO2 sensor Value.

Press  then  to finish editing & return to main screen or  to move to another menu.

*Note: The HCP7 Controller and expansion modules EXP7 are designed to respond to gas sensors with an output voltage of 2 to 10vDC over their measurement range. Examples being : The Hevac HGS-CO sensors produce 2-10v over 0-**100** ppm & DWYER CO sensors typically produce 2-10v over 0-**200** ppm. The SENSOR FULL SCALE settings must be set to match the attached sensors, and sensor (types) must be of the same range, ie all CO sensors if set to 200 must all have a full range of 200, if NO2 sensors are also connected and set to 20ppm , then all NO2 sensors have to be 0-20ppm sensors.*

-SET OCCUPANCY TYPE

To enter “**SET OCCUPANCY TYPE**” menu Press  or  or  to move to another menu.

In the “**OCCUPANCY TYPE**” screen Press  or  to scroll the choice of “**OCCUPIED**”, “**UNOCCUPIED**” or “**CUSTOM**” choosing “**OCCUPIED**” or “**UNOCCUPIED**” using the  button will load those settings and return you to this menu. choosing “**CUSTOM**” using the  will jump to its 1st sub menu “**EDIT CO LEVELS**”.

SUB MENU “**CUSTOM**” in Occupancy type

USE THIS SUB MENU TO EDIT ALL VALUES FOR CO & NO2 TRIGGER POINTS, TIME DELAYS AND RESPONSE TIMES & METHOD. **NOTE : USING THIS MENU SHIFTS RESPONSABILITY FROM HEVAC CONTROLS PTY.LTD TO THE USER FOR COMPLIANCE WITH AUSTRALIAN STANDARDS AS1668.2**



IF “**CUSTOM**” IS SELECTED AS THE OCCUPANCY TYPE, THE FOLLOWING SUB MENUS ARE ACCESSABLE


- EDIT CO OUTPUT ON/OFF VALUES** - set On, Off, Start & Range trigger points of relative output relays & Y1 in ppm CO
- EDIT NO2 OUTPUT ON/OFF VALUES** - set On, Off, Start & Range trigger points of relative output relays & Y1 in ppm NO2
- SET SENSOR O/P RESPONSE METHOD** - choose Time Weighted Average (**TWA**) or Current Value (**CV**) for each output

- EDIT CO OUTPUT ON/OFF VALUES


(CO LOW SPEED FAN SETTINGS - RELAY 1)

To enter “**EDIT CO OUTPUT ON/OFF VALUES**” menu Press  or  to jump to “**EDIT NO2 LEVELS**” menu.

Edit “**CO LOW SPEED FAN OFF**” using the  or  buttons to alter the low speed FAN turn OFF point in ppm CO.


Press  to accept & jump to edit screen “**LOW SPEED FAN ON**”



Edit “**CO LOW SPEED FAN ON**” using the  or  buttons to alter the low speed FAN turn ON point in ppm CO.

Press  to accept & jump to edit screen “**CO HIGH SPEED FAN OFF**”



(CO HIGH SPEED FAN SETTINGS - RELAY 2)


Press  to edit “**HIGH SPEED FAN OFF**” using the  or  buttons to alter high speed turn OFF point in ppm CO.



Press  to accept & jump to edit screen “**HIGH SPEED FAN ON**”

Edit “**HIGH SPEED FAN ON**” using the  or  buttons to alter the high speed FAN turn ON point in ppm CO.



(CO STROBE SETTINGS - RELAY 3)


Edit "STROBE OFF" using the  or  buttons to alter the STROBE turn off point in ppm CO.



Press  to accept & jump to edit screen "STROBE ON"

Edit "STROBE ON" using the  or  buttons to alter the STROBE turn ON point in ppm CO.



(CO SIREN SETTINGS - RELAY 4)


Edit "SIREN OFF" using the  or  buttons to alter the SIREN turn off point in ppm CO.

Press  to accept & jump to edit screen "SIREN ON"


Edit "SIREN ON" using the  or  buttons to alter the SIREN turn ON point in ppm CO.

(CO VSD RAMP SETTINGS - Y1)


Edit "VSD RAMP START" using the  or  buttons to alter the VSD RAMP start point in ppm CO.

Press  to accept & jump to edit screen "VSD RAMP P BAND"


Edit "VSD RAMP P-BAND" using the  or  buttons to alter the VSD RAMP P BAND in ppm CO.



Press  to accept & jump to edit screen "VSD RAMP I-TIME"

Edit "VSD RAMP I-TIME" using the  or  buttons to alter the VSD RAMP Integral TIME in Minutes.

