Regulator Systems

# TC5044-Mk4 Universal Controller
# Instruction Manual


## Description Of Operation

Pressing the SEL (Select) button will activate the back light for 60 seconds.
There are four lines of display on the main screen, press SEL button to toggle between the lines.
The first line displays the parameter, e.g. TEMP degC or HUMID %RH etc.
The second line displays the measured variables, e.g. +25.0 and set point, SP: +23
The third line displays the three analogue output voltages (0-10vdc), AO1, AO2, AO3
Use the Up/Down arrows to change set points.

## Index



## Technical Data

| | |
|---|---|
| Supply voltage. TC5044. | 18 - 265 vac/dc. |
| Temp. Operating range. | -20 to 120oC |
| Frequency. | 50-60Hz |
| Power consumption. | 3w Max. |
| Model | Mk4 |
| Ambient Temp. Operation | 0-50oC |
| Dimensions. | W70 x H88 x D62mm |
| Weight. | 0.4kg |
| Wiring Terminal size. | 4.0mm2 |
| Inputs- Resistive Sensors. | Thermistors 1k, 2k, 10k, Ni 1000R, Pt 1000R. Default setting 10k. |
| Active Sensors. | Smart Sensors TR3800W, TR3840W, TR3700W, TR3740W. |
| Transmitters | Temperature, Humidity, Flow , Carbon Monoxide, Carbon Dioxide. 4-20mA, 0-10vdc. Default 4-20mA |
| Analogue outputs | Analogue Outputs AO1, AO2, AO3 0-10vdc plus diode protected output AO4, 10mA protected for AO3. Proportional or PID operating mode. Default setting Proportional. |
| Relay outputs | RL1 SPCO, RL2, RL3 & RL4 SPNO. 250vac 5 A resistive. |

## Getting started: Selecting the Menu. Factory Default Menu 001. 2 stage reverse cycle & electric heat

To select a different menu, press and hold the SEL button for approx 10 seconds to display current menu. I.e. >+001 TEMP. Use the Up or Down arrow to scroll to menu number required. I.e. 005 TEMP. See table below. Press SEL button to select. Press SEL button again> INPUTS displayed> scroll down to SAVE AND EXIT> Press SEL button> return to main screen

| Menu | Temperature. All menu's have 3 analogue(0-10vdc)outputs for modulating valves or dampers |
|---|---|
| 001 | 2 stage reverse cycle control with 1 stage electric boost heat. |
| 002 | 3 stage reverse cycle. |
| 003 | 4 stage On/Off heat control. |
| 004 | 3 stage On/Off heat & 1 stage cool. |
| 005 | 2 stage On/Off heat & 2 stage cool. |
| 006 | 1 stage On/Off heat & 3 stage cool. |
| 007 | 4 stage cool control. |
| 008 | 4 stage time proportional heat control. |
| 009 | 3 stage time proportional heat & 1 stage cool. |
| 010 | 2 stage time proportional heat & 2 stage cool. |
| 011 | 1 stage time proportional heat & 3 stage cool. |
| 012 | 2 stage On/Off heat & PWM cool output for thermotronic valve & cooling pump call |
| 013 | 2 x PWM heat/cool outputs for thermotronic valves & cooling and heating pump call. |
| 014 | High Temperature Range. -50oC to 500oC |
| 019 | Temperature setback. |
| 025 | 2 stage reverse cycle system and system stop/start button Temperature & fan control |
| 026 | 1 stage time proportional heat & 2 stage cool and system stop/start button. Temperature & fan control |
| 033 | 3 stage heat pump and differential temperature Econ. cycle. |
| 036 | 3 stage heat pump and differential enthalpy Econ. cycle. |
| 037 | 2 zone 1 stage heat pump and Econ. cycle. |
| 038 | 2 zone 1 stage heat 1 stage cool and Econ. cycle. |
| 039 | Dual zone differential control of air supply. |
| | Temp. & Humid. Smart sensor required. 3 x analogue outputs for valves, dampers or humidity. |
| 041 | 2 stage reverse cycle and humidity control |
| 042 | 1 stage heat & 2 stage cool On/Off control and humidity control. |
| 043 | 1 stage heat & 1 stage cool On/Off control and humidity & de-humidity On/Off control. |
| | Humidity. Humidity transmitter required. 3 x analogue outputs for humidity & de-humidity control |
| 051 | Humidity and de-humidity control. |
| | Absolute Humidity. |
| 053 | Absolute Humidity |
| | Low pressure control. I.e. Air Pressure Control. Pressure transmitter required |
| 061 | Operating range. 0 - 25pa. 4 relay and 3 analogue outputs for dampers or VSD control. |
| 062 | Operating range. 0 - 50pa. As per menu 061 |
| 063 | Operating range. 0 - 100pa. As per menu 061. |
| 064 | Operating range. 0 - 250pa. As per menu 061. |
| 065 | Operating range. 0 - 500pa. As per menu 061 |
| 066 | Operating range. 0 - 1000pa. As per menu 061 |
| | Medium pressure control. I.e. Water Pressure Control. Pressure transmitter required. |
| 067 | Operating range. 0 - 400kpa. As per menu 061 |
| 068 | Operating range. 0 - 1000kpa. As per menu 061 |
| | High pressure control. I.e. Refrigerant Pressure Control. Pressure transmitter required |
| 069 | Operating range. 0 - 3000kpa. As per menu 061. |
| | 4 stage voltage relay |
| 081 | 4 individually adjustable relay outputs from one common 0-10vdc input signal. |
| | CO. Carbon monoxide control. Car park fan auto control. CO transmitter required |
| 091 | Operating range. 0 - 100ppm. 4 relay and 3 analogue outputs for fan start, VSD or damper control. |
| 092 | Operating range. 0 - 200ppm. As per menu 091 |
| 093 | Operating range. 0 - 300ppm. As per menu 092 |
| | Co2. Carbon dioxide control. Automatic ventilation control. Co2 transmitter required |
| 101 | Operating range. 0 - 2000ppm. 4 relays and 3 analogue outputs for fan start, VSD or damper control. |
| | Refrigerant Gases |
| 111 | R22 Operating range 0 - 2000ppm. |
| 112 | R134a Operating range 0 - 2000ppm. As per menu 111 |
| 113 | R410a Operating range 0 - 2000ppm. As per menu 111 |
| | 2 x Fan and 1 stage cool duty change over |
| 121 | Duty Standby |

