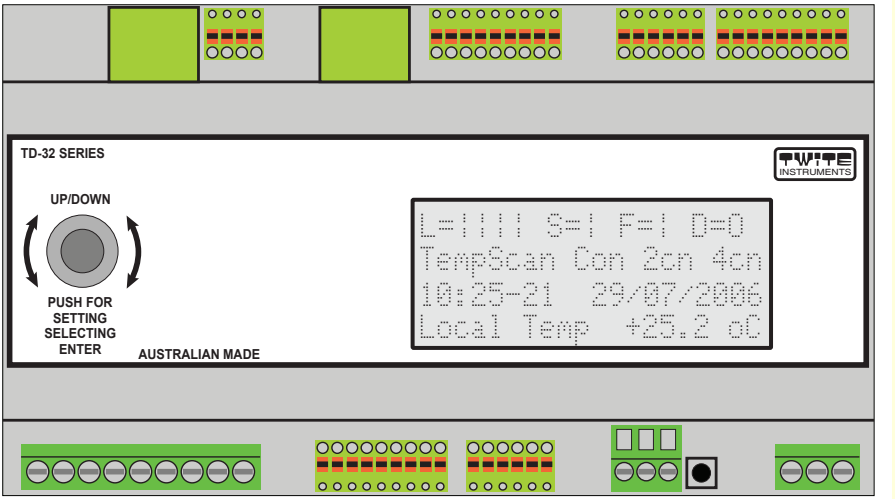
MultiScan

OPERATING MANUAL
MODEL TD-32-E



TWITE INSTRUMENTS

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Specifications of the MultiScan Model TD-32-E and Control Modules Associated with this unit are subject to change without notice.

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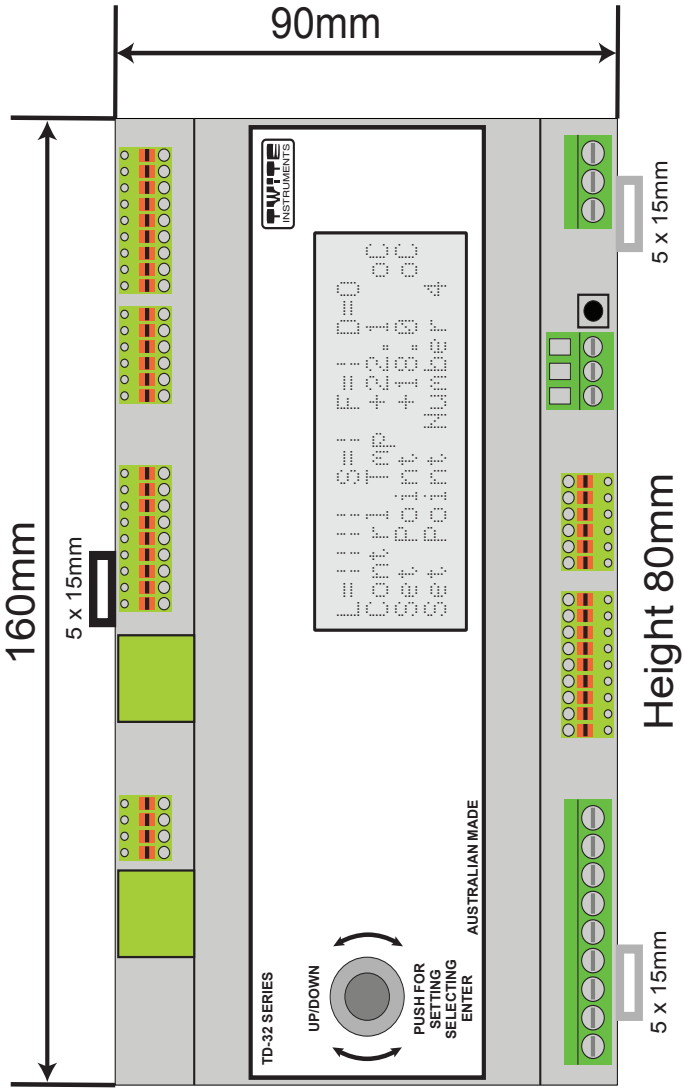
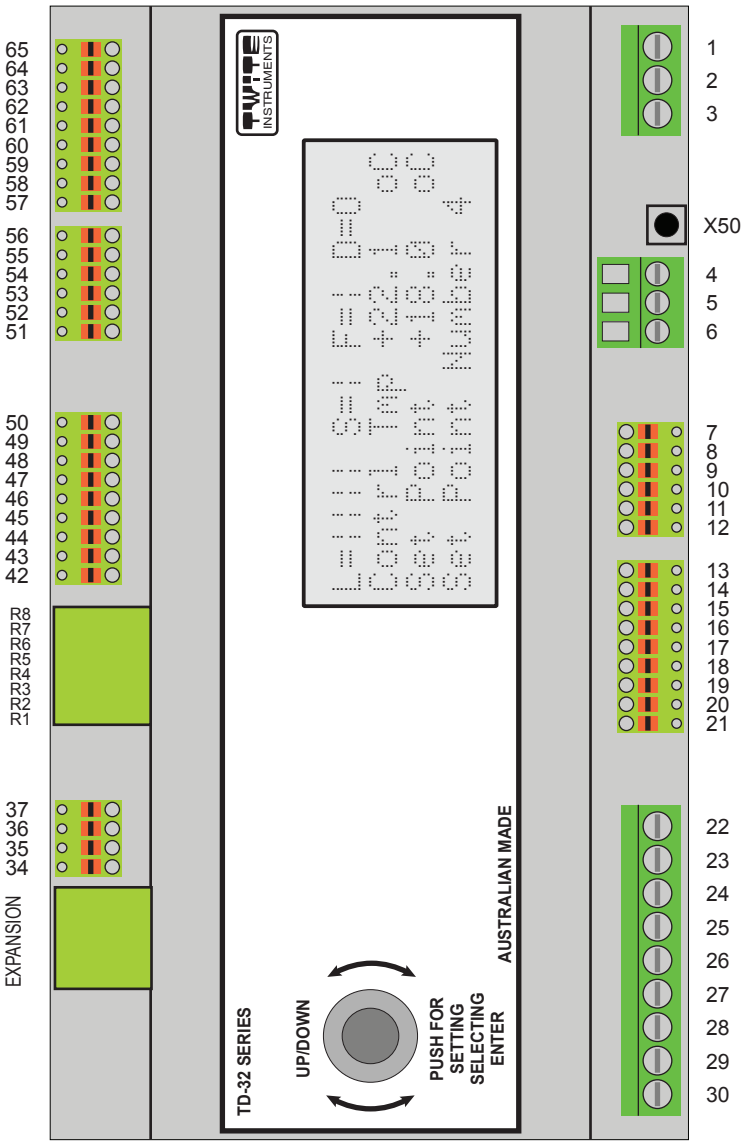
INSTALLATION :-

DIN RAIL MOUNT SIZE OF UNIT.



INSTALLATION :-

TERMINAL NUMBERS.



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.

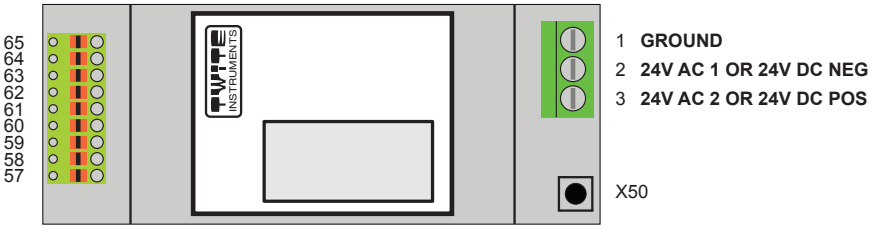
MultiScan Unit Power Connection.

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 :-

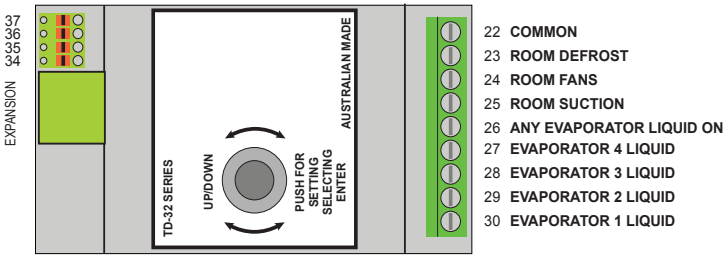
Power for room control can be up to 24 V ac. and connected to the terminal Block

MultiScan Control Output Power Connections. Total Current Must Not Exceed 5 amps.

Terminal No.

22 - **The Active common input.**
23 - Room defrost output.
24 - Room fans contactor output.
25 - Room suction solenoid output.
26 - Room any Evaporator liquid on output

27 - Room Evaporator number 4 liquid pulse solenoid output (solid state relay).
28 - Room Evaporator number 3 liquid pulse solenoid output (solid state relay).
29 - Room Evaporator number 2 liquid pulse solenoid output (solid state relay).
30 - Room Evaporator number 1 liquid pulse solenoid output (solid state relay).