Press  to accept & jump to edit screen "VSD MIN O/P LEVEL"

Edit "VSD MIN O/P LEVEL" using the  or  buttons to alter the VSD Minimum Output level.



Press  to accept & return to this sub menu.


Press  to jump to "EDIT NO2 LEVELS" or press  to move back up through the menus.



-EDIT NO2 ON/OFF OUTPUT VALUES


(NO2 LOW SPEED FAN SETTINGS - RELAY 1)

To enter "EDIT NO2 ON/OFF VALUES" menu Press   to jump to "SET RESPONSE METHOD" menu. .

Edit "NO2 LOW SPEED FAN OFF" using the  or  buttons to alter the low speed fan turn off point in ppm NO2


Press  to accept & jump to edit screen "LOW SPEED FAN ON"



Edit "NO2 LOW SPEED FAN ON" using the  or  buttons to alter the low speed FAN turn ON point in ppm NO2.

Press  to accept & jump to edit screen "NO2 HIGH SPEED FAN OFF"

(NO2 HIGH SPEED FAN SETTINGS - RELAY 2)


Press  to edit "HIGH SPEED FAN OFF" using the  or  buttons to alter high speed turn OFF point in ppm NO2.


Press  to accept & jump to edit screen "HIGH SPEED FAN ON"

Edit "HIGH SPEED FAN ON" using the  or  buttons to alter the high speed FAN turn ON point in ppm NO2.


(NO2 STROBE SETTINGS - RELAY 3)


Edit "STROBE OFF" using the  or  buttons to alter the STROBE turn off point in ppm NO2.



Press  to accept & jump to edit screen "STROBE ON"

Edit "STROBE ON" using the  or  buttons to alter the STROBE turn ON point in ppm NO2.



(NO2 SIREN SETTINGS - RELAY 4)


Edit "SIREN OFF" using the  or  buttons to alter the SIREN turn off point in ppm NO2.



Press  to accept & jump to edit screen "SIREN ON"


Edit "SIREN ON" using the  or  buttons to alter the SIREN turn ON point in ppm NO2.



(NO2 VSD RAMP SETTINGS - Y1)


Edit "VSD RAMP START" using the  or  buttons to alter the VSD RAMP start point in ppm NO2.

Press  to accept & jump to edit screen "VSD RAMP P-BAND"


Edit "VSD RAMP P-BAND" using the  or  buttons to alter the VSD RAMP P-BAND in ppm NO2.

Press  to accept & jump to edit screen "VSD RAMP I-TIME"

Edit "VSD RAMP I-TIME" using the  or  buttons to alter the VSD RAMP Integral TIME in Minutes.



Press  to accept & jump to edit screen "VSD MIN O/P LEVEL"


Edit "VSD MIN O/P LEVEL" using the  or  buttons to alter the VSD Minimum Output level.



Press  to accept & jump to edit screen "SET RESPONSE METHOD"


-SET SENSOR O/P RESPONSE METHOD - (TWA or CV)



Use this menu to set whether an output relay (or the VSD ramp) should respond to the highest sensor signal but which is averaged out over a time window period using the TWA time setting, or to respond to the highest actual current sensor value (CV).


Edit "LOW SPEED ON/OFF CONTROL METHOD" using the  or  buttons to select "CV" or "TWA".



Press  to accept & jump to edit screen "HIGH SPEED CONTROL METHOD"


Edit "HIGH SPEED ON/OFF CONTROL METHOD" using the  or  buttons to select "CV" or "TWA".



Press  to accept & jump to edit screen "STROBE ON/OFF CONTROL METHOD"


Edit "STROBE ON/OFF CONTROL METHOD" using the  or  buttons to select "CV" or "TWA".

Press  to accept & jump to edit screen "SIREN ON/OFF CONTROL METHOD"




Edit "SIREN ON/OFF CONTROL METHOD" using the  or  buttons to select "CV" or "TWA".


Press  to accept & jump to edit screen "VSD RAMP CONTROL METHOD"



Edit "VSD RAMP CONTROL METHOD" using the  or  buttons to select "CV" or "TWA".


Press  to accept & return to this sub menu Set Response Method.