# Inputs

The TC5044 temperature default inputs are a) Smart Sensor or b) 10k NTC thermistor sensor.
Optional input types.
Thermistor NTC:- 2k. I.e. ET45 controller
Thermistor NTC:- 1k. I.e. Delta Dore controller. Not TCU model
Platinum PTC:- 1k.
Nickel PTC:- 1k.
Thermistor PTC:-
Current loop. 4 - 20mA.
Voltage input. 0 -10vdc.

**To change the default temperature sensor input to optional input types. See above**
Press and hold SEL button for approximately 10secs until current menu is displayed:- I.e. >+005 TEMP.
Press SEL button again. INPUTS / OUTPUTS displayed.
Press SEL button again and select INPUTS. SENSOR displayed.
Press SEL button again. THERMISTOR, 4-20mA and SMART SENSOR is displayed. Select THERMISTOR.
Press SEL button again. The current sensor will be displayed. I.e. 10k. Scroll up/down to required selection. E.g. 2k.
Press SEL button again. + 2k displayed.
Press SEL button again. +NUM THRMS = 1/2/3/4 displayed. This allows you select the number of thermistors in circuit.
Select the number in circuit. E.g. 1. Press SEL button. INPUT / OUTPUT displayed. Scroll down to SAVE AND EXIT.
Press SEL button and TC5044 will return to main operating screen.
**To change the temperature sensor to a temperature transmitter (4-20mA).**
After entering menu (see above) select 4 - 20mA instead of THERMISTOR.
Press SEL button.
4mA value is displayed. E.g. 20.(20oC) Change and/or select current value. 20mA value displayed. E.g. 25.(25oC).
Change and/or select current value, press SEL button. NUM 4-20mA=1/2 displayed (number of Transmiters in circuit).
Select number in circuit. E.g. 2. Press SEL button. INPUT/OUTPUT displayed. Scroll down to SAVE AND EXIT.
Press SEL button and TC5044 will return to main operating screen.

**Pressure or Gas menu's.** Default setting is 4-20mA. To change to 0-10vdc.
Press and hold SEL button for 10 seconds.
The current menu will be displayed:- I.e. >+061 PRESS.
Press SEL button. INPUTS / OUTPUTS displayed.
Press SEL button to select INPUTS.
Press SEL button to select SENSOR.
Press SEL button to select 0-10v.
Press SEL button. 0v value shown. I.e. 0.00.(0.00pa) Adjust if required.
Press SEL button. 10v value shown. I.e. 25.00. (25pa). Adjust if required.
Press SEL button. SENSOR displayed. Scroll down to EXIT.
Press SEL button. INPUT/ OUTPUT displayed. Scroll down to SAVE AND EXIT.
Press SEL button to return to main operating screen.

**To change set point control.** Default setting is by the Up/Down arrows on TC5044.
Press and hold SEL button for 10 seconds. The current menu will be displayed:- I.e. >+005 TEMP.
Press SEL button again. to select. INPUTS/OUTPUTS displayed. Select INPUTS and press SEL button..
SENSOR, SETPOINT, & EXIT displayed. Select SETPOINT and press SEL button.
INTERNAL, EXTERNAL, SMART SENSOR and EXIT displayed. Scroll to selection. E.g. EXTERNAL
Press SEL button. See below for the different selection.

**EXTERNAL** selection. Following selections displayed.
REGULATOR
CUSTOM
EXIT.
Press Up/Down arrow to required selection. E.g. RS2103. Press SEL button.
INPUT/OUTPUT displayed. Scroll down to SAVE & EXIT. Press SEL button to return to main screen.

**INTERNAL selection.** To change temperature increments from 0.5 to 0.1 degrees.
Select internal with SEL button:- SP CHG = 0.5 & SP CHG = 0.1 displayed. Select 0.1 and press SEL button.
INPUT/OUTPUT displayed. Scroll down to SAVE & EXIT. Press SEL button to return to main screen.

**SMART SENSOR** selection.
If Smart Sensor is connected to the TC5044 it is automatically controlled from the Smart Sensor.

# Outputs

**To change the default relay switching points.**
Press and hold SEL button for approximately 10 seconds until current menu is will be displayed:- E.g. >+005 TEMP.
Press SEL button again. INPUTS/OUTPUTS displayed.
Scroll down to OUTPUTS, press SEL button.
RELAY, ANALOG, & EXIT displayed. Select RELAY and press SEL button.
RELAY 1, RELAY 2, RELAY 3, RELAY 4 and EXIT is displayed.
See below for example menu selections. Refer to default relay settings and operating modes on page 6.

**ON/OFF control.** E.g. Menu 5.
Scroll to required relay and Press SEL button. ON/OFF displayed. Press SEL again.
ON POINT displayed. I.e. 1.00 (RL3) or -1.00 (RL1). This is the ON point above or below(-) temperature set point.
Adjust and press SEL button. OFF POINT displayed. I.e. 0.5 or -0.5. This is the OFF point above or below(-) set point.
Adjust and press SEL button and returns to RELAY screen. Repeat as required for other relays then scroll down to EXIT.
Press SEL button returns to INPUT/OUTPUT screen. Scroll to SAVE AND EXIT. Press SEL button. Returns to main screen.

