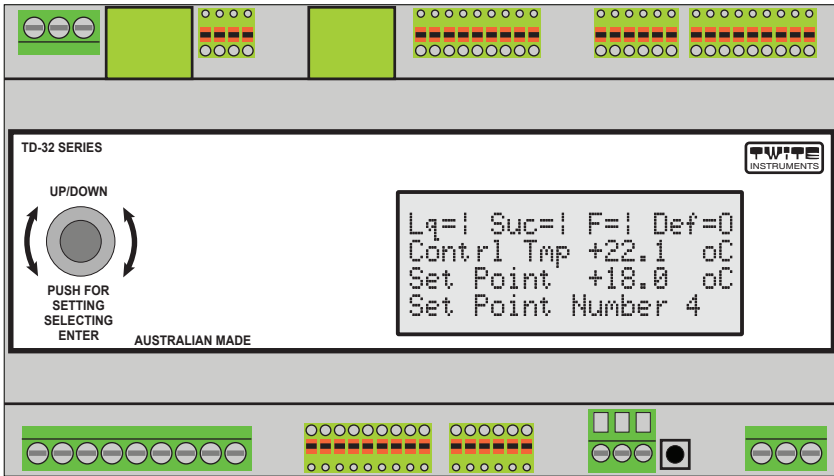


MultiScan

OPERATING MANUAL MODEL TD-32-MT



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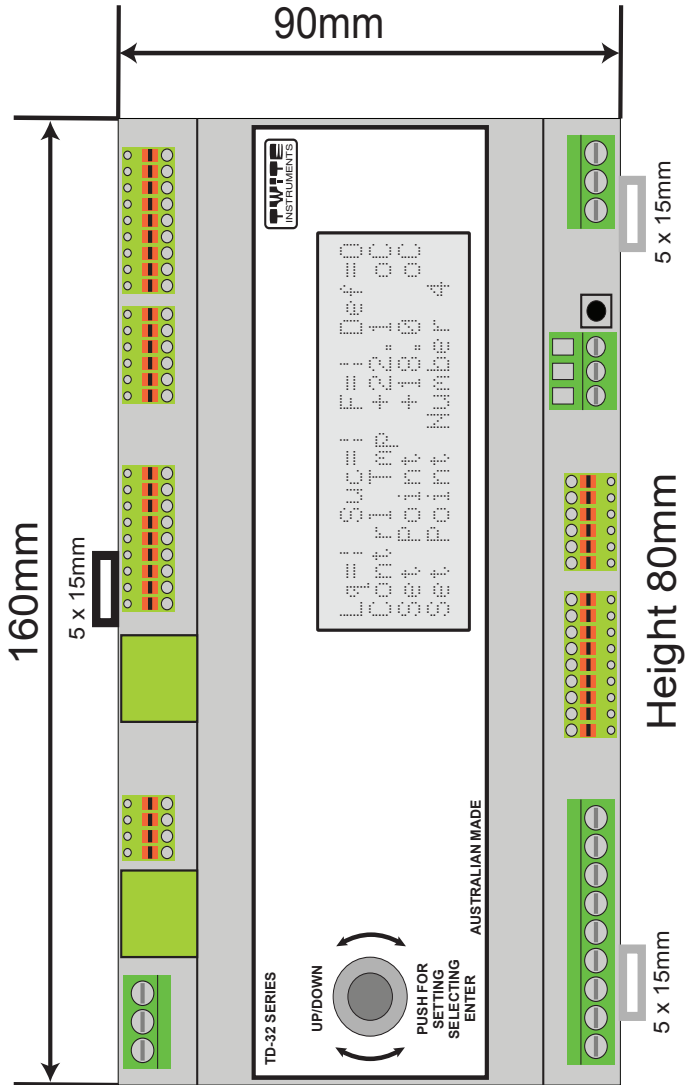
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INSTALLATION :-

DIN RAIL MOUNT SIZE OF UNIT.



INSTALLATION :-

MULTISCAN POSITIONING AND MOUNTING.

The unit should be mounted at a level for easy viewing and access to setting knob, using the DIN rail mounting to mount to the DIN rail within the cabinet. Ensure it is in a dry area and not in direct sunlight.

The unit must not be subject to any vibration.

The unit must be mounted as far away from contactors switching motors, solenoids etc. as possible.

If possible mount the unit within its own cabinet.

If it is to be connected to a COMPUTER or MODEM the connection cable must not exceed 6 metres.

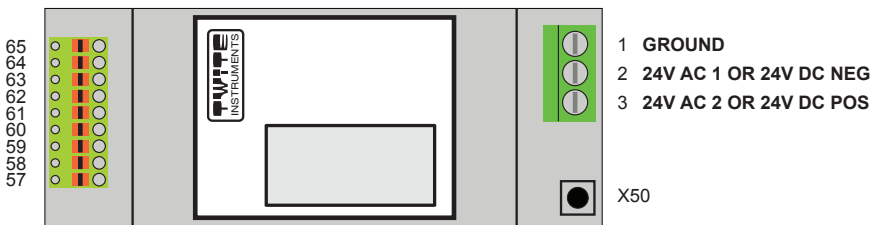
MULTISCAN UNIT POWER CONNECTION.

Power to the unit must be 24 V ac or dc. and connected to the terminal Block numbers 1 = Ground, 2 = 1 side of the 24v (if dc power is used, the negative or ground side) and 3 = the other side of the 24v (if dc power is used, the positive side).

NOTE:- If more than one MultiScan is connected to the same 24v ac power supply, all terminals numbered 2 must be connected to the same side of the 24v ac and all terminals numbered 3 must be connected to the other side of the 24v ac.

NOTE:- Terminal 1 and 2 are connected together on the circuit board.

NOTE:- The power supply for the unit should be left on at all times to conserve the battery power for the Real Time Clock and Set Points memory. See Battery Replacement later in this manual to change the battery.



INSTALLATION CONT.

CONTROL OUTPUT POWER CONNECTIONS :-

Power for room, compressor and condenser control can be up to 24 V ac. and connected to the terminal Block

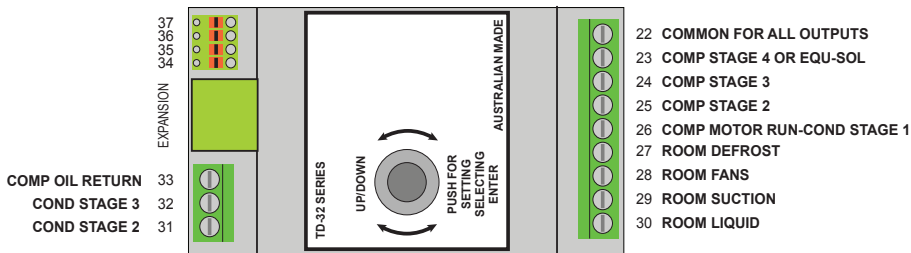
MULTISCAN CONTROL OUTPUT POWER CONNECTIONS. TOTAL CURRENT MUST NOT EXCEED 5 AMPS.

Terminal No.

- 22 - **The Active common input.**
- 23 - Stage 4 compressor or compressor equalizer solenoid output.
- 24 - Stage 3 compressor output.
- 25 - Stage 2 compressor output.
- 26 - Stage 1 compressor (motor run) output

- 27 - Room defrost output.
- 28 - Room fans contactor output.
- 29 - Room suction solenoid output.
- 30 - Room liquid solenoid output.

- 31 - Stage 2 condenser output. Stage 1 of condenser (water pump can be tied to stage 1 (compressor motor run) output).
- 32 - Stage 3 condenser output.
- 33 - Oil return solenoid on compressor output.



INSTALLATION CONT.

MULTISCAN DIGITAL TEMPERATURE INPUT TERMINALS :-

DS18B20 Digital Type (up to 8 temperature sensors may be connected):-

Temperature probes are fitted with 1 meter of cable each (may be extended to a maximum distance of 100 meters using twisted pair shielded cable).

The shield must be connected to ground at the MultiScan terminal number 50 and the shield of the sensor cable, the positive, terminal number 48 must be connected to the white wire of the sensor and the signal, terminal number 49 must be connected to the blue wire of the sensor.

The joins for any extensions must be kept dry and clean and not subject to any voltage or damage will occur.

Each sensor is calibrated to +/- 0.5 degrees Celsius (manufactures statement).

Sensors may be calibrated by the end user. See later for calibrating sensors.

Sensor cables must not run parallel or near voltage cables & must be kept well away from voltage and other control cables, at least 2 meters.

Terminal No.

- 50 - Shield of each cable (Ground).
- 49 - Signal all Blue wires to sensors.
- 48 - Positive White for each sensor.

Any sensor may be used for control of the room and if more than one sensor is used for room control, the average of all sensors used will be used as the control temperature.

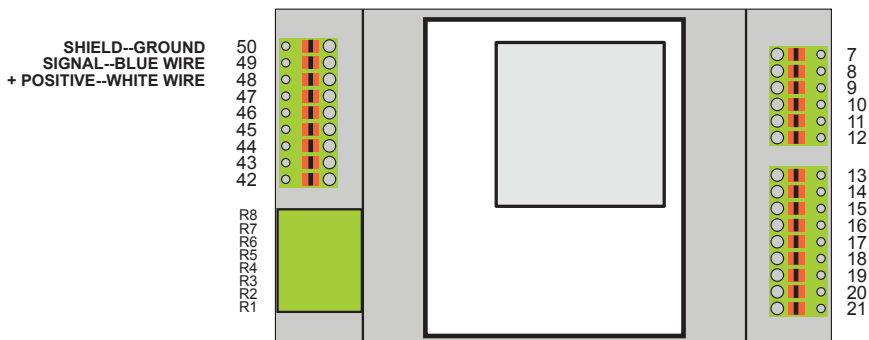
Any sensor may be used for control of the compressor and or condenser (if controlled on temperature and not pressure) and if more than one sensor is used for control, the average of all sensors used will be used as the control temperature for the compressor and or condenser.

Other sensors may be used for core, suction, discharge etc.

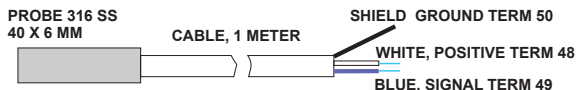
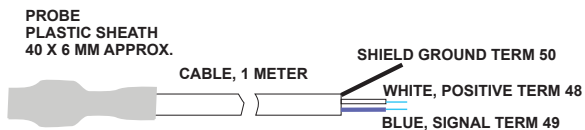
INSTALLATION CONT.

MULTISCAN DIGITAL TEMPERATURE INPUT TERMINALS CONT :-

DS18B20 Digital Type. Up to 8 temperature sensors may be connected



Types of sensors Available



INSTALLATION CONT.

MULTISCAN ANALOG TEMPERATURE INPUT TERMINALS :-

PT100 Analog Type (up to 7 temperature sensors may be connected):-

Temperature probes that are of the type PT100 (platinum type with a resistance value of 100 OHMS at 0.0 oC) of various types can be fitted to the unit.

These type must be supplied by the end user and may use only the 2 wire type of sensor. Below is the wiring diagram and the internal jumpers that are required to allow for this type of sensor to be used.

If a sensor is not used in any position the terminals that the sensor would be inserted must be connected together with a minimum length of cable.

Sensors may be extended to a maximum distance of 100 meters using twisted pair shielded cable.

If extended, the shield must be connected to ground at the MultiScan end only and must be continuous for the full length.

The joins for any extensions must be kept dry and clean and not subject to any voltage or damage will occur.

Sensors may be calibrated by the end user. See later for calibrating sensors.

Sensor cables must not run parallel or near voltage cables & must be kept well away from voltage and other control cables, at least 2 meters

Any sensor may be used for control of the room and if more than one sensor is used for room control, the average of all sensors used will be used as the control temperature.

Any sensor may be used for control of the compressor and or condenser (if controlled on temperature and not pressure) and if more than one sensor is used for control, the average of all sensors used will be used as the control temperature for the compressor and or condenser.

Other sensors may be used for core, suction, discharge etc.

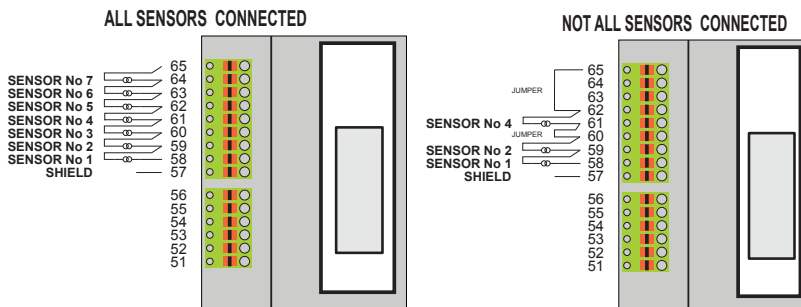
INSTALLATION CONT.

MULTISCAN ANALOG TEMPERATURE INPUT TERMINALS CONT:-

PT100 Analog Type (up to 7 temperature sensors may be connected):-

Terminal No.

- 57 - Shield of each cable.
- 58 - Sensor number 1 first wire.
- 59 - Sensor number 1 second wire and sensor number 2 first wire.
- 60 - Sensor number 2 second wire and sensor number 3 first wire.
- 61 - Sensor number 3 second wire and sensor number 4 first wire.
- 62 - Sensor number 4 second wire and sensor number 5 first wire.
- 63 - Sensor number 5 second wire and sensor number 6 first wire.
- 64 - Sensor number 6 second wire and sensor number 7 first wire.
- 65 - Sensor number 7 second wire.



INSTALLATION CONT.

TEMPERATURE AND PRESSURE CHANNELS USED FOR CONTROL:-

Default Temperature Sensors used for each Function:

Digital Sensor Number 1 :	Room control sensor.
Digital Sensor Number 2 :	Room core probe sensor.
Digital Sensor Number 3 :	Compressor control sensor (temperature control)
Digital Sensor Number 4 :	Condenser control sensor. (temperature control)
Digital Sensor Number 5 :	Compressor Oil control sensor.
Digital Sensor Number 6 :	Compressor Suction sensor.
Digital Sensor Number 7 & 8 :	Spares.
PT100 Sensor Number 1 to PT100 :	Spares.

Room control:

Any temperature sensor can be used for room control and can be set by the end user.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used for control.

Core probe temperature:

Any temperature sensor can be used for the core probe & can be set by the end user.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used.

Compressor control:

Suction pressure or temperature can be used for compressor control.

If pressure is used the pressure input used is Suction Pressure, 4-20ma input number 1.

If temperature is used, any temperature sensor can be used for control and can be set by the end user and is used.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used for control.

INSTALLATION CONT.

TEMPERATURE AND PRESSURE CHANNELS USED FOR CONTROL CONT:-

Condenser control:

Condenser discharge pressure or temperature can be used for condenser control.

If pressure is used the pressure input used is Condenser Discharge Pressure, 4-20ma input number 7.

If temperature is used, any temperature sensor can be used for control and can be set by the end user. It should be the discharge temperature.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used for control.

The temperature used for the oil purge temperature is the same as for condenser control.

Oil probe temperature:

Any temperature sensor can be used for the oil probe and can be set by the end user.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used.

Compressor Suction probe temperature:

Any temperature sensor can be used for the compressor suction probe and can be set by the end user.

If more than one sensor is selected, the average of all sensors that return a valid temperature are averaged and is the temperature used and used for the super heat calculation.

INSTALLATION CONT.

MULTISCAN PRESSURE & 4-20MA INPUT TERMINALS UP TO 8 POSSIBLE:-

Pressure transducers must be of the 4 to 20ma type and a recommended span of -1 Bar to +24 Bar.

Other spans may be used if required and the span may be programmed into the MultiScan.

The voltage supplied for the transducers is 12v DC. The transducer must be able work correctly on this voltage.

The cable from the MultiScan to the transducers must be twisted pair shielded type and can be up to a maximum distance of 300 meters.

The shield must be connected at the MultiScan end only and all connections must be kept dry and clean.

The positive of each transducer must be connected to the COM of the terminal block and each Negative must be connected to its particular input terminal.