SUB MENUS UNDER "CONFIGURE CONTROLLER"

- SET NUMBER OF SENSORS
 - EDIT SENSOR FULL SCALE
 - SET OCCUPANCY TYPE > Unoccupied, Occupied, or (Custom > various sub menus)
 - EDIT OUTPUT DELAY TIMERS
 - SET AVERAGING TIME WINDOW TWA
 - SET IDLE PERIOD FAN RUN TIMER
 - SET D1 (fan) FAULT MODE STATE
 - EDIT FORCED FAN D3/IDLE SPEED
 - CONFIGURE MODBUS
 - RESTORE FACTORY DEFAULTS
- you are here

-  

To jump to the another main sub menu from this point press  twice till "SET OCCUPANCY TYPE" is displayed


Then use the  or  buttons to move through the main sub menus.

or repeatedly Press  to move back up through the menus and to exit to the main running screen.


-EDIT OUTPUT DELAY TIMERS

USE THIS MENU TO ADJUST THE DELAY ON AND RUN ON TIME DELAYS FOR EACH RELAY OUTPUT (COMMON FOR CO & NO2 RESPONSE)


Edit "LOW SPEED FAN ON DELAY" using the  or  buttons to alter the ON time delay in mins & secs.

Press  to accept & jump to edit screen "LOW SPEED FAN RUN ON TIMER"


Edit "LOW SPEED FAN RUN-ON" using the  or  buttons to alter the run ON time delay in mins & secs.

Press  to accept & jump to edit screen "HIGH SPEED START DELAY"



Edit "HIGH SPD FAN ON DELAY" using the  or  buttons to alter the ON time delay in mins & secs.


Press  to accept & jump to edit screen "HIGH SPEED FAN RUN ON TIMER"




Edit "HIGH SPEED FAN RUN-ON" using the  or  buttons to alter the run ON time delay in mins & secs.

Press  to accept & jump to edit screen "STROBE ON DELAY"

Edit "STROBE ON DELAY" using the  or  buttons to alter the STROBE turn ON delay in mins & secs.


Edit "SIREN ON DELAY" using the  or  buttons to alter the SIREN turn ON delay in mins & secs.



Press  to accept & and return to this main sub menu.


Press the  or  buttons to scroll to other main sub menus or press  to exit programming




-SET TIME AVERAGING WINDOW

USE THIS MENU TO CHANGE THE TIME WINDOW THAT A SENSOR MEASUREMENT IS AVERAGED OVER , AS1668.2 ACCEPTS THIS SET TO 8 HOURS, ALTHOUGH THIS SETTING WILL CAUSE VERY DELAYED SENSOR RESPONSE. SETTING THIS VALUE LOWER EXCEEDS REQUIREMENTS AND WILL GIVE FASTER SENSOR RESPONSE, OR USING THE "CUSTOM MENU" OUTPUTS CAN BE ALTERNATIVELY INDIVIDUALLY SET TO USE "CURRENT VALVE" WHICH THEN USES THE HIGHEST REAL TIME ACTUAL SENSOR VALUE.

Press  to allow editing of the existing value


Press the  or  buttons to change the time window in hours & minutes .



Press  to accept the new value & return to this main sub menu.


Press the  or  buttons to scroll to other main sub menus or press  to exit programming



-SET IDLE PERIOD FAN RUN TIMER


USE THIS MENU TO SET THE IDLE PERIOD AFTER WHICH THE FAN WILL AUTOMATICALLY START AND THE AMOUNT OF TIME THE FAN THEN RUNS FOR TO PROVIDE MINIMUM VENTILATION REQUIREMENTS



Press  to edit settings in the menu "SET IDLE PERIOD FAN RUN TIMER"


Edit "IDLE PERIOD RUN DELAY" using the  or  buttons to set the time gap that triggers the fan in an idle period.

Press  to accept & jump to edit screen "RUN FOR TIME" screen.


Edit "RUN FOR TIME" using the  or  buttons to set the length of time that the fan then runs for in minutes.




Press  to accept & jump to edit screen "INHIBIT IDLE RUN FROM" screen.

Edit "INHIBIT IDLE RUN FROM" using the  or  buttons to set start lockout time, to inhibit idle fan run start.

Press  to accept & jump to edit screen "INHIBIT IDLE RUN UNTIL" screen.


Edit "INHIBIT IDLE RUN UNTIL" using the  or  buttons to set finish lockout time, to allow idle fan run start.