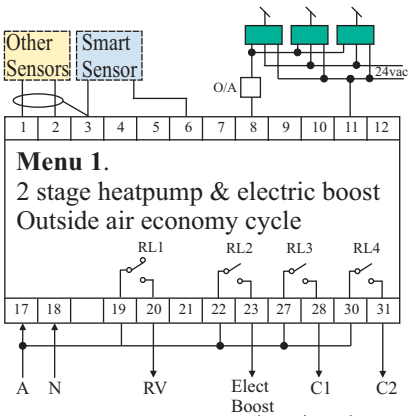
**DUAL relay control systems.**
**Reverse cycle.** Menu's 1, 2, 25 & 41
Select relays 3 & 4 (relays 2,3,4 in Menu 2). COMPRESSOR displayed.
PRI ON POINT (heat mode) displayed. I.e. -1.00 (Comp. On point in heat). Adjust as required, press SEL button.
PRI OFF POINT displayed. I.e. -0.5 (Comp. Off point in heat). Adjust as required, press SEL button
SEC ON POINT (cool mode) displayed. I.e. 1.00 (Comp. On point in cool). Adjust as required, press SEL button.
SEC OFF POINT displayed. I.e. 0.5 (Comp. Off point in cool). Adjust as required, press SEL button.
Returns to RELAY screen. Exit to main screen as above.
**Temperature & humidity.** Menu's 41, 42 & 43.
Submode 1. Temperature relays.
Submode 2. Humidity relays.

**REV VALVE.** To adjust ON/OFF point for reversing valve(s). RELAY 1
Adjust as above if required.

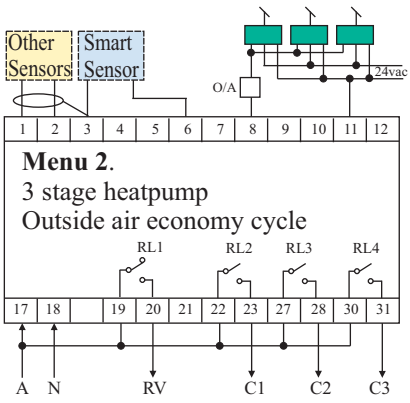
**PWM/TP control.** Time proportional control of heat relays. E.g. Relays l & Relay 2 in Menu 5.
Select PWM/TP. Press SEL again. ON POINT displayed.
Adjust and press SEL button. OFF POINT displayed. Adjust as required, press SEL button.
TIMEBASE (S) displayed, cycle time before action. I.e. 10 (seconds). Adjust and press SEL button.
MIN DUTY CYC % displayed. Relay OFF point in cycle. Adjust and press SEL button.
MAX DUTY CYC % displayed. Relay ON point in cycle. Adjust and press SEL button.
Returns to RELAY screen. Exit to main screen as above.

**Analog outputs.** 3 x 0-10vdc outputs to modulate valves, actuators, VSD's, SSR's etc.
Enter into OUTPUTS as described above and select ANALOG. Press SEL button.
ANALOG 1, ANALOG 2 & ANALOG 3 and EXIT displayed.
Analog 1: - 0-10vdc RA.
Analog 2: - 0-10vdc DA.
Analog 3: - 0-10vdc RA. Note Analog 4 diode protected output for Analog 3.
Select Analog output to be changed, press SEL button. 0-10v displayed. (On/Off or PWM/TP can be selected)
Press SEL button, PROPORTIONAL and PID displayed. E.g. Select PROPORTIONAL.
ON POINT displayed. I.e. 1.00 or -1.00.
Temperature in degrees above or below set point for maximum output (10vdc).
Adust and press SEL button. OFF POINT displayed. I.e. 0.50 or -0.50.
Temperature in degrees above or below set point for minimum output (0vdc).
Adjust and press SEL button. Returns to Analog screen. Repeat for other Analogs as required.
Scroll down to EXIT and press SEL. Returns to INPUT/OUTPUT screen. Scroll to SAVE and EXIT.
Returns to main screen.
**Change 0-10vdc proportional to PID control function.**
Select PID and press SEL button.
PROPONL (Proportional) BAND displayed. E.g. 6 Raise or lower value if required, press SEL button.
INTEGS TIME (secs) displayed. E.g. 22.00. Raise or lower value if required, press SEL button.
DERVTV TIME (secs) displayed. E.g. 3.00. Raise or lower value as required, press SEL button. Returns to Analog screen.
Change other analogs as required and scroll down to EXIT and press SEL button.
Returns to INPUT/OUTPUT screen. Scroll to SAVE and EXIT and return to main screen