The shield must be connected to the shield terminal.

Sensor cables must not run parallel or near high voltage cables & must be kept well away from high voltage and other control cables, at least 2 meters.

Terminal Inputs for channels 1-4

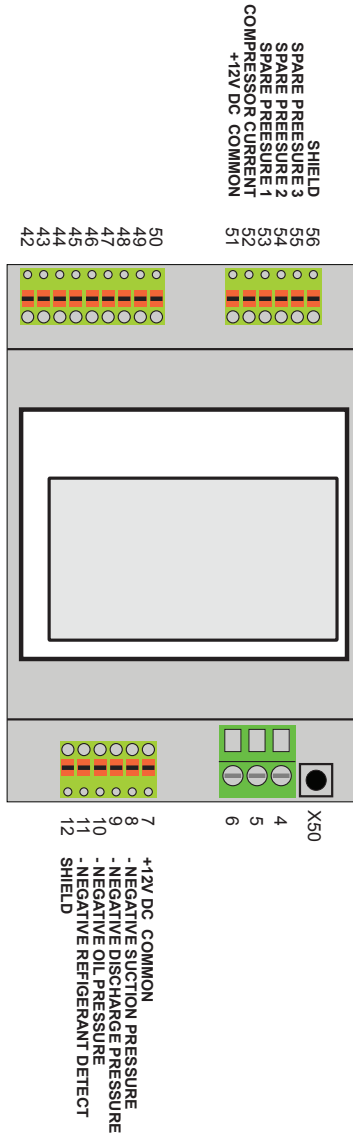
- 12 - Shield of each cable.
- 7 - Common +12 Volts (all Positive wires to transducers).
- 8 - Negative for Suction Pressure.
- 9 - Negative for Discharge Pressure.
- 10 - Negative for Oil Pressure.
- 11 - Negative for compressor motor current if used.

Terminal Inputs for channels 5-8

- 56 - Shield of each cable.
- 51 - Common +12 Volts (all Positive wires to transducers).
- 52 - Negative for refrigerant detector if used.
- 53 - Negative for Humidity
- 54 - Spare Pressure 1
- 55 - Spare pressure 2

INSTALLATION CONT.

MULTISCAN PRESSURE & 4-20MA INPUT TERMINALS CONT.-:-



INSTALLATION CONT.

COMPSCAN DIGITAL INPUT TERMINALS CONT.:-

DESCRIPTIONS:-

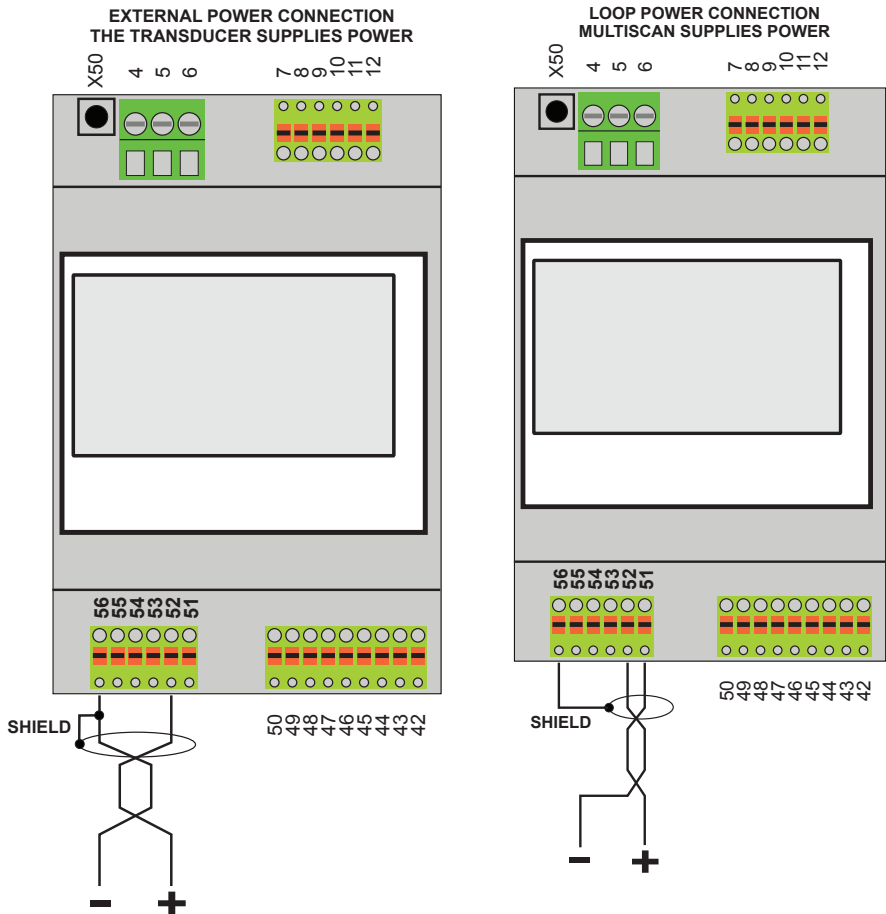
- 21 - **Common for all 8 digital inputs.**
- 20 - **Remote RUN input. (IF NOT USED THE UNIT WILL RUN ON START UP IF FUNCTION 1 (CONTROL AUTO OR OFF) IS SET TO YES).**
Used to turn the system ON from a remote location. The system will run automatically to the set points set for temperature and pressure etc. The system will shut down if this input is turned off. The room control will shut down immediately and the compressor and condenser will shut down at there pump down set point if set with there relevant set points.
- 19 - **Remote OFF input.**
Used to turn the whole system OFF from a remote location immediately. This input also causes an alarm after a 10 second delay.
- 18 - **Motor Auxiliary.**
Turns the compressor OFF after a 10 second delay if the this digital switch is activated while the motor is on. Also an alarm is activated within the system.
- 17 - **Water Jacket input.**
Goes into alarm if the flow switch for the water jacket is not active after the compressor turns on with time delay. i.e. no water flow. Also turns the whole system OFF.
- 16 - **Oil Low Pressure Switch input.**
Goes into alarm if the low oil pressure switch is active after the compressor turns on with time delay. i.e. no oil pressure. Also turns whole system OFF.
- 15 - **Oil Level Low Input.**
Goes into alarm if the low oil level switch is active after the compressor turns on with time delay. i.e. low oil level. Also turns whole system OFF.
- 14 - **Not Used input.**
- 13 - **Not Used input.**

INSTALLATION CONT.

MULTISCAN 4-20MA CURRENT INPUT TERMINALS:-

The current input is via a 4-20ma transducer and can be loop powered or not. Shown below are the two ways of interfacing the transducer to the MultiScan.

WARNING:- There is a delay of 15 seconds on the current alarm before the compressor motor will be turned off.



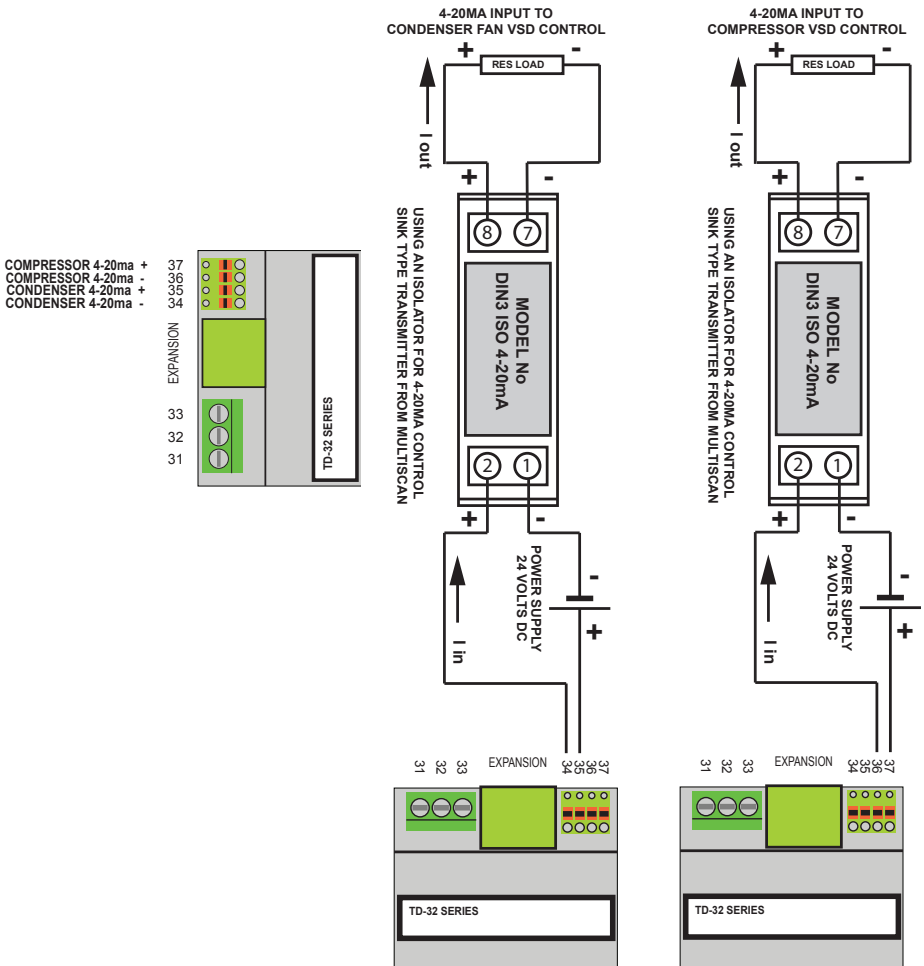
INSTALLATION CONT.

MULTISCAN 4 TO 20 MA OUTPUT TERMINALS:-

The 4 - 20ma outputs are for variable speed motor on the compressor and or variable speed condenser fan motors

It is recommended that a 4-20ma isolator is used. The components are available from the manufacturer and must be wired as shown below.

For variable motor speed control see later for expansion parameters.



INSTALLATION CONT.

MULTISCAN ALARM AND OUTPUT TERMINALS:-

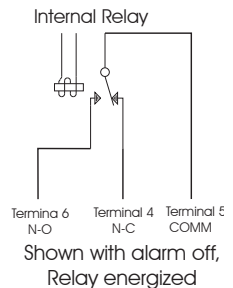
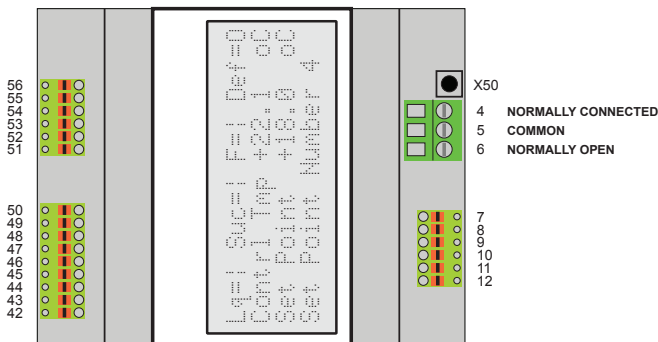
The Alarm Relay is of the voltage free type with a common, normally connected and normally not connected outputs.

The maximum voltage that can be applied to the alarm relay contacts is 24v AC/DC at 1AMP.

Terminals.

- 4 = Normally connected
- 5 = Common
- 6 = Normally open

The Relay is energized (powered on) when not in the alarm state and the normally connected terminal is active (connected). This allows for an alarm to be activated using a battery backup alarm system to trigger if the MultiScan unit losses power.



INSTALLATION CONT.

MULTISCAN RS485 TERMINALS:-

TempScan Connected :-

The RS485 terminals are used for communicating with the compressor section and is controlled by the TempScan. The Equalizer solenoid is not available in this mode.

If TempScan control is stepped (1 to 4 without an equalizer solenoid), the MultiScan will turn on each stage of the compressor to the TempScan requirements.

If TempScan control is variable, The first stage will turn on, then all other stages will turn on after 15 seconds. The MultiScan 4-20ma output will track with the variable speed that the TempScan supplies to the MultiScan.

NOTE:- The condenser section of the MultiScan can only be controlled by the MultiScan set points and cannot be controlled by a TempScan.

The MultiScan is one of a number (up to 27 set in setting functions) connected together through the RS485 Terminals as below and set in function "Compressor ID".

All TX+ are connected, all TX- connected in series and all RX+ connected in series, all RX- connected in series using twisted pair shielded cable and not run near high voltage cables.

The first display (Lq = | Suc=| F=| Def = O on top line) will indicate on the 3rd line at the right hand position "--" if no communications are received from the TempScan after 60 seconds and will display "cn" if communications are successful.

An alarm will sound after 10 minutes if no communications are received but the system will remain on using its own set points.

The cable is connected to the TempScan via the below terminal numbers.

TempScan Terminal Number		Connection	
Terminal No.	50	TX+	Term No. 43
Terminal No.	49	TX-	Term No. 42
Terminal No.	70	RX+	Term No. 45
Terminal No.	69	RX-	Term No. 44
Terminal No.	43	SHIELD	

The shield must be connected at the TempScan end only.

INSTALLATION CONT.

MULTISCAN RS485 TERMINALS:-

TempScan Connected cont.

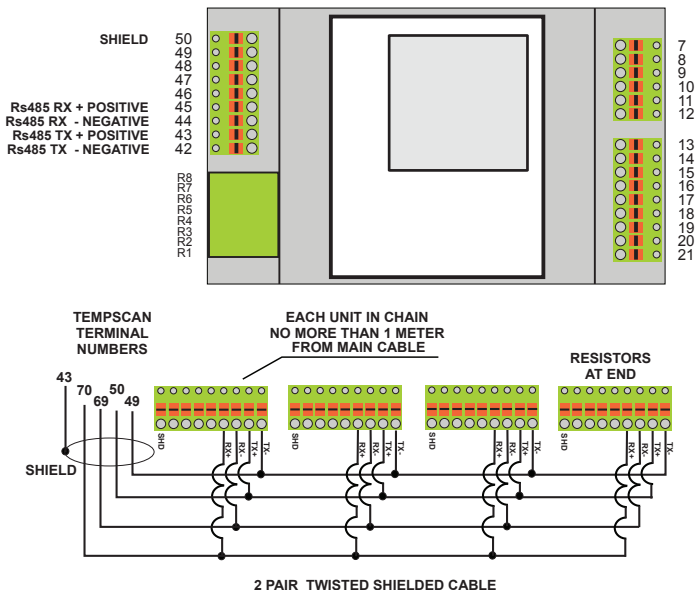
The connection to each unit must be continuous from the TempScan then one to the next then the next etc..

The units must be connected in a daisy chain configuration and not spider from one point.

A Computer is not allowed to be connected to units that are set to connect to a TempScan using the 4 wire RS485 communications.

The unit at the end of the line must have 2 x 120 OHM resistors placed across the TX terminals 42 & 43 and one across the RX terminals 44 & 45.

All MultiScans that are connected and set to "TempScan Con 4 wire" or "TempScan Con 2&4 wire" can supply information to the Tempscan software and the compressor section is controlled by the TempScan.



INSTALLATION CONT.

MULTISCAN 2 WIRE SERIAL INPUTS :-

TempScan Connected cont.

If a TempScan is connected to the MultiScan, the 2 wire serial connections is required for the TempScan to control the room temperature and defrost sections of the MultiScan, the compressor can be controlled by a TempScan RS485 (4 wire serial) or by the MultiScan set points and the condenser is controlled by the set points in the MultiScan.

The MultiScan is one of a number (up to 100 set on the DIP switch) connected together through the 2 wire serial, the same as remote relay modules are connected to the TempScan and is set using the DIP switch settings as displayed in the TempScan manual.

One Single pair SHIELDED cable must be used to connect the remote control modules to the TEMPSCAN in a daisy chain type connection, not multiple outputs from the TempScan. The maximum distance from the TEMPSCAN must not exceed 500 meters to the furthest module and must not run near to high voltage cables, definitely not in the same ducting.

The shield must be connected to the SHIELD at the TEMPSCAN **Terminal No. 43** & connected to the SHIELD terminal on the remote relay boards but not connected to the shield (or ground) on MultiScans.