Press  to accept and return to this main menu

Press the  or  buttons to scroll to other main sub menus or press  to exit programming



-SET D1 (fan) FAULT MODE STATE

USE THIS MENU TO SET CONTROLLERS RESPONSE TO A FAN FAULT CAUSED BY AN OPENING OR CLOSING CONTACT ON D1 & M

Press  to edit settings in the menu "SET D1 FAULT MODE STATE"


Display shows existing state (factory default is close on fault)



Edit "D1 FAULT MODE STATE" using the  or  buttons to select [CLOSE] or [OPEN] on fault


Press  to accept & return to menus & then  to exit programming




-EDIT FORCED FAN D3/IDLE SPEED

*USE THIS MENU TO SET THE FAN SPEED USED DURING FORCED **ON** OPERATION DUE TO THE INTERNAL TIME SWITCH/D3 OR IDLE TIMER OPERATION.*

Press  to edit settings in the menu "EDIT FORCED FAN D3/IDLE SPEED "

Edit "FORCED RUN FAN SPEED" using the  or  buttons to set VSD speed during forced run operation
if the 2 speed ON/OFF CONTROL (no VSD) link is fitted, then instead of VSD speed , LOW or HIGH speed is selectable

Press  to accept and return to this main menu

Press the  or  buttons to scroll to other main sub menus or press  to exit programming

-CONFIGURE MODBUS

TO ENABLE THE USE OF MODBUS SET THE SETTINGS IN THE MENU BELOW AS REQUIRED TO MATCH THE SYSTEM CONNECTED, ALSO NOTE : INTERNAL RED CONNECTOR LINKS ON THE BOTTOM CIRCUIT BOARD HAVE TO BE RELOCATED TO TRANSFER USE OF TERMINALS "X5, X6 & X7" FROM SENSOR INPUT USE TO MODBUS USE. WITH POWER OFF, OPEN THE HOUSING & LOCATE THE 3 RED JUMPERS ON THE PCB LABELED "CN3 & CN4" (3 JUMPERS) REPOSITION THESE 3 JUMPERS FROM THE TOP 2 PINS (V) TO THE BOTTOM 2 PINS (C).

Press to edit settings in the menu "CONFIG MODBUS"

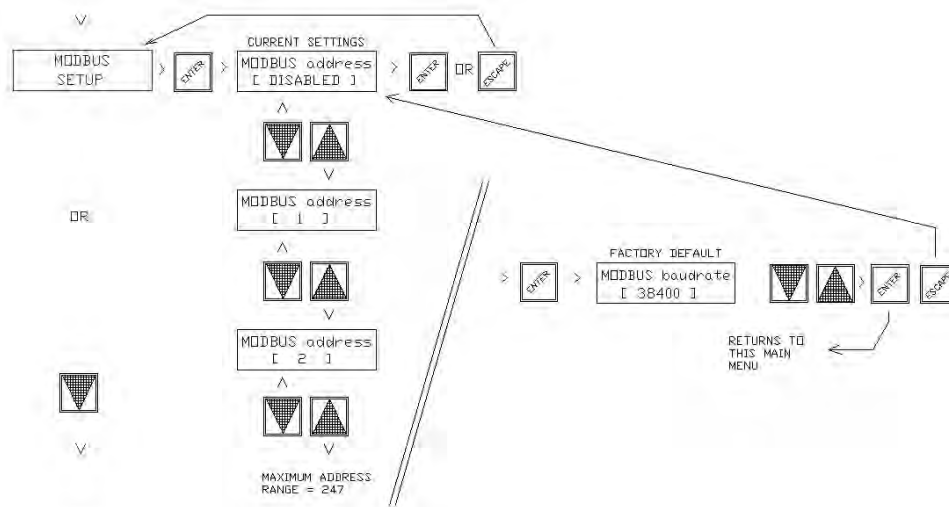
Edit "MODBUS Address" using the or buttons.

Press to accept address and jump to edit screen for the baudrate "MODBUS BAUDRATE"

Edit "MODBUS Baudrate" address using the or buttons.

Press to accept and return to this main menu.

Press the or buttons to scroll to other main sub menus or press to exit programming