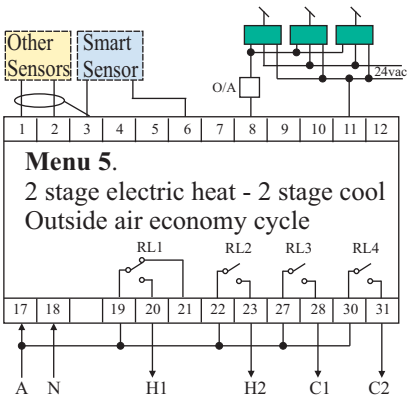
# Typical TC5044 wiring diagrams



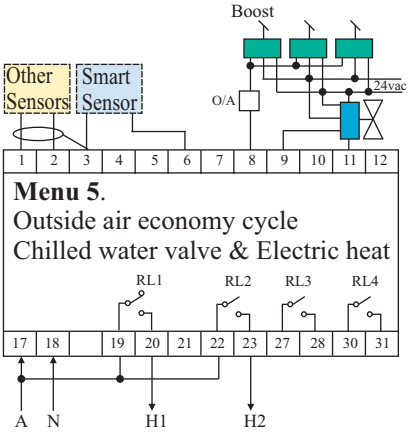

**Menu 1.**
2 stage heatpump & electric boost
Outside air economy cycle



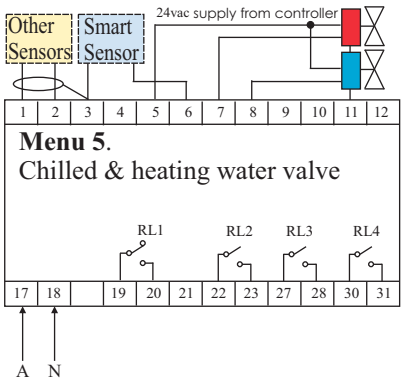

**Menu 2.**
3 stage heatpump
Outside air economy cycle



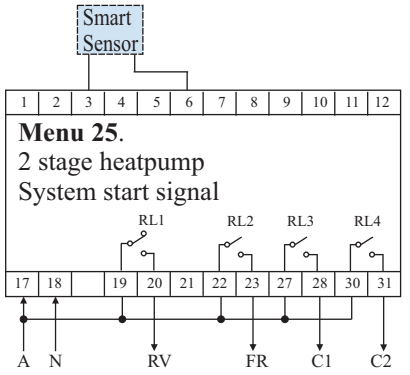

**Menu 5.**
2 stage electric heat - 2 stage cool
Outside air economy cycle



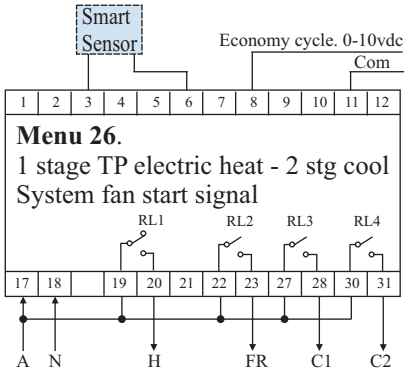

**Menu 5.**
Outside air economy cycle
Chilled water valve & Electric heat



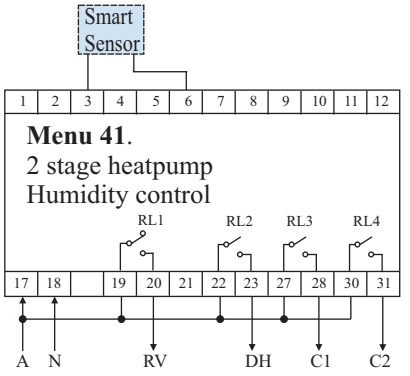

**Menu 5.**
Chilled & heating water valve



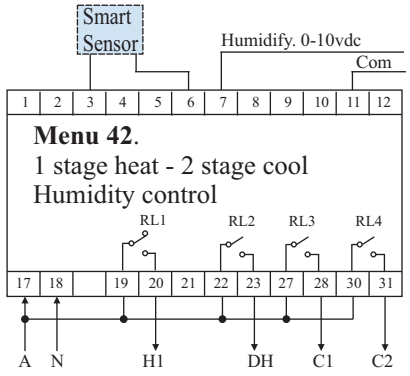

**Menu 25.**
2 stage heatpump
System start signal



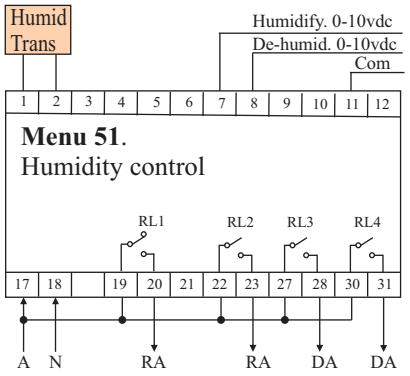

**Menu 26.**
1 stage TP electric heat - 2 stg cool
System fan start signal



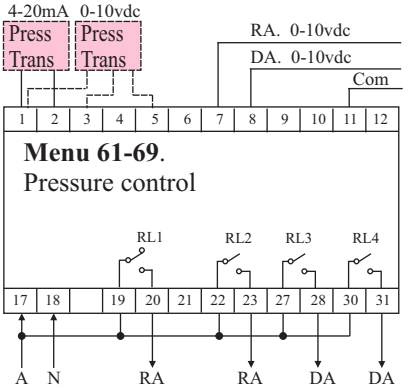

**Menu 41.**
2 stage heatpump
Humidity control



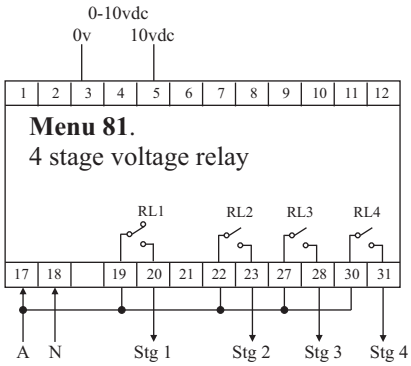

**Menu 42.**
1 stage heat - 2 stage cool
Humidity control



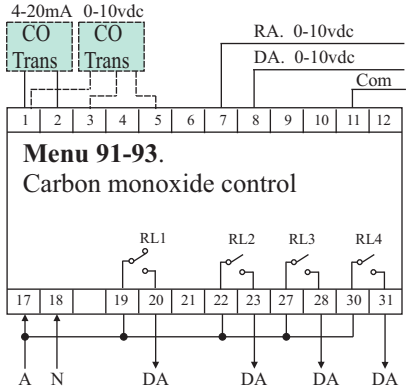

**Menu 51.**
Humidity control



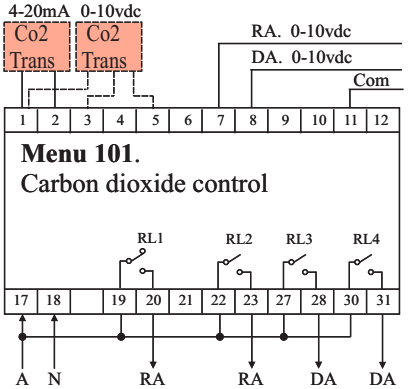

**Menu 61-69.**
Pressure control



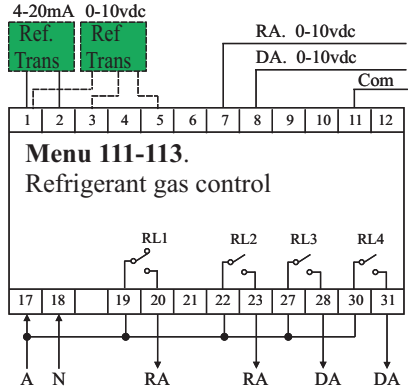

**Menu 81.**
4 stage voltage relay




**Menu 91-93.**
Carbon monoxide control




**Menu 101.**
Carbon dioxide control




**Menu 111-113.**
Refrigerant gas control

# Default relay settings for Menu's

| MENU | FUNCTION | RELAY 1 OFF | RELAY 1 ON | RELAY 2 OFF | RELAY 2 ON | RELAY 3 OFF | RELAY 3 ON | RELAY 4 OFF | RELAY 4 ON | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 2 stage reverse cycle<br>1 stage elect heat | Reversing valve | | Electric heat | | Compressor 1 | | Compressor 2 | | |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | -0.5 | -1.0 | -1.0 | -1.5 | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| 002 | 3 stage reverse cycle | Reversing valve | | Compressor 1 | | Compressor 2 | | Compressor 3 | | |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | |
| | Cooling cycle | | | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | |
| 003 | 4 stage heat | Heat 1 | | Heat 2 | | Heat 3 | | Heat 4 | | |
| | Heating cycle | 0.0 | -0.5 | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | |
| 004 | 3 stage heat/ 1 stage cool | Heat 1 | | Heat 2 | | Heat 3 | | Cool 1 | | |
| | Heating cycle | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | | | |
| | Cooling cycle | | | | | | | +0.5 | +1.0 | |
| 005 | 2 stage heat/ 2 stage cool | Heat 1 | | Heat 2 | | Cool 1 | | Cool 2 | | |
| | Heating cycle | -0.5 | -1.0 | -1.0 | -1.5 | | | | | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| 006 | 1 stage heat/ 3 stage cool | Heat 1 | | Cool 1 | | Cool 2 | | Cool 3 | | |
| | Heating cycle | -0.5 | -1.0 | | | | | | | |
| | Cooling cycle | | | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | |
| 007 | 4 stage cool | Cool 1 | | Cool 2 | | Cool 3 | | Cool 4 | | |
| | Cooling cycle | 0.0 | +0.5 | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | |
| 008 | 4 stage heat. Time Prop | Heat 1 | | Heat 2 | | Heat 3 | | Heat 4 | | TP 100 secs |
| | Heating cycle | 0.0 | -0.5 | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | Time base |