One wire is connected to SIGNAL - on the TEMPSCAN, **Terminal No. 62** and connected to the serial input - (*negative*) terminal 46 of the MultiScan modules.

One wire is connected to SIGNAL + on the TEMPSCAN, **Terminal No. 61** and connected to the serial input + (*positive*) terminal 47 of the MultiScan modules.

If more than one remote module is connected, they must be connected in series with each other, making sure that the Shield is unbroken at each module's position but not connected to any terminal on the MultiScan.

A terminating resistor of approximately 120 ohms must be placed between the + and the - serial signal terminals at the further most module (last module on the cable).

INSTALLATION CONT.

MULTISCAN 2 WIRE SERIAL INPUTS :-

TempScan Connected cont.

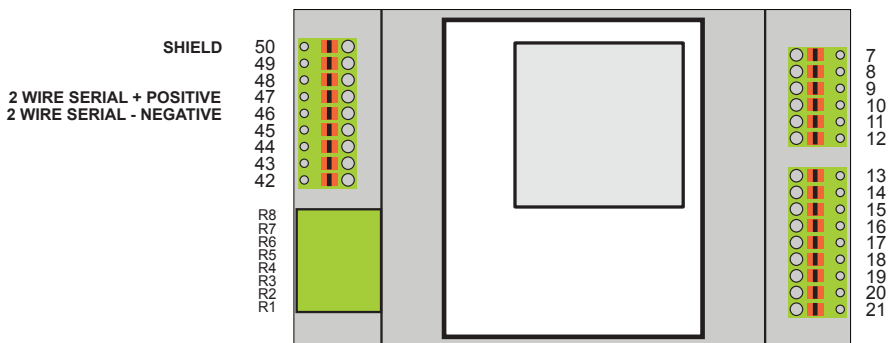
The first display (Lq = | Suc=| F=| Def = O on top line) will indicate on the 2nd line at the right hand position "--" if no communications are received from the TempScan after 10 seconds and will display "cn" if communications are successful.

An alarm will sound after 10 minutes if no communications are received and the system will turn off.

The cable is connected to the TempScan via the below terminal numbers.

TempScan Terminal Number	Connection	Term No.
Terminal No. 61	+	Term No. 47
Terminal No. 62	-	Term No. 46

The shield must be connected at the TempScan end only.



INSTALLATION CONT.

MULTISCAN 2 WIRE SERIAL INPUTS :-

TempScan Connected cont.

To set the DIP switch.

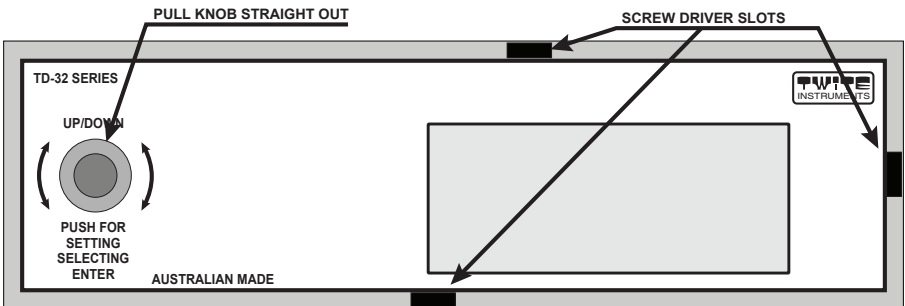
Remove the knob by pulling straight out.

Remove the front panel by levering it out from the display end and two sides (top and bottom) using a small screw driver being careful not to damage the front panel or the unit.

Switch each DIP switch (1 on the left to 5 on the right) to the correct channel number from 1 to 100.

The settings for each channel number are displayed in the TempScan manual.

The DIP switches have three positions, up, middle and down for each switch.



INSTALLATION CONT.

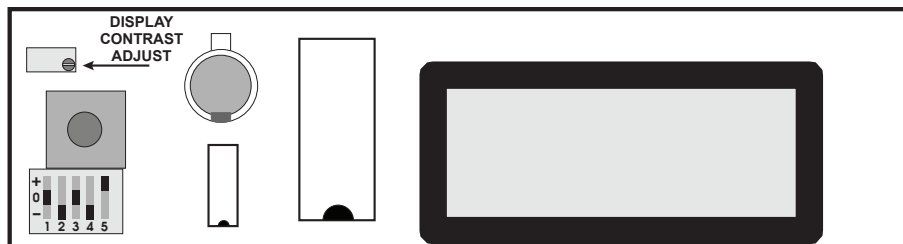
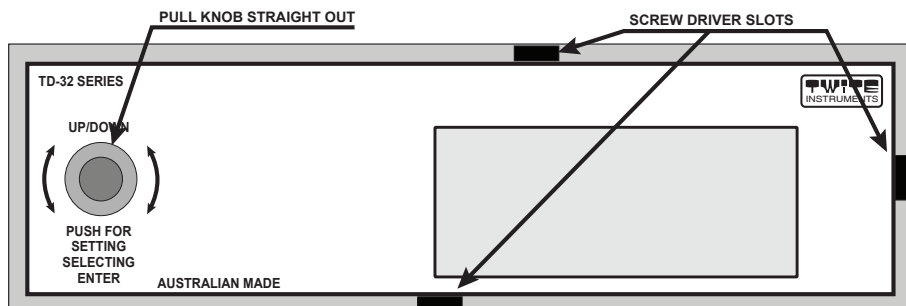
LCD DISPLAY CONTRAST ADJUST.

This trim pot adjusts the intensity of the LIQUID CRYSTAL DISPLAY. This should not normally need adjusting.

Remove the knob by pulling straight out.

Remove the front panel by levering it out from the display end and two sides (top and bottom) using a small screw driver being careful not to damage the front panel or the unit.

To adjust the contrast turn the screw on the pot shown below.



INSTALLATION CONT.

BATTERY REPLACEMENT.

If the backup battery needs replacing, the display will flash "Replace Battery" on the bottom line each second.

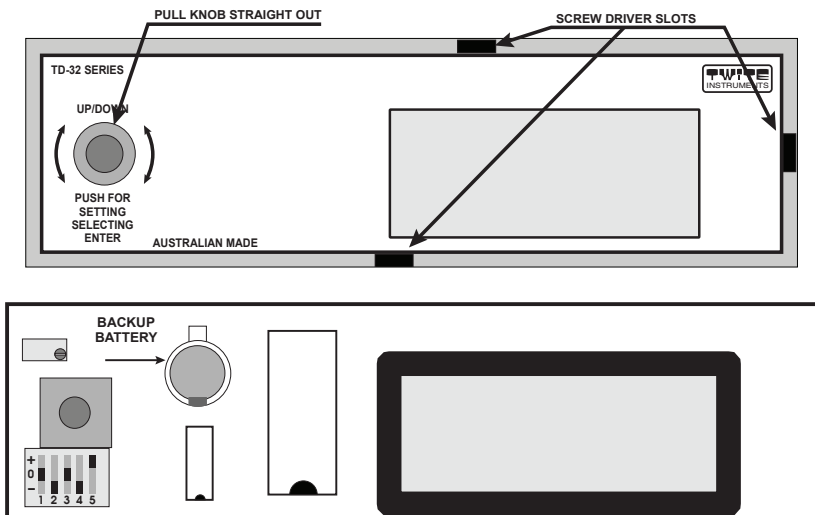
Turn off the power to the unit.

Remove the knob by pulling straight out.

Remove the front panel by levering it out from the display end and two sides (top and bottom) using a small screw driver being careful not to damage the front panel or the unit.

Replace the battery (+ to the top) and cover power on the unit. All set points will be loaded on the first minute change. The clock may need setting after a new battery is installed.

When replacing the battery, all data logged and alarms logged will be lost, save all data logged if required before turning off the power.



INSTALLATION CONT.

PROGRAM CHIP REPLACEMENT.

If the program chip needs replacing do the following.

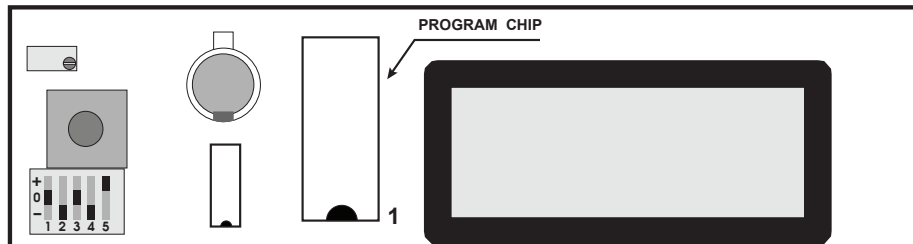
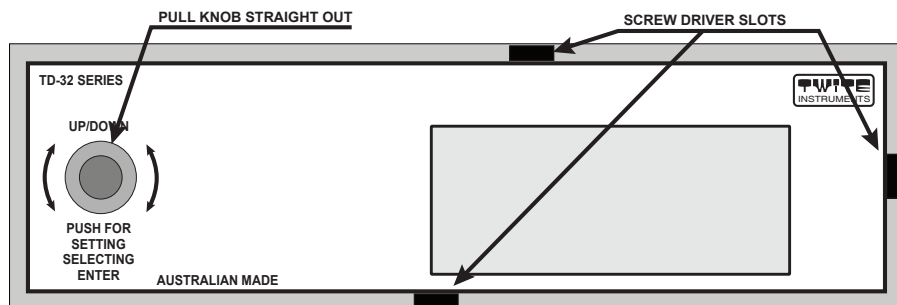
Turn the power off to the unit.

Remove the knob by pulling straight out.

Remove the front panel by levering it out from the display end and two sides (top and bottom) using a small screw driver being careful not to damage the front panel or the unit.

Pull out the program chip straight up and out of its socket.

Place the new program chip into the socket making sure that all pins are lined up to the socket and that the chip orientation is correct. The pin 1 next to the position indicated and the half moon cutout is to the bottom.



INSTALLATION CONT.

EXPANSION SOCKET.

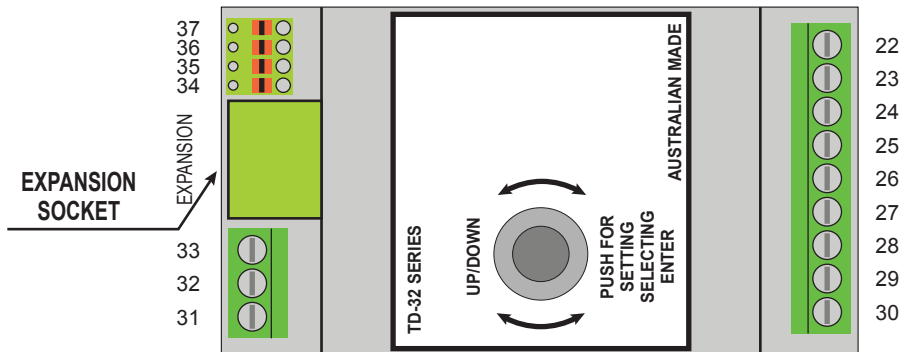
The Expansion socket is used for other modules to be added if required.

Additional LED panel display is available as an optional extra.

To install the LED panel display, follow the below diagrams and connect the cable from the TD-32-MT expansion socket (making sure the orientation is correct) to the INPUT socket of the TD-32-D board (making sure the orientation is correct).

The LED display will indicate the local room control temperature and the control of the relays for room control on the Bar LED's.

- | | | |
|----------|---|---|
| Top LED | = | Room Liquid solenoid is on. |
| 2nd. LED | = | Room Suction solenoid is on. |
| 3rd. LED | = | Room Fans contactor is on. |
| 4th. LED | = | Room Defrost Solenoid is on. |
| 5th. LED | = | Compressor motor is on. |
| 6th. LED | = | Compressor oil return solenoid is on. |
| 7th. LED | = | Condenser fans contactor is on (any one or more). |
| 8th. LED | = | Alarm is active (Flashes). |

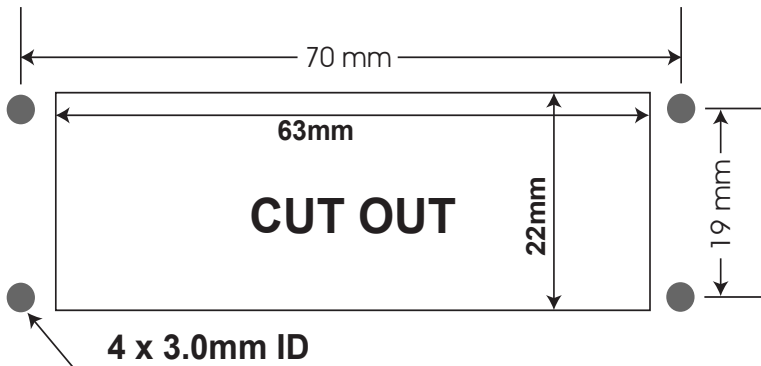


INSTALLATION CONT.

EXPANSION SOCKET CONT.

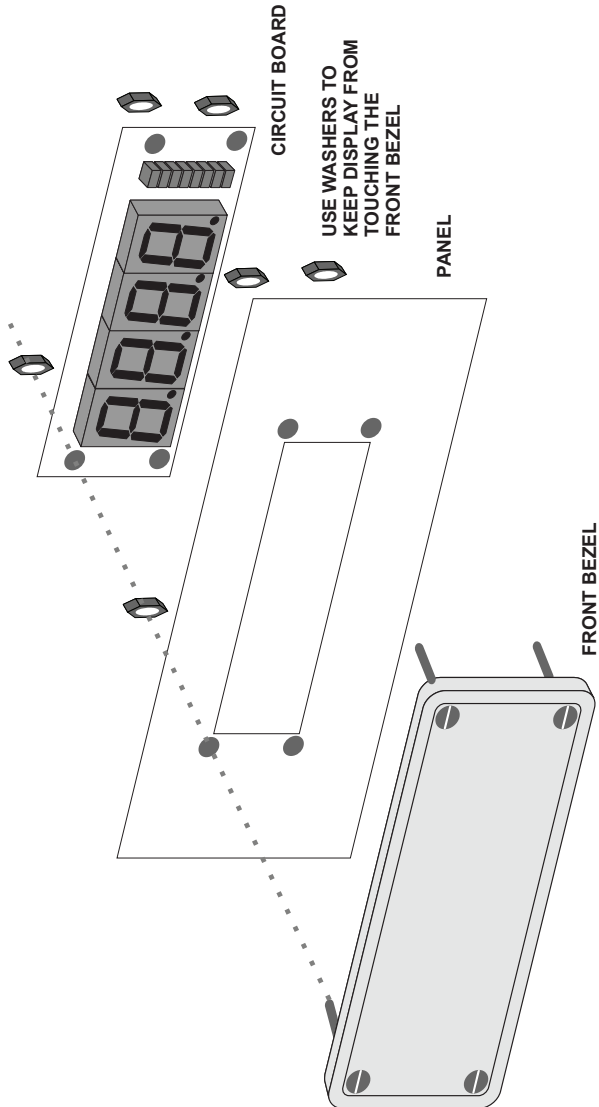
The LED display can be mounted onto a front panel. If the LED display touches the front bezel before the unit is secure, use the washers to set the circuit board back so that the display does not touch the bezel.

Cut the panel as in the diagram with 4 x 3mm holes at each corner to the diagram. place the bezel to the front of the panel and fix it with 4 x 3mm nuts (do not over tighten, otherwise damage to the bezel will occur). Place the circuit board to the rear of the panel (making sure the correct orientation, point UP arrow the UP) and place 4 x 3mm nuts to fix the circuit board in place making sure that the LED does not touch the front bezel.



INSTALLATION CONT.

EXPANSION SOCKET CONT



INSTALLATION CONT.

SENSOR POSITIONING (TEMPERATURE AND PRESSURE) :-

Temperature probes and Pressure transducers must be placed in the appropriate positions in give accurate readings of the process required.