MODBUS MEMORY MAP

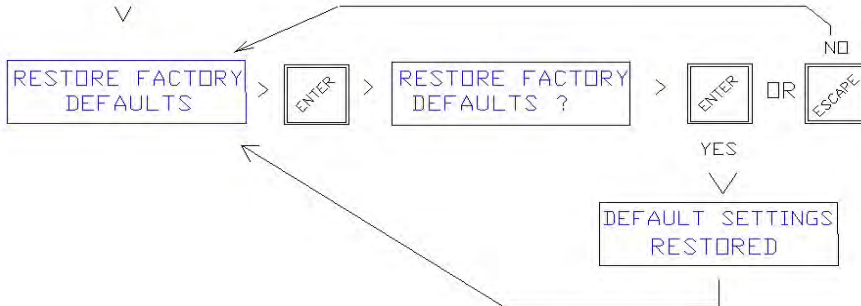
Modic on	Addr ess	Access	Description	Units	Type	Explanation	Defau	Min	Max	Error	InternalUs e	Internal Use
Read Coils												
00161	160	Read/Only		-	boolean						00000	200
01001	1000	Read/Only	Relay 0	-	boolean	TRUE if relay is active	-	-	-	-	00000	102
01002	1001	Read/Only	Relay 1	-	boolean	TRUE if relay is active	-	-	-	-	00001	102
01003	1002	Read/Only	Relay 2	-	boolean	TRUE if relay is active	-	-	-	-	00002	102
01004	1003	Read/Only	Relay 3	-	boolean	TRUE if relay is active	-	-	-	-	00003	102
01005	1004	Read/Only	Relay 4	-	boolean	TRUE if relay is active	-	-	-	-	00004	102
Inputs												
10001	0	Read/Only	Unassigned input 0	-	boolean	No current function	-	-	-	-		
10002	1	Read/Only	Unassigned input 1	-	boolean	No current function	-	-	-	-		
10003	2	Read/Only	Unassigned input 2	-	boolean	No current function	-	-	-	-		
10004	3	Read/Only	Unassigned input 3	-	boolean	No current function	-	-	-	-		
Write Coils												
00169	160	Read/Write		-	boolean							210
Read Registers												
45001	5000	Read/Only	Controller model	-	unsigned 16bit	C controller model number	-	-	-	-		
45002	5001	Read/Only	MODBUS mapping version	-	unsigned 16bit	MODBUS memory/coil mapping version number	-	-	-	-		
41023	1022	Read/Only	Number of CO sensors	-	unsigned 8bit	Number of configured CO sensors (these will be the first group of sensors)	-	0	42	-		
41024	1023	Read/Only	Number of NO2 sensors	-	unsigned 8bit	Number of configured NO2 sensors (these appear after the CO sensors)	-	0	42	-		
41025	1024	Read/Only	Max CO sensor gas reading	ppm	unsigned 8bit	Maximum ppm level reported by all CO sensors	-	0	255	-		
41026	1025	Read/Only	Max NO2 sensor gas reading	ppm * 10	unsigned 8bit	Maximum ppm level reported by all NO2 sensors	-	0	255	-		
41027	1026	Read/Only	TWA CO gas reading	ppm	unsigned 8bit	Time weighted average of the maximum of all CO sensors	-	0	255	-		
41028	1027	Read/Only	TWA NO2 gas reading	ppm * 10	unsigned 8bit	Time weighted average of the maximum of all CO sensors	-	0	255	-		
41029	1028	Read/Only	Sensor 1 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		
41030	1029	Read/Only	Sensor 2 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		
41031	1030	Read/Only	Sensor 3 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		
41032	1031	Read/Only	Sensor 4 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		
...						
41068	1067	Read/Only	Sensor 40 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		211
41069	1068	Read/Only	Sensor 41 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		212
41070	1069	Read/Only	Sensor 42 gas reading	ppm or ppm*10	unsigned 8bit	For CO sensor value is ppm, for NO2 sensor value is ppm * 10	-	0	250	255		213
Write Registers												
41022	1022	Read/Write		-	unsigned 16bit		10					210

-RESTORE FACTORY DEFAULTS

Press **ENTER** to access the choice of restoring settings to original factory defaults (unoccupied mode as per AS1668.2)

To restore factory defaults select [YES] using the **▲** or **▼** buttons, then press **ENTER**

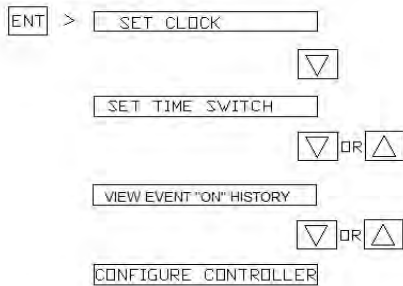
Press **ESC** to exit programming & return to normal operation & running display



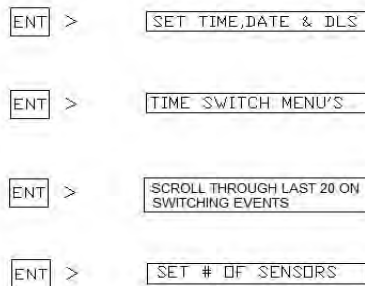
PLEASE NOTE : RESETTING THE CONTROLLER TO FACTORY DEFAULTS SETS THE CONTROLLER TO FULLY CONFORM TO UN-OCCUPIED AS1668.2 MODE SETTINGS USING 8HR TWA FOR ALL OUTPUTS . EX HEVAC SETTINGS ARE SET BEFORE DESPATCH SUCH THAT RELAYS 1 & 3 TO USE CURRENT VALUE AND THE TWA IS ALSO CHANGED TO 1 HR (FROM 8).