| 009 | 3 stage heat TP./1 stage cool | Heat 1 | | Heat 2 | | Heat 3 | | | | TP 100 secs |
| | Heating cycle | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | | | Time base |
| | Cooling cycle | | | | | | | +0.5 | +1.0 | |
| 010 | 2 stage heat TP./2 stage cool | Heat 1 | | Heat 2 | | Cool 1 | | Cool 2 | | TP 100 secs |
| | Heating cycle | -0.5 | -1.0 | -1.0 | -1.5 | | | | | Time base |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| 011 | 1 stage heat TP./3 stage cool | Heat | | Cool 1 | | Cool 2 | | Cool 3 | | TP 100 secs |
| | Heating cycle | -0.5 | -1.0 | | | | | | | Time base |
| | Cooling cycle | | | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | |
| 012 | 2 stg heat/Therm.valve cool.<br>Cool pump call | 24v<br>Heat 1 | | Heat 2 | | CHW Pump | | Thermal Valve cool | | PWM 40 secs<br>Time base |
| | | -0.5 | -1.0 | -1.0 | -1.5 | | | | | |
| | | | | | | +0.25 | +0.5 | +0.25 | +1.25 | |
| 013 | Thermal valve PWM. 240ac<br>Heat/Cool pump call | H W Pump | | Thermal Valve heat | | CHW Pump | | Thermal Valve cool | | PWM 40 secs<br>Time base |
| | | -0.25 | -0.5 | -0.25 | -1.25 | | | | | |
| | | | | | | +0.25 | +0.5 | +0.25 | +1.25 | |
| 014 | 3 stage heat/ 1 stage cool | Heat 1 | | Heat 2 | | Heat 3 | | Cool 1 | | |
| | | 0.00 | -2.5 | -2.5 | -5.0 | -5.0 | -7.5 | | | High Temp. |
| | | | | | | | | +20 | +25 | Set point 500oC |
| 019 | 2 stage heat/ 2 stage cool<br>Adjustable after hours setback | Heat 1 | | Heat 2 | | Cool 1 | | Cool 2 | | Night Setback |
| | | -0.0 | -1.0 | -1.0 | -1.5 | | | | | |
| | | | | | | +0.0 | +1.0 | +1.0 | +1.5 | |
| 025 | 2 stage reverse cycle &<br>fan Cont. | Reversing valve | | Fan control | | Compressor 1 | | Compressor 2 | | |
| | Heating cycle | 0.0 | -0.25 | On/Off Button | | -0.5 | -1.0 | -1.0 | -1.5 | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| 026 | 1 stg heat/2 stg cool &<br>fan Cont. | Heat | | Fan control | | Cool 1 | | Cool 2 | | |
| | Heating cycle | -0.5 | -1.0 | On/Off Button | | | | | | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| 033 | 3 stage reverse cycle | Reversing valve | | Compressor 1 | | Compressor 2 | | Compressor 3 | | Differential Temp. |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | Economy cycle |
| | Cooling cycle | | | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | |
| 036 | 3 stage reverse cycle | Reversing valve | | Compressor 1 | | Compressor 2 | | Compressor 3 | | Differential |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | -1.0 | -1.5 | -1.5 | -2.0 | Enthalpy Economy |
| | Cooling cycle | | | +0.5 | +1.0 | +1.0 | +1.5 | +1.5 | +2.0 | cycle |
| 037 | 2 Zones 1 stage reverse cycle | AC1 Reversing valve | | AC1 Compressor | | AC2 Reversing valve | | AC2 Compressor. | | |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | 0.0 | -0.25 | -0.5 | -1.0 | |
| | Cooling cycle | | | +0.5 | +1.0 | | | +0.5 | +1.0 | |
| 038 | 2 Zones 1 stage heat/cool | AC1 electric heat | | AC1 Compressor | | AC2 electric heat | | AC2 Compressor. | | |
| | Heating cycle | 0.0 | -0.25 | -0.5 | -1.0 | 0.0 | -0.25 | -0.5 | -1.0 | |
| | Cooling cycle | | | +0.5 | +1.0 | | | +0.5 | +1.0 | |
| 039 | Zone and duct | NA | | NA | | NA | | NA | | No relay operation |