The temperature sensors must not be exposed to temperatures below -50.0 °C or above +125.0 °C

Sensors and cables should not be fully immersed in any liquid for long periods of time. They may be immersed for short periods for calibration purposes only. The stainless steel sheath may be immersed in a liquid that will not corrode AISI 304 Stainless Steel.

Pressure transducers must not exceed there pressure maximums and minimums.

OPERATION.

USING 4 SET POINTS FOR TEMPERATURE CONTROL :-

Up to 4 Temperature set points may be used for Temperature Control and Temperature Alarms for each day of the week.

These 4 set points (*set in function "SET POINT TIMES"*) are associated with 4 times of the day, each day of the week use the same 4 times.

Different set points may be nominated for use on each day of the week using "DAILY SET POINTS" set function.

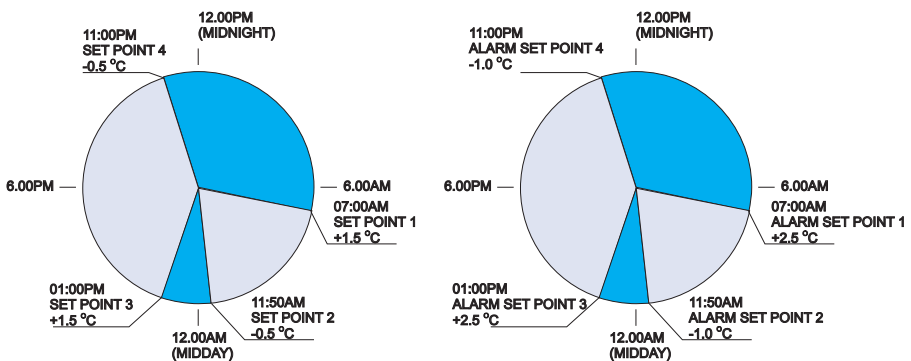
This allows the use of different temperature set points over a 24 hour period for each day of the week. By setting the night time temperature set point to a lower value than the day time Temperature set point the night rate power consumption can be taken advantage of.

Also the low weekend rate can be used by using the lowest temperature set point for the whole of the weekend.

The first set point time that is set (*the time from when the unit uses set point number 1*) must be the first time after midnight (00:00).

This means that the unit uses set point number 4 over the midnight period until the set point time number 1 is reached the following day (*providing set point 1 is set to be used on that day*).

The daily set point usage is from midnight to midnight.



OPERATION CONT.

DEFROST CONTROL :-

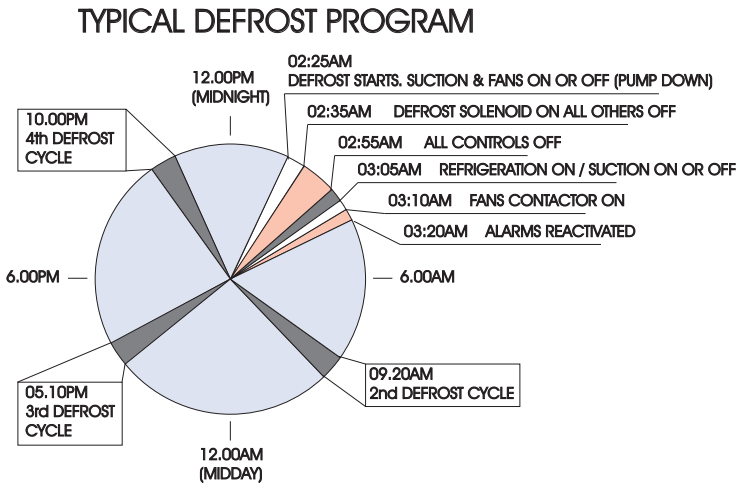
Up to 8 Defrosts can be programmed per 24 hour day. Full control of delays and drain times are provided including pump down and automatic and manual defrosts.

Air defrost is also possible.

Soft Defrost:-

If set to YES the suction solenoid is not turned on when the defrost cycle is in the fan turn on delay time.

The soft defrost solenoid is tied to the liquid solenoid to allow for the soft defrost. If set to NO the suction solenoid is turned on with the liquid solenoid during the fan turn on delay.



OPERATION CONT.

COMPRESSOR CONTROL:-

The compressor may be controlled using the suction pressure or temperature. If temperature control is used, the sensor or sensors may be selected from any one or multiple sensors. If multiple sensors are selected, it uses the average of selected sensors for control. The default (if none selected) is PT100 number 3.

The start to start time on power up is always 30 seconds.

The control type can be any one of the following.

- 1 stage stepped with or without equalizer solenoid on start up.**
- 2 stage stepped with or without equalizer solenoid on start up.**
- 3 stage stepped with or without equalizer solenoid on start up.**
- 4 stage stepped without equalizer solenoid.**
- 1 stage stepped and variable with or without equalizer solenoid on start up.**
- 2 stage stepped and variable with or without equalizer solenoid on start up.**
- 3 stage stepped and variable with or without equalizer solenoid on start up.**
- 4 stage stepped and variable without equalizer solenoid.**

The variable is a 4-20ma output to control a variable speed drive.

Stages 2 to 4 may be inverted (energized for unloaded) or not (energized to load).

Compressors use fast load, slow load and unload times and pump down set point (*user programmable*) for loading and unloading a compressor.

Also the compressor has a user programmable Start to Start timer in minutes.

The oil return relay also is timed and dependent on oil temperature (if used) and motor on run time.

An equalizer solenoid may be used to bypass the suction to discharge lines on motor start on compressors with less than 4 stages of loading. The equalizer solenoid is turned on by half the set point (time set in seconds) before the motor starts and remains on for half the set point (time in seconds) after the motor starts.

OPERATION CONT.

COMPRESSOR CONTROL CONT:-

Number of hard piped stages can be entered to allow for correct indication of stages loaded. This is the number of stages that are active (on) when the motor starts.

Compressor on with room on/off.

This allows for three types of compressor control with the room on or off and are as follows.

1 Set to "Ctl on Suc/Temp Only"

The compressor turns on and off with suction pressure/temperature set points regardless of the room control on or off.

2 Set to "ON and Room ON Only"

The compressor will not start if the room suction solenoid is off, as soon as the room suction solenoid is on, the compressor will start using suction pressure/temperature set points and stop using suction pressure/temperature set points only, regardless of whether the room suction control is on or off.

3 Set to "ON and Room ON & OFF"

The compressors will start and stop using its pressure/temperature set points only if the room suction solenoid is ON, otherwise the compressor will turn off if the room suction solenoid is OFF.

Step Amount.

The step amount when using variable speed drives can be set between 1 and 10 percent for each step for each time the compressor needs to be loaded or unloaded.

Compressor minimum run.

When using variable speed drives, the minimum run percentage may be set between 0 to 100 percent for each stage of turn on. This is the percentage of speed at the time each stage is loaded and the minimum speed when the stage is to be unloaded. The last stage (stage 1) is left at 100% until the pump down set point is reached.

OPERATION CONT.

COMPRESSOR CONTROL CONT:-

Compressor proportional control.

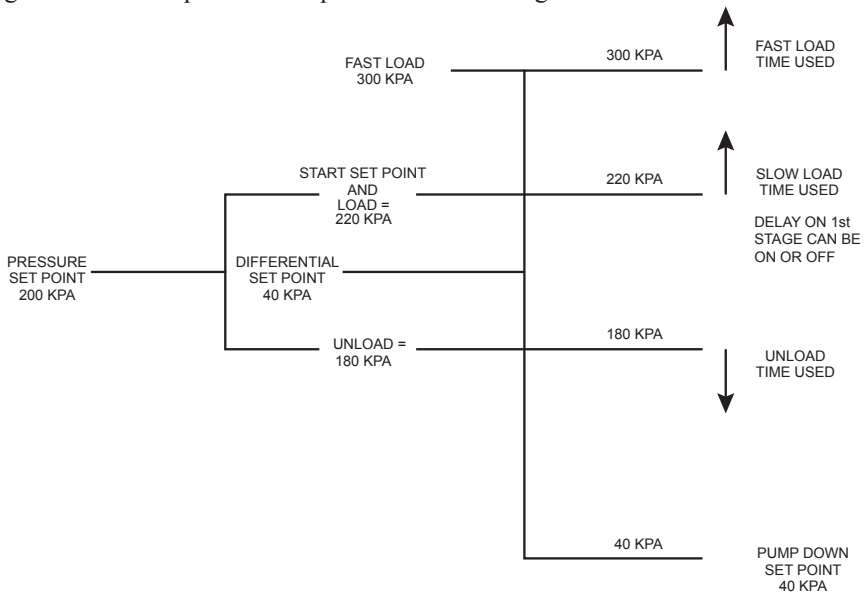
The proportional control can be used to decrease the time between loading and unload the compressor stages and or the percentage of speed.

If 0 is selected, no proportional control is used.

If set to 1 to 10 proportional control is used as a proportion of the selected amount. The higher the number, the more time is taken off the load and unload times in seconds.

When the pressure/temperature is in the loading stage and counting down to load the compressor and if the pressure/temperature decreases, the count down for loading holds until the pressure/temperature increases again.

When the pressure/temperature is in the unloading stage and counting down to unload the compressor and if the pressure/temperature increases, the count down for unloading holds until the pressure/temperature decreases again.



OPERATION CONT.

CONDENSER CONTROL:-

The condenser may be controlled using the condenser discharge pressure or temperature. If temperature control is used, the sensor or sensors may be selected from any one or multiple sensors. If multiple sensors are selected, it uses the average of selected sensors for control. The default (if none selected) is PT100 number 4.

The condenser will not run regardless of the pressure/temperature if the compressor is turned off.

The control type can be any one of the following.

1 stage stepped.

2 stage stepped.

1 stage stepped and variable.

2 stage stepped and variable.

The variable is a 4-20ma output to control a variable speed drive.

Condensers use load and unload time set points (*user programmable*) for loading and unloading a condenser.

The condensers first stage, normally the water pump should be connected to the stage 1 (motor run) output of the compressors output.

Step Amount.

The step amount when using variable speed drives can be set between 1 and 10 percent for each step for each time the condenser needs to be loaded or unloaded.

Condenser minimum run.

When using variable speed drives, the minimum run percentage may be set between 0 to 50 percent for each stage of turn on. This is the percentage of speed at the time each stage is loaded and the minimum speed when the stage is to be unloaded.

OPERATION CONT.

CONDENSER CONTROL CONT:-

Condenser proportional control.

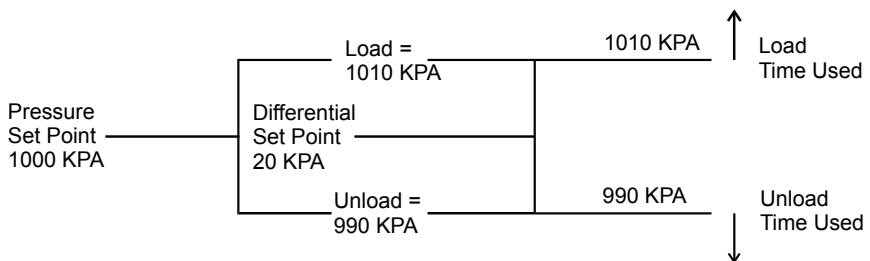
The proportional control can be used to decrease the time between loading and unload the condenser stages and or the percentage of speed.

If 0 is selected, no proportional control is used.

If set to 1 to 10 proportional control is used as a proportion of the selected amount. The higher the number, the more time is taken off the load and unload times in seconds.

When the pressure/temperature is in the loading stage and counting down to load the condenser and if the pressure/temperature decreases, the count down for loading holds until the pressure/temperature increases again.

When the pressure/temperature is in the unloading stage and counting down to unload the condenser and if the pressure/temperature increases, the count down for unloading holds until the pressure/temperature decreases again.



OPERATION CONT.

ALARM ACTION:-

Some alarms will turn the system off and some will indicate the alarm but the system will still run. If any sensor used in a control temperature/pressure goes into alarm, that control temperature/pressure will alarm and the system will shut down.

All alarms are indicated on the alarm display page in the order and time they were activated.

To scroll through alarms, turn the knob to the alarm page and press the knob once then turn the knob clockwise or anticlockwise to display each alarm.

To reset the alarms, Press the knob again, if any alarm is still active the alarm will sound and each new alarm is displayed. If no new alarms are still active the display reverts to normal running mode.

While the alarms are displayed, pressing the knob and holding it down for 3 seconds the display will revert to the normal run displays and different pages can be displayed by turning the knob clockwise and anticlockwise.

All alarms have a minimum delay of 10 seconds. Over range sensors have a delay of 20 seconds and no sensor (on digital temperature sensors only) alarms have a delay of 20 seconds.

The following is a sample of the alarms displayed. The buzzer will sound and the alarm relay will turn off. To disable the buzzer press the x50 button or the spin knob.

```
ALARMS LOGGED STATUS
TOTAL No. ALARMS 01
order 01 Disch Pres
17:46 04 Jan
```

If no alarms are active the display will show:-

```
ALARMS LOGGED STATUS
NO ALARMS LOGGED
```

OPERATION CONT.

ALARM ACTION CONT.:-

The following is the display for each alarm and its meaning. The N = No alarm on this input. The S = the system will shut down if this goes into alarm and A = Only an alarm will sound on this input but the system will continue to run.

If a channel is set to "not connected" no alarm will activate on that input:-

1	"Dig Temp 1"	A	The digital temperature No 1 is in alarm.
2	"Dig Temp 2"	A	The digital temperature No 2 is in alarm.
3	"Dig Temp 3"	A	The digital temperature No 3 is in alarm.
4	"Dig Temp 4"	A	The digital temperature No 4 is in alarm.
5	"Dig Temp 5"	A	The digital temperature No 5 is in alarm.
6	"Dig Temp 6"	A	The digital temperature No 6 is in alarm.
7	"Dig Temp 7"	A	The digital temperature No 7 is in alarm.
8	"Dig Temp 8"	A	The digital temperature No 8 is in alarm.
9	"PT100 Tmp 1"	A	The PT100 temperature No 1 is in alarm.
10	"PT100 Tmp 2"	A	The PT100 temperature No 2 is in alarm.
11	"PT100 Tmp 3"	A	The PT100 temperature No 3 is in alarm.
12	"PT100 Tmp 4"	A	The PT100 temperature No 4 is in alarm.
13	"PT100 Tmp 5"	A	The PT100 temperature No 5 is in alarm.
14	"PT100 Tmp 6"	A	The PT100 temperature No 6 is in alarm.
15	"PT100 Tmp 7"	A	The PT100 temperature No 7 is in alarm.
16	"Not Used"	N	No alarm in this position.
17	"Suction Prs"	S	The suction pressure transducer is in alarm.
18	"Discharge P"	S	The discharge pressure transducer is in alarm.
19	"Oil Press "	S	The oil pressure transducer is in alarm.
20	"Refrig Det "	S	The refrigerant detection transducer is in alarm.
21	"Cmp Current"	S	The motor current transducer is in alarm.
22	"Spare Prs 1"	A	The spare 4-20ma input number 1 is in alarm.
23	"Spare Prs 2"	A	The spare 4-20ma input number 2 is in alarm.
24	"Spare Prs 3"	A	The spare 4-20ma input number 3 is in alarm.
25	"Room Ctl Tm"	S	Any room control temperature sensor is in alarm.
26	"Core Temp"	N	Any core temperature probe is in alarm.
27	"Comp Cont'l"	S	Any compressor control sensor/transducer is in alarm.
28	"Cond Cont'l"	S	Any condenser control sensor/transducer is in alarm.
29	"Oil Real Tm"	S	Any oil temperature sensor is in alarm.
30	"Comp Suc Tm"	N	Any compressor suction temperature sensor is in alarm.
31	"Room Run"	N	Digital input to run the system.

OPERATION CONT.