MENU SYSTEM CONCEPT & BASIC OVERVIEW

OPERATING DISPLAY

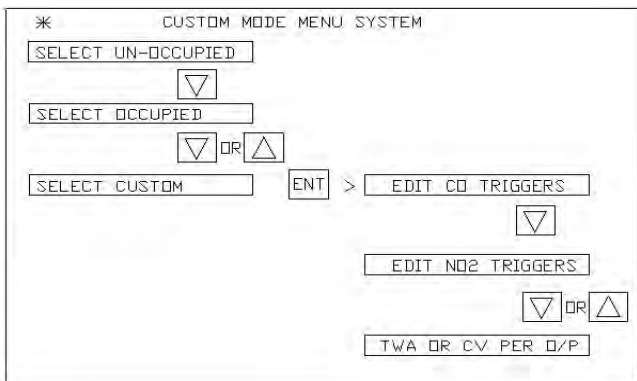
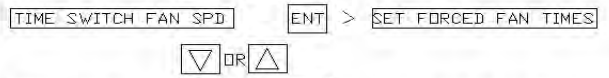
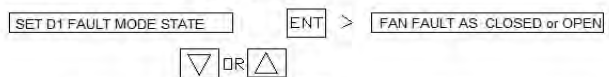
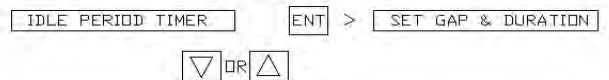
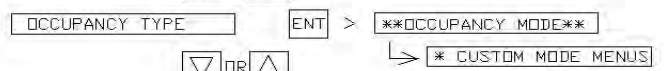
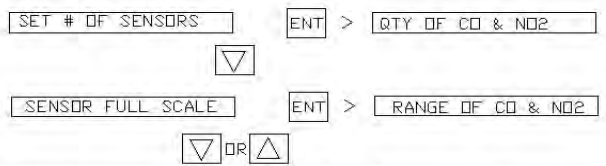


(PASSWORD = 9562)



NOTE :

PRESSING THE **ESC** BUTTONS MOVES YOU BACK ONE SCREEN OR RETURNS TO THE ABOVE MENU





Operational notes

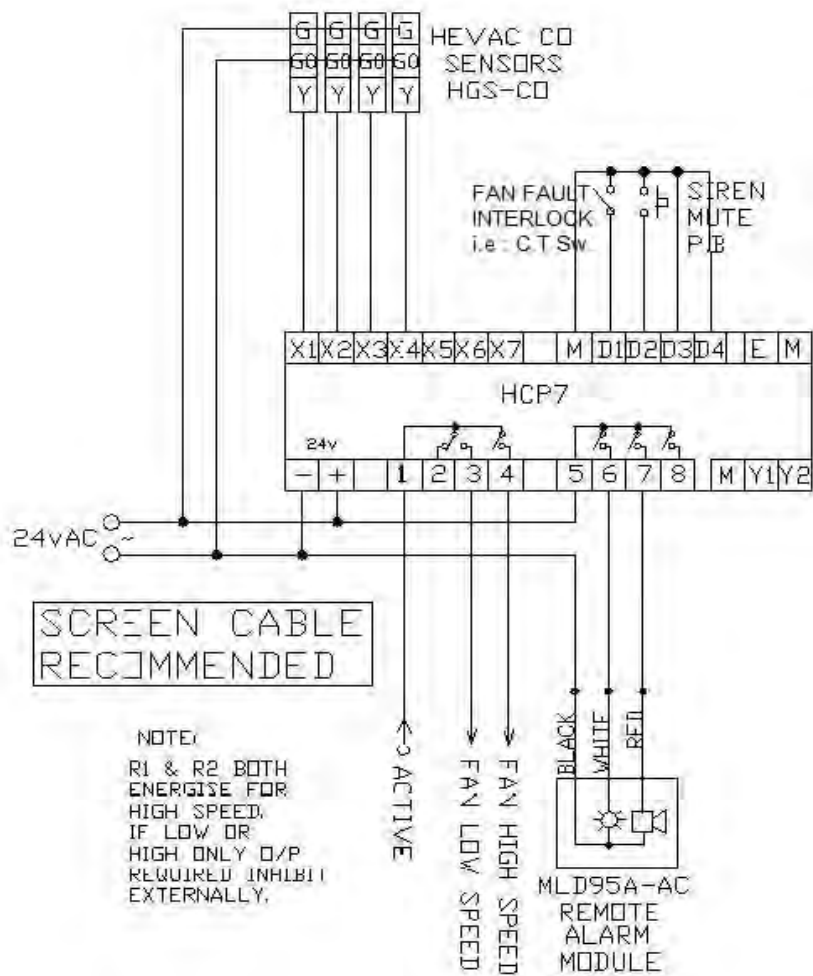
"TIME WEIGHTED AVERAGE" (TWA) is a method used to average out sensor readings to produce an average output value calculated over a set period (time window), whereas "CURRENT VALUE" (CV) produces the actual current real time sensor value. To save energy & meet minimum safety requirements AS1668.2 calls up the use of TWA measured over an 8 hour period, Most CO control systems on the market tend to ignore this and can only respond to current value (which exceeds requirements but uses more energy). This controller can be set to use any combination of TWA or CV for the various outputs. The controller can also be set to force ON fan operation between several configurable blocks of time, intended for use when high periods of traffic are expected and to save cycling and fume build up. The controllers internal time switch is factory preset to force fan operation Monday to Friday in the morning between 7am till 9am and in the evening between 5pm till 7pm (adjustable). **To enable this feature an external link or switch must also be connected between terminals "M" & "D3"**. This input can alternatively be used as a forced fan run input (for example) from a switch, a movement sensor (with built in run on timer) or & a thermostat, this forced fan run speed is also programmable with a factory default of 100% vsd or high speed. The controller also makes use of an "Idle Run Timer" routine that keeps track of the last fan operation time and automatically starts the fan to satisfy minimum ventilation requirements. The preset factory settings force fan ON operation after 24 hours of idle time and then to run for 10 minutes , both gap & duration settings are user adjustable. HEVAC have also included a feature to Inhibit this forced ON operation by use of an internal time switch, which blocks the Idle Timer triggering fan operation between certain hours so as not to cause unnecessary noise (for example) during night hours in an apartment building. The factory settings for this inhibit timer is to block operation between the hours of 10pm till 9am , Note : This inhibit routine does not stop a genuine fan start call due to a build up of CO or NO2 which is enabled to operate 24/7 as per AS1668.

The number of connected sensors and the sensor measurement maximum value (allowing other brand of sensors to used) are user adjustable in the menu system under the password protected " CONFIGURE CONTROLLER " sub menu.

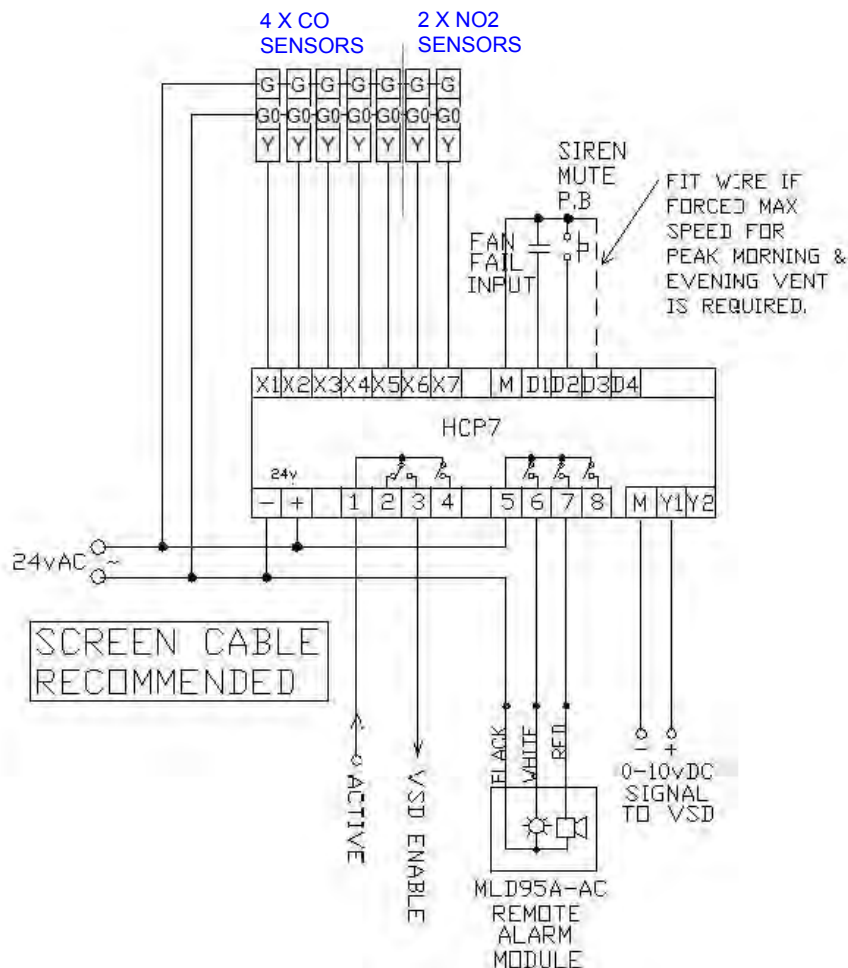
Analog output "Y2" is factory preset as a 10vDC output signal source for use (as example) as a EC fan full speed signal source via a "Auto/Manual" selector switch or for use as a sensor I/P test = full scale.

New features recently added now gives this controller simple time stamped data logging as events trigger to help diagnose faults and system behavior. Also for optional use, Relay 5 now acts as an "I'm OK" output which holds relay 5's contacts closed when the controller has power, is operating correctly, there are no sensor faults and no interlocked fan faults. The fan fault input "D1" can now also be user set such that the controller will respond to an opening or closing (default) contact to "M" on fan fault.

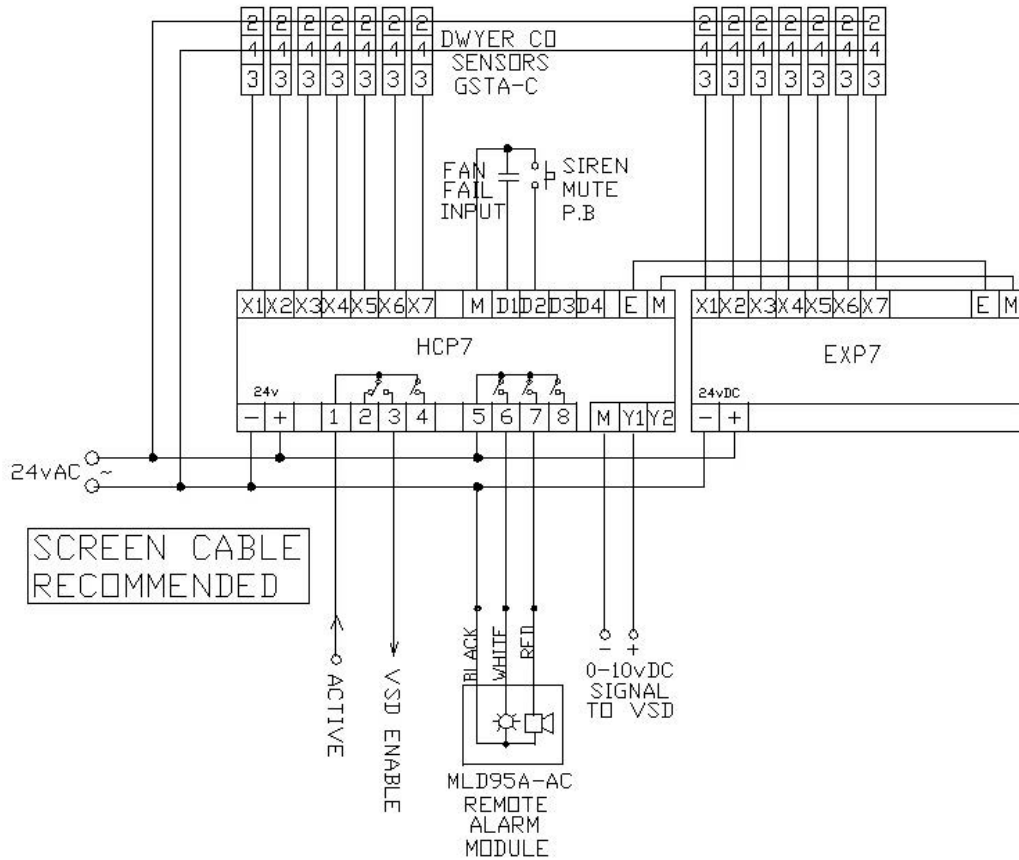
Application Example (1) 4 HEVAC HGS-CO SENSORS CONNECTED using 2 SPEED LO-HI FAN CONTROL



Application Example (2) 4 X HEVAC CO SENSORS & 2 X HEVAC NO2 SENSORS c/w MODULATING VSD OUTPUT



Application Example (3) 14 DWYER CO SENSORS , c/w MODULATING VSD OUTPUT



Application Example (4) 12 HEVAC CO sensors , c/w on/off thermostats for temperature control