# Default relay settings for Menu's

| MENU | FUNCTION | RELAY 1 OFF | RELAY 1 ON | RELAY 2 OFF | RELAY 2 ON | RELAY 3 OFF | RELAY 3 ON | RELAY 4 OFF | RELAY 4 ON | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 041 | 2 stg Rev. Cyc & Humidity Cont. | Reversing valve | | Humidity | | Compressor 1 | | Compressor 2 | | Use TR3740W or TR3700W TP3701 |
| | Heating cycle | 0.0 | -0.25 | | | -0.5 | -1.0 | -1.0 | -1.5 | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| | Humidity cycle | | | 0.0% | 5.0% | | | | | |
| 042 | 1 stg heat/2 stg cool & humidity | Heat | | Humidity | | Cool 1 | | Cool 2 | | Use TR3740W or TR3700W TP3701 |
| | Heating cycle | -0.5 | -1.0 | | | | | | | |
| | Cooling cycle | | | | | +0.5 | +1.0 | +1.0 | +1.5 | |
| | Humidity cycle | | | 5.0% | 10.0% | | | | | |
| 043 | 1 stg heat/cool & Hum./De-hum. | De-Humidity | | Humidity | | Heat | | | | Use TR3740W or TR3700W TP3701 |
| | Heating cycle | | | | | -0.5 | -1.0 | | | |
| | Cooling cycle | | | | | | | +0.5 | +1.0 | |
| | Humidity cycle | | | 5.0% | 10.0% | | | | | |
| | De-Humidity cycle | -5.0% | -10.0% | | | | | | | |
| 051 | Humidity control | R/A | | R/A | | D/A | | D/A | | Use humidity Transmitter |
| | | 0.0% | -5.0% | -5.0% | -10.0% | 0.0% | 5.0% | 5.0% | 10.0% | |
| 053 | Absolute Humidity | Grams/Kg | | Grams/Kg | | Grams/Kg | | Grams/Kg | | |
| | | R/A | | R/A | | D/A | | D/A | | |
| | | -0.0 | -1.0 | -1.0 | -2.0 | +0.0 | +1.0 | +1.0 | +2.0 | |
| 061 | Pressure. 0-25pa | R/A | | R/A | | D/A | | D/A | | Use pressure Transmitter |
| | | 0.0pa | -2.5pa | -2.5pa | -5pa | 0.0pa | 2.5pa | 2.5pa | 5pa | |
| 062 | Pressure. 0-50pa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0pa | -5pa | -5pa | -10pa | 0.0pa | 5pa | 5pa | 10pa | |
| 063 | Pressure. 0-100pa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0pa | -10pa | -10pa | -20pa | 0.0pa | 10pa | 10pa | 20pa | |
| 064 | Pressure. 0-250pa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0pa | -20pa | -20pa | -40pa | 0.0pa | 20pa | 20pa | 40pa | |
| 065 | Pressure. 0-500pa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0pa | -40pa | -40pa | -80a | 0.0pa | 40pa | 40pa | 80pa | |
| 066 | Pressure. 0-1000pa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0pa | -100pa | -100pa | -200pa | 0.0pa | 100pa | 100pa | 200pa | |
| 067 | Pressure. 0-400kpa | R/A | | R/A | | D/A | | D/A | | |
| | | 0.0kpa | -30kpa | -30kpa | -60kpa | 0.0kpa | 30kpa | 30kpa | 60kpa | |
| 068 | Pressure. 0-1000kpa | D/A | | D/A | | D/A | | D/A | | |
| | | 0.0kpa | 50kpa | 50kpa | 100kpa | 100kpa | 150kpa | 150kpa | 200kpa | |
| 069 | Pressure. 0-3000kpa | D/A | | D/A | | D/A | | D/A | | |
| | | 0.0kpa | 100kpa | 100kpa | 200kpa | 200kpa | 300kpa | 300kpa | 400kpa | |
| 081 | 4 stage voltage relay | D/A | | D/A | | D/A | | D/A | | |
| | | 1V | 3V | 3V | 5V | 5V | 7V | 7V | 9V | |
| 091 | Gas. CO 0-100ppm | D/A | | D/A | | D/A | | D/A | | Use gas Transmitter |
| | | 0ppm | 10ppm | 10ppm | 20ppm | 20ppm | 30ppm | 40ppm | 70ppm | |
| 092 | Gas. CO 0-200ppm | D/A | | D/A | | D/A | | D/A | | |
| | | 0ppm | 10ppm | 10ppm | 20ppm | 20ppm | 30ppm | 40ppm | 70ppm | |
| 093 | Gas. CO 0-300ppm | D/A | | D/A | | D/A | | D/A | | |
| | | 0ppm | 10ppm | 10ppm | 20ppm | 20ppm | 30ppm | 40ppm | 70ppm | |
| 101 | Gas. Co2 0-2000ppm | R/A | | R/A | | D/A | | D/A | | |
| | | 0ppm | -200ppm | -200ppm | -400ppm | 0ppm | 200ppm | 200ppm | 400ppm | |
| 111 | Gas. R22 0-2000ppm | R/A | | R/A | | D/A | | D/A | | Use Ref. gas Transmitter |
| | | 0ppm | -200ppm | -200ppm | -400ppm | 0ppm | 200ppm | 200ppm | 400ppm | |
| 112 | Gas. R134a 0-2000ppm | R/A | | R/A | | D/A | | D/A | | |
| | | 0ppm | -200ppm | -200ppm | -400ppm | 0ppm | 200ppm | 200ppm | 400ppm | |
| 113 | Gas. R419a 0-2000ppm | R/A | | R/A | | D/A | | D/A | | |
| | | 0ppm | -200ppm | -200ppm | -400ppm | 0ppm | 200ppm | 200ppm | 400ppm | |
| 121 | Duty / Standby | Fan 1 | | D/A | | Fan 2 | | D/A | | Cooling only |
| | | | | +0.25 | +0.5 | | | +0.25 | +0.5 | |