ALARM ACTION CONT.:-

32	"Remote OFF"	S	Digital input to shut the system down. (10 sec delay).
33	"Motor Aux"	S	Digital input from a faulty compressor. (10 sec delay).
34	"Water Jack"	S	Digital input for no water jacket flow. (10 sec delay).
35	"Oil Press"	S	Digital input for low oil pressure comp. (10 sec delay).
36	"Spare Dig 1"	N	Digital input spare number 1.
37	"Spare Dig 2"	N	Digital input spare number 2.
38	"Spare Dig 3"	N	Digital input spare number 3.
39	"Super Heat"	S	Super heat = 0 or less on compressors suction (see below).
40	"Super Sat T"	N	Super Saturated Temperature.
41	"TempScan 2"	S	TempScan 2 wire room only control failed.
42	"TempScan 4"	A	TempScan 4 wire communications failed.

The super heat is only activated if the compressor motor is on and has been on for at least 30 minutes from start. Can be deactivated by selecting no refrigerant used.

ALARM HISTORY:-

The alarm history displays the last 40 alarms that were active. After 40 alarms have been logged the next alarm is placed over the first alarm that was saved and each successive alarm placed over the next earliest alarm etc..

To display each alarm history, rotate the "UP/DOWN" knob until the alarm history page is displayed, press the knob briefly, then rotate the knob to display other alarm history information.

To revert to normal run display press the knob for 3 seconds.

The display will revert to the time display (page 1) after 240 seconds if nothing is pressed or turned.

The following is a typical alarm history display.

```

ALARM HISTORY; SHOWS
THE LAST 40 ALARMS
HOT WATER
20:45 04 JAN +44.0 OC
  
```

OPERATION CONT.

ALARM HISTORY CONT:-

If no alarm is in a position, the following will be displayed.

```
ALARM HISTORY, SHOWS
THE LAST 40 ALARMS
```

```
NO ALARM IN THIS POS
```

DATA LOGGING.

Data logging is done on the times set in the functions setting and can log at the below times.

Data logging may be done at timed intervals as follows:-

1:	NONE (don't do)	Does not do timed logging.
2:	Every 1 Minute	Does a log every minute on the minute change.
3:	Every 5 Minutes	Does a log every 5 minutes at 5, 10 15 etc.
4:	Every 10 Minutes	Does a log every 10 minutes at 10, 20, 30 etc.
5:	Every 30 Minutes	Does a log every 00, 30 minutes.
6:	Every 1 Hour	Does a log every hour on the hour change.
7:	Every 2 Hours	Does a log every 2 hours at 2, 4, 6 etc.

To display data logged, rotate the knob until the data logg display page is displayed, displays "Data Logged Display" on the top line.

Press the knob briefly to hold the display. Rotating the knob will go to the next/previous time to be displayed.

When the displayed time reaches the end/start the display will roll over to the first/last displayed log.

To change the parameter to be displayed at each displayed data log push the "KNOB" and it will display each parameter in turn and roll over to the first parameter after the last parameter is displayed.

DATA LOGGING CONT.

Press the knob for 3 seconds to revert to the normal run display pages.

The display will revert to the time display (page 1) after 240 seconds if nothing is pressed or turned.

The third line displays the parameter and its value.

The fourth line displays the time and date of the log and the following:-

The following is a sample of data logged page:-

```
Data Logged Display
<=>=Time Push =Value
Vat Milk Tn 28.7 oC
11:14 14 Jan Pick UP
```

If no their is data logs to display the display will show the following.

```
Data Logged Display
No Data Logged
```

UP/DOWN KNOB AND SWITCH FUNCTIONS :-

OVERVIEW

The following switches are available for setting of functions etc.

- 1: The ROTARY/PUSH knob - for displaying different pages, data logged, alarms and setting/entering values of functions.
- 2: The X50 Switch -for incriminating or detrainment by 50 (5.0 oC) values while setting of values when the rotary switch is turned.

DISPLAY PAGES.

The following displays are available by rotating the "ROTARY/PUSH" knob clockwise and anticlockwise while no setting of functions is being done.

NOTE: If after 240 seconds the knob was not used, the display will revert to page 1.

If a value displayed is in error, the following may be displayed the meaning is as follows:

Er-Ovr The sensor or transducer is in an open circuit or shortage out or the sensor has failed.

No-Sen The temperature sensor is not responding, check cable and sensor.

No-Con The sensor or transducer has been set to "Not Connected".

If sensors, transducers or digital inputs have been set to "Not Connected", the value may not be displayed.

If all inputs within the one page are set to "Not Connected", the page may be skipped to the next/previous page automatically,

PAGE 1:

The status of the room controls, the control temperature value, the set point value and the set point number that the control set point is using.

The top line uses the following enuciations.

Lq =	Liquid solenoid is on.
Suc =	Suction solenoid is on.
F =	The fans output is on.
Def = O	The defrost solenoid is off.

```

Lq=1  Suc=1  F=1  Def=0
Contrl Tmp +25.5  oC
Set Point  +13.0  oC
Set Point No. 4

```

DISPLAY PAGES CONT.

PAGE 2:

The time and date on the top line.

The temperature of the digital sensor number 1 on the second line.

The temperature of the digital sensor number 2 on the third line.

The temperature of the digital sensor number 3 on the fourth line.

NOTE:- Annunciations depending on set function "Display Annunciations" can be displayed instead of "Dig Temp 1" etc.

```
17:48-51  10/10/2006
Dig Temp 1 +26.5  oC
Dig Temp 2 +26.5  oC
Dig Temp 3 +26.5  oC
```

PAGE 3:

The temperature of the digital sensor number 4 on the second line.

The temperature of the digital sensor number 5 on the second line.

The temperature of the digital sensor number 6 on the third line.

The temperature of the digital sensor number 7 on the fourth line.

NOTE:- Annunciations depending on set function "Display Annunciations" can be displayed instead of "Dig Temp 1" etc.

```
Dig Temp 4 +26.5  oC
Dig Temp 5 +26.5  oC
Dig Temp 6 +26.5  oC
Dig Temp 7 +26.5  oC
```

DISPLAY PAGES CONT.

PAGE 4:

The temperature of the digital sensor number 4 on the second line.
The temperature of the PT100 sensor number 1 on the second line.
The temperature of the PT100 sensor number 2 on the third line.
The temperature of the PT100 sensor number 3 on the fourth line.

NOTE:- Annunciations depending on set function "Display Annunciations" can be displayed instead of "Dig Temp 1" etc.

```
Dig Temp 4 +26.5  oC
PT Temp 1 +26.5  oC
PT Temp 2 +26.5  oC
PT Temp 3 +26.5  oC
```

PAGE 5:

The temperature of the PT100 sensor number 4 on the second line.
The temperature of the PT100 sensor number 5 on the second line.
The temperature of the PT100 sensor number 6 on the third line.
The temperature of the PT100 sensor number 7 on the fourth line.

NOTE:- Annunciations depending on set function "Display Annunciations" can be displayed instead of "Dig Temp 1" etc.

```
PT Temp 4 +26.5  oC
PT Temp 5 +26.5  oC
PT Temp 6 +26.5  oC
PT Temp 7 +26.5  oC
```

DISPLAY PAGES CONT.**PAGE 6:**

The compressor status on the top line.

The 1234 = each stage that is on, the E = equalizer solenoid is on and the 50% is the percentage of the variable speed drive output if used or if start to start time out is active the time left in seconds will be displayed.

The control temperature/pressure for the compressor second line.

The discharge pressure on the third line.

The oil pressure on the fourth line.

```

Comp-Stat 1234 100%  Comp-Stat StoS 34
Suc Press +200 KPA
Dis Press +1000 KPA
Oil Press +254 KPA

```

PAGE 7:

The condenser status on the top line.

The 12 = each stage that is on, and the 50% is the percentage of the variable speed drive output if used.

The control temperature/pressure for the condenser second line.

The discharge pressure on the third line.

The oil pressure on the fourth line.

```

Conden-Stat 12 100%
Dis Press +200 KPA
Suc Press +1000 KPA
Refrig Dt +14 FPM

```

DISPLAY PAGES CONT.

PAGE 8:

The status of all 8 digital inputs on the top line.
O=Off I=ON N=Not-Con on the second line.
Each digital input number on the third line.
The status of each digital input on the fourth line

```

      Digital Inputs
O=Off I=ON N=Not-Con
  1  2  3  4  5  6  7  8
  1  0  0  0  1  0  0  0
```

PAGE 9:

The compressor suction line temperature on the top line.
Suction pressure on the second line.
The saturated suction temperature on the third line.
The super heat on the fourth line.

```

Comp Suctn +23.8  oC
Suc Press  +210   KPA
Satur'd tm -8.3   oC
Super Heat +32.3  oC
```

DISPLAY PAGES CONT.

PAGE 10: DATA LOGGED PAGE.

To display data logged, rotate the knob until the data logg display page is displayed, displays "Data Logged Display" on the top line.

Press the knob briefly to hold the display. Rotating the knob will go to the next/previous time to be displayed.

When the displayed time reaches the end/start the display will roll over to the first/last displayed log.

To change the parameter to be displayed at each timed data log push the "KNOB" and it will display the next parameter in turn and roll over to the first parameter after the last parameter is displayed. To change back one parameter press and hold the x50 button while the "KNOB" is pushed

Press the knob for 3 seconds to revert to the normal run display pages.

The display will revert to the time display (page 1) after 240 seconds if nothing is pressed or turned.

The third line displays the parameter and its value.

The fourth line displays the time and date of the log and the following:-

The following is a sample of data logged page:-

```
Data Logged Display
<>=Time Push =Value
Comp % out 50
11:14 14 Jan percent
```

If no their is data logs to display the display will show the following.

```
Data Logged Display
No Data Logged
```

DISPLAY PAGES CONT.

PAGE 11: ALARMS PAGE.

To scroll through alarms, turn the knob to the alarm page and press the knob once then turn the knob clockwise or anticlockwise to display each alarm.

To reset the alarms, Press the knob again, if any alarm is still active the alarm will sound and each new alarm is displayed. If no new alarms are still active the display reverts to normal running mode.

While the alarms are displayed, pressing the knob and holding it down for 3 seconds the display will revert to the normal run displays and different pages can be displayed by turning the knob clockwise and anticlockwise.

All alarms have a minimum delay of 10 seconds. Over range sensors have a delay of 20 seconds and no sensor (on digital temperature sensors only) alarms have a delay of 10 seconds.

The following is a sample of the alarms displayed. The buzzer will sound and the alarm relay will turn off. To disable the buzzer press the x50 button or the spin knob.

```
ALARMS LOGGED STATUS
TOTAL No. ALARMS 01
order 01 Disch Pres
17:46 04 Jan
```

If no alarms are active the display will show:-

```
ALARMS LOGGED STATUS
NO ALARMS LOGGED
```

DISPLAY PAGES CONT.

PAGE 12: ALARM HISTORY PAGE.

The alarm history displays the last 40 alarms that were active. After 40 alarms have been logged the next alarm is placed over the first alarm that was saved and each successive alarm placed over the next earliest alarm etc..

To display each alarm history, rotate the "UP/DOWN" knob until the alarm history page is displayed, press the knob briefly, then rotate the knob to display other alarm history information.

To revert to normal run display press the knob for 3 seconds.

The display will revert to the time display (page 1) after 240 seconds if nothing is pressed or turned.

The following is a typical alarm history display.

```
ALARM HISTORY, SHOWS  
THE LAST 40 ALARMS  
HOT WATER  
20:45 04 JAN +44.0 oC
```

If no alarm is in a position, the following will be displayed.

```
ALARM HISTORY, SHOWS  
THE LAST 40 ALARMS  
  
NO ALARM IN THIS POS
```

DISPLAY PAGES CONT.**PAGE 13:**

The number of hours the compressor has run on the top line.

The number of hours the condenser fans have run on the second line.

The number of hours the room has run on the third line.

The compressor amps on the fourth line

```
Comp'r Run 544    Hrs
Cond'r Run 438    Hrs
Room Run   612    Hrs
Compressor 00     AMPS
```

PAGE 14:

The time and date on the top line.

The copyright on the second line.

The MultiScan Model No. on the third line.

The TD-32_MT Ver No. ** on the fourth line

```
09:55-25 16/05/2007
Copyright Twite Inst
MultiScan Model No.
Td-32-MT Ver No. 01
```

PASSWORD:-

USERS PASSWORD :-

When the password is required (*can be turned on or off*) the display will request the password when "SET" knob is pressed then "ENTER" knob is pressed to select that function to change/check with the following message.

```
Enter Users  
Password
```

```
0000
```

NOTE:- flashing cursor.

The PASSWORD consists of A NUMBER BETWEEN 0000 AND 5999 inclusive.

To enter the password rotate the knob to the first value required then press "ENTER" knob for the next number etc. until the correct number is displayed, press "ENTER", knob again to finish entering the password number. If the password number was correct the unit will go to the next step for setting functions.

If the number was incorrect the unit will display the following.

```
Wrong Password  
Press X50  
or Try Again  
0000
```

If X50 is pressed the display will revert to its normal running display with the displayed data that was displayed before the "SET" knob was pressed.

PASSWORD CONT.:-

CHANGE PASSWORD

(use "SET" knob, "ENTER" knob, rotate UP/DOWN knob.)

Allows the Password to be changed. If the Password is inactive (*i.e.. is set to OFF*) this function will automatically require the users password before you can change it.

This is done using the "Password YES/NO" function

DISABLE PASSWORD

(use "SET" knob , "ENTER" knob, rotate UP/DOWN knob).

This is done using the "Password YES/NO" function

Changes the PASSWORD function to ACTIVE or NON ACTIVE.

PASSWORD UNKNOWN

If the pass word has been lost it is possible to reset the pass word to **"0888"** by pressing and holding the X50 switch pressed and turning on the power to the unit.

SETTING FUNCTIONS.

OVERVIEW:

To set any function, the following switches are used:-

If the password is required, then it must be entered before any function can be changed.

The large knob is used for "SET FUNCTIONS" key on the first press and then becomes the "ENTER" key there after.

After pressing the Knob for the first time. Rotating this knob clockwise by one click increases the value by 1 function and rotating anticlockwise by one click decreases the value by 1 function.

When the correct function is displayed for changing or checking press the knob to go to that function to change or check.

If channels are required for the function the display will indicate this.

Turn the knob to select each channel and press the knob to select or deselect each channel as required or not required.

When all channels that require changing turn the knob to display "----> Continue Next" and press the knob. This will now go to the next section and the value of the last channel that was selected will be displayed for changing.

If no channels were selected (*and were required*) the function will not proceed and the display will revert to there normal functions.

Rotate the knob to increase or decrease the value by 1 count each click.

If the "X50" button is pressed when rotating the knob the value will increase or decrease by 50 each click.

If the "ENTER" knob is pressed without the value being changed all channels that were selected will be updated with the value displayed on the LCD.

SETTING FUNCTIONS.

OVERVIEW CONT.:

When a flashing cursor is displayed on the Liquid Crystal Display the Value or Function may be changed to another by rotating the knob ("UP/DOWN").

After the correct value has been entered press the "ENTER" knob and the value will be entered into memory for all the channels selected if required and will not be affected by a power failure.

If the following is displayed after the last "ENTER" knob press, redo the function. The "ENTER" knob was not pressed for the required time for the value to be saved. This only applies to values that must be saved to the EEPROM.

```
The Enter Switch was
not pressed for the
required time.
Press X50 and Re-Do
```

If more than one value is required (*i.e. set real time clock*) the unit will request each value in turn to be altered. After each value has been entered press the "ENTER" knob. After all required values have been altered (*or checked*), the displays will revert to normal run mode.

When the "SET" knob is first pressed the last function that was altered will appear on the display The FUNCTIONS and there meaning are described in the following pages in short form then in detail.

```
SETTING FUNCTIONS
Turn Dial < or > for
Required Function 9
Set Data Logging
```

To change from one function to another, turn the "DIAL" (*up/down arrow*) knob to display each function in numerical order.

FUNCTIONS.