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.

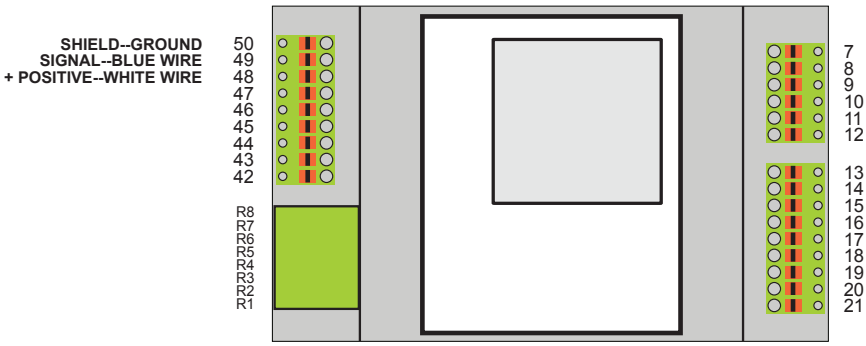
Any sensor may be used for control of the room, evaporator number 1 suction temperature, evaporator number 2 suction temperature, evaporator number 3 suction temperature, evaporator number 4 suction temperature, air off temperature and core temperature, if more than one sensor is used for the function, the average of all sensors used will be used as the control temperature.

If a sensor is in over range or set to "Not Connected" it will not be used in the averaging process.

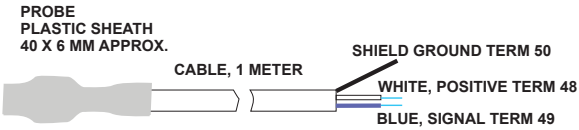
INSTALLATION CONT.

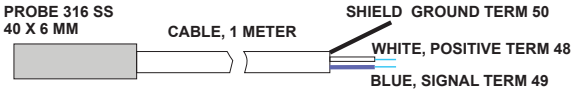
MultiScan Digital Temperature Input Terminals Cont :-

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



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 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, evaporator number 1 suction temperature, evaporator number 2 suction temperature, evaporator number 3 suction temperature, evaporator number 4 suction temperature, core temperature and air off temperature, if more than one sensor is used for the function, the average of all sensors used will be used as the control temperature.

If a sensor is in over range or set to "Not Connected" it will not be used in the averaging process.

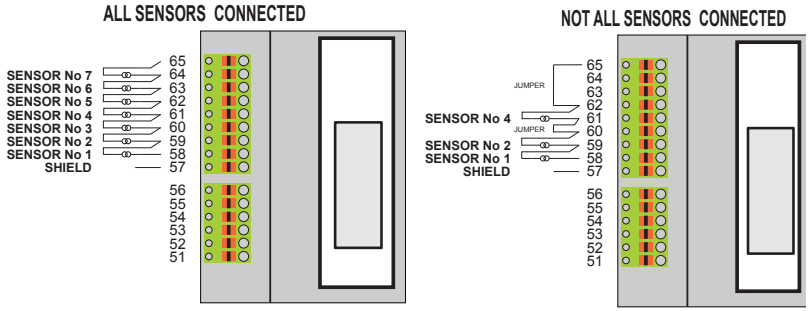
INSTALLATION CONT.

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	:	Air OFF Suction Solenoid control sensor.
Digital Sensor Number 4	:	Evaporator number 1 suction sensor.
Digital Sensor Number 5	:	Evaporator number 2 suction sensor.
Digital Sensor Number 6	:	Evaporator number 3 suction sensor.
Digital Sensor Number 7	:	Evaporator number 4 suction sensor.
Digital Sensor Number 8	:	Spare

PT100 Sensor Number 1	:	Spare.
PT100 Sensor Number 2	:	Spare.
PT100 Sensor Number 3	:	Spare.
PT100 Sensor Number 4	:	Spare.
PT100 Sensor Number 5	:	Spare.
PT100 Sensor Number 6	:	Spare.
PT100 Sensor Number 7	:	Spare.

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.

The default sensor used if none are selected is Digital number 1.

INSTALLATION CONT.

TEMPERATURE AND PRESSURE CHANNELS USED FOR CONTROL CONT:-

Core probe temperature:

Any temperature sensor can be used for the core 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.

The default sensor used if none are selected is Digital number 2.

Evaporator Number 1 Suction probe temperature:

Any temperature sensor can be used for the evaporator number 1 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.

The default sensor used if none are selected is Digital number 4.

Evaporator Number 2 Suction probe temperature:

Any temperature sensor can be used for the evaporator number 2 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.

The default sensor used if none are selected is Digital number 5.

INSTALLATION CONT.

TEMPERATURE AND PRESSURE CHANNELS USED FOR CONTROL CONT:-

Evaporator Number 3 Suction probe temperature:

Any temperature sensor can be used for the evaporator number 2 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.

The default sensor used if none are selected is Digital number 3.

Evaporator Number 4 Suction probe temperature:

Any temperature sensor can be used for the evaporator number 2 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.

The default sensor used if none are selected is Digital number 4.

Air OFF (Evaporator) temperature:

Any temperature sensor can be used for the air OFF 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.

The default sensor used if none are selected is Digital number 3.

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

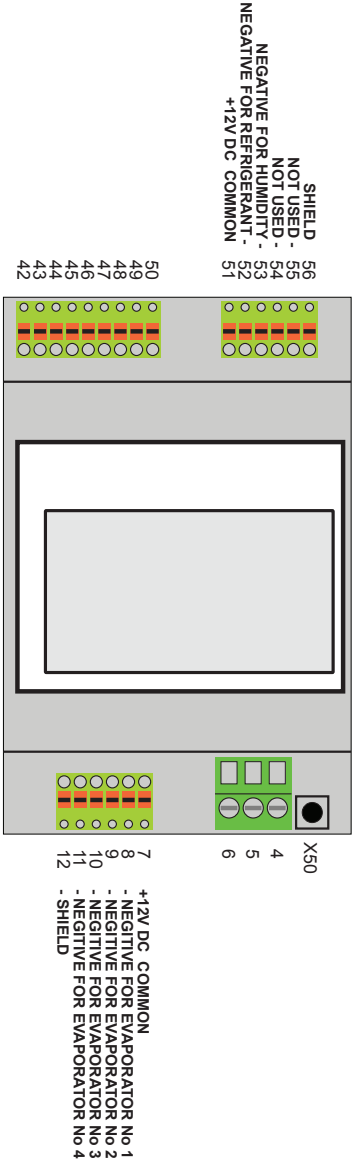
12 - Shield of each cable.
7 - Common +12 Volts (all Positive wires to transducers).
8 - Negative for evaporator number 1 suction line pressure.
9 - Negative for evaporator number 2 suction line pressure.
10 - Negative for evaporator number 3 suction line pressure.
11 - Negative for evaporator number 4 suction line pressure.

Terminal Inputs for channels 5-8

56 - Shield of each cable.
51 - Common +12 Volts (all Positive wires to transducers).
52 - Refrigerant Detection.
53 - Humidity Input.
54 - Not used.
55 - Not used.

INSTALLATION CONT.

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



INSTALLATION CONT.

MULTISCAN DIGITAL INPUT TERMINALS:-

8 Digital inputs are supplied of which 5 are used. All inputs are optically isolated.

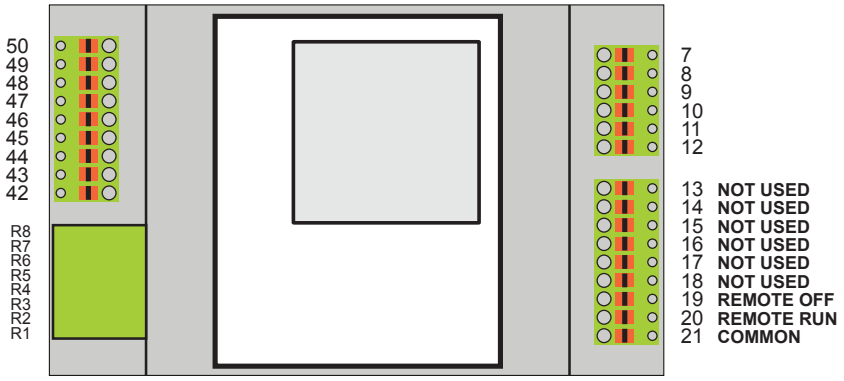
Each Digital input is ON if its input is connected (shortage) to the COM pin of the digital input terminal strip and OFF if not connected (open circuit) if the function "Digital IN Inverted" for each input is set to "NO" and the inverse is true for each input if the function "Digital IN Inverted" is set to "YES".

No voltage is to be applied to any input of the digital inputs.

The distance from the switch (voltage free relay contacts) to switch digital inputs must not exceed 10 meters and must not be run parallel or next to high voltage (240 and above) cables.

Terminal No.

21 - Common for all 8 digital inputs.
20 - Remote room run input.
19 - Remote Off Input.
18 - Not used
17 - Not used
16 - Not used
15 - Not used.
14 - Not used
13 - Not used



INSTALLATION CONT.

CompScan Digital Input Terminals cont.:-

Descriptions:-

21 - Common for all 8 digital inputs.

20 - Remote room 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.

19 - Remote OFF input.
Used to turn the whole system OFF from a remote location and causes an alarm.

18 - Not Used input..

17 - Not Used input.

16 - Not Used input..

15 - Not Used input.

14 - Not Used input.

13 - Not Used input.

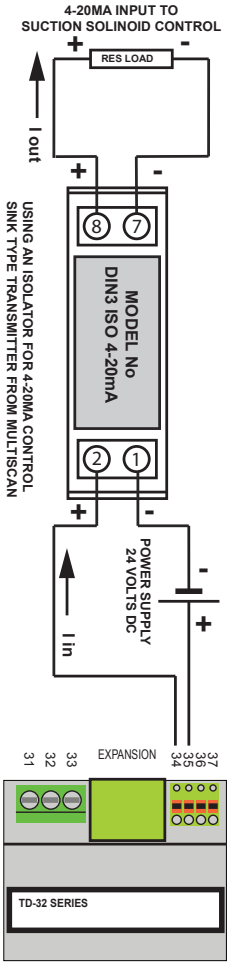
INSTALLATION CONT.

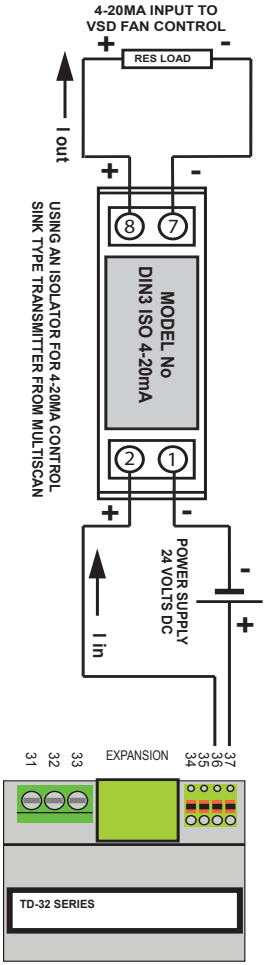
MULTISCAN 4 TO 20 MA OUTPUT TERMINALS:-

The 2 x 4 - 20ma outputs can be used for room fans speed control and suction solenoid control.

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 room fans/suction variable control, see later for operation parameters.





INSTALLATION CONT.

MULTISCAN ALARM AND OUTPUT TERMINALS:-

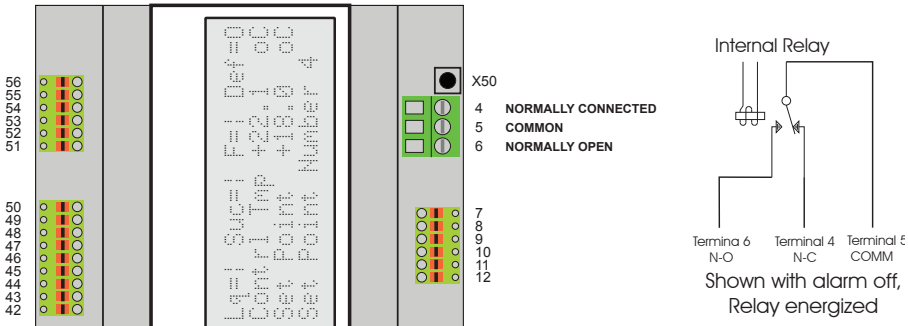
The Alarm Relay is of the voltage free type with a common, normally connected and normally not connected outputs.

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 a TempScan if connected.

Terminals.

42	=	TX -	43	=	TX +
44	=	RX -	45	=	RX +

The MultiScan is one of a number (1 to 100 set in setting functions "Set Room ID Number") connected together through the RS485 Terminals as below.

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 (L= |||| S=| F=| D=O on top line) will indicate on the 2nd line at the right hand position "T2c4-" if no communications are received from the TempScan after 5 minutes and will display "T2c4c" if communications are successful.

If no communications are received after 5 minutes the system will remain on using the 2 wire serial from the TempScan and use its own set point for super heat required. If the 2 wire serial fails as well the system will turn off.

If 4 wire communications are present the MultiScan will use the TempScans required super heat and data maybe retrieved from the MultiScan into the TempScan SCADA software.

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

TempScan Terminal Numbers		Connection	MultiScan Terminal Numbers
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.

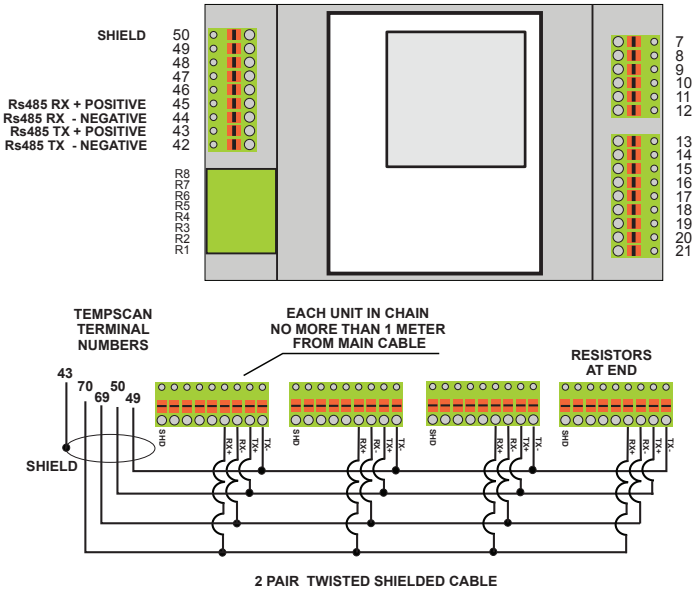
The connection to each unit must be continuous from the TempScan then one to the next then the next etc..

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 Connected" = "YES" and have 4 Wire serial connected can supply information to the Tempscan software.



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 and the MultiScans super heat required set point will be used.

The MultiScan is one of a number (1 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.

Setting of the DIP switch to the correct channel number can be found 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 furthermost 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.

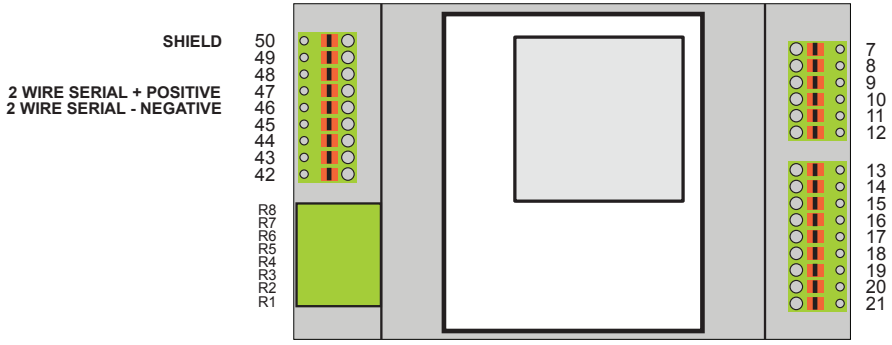
The first display (L= |||| S=| F=| D=O on top line) will indicate on the 2nd line on the right hand side "T2-4-" if no communications are received from the TempScan after 10 seconds and will display "T2c4-" if communications are successful. If "T2-4-" is displayed for the 2 wire serial communications the cool room controls will turn off.

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 Numbers		Connection	MultiScan Terminal Numbers
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.

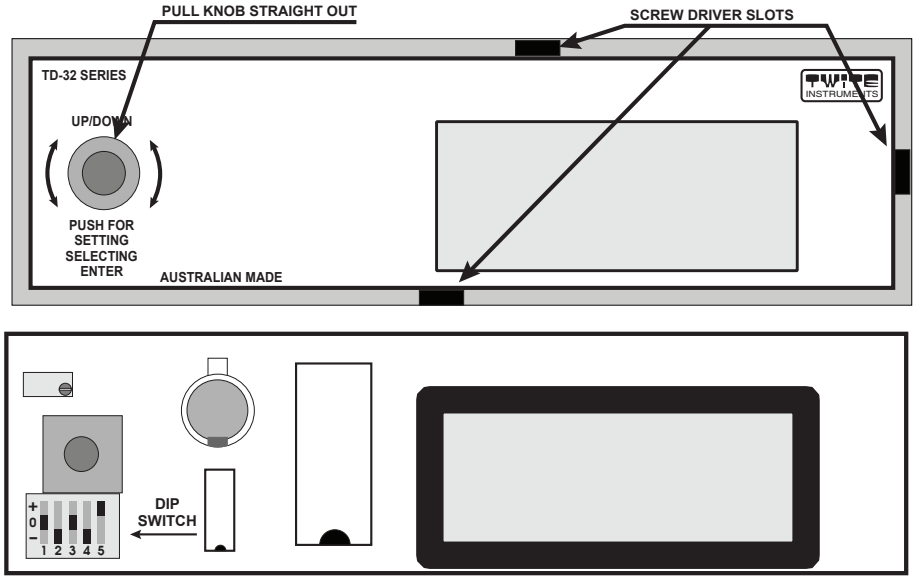
Remove the knob by pulling straight out.

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.

MULTISCAN RS232 TERMINALS:-

All MultiScan units have a RS232 port.

Computer or Modem Connected:-

A computer or modem is allowed to be connected if The MultiScan unit is set to "Stand Alone DX Cntl" or "Stand Alone ON - OFF".

For computer or standard modem the cable used is a 9 pin D connector (female) to the RJ45 connector (female 8 way) on the MultiScan available from the manufacture.

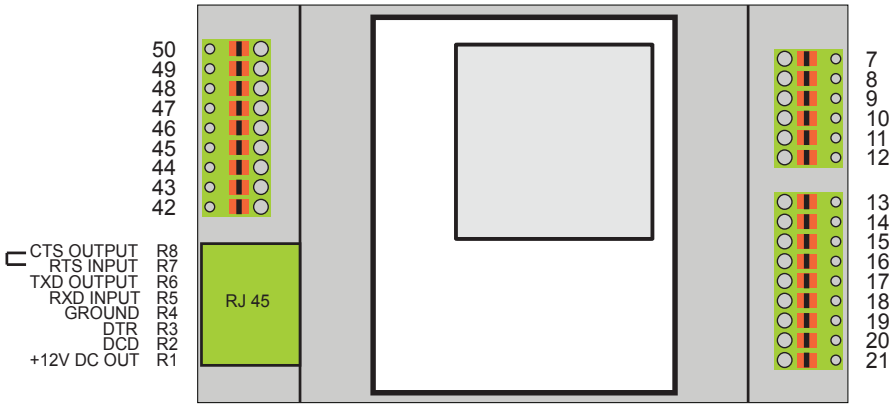
For GSM (wireless) modem connection a standard straight though RJ45 (8 way) cable is used and is available from the manufacture.

NOTE:- Do not connect pin 1 to a computer or dial up modem as this is used to power the SAM (stand alone modem) wireless GSM modem.

The maximum distance the cable can be is 5 meters.

The Baud rate must be 9600, the stop bit must be set to "1", the parity must be set to "NONE" and bit length must be set to "8".

The MultiScan can be communicated with the computer using MultiScan-M software available separately.



INSTALLATION CONT.

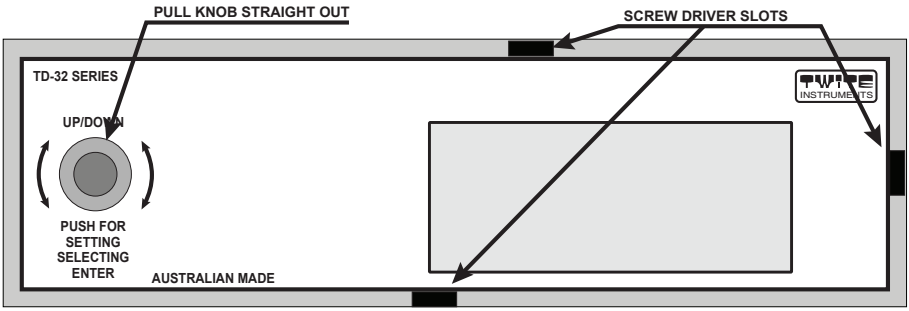
LCD Display Contrast Adjust.

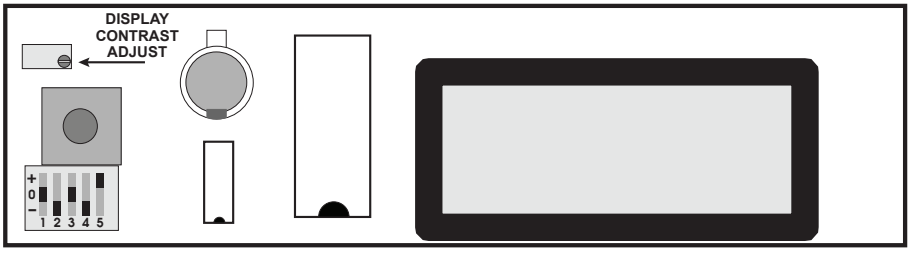
This trim pot adjusts the intensity of the LIQUID CRYSTAL DISPLAY. This should not normally need adjusting.

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.

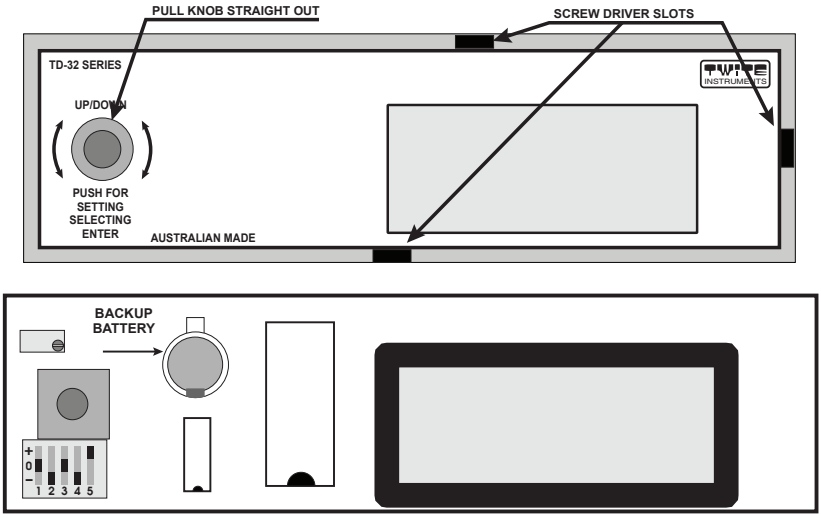
Turn off the power to the unit.

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 has been 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.

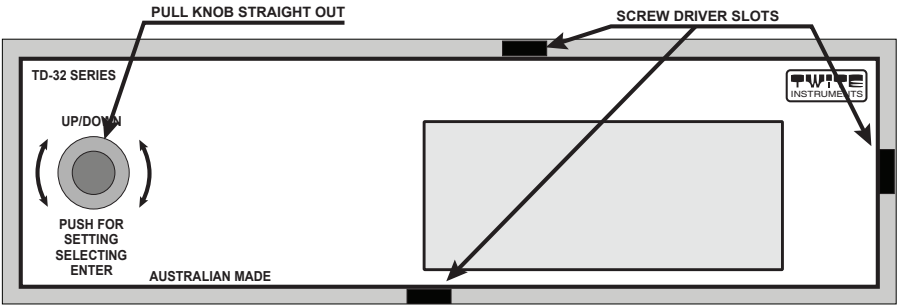
Turn the power off to the unit.

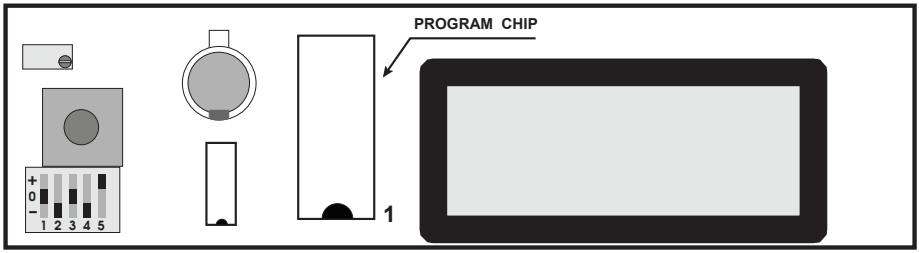
Remove the knob by pulling straight out.

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.

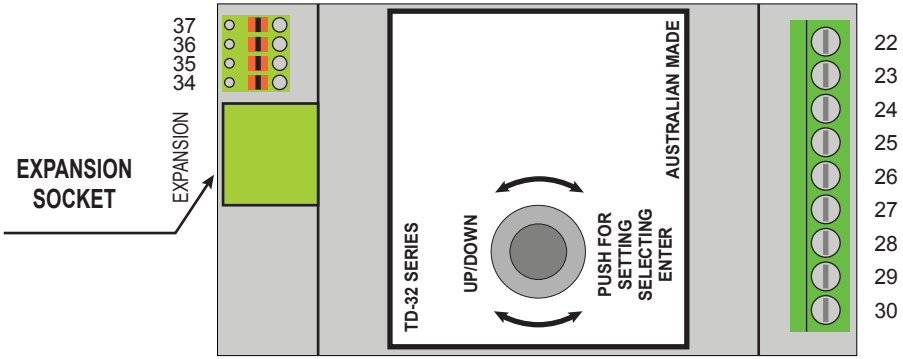
The Expansion socket is used for other modules to be added if required.

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-E 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 = Evaporator No. 1 Liquid solenoid is on.
2nd. LED = Evaporator No. 2 Liquid solenoid is on.
3rd. LED = Evaporator No. 3 Liquid solenoid is on.
4th. LED = Evaporator No. 4 Liquid solenoid is on.
5th. LED = Any Liquid Solenoid is on.
6th. LED = Fans Solenoid is on.
7th. LED = Defrost Solenoid is on.
8th. LED = Alarm is active (Flashes).