## To reset Controller to Factory settings. Default configuration Menu 001.

Press and hold the SEL button for approx 10 seconds. The current menu will be displayed, I.e. >+001 TEMP.
Press the Down arrow and scroll to FACT RST ALL>press SEL button >RESETTING DB PLEASE WAIT displayed
After 30 secs >+001 TEMP is displayed > select menu> press SEL button > INPUTS displayed
scroll down to SAVE AND EXIT>Press SEL and return to main screen.

# Default analogue (0-10vdc) settings for Menu's

| MENU | FUNCTION | ANALOGUE 1 | | ANALOGUE 2 | | ANALOGUE 3 | | HIGH SELECT | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | OFF | ON | OFF | ON | OFF | ON | OFF | ON | |
| 001 | 2 stg Rev. Cyc & 1 Stg elec heat | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 002 | 3 stage reverse cycle | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 003 | 4 stage heat | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 004 | 3 stage heat/ 1 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 005 | 2 stage heat/ 2 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 006 | 1 stage heat/ 3 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 007 | 4 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 008 | 4 stage heat. Time Prop Heating cycle | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 009 | 3 stage heat TP./1 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 010 | 2 stage heat TP./2 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 011 | 1 stage heat TP./3 stage cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 012 | 2 stg heat/Therm.valve cool. 24v Cool pump call | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 013 | Thermal valve PWM. 240ac Heat/Cool pump call | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 014 | 1 stage heat/ 1 stage cool High Temp. | RA/DA | | NA | | NA | | NA | | |
| | | 0.0 | -2.5 | | | | | | | |
| 019 | | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 025 | 2 stage reverse cycle & fan Cont. | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 026 | 2 stg heat/2 stg cool & fan Cont. | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 033 | Temperature and Differential Temp. Economy Cyl | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.25 | 0.0 | +1.25 | +0.0 | +1.25 | +0.0 | +1.25 | |
| 036 | Temperature and Enthalpy Econ | RA-1 | | DA-1(enthalpy) | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.25 | | | +0.0 | +1.25 | +0.0 | +1.25 | |
| | Heating cycle | | | 0.0 | -1.00 | | | | | |
| | Cooling cycle | | | 0.0 | +1.00 | | | | | |
| 037 | 2 zone 1 stage reverse cycle | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 038 | 2 zone 1 stage heat/cool | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 039 | Zone and duct | DA | | DA | | Disabled | | Disabled | | |
| | | 0.0 | +1.0 | +0.0 | +1.0 | | | | | |
| 041 | 2 stage Rev. Cyc & Humidity Control. | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0% | -10.0% | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |
| 042 | 1 stage heat/2 stage cool & Humidity Control | RA-1 | | RA-2 | | DA-1 | | DA-1. HS | | |
| | | 0.0% | -10.0% | 0.0 | -1.0 | 0.0 | +1.0 | 0.0 | +1.0 | |
| 043 | 1 stage heat & cool & Humidity & De-humidty control. | RA-1 | | RA-2 | | DA-1 | | DA-1. HS | | |
| | | 0.0% | -10.0% | 0.0 | -1.0 | 0.0 | +1.0 | 0.0 | +1.0 | |
| 051 | Humidity control. On/Off | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0% | +5.0% | +5.0% | +10.0% | +5.0% | +10.0% | |
| 053 | ABS Humidity control | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | 1.0 | +2.0 | 1.0 | +2.0 | |
| 061 | Pressure. 0-25pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -2.5pa | -2.5pa | -5pa | 2.5pa | 5pa | 2.5pa | 5pa | |
| 062 | Pressure. 0-50pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -5.0pa | 0.0pa | +5pa | 5pa | 10pa | 5pa | 10pa | |
| 063 | Pressure. 0-100pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -10pa | 0.0pa | +10pa | 10pa | 20pa | 10pa | 20pa | |
| 064 | Pressure. 0-250pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -20pa | 0.0pa | +20pa | 20pa | 40pa | 20pa | 40pa | |
| 065 | Pressure. 0-500pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -40pa | 0.0pa | +40pa | +40pa | +80pa | +40pa | +80pa | |
| 066 | Pressure. 0-1000pa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0pa | -100pa | 0.0pa | +100pa | +100pa | +200pa | +100pa | +200Pa | |
| 067 | Pressure. 0-400kpa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0kpa | -30kpa | 0.0kpa | +30kpa | +30kpa | +60kpa | +30kpa | +60kpa | |

# Default analogue (0-10vdc) settings for Menu's

| MENU | FUNCTION | ANALOGUE 1 | | ANALOGUE 2 | | ANALOGUE 3 | | HIGH SELECT | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | OFF | ON | OFF | ON | OFF | ON | OFF | ON | |
| 068 | Pressure. 0-1000kpa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0kpa | -100kpa | 0.0kpa | +100kpa | +100kpa | +200kpa | +100kpa | +200kpa | |
| 069 | Pressure. 0-3000kpa | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0kpa | -300kpa | 0.0kpa | +300kpa | +300kpa | +600kpa | +300kpa | +600kpa | |
| 081 | 4 stage voltage relay | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 10.0V | 0V | 0V | 5V | 5V | 10.0V | 5V | 10.0V | |
| 091 | Gas. CO 0-100ppm | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0ppm | -10ppm | 0ppm | +10ppm | +10ppm | +20ppm | +10ppm | +20ppm | |
| 092 | Gas. CO 0-200ppm | | | | | | | | | |
| | | 0ppm | -10ppm | 0ppm | +10ppm | +10ppm | +20ppm | +10ppm | +20ppm | |
| 093 | Gas. CO 0-300ppm | | | | | | | | | |
| | | 0ppm | -10ppm | 0ppm | +10ppm | +10ppm | +20ppm | +10ppm | +20ppm | |
| 101 | Gas. Co2 0-2000ppm | | | | | | | | | |
| | | 0ppm | -200ppm | 0ppm | +200ppm | +200ppm | +400ppm | +200ppm | +400ppm | |
| 111 | Ref. Gas. R22 0-2000ppm | | | | | | | | | |
| | | 0ppm | -200ppm | 0ppm | +200ppm | +200ppm | +400ppm | +200ppm | +400ppm | |
| 112 | Ref. Gas. R134a 0-2000ppm | | | | | | | | | |
| | | 0ppm | -200ppm | 0ppm | +200ppm | +200ppm | +400ppm | +200ppm | +400ppm | |
| 113 | Ref. Gas. R410a 0-2000ppm | | | | | | | | | |
| | | 0ppm | -200ppm | 0ppm | +200ppm | +200ppm | +400ppm | +200ppm | +400ppm | |
| 121 | Duty / Standby | RA-1 | | DA-1 | | DA-2 | | DA-2. HS | | |
| | | 0.0 | -1.0 | 0.0 | +1.0 | +1.0 | +2.0 | +1.0 | +2.0 | |

## TC5044-Mk4. Set up Menus 025 or Menu 026. Start-Stop-Run On

PRESS & HOLD THE SEL BUTTON UNTIL > +001 TEMP DISPLAYED

SCROLL DOWN TO TIME & DATE > PRESS SEL BUTTON > SET TIME > SET DATE > SELECT DAYLIGHT SAVING > YES/NO > SELECT DAYLIGHT SAVING START & STOP TIMES > +001 DISPLAYED

SCROLL DOWN SCHEDULE > PRESS SEL BUTTON >LIST EVENTS DISPLAYED > SCROLL DOWN TO NEW EVENTS

PRESS SEL BUTTON > ADD EVENT ON TIME DISPLAYED > SET ON TIME > COPY TO DAYS DISPLAYED > USE DOWN ARROW TO SELECT, MON-FRI or MON-SUN or SAT&SUN > PRESS SEL BUTTON > SCROLL DOWN TO EXIT

ADD EVENT OFF TIME DISPLAYED > SET OFF TIME > COPY TO DAYS DISPLAYED > USE DOWN ARROW TO SELECT, MON-FRI or MON-SUN or SAT&SUN > PRESS SEL BUTTON > SCROLL DOWN TO EXIT

SCROLL DOWN TO SAVE & EXIT > PRESS SEL BUTTON > TIME SCHEDULE SAVED

PRESS & HOLD THE SEL BUTTON UNTIL > +001 TEMP DISPLAYED

SCROLL DOWN TO MENU 025 or 026 > PRESS SEL BUTTON UNTIL > INPUTS DISPLAYED

PRESS SEL BUTTON > RUN CONTROL DISPLAYED > PRESS SEL BUTTON > CONTROLS DISPLAYED

PRESS SEL BUTTON > SCHEDULE DISPLAYED > PRESS SEL BUTTON > DISABLED DISPLAYED > SCROLL UP > SELECT ENABLE

PRESS SEL BUTTON > SCHEDULE DISPLAYED > SCROLL DOWN TO SMART SENSOR >PRESS SEL BUTTON > SELECT ENABLE

PRESS SEL BUTTON > SCHEDULE DISPLAYED > SCROLL DOWN TO EXIT

CONTROLS DISPLAYED > SCROLL DOWN > ACTION > SELECT STRT-STP-RUNON > RUNON TIME DISPLAYED > SELECT TIME IN INCREMENTS OF 0.5 Hrs. MAX 12Hrs > PRESS SEL BUTTON > CONTROLS DISPLAYED > SCROLL DOWN TO EXIT > SELECT

RUN CONTROL DISPLAYED > SCROLL DOWN TO EXIT > SELECT

INPUTS DISPLAYED > SCROLL DOWN TO SAVE & EXIT > SELECT

RETURNS TO MAIN SCREEN

PUSH BUTTON ON SMART SENSOR TO OPERATE SYSTEM BEFORE AND AFTER SCHEDULE TIMES.