FUNCTIONS AND THE NO. OF EACH:-

1	"Control Auto or OFF"	Turns the system to run on auto or off.
2	"Temperature set Pnts"	Sets 4 temperature set points for room control.
3	"Temp're Differential"	Sets the room control differential.
4	"Temp Diff'tial Type"	Sets the differential type.
5	"Temp Time Set Points"	The time of day for each set point to be used.
6	"Daily Set Points Use"	Which set points to use on each day of the week.
7	"Fans Auto or Manual"	Whether the fans run continuously or auto.
8	"Fans Manual 1 Day Wk"	Fans run continuously one day a week on not.
9	"Set Defrost Function"	Sets the defrost times.
10	"Defrost Start Times"	Up to 8 defrost times per day can be set.
11	"Auto Defrost Yes/No"	Whether to do auto defrosts or not.
12	"Soft Defrost Tes/No"	Soft defrost or not, suction sol control at end.
13	"Air Only Defrost Y/N"	Do air only defrost, suction sol control at start.
14	"Do a Manual Defrost"	Starts manual defrost at the next minute change.
15	"Cancel any Defrost"	Cancels any active defrost immediately
16	"Long Term Storage"	Controls the suction solenoid when cooling.
17	"Fans Suction Delay"	The pump down time in seconds after turn off.
18	"Power on Start Delay"	Time in minutes room starts after power failure.
19	"High Alarm Temp're"	The high alarms for temperature sensors.
20	"Low Alarm Temp're"	The low alarms for temperature sensors.
21	"Hi Temp Alarm Delay"	The high alarm delays for temperature sensors.
22	"Low Temp Alarm Delay"	The low alarm delays for temperature sensors.
23	"Heating or Cooling"	Whether room control is heating or cooling.
24	"Set Data Logging"	The data logged times or none don't do.
25	"Set Time & Date"	Sets the real time clock.
26	"Dig Temp's Connected"	The 8 digital temp sensors that are connected.
27	"PT100 Temp Connected"	The 7 PT100 temp sensors that are connected.
28	"Temp Sensors for Ctl"	Sets temperature sensors used for room control.
29	"Temp Sen's for Core"	Sets temperature sensors used for core probe.
30	"Password YES/NO"	Use the password or not for setting functions.
31	"Change Password"	Change the password. Password must be used.
32	"Ram Memory Check"	Checks all memory for any faults.
33	"Test Display/Rst log"	Displays model number & resets all data logged.
34	"Set Dig Temp Offset"	Set the digital temperature sensors offset.

FUNCTIONS CONT.

FUNCTIONS AND THE NO. OF EACH CONT:-

35	"Set PT100 Tmp Offset"	Set the PT100 temperature sensors offset.
36	"Add Dig Temp Sensor"	Add a new digital temperature sensor.
37	"Set RS485/232 Baud"	Set the baud rate for serial communications.
38	"Set Room ID Number"	The units number from 1 to 100 for TempScan.
39	"Display Brightness"	The brightness of the displays back light.
40	"Number of Resets S/N"	Display the number of resets and the serial No.
41	"TempScan Connected"	Whether single stand alone or TempScan control.
42	"Reset Room Run Hours"	Resets the room run hours to 0.
43	"Press's Connected"	The pressure and 4-20ma inputs connected.
44	"Digital IN Connected"	The Digital inputs connected or not connected.
45	"Digital IN Inverted"	Whether a digital input is inverted or not.
46	"High Alarm 4-20ma In"	The high alarms for pressure/40-20ma sensors.
47	"Low Alarm 4-20ma In"	The low alarms for pressure/40-20ma sensors.
48	"Hi 4-20 Alarm Delay"	The high alarm delays pressure/40-20ma sensors.
49	"Lo 4-20 Alarm Delay"	The low alarm delays pressure/40-20ma sensors.
50	"4-20 Weight Average"	The amount of averaging for the 4-20ma inputs.
51	"Set 4-20 Input Span"	The span of pressure transducers & 4-20ma.
52	"Type of Compressor"	The type of compressor used.
53	"Cmp Start/Start Time"	The start to start time in minutes for compressor.
54	"Compressor Set Point"	The compressor set point pressure/temperature.
55	"Compressor Diff'tial"	The compressor differential pressure/temperature.
56	"Comp Slow Load Time"	Ramp up time in seconds for compressor load.
57	"Fast Load Set Point"	Fast load set point in pressure/temperature.
58	"Comp Fast Load Time"	Time in seconds for fast compressor loading.
59	"Comp'or Unload Time"	Time in seconds for compressor unload stage.
60	"Pump Down Set Point"	The pump down set point for the compressor.
61	"Comp Equalizer Sol'd"	Time in seconds for the comp equalizer solenoid.
62	"Oil Return Interval"	Time in minutes between comp oil return,
63	"Temp Sensors for Oil"	Temperature sensors used for comp oil temp.
64	"Comp Stages Inverted"	Whether comp stages 2,3 & 4 are inverted or not.
65	"Hard Piped Stages Nu"	Number of compressor hard piped stages.
66	"Comp ON/OFF with Chn"	Sets compressor is on or off with room control.
67	"Comp cntl PRESS-TEMP"	Compressor control on pressure or temperature.
68	"Temp Sen's Comp Ctrl"	Temperature sensors used for compressor control.

FUNCTIONS CONT.

FUNCTIONS AND THE NO. OF EACH CONT:-

69	"Comp Stg 1 Dly YesNo"	Compressor stage 1 use delay yes or no.
70	"Compre'r Step Amount"	Step % amount for each load step for compressor.
71	"Compressor Min % Run"	Minimum % for each compressor stage to run at.
72	"Comp Proportional Ct"	Amount of proportional control on compressor.
73	"Reset Comp'sor Hours"	Reset the compressor run hours.
74	"Temp Sen's Comp Suc"	Temperature sensors used for compressor suction.
75	"Compressor Number ID"	The compressor number if TempScan control.
76	"Type of Condenser"	The type of condenser used.
77	"Condenser Set Point"	The condenser set point pressure/temperature.
78	"Condenser Diff'tial"	The condenser differential pressure/temperature.
79	"Condenser Load Time"	Ramp up time in seconds for condenser load.
80	"Condenser Unload Tme"	Unload load set point in pressure/temperature.
81	"Conden'r Step Amount"	Step % amount for each load step for condenser.
82	"Condenser Min % Run"	Minimum % for each condenser stage to run at.
83	"Cond cntl PRESS-TEMP"	Condenser control on pressure or temperature.
84	"Temp Sen's Cond Ctrl"	Temperature sensors used for condenser control.
85	"Cond Proportional Ct"	Amount of proportional control on condenser.
86	"Reset Cond'ser Hours"	Reset the condenser run hours.
87	"Type of refrigerant"	Type refrigerant used for super heat calculation.
88	"Computer Connected"	Wether a Computer is connected or not.
89	"LED Display Intens'y"	The brightness of the LED display.
90	"Display Annunciation"	Display annunciation yes or no for temperatures.

FUNCTIONS CONT.

1 “Control Auto or OFF”

Sets whether the room control is on automatic or off. There is no manual on control for safety.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Control Auto or OFF” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO [Control Auto].
PRESS “KNOB”
SELECTION COMPLETE.

2 “Temperature Set Pnts”

Sets the 4 Temperature set points associated with the 4 Set Point Times.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Temperature Set Pnts” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -50.0 to +150.0 oC [Set Pt Time 1].
PRESS “KNOB”
REPEAT FOR SET POINTS 2,3 AND 4
PRESS “KNOB”
SELECTION COMPLETE.

3 “Temp're Differential”

This sets the temperature differential for room control.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Temp're Differential” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR +0.2 to +10.0 oC [Set Pt Time 1].
PRESS “KNOB”
SELECTION COMPLETE.

4 “Differential Type”

Sets the Differential Type of Temperature room control.

The position of the temperature set point is either Set Point in Middle, Turn OFF at Set Pnt, or Turn ON at Set Point. This means that the set point can be at the top, bottom, or middle of the differential.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Temp Diff'tial Type” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR Set Point in Middle, Turn OFF at Set Pnt, Turn ON at Set Point.
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

5 “Temp Time Set Points”

Sets the 4 Set Point Times associated with the 4 Temperature set points and Temperature Alarm set points. The first set point time must be the time closest to midnight.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Temp Time Set Points” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR 00:00 to 23:59 [Set Pt Time 1].
 PRESS “KNOB”
 REPEAT FOR SET POINTS 2,3 AND 4
 PRESS “KNOB”
 SELECTION COMPLETE.

6 “Daily Set Points Use”

Sets which of the 4 Temperature set points (*control and alarm*) may be used for each day of the week. At least 1 set point must be used for each day of the week.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Daily Set Points Use” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▼ [COUNTER CLOCKWISE] FOR SET POINT NUMBER 1 ON/OFF [Sunday].
 ROTATE KNOB ▲ [CLOCKWISE] TO GO TO SET POINT NUMBER 2 [Sunday].
 ROTATE KNOB ▼ [COUNTER CLOCKWISE] FOR SET POINT NUMBER 2 ON/OFF [Sunday].
 ROTATE KNOB ▲ [CLOCKWISE] TO GO TO SET POINT NUMBER 3 [Sunday].
 ROTATE KNOB ▼ [COUNTER CLOCKWISE] FOR SET POINT NUMBER 3 ON/OFF [Sunday].
 ROTATE KNOB ▲ [CLOCKWISE] TO GO TO SET POINT NUMBER 4 [Sunday].
 ROTATE KNOB ▼ [COUNTER CLOCKWISE] FOR SET POINT NUMBER 4 ON/OFF [Sunday].
 PRESS “KNOB”
 REPEAT FOR SET POINTS FOR THE OTHER 6 DAYS OF THE WEEK
 PRESS “KNOB”
 SELECTION COMPLETE.

7 “Fans Auto or Manual”

Selects whether the Fans in the cool room (or agitator for heating) are on continuously or on only while the refrigeration solenoid (heating element) is on.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Fans Auto or Manual” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR Fans on Automatic or Fans on Continuously.
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

8 “Fans Manual 1 Day Wk”

This set point is for allowing the fans in a room to be on manual (continuously) for 1 day of the week every week. The fans will be on manual for the selected day from 12:00 AM to 12:00 midnight of the day required. This allows for full air circulation within the cool room.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Fans Manual 1 Day Wk” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR None, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday or Saturday.

PRESS “KNOB”

SELECTION COMPLETE.

9 “Set Defrost Function”

Sets the Defrost including, the defrost solenoid turn on delay (*all solenoids off or suction and fans on to pump down evaporator*), Auto defrost time, Manual Defrost time, Liquid solenoid turn on delay (*drain time after the defrost solenoid turns off and before the liquid solenoid turns on*) and the fans turn on delay (*allows any water to freeze before the fans turn on*).

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Set Defrost Function” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 120 Minutes, [Start Delay]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR YES/NO, [FansSuc on Del]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR 0 to 120 Minutes, [Auto Def Time]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR 0 to 120 Minutes, [Man Def Time]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR 0 to 120 Minutes, [Drain Delay]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR 0 to 120 Minutes, [Fan on Delay]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

10 “Defrost Start Times”

Sets the 8 Times that an automatic defrost can be done in each 24 hour day. Time one must be the first time after 00:00 (*midnight*) etc. If less than 8 times per day are required set the remaining times not required to the same last time the last defrost is required.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Defrost Start Times” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 00:00 to 23:59 [Set Pt Time 1].
PRESS “KNOB”
REPEAT FOR SET POINTS 2,3,4,5,6,7 and 8
PRESS “KNOB”
SELECTION COMPLETE.

11 “Auto Defrost YES/NO”

Selects whether the unit does Automatic Defrosts or not.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Auto Defrost YES/NO” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO [Auto Defrost].
PRESS “KNOB”
SELECTION COMPLETE.

12 “Soft Defrost Yes/No”

Sets whether the defrost is a soft defrost or not. If set to YES the suction solenoid is not turned on when the defrost cycle is in the fan turn on delay time. The soft defrost solenoid is tied to the liquid solenoid to allow for the soft defrost. If set to NO the suction solenoid is turned on with the liquid solenoid during the fan turn on delay.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Soft Defrost Yes/No” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO [Soft Defrost].
PRESS “KNOB”
SELECTION COMPLETE.

13 “Air Only Defrost Y/N”

Sets whether the suction solenoid is on or off while in the first delay. If set to yes, the fans only are turned on in the first delay. If set to no, the fans and suction solenoid are turned on in the first delay to allow pump down of the evaporator.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Air Only Defrost Y/N” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO [Air Defrost].
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

14 “Do a Manual Defrost”

Selects whether the unit does a Manual Defrost, Resets to "no" when finished defrost.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Do a Manual Defrost" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR YES or NO [Man Def Time].

PRESS "KNOB"

SELECTION COMPLETE.

15 “Cancel any Defrost”

Cancels a defrost cycle that was in progress.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Cancel any Defrost" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR YES or NO [Cancel Def'st].

PRESS "KNOB"

SELECTION COMPLETE.

16 “Long Term Storage”

Selects long term storage. If set to Long Term Storage the Suction solenoid is not turned on when the room requires refrigeration, allowing a pressure regulator to control the evaporator temperature (*if fitted*). If not selected the Suction solenoid is turned on with the Liquid and Fans solenoid. The Suction solenoid is still turned on at the required times while in a Defrost cycle.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Long Term Storage" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR YES or NO [Long Term Str].

PRESS "KNOB"

SELECTION COMPLETE.

17 “Fans Suction Delay”

Sets the time the "FANS" and "SUCTION" stay on for after the temperature turn off point has been reached, (*in cooling mode only*) from 0 to 600 seconds. This function allows the pumping out of the evaporator after the liquid solenoid has turned off and stops short cycling of the compressors.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Fans Suction Delay" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 600 [Seconds].

PRESS "KNOB"

SELECTION COMPLETE.

FUNCTIONS CONT.

18 “Power On Start Delay”

Sets the Turn on Delay in minutes for the system to start after a reset or power failure.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT "Power On Start Delay" on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 120 [Minutes].
PRESS “KNOB”
SELECTION COMPLETE.

19 “High Alarm Temp'ture”

Sets the high alarm temperature for temperature sensors. Only sensors that are set to "Connected" will be available for selection.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT "High Alarm Temp'ture" on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
CONTINUE TO SELECT REQUIRED CHANNELS
ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
PRESS “KNOB”
ROTATE KNOB ▲ ▼ FOR -50.0 to +150.0 [Degrees C].
PRESS “KNOB”
SELECTION COMPLETE.

20 “Low Alarm Temp'ture”

Sets the low alarm temperature for temperature sensors. Only sensors that are set to "Connected" will be available for selection.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT "Low Alarm Temp'ture" on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
CONTINUE TO SELECT REQUIRED CHANNELS
ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
PRESS “KNOB”
ROTATE KNOB ▲ ▼ FOR -50.0 to +150.0 [Degrees C].
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

21 “Hi Temp Alarm Delay”

Sets the high alarm temperature delay for temperature sensors. Only sensors that are set to "Connected" will be available for selection.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Hi Temp Alarm Delay" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS "KNOB" TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]

CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS "KNOB"

ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds].

PRESS "KNOB"

SELECTION COMPLETE.

22 “Lo Temp Alarm Delay”

Sets the low alarm temperature delay for temperature sensors. Only sensors that are set to "Connected" will be available for selection.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Lo Temp alarm Delay" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS "KNOB" TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]

CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS "KNOB"

ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds].

PRESS "KNOB"

SELECTION COMPLETE.

23 “Heating or Cooling”

Selects whether Cooling or Heating. If set to heating, the defrost solenoid is used for the heating element and the fans relay is used for the agitator if required.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Heating or Cooling" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR Control for Cooling or Control for Heating

PRESS "KNOB"

SELECTION COMPLETE.

FUNCTIONS CONT.

24 “Set Data Logging”

Sets the data logging times (*puts information values and time*) into memory for retrieval latter via the display, printer or computer.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Set Data Logging” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR None (don't do), Every 1 Minute, Every 5 Minutes, Every 10 Minutes,
Every 30 Minutes, Every 1 Hour or Every 2 Hours.

PRESS “KNOB”

SELECTION COMPLETE.

