

CHAPTER 3**VIDEO DISPLAY AND KEYBOARD**

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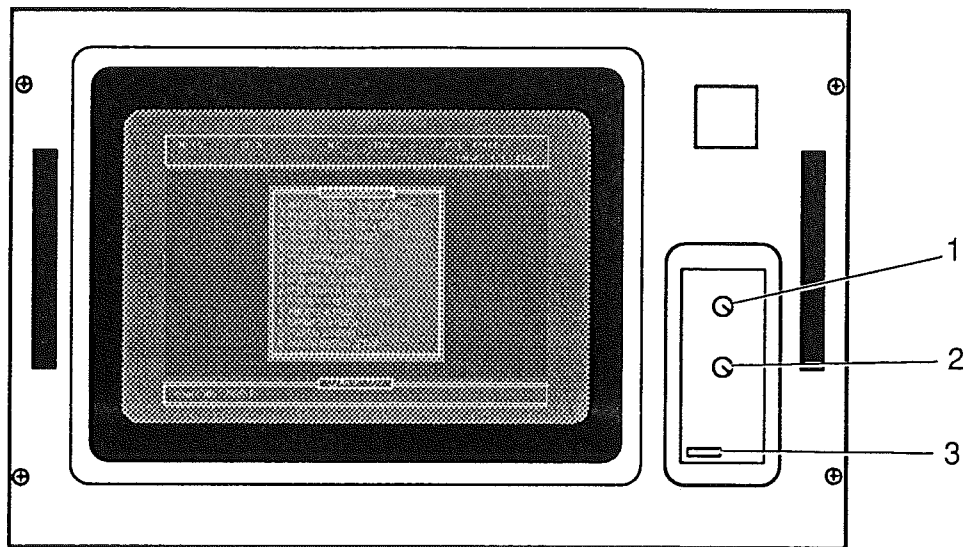


Figure 3.1 - Video Display Unit

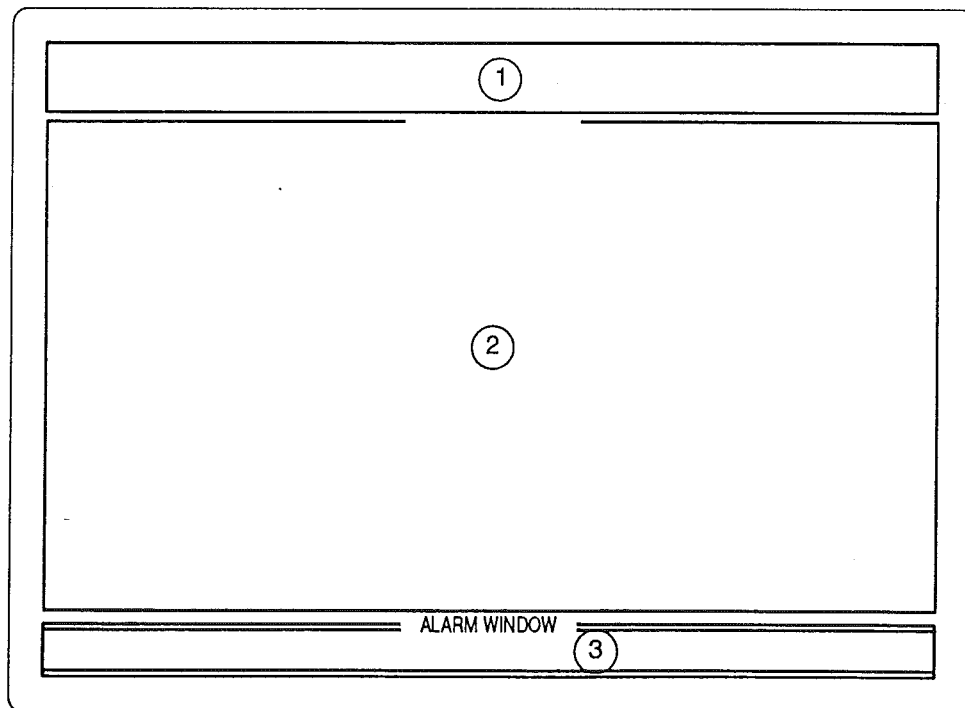


Figure 3.2 - Screen 'Windows'

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1 GENERAL

The video display unit is a Cathode Ray Tube (CRT) used to display messages on the performance of the Gas Turbine/Generator Unit.

The messages are grouped in 'Pages' and the required information display group can be called up using the CONFIGURATION KEYBOARD. Alarm and Timer limits can be reset from this keyboard as can the 'duty' status of duplicated systems.

The following information on the operator information displayed and the control facilities available to the operator are identical with those at the remote terminal.

NOTE: Although the software programs for the Turbine Control Cabinet and the Remote Terminal can be considered identical certain features may not be available at both terminals. Where applicable these differences are noted in the text.

2 VIDEO DISPLAY UNIT

The brightness and contrast of the colour display should be set to suit the environmental conditions. The display must be easily read; while at the same time the difference between the various colour and highlighted modes should be discernible without any reservation. The BRIGHTNESS (1) and CONTRAST (2) Controls for the Video Display Unit are on located behind a small panel to the right of the video screen. Also available behind this panel is a push-button ON/OFF POWER SWITCH (3) for the display. This power switch should normally be set to the 'ON' position as the power to the computer unit will be controlled from switches within the cabinet.

2.1 WINDOWS DISPLAY

The information presented on the display is divided into three areas that are known as 'Windows'.

2.1.1 Speed and Temperature Window (1)

This upper part of the screen is a two line display that contains the current operating speed of the Gas Generator [N1] and Power Turbine [N2] Speeds in revolutions per minute. (The Gas Generator speed [N1] shown has to be multiplied by a factor of 10 to give the true figure). The temperature value identified as PTIT is the average value for the Power Turbine Inlet Temperature.

NOTE: These values are also shown by the meters on the front face of the Turbine Control Panel above the Video Display Unit. This information on the display is primarily intended for the Operator's reference when running the unit from the Remote Terminal.

The second line in this window contains the current time reference in the sequence of Day - Month - Date - Hour:Minute:Second - Year.

If a computer operating system error message is generated it will be displayed in this area. An example of an error message would be that the datalogger printer is not functioning where attempting to activate the history print-out from the local Turbine Control Panel.

The border around this window will change colour to red to highlight the message. To acknowledge and cancel the message it is required to depress the Spacebar on the Configuration Keyboard. To revert the window border to the original green colour it is necessary to depress the 'F1' Function Key on the Configuration Keyboard.

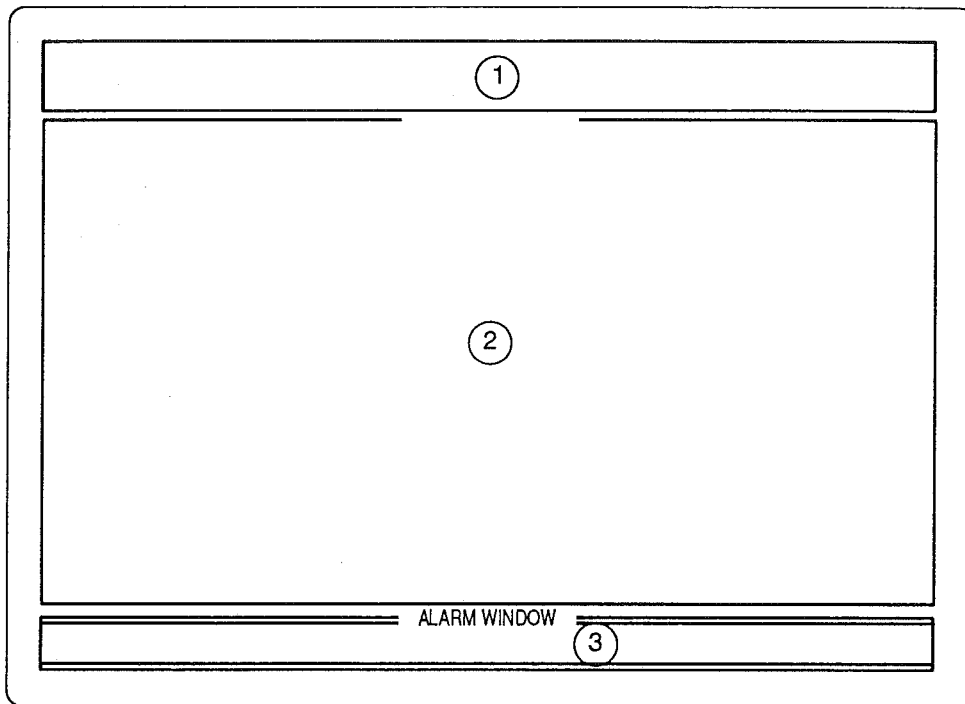


Figure 3.2 - Screen 'Windows'

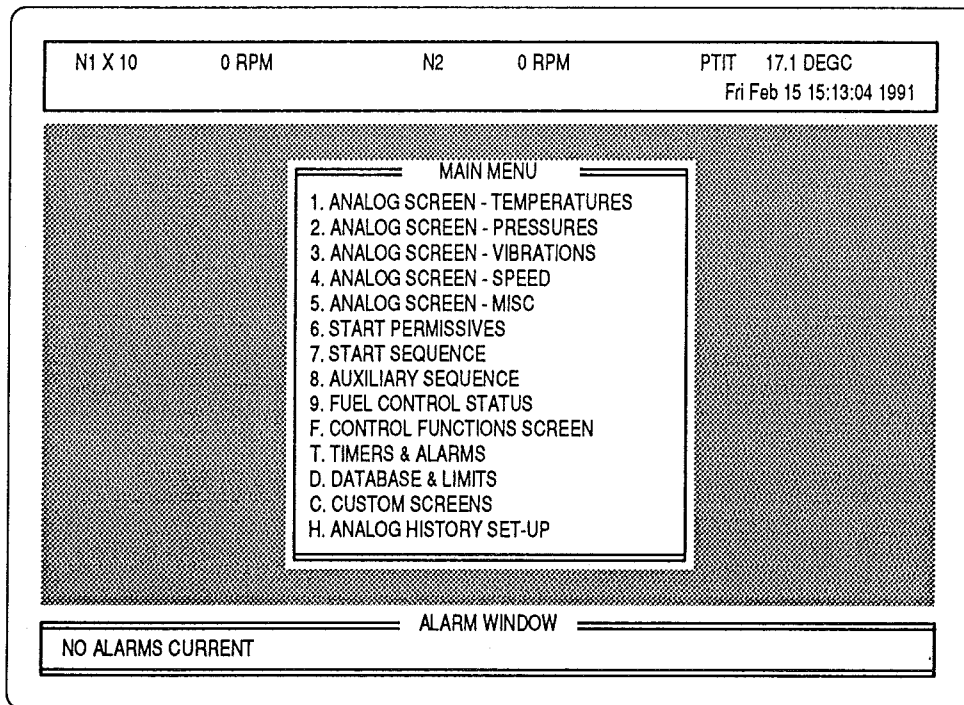


Figure 3.3 - Main Menu Screen

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2.1.2 Menu and Page Window (2)

This central window area displays the analogue, discreet and alarm screen pages as selected by the Operator.

The screen can display the alarm, timer and other setpoints. These setpoints can only be modified from the local Turbine Control Panel modifications are inhibited from the Remote Terminal.

NOTE: The Operator may only change the parameters for the Data Logger from the Remote Terminal. All parameter limits accessible for change from the local Turbine Control Panel are protected by an security access code to prevent unauthorized changes.

This area of the screen provides a seventeen line display area within the border of the window. The pages may contain many more than the seventeen able to be displayed at the one time. The other lines may be scrolled through or accessed one screen 'page' at a time by Operator's commands from the Configuration Keyboard.

The initial page of the display is the MAIN MENU that lists the descriptions of the screen pages available.

2.1.3 Alarm Window (3)

This one line display window shows the last alarm generated with the indication of which 'Alarm Page' the item can be found.

An identification tag 'AL' indicates that the alarm generated is passive and is for the attention of the Operator to instigate an action; whereas the identification tag 'SD' indicates a shut-down alarm has been generated and an automatic shut-down of the unit initiated.

2.2 MAIN MENU

The first screen displayed in the middle window, at the time of initial power-up, is the 'MAIN MENU'. This menu enables the Operator to select the screen displays requires under the general groupings of:

- » Analogue Where specific values are given for each of the monitored operating conditions.
- » Discreet (Permissive, Sequence and Status) Where a 'Yes' or 'No' indication flag is given for the selection and/or operation of a system of function.
- » Control Function The Operator may select and instigate the operating functions for the turbine generator unit.
- » Timers and Alarms This grouping is in two parts. The first enables the operator to view the activation and timing-out of the various timer presets. The second part is the listing on screen of the most recent generated alarms.
- » Database and Limits This grouping is in three parts; each part is only available at the local Turbine Control Panel to permit the Operator to change the various analogue, computed and timer set-points.
- » Custom Screens The Operator can group together those items most commonly referred to on custom made screens.

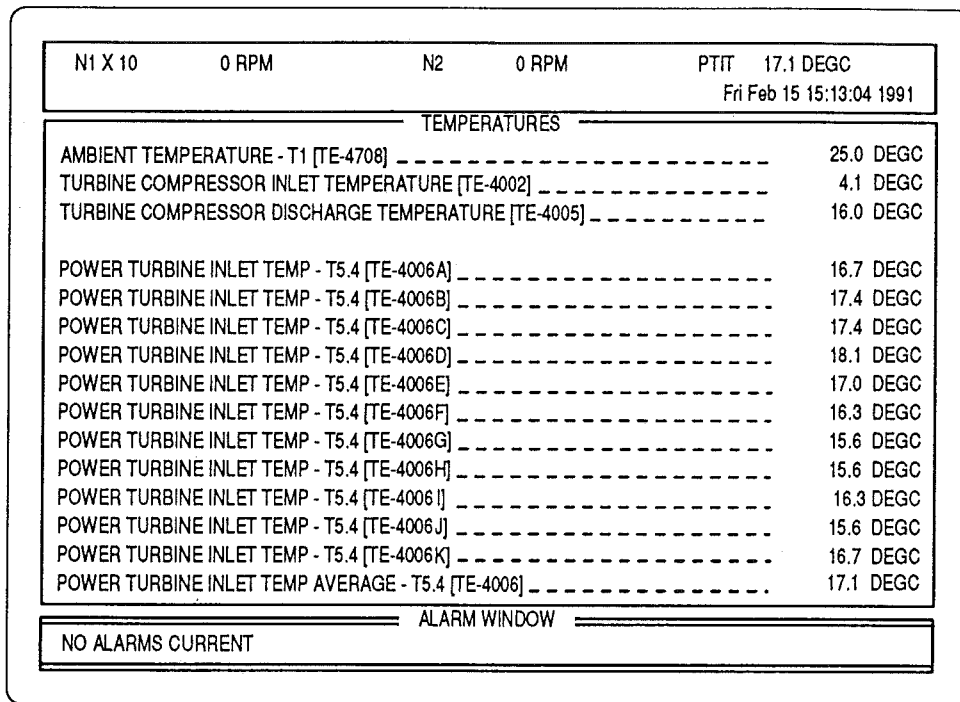


Figure 3.4 - Typical Analogue Screen