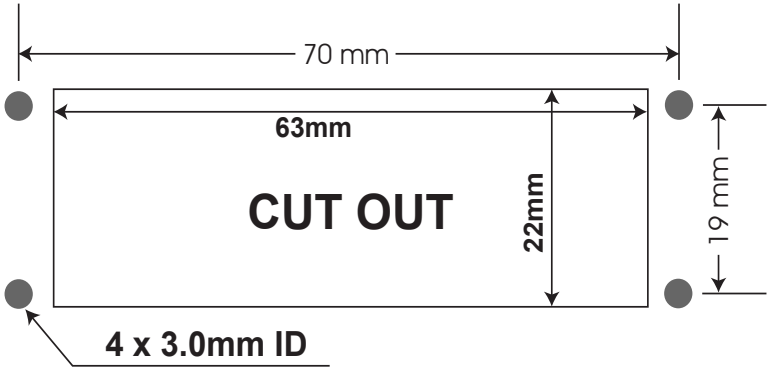


INSTALLATION CONT.

Expansion Socket cont.

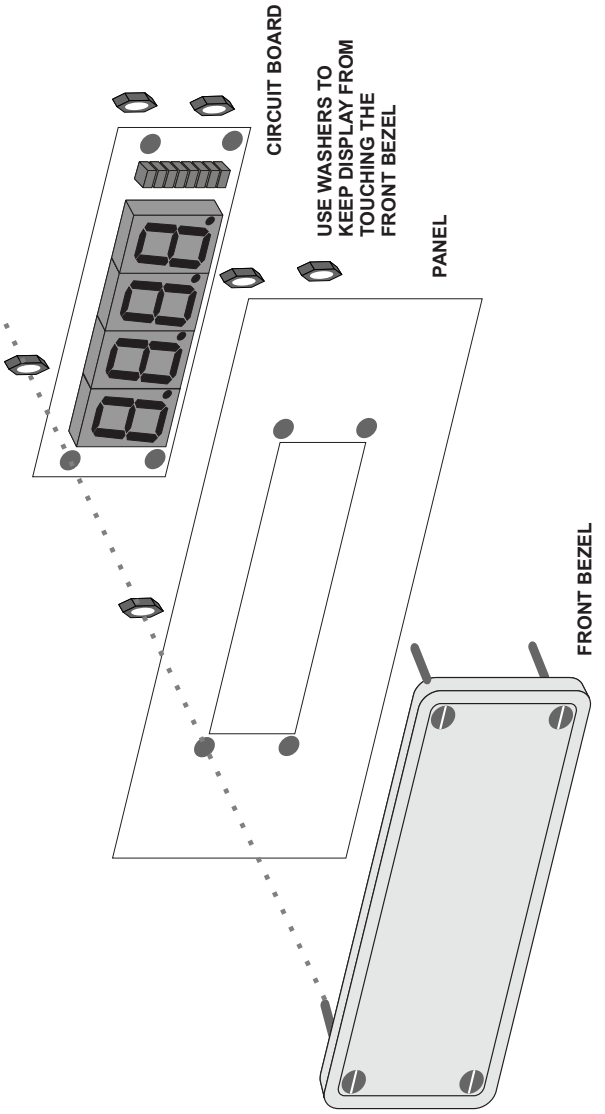
The LED display can be mounted onto a front panel. If the LED display touches the front bezel before the unit is secure, use the washers to set the circuit board back so that the display does not touch the bezel.

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 ^{o}C or above +125.0 ^{o}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.

For DX control of the evaporators, the temperature sensors must be placed as close as possible within a thermowell to the suction outlet of each evaporator.

The pressure transducers must be placed as near as possible to the temperature sensors on each evaporator.

The super heat for each evaporator is calculated for each evaporator independently and the liquid solenoid pulse is adjusted accordingly to the super heat of each evaporator.

If the super heat goes to +1.0 oC or lower the liquid solenoid pulse valve will be turned off.

OPERATION.

Liquid Solenoid (Refrigeration). :-

Three types of control can be used for the liquid solenoid using the Air On temperature sensor.

Single Stand Alone.

In this mode the liquid solenoid is turned on and off (pulsed) at rate according to the suction pressure and the actual suction temperature of the evaporator and the MultiScans super heat required set point. This method calculates the super heat of the evaporator and pulses the liquid solenoid to achieve the correct operating conditions according to the set points.

The suction solenoid and fans will turn on and be set at the correct 4-20ma out put if used else they will turn on to 100%.

If defrost is active the unit will turn all off and do the defrost function according to the defrost set points and times.

The solenoid will turn off when the temperature set point (with differential calculated) is reached and start pulsing again with the temperature set point with differential calculation).

The suction and fans will also turn off.

TempScan 2 Wire Only.

In this mode the MultiScan is controlled as in the "Single Stand Alone" with the following exceptions.

The solenoid will turn off when the TempScans temperature set point (with differential calculated) using the TempScans control temperature probe and start pulsing again with the TempScans temperature set point with differential calculation.

The suction and fans will also turn on and off (or 4-20ma control if used) using the TempScans control.

If 2 wire communications from the TempScan fail the unit will go into alarm and turn all controls off.

OPERATION.

Liquid Solenoid (Refrigeration) cont :-

TempScan 4 Wire Only.

In this mode the MultiScan is controlled as in the "Single Stand Alone" with the following exceptions.

The MultiScan super heat required will use the TempScans super heat required set point.

The solenoid will turn off when the TempScans temperature set point (with differential calculated) using the TempScans control temperature probe and start pulsing again with the TempScans temperature set point with differential calculation.

The suction and fans will also turn on and off (or 4-20ma control if used) using the TempScans control.

If 4 wire communications from the TempScan fail the unit will go into alarm and turn all controls off.

TempScan 2 & 4 Wire.

In this mode the MultiScan is controlled as in the "Single Stand Alone" with the following exceptions.

The MultiScan super heat required will use the TempScans super heat required set point.

The solenoid will turn off when the TempScans temperature set point (with differential calculated) using the TempScans control temperature probe and start pulsing again with the TempScans temperature set point with differential calculation.

The suction and fans will also turn on and off (or 4-20ma control if used) using the TempScans control.

If 4 wire communications from the TempScan fail the unit will go into alarm and keep running using the MultiScans super heat required set point.

If 2 wire communications from the TempScan fail as well as the 4 wire serial the unit will go into alarm and turn all controls off.

OPERATION.

Suction Solenoid. :-

Two types of control can be used for the suction solenoid using the Air off temperature sensor.

Auto ON/OFF :-

The suction solenoid turns on and off according to temperature set points (TempScan set points if connected) and pump down and long term store etc.

The 4-20ma output changes from 4ma (suction relay off) to 20ma (suction relay on).
The Air off temperature sensor is not used in this type of control.

4-20ma Variable :-

This type of control uses the air off temperature sensor to control the 4-20ma output to maintain the air off temperature to as close to the set point as possible.

Fans Contactor/4-20ma Output. :-

Three types of control can be used for the fans using the Core Probe temperature sensor.

Auto ON or OFF :-

The fans relay turns on and off according to temperature set points (TempScan set points if connected) and pump down and long term store etc.
The 4-20ma output changes from 4ma (fans relay off) to 20ma (fans relay on).
The Core Probe temperature sensor is not used in this type of control.

4-20ma Variable :-

This type of control uses the Core Probe temperature sensor to control the 4-20ma output to ramp down the speed of the fans according to the core probe temperature set point.

The 4-20ma output will be at 20ma if the core probe temperature is above the fans ramp start temperature set point.

The 4-20ma output will reduce its output in a linear fashion as the core probe temperature drops closer to the core probe temperature set point.

The fans relay is off for a 4ma output and on for any value above 4ma.
The relay and ma output is on/maximum for pump down etc.

Continuous.

This type of control turns the fans relay on continuously and the 4-20ma output will be at 20ma. During defrost, alarm and control off, the fans relay and 4-20ma output will be off and at 4ma.

OPERATION CONT.

Defrost Control (Stand Alone Only, Not TempScan Control) :-

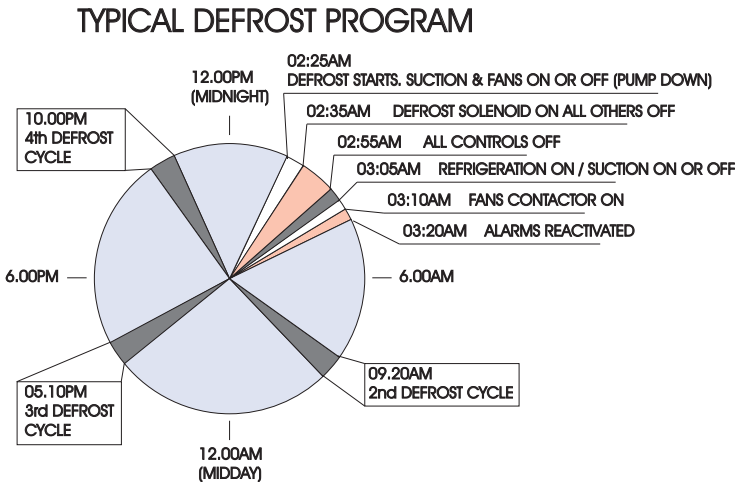
The defrost relay is connected to the defrost solenoid.

Full defrost is provided.

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.

If a TempScan is connected, the defrost function are controlled by the TempScan set points.

Air defrost is also possible.



OPERATION CONT.

USING 4 SET POINTS FOR TEMPERATURE CONTROL (STAND ALONE ONLY, NOT TEMPSCAN CONTROL) :-

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

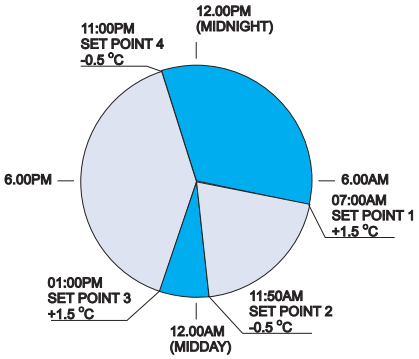
These 4 set points *(set in function "SET POINT TIMES")* are associated with 4 times of the day, each day of the week use the same 4 times.

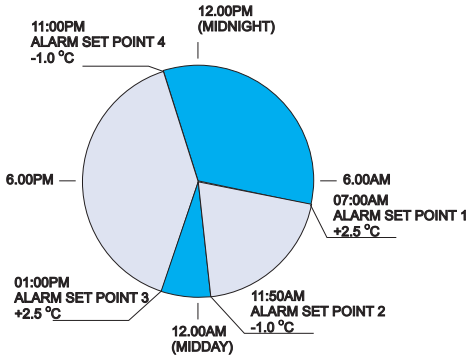
Different set points may be nominated for use on each day of the week using "DAILY SET POINTS" set function.

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 untill 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.

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 goes into alarm, that control temperature 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 though and 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	"Evap 1 SucP"	S	The evaporator number 1 pressure is in alarm.
18	"Evap 2 SucP"	S	The evaporator number 2 pressure is in alarm.
19	"Evap 3 SucP"	S	The evaporator number 3 pressure is in alarm.
20	"Evap 4 SucP"	S	The evaporator number 4 pressure is in alarm.
21	"Refrig Det"	A	The refrigerent transducer is in alarm.
22	"Humidity ip"	A	The humidity input is in alarm.
23	"Spare ma 1"	N	Not used.
24	"Spare ma 2"	N	Not used.

OPERATION CONT.

ALARM ACTION CONT.:-

25	"Room Ctl Tm"	S	Any room control temperature sensor is in alarm.
26	"Core Temp"	A	Any core temperature probe is in alarm.
27	"Air Off Tmp"	A	Any air off temperature sensor is in alarm.
28	"Evap 1 Temp"	S	Any evaporator number 1 suction temperature is in alarm.
29	"Evap 2 Temp"	S	Any evaporator number 2 suction temperature is in alarm.
30	"Evap 3 Temp"	S	Any evaporator number 3 suction temperature is in alarm.
31	"Evap 4 Temp"	S	Any evaporator number 4 suction temperature is in alarm.
32	"Room Run"	N	Digital input to run the system.
33	"Remote Off"	S	Digital input to shut the system down. (10 sec delay).
34	"Spare Dig 1"	N	Digital input spare number 1.
35	"Spare Dig 2"	N	Digital input spare number 2.
36	"Spare Dig 3"	N	Digital input spare number 3.
37	"Spare Dig 4"	N	Digital input spare number 4.
38	"Spare Dig 5"	N	Digital input spare number 5.
39	"Spare Dig 6"	N	Digital input spare number 6.
40	"TempScan 2"	S	TempScan 2 wire room only control failed.
41	"TempScan 4"	N	TempScan 4 wire communications failed.

OPERATION CONT.

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
```

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 log 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
     Dig Temp   1 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: (IF TEMPSCAN IS NOT CONNECTED).

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 annunciations.

L = ||||	Liquid 1 to 4 solenoid is on.
S = |	Suction solenoid is on.
F = |	The fans output is on.
D = O	The defrost solenoid is off.

The pressure in KPA of evaporator number 1 on the second line.
The super heat of evaporator number 1 on the third line.
The control temperature on the fourth line.

```
L=|||| S=| F=| D=O
Evp 1 Suc        KPA
Super Ht 1 +7.8   oC
Contrl Tmp +26.5  oC
```

DISPLAY PAGES CONT.

PAGE 1: (IF TEMPSCAN IS CONNECTED).

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 annunciations.

L = ||||	Liquid 1 to 4 solenoid is on.
S = |	Suction solenoid is on.
F = |	The fans output is on.
D = O	The defrost solenoid is off.

The pressure in KPA of evaporator number 1 on the second line.
The super heat of evaporator number 1 on the third line.
The local temperature on the fourth line.

```
L=|||| S=| F=| D=O
Ev1 Suc          T2c4c
Super Ht 1 +7.8    oC
Local Temp +29.6   oC
```

PAGE 2:

The super heat to use set point (from TempScan or local) 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.

```
Sup-Ht SPT +5.0    oC
Dig Temp 1 +26.5   oC
Dig Temp 2 +26.5   oC
Dig Temp 3 +26.5   oC
```

DISPLAY PAGES CONT.

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
```

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 8 +26.5  oC
PT  Temp 1 +26.5  oC
PT  Temp 2 +26.5  oC
PT  Temp 3 +26.5  oC
```

DISPLAY PAGES CONT.

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
```

PAGE 6:

The status of all 8 digital inputs on the top line.
O=Off |=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 |=ON N=Not-Con
  1 2 3 4 5 6 7 8
  | N N N O N N N
```

DISPLAY PAGES CONT.

PAGE 7: 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 loggs to display the display will show the following.

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

DISPLAY PAGES CONT.

PAGE 8: ALARMS PAGE.

To scroll though and 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.

Al 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 9: 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
Dig Temp 1
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 10:

The evaporator number 1 suction temperature on the top line.
The evaporator number 1 suction pressure on the second line.
The evaporator number 1 saturated temperature on the third line.
The evaporator number 1 super heat on the fourth line

```
Evap 1 Suc +29.5  oC
Evap 1 Prs +799  KPA
Saru'd tmp +21.5  oC
Super Heat +7.8   oC
```

PAGE 11:

The evaporator number 2 suction temperature on the top line.
The evaporator number 2 suction pressure on the second line.
The evaporator number 2 saturated temperature on the third line.
The evaporator number 2 super heat on the fourth line

```
Evap 2 Suc +29.5  oC
Evap 2 Prs +799  KPA
Saru'd tmp +21.5  oC
Super Heat +7.8   oC
```

PAGE 12:

The evaporator number 3 suction temperature on the top line.
The evaporator number 3 suction pressure on the second line.
The evaporator number 3 saturated temperature on the third line.
The evaporator number 3 super heat on the fourth line

```
Evap 3 Suc +29.5  oC
Evap 3 Prs +799  KPA
Saru'd tmp +21.5  oC
Super Heat +7.8   oC
```

DISPLAY PAGES CONT.

PAGE 13:

The evaporator number 4 suction temperature on the top line.
The evaporator number 4 suction pressure on the second line.
The evaporator number 4 saturated temperature on the third line.
The evaporator number 4 super heat on the fourth line

```
Evap 4 Suc +29.5  oC
Evap 4 Prs +799  KPA
Satu'd tmp +21.5  oC
Super Heat +7.8   oC
```

PAGE 14:

The evaporator number 1 liquid solenoid on percentage on the top line.
The evaporator number 2 liquid solenoid on percentage on the second line.
The evaporator number 3 liquid solenoid on percentage on the third line.
The evaporator number 4 liquid solenoid on percentage on the fourth line.

```
Evap 1 Liq ON  95  %
Evap 2 Liq ON  92  %
Evap 3 Liq ON  95  %
Evap 4 Liq ON  95  %
```

PAGE 15:

The evaporator number 1 liquid solenoid on percentage on the top line.
The evaporator number 2 liquid solenoid on percentage on the second line.
The room fans on percentage on the third line.
The room suction solenoid on percentage on the fourth line

```
Room Fans ON   83  %
Room Suction   46  %
Room Run   12    HRS
```

DISPLAY PAGES CONT.

PAGE 16:

The time and date on the top line.
The copyright on the second line.
MultiScan Model No. on the third line.
The model number and version on the fourth line

```
10:55-24  16/05/2007
Copyright Twite Inst
MultiScan Model No.
TD-32-E  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	"Set Defrost Function"	Sets the defrost times.
8	"Defrost Start Times"	Up to 8 defrost times per day can be set.
9	"Auto Defrost Yes/No"	Whether to do auto defrosts or not.
10	"Air Only Defrost Y/N"	Do air only defrost, suction sol control at start.
11	"Do a Manual Defrost"	Starts manual defrost at the next minute change.
12	"Cancel any Defrost"	Cancels any active defrost immediately
13	"Long Term Storage"	Controls the suction solenoid when cooling.
14	"Fans Suction Delay"	The pump down time in seconds after turn off.
15	"Power on Start Delay"	Time in minutes room starts after power failure.
16	"High Alarm Temp're"	The high alarms for temperature sensors.
17	"Low Alarm Temp're"	The low alarms for temperature sensors.
18	"Hi Temp Alarm Delay"	The high alarm delays for temperature sensors.
19	"Low Temp Alarm Delay"	The low alarm delays for temperature sensors.
20	"Set Data Logging"	The data logged times or none don't do.
21	"Set Time & Date"	Sets the real time clock.
22	"Dig Temp's Connected"	The 8 digital temp sensors that are connected.
23	"PT100 Temp Connected"	The 7 PT100 temp sensors that are connected.
24	"Temp Sensors for Ctl"	Sets temperature sensors used for room control.
25	"Temp Sen's for Core"	Sets temperature sensors used for core probe.
26	"Temp Sen for Evap 1"	Sets temperature sensors used for evaporator 1.
27	"Temp Sen' for Evap 2"	Sets temperature sensors used for evaporator 2.
28	"Temp Sen for Evap 3"	Sets temperature sensors used for evaporator 3.
29	"Temp Sen' for Evap 4"	Sets temperature sensors used for evaporator 4.
30	"Temp Sen for Air Off"	Sets temperature sensors used for air off.
31	"Super Heat Required"	Sets the super heat required for room to run at.
32	"DX Pulse Cycle"	Sets liquid solenoid pulse cycle from 3 to 6 sec.
33	"Minimum Valve % Open"	Sets liquid sol minimum valve opening 0 to 50%.

FUNCTIONS CONT.

Functions and the No. of each cont:-

34	"Type of Room Fan Ctl"	Sets the type of room fans control.
35	"Fans Manual 1 Day Wk"	Fans run continuously one day a week on not.
36	"Fans Temp Ramp Start"	The temp at which the fans variable starts.
37	"Fan Lowest Speed Tmp"	Temp at which room fans run at lowest speed.
38	"Type of Suction Ctl"	Sets the type of room suction control.
39	"Air Off Rmp Start Tp"	Temp at which the suction solenoid ramp starts.
40	"Air off Temp're StPt"	The temp at which air off is required.
41	"Number of Evaporat's"	Sets the number of evaporators from 1 to 4.
42	"Super Heat Agression"	Sets the aggression for the super heat control.
43	"Password YES/NO"	Use the password or not for setting functions.
44	"Change Password"	Change the password. Password must be used.
45	"Ram Memory Check"	Checks all memory for any faults.
46	"Test Display/Rst log"	Displays model number & resets all data logged.
47	"Set Dig Temp Offset"	Set the digital temperature sensors offset.
48	"Set PT100 Tmp Offset"	Set the PT100 temperature sensors offset.
49	"Add Dig Temp Sensor"	Add a new digital temperature sensor.
50	"Set RS485/232 Baud"	Set the baud rate for serial communications.
51	"Set Room ID Number"	The units number from 1 to 100 for TempScan.
52	"Display Brightness"	The brightness of the displays back light.
53	"Number of Resets S/N"	Display the number of resets and the serial No.
54	"TempScan Connected"	Whether single stand alone or TempScan control.
55	"Reset Room Run Hours"	Resets the room run hours to 0.
56	"4-20ma InP Connected"	The pressure and 4-20ma inputs connected.
57	"Digital IN Connected"	The Digital inputs connected or not connected.
58	"Digital IN Inverted"	Whether a digital input is inverted or not.
59	"High Alarm 4-20 Inpt"	The high alarms for pressure/40-20ma sensors.
60	"Low Alarm 4-20 Input"	The low alarms for pressure/40-20ma sensors.
61	"Hi 4-20 Alarm Delay"	The high alarm delays pressure/40-20ma sensors.
62	"Lo 4-20 Alarm Delay"	The low alarm delays pressure/40-20ma sensors.
63	"4-20 Weight Average"	The amount of averaging for the 4-20ma inputs.
64	"Set 4-20 Input Span"	The span of pressure transducers & 4-20ma.

FUNCTIONS CONT.

Functions and the No. of each cont:-

65	"Type of refrigerant"	Type refrigerant used for super heat calculation.
66	"ComputerModem Con'td"	Whether a Computer or modem is connected.
67	"LED Display Intens'y"	The brightness of the LED display.
68	"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.

FUNCTIONS CONT.

7 "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.

8 "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.

9 "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.

FUNCTIONS CONT.

10 "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.

11 "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.

12 "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 Defrost].
PRESS "KNOB"
SELECTION COMPLETE.

FUNCTIONS CONT.

13 "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.

14 "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.

15 "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.

FUNCTIONS CONT.

16 "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.

17 "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.

18 "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.

FUNCTIONS CONT.

19 "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.

20 "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.

FUNCTIONS CONT.

21 "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.

22 "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.

23 "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.

FUNCTIONS CONT.

24 "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.

25 "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.

26 "Temp Sen for Evap 1"

Sets the temperature sensors that are used for evaporator number 1 suction 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 core temperature.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen for Evap 1" 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.

27 "Temp Sen for Evap 2"

Sets the temperature sensors that are used for evaporator number 2 suction 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 core temperature.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen for Evap 2" 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.

28 "Temp Sen for Evap 3"

Sets the temperature sensors that are used for evaporator number 3 suction 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 core temperature.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen for Evap 3" 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.

29 "Temp Sen for Evap 4"

Sets the temperature sensors that are used for evaporator number 4 suction 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 core temperature.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen for Evap 4" 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 "Temp Sen for Air Off"

Sets the temperature sensors that are used for evaporator air off temperature for room suction solenoid 4-20ma variable 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 core temperature.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Temp Sen for Air Off" 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.

31 "Super Heat Required"

Sets the temperature for the super heat required for the evaporator to run at when running in stand alone. If a TempScan is connected and communications are active the TempScan will supply the super heat to use in TempScan connected.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Super Heat Required" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR +1.0 to +20.0 [Degrees C].
PRESS "KNOB"
SELECTION COMPLETE.

32 "DX Pulse Cycle"

Sets the pulse cycle for the liquid solenoids on each evaporator from 3 to 6 seconds. The pulse cycle is the time in seconds for the solenoids to be on as a percentage of the total pulse time required that is calculated to obtain the required super heat of each evaporator independently.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "DX Pulse Cycle" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 3 to 6 [Seconds].
PRESS "KNOB"
SELECTION COMPLETE.

FUNCTIONS CONT.

33 "Minimum Valve % Open"

Sets the minimum percentage that each of 4 liquid solenoid valves are opened for. If the super heat for each evaporator goes to 0,0 oC or below the valve will remain OFF.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Minimum Valve % Open" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 0 to 50 % for each of 4 evaporators (Valves).
PRESS "KNOB"
SELECTION COMPLETE.

34 "Type of Room Fan Ctl"

Selects the type of room fans control.
If set to Fans Auto ON or OFF, the fans relay will be on only when required for cooling (and heating).
If set to Fans 4-20ma Variable, the fans relay will be on only when required for cooling (and heating) and the 4-20ma output will be a speed percentage required according to the fan ramp start temperature (set point) and fan minimum run temperature (set point) using the core probe temperature sensor.
If set to Fans on Continuously, the fans relay will be on all the time except when not required in a defrost etc.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Type of Room Fan Ctl" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR Fans Auto ON or OFF, Fans 4-20ma Variable or Fans on Continuously.
PRESS "KNOB"
SELECTION COMPLETE.

35 "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 for one day each week.

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.

FUNCTIONS CONT.

36 "Fans Temp Ramp Start"

Sets the temperature for evaporator fans to start to ramp down using the core probe temperature sensor. The percentage at which the fans will run at will be the calculated percentage between the start ramp down temperature (this set point) and the fan lowest speed temp set point (next set point) and sending the value from 20ma (highest speed) to 4ma (lowest speed) to the 4-20ma output.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Fans Temp ramp start" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -20.0 to +50.0 [Degrees C].
PRESS "KNOB"
SELECTION COMPLETE.

37 "Fan Lowest Speed Tmp"

Sets the temperature for evaporator fans to run at the lowest speed using the core probe temperature sensor. See the previous set point function for further explanation.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Fan Lowest Speed Tmp" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -40.0 to +50.0 [Degrees C].
PRESS "KNOB"
SELECTION COMPLETE.

38 "Type of Suction Ctl"

Selects the type of room evaporator suction solenoid control.
If set to Suction Auto ON/OFF, the suction relay will be on only when required for cooling (and heating).
If set to Suc 4-20ma Variable, the suction relay will be on only when required for cooling (and heating) and the 4-20ma output will be an output percentage required according to the suction ramp start temperature (set point) and suction run temperature (set point) using the air off (evaporator) temperature sensor. **If set to 4-20ma variable, it will over ride condenser variable speed drive if set.**

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Type of Room Fan Ctl" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR Suction Auto ON/OFF, Suc 4-20ma Variable.
PRESS "KNOB"
SELECTION COMPLETE.

FUNCTIONS CONT.

39 "Air Off Rmp Start Tp"

Sets the temperature for evaporator suction solenoid to start to ramp down using air off temperature sensor. The percentage at which the suction solenoid will be at will be the calculated percentage between the start ramp down temperature (this set point) and the air off temp set point (next set point) and sending the value from 20ma (highest percentage on) to 4ma (lowest percentage on) to the 4-20ma output to obtain the required air off temperature. This allows a high humidity to be retained within the cool room.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Air Off Rmp Start Tp" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -45.0 to +50.0 [Degrees C].
PRESS "KNOB"
SELECTION COMPLETE.

40 "Air off Temp're StPt"

Sets the temperature for the evaporator air off to be maintained using the air off temperature sensor. See the previous set point function for further explanation.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Air off Temp're StPt" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR -45.0 to +50.0 [Degrees C].
PRESS "KNOB"
SELECTION COMPLETE.

41 "Number of Evaporat's"

Sets the number of evaporators to be controlled.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Number of Evaporat's" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 1 or 2 [Evaporators].
PRESS "KNOB"
SELECTION COMPLETE.

42 "Super Heat Agression"

Sets the super heat aggression to use. The higher the number the more aggression the calculated value will be to obtain the required super heat for the evaporators.

PRESS "KNOB"
ROTATE KNOB ▲ ▼ TO SELECT "Super Heat Agression" on bottom line.
PRESS "KNOB"
ENTER PASSWORD IF REQUIRED
ROTATE KNOB ▲ ▼ FOR 5 to 30 [Aggression].
PRESS "KNOB"
SELECTION COMPLETE.

FUNCTIONS CONT.

43 "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.

44 "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 try 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.

45 "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.

46 "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.

47 "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.

48 "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.

49 "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 senors (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.]
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" 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.

50 "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.

51 "Set Room ID Number"

Sets the room number from 1 to 100. This is required if the unit is connected to a TempScan using the 4 wire RS485 communications. 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.

52 "Display Brightness"

Sets the LCD 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 [ ].
PRESS "KNOB"
SELECTION COMPLETE.

53 "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.

54 "TempScan Connected"

Sets the unit for single stand alone (runs on its own only).
TempScan is connected using 2 wire serial only, TempScan Controls the on and off and defrost and the unit controls the liquid pulsing according to its own super heat required set point.
TempScan is connected using 2 and 4 wire serial, TempScan Controls the on and off and defrost and the unit controls the liquid pulsing according to the TempScans required super heat required set point. If the 4 wire serial fails the super heat required is the MultiScans super heat required set point. Information on the MultiScan is available on the TempScan SCADA software if 4 wire serial is valid.

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

FUNCTIONS CONT.

55 "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.

56 "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 InPt 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.

57 "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.

FUNCTIONS CONT.

58 "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.

59 "High Alarm 4-20 Inpt"

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 4-20 Inpt" 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.

60 "Low Alarm 4-20 Input"

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 4-20 Input" 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.

FUNCTIONS CONT.

61 "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.

62 "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.

63 "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.

FUNCTIONS CONT.

64 "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.

65 "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.

66 "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.

FUNCTIONS CONT.

67 "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 thew 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.

68 "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.

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 AND MODEL 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	"Set Defrost Function"	5, 1, 20, 60, 5, 5
8	"Defrost Start Times"	1:00, 7:00, 13:00, 19:00 rest 19:00
9	"Auto Defrost Yes/No"	YES
10	"Air Only Defrost Y/N"	NO
11	"Do a Manual Defrost"	NO
12	"Cancel any Defrost"	NO
13	"Long Term Storage"	NO
14	"Fans Suction Delay"	0
15	"Power on Start Delay"	0
16	"High Alarm Temp're"	ALL +150.0 oC
17	"Low Alarm Temp're"	ALL -50.0 oC
18	"Hi Temp Alarm Delay"	ALL 1800
19	"Low Temp Alarm Delay"	ALL 1800
20	"Set Data Logging"	NONE
21	"Set Time & Date"	VALID TIME AND DATE
22	"Dig Temp's Connected"	ALL 8 CONNECTED
23	"PT100 Temp Connected"	ALL 7 NOT CONNECTED
24	"Temp Sensors for Ctl"	Dig Temp Number 1
25	"Temp Sen's for Core"	Dig Temp Number 2
26	"Temp Sen for Evap 1"	Dig Temp Number 4
27	"Temp Sen' for Evap 2"	Dig Temp Number 5
28	"Temp Sen for Evap 3"	Dig Temp Number 6
29	"Temp Sen' for Evap 4"	Dig Temp Number 7
30	"Temp Sen for Air Off"	Dig Temp Number 3
31	"Super Heat Required"	6.0 oC
32	"DX Pulse Cycle"	3 Seconds
33	"Minimum Valve % Open"	ALL 4 at 0%
34	"Type of Room Fan Ctl"	Fans Auto On Off
35	"Fans Manual 1 Day Wk"	NONE
36	"Fans Temp Ramp Start"	5.0 oC
37	"Fan Lowest Speed Tmp"	0.0 oC

DEFAULT VALUES.

DEFAULT VALUES CONT:-

38	"Type of Suction Ctl"	Suction Auto ON/OFF
39	"Air Off Rmp Start Tp"	5.0 oC
40	"Air off Temp're StPt"	0.0 oC
41	"Number of Evaporat's"	1
42	"Super Heat Agression"	5
43	"Password YES/NO"	NO
44	"Change Password"	
45	"Ram Memory Check"	
46	"Test Display/Rst log"	
47	"Set Dig Temp Offset"	ALL 0.0 oC
48	"Set PT100 Tmp Offset"	ALL 0.0 oC
49	"Add Dig Temp Sensor"	
50	"Set RS485/232 Baud"	9600
51	"Set Room ID Number"	1
52	"Display Brightness"	255
53	"Number of Resets S/N"	
54	"TempScan Connected"	NO
55	"Reset Room Run Hours"	
56	"4-20ma InP Connected"	1,2,3,4 Connected, Rest Not.
57	"Digital IN Connected"	All Not Connected
58	"Digital IN Inverted"	None
59	"High Alarm 4-20 Inpt"	All 3000
60	"Low Alarm 4-20 Input"	All -100
61	"Hi 4-20 Alarm Delay"	All 1800
62	"Lo 4-20 Alarm Delay"	All 1800
63	"4-20 Weight Average"	1
64	"Set 4-20 Input Span"	1,2,3,4,7 and 8 = 0 to 3000 5 = 0 to 500 6 = 0 to 100
65	"Type of refrigerant"	NONE
66	"Computer Connected"	NO
67	"LED Display Intens'y"	15
68	"Display Annunciation"	OFF

SPECIFICATIONS A-32-R

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

TEMPERATURE INPUTS		
(Digital)	:-	18B20 temperature sensor
(Analog)	:-	PT100 temperature sensor.
MAX TEMPERATURE INPUTS	:-	17
4-20ma INPUTS SUPPLY	:-	12V DC
MAX 4-20ma INPUTS	:-	8
4-20ma RANGE	:-	-200 KPA/etc. to +3000 KPA/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 *(temperature)*	:-	0.1 oC.
REPEATABILITY *(temperature)*	:-	0.2 oC.
RANGE		
(Digital)	:-	-25.0 - +125.0 Degrees C
(Analog)	:-	-50.0 - + 150.0 Degrees C
ACCURACY		
(Digital)	:-	+- 0.5 Degrees C (manufacture)
(Analog)	:-	User select
ALL MEMORY BACKUP	:-	1 year minimum.
ALARM SET POINT RANGE		
(HIGH & LOW)	:-	-50.0 oC to +150.0 oC.
ALARMS SET POINT		
RESOLUTION	:-	0.1 oC.
ALARM DELAY SET RANGE		
(HI & LO)	:-	0 - 1800 seconds. *(1 on each channel).*
ALARMS DELAY SET		
RESOLUTION	:-	1 second.
ALARM *(INTERNAL)*	:-	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 *(may be active or not active)*.
Unit No.	:-	set between 1 and 100 inclusive.
RS 232 PORT *(FULL DUPLEX)*	:-	8 pin RJ45 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. *(fixed),*
PARITY	:-	none *(fixed)*.
COMPUTER COMMUNICATIONS	:-	Most functions are available via computer & RS232.
CONTROL SERIAL *(TO TempScan)*	:-	2 wire. maximum distance 500 metres. *(coax twisted pair)*.
CONTROL OUTPUTS	:-	8 Rating, 24v AC 5AMP total over the 11 Outputs voltage free.
EVAPORATOR LIQUID CONTROL	:-	Solid State Relay Rating, 24v AC 5AMP total over the 4
LIQUID CONTROL PULSE CYCLE	:-	3 to 6 Seconds.
LIQUID CONTROL ACCURACY	:-	1 Tenth of a Second.
POWER SUPPLY	:-	24 V a.c. or dc +/- 10%, 50Hz.
MOUNTING	:-	DIN Rail Mount
SIZE	:-	L 160mm x W 100mm x 80mm.