25 “Set Time & Date”

Sets the Real Time Clock

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Set Time & Date” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR THE HOURS (24 HOUR) [Hours]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE MINUTES [Minutes]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE SECONDS [Seconds]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE DAY [Day SUN = 1]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE DATE [Date]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE MONTH [Month]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE YEAR [Year]

PRESS “KNOB”

ROTATE KNOB ▲ ▼ FOR THE CENTURY [Century]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

26 “Dig Temp's Connected”

Sets whether each digital type temperature sensor is connected or not. All digital sensors may be selected in this function.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Dig Temp's Connected" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

27 “PT100 Temp Connected”

Sets whether each PT100 type temperature sensor is connected or not. All PT100 sensors may be selected in this function.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "PT100 Temp Connected" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [PT100 Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

28 “Temp Sensors for Ctl”

Sets the temperature sensors that are used for the room control. All sensors (both digital and PT100) that are set to "Connected" will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the control of the room. If any sensor is in alarm the system will turn off

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Temp Sensors for Ctl" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

29 “Temp Sen's for Core”

Sets the temperature sensors that are used for the core probe. All sensors (both digital and PT100) that are set to "Connected" will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the core temperature.

PRESS "KNOB"

ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen's for Core" on bottom line.

PRESS "KNOB"

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS "KNOB" TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]

CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS "KNOB"

SELECTION COMPLETE.

FUNCTIONS CONT.

30 “Password YES/NO”

Selects whether the Password is required for setting functions or not.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Password YES/NO" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR YES or NO [Password].
 PRESS “KNOB”
 SELECTION COMPLETE.

31 “Change Password”

Sets the Password of a number from 0000 to 5999. If the password was not active when this function is selected, the password will be required. If the wrong password is entered, the display will indicate this. You can trye again or press the x50 button to revert to normal running.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Change Password" on bottom line.
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 1 to 5 [Password].
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 1 to 9 [Password].
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 1 to 9 [Password].
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 1 to 9 [Password].
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 0 to 5999 [Password].
 PRESS “KNOB”
 SELECTION COMPLETE.

32 “Ram Memory Check”

For Testing the RAM and EEPROM memory. This function will not remove the contents of memory. If any error messages display on the LCD call your nearest service agent for service. This function can take up to 20 seconds. This function should not be used unless by an authorized technician.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Ram Memory Check" on bottom line.
 ENTER PASSWORD IF REQUIRED
 PRESS AND HOLD “KNOB” UNTIL "Done Press ENTER" is displayed on the bottom line.
 RELEASE “KNOB”
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

33 “Test Display/Rst Log”

Displays the model number and version number and resets the data logged to nothing logged.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Test Display/Rst Log" on bottom line.
 ENTER PASSWORD IF REQUIRED
 PRESS “KNOB” "Done Press ENTER" is displayed on the bottom line.
 PRESS “KNOB”
 SELECTION COMPLETE.

34 “Set Dig Temp Offset”

Sets an offset into non volatile ram for any or all digital temperature sensors. This is required if the temperature reading is wrong. To check the accuracy of the sensors, place them into an ice bath (0.0 oC) and check the reading. If the sensor does not read 0.0 oC, the amount of discrepancy can be entered so that the sensor will read accurately at 0.0 oC. Only sensors that are set to "Connected" will be available for selection

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Set Dig Temp Offset" on bottom line.
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR -20.0 TO +20.0 oC [Degrees C]
 SELECTION COMPLETE.

35 “Set PT100 Tmp Offset”

Sets an offset into non volatile ram for any or all PT100 temperature sensors. This is required if the temperature reading is wrong. To check the accuracy of the sensors, place them into an ice bath (0.0 oC) and check the reading. If the sensor does not read 0.0 oC, the amount of discrepancy can be entered so that the sensor will read accurately at 0.0 oC. Only sensors that are set to "Connected" will be available for selection

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Set Dig Temp Offset" on bottom line.
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [PT100 Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR -20.0 TO +20.0 oC [Degrees C]
 SELECTION COMPLETE.

FUNCTIONS CONT.

36 “Add Dig Temp Sensor”

All digital temperature sensors have a unique serial number embedded within the sensor. To add a sensor or replace an existing sensor, do the following. Remove all currently connected sensors (hard wired). Place the new sensor into the correct terminals and do the following. If more than one sensor channel is selected the display will indicate this and jump out of the function. All sensor numbers are available to select from in this function.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Add Dig Temp Sensor” on bottom line.

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNEL TO ADD SENSOR ON TO [Dig Temp 1 etc.]
 TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 PRESS “KNOB” CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS “KNOB” MAKE SURE SENSOR IS CONNECTED CORRECTLY.

PRESS “KNOB” THE SENSORS SERIAL NUMBER WILL BE DISPLAYED ON THE BOTTOM LINE.

IF THE ACCESS TO THE SENSOR FAILED THE DISPLAY WILL INDICATE THIS. CHECK CONNECTIONS AND REPLACE THE SENSOR AND TYR AGAIN.

PRESS “KNOB” ENTERS THE SERIAL NUMBER INTO NON VOLATILE RAM

PRESS “KNOB”

SELECTION COMPLETE.

37 “Set RS485/232 Baud”

Sets the Baud Rate of the RS485 and RS232 Ports. The Stop bit is set to 1 and the Parity is set OFF automatically. This should be 9600 if connected to a computer.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Set RS485/232 Baud” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 110, 300, 1200, 2400, 4800 or 9600 [Baud Rate].

PRESS “KNOB”

SELECTION COMPLETE.

38 “Set Room ID Number”

Sets the room number from 1 to 100. This is required if the unit is connected to a TempScan. Also the DIP switches must be set for TempScan connection, see else where for the DIP switch settings.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Set Room ID Number” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1 to 100 [Unit Number].

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

39 “Display Brightness”

Sets the brightness of the displays back light. 0 = off and 255 = full on.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Display Brightness" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 255 [the larger the number the higher the brightness].

PRESS “KNOB”

SELECTION COMPLETE.

40 “Number of Resets S/N”

Displays the number of times the unit was reset (power failures) and the serial number of the unit. After this function the number of resets counter is set to 0.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Number of Resets S/N" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

PRESS “KNOB”

Done Press ENTER on the bottom line

PRESS “KNOB”

SELECTION COMPLETE.

41 “TempScan Connected”

Sets the unit for single stand alone (runs on its own only) or whether a TempScan is connected using 2 wire serial. If a TempScan is connected to the unit, the TempScan runs the room on/off and defrost controls and the unit runs the compressor and condenser.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "TempScan Connected" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR Single stand Alone, TempScan Con 2 wire

PRESS “KNOB”

SELECTION COMPLETE.

42 “Reset Room Run Hours”

Resets the room run hours counter to 0.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Reset Room Run hours" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

PRESS “KNOB”

Done Press ENTER on the bottom line

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

43 “4-20ma Inp Connected”

Sets whether each pressure transducer (or any 4-20ma input) is connected or not. All 8 channels may be selected in this function.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “4-20ma Inp Connected” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

44 “Digital IN Connected”

Sets whether each digital input is connected or not. All 8 channels may be selected in this function.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Digital IN Connected” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Room Run Inpt etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

45 “Digital IN Inverted”

Sets whether each digital input is inverted or not. The default is that a digital input is open off if not connected to ground and on if connected to ground. This function can reverse one or more to be the case. All 8 channels may be selected in this function.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Digital IN Inverted” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Room Run Inpt etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

46 “High Alarm 4-20ma In”

Sets the high alarm pressure inputs and 4-20ma inputs. Only sensors that are set to "Connected" will be available for selection.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "High Alarm 4-20ma In" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR -100.0 to +4000 [Pressure KPA].
 PRESS “KNOB”
 SELECTION COMPLETE.

47 “Low Alarm 4-20ma In”

Sets the low alarm pressure inputs and 4-20ma inputs. Only sensors that are set to "Connected" will be available for selection.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Low Alarm 4-20ma In" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR -100.0 to +4000 [Pressure KPA].
 PRESS “KNOB”
 SELECTION COMPLETE.

48 “Hi 4-20 Alarm Delay”

Sets the high alarm delay for pressure inputs and 4-20ma inputs. Only sensors that are set to "Connected" will be available for selection.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT "Hi 4-20 Alarm Delay" on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds].
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

49 “Lo 4-20 Alarm Delay”

Sets the low alarm delay for pressure inputs and 4-20ma inputs. Only sensors that are set to "Connected" will be available for selection.

PRESS "KNOB"
 ROTATE KNOB ▲ ▼ TO SELECT "Lo 4-20 Alarm Delay" on bottom line.
 PRESS "KNOB"
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS "KNOB" TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS "KNOB"
 ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds].
 PRESS "KNOB"
 SELECTION COMPLETE.

50 “4-20 Weight Average”

Sets the amount of averaging to do on the 4-20ma input channels. The higher the number the smoother the value displayed.

PRESS "KNOB"
 ROTATE KNOB ▲ ▼ TO SELECT "4-20 Weight Average" on bottom line.
 PRESS "KNOB"
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR 0 to 10 [Pressure KPA].
 PRESS "KNOB"
 SELECTION COMPLETE.

51 “Set 4-20 Input Span”

Sets the Low and High input span for pressure transducers and or the Refrigerant Transducer input and other 4-20ma inputs. Only sensors that are set to "Connected" will be available for selection.

PRESS "KNOB"
 ROTATE KNOB ▲ ▼ TO SELECT "Set 4-20 Input span" on bottom line.
 PRESS "KNOB"
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Suction Press etc.]
 PRESS "KNOB" TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS "KNOB"
 ROTATE KNOB ▲ ▼ FOR -200 to 20000 [4-20ma Low].
 PRESS "KNOB"
 ROTATE KNOB ▲ ▼ FOR -200 to 20000 [4-20ma High].
 PRESS "KNOB"
 SELECTION COMPLETE.

FUNCTIONS CONT.

52 “Type of Compressor”

Sets the type of compressor that is connected to the unit.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Type of Compressor” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1 Stage Stepped, 2 Stage Stepped, 3 Stage Stepped, 4 Stage Stepped,
1 Stage Stepped Var, 2 Stage Stepped Var, 3 Stage Stepped Var or 4
Stage Stepped Var,

PRESS “KNOB”

SELECTION COMPLETE.

53 “Cmp Start/Start Time”

Sets the start to start time that the compressor is allowed to start again from the last time it started in minutes.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Cmp Start/Start Time” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 60 [Minutes]

PRESS “KNOB”

SELECTION COMPLETE.

54 “Compressor Set point”

Sets the set point in suction pressure or temperature (depends on which required) for the compressor to operate at.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Compressor Set Point” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR -100 (-10.0) to +500 (+50.0) [KPA or oC]

PRESS “KNOB”

SELECTION COMPLETE.

55 “Compressor Diff’tial”

Sets the differential in suction pressure or temperature (depends on which required) for the compressor to operate at.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Compressor Diff’tial” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR +10 (+1.0) to +100 (+10.0) [KPA or oC]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

56 “Comp Slow Load Time”

Sets the slow load time in seconds that the compressor is loaded to the next stage using the control value divided by 2. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Comp Slow Load Time” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

57 “Fast Load Set Point”

Sets the value at which the compressor loads using the fast load set point. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Fast Load Set Point” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -100 (-10.0) to +1000 (+10.0) [KPA or oC]
PRESS “KNOB”
SELECTION COMPLETE.

58 “Comp Fast Load Time”

Sets the fast load time in seconds that the compressor is loaded to the next stage. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Comp Fast Load Time” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

59 “Compr'or Unload Time”

Sets the unload time in seconds that the compressor is unloaded to the previous stage using the control value divided by 2. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Compr'or Unload Time” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

60 “Pump Down Set Point”

Sets the value at which the compressor turns off.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Pump Down Set Point” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -200 (-20.0) to +500 (+50.0) [KPA or oC]
PRESS “KNOB”
SELECTION COMPLETE.

61 “Comp Equalizer Sol'd”

Sets the time that the equalizer solenoid is on before and after the compressor starts. If the compressor type is set to have 4 stages, an equalizer solenoid can not be used. The value entered is divided by 2 for the both times ie. if set to 10, the equalizer solenoid is turned on for 5 seconds before the compressor starts and remains on for 5 seconds after the compressor starts.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Comp Equalizer Sol'd” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 100 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

62 “Oil Return Interval”

Sets the time between the oil return solenoid is turned on in minutes. The time the solenoid is on for is set at 5 minutes. The solenoid will not turn on if the oil temperature is below 55.0 degrees Celsius. The first allowed turn on after motor start is 30 minutes if the compressor has been off for 5 hours or more other wise the the minimum time for the return to turn on is set at 1 minute after motor start and from then on the "Oil Return Interval" set point is the time between oil return times while the motor is on.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Oil Return Interval" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1 to 240 [Minutes]

PRESS “KNOB”

SELECTION COMPLETE.

63 “Temp Sensors for Oil”

Sets the temperature sensors that are used for the compressor oil probe. All sensors (both digital and PT100) that are set to "Connected" will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the oil temperature.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Temp Sensors for Oil" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS “KNOB”

SELECTION COMPLETE.

64 “Comp Stages Inverted”

For inverting compressor stages. If set to NO, all stages (1 to 4 will energize to load. If set to YES all stages (2 to 4) will energize to unload, stage 1 is used for motor start. If the compressor is off all stages will not be energized. If an equalizer solenoid is used it will not be inverted.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Comp Stages Inverted" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR YES or NO [Stgs Inverted]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

65 “Hard Piped Stages Nu”

Sets the number of compressor load stages are permanently on.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Hard Piped Stages Nu” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1, 2, 3, or 4 [Hard Piped]

PRESS “KNOB”

SELECTION COMPLETE.

66 “Comp ON/OFF with Chn”

Selects whether the compressor can start and or stop when the room control is on or off.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Comp ON/OFF with Chn” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR Ctl on Suc/Temp Only, ON and Room ON Only or ON and Room ON & OFF

PRESS “KNOB”

SELECTION COMPLETE.

67 “Comp cntl PRESS-TEMP”

Selects whether the compressor is controlled using suction pressure or temperature.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Comp cntl PRESS-TEMP” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR Control on Pressure or Ctrol on Temperature.

PRESS “KNOB”

SELECTION COMPLETE.

68 “Temp Sen's Comp Ctrl”

Sets the temperature sensors that are used for compressor control if it is to be controlled on temperature. All sensors (both digital and PT100) that are set to “Connected” will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the control temperature.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Temp Sen's Comp Ctrl” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]

CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

69 “Comp Stg 1 Dly YesNo”

Selects whether the compressor stage 1 uses the delay for loading or the compressor starts as soon as the set point is reached.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Comp Stg 1 Dly YesNo” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO to use delay on stage 1.
PRESS “KNOB”
SELECTION COMPLETE.

70 “Compe'r Step Amount”

Sets the step amount in percentage that the compressor will load and unload each time if a variable speed drive is used.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Compe'r Step Amount” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 1 to 10 [% Per Step]
PRESS “KNOB”
SELECTION COMPLETE.

71 “Compressor Min % Run”

Sets the minimum percentage that each stage will start at when turned on if a variable speed drive is used.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Compressor Min % Run” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 1]
PRESS “KNOB”
ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 2]
PRESS “KNOB”
ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 3]
PRESS “KNOB”
ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 4]
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

72 “Comp Proportional Ct”

Sets the amount of PID that is used to control the load and unload times depending on how much difference there is between the set point and the actual value.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Comp Proportional Ct” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 10 [Prop 0 = none]

PRESS “KNOB”

SELECTION COMPLETE.

73 “Reset Comp'sor Hours”

Resets the hours run counter for the compressor to 0.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Reset Comp'sor Hours” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

PRESS “KNOB”

Done press enter on the bottom line

PRESS “KNOB”

SELECTION COMPLETE.

74 “Temp Sen's Comp Suc”

Sets the temperature sensors that are used for the compressor suction line to calculate the super heat. All sensors (both digital and PT100) that are set to “Connected” will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the compressors suction line temperature.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Temp Sen's Comp Suc” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]

PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
CONTINUE TO SELECT REQUIRED CHANNELS

ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]

PRESS “KNOB”

SELECTION COMPLETE.

75 “Compressor Number ID”

Sets the number of the compressor to be used for connection to a TempScan.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Compressor Number ID” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1 TO 27

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

76 “Type of Condenser”

Sets the type of condenser that is connected to the unit. The first stage, normally the water pump is connected to the stage one of the compressor (motor run) and stages 2 and 3 are fan sages on the condenser.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Type of Condenser" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 1 Stage Condenser, 2 Stage Condenser, 1 Stage Conden'r Var or 2 Stage Conden's Var

PRESS “KNOB”

SELECTION COMPLETE.

77 “Condenser Set point”

Sets the set point in discharge pressure or temperature (depends on which required) for the condenser to operate at. The first stage, normally the water pump is connected to the stage one of the compressor (motor run) and stages 2 and 3 are fan sages on the condenser.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Condenser Set Point" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 (0.0) to +2000 (+200.0) [KPA or oC]

PRESS “KNOB”

SELECTION COMPLETE.

78 “Condenser Diff'tial”

Sets the differential in discharge pressure or temperature (depends on which required) for the compressor to operate at.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT "Condenser Diff'tial" on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR +10 (+1.0) to +200 (+20.0) [KPA or oC]

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

79 “Condenser Load Time”

Sets the load time in seconds that the condenser is loaded to the next stage using the control value divided by 2. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value. The first stage, normally the water pump is connected to the stage one of the compressor (motor run) and stages 2 and 3 are fan sages on the condenser.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Condenser Load Time” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 900 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

80 “Condenser Unload Tme”

Sets the unload time in seconds that the condenser is unloaded to the previous stage using the control value divided by 2. If the proportional setting is more than 0, this time is automatically adjusted down as the set point increases to the actual control value. The first stage, normally the water pump is connected to the stage one of the compressor (motor run) and stages 2 and 3 are fan sages on the condenser.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Condenser Unload Tme” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 1800 [Seconds]
PRESS “KNOB”
SELECTION COMPLETE.

81 “Conden'r Step Amount”

Sets the step amount in percentage that the condenser will load and unload each time if a variable speed drive is used.

PRESS “KNOB”
ROTATE KNOB ▲ ▼ TO SELECT “Conden'r Step Amount” on bottom line.
PRESS “KNOB”
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 1 to 10 [% Per Step]
PRESS “KNOB”
SELECTION COMPLETE.

FUNCTIONS CONT.

82 “Condenser Min % Run”

Sets the minimum percentage that each stage will start at when turned on if a variable speed drive is used.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Condenser Min % Run” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 1]
 PRESS “KNOB”
 ROTATE KNOB ▲ ▼ FOR 0 to 100 [% at Stage 2]
 PRESS “KNOB”
 SELECTION COMPLETE.

83 “Cond cntl PRESS-TEMP”

Selects whether the condenser is controlled using discharge pressure or temperature.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Cond cntl PRESS-TEMP” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR Control on Pressure or Ctrl on Temperature.
 PRESS “KNOB”
 SELECTION COMPLETE.

84 “Temp Sen's Cond Ctrl”

Sets the temperature sensors that are used for condenser control if it is to be controlled on temperature. All sensors (both digital and PT100) that are set to “Connected” will be available for selection. If more than one sensor is selected, the average of the selected sensors will be used for the control temperature.

PRESS “KNOB”
 ROTATE KNOB ▲ ▼ TO SELECT “Temp Sen's Cond Ctrl” on bottom line.
 PRESS “KNOB”
 ENTER PASSWORD IF REQUIRED
 ROTATE KNOB ▲ ▼ FOR SELECTING CHANNELS TO CHECK/CHANGE [Dig Temp 1 etc.]
 PRESS “KNOB” TO SELECT OR NOT TO SELECT SELECTED CHANNEL [YES NO]
 CONTINUE TO SELECT REQUIRED CHANNELS
 ROTATE KNOB ▲ ▼ TO DISPLAY -----> [Continue Next]
 PRESS “KNOB”
 SELECTION COMPLETE.

FUNCTIONS CONT.

85 “Cond Proportional Ct”

Sets the amount of PID that is used to control the load and unload times depending on how much difference there is between the set point and the actual value.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Cond Proportional Ct” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR 0 to 10 [Prop 0 = none]

PRESS “KNOB”

SELECTION COMPLETE.

86 “Reset Cond'ser Hours”

Resets the hours run counter for the condenser to 0.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Reset Cond'ser Hours” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

PRESS “KNOB” Done press enter on the bottom line

PRESS “KNOB”

SELECTION COMPLETE.

87 “Type of Refrigerant”

Sets the type of refrigerant used. The following refrigerants available are NOT USED (no alarm will be activated if this is selected and no display), R717, R 507, R 12, R 22, R 134a, R 404A, R 407B, R 407C.

PRESS “KNOB”

ROTATE KNOB ▲ ▼ TO SELECT “Type of Refrigerant” on bottom line.

PRESS “KNOB”

ENTER PASSWORD IF REQUIRED

ROTATE KNOB ▲ ▼ FOR THE TYPE OF REFRIGERANT OR Not Used

PRESS “KNOB”

SELECTION COMPLETE.

FUNCTIONS CONT.

88 “Computer Connected”

Sets whether a computer is connected to the unit. If a computer is connected and 4 wire communications to a TempScan is also connected with other modules (CompScans etc.) are also connected, the 4 wire communications from the TempScan cannot be done while this unit is set to "Yes" for computer connected.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Computer Connected" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR Yes or No.
PRESS "KNOB"
SELECTION COMPLETE.

89 “LED Display Intens'y”

Sets the brightness of the LED display from 0 = Dull and 15 = full on. This is an optional extra module that can be fitted to the unit.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "LED Display Intens'y" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 15.
PRESS "KNOB"
SELECTION COMPLETE.

90 “Display Annunciation”

Sets whether to display the temperature annunciations when displaying the temperatures. Instead of displaying "Dig Temp 1" it will display the control or indication of that temperature sensor i.e. "Room Cntl". If more than 1 sensor is allocated to a control or indication, it will show that by displaying the control or indication for all sensors allocated to that control or indication.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Display Annunciation" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR YES or NO.
PRESS "KNOB"
SELECTION COMPLETE.

STARTUP DEFAULT SET POINTS & COMPLETE RESET.

If for any reason the unit locks up, the unit may be reset and the real time clock restarted and all set points set to the first set of default values by doing the following.

Remove the power from the unit. Press and hold the x50 button and with the knob pressed, apply power to the unit and all set points will be set to a default value and the real time clock will be started with a valid time. The display will indicate that a reset was preformed.

The temperature offset values will not be changed. The temperature offset values can be changed to 0 using there set points. This should not be required unless the temperature offset values were lost. If they were lost, re calibration of the temperature sensors will have to be done or if the temperature offset values were saved (written down manually) they can be re entered using there set points.

After this has been done all set points will need to be set for the users requirements.

After user set points have been set, do the "Save Eng'rs Defaults" set point to update current set points into non volatile ROM in for reset set points using the CRC check sum check and limp home mode if required at a latter stage.

SET POINTS CRC:- CYCLIC REDUNDANCY CHECK & LIMP HOME.

A CRC check is done on all set points each 5 seconds and if the set points become corrupt for any reason the saved set points will be loaded into all set points for the system to use these set points.

Set points are automatically saved each time any set point is changed.

If the CRC check is not correct and the saved set values have been loaded into the set points to use, The Display will indicate this with the "-" between the minutes and seconds on the real time clock showing "->" (right pointing arrow). The unit will continue to run as normal.

Press the "x50" button to revert to normal displays noting that the set points have been re loaded and should be checked to make sure all set points are the required values.

VERSION NUMBER.

THIS IS DISPLAYED WHEN "TEST DISPLAY/RST LOG" FUNCTION IS EXECUTED. THE LCD WILL DISPLAY THE COPY RIGHT INFORMATION AND THE MODEL NUMBER AND SOFTWARE VERSION.

DEFAULT VALUES.

1	"Control Auto or OFF"	ON
2	"Temperature set Pnts"	0.0 oC
3	"Temp're Differential"	1.0 oC
4	"Temp Diff'tial Type"	MIDDLE
5	"Temp Time Set Points"	ALL 10:00
6	"Daily Set Points Use"	ALL USED EVERY DAY
7	"Fans Auto or Manual"	AUTO
8	"Fans Manual 1 Day Wk"	NONE
9	"Set Defrost Function"	5, 1, 20, 60, 5, 5
10	"Defrost Start Times"	1:00, 7:00, 13:00, 19:00 rest 19:00
11	"Auto Defrost Yes/No"	YES
12	"Soft Defrost Tes/No"	NO
13	"Air Only Defrost Y/N"	NO
14	"Do a Manual Defrost"	NO
15	"Cancel any Defrost"	NO
16	"Long Term Storage"	NO
17	"Fans Suction Delay"	0
18	"Power on Start Delay"	0
19	"High Alarm Temp're"	ALL +150.0 oC
20	"Low Alarm Temp're"	ALL -50.0 oC
21	"Hi Temp Alarm Delay"	ALL 1800
22	"Low Temp Alarm Delay"	ALL 1800
23	"Heating or Cooling"	COOLING
24	"Set Data Logging"	NONE
25	"Set Time & Date"	VALID TIME AND DATE
26	"Dig Temp's Connected"	ALL CONNECTED
27	"PT100 Temp Connected"	ALL CONNECTED
28	"Temp Sensors for Ctl"	Dig Temp Number 1
29	"Temp Sen's for Core"	Dig Temp Number 2
30	"Password YES/NO"	NO
31	"Change Password"	
32	"Ram Memory Check"	
33	"Test Display/Rst log"	
34	"Set Dig Temp Offset"	ALL 0.0 oC

DEFAULT VALUES.**DEFAULT VALUES CONT:-**

35	"Set PT100 Tmp Offset"	ALL 0.0 oC
36	"Add Dig Temp Sensor"	
37	"Set RS485/232 Baud"	9600
38	"Set Room ID Number"	1
39	"Display Brightness"	255
40	"Number of Resets S/N"	
41	"Type of Room Control"	SINGLE STAND ALONE
42	"Reset Room Run Hours"	0
43	"4-20ma Inp Connected"	FIRST 5 CONNECTED
44	"Digital IN Connected"	FIRST 5 CONNECTED
45	"Digital IN Inverted"	NONE
46	"High Alarm 4-20ma In"	ALL 3000
47	"Low Alarm 4-20ma In"	ALL -100
48	"Hi 4-20 Alarm Delay"	ALL 1800
49	"Lo 4-20 Alarm Delay"	ALL 1800
50	"4-20 Weight Average"	0
51	"Set 4-20 Input Span"	ALL -100 TO 2400
52	"Type of Compressor"	4 STAGE STEPPED
53	"Cmp Start/Start Time"	5
54	"Compressor Set Point"	200
55	"Compressor Diff'tial"	20
56	"Comp Slow Load Time"	60
57	"Fast Load Set Point"	300
58	"Comp Fast Load Time"	10
59	"Comp'or Unload Time"	20
60	"Pump Down et Point"	160
61	"Comp Equalizer Sol'd"	0
62	"Oil Return Interval"	60
63	"Temp Sensors for Oil"	Dig Temp Number 5
64	"Comp Stages Inverted"	NO
65	"Hard Piped Stages Nu"	1

DEFAULT VALUES.**DEFAULT VALUES CONT:-**

66	"Comp ON/OFF with Chn"	NONE
67	"Comp cntl PRESS-TEMP"	PRESSURE
68	"Temp Sen's Comp Ctrl"	Dig Temp Number 3
69	"Comp Stg 1 Dly YesNo"	YES
70	"Compre'r Step Amount"	10
71	"Compressor Min % Run"	20, 30, 40, 50
72	"Comp Proportional Ct"	0
73	"Reset Comp'sor Hours"	
74	"Temp Sen's Comp Suc"	Dig Temp Number 6
75	"Compressor Number ID"	1
76	"Type of Condenser"	2 STAGE STEPPED
77	"Condenser Set Point"	1000
78	"Condenser Diff'tial"	20
79	"Condenser Load Time"	30
80	"Condenser Unload Tme"	20
81	"Conden'r Step Amount"	10
82	"Condenser Min % Run"	30, 40
83	"Cond cntl PRESS-TEMP"	PRESSURE
84	"Temp Sen's Cond Ctrl"	Dig Temp Number 4
85	"Cond Proportional Ct"	0
86	"Reset Cond'ser Hours"	
87	"Type of refrigerant"	NONE
88	"Computer Connected"	NO
89	"LED Display Intens'y"	15
90	"Display Annunciation"	OFF

SPECIFICATIONS A-32-R

ALL SET POINTS ARE FOR INDIVIDUAL CHAN'S WHERE APPLICABLE.

TEMPERATURE INPUTS

<i>(Digital)</i>	:-	18B20 temperature sensor
<i>(Analog)</i>	:-	PT100 temperature sensor.
MAX TEMPERATURE INPUTS	:-	17
4-20ma INPUTS SUPPLY	:-	12V DC
MAX 4-20ma INPUTS	:-	8
4-20ma RANGE	:-	-200 to +3000 KPA/PPM etc.
4-20ma OUTPUTS	:-	2
4-20ma OUTPUTS POWER	:-	Loop powered 12 - 36 V dc.
DIGITAL INPUTS	:-	8
LCD DISPLAY	:-	4 line x 20 character super twist.
KEYBOARD SETTING	:-	Spin up/down and push and x50 button
RESOLUTION <i>(temperature)</i>	:-	0.1 oC.
REPEATABILITY <i>(temperature)</i>	:-	0.2 oC.
RANGE		
<i>(Digital)</i>	:-	-25.0 - +125.0 Degrees C
<i>(Analog)</i>	:-	-50.0 - + 150.0 Degrees C
ACCURACY AD590 oC	:-	+/-0.5% -30.0 - +130.0
<i>(Digital)</i>	:-	+ - 0.5 Degrees C
<i>(Analog)</i>	:-	User select
ALL MEMORY BACKUP	:-	1 year minimum.
ALARM SET POINT RANGE		
<i>(HIGH & LOW)</i>	:-	-50.0 oC to +150.0 oC.
ALARMS SET POINT		
RESOLUTION	:-	0.1 oC.
ALARM DELAY SET RANGE		
<i>(HI & LO)</i>	:-	0 - 1800 seconds. <i>(1 on each channel).</i>
ALARMS DELAY SET		
RESOLUTION	:-	1 second.
ALARM <i>(INTERNAL)</i>	:-	pulsed visual and audio.
ALARM OUTPUT	:-	dry relay output, rated 24 V d.c. 1 A.

SPECIFICATIONS A-32 CON'T

ALARM INPUT (DIGITAL ACTIVATE)	:-	short to signal common for instant audible alarm.
DATA LOGGING TIME BETWEEN	:-	1, 5, 10, 30, 60, 120 minutes or none.
DATA LOGGING MAXIMUM	:-	220 loggs.
PASSWORD	:-	0000-5999 (<i>may be active or not active</i>).
Unit No.	:-	set between 1 and 100 inclusive.
RS 232 PORT (FULL DUPLEX)	:-	4 pin push in connector, maximum distance allowed, 6 meters.
RS 485 PORT (FULL DUPLEX)	:-	4 x, terminals. Maximum distance allowed, 500 meters
BAUD RATE	:-	110, 300, 1200, 2400, 4800, 9600.
STOP BITS	:-	1. (<i>fixed</i>),
PARITY	:-	none (<i>fixed</i>).
COMPUTER COMMUNICATIONS	:-	Most functions are available via computer & RS232.
CONTROL SERIAL (TO TempScan)	:-	2 wire. maximum distance 500 metres. (<i>coax twisted pair</i>).
CONTROL OUTPUTS	:-	11 Rating, 24v AC 5AMP total over the 11 Outputs voltage free.
POWER SUPPLY	:-	24 V a.c. or dc +/- 10%, 50Hz.
MOUNTING	:-	DIN Rail Mount
SIZE	:-	L 160mm x W 100mm x 80mm.