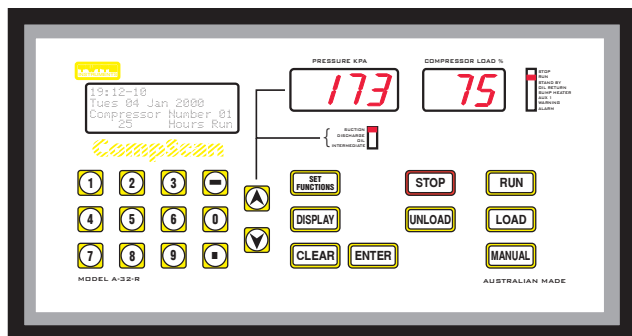


CompScan

OPERATING MANUAL MODEL A-32-R



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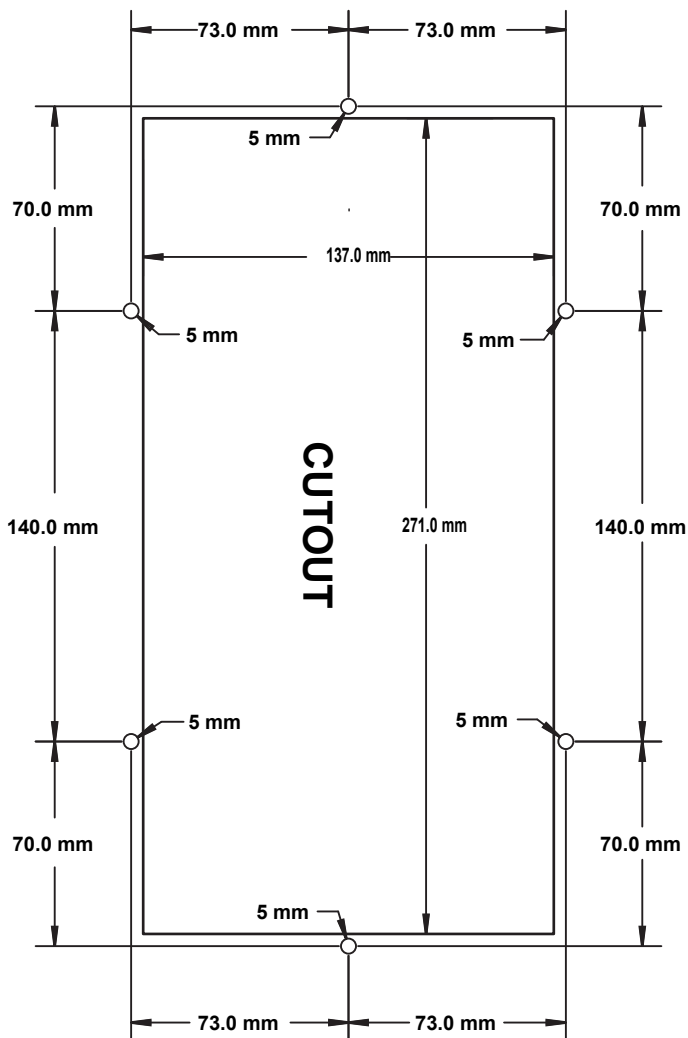
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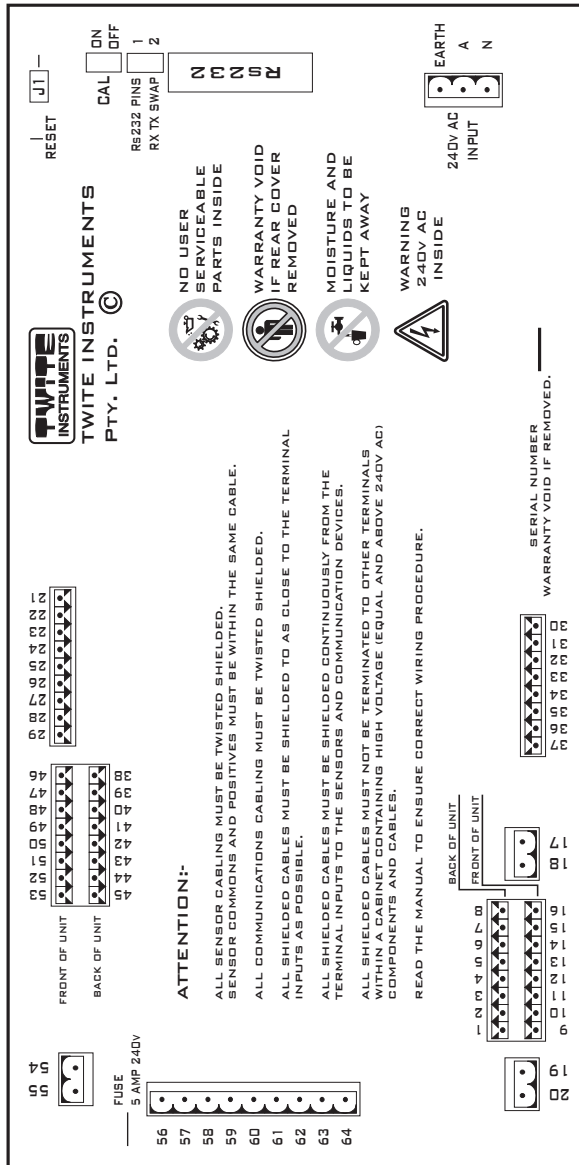
INSTALLATION :-

PANEL MOUNT CUTOUT.



INSTALLATION :-

PANEL MOUNT TERMINAL NUMBERS.



INSTALLATION :-

COMPSCAN POSITIONING AND MOUNTING.

The unit should be mounted at a level for easy viewing and access to keyboard, using fixing screws. Ensure it is in a dry area and not in direct sunlight. The unit must not be subject to any vibration.

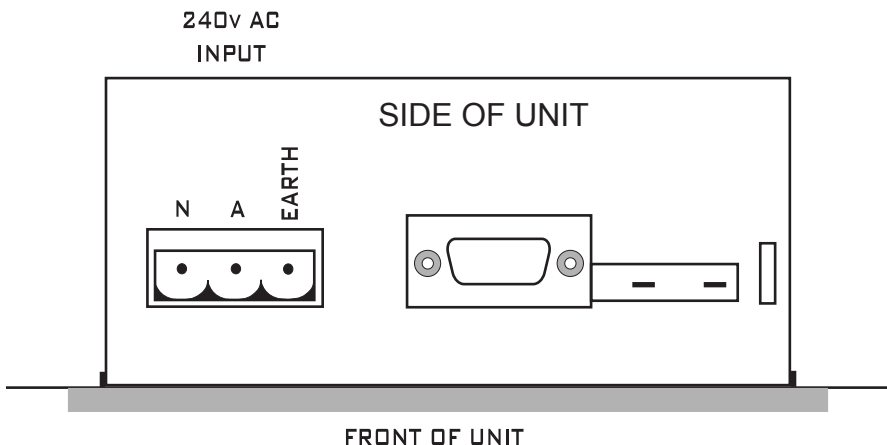
The unit must not be mounted in or near electrical cabinets (*switch boards with contactors switching motors, solenoids etc.. for example*), it must be placed at least 4 meters from other cabinets in its own cabinet. If it is to be connected to a PRINTER, COMPUTER or MODEM the RS232 cable must not exceed 6 metres. The unit may be mounted in an office and control boards mounted remotely.

COMPSCAN UNIT POWER CONNECTION.

Power to the main unit must be 240 V ac. and connected to the terminal Block E. A. N. for E = EARTH, A = ACTIVE and N = NEUTRAL.

The power supply for the CompScan must be a direct line from the main switch board and not an extension of control power etc.

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 INPUT/OUTPUT POWER CONNECTIONS :-

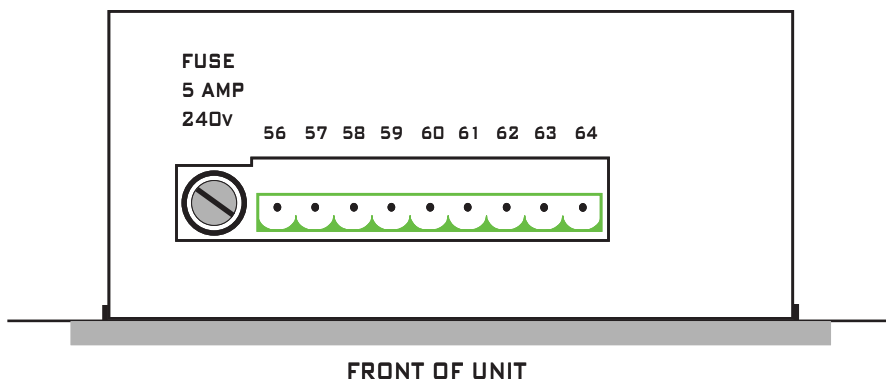
Power for compressor control can be up to 240 V ac. and connected to the terminal Block

The power supply for the CompScan must be a direct line from the main switch board and not an extension of control power etc.

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

Terminal No.

- 56 - **The Active common input.**
- 57 - Motor start active output.
- 58 - Stage 1 active output.
- 59 - Stage 2 active output.
- 60 - Stage 3 active output
- 61 - Stage 4 active output
- 62 - Oil Purge active output.
- 63 - Sump heater active output.
- 64 - Not used.



INSTALLATION CONT.

COMPSCAN TEMPERATURE INPUT TERMINALS :-

AD590 TYPE (plastic type supplied with unit if required):-

Temperature probes are fitted with 3 meters of cable each (may be extended or cut to a maximum distance of 300 meters using twisted pair shielded cable). If extended, the shield must only be connected at the CompScan 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.

The sensors are usually supplied as 1 (suction) green cable sheath, 2 (discharge) red cable sheath, 3 (oil, manifold) violet cable sheath and 4 (oil separator) blue or black cable sheath. If an intermediate sensor is supplied, 4 (intermediate) blue or black cable sheath. Colours may not always be as stated.

Each sensor is calibrated at the factory and must be connected to its correct input for accurate temperatures to be displayed.

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.

Internal jumpers that are required for this type of sensor to be used are shown on the next page.

The function "Type of Temp Sensor" must be set to AD590 for these sensors.

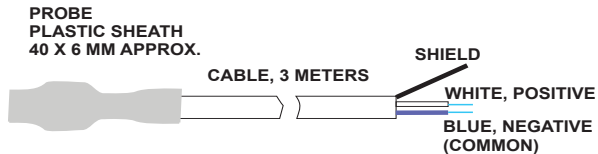
Terminal No.

- 20 - Shield of each cable (may not be used in all cases).
- 19 - Common (all Blue (negative) wires to sensors).
- 1 - Positive (white) for Suction temperature, (Green cable).
- 2 - Positive (white) for Discharge temperature, (Red cable).
- 3 - Positive (white) for Oil temperature, (Violet cable).
- 4 - Pos. (white) for intermediate temp, (Blue cable). If req.
- 5 - Not used.
- 6 - Not used
- 7 - Not used
- 8 - Not used

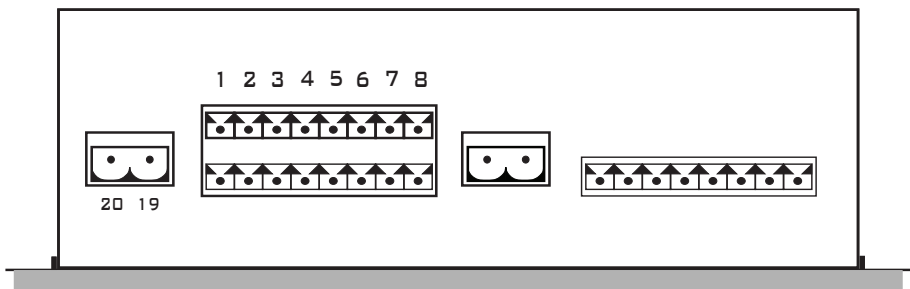
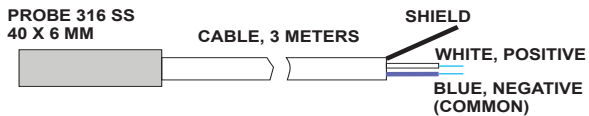
INSTALLATION CONT.

COMPSCAN TEMPERATURE INPUT TERMINALS CONT. :-

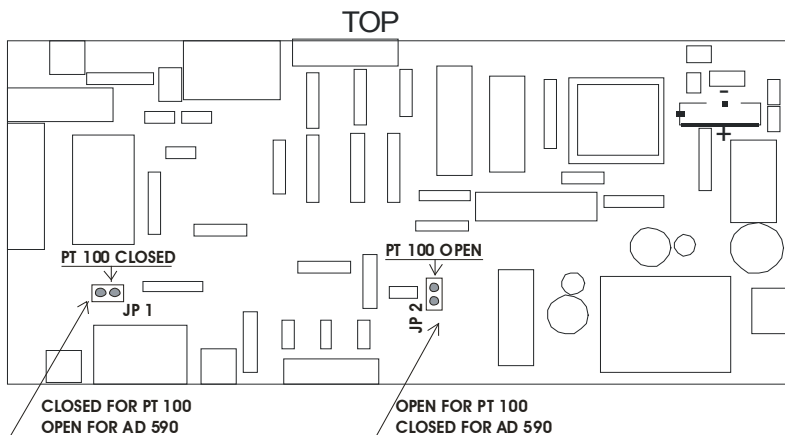
SUPPLIED WITH UNIT IF REQUIRED



OPTIONAL EXTRA



FRONT OF UNIT



INSTALLATION CONT.

COMPSCAN TEMPERATURE INPUT TERMINALS CONT. :-

PT100 TYPE (user must supply):-

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

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

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

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.

Internal jumpers that are required for this type of sensor to be used are shown on the next page.

The function "Type of Temp Sensor" must be set to PT100 for these sensors.

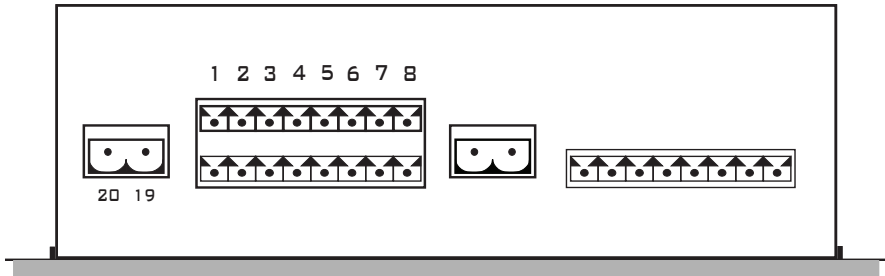
Sensor numbers are for the same temperature input as the AD590 type.

Terminal No.

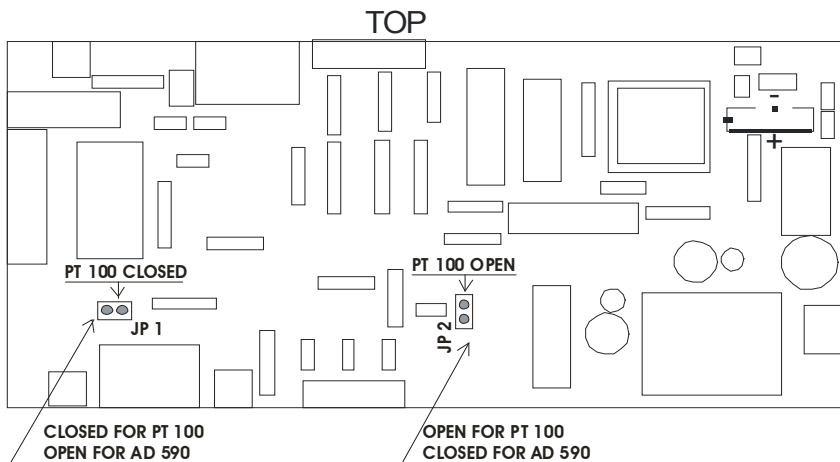
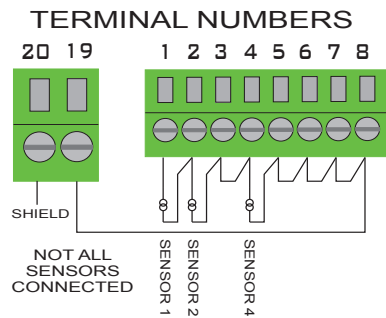
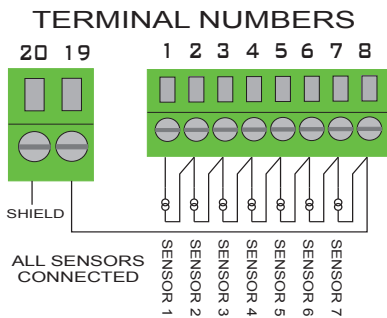
- 20 - Shield of each cable (may not be used in all cases).
- 19 - Sensor number 7 second wire and also connected to Term No. 8.
- 1 - Sensor number 1 first wire.
- 2 - Sensor number 1 second wire and sensor number 2 first wire.
- 3 - Sensor number 2 second wire and sensor number 3 first wire.
- 4 - Sensor number 3 second wire and sensor number 4 first wire.
- 5 - Sensor number 4 second wire and sensor number 5 first wire.
- 6 - Sensor number 5 second wire and sensor number 6 first wire.
- 7 - Sensor number 6 second wire and sensor number 7 first wire.
- 8 - Sensor number 7 second wire and also connected to Term No. 19.

INSTALLATION CONT.

COMPSCAN TEMPERATURE INPUT TERMINALS CONT. :-



FRONT OF UNIT



INSTALLATION CONT.

COMPSCAN PRESSURE INPUT TERMINALS:-

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 CompScan.

The voltage supplied for the transducers is 11v DC. The transducer must be able work correctly on this voltage.

The cable from the CompScan 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 CompScan 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.

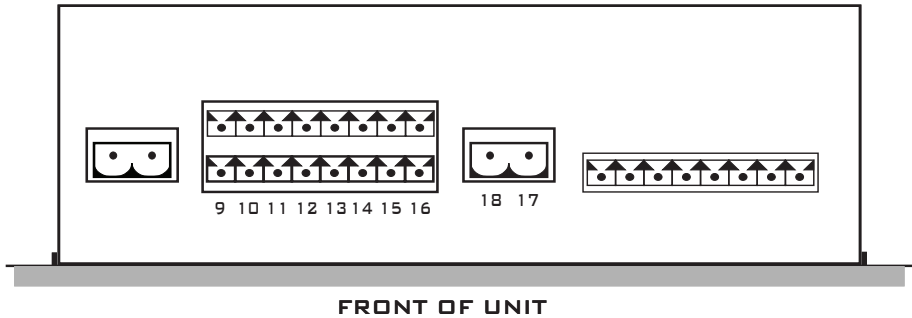
Sensor cables must not run parallel or near high voltage cables & must be kept well away from high voltage and other control cables, at least 2 meters.

Terminal No.

- 18 - Shield of each cable (may not be used in all cases).
- 17 - Common (all Positive wires to transducers).
- 9 - Negative for Suction Pressure.
- 10 - Negative for Discharge Pressure.
- 11 - Negative for Oil Pressure.
- 12 - Negative for Intermediate Pressure if used.
- 13 - Not used
- 14 - Not used
- 15 - Not used

INSTALLATION CONT.

COMPSCAN PRESSURE INPUT TERMINALS CONT.:-



INSTALLATION CONT.

COMPSCAN DIGITAL INPUT TERMINALS:-

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

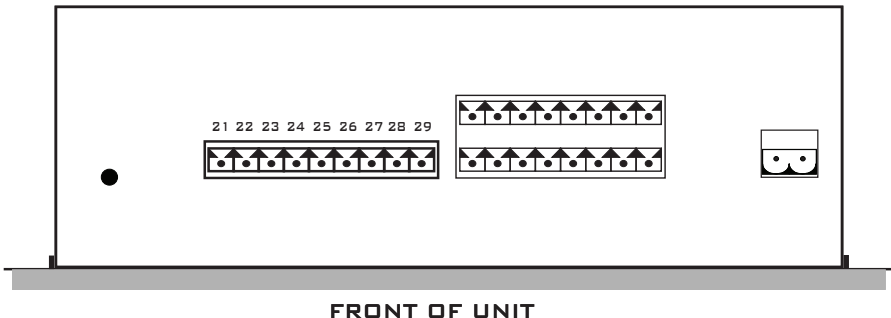
Each Digital input is ON if its input is connected (shortage) to the COM pin of the digital input terminal strip and OFF if not connected (open circuit).

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 2 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.
- 22 - Remote RUN input (stand alone operation).
- 23 - Remote OFF input.
- 24 - Motor Auxiliary.
- 25 - Water Jacket input.
- 26 - Emergency Switch input.
- 27 - Not used.
- 28 - Remote Run input (PLC controls compressor)
- 29 - Reset and Clear alarms via remote switch.



INSTALLATION CONT.

COMPSCAN DIGITAL INPUT TERMINALS CONT.:-

DESCRIPTIONS:-

21 - Common for all 8 digital inputs.

22 - Remote RUN input (stand alone operation).

Used to turn the compressor on from a remote location. If the emergency switch is pressed the compressor will turn off. If the emergency switch is reset the compressor will turn on from its idle state, i.e.. motor on without any stages on.

The compressor will run with its set points and turn off at its pump down set point. If the remote run input is turned off, the compressor will turn off immediately regardless of the suction pressure value.

23 - Remote OFF input.

Used to turn the compressor OFF from a remote location. Can be used for other digital inputs etc.. Also goes into alarm state and the compressor cannot be turned on until the alarm has been cleared.

24 - Motor Auxiliary.

Goes into alarm if the motor has not started after a time delay and the compressor is turned off. Connect voltage free relay contacts across this input and power the relay from the motor supply. There is a 15 second delay as well as the motor start delay of 60 seconds on this input.

25 - Water Jacket input.

Goes into alarm if the flow switch for the water jacket is not active after the compressor turns on with time delay. i.e. no water flow.

26 - Emergency Switch input.

If the emergency switch is pressed the display will indicate this and the compressor will be set to the turned off state. The remote run input (1) will start the compressor if active when the emergency switch is reset.

27 - Not Used input.

INSTALLATION CONT.

COMPSCAN DIGITAL INPUT TERMINALS CONT.:-

DESCRIPTIONS CONT. :-

28 - Remote RUN input (PLC controls compressor).

Used for telling the CompScan that the compressor is on (turned on by a PLC or other means) so that the alarm functions can become active. The CompScan will not turn any output relays on but all alarm functions are as if the compressor is running if this input is connected to com. The emergency input will not turn off the compressor as it is controlled via an external source but the CompScan will go into alarm. The alarm functions will cease if this input is opened from com, but if there was an alarm when the input is turned off, this alarm will remain active until reset. The LED will show "PLC" if the input is on (closed).

NOTE :- IF THIS INPUT IS SET TO CONNECTED IT WILL TAKE PRECEDENCE OVER ALL OTHER CONTROL SYSTEMS.

29 - Remote Alarm Clear (reset).

Used for resetting all alarms from a remote switch. When this input is connected to com. the alarms will be reset (cleared). If the input is not then opened, any new alarms will become active until the input is opened and closed for the second time. The input must be closed to reset the alarms and must be opened and then closed before alarms can be reset for each subsequent time. Leaving the input on (closed) will only reset the alarms once.

COMPSCAN CURRENT INPUT TERMINALS:-

The current input is via 2 wires and must use twisted pair shielded cable and not run near high voltage cables.

The current transformer used must be one of the following type, 100/5, 150/5, 200/5, 300/5, 400/5, 500/5, 600/5, 800/5, NOT-C current transformer. This is set in the type of current transformer in setting of functions. If the set point is set to NOT-C then no current transformer may be used and the display will not show the AMPS used for the motor.

INSTALLATION CONT.

COMPSCAN CURRENT INPUT TERMINALS CONT.:-

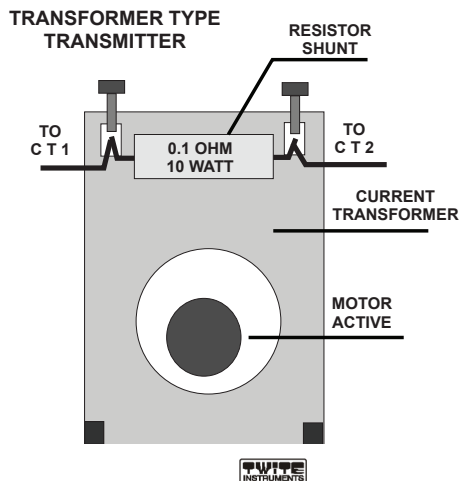
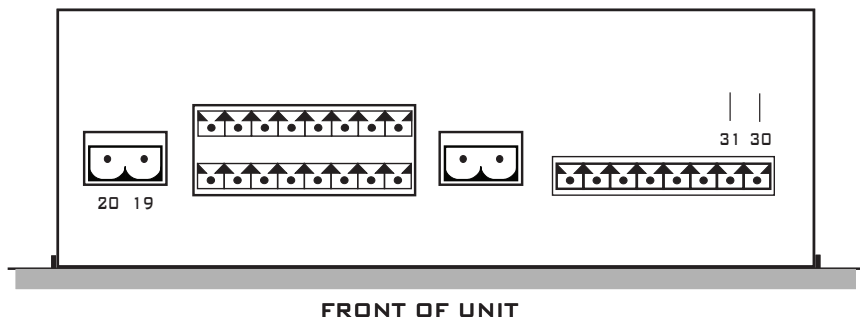
The resistor shunt must be 0.1 OHM across the transformer terminals and must never be disconnected while the motor is running.

The active of the motor cable must pass through the transformer hole.

The resistor shunt terminals connected to the current transformer must be connected to, 1 terminal connected to CT1 and the other terminal connected to CT2.

On the panel mount style connect to terminals 30 and 31.

WARNING:- There is a delay of 10 seconds on the current alarm before the motor will be turned off.



INSTALLATION CONT.

COMPSCAN 4 TO 20 MA OUTPUT TERMINALS:-

The 4 - 20ma output is for variable speed motors.

The output must be loop powered from the variable speed controller from 12 to 24 volts DC. The positive line from the variable speed controller must be connected to the +11V terminal and the Ground line from the variable speed controller must be connected to the GND terminal. The Shield, terminal No 38 must be used to protect the signal and must be connected at the CompScan end only.

The 4 - 20ma output increases from 4 - 20ma in 255 steps.

Terminal number 41 = - (GND), terminal number 42 = +11v to 30v DC.

The 2 set points and usage the for the 4 - 20ma output are:-

1 Set point set to "StageOnly", the 4 - 20ma output is set to the stages that are on as a percentage of the compressor load shown on the LED and the stages turn on and off as in a conventional system.

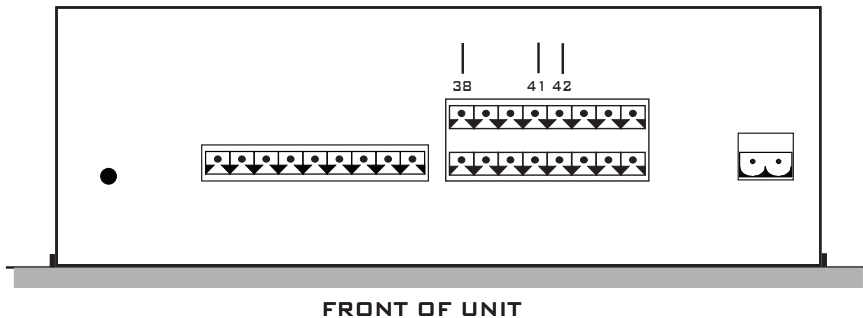
2 Set point set to "Variable", the 4 - 20ma output will vary from 4 to 20ma for the first stage, i.e.. When the compressor comes on and stage 1 turns on (after motor start), the output will be 4ma, as the suction pressure increases the 4 - 20ma output increases (at the slow/fast load time outs) until fully loaded for stage 1, then stage 2 turns on and the 4 - 20ma output will be set at 12ma (50%), as the suction pressure increases the 4 - 20ma increases (at the slow/fast load time outs) until fully loaded at that stage and so on for each stage required until the compressor is fully loaded.

If the compressor ID number is set to number 1, the compressor will only turn off at the pump down set point after ramping down. If it is set to number 2 to 27 then the compressor will turn off at the unload set point after ramping down.

If the compressor is set to a one stage compressor only, it will only load up once with the 4-20ma output.

INSTALLATION CONT.

COMPSCAN 4 TO 20 MA OUTPUT TERMINALS CONT.:-



INSTALLATION CONT.

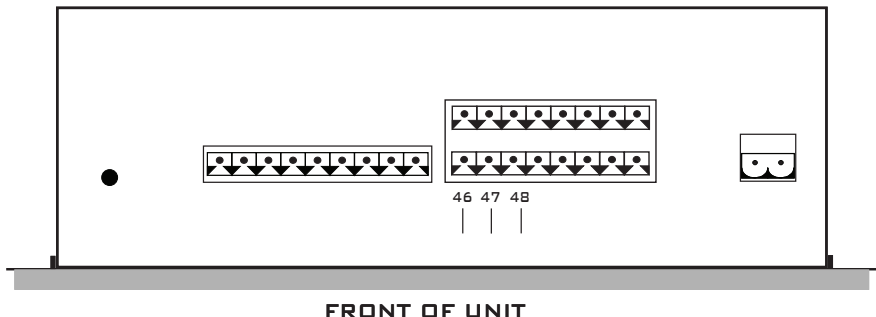
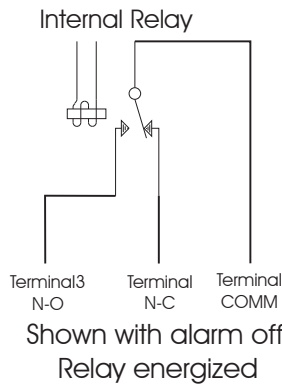
COMPSCAN ALARM AND OUTPUT TERMINALS:-

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. NO = 45, COMM = 44, NC = 43.

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 CompScan unit losses power.



INSTALLATION CONT.

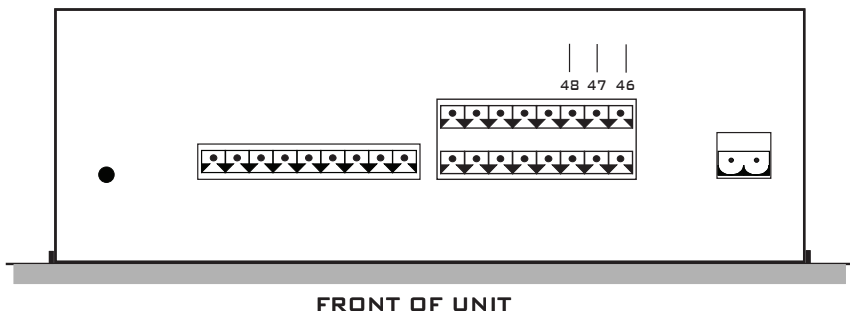
COMPSCAN EXTERNAL RELAY CONTROL TERMINALS:-

All Control Relay outputs can be controlled externally via a single pair control line to a remote relay board (A-32R-4)

The cable must be single twisted shielded pair cable and must not run near high voltage cables.

The maximum distance from the CompScan is 500 meters and the shield must be connected at the CompScan end only.

The terminal No. 48 must be connected to the Serial Input + and terminal No. 47 must be connected to the Serial Input - terminal on the remote relay board. The shield must be connected to terminal No. 46.



INSTALLATION CONT.

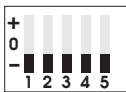
COMPSCAN EXTERNAL RELAY CONTROL TERMINALS CONT.:-

The Relay outputs commons are as shown on the below diagram. The Control outputs 1 to 8 are as the below diagram.

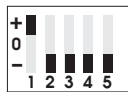
The Common of the relay modules must be placed in line with the Emergency Switch on the CompScan so that the Emergency Switch cuts the power to the Common inputs mechanically.

The Relay controls are voltage free and a maximum of 240v AC 3AMPS is allowed on the control relays.

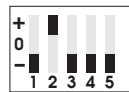
The Address DIP switches must be set to the following positions. If all are set to the + (positive) the relays will all turn on/off each second for that channel. This used for testing of the communications and relays.



DIP 1



DIP 2



DIP 3



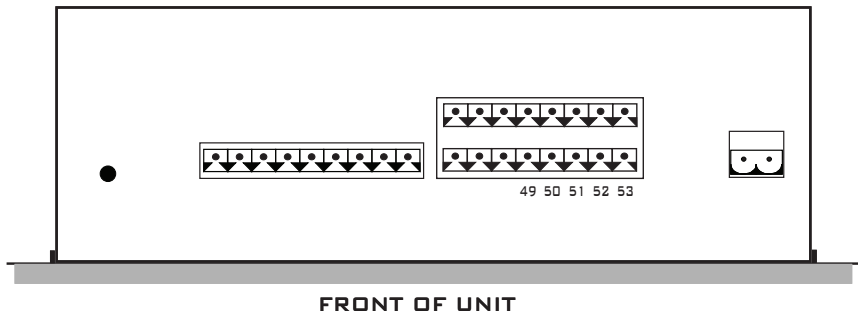
DIP 4

INSTALLATION CONT.

COMPSCAN RS485 TERMINALS:-

The RS485 terminals are used for communicating with other CompScan units or a TempScan if connected or a Computer if connected.

Terminals. Shield = 49, TX+ = 53, TX- = 52, RX+ = 51, RX- = 50.



If the set point "RS485/232 Connection" (see later in set points) is set to the following, the communications are as follows:-

"Single Stand Alone"

The CompScan is a single unit which operates on its own. The Compressor number can be any from 1 to 27.

It will send its data to a Printer through the RS232 port (see next) at the data log times.

No connection can be made to the RS485 Terminals.

The CompScan will not turn off the last stage until the PUMP DOWN set point has been reached if the compressor number is set to No. 1, if any other compressor number is used the compressor will unload and turn off at the unload set point.

INSTALLATION CONT.

COMPSCAN RS485 TERMINALS CONT.:-

"Multiple CompScans"

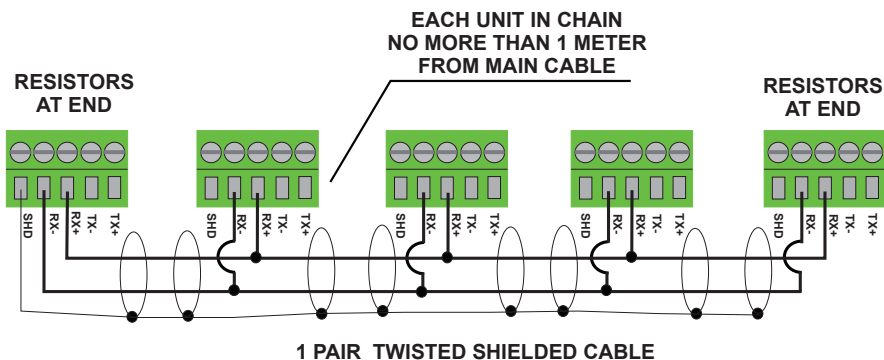
The CompScan is one of a number (up to 27 A-32-R and or A-32-S) connected together through the RS485 Terminals as below. All RX+ are connected and all RX- connected in series using twisted pair shielded cable and not run near high voltage cables. The time display (first display) will indicate "CompScan --" if no communications are received from the number 1 CompScan after 60 seconds and will display "CompScan Cn" if communications are successful. If the CompScan is set to number 1, it will display "CompScan Mr". Alarm will sound after 10 minutes if no comms, and compressors with no comm's above number 1 will turn off.

The shield must be connected at one end of the line only.

The connection to each unit must be continuous from one to the next then the next etc.. The units must be connected in a daisy chain configuration and not spider from one point.

It will send its data to a Printer through the RS232 port (see next) at the data log times. The printer must be connected to the compressor that is set to number 1.

The unit at each end of the line must have 2 x 120 OHM resistors placed in the socket behind the terminal block as shown. The resistors on the panel mount unit must be placed externally into the terminals.



INSTALLATION CONT.

COMPSCAN RS485 TERMINALS CONT.:-

"Multiple CompScans" cont.

Each CompScan must have a different number and one must be number 1.

The CompScan that is set to number 1 will control all other units in the chain. CompScans may be models A-32-R or A-32-S or a combination of either.

The order of turn on for each compressor is in the compressor numbers, i.e. compressor number 1 turns on first, when it has reached full load, compressor number 2 will turn on, when number 2 is fully loaded compressor number 3 will turn on etc.

Each compressor loads and unloads using its own set points and delays.

Each compressor that is not set to number 1 will turn off (after unloading, or its last stage off) at its own UNLOAD set point (with delay) providing all other compressors have turned off that have a higher number. The compressor that is set to number 1, will turn OFF (at minimum % load or stage 1 (last stage)) at its PUMP DOWN set point.

The compressor that is set to number 1 will not allow the next compressor (number order) to turn on (regardless of its set points) until the compressor that precedes it is fully loaded.

The compressor that is set to number 1 will not allow a compressor to turn off or unload (regardless of its set points) until the compressor that is after it (number order) has been turned off (at its UNLOAD set point).

NOTE:- If there is no compressor set to number 1 or the communications fail between compressors after 10 minutes, all compressors other than number 1 will go into alarm and turn off. The number 1 compressor will continue to operate with its own set points unless an alarm occurs within itself.

INSTALLATION CONT.

COMPSCAN RS485 TERMINALS CONT.:-

"TempScan Connected"

The CompScan is one of a number (up to 27) 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 time display (first display) will indicate "TempScan --" if no communications are received from the TempScan after 60 seconds and will display "TempScan Cn" if communications are successful. Alarm will sound after 10 minutes if no comms, and the compressor will turn off.

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

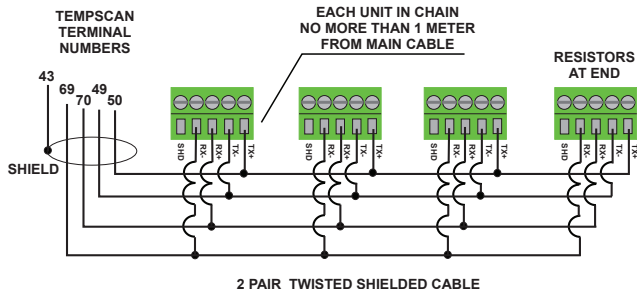
TempScan Terminal Number		Connection	
Terminal No.	50	TX+	Term No. 53
Terminal No.	49	TX-	Term No. 52
Terminal No.	70	RX+	Term No. 51
Terminal No.	69	RX-	Term No. 50
Terminal No.	43	SHIELD	Term No. 49

The shield must be connected at the TempScan end only.

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 Printer or Computer is not allowed to be connected to units that are connected to a TempScan.

The unit at the end of the line must have 2 x 120 OHM resistors placed in the socket behind the terminal block as shown on the previous pages.



INSTALLATION CONT.

COMPSCAN RS485 TERMINALS CONT.:-

"TempScan Connected" cont.

All Compressors are controlled by the TempScan and its pressure inputs including all stage turn on and stage turn off.

The order of compressor turn on and off is controlled by the TempScan.

All compressors must have a different number and can be from 1 to 27 inclusive.

NOTE:- If the communications fail between the compressors and TempScan, after 10 minutes, all compressors will go into alarm and turn off.

INSTALLATION CONT.

COMPSCAN RS232 TERMINALS:-

All ComScan units have a RS232 port at the right hand end plate. The socket is a Male 9 Pin D connector.

Printer Connected:-

A Printer is allowed to be connected if The CompScan units are set to "Single Stand Alone" or "Multiple CompScans" in the set point "RS485/232 Connection" (function number 30).

The cable used is a standard 9 pin to 25 D connector for serial input printers (recommended type EPSOM LX300).

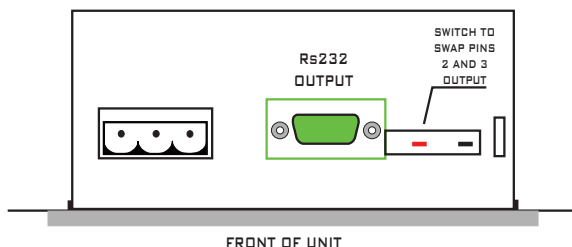
If more than 1 CompScan is connected together, the printer must be connected to compressor number 1, set in set point functions.

The maximum distance the cable can be is 10 meters. If a longer distance is required, a RS232 to RS485 convertor must be placed at the CompScan end and at the Printer end.

The Pin 2 and Pin 3 of the 9 Pin D connector can be reversed if required by the Switch shown below. This may be required if the cable is not standard or communications with the printer fail to initialize.

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 CompScan will send data to the printer at the same times as the data log is done if set.



INSTALLATION CONT.

SENSOR POSITIONING (TEMPERATURE AND PRESSURE) :-

The temperature sensors must not be exposed to temperatures below -50.0 oC or above +150.0 oC

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.

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

LCD DISPLAY CONTRAST ADJUST.

This trim pot adjusts the intensity of the LIQUID CRYSTAL DISPLAY (*top left hand display*). This should not normally need adjusting. To adjust the contrast consult the manufacturer.

LED DISPLAY CONTRAST ADJUST.

See LED Brightness in Setting functions for this adjustment

INSTALLATION CONT.

COMPRESSOR CONTROL. :-

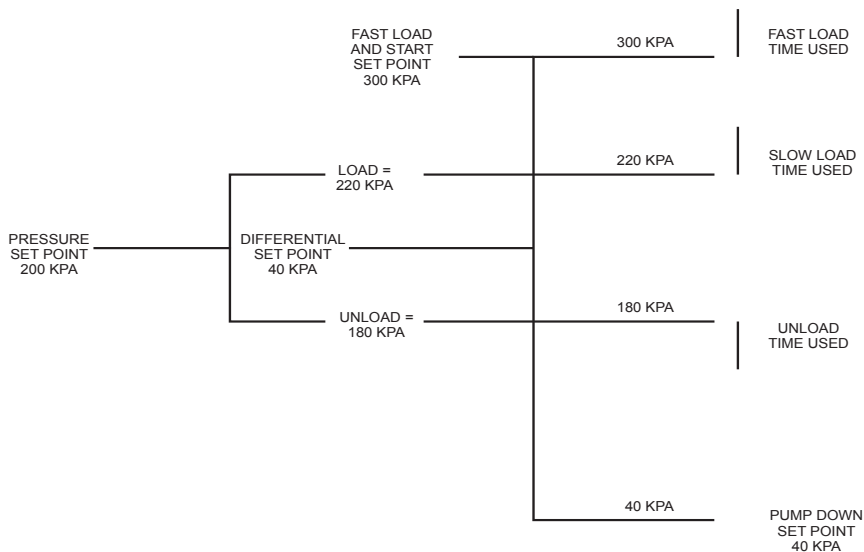
Depending on the set point of "RS485/232 Connection" (function number 30), compressors are controlled differently. See earlier for descriptions of different compressor control types.

Stages 1 to 4 may be inverted (energized for unloaded) or not (energized to load) in set point No. 55.

Compressors use fast load, slow load and unload times (*user programmable*) for loading and unloading a compressor. Also each compressor has a user programmable Start to Start timer in minutes. See set functions for compressors for all set points regarding compressors and next page for types of compressors. If variable type is used (4-20ma), 255 steps are used.

If the compressor ID number is set to number 1, the compressor will only turn off at the pump down set point after ramping down. If it is set to number 2 to 27 then the compressor will turn off at the unload set point after ramping down.

NOTE: - It may be necessary to reset the CompScan after changing compressor set points to allow the changes to operate properly.



INSTALLATION CONT.

TYPES OF COMPRESSORS :-

Compressors may be any one of the following, set in "Compressor Type" (function number 48) :-

LD 1 1STG	Single stage compressor with 1 load stage, i.e. 0, 100 %
LD 2 1STG	Single stage compressor with 2 load stage, i.e. 0, 50, 100%
LD 3 1STG	Single stage compressor with 3 load stage, i.e. 0, 33, 66, 100%
LD 4 1STG	Single stage compressor with 4 load stage, i.e. 0, 25, 50, 75, 100%
LD 1 2STG	Dual stage compressor with 1 load stage, i.e. 0, 100 %
LD 2 2STG	Dual stage compressor with 2 load stage, i.e. 0, 50, 100%
LD 3 2STG	Dual stage compressor with 3 load stage, i.e. 0, 33, 66, 100%
LD 4 2STG	Dual stage compressor with 4 load stage, i.e. 0, 25, 50, 75, 100%

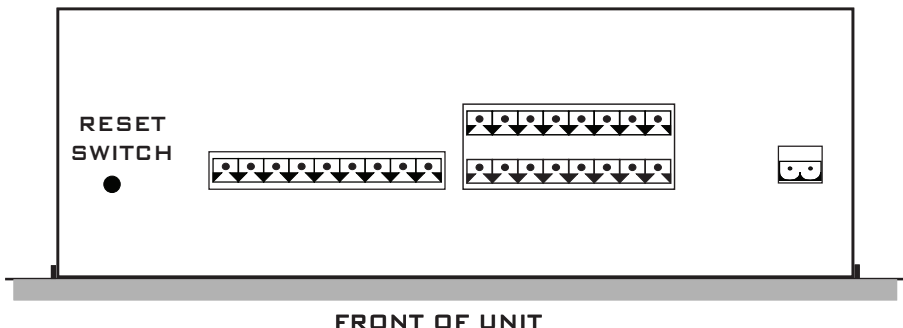
For TempScan control of compressors see the TempScan manual.

RESET SWITCH.

By pressing this switch the system will reset.

Set points and data logged will not be affected by pressing this switch.

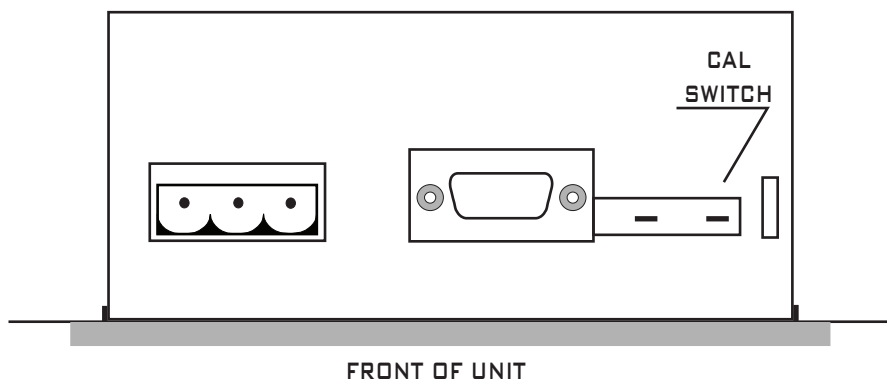
This is only required if the system locks up and is not functioning properly. If after pressing RESET the unit still does not perform correctly call your nearest service agent.



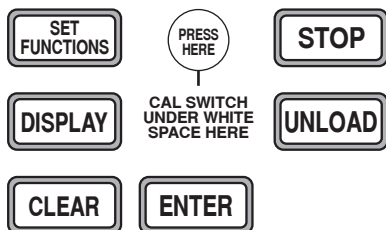
INSTALLATION CONT.

CAL SWITCH.

These 2 switches are used for setting of some of the functions. See Setting Functions for which functions require the pressing of this switch. Either switch may be used with the appropriate functions and must be held pressed while the "ENTER" key is pressed and held until the alarm beep is sounded for the function to operate properly. After finishing with the "CAL" switch, if the slide switch was used, be sure it placed back into the OFF position. The right most LED digits decimal point will light to indicate that the cal switch is pressed.



FRONT PANEL



OPERATION.

ALARM ACTION:-

If any one of the pressure transducers (suction, discharge, oil or intermediate) or temperature alarms or digital alarms go to the active state, The compressor will turn off and the Display will indicate what the alarm's that was/were and the time it went into alarm.

To reset the alarms, Press the "CLEAR" key when the display is displaying Alarms Logged. All alarms if in over range have a 15 second delay.

The total number of alarms are displayed and the order in which each alarm went into alarm.

To select different alarms that are active press the “▲” “UP” (ARROW) KEY and the “▼” “DOWN” (ARROW) KEY. and each alarm will be displayed on the LCD and LED display. The alarm displays will revolve around in a circular fashion to display all alarms that are active.

The following is a sample of the alarms displayed. The Right hand LED bar display bottom LED will flash (red) and the buzzer will sound and the alarm relay will turn off. To disable the buzzer press any key.

ALARMS LOGGED STATUS

TOTAL No. ALARMS 01

order 01 Disch Pres

17:46 04 Jan

The LCD displays the total number of alarms, the order of the alarms and the time in went into alarm.

The LED display will show the value of the alarm (dig if a digital alarm).

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:-

"Suct Temp"	The suction temperature is in alarm
"Disch Temp"	The discharge temperature is in alarm.
"Oil Temp"	The oil temperature is in alarm.
"Inter Temp"	The intermediate temperature is in alarm.
"Suct Press"	The suction pressure is in alarm
"Disch Pres"	The discharge pressure is in alarm.
"Oil Press"	The oil pressure is in alarm.
"Inter Pres"	The intermediate pressure is in alarm.
"Remote Run"	The remote run digital is in alarm (not used)
"Remote OFF"	The remote OFF digital is in alarm.
"Motor Aux"	The motor auxiliary digital is in alarm.
"Water Jack"	The water jacket digital is in alarm.
"Mt Current"	The motor current is in alarm.
"Emerg Swch"	The emergency switch has been pressed.
"TempScan C"	No signal from TempScan was received for 10 minutes.
"CompScan C"	No signal from compressor No. 1 received for 10 minutes.
"Press Diff"	The pressure between suction & intermediate exceeds 800 KPA and or the pressure between suction and discharge exceeds 1400 KPA.
"Super Heat"	If the super heat, (the calculated saturation temperature from the suction pressure minus the actual suction tem- perature) is below or equal to the alarm set point.

See CompScan Digital Input Terminals for more information on digital alarm inputs.

WARNING ACTION:-

A warning log and values will be displayed if any value goes into the warning zone (see later for warning set points) and will be displayed on the LCD and LED as in the alarm displays and the Warning LED will flash (yellow bar LED second bottom). The compressor will not turn of for any warnings logged.

To reset the Warnings, Press the "CLEAR" key when the display is displaying Warn-ings Logged.

The total number of warnings are displayed and the order in which each warning went into that state.

OPERATION CONT.

WARNING ACTION CONT.:-

To select different warnings that are active press the “▲” “UP” (ARROW) KEY and the “▼” “DOWN” (ARROW) KEY. and each warning will be displayed on the LCD and LED display. The warnings display will revolve around in a circular fashion to display all warnings that are active.

The following is a sample of the warnings displayed.

WARN LOGGED STATUS
TOTAL No. Warn'S 01
order 01 Disch Pres
17:46 04 Jan

The LCD displays the total number of warnings, the order of the warnings and the time in went into that state.

The LED display will show the value of the warning.

If no warnings are active the display will show:-

WARN LOGGED STATUS
NO WARNINGS LOGGED

The following is the display for each warning and its meaning:-

"Suct Temp"	The suction temperature warning
"Disch Temp"	The discharge temperature warning.
"Oil Temp"	The oil temperature warning.
"Inter Temp"	The intermediate temperature warning.
"Suct Press"	The suction pressure warning.
"Disch Pres"	The discharge pressure warning.
"Oil Press"	The oil pressure warning.
"Inter Pres"	The intermediate pressure warning.

OPERATION CONT.

DISPLAY FUNCTIONS:-

LIQUID CRYSTAL DISPLAY (*TOP LEFT*).

Used to time and date, display logged data and menu driven instructions and values while setting parameters.

See "DISPLAY" KEY.

LED DISPLAY (*TOP MIDDLE AND RIGHT*).

Used to display channels temperature and pressure and for values while displaying alarm status and data logged. The 3 Digit display shows the current percentage that the compressor is loaded or "StP" for Stop if compressor is off.

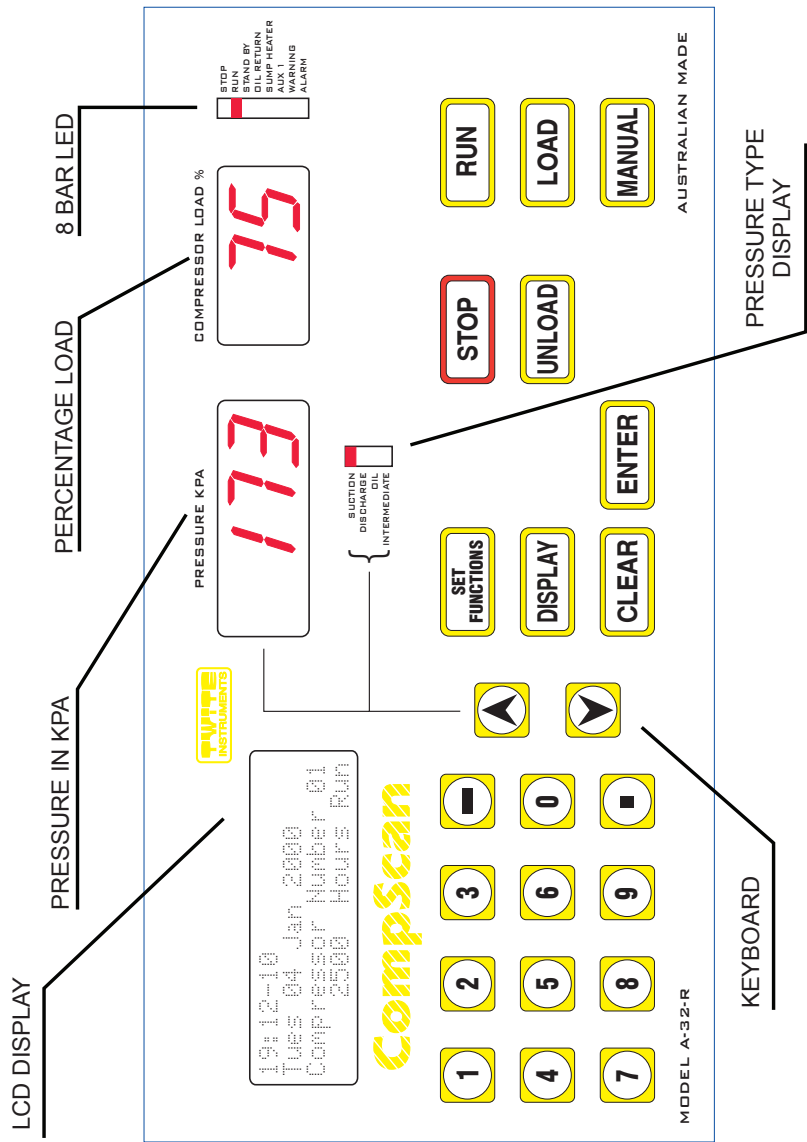
See "DISPLAY" KEY.

CHANNEL STATUS INDICATORS (*8 LED BAR*).

- | | |
|------------------------------------|--|
| 1 st LED (<i>top</i>) | - (<i>RED</i>) The compressor is in the OFF state. |
| 2 nd LED | - (<i>GREEN</i>) The compressor is running. |
| 3 rd LED | - (<i>YELLOW</i>) The compressor is in the stand by mode. Waiting for start to start to time out or waiting for the suction pressure to rise or waiting for compressor number 1 or TempScan to tell it to turn on. |
| 4 th LED | - (<i>GREEN</i>) The oil return solenoid is on. |
| 5 th LED | - (<i>GREEN</i>) The sump heater is turned on. Always on if the compressor is off. |
| 6 th LED | - (<i>YELLOW</i>) Aux 1. (not used) |
| 7 th LED | - (<i>YELLOW</i>) Flashing, a warning has been logged. |
| 8 th LED | - (<i>RED</i>) Flashing, at least one alarm is active. |

OPERATION CONT.

DISPLAY FUNCTIONS CONT.:-



KEYBOARD FUNCTIONS :-

OVERVIEW

If the wrong key is pressed at any time the key beep will beep twice to indicate this and nothing will be changed.

While the unit is in normal running mode, i.e.. not setting functions or displaying ALARMS LOGGED STATUS or WARN LOGGED STATUS or Data Logged Display The pressure value on the LED may be displayed for the Suction, Discharge, Oil or Intermediate (if connected) by Pressing the “▲” & “▼” keys

If the unit is displaying Data Logged, pressing the “▲” & “▼” keys will advance/decrement logged data time of log and will indicate this on the LCD. Pressing any of the left hand number keys and the “-” and “.” keys the logged data for different values (temperatures, pressures and digital inputs etc.. that were logged at that time. The right hand Bar LEDs will show the status of the compressor at that time.

If Alarms Logged or Warnings logged is displayed, pressing the “▲” & “▼” keys will advance/decrement to the next/pervious alarm/warning if logged.

Setting parameters.

There are 2 passwords for setting of functions. 1 Engineers password which must be used for most functions to be available for changing and 1 user password that can be set to any number between 1 and 5999.

Only the first 8 functions can be set by the user without the Engineers Password.

If the password is requested after the "SET FUNCTIONS" key is pressed, see PASSWORD for entering the correct PASSWORD.

When a flashing cursor is displayed on the Liquid Crystal Display the Value or Function may be changed to another by pressing the “▲” & “▼” (“UP/DOWN” arrow or entering a valid value on the left hand number keys).

Holding the “UP” or “DOWN” arrow key (“▲” & “▼”) on will increase or decrease the value displayed faster on some functions.

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

If CHANNEL SELECTION is required for a function, select the channel by pressing the “▲” key and press “▼” to select "YES" or "NO" for that channel. More than one channel may be set to a value at the same time.

When the channels have been selected, press the “ENTER” key to enter the channels selected. The value that is displayed on the LCD will be the value of the last channel that was selected and is the value used for the “▲” & “▼” (“UP/DOWN”) keys to use as a reference to alter or if a value is entered on the left hand number keys a new number will be input.

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

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

If the "CLEAR" key is pressed before the "ENTER" key is pressed the value will not be updated the channels that were selected and the displays will revert to there normal functions.

To alter the value press the “▲” (“UP” arrow) key to increase the value or press the “▼” (“DOWN” arrow) key to decrease the value or enter the value on the left number keys. This will be the value entered into the channels that were selected when the "ENTER" key is pressed.

When entering a value using the left hand number keys the Auto Key Delay is active. If a value of -2.5 is required, press "-" then "2" then "." then "5", -2.5 will be displayed. If the key beep sounded for the second time (*auto key press time out*), before the next key is pressed in the above sequence a new value will be started on the display.

The time out for the second or third key is to be pressed can be set using Set Functions "Key Select Delay".

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

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

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" key. After all required values have been altered (*or checked*), the displays will revert to normal run mode. If the "CLEAR" key is pressed before all 4 set points (*or required number of set points*) before the "ENTER" key is pressed, none of the entered values will be updated.

IF THE WRONG KEY IS PRESSED AT ANY TIME THE ALARM BEEP WILL BEEP TWICE TO INDICATE THIS AND NOTHING WILL CHANGE.

"SET FUNCTIONS" KEY

When the "SET FUNCTIONS" key is first pressed the last function that was altered will appear on the LCD and the LED display will remain the same until the "ENTER" key is pressed to select that function at which time the LED display will be turned off. The FUNCTIONS and there meaning are described in the following pages in short form then in detail.

```
SETTING FUNCTIONS
Press UP or DOWN or
Enter Function No 10
Compressor Set Point
```

To change from one function to another, press the "▲" or "▼" (*up/down arrow*) keys to display each function in numerical order, or enter the function number on the left number keys.

When entering a value for the required function to set/check using the left hand number keys the Auto Key Delay is active. If function number of 11 "High Alarm Temp're" is required, press "1" then "1", 11 will be displayed after Function No . If the key beep sounded for the second time (*auto key press time out*), before the "0" key is pressed in the above sequence a new value will be started on the display.

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

If a lesser number i.e. "0" was pressed the unit will beep twice and display the lowest allowed function number, and if a higher number was entered than allowed it will beep twice and display the highest function number allowed.

The time out for the second or third key is to be pressed can be set using Set Functions "Key Select Delay".

When the required function to be altered (*or checked*) is displayed, press the "ENTER" key. and follow the instructions displayed on the LCD display.

"ENTER" KEY

Used to select the function or value to be checked or changed.

When setting functions the display will display one of the following.

If Channel selection is required, Press the "▼" for YES/NO for that channel and press "▲" to select the next channel. Channel selection rotates around in a circular fashion so if the wrong channel was selected it can be de selected next time that channel is displayed.

```
Temp's Connected
Select Channel's
^ = Chan v = Yes/No
YES      Suction
```

If Channel selection was not required, the way in which the value may be changed and the type of set point without the value under the flashing cursor.

```
Compressor Set Point
Press UP or DOWN or
Enter Value Required
150      Pressure KPA
```

The above displays are an indication only, other channel select values and types of ways to enter values may be displayed depending on the function that is being set or checked.

The "CAL" switch may be required on some functions. See CAL SWITCH.

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

“▲” “UP” (ARROW) KEY

Used to advance to the next channel to display or when setting functions, increase to the next function or to increase the value displayed. If held down the value will change faster automatically.

“▼” “DOWN” (ARROW) KEY

Used to decrement to the previous channel to display or when setting functions, decrement to the previous function or to decrease the value displayed. If held down the value will change faster automatically.

“DISPLAY” KEY.

The following displays are available by pressing the “DISPLAY” key when in normal use, (*i.e. while the unit is running and no setting of functions is being done*).

(Each display is available by pressing the number shown immediately).

The Display revolves around, i.e., when the last one is displayed by pressing the "DISPLAY" key, pressing it again displays the first one described here.

- 1 (No. 0): Time and date on the LCD. and The Compressor number and the number of hours the compressor has been running. Also a Time out of Start to Start time left before the compressor can start again if not 0 minutes.

```

13:33-14
Tues 19 Dec 1995
Compressor Number 01
234      Hours Run
  
```

- 2 (No. 1): The Temperatures of all connected channels on the LCD and Pressure on the 1st LED and percentage on the right most LED and the compressor status on the 8 LED bar display.

```

Suct Temp      +28.1 oC
Disch Temp     +78.8 oC
Oil Temp       +34.4 oC
  
```

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

“DISPLAY” KEY CONT.

- 3 (No. 2): The Pressures of all connected channels on the LCD and Pressure on the 1st LED and percentage on the right most LED and the compressor status on the 8 LED bar display.

```
Suct Pres    +150    KPA
Disch Pres   +1023   KPA
Oil Pres     +203    KPA
```

- 4 (No. 3): The Digital input status of the first 4 connected channels on the LCD and Pressure on the 1st LED and percentage on the right most LED and the compressor status on the 8 LED bar display.

```
Dig IN Rem't Run OFF
Dig IN RemoteOFF OFF
```

- 5 (No. 4): The Amps used for the motor current and Pressure on the 1st LED and percentage on the right most LED and the compressor status on the 8 LED bar display.

```
Motor Current
120 AMPS
```

- 6 (No. 5): The Alarms Logged on the LCD (if any) and alarm value on the 1st LED and the compressor status on the 8 LED bar display.

```
ALARMS LOGGED STATUS
Total No. Alarms 01
order 01 Suct Press
20:45 04 Jan
```

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT. "DISPLAY" KEY CONT.

- 7 (No. 6): The Warnings Logged on the LCD (if any) and warning value on the 1st LED and the compressor status on the 8 LED bar display.

```

WARN LOGGED STATUS
Total No. Warn's 01
order 01    Suct Press
20:45 04 Jan
  
```

- 8 (No. 7): The Data Logged on the LCD (if any) & the compressor status on the 8 LED bar display at the time of log. Pressing left number keys select different data that was logged and pressing the "UP" or "DOWN" keys goes forward or back in time that the data was logged

Data Logged Display	
S-T/S-H +28.7 +52.7	Suction temp/ Super Heat
Disch Temp +31.7 °C	Discharge temperature
20:45 04 Jan	

- 9 (No. 8): The Compressor Ratio the LCD and the compressor status on the 8 LED bar display and the % load on the LED.

```

Compressor Ratio
Suct    Abs +261    KPA
Disch Abs +1101 KPA
Ratio       4.21 : 1
  
```

- 10 (No. 9): The Suction pressure, the calculated saturation temperature, the actual suction temperature and the super heat on the LCD and the compressor status on the 8 LED bar display and the % load on the LED.

```

Suc Press    +82       KPA
Suc S Tmp    -20.0 °C
Suc Temp     +24.3 °C
Super Heat   +45.1 °C
  
```


KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

“DISPLAY” KEY CONT.

- 11 (. Key minus key): The alarm history. This displays the last 40 alarms that occurred and the time each occurred and cannot be deleted. After 40 alarms have been logged the earliest alarm will be replaced etc..

Note:- the display will revert to displaying the time and date after 60 seconds after the last key was pressed if not done manually.

```
Alarm History, Shows
The Last 40 Alarms
Suc Temp  +45.0 oC
20:45 04 Jan
```

- 12 (No. - decimal point key): The Digital input status of the second 4 connected channels on the LCD and Pressure on the 1st LED and percent age on the right most LED and the compressor status on the 8 LED bar display.

```
Dig IN Energ SCH OFF
Dig IN Not Used OFF
Dig IN Rem't PLC OFF
Dig IN Alarm RST OFF
```

“CLEAR” KEY.

The Clear key is used to Clear and Reset Alarms if active, to clear and to clear from a function while in SET FUNCTIONS mode.

“LEFT SIDE NUMBER, - , AND . ” KEYS.

These keys are used to enter a value while using SET FUNCTIONS, not all functions allow these keys to be used, i.e.. a YES or NO for some functions only allow the “▲” & “▼” to be used. See Overview for Auto Key Repeat and entering an invalid value for more information.

KEYBOARD FUNCTIONS CONT.

OVERVIEW CONT.

“STOP” KEY.

This key is used to stop the compressor from operating. This is not an emergency OFF key, as it uses software control to turn the compressor off.

“EMERGENCY STOP” BUTTON.

The EMERGENCY STOP button is the large red button on the top of the unit. This button mechanically switches off the active control cable from the control relays but allows the CompScan to keep running and will sound the alarm. To reset the emergency stop button, Twist the button clockwise.

“RUN” KEY.

This key is used to start the compressor operating. The compressor may not start immediately due to Start to Start time out or the suction presser is not at the load value.

“LOAD” KEY.

This key may be used to manually load the compressor to the next stage. If the maximum number of stages are already loaded the Key Beep will Beep twice to indicate this.

“UNLOAD” KEY.

This key may be used to manually unload the compressor to the previous stage. If no stages are loaded the Key Beep will Beep twice to indicate this.

“MANUAL” KEY.

This key may be used to manually start the compressor regardless of the suction pressure. The load and unload keys can be pressed to test the compressor. This function does not time out, the compressor will run until the stop key is pressed or the unit goes into alarm.

PASSWORDS :-

USING ENGINEERS PASSWORD

(use SET FUNCTIONS, ENTER, VALUE keys)

The engineers password is required on some set points and to allow changing set points above function number 8. The display will request the password when "SET FUNCTIONS" key is pressed then "ENTER" is pressed to select that function to change with the following message.

Enter Engineers
Password



NOTE:- flashing cursor.

The PASSWORD consists of A NUMBER BETWEEN 0000 AND 5999 inclusive and only known to an authorized person that is able to change certain set points.

The Engineers password cannot be changed.

Which functions that require this password are indicated in the following section.

USERS PASSWORD

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

Enter Users
Password



NOTE:- flashing cursor.

PASSWORDS CONT.:-

USERS PASSWORD CONT.

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

To enter the password enter the value using the left hand number keys until the correct number is displayed, then press the “ENTER” key. If the password number was correct the unit will go to the next step for setting functions. If the number was incorrect the alarm will beep and the unit will revert to its normal running display with the displayed data that was displayed before the “SET FUNCTIONS” key was pressed.

CHANGE PASSWORD

LCD display “Change Password” use SET FUNCTIONS, ENTER, ▲ and ▼ or enter VALUE keys.

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.

DISABLE PASSWORD

(*use SET FUNCTIONS, ENTER, ▲ and ▼ or enter VALUE keys*)

LCD display “Pass Word YES/NO”

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 “1111” by pressing and holding the CAL key when selecting function "Reset Password"

KEYBOARD FUNCTIONS.

FUNCTIONS AND THE NO. OF EACH

THE * MEANS, *CAL* SWITCH MUST BE USED FOR THIS FUNCTION.

THE ^ MEANS, ENGINEERS PASSWORD REQUIRED FOR FUNCTION.

1	"Compressor Set Point"	The compressor set point in KPA..
2	"Compressor Diff'tial"	The compressor differential in KPA..
3	"Compressor Slow Load"	The slow load time in seconds..
4	"Compressor Fast Load"	The compressor fast load in seconds.
5	"Fast Load Suction Pr"	The compressor fast load pressure in KPA..
6	"Compre'r Unload Time"	The compressor unload time in seconds.
7	"Pump Down Set Point"	The compressor pump down set point in seconds.
8	"Start - Start Time"	The compressor start to start time in minutes.
9	"Set Factory Defaults" ^	Set up factory defaults for all functions.
10	"Allow Other Settings" ^	Allow the user to set other functions (time out).
11	"High Alarm Temp're"	High alarm temperature (select channels).
12	"Warn Temp From High"	Warning temp from high alarm (select channels).
13	"Low Alarm Temp're"	Low alarm temperature (select channels).
14	"Warn Temp above Low"	Warning temp above low alarm (select channels).
15	"Hi Temp Alarm Delay"	High temp alarm in seconds (select channels).
16	"Low Temp Alarm Delay"	Low temp alarm in seconds (select channels).
17	"High Alarm Press KPA"	High alarm pressure in KPA (select channels).
18	"Warn Press From High"	Warn pressure from high alarm (select channels)
19	"Low Alarm Press KPA"Low	pressure alarm (select channels).
20	"Warn Press above Low"	Warn pressure above low (select channels).
21	"Hi Press Alarm Delay"	High pressure alarm in seconds (select channels)
22	"Lo Press Alarm Delay"	Low pressure alarm in seconds (select channels).
23	"Compressor Number"	The compressor number from 1 to 27 incl.
24	"Set Data Logging"	The time between data logging and printing.
25	"Key Select Delay"	The delay between key select and new number.
26	"Set Time & Date"	Set the real time clock.
27	"Temp's Connected"	Set which temperature channels are connected.
28	"Press's Connected"	Set which pressure channels are connected.
29	"Digital IN Connected"	Set which digital inputs are connected.
30	"RS485/232 Connection"	Set the type of serial communications.
31	"Password YES/NO"	Set whether the users password is required.

KEYBOARD FUNCTIONS CONT.

FUNCTIONS AND THE NO. OF EACH

THE * MEANS, CAL SWITCH MUST BE USED FOR THIS FUNCTION.

THE ^ MEANS, ENGINEERS PASSWORD REQUIRED FOR FUNCTION.

32	"Change Password"	Change the users password (requires users password)
33	"Set RS485/232 Baud"	Set the RS485 and RS232 Baud rate.
34	"LED Brightness"	Set brightness of the LED display & LCD backlight.
35	"Pressure Input Span"	Set the pressure trans. input span (select channels)
36	"Do 4-20ma Offset" *	Sets offset value for pressure inputs (select channels)
37	"Reset Compre'r Hours"	Sets compressor hours to 0.
38	"Current Trans'r Type"	Sets the type of current transformer type.
39	"High Current Alarm"	Sets the high motor current alarm.
40	"Reset Calib'n Offset" *	Resets all calibration offsets to 0.
41	"Cal Hi Values Check" *	Set/Check high temp calibration values (sel channels)
42	"Cal Lo Values Check" *	Set/Check low temp calibration values (sel channels)
43	"Calibrate Tmp Sensor" *	Calibrating temperature sensors (select channels)
44	"Ram Memory Check" *	Checks all memory.
45	"Test Display/Rst Log"	Tests displays and reset data logged to no data logged
46	"Number of Resets"	Displays the number of resets (power fail etc.)
47	"Reset Password"	Resets the users password to 1111
48	"Compressor Type"	Sets the type of compressor this unit is for.
49	"Save Eng'rs Defaults"	Saves all current set points to non vol memory.
50	"Oil Return Interval"	The time between the oil return turns on in minutes.
51	"4 - 2-ma Output Type"	The type of 4-20ma output control.
52	"No.Hard Wired Stages"	The number of stages that are always on.
53	"Refrigerant Used"	The type of refrigerant used in R values
54	"Super Heat Low Alarm"	The Low alarm set point for the super heat.
55	"Comp Stages Inverted"	Stages either ON to load or OFF to load.
56	"Oil Sump Temp Set Pt"	The set point for the sump oil temperature.
57	"Type of Temp Sensor"	The type of temperature sensor used.

KEYBOARD FUNCTIONS CONT.

1 “Compressor Set Point”

Sets the Compressor Pressure set point value in KPA with the Compressor Differential, for when the compressors use the Slow Load/Unload set points. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 1 TO SELECT `Compressor Set Point`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 500 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

2 “Compressor Diff’tial”

Sets the Compressor Pressure Differential set point value in KPA, with the Compressor Pressure set point, for when the compressors use the Slow Load/Unload set points. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 1 TO SELECT `Compressor Set Point`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 500 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

3 “Compressor Slow Load”

Sets the Slow Load Time in seconds for the compressor to load. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 3 TO SELECT `Compressor Slow Load`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 300 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

4 “Compressor Fast Load”

Sets the Fast Load Time in seconds for the compressor to load. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 4 TO SELECT `Compressor Fast Load`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 100 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

5 “Fast Load Suction Pr”

Sets the Fast Load Pressure value in KPA for when the Fast Load Time is used to load the Compressor. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 5 TO SELECT Fast Load Suction Pr

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 100 - 1000 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

6 “Compre'r Unload Time”

Sets the Unload Time in seconds for the compressor to unload. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 6 TO SELECT Compre'r Unload Time

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 300 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

7 “Pump Down Set Point”

Sets the Pump Down Pressure set point value in KPA for when the last compressor stage is turned off. See Compressor Control.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 7 TO SELECT Pump Down Set Point

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 - 200 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

8 “Start - Start Time”

Sets the Start to Start time for Compressor. When a Compressor is turned on the time in minutes before it is allowed to come on again is set using this function. Start to Start time is set to 2 minutes if a power failure occurs then the set time is used from then on.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 8 TO SELECT Start - Start Time

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 1 TO 30 MINUTES.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

9 “Set Factory Defaults”

Sets the Factory Defaults for all set points to default value's. The factory defaults are any one of 10 sets. 1 set is the Engineers defaults. These defaults are the current set points and may be the same as other defaults with 1 or more set points changed and saved using the set point "Save Eng'rs Defaults". This can reload these set points if previously saved. The other 9 default set points are fixed and are listed near the end of the manual.

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 9 TO SELECT Set Factory Defaults

PRESS "ENTER"

ENTER ENGINEERS PASSWORD IF REQUIRED

PRESS ▲ ▼ TO SELECT THE REQUIRED DEFAULT SETTINGS.

PRESS "ENTER"

SELECTION COMPLETE.

10 “Allow Other Settings”

Sets whether other settings (set points 11 and up) are able to be checked or changed. This set point when set to YES automatically resets to NO after a time out.

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 10 TO SELECT Allow Other Settings

PRESS "ENTER"

ENTER ENGINEERS PASSWORD IF REQUIRED

PRESS ▲ ▼ TO SELECT YES or NO.

PRESS "ENTER"

SELECTION COMPLETE.

11 “High Alarm Temp're”

Sets the High Alarm Temperature set points for each or all temperature probes.

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 11 TO SELECT High Alarm Temp're

PRESS "ENTER"

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS "ENTER"

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -50.0 to +150.0 oC.

PRESS "ENTER"

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

12 “Warn Temp From High”

Sets the High warning Alarm Temperature set points from the high alarm set point for each or all temperature probes. The temperature set point is subtracted from the high alarm set point which becomes the warning set point. i.e. if the high alarm set point is set at 50.0 and the warning set point is set at 10.0. the warning alarm will occur at 40.0.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 12 TO SELECT Warn Temp From High

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0.0 to +50.0 oC.

PRESS “ENTER”

SELECTION COMPLETE.

13 “Low Alarm Temp're”

Sets the Low Alarm Temperature set points for each or all temperature probes.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 13 TO SELECT Low Alarm Temp're

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -50.0 to +150.0 oC.

PRESS “ENTER”

SELECTION COMPLETE.

14 “Warn Temp Above Low”

Sets the Low warning Alarm Temperature set points above the low alarm set point for each or all temperature probes. The temperature set point is added to the low alarm set point which becomes the warning set point. i.e. if the low alarm set point is set at -10.0 and the warning set point is set at 10.0. the warning alarm will occur at 0.0.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 14 TO SELECT Warn Temp Above Low

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0.0 to +50.0 oC.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

15 “Hi Temp Alarm Delay”

Sets the High Alarm Temperature delay set points for channels in seconds.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 15 TO SELECT Hi Temp Alarm Delay

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 20 120 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

16 “Lo Temp Alarm Delay”

Sets the Low Alarm Temperature delay set points for channels in seconds.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 16 TO SELECT Lo Temp Alarm Delay

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 120 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

17 “High Alarm Press KPA”

Sets the High Alarm Pressure set points for each or all pressure transducers.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 17 TO SELECT High Alarm Press KPA

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 4000 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

18 “Warn Press From High”

Sets the High warning Alarm Pressure set points from the high alarm set point for each or all pressure transducers. The pressure set point is subtracted from the high alarm set point which becomes the warning set point. i.e. if the high alarm set point is set at 1000 and the warning set point is set at 100. the warning alarm will occur at 900.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 18 TO SELECT Warn Press From High

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 300 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

19 “Low Alarm Press KPA”

Sets the Low Alarm Pressure set points for each or all pressure transducers.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 19 TO SELECT Low Alarm Press KPA

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -200 TO 1000 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

20 “Warn Press above Low”

Sets the Low warning Alarm Pressure set points above the low alarm set point for each or all pressure transducers. The pressure set point is added to the low alarm set point which becomes the warning set point. i.e. if the low alarm set point is set at 10 and the warning set point is set at 20. the warning alarm will occur at 30.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 20 TO SELECT Warn Press above Low

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 300 KPA.

PRESS “ENTER”

SELECTION COMPLETE.

21 “Hi Press Alarm Delay”

Sets the High Alarm Pressure delay set points for channels in seconds.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 21 TO SELECT Hi Press Alarm Delay

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 120 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

22 “Lo Press Alarm Delay”

Sets the Low Alarm Pressure delay set points for channels in seconds.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 22 TO SELECT Lo Press Alarm Delay

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT YES OR NO FOR THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 20 120 SECONDS.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

23 “Compressor Number”

Selects the Identification of a units compressor from 1 to 27. If it is number 1 it will control the turn on and off of other compressors if they are set as such and the serial link is in place. The compressors will be turned on in there number order for loading up the system.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 23 TO SELECT Compressor Number

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 1 - 27

PRESS “ENTER”

SELECTION COMPLETE.

24 “Set Data Logging”

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

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 24 TO SELECT Set Data Logging

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ FOR NONE (DON'T DO), 1, 5, 10, 30, 60, 120 MINUTES.

PRESS “ENTER”

SELECTION COMPLETE.

25 “Key Select Delay”

Sets the Total number of timer cycles before the key select is reset. When a key is pressed in some functions i.e.. selecting value 23 is done by pressing 2 then 3 before the second beep is sounded, if the second beep is heard before the 3 was pressed the value number will be 3. The time allowed before the second beep (key select delay reset) is set by using this function.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 25 TO SELECT Key Select Delay

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 1 - 30 CYCLES.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

26 “Set Time & Date” Sets the Real Time Clock

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 26 TO SELECT Set Time & Date

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ FOR 0 to 23 FOR HOURS IN 24 HOUR MODE.

PRESS “ENTER”

PRESS ▲ ▼ 0 to 23 FOR HOURS IN 24 HOUR MODE.

PRESS “ENTER”

PRESS ▲ ▼ FOR 0 to 59 FOR MINUTES.

PRESS “ENTER”

PRESS ▲ ▼ FOR 0 to 59 FOR SECONDS.

PRESS “ENTER”

PRESS ▲ ▼ FOR 1 to 7 FOR DAY (1 = SUNDAY, 2 = MONDAY ETC.).

PRESS “ENTER”

PRESS ▲ ▼ FOR 1 to 31 FOR DATE.

PRESS “ENTER”

PRESS ▲ ▼ FOR 1 to 12 FOR MONTH.

PRESS “ENTER”

PRESS ▲ ▼ FOR 0 to 99 FOR YEAR.

PRESS “ENTER”

PRESS ▲ ▼ FOR 0 to 99 FOR CENTURY.

PRESS “ENTER”

SELECTION COMPLETE.

27 “Temp's Connected”

Sets whether each temperature probe is connected or not. If set to NO it will not cause an alarm regardless of the alarm set point..

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 27 TO SELECT Temp's Connected

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO BE CONNECTED OR NOT

PRESS “ENTER”

SELECTION COMPLETE.

28 “Press's Connected”

Sets whether each pressure transducer is connected or not. If set to NO it will not cause an alarm regardless of the alarm set point..

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 28 TO SELECT Press's Connected

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO BE CONNECTED OR NOT

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

29 “Digital IN Connected”

Sets whether each Digital Input is connected or not. If set to NO it will not cause an alarm regardless of the input state.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 29 TO SELECT Digital IN Connected

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO BE CONNECTED OR NOT

PRESS “ENTER”

SELECTION COMPLETE.

30 “RS485/232 Connection”

Sets the type of serial link connection is between CompScans if connected. See earlier in the manual for operation using the serial communications.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 30 TO SELECT RS485/232 Connected

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ FOR SINGLE STAND ALONE, MULTIPLE COMPSkans, TEMPSCAN CONNECTED.

PRESS “ENTER”

SELECTION COMPLETE.

31 “Password YES/NO”

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

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 31 TO SELECT Password YES/NO

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ FOR YES/NO FOR THE USER PASSWORD TO BE ACTIVE (REQUIRED) OR NOT

PRESS “ENTER”

SELECTION COMPLETE.

32 “Change Password”

Sets the User Password of a number from 0000 to 5999. If the user password was not active when this function is selected, the password required to change the password.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 32 TO SELECT Change Password

PRESS “ENTER”

ENTER USER PASSWORD

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 to 5999 FOR THE PASSWORD NUMBER.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

33 “Set RS485/232 Baud”

Sets the Baud Rate of the RS485/232 Ports. The Stop bit is set to 1 and the Parity is set OFF automatically. This must be 2400 or above if connected to a computer.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 33 TO SELECT Set RS485/232 Baud

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ FOR 110, 300, 1200, 2400 OR 9600 BAUD.

PRESS “ENTER”

SELECTION COMPLETE.

34 “LED Brightness”

Sets the Brightness of the LED display and the LCD backlight

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 34 TO SELECT LED Brightness

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 1 - 15 Inclusive

PRESS “ENTER”

SELECTION COMPLETE.

35 “Pressure Input Span”

Sets the Low and High input span for pressure transducers input for each channel.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 35 TO SELECT Pressure Input Span

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” TO SELECT THE DISPLAYED CHANNEL

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -200 TO 3000 KPA/PPM FOR THE LOW VALUE OF TRANSDUCER.

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -200 TO 3000 KPA/PPM FOR THE HIGH VALUE OF TRANSDUCER.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

36 “Do 4-20ma Offset”

For automatically setting the 4-20ma input offsets. All 4-20ma inputs must be disconnected to do this function. This function should not be used unless by an authorized technician. If reset calibration values was done on the 4-20ma inputs this must be re done after to set the correct values.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 36 TO SELECT Do 4-20ma Offset

ENTER PASSWORD IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”.

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO BE CONNECTED OR NOT

PRESS “ENTER”

WAIT FOR THE LED DISPLAY TO SHOW A VALID VALUE (410 APPROX.) ON EACH SELECTED CHANNEL. ALSO WAIT FOR OTHER CHANNELS SELECTED TO BE DONE (AT LEAST 1 MINUTE).

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”.

SELECTION COMPLETE.

37 “Reset Compre'r Hours”

Resets the number of hours the compressor has run The number of hours run is displayed on the first display (Time and Date) on the 4th line. A maximum of 32700 hours per channel is allowed.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 37 TO SELECT Reset Compre'r Hours

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

SELECTION COMPLETE.

38 “Current Trans'r Type”

Sets the current transducer type from the below types. If NOT-C is selected no current transducer is connected. The only transducer supported at present is NOT-C or 200/5.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 38 TO SELECT Current Trans'r Type

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

PRESS ▲ ▼ FOR NOT-C, 100/5, 200/5, 400/5, 800/5, 100/1, 200/1, 400/1 OR 800/1 TYPE.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

39 “High Current Alarm”

Sets the High Current alarm for the motor.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 39 TO SELECT `High Current Alarm`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0 TO 2000 AMPS

PRESS “ENTER”

SELECTION COMPLETE.

40 “Reset Calib'n Offset”

Resets the temperature calibration values of the channels selected to 0.00. This function should not be used unless by an authorized technician.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 40 TO SELECT `Reset Calib'n Offset`

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL DISPLAYED TO BE RESET TO 0.00

PRESS “ENTER”

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

SELECTION COMPLETE.

41 “Cal Hi Values Check”

Altering or checking the Calibration offset values of the channels selected at 100.00 °C. This function should not be used unless by an authorized technician.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 41 TO SELECT `Cal Hi Values Check`

ENTER PASSWORD IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO ALTER OR CHECK AT 100.00 °C

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -20.00 TO +20.00

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

SELECTION COMPLETE.

42 “Cal Lo Values Check”

Altering or checking the Calibration offset values of the channels selected at 0.00 °C. This function should not be used unless by an authorized technician.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 42 TO SELECT `Cal Lo Values Ck`

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO ALTER OR CHECK AT 0.00 °C

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -20.00 TO +20.00

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

43 “Calibrate Sensor”

For Calibrating Temperature Sensors at 0.00 °C. and at 100.00 °C. This function should not be used unless by an authorized technician.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 43 TO SELECT `Calibrate Sensors`

PRESS “ENTER”

ENTER PASSWORD REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”

PRESS ▲ TO SELECT CHANNELS TO CHANGE/CHECK

PRESS ▼ TO SELECT “YES” OR “NO” FOR THE CHANNEL TO CALIBRATE

PRESS “ENTER”

PLACE SENSOR'S INTO A STIRRED ICE BATH WHICH IS AT 0.00 OC. AND WAIT FOR THE TEMPERATURE (ON THE LAST SENSORS CHANNEL NUMBER) THAT IS DISPLAYED ON THE LED TO SETTLE.

PRESS & HOLD CAL SWITCH IN AND PRESS ▼ TO ENTER THE LOW VALUE OFFSET VALUE INTO E²PROM.

PLACE SENSOR'S INTO A BOILING WATER BATH WHICH IS AT 100.00 OC. AND WAIT FOR THE TEMPERATURE (ON THE LAST SENSORS CHANNEL NUMBER) THAT IS DISPLAYED ON THE LED TO SETTLE.

WHEN THE TEMPERATURE REACHES 95.00 °C (APPROX.) THE DISPLAY WILL SHOW THE TEMPERATURE MINUS 100.00 °C.

PRESS & HOLD CAL SWITCH IN AND PRESS ▲ TO ENTER THE HIGH VALUE OFFSET VALUE INTO E²PROM.

PRESS “ENTER”

SELECTION COMPLETE.

44 “Ram Memory Check”

For Testing the RAM and E²PROM 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 2 minutes. This function should not be used unless by an authorized technician. If an error occurs it will display the memory type error. Call the service centre if an error message is displayed.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 44 TO SELECT `Ram Memory Check`

PRESS “ENTER”

ENTER PASSWORD AND “ENTER” IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”, HOLDING THE CAL SWITCH UNTIL THE FIRST BEEP.

PRESS “CLEAR”, AFTER THE 2nd. BEEP WHEN “Done Press Clear” IS DISPLAYED TO INDICATE NO ERRORS.

SELECTION COMPLETE.

45 “Test Display/Rst Log”

For Testing the LED displays. All LED's will be on at full intensity. Also resets all data logged to so that no data has been logged (required if data logged is corrupt. Also displays version number see Software version.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 45 TO SELECT `Test Displays`

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”.

PRESS “CLEAR”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

46 “Number of Resets”

For viewing the number of resets the unit has performed. After this function has been done the number of resets is set to 0.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 46 TO SELECT *Number of Resets*

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”.

PRESS “CLEAR”

SELECTION COMPLETE.

47 “Reset Password”

For Resetting the password to 1111 if the password is unknown.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 47 TO SELECT *Reset Password*

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”.

PRESS “CLEAR”

SELECTION COMPLETE.

48 “Compressor Type”

Selects the type of compressor from 1 to 4 load stages and 1 to 4 load stages on a 2 stage compressor (low/high type compressor).

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 48 TO SELECT *Compressor Type*

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

PRESS ▲ ▼ FOR LD 1 1STG, LD 2 1STG, LD 3 1STG, LD 4 1STG, LD 1 2STG, LD 2 2STG, LD 3 2STG
OR LD 4 2STG.

PRESS “ENTER”

SELECTION COMPLETE.

49 “Save Eng's Defaults”

Saves all current set points to non volatile memory. These default values may put back into the set points at any time using the set point function “Set Factory Defaults” and selecting “Engineers Defaults”.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 49 TO SELECT *Save Eng's Defaults*

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS & HOLD CAL SWITCH IN AND PRESS “ENTER”. AND WAIT FOR KEY BEEP UNTIL RELEASING CAL.

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

50 “Oil Return Interval”

Sets the time between the oil return solenoid is turned on in minutes. The time the solenoid is on for is set at 5 minutes. The solenoid will not turn on if the discharge temperature is below 60.0 degrees Celsius. The first allowed turn on after motor start is 30 minutes if the compressor has been off for 5 hours or more otherwise the minimum time for the purge to turn on is set at 1 minute after motor start and from then on the "Oil Return Interval" set point is the time between oil return times while the motor is on.

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 50 TO SELECT Oil Return Interval

PRESS "ENTER"

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 1 TO 240 MINUTES

PRESS "ENTER"

SELECTION COMPLETE.

51 “4 - 20ma Output Type”

Sets the type of control that is used for the motor and compressor for loading and unloading the compressor. See earlier for a description of each type.

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 51 TO SELECT 4 - 20ma Output Type

PRESS "ENTER"

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ TO SELECT Stg Only, or Variable.

PRESS "ENTER"

SELECTION COMPLETE.

52 “No.Hard Wired Stages”

Sets the number of compressor load stages are permanently on. This allows the display to display the correct percentage of load that the compressor is at any time

PRESS "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 52 TO SELECT No.Hard Wired Stages

PRESS "ENTER"

ENTER PASSWORD IF REQUIRED

PRESS ▲ ▼ TO SELECT 1, 2, 3 OR 4

PRESS "ENTER"

SELECTION COMPLETE.

53 “Refrigerant Used”

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 "SET FUNCTIONS"

▲ ▼ OR ENTER FUNCTION No. 53 TO SELECT Refrigerant Used

PRESS "ENTER"

ENTER PASSWORD IF REQUIRED

PRESS "ENTER"

PRESS ▲ ▼ FOR THE TYPE OF REFRIGERANT USED (OR NONE-USED).

PRESS "ENTER"

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

54 “Super Heat Low Alarm”

Sets the Low Alarm Temperature set point for the super heat. The super heat is calculated from the actual suction temperature minus the saturation suction temperature calculated using the suction pressure.

The super heat alarm is checked 45 minutes after the compressor starts and if in alarm after this delay, a further 120 second delay is performed before the alarm is activated.

This 45 minute delay is to allow for the increase of suction pressure while the compressor is off, which in turn will lower the super heat because of the actual suction temperature remains low because of the sensor location within the suction line is in a cold sink.

The 120 second delay is provided to cater for false triggering.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 54 TO SELECT Super Heat Low Alarm

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR -10.0 to +10.0 oC.

PRESS “ENTER”

SELECTION COMPLETE.

55 “Comp Stages Inverted”

For inverting compressor stages. If set to NO, all stages (1 to 4 will energize to load. If set to YES all stages (1 to 4) will energize to unload, if the compressor is off all stages will not be energized.

PRESS “SET FUNCTIONS”

ENTER PASSWORD IF REQUIRED

▲ ▼ OR ENTER FUNCTION No. 55 TO SELECT Comp Stages Inverted

PRESS ▲ ▼ FOR YES or NO

PRESS “ENTER”

SELECTION COMPLETE.

56 “Oil Sump Temp Set Pt”

Sets the Sump Oil temperature set point. This output is only turned on when the compressor is stopped. The differential is set at 2.0 oC. If the set point is set at +40.0 oC the sump heater output will turn on at 42.0 oC and off at 40.0 oC. If the oil temperature sensor is in over range or set to not connected the heater output will turn on whenever the compressor is stopped.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 56 TO SELECT Oil Sump Temp Set Pt

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

PRESS ▲ ▼ OR USE NUMBER KEY PADS FOR 0.0 to +100.0 oC.

PRESS “ENTER”

SELECTION COMPLETE.

KEYBOARD FUNCTIONS CONT.

57 “Type of Temp Sensor”

Sets the type of temperature sensor that is used. If AD590 is selected only that type can be used on all channels and up to 8 inputs are available. If PT100 is selected, only that type (Platinum sensors with a resistance value at 0.0 oC of 100 OHMS) can be used on all channels and only 7 sensor inputs are available and can only be of the 2 wire type.

PRESS “SET FUNCTIONS”

▲ ▼ OR ENTER FUNCTION No. 57 TO SELECT Type of Temp Sensor

PRESS “ENTER”

ENTER PASSWORD IF REQUIRED

PRESS “ENTER”

PRESS ▲ ▼ FOR PT100 OR AD590

PRESS “ENTER”

SELECTION COMPLETE.

REPLACING THE BACKUP BATTERY.

The unit has a battery which maintains the real time clock, all set points, data logged and alarms logged when the main power is lost.

If the battery falls below a predetermined level the display will flash "Replace Battery" on the bottom line when the real time clock is displayed while the power is connected and turned on.

To replace the battery, first save all set points to the engineers default values using set point number 49 "Save Eng's Defaults". This saves all set points to non volatile ram.

Turn the power off and disconnect the 240v AC power from the unit. Unplug all connectors from the unit.

Undo the 4 screws on the back cover and remove the back cover from the unit.

Using pointed pliers on the battery, twist anti clockwise and pull to the right and up and pull the battery out. Do not try to pull the battery straight out.

Place a new battery into the slot the same way as extraction using fingers only, put the battery in at an angle from the top until it snaps in, making sure the positive side of the battery is next to the plastic back of the battery holder and the negative side is towards the silver connector.

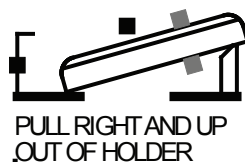
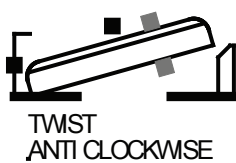
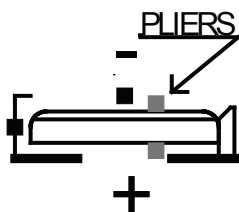
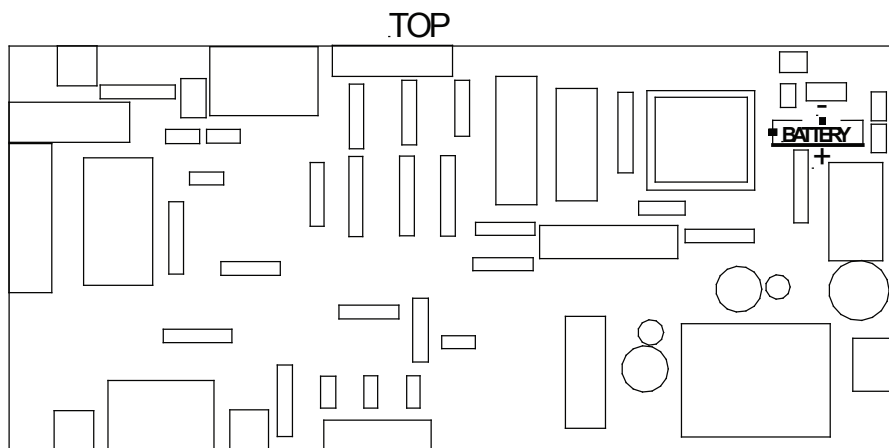
The battery to use must be a lithium type of 3 volts with a diameter of 20mm. Type CR2016, CR2025 or CR2032.

Replace the back cover and the fixing screws and all the plugs back into the unit making sure the plugs are replaced in the same sockets from where they came.

Turn the power on to the unit. The display will indicate that the engineers default values have been placed in memory. Wait 10 seconds and then press the "Clear" key.

Set the real time clock to the correct time and date.

See the next page for a diagram of where the battery is.

BACKUP BATTERY POSITION.

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.

Press and release the reset switch on the right hand side of the unit, at the same time press and hold number one (1) key (on front panel, top left) and press and hold Cal switch on right side of the unit (top button, above reset switch).

While reset switch on right hand side (bottom one) is pressed and released, both other switches must be held on until the display lights up.

All set points will be loaded with the first set of default values and the "ENGINEERS DEFAULT VALUES" (set point number 49) will be loaded with the same values.

The temperature calibration values will not be changed. The temperature calibration values can be reset to 0 using set point number 40 "Reset Calib'n Values". This should not be required unless the temperature calibration values were lost. If they were lost, re calibration of the temperature sensors will have to be done or if the temperature calibration values were saved (written down manually using set points numbers 41 and 42) they can be re entered using set point numbers 41 and 42.

The 4-20ma offsets will not be changed. If the 4-20ma offset values were lost. Use set point number 36 "Do 4-20ma Offset" to re do the offsets.

When the display lights up, release the number one key and cal button and press the clear key and the unit will reset and start up with the first set of default values.

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

After user set points have been set, do the "Save Engineers Defaults" set point number 49 to update current set points into non volatile ROM in for reset set points using the CRC check sum check and limp home mode if required at a latter stage.

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

A CRC check is done on all set points each minute and if the set points become corrupt for any reason the "Engineers Default Values" (saved using set point number 49) will be loaded into all set points for the compressor to use these set points, so it is advisable to have the Engineers Default Values (set point number 49) always updated with the most recent set points.

If the CRC check is not correct and the Engineers Default Values have been loaded into the set points to use, The Display will indicate this with the following message:

"The Engineer Default"
"Values Have been put"
"into all set points "
"Press Clear to Cont "

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

VERSION NUMBER.

THIS IS DISPLAYED WHEN "TEST DISPLAYS" (FUNCTION NUMBER 78 IS USED). THE LCD WILL DISPLAY "TWITE INSTRUMENT" ON THE 2ND LINE AND THE MODEL NUMBER AND VERSION NUMBER ON THE 3RD LINE.

DEFAULT VALUES.

The default values for all 9 types of compressors are the same as shown below.

Defaults Set Number 1.

Function Number		Function Default Value		
1	"Compressor Set Point"	150	KPA	
2	"Compressor Diff'tial"	20	KPA	
3	"Compressor Slow Load"	60	Seconds	
4	"Compressor Fast Load"	10	Seconds	
5	"Fast Load Suction Pr"	250	KPA	
6	"Compre'r Unload Time"	30	Seconds	
7	"Pump Down Set Point"	100	KPA	
8	"Start - Start Time"	15	Minutes	
9	"Set Factory Defaults"	Default Values Selected		
10	"Allow Other Settings"	NO		
11	"High Alarm Temp're"	50.0	Suction	oC
		149.0	Discharge	oC
		70.0	Oil	oC
		50.0	Intermediate	oC
12	"Warn Temp From High"	5.0	Suction	oC
		10.0	Discharge	oC
		5.0	Oil	oC
		5.0	Intermediate	oC
13	"Low Alarm Temp're"	-49.0	Suction	oC
		0.0	Discharge	oC
		5.0	Oil	oC
		-35.0	Intermediate	oC
14	"Warn Temp above Low"	10.0	Suction	oC
		0	Discharge	oC
		0	Oil	oC
		5.0	Intermediate	oC
15	"Hi Temp Alarm Delay"	0	Suction	Sec
		0	Discharge	Sec
		0	Oil	Sec
		0	Intermediate	Sec
16	"Low Temp Alarm Delay"	0	Suction	Sec
		0	Discharge	Sec
		0	Oil	Sec
		0	Intermediate	Sec

DEFAULT VALUES.

Function Number	Function	Default Value
17	"High Alarm Press KPA"	2000 Suction KPA
		1720 Discharge KPA
		2000 Oil KPA
		1000 Intermediate KPA
18	"Warn Press From High"	100 Suction KPA
		100 Discharge KPA
		100 Oil KPA
		100 Intermediate KPA
19	"Low Alarm Press KPA"	30 Suction KPA
		0 Discharge KPA
		150 Oil KPA
		40 Intermediate KPA
20	"Warn Press above Low"	10 Suction KPA
		0 Discharge KPA
		10 Oil KPA
		10 Intermediate KPA
21	"Hi Press Alarm Delay"	0 Suction Sec
		0 Discharge Sec
		0 Oil Sec
		0 Intermediate Sec
22	"Lo Press Alarm Delay"	0 Suction Sec
		0 Discharge Sec
		0 Oil Sec
		0 Intermediate Sec
23	"Compressor Number"	1
24	"Set Data Logging"	1 Every 1 Minute
25	"Key Select Delay"	10
26	"Set Time & Date"	Current Time and Date
27	"Temp's Connected"	YES Suction
		YES Discharge
		YES Oil
		NO Intermediate
28	"Press's Connected"	YES Suction
		YES Discharge
		YES Oil
		NO Intermediate

DEFAULT VALUES.

Function Number	Function	Default Value
29	"Digital IN Connected"	YES Remote RUN
	YES Remote OFF	
	NO Motor Auxiliary	
	NO Water Jacket	
	YES Emergency Button	
30	"RS485/232 Connection"	Single Stand Alone
31	"Password YES/NO"	NO
32	"Change Password"	888
33	"Set RS485/232 Baud"	9600
34	"LED Brightness"	15
35	"Pressure Input Span"	-100 to 2400 Suction KPA
		-100 to 2400 Discharge KPA
		-100 to 2400 Oil KPA
		-100 to 2400 Intermediate KPA
36	"Do 4-20ma Offset"	Calibration Values.
37	"Reset Compr'r Hours"	Resets Comp Hours Run to 0
38	"Current Trans'r Type"	N-CON (200/5 type only)
39	"High Current Alarm"	150
40	"Reset Calib'n Offset"	0.00 for all values
41	"Cal Hi Values Check"	Calibration Values.
42	"Cal Lo Values Check"	Calibration Values.
43	"Calibrate Tmp Sensor"	Calibration Values.
44	"Ram Memory Check"	Check Function Only
45	"Test Display/Rst Log"	Testing and Reset Log
46	"Number of Resets"	Test Number of Resets
47	"Reset Password"	888
48	"Compressor Type"	3 Load 1 Stage
49	"Save Eng'rs Defaults"	Saves Current Settings
50	"Oil Return Interval"	15 Minutes for 5 Minutes
51	"4 - 2-ma Output Type"	Stages Only.
52	"No.Hard Wired Stages"	0 (not used yet)
53	"Refrigerant Used"	Not Used
54	"Super Heat Alarm"	0.0 oC.
55	"Comp Stages Inverted"	NO
56	"Oil Sump Temp Set Pt"	40.0 oC

SPECIFICATIONS A-32-R

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

TEMPERATURE INPUTS

<i>(ANALOG)</i>	:-	AD590 temperature sensor.
MAX TEMPERATURE INPUTS	:-	4
4-20ma INPUTS SUPPLY	:-	11V DC
MAX 4-20ma INPUTS	:-	4
4-20ma RANGE	:-	-200 KPA/PPM to +3000 KPA/PPM
DIGITAL INPUTS	:-	5
LCD DISPLAY	:-	4 line x 20 character super twist.
LED DISPLAY	:-	7 digit 13 mm high red.
LED BAR DISPLAY	:-	8 2mm x 5mm.
		1 = Green
		2 = Red.
		3 = Yellow.
		4 = Red.
		5 = Red.
		6 = Yellow.
		7 = Yellow.
		8 = Red.

KEYBOARD SETTING	:-	0-9, -, ., ▲, ▼, set functions, display, clear, enter..
KEYBOARD CONTROL	:-	Stop, Run, Load, Unload, Test.
RESOLUTION <i>(temperature)</i>	:-	0.1 oC.
REPEATABILITY <i>(temperature)</i>	:-	0.2 oC.
RANGE	:-	-50.0 - +150.0 Degrees C
ACCURACY AD590 oC	:-	+/-0.5% -30.0 - +130.0
ALL MEMORY BACKUP	:-	1 year minimum.
ALARM SET POINT RANGE <i>(HIGH & LOW)</i>	:-	-50.0 oC to +150.0 oC.
ALARMS SET POINT RESOLUTION	:-	0.1 oC.
ALARM DELAY SET RANGE <i>(HI & LO)</i>	:-	0 - 120 seconds. <i>(1 on each channel).</i>
ALARMS DELAY SET RESOLUTION	:-	1 second.
ALARM <i>(INTERNAL)</i>	:-	pulsed visual and audio.
ALARM OUTPUT	:-	dry relay output, rated 24 V d.c. 1 A.

SPECIFICATIONS A-32 CON'T

ALARM INPUT (DIGITAL ACTIVATE)	:-	short to signal common for instant audible alarm.
DATA LOGGING TIME BETWEEN	:-	1, 5, 10, 30, 60, 120 minutes or none.
DATA LOGGING MAXIMUM	:-	1330 logs.
PASSWORD	:-	0000-5999 (<i>may be active or not active</i>).
Compressor No.	:-	set between 1 and 27 inclusive.
RS 232 PORT (FULL DUPLEX)	:-	9 pin male connector, maximum distance allowed, 6 meters.
RS 485 PORT (FULL DUPLEX)	:-	4 x, terminals inside case. Maximum distance allowed, 500 meters
BAUD RATE	:-	110, 300, 1200, 2400, 4800, 9600.
STOP BITS	:-	1. (<i>fixed</i>),
PARITY	:-	none (<i>fixed</i>).
COMPUTER COMMUNICATIONS	:-	Most functions are available via computer & RS232.
CONTROL SERIAL (TO A-32R-4)	:-	2 wire. maximum distance 500 metres. (<i>coax twisted pair</i>).
CONTROL OUTPUTS	:-	8 Rating, 240v AC 5AMP total over the 8 Outputs voltage free.
POWER SUPPLY	:-	240 V a.c. +/- 10%, 50Hz.
PROTECTION	:-	IP65 DUST PROTECTION
SIZE	:-	360mm x 166mm x 67mm.

SPECIFICATIONS TEMPERATURE SENSORS :-

AD590	:-	Current Sensor. maximum distance from unit allowed, 500 meters total of cable, twisted 2 wire shielded.
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SPECIFICATIONS PRESSURE TRANSDUCERS :-

POWER SUPPLY	:-	11v DC 4-20ma Output. Maximum distance from unit allowed, 500 meters total of cable, twisted 2 wire shielded.
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SPECIFICATIONS A-32R-1,4 :-

REMOTE CONTROL MODULES

POWER SUPPLY OF ALL	:-	240 V a.c. +/- 10%, 50Hz.
A-32R-1	:-	one common, 4 (<i>STAGE 1,2,3 & 4</i>) control NORMALLY OPEN outputs. (LIQ, FAN, DEF, SUC) Rating, 240v AC 5AMP total over the 4 Outputs Size, (H)95mm x (W)84mm x (D)60mm DIN Rail Mounting.
A-32R-4	:-	1 x 4 common, 4 x 4 (<i>STAGE 1,2,3 & 4</i>) control NORMALLY OPEN outputs. (LIQ, FAN, DEF, SUC) Rating, 240v AC 5AMP total over each of the 4 Outputs Size, (H)95mm x (W)184mm x (D)60mm DIN Rail Mounting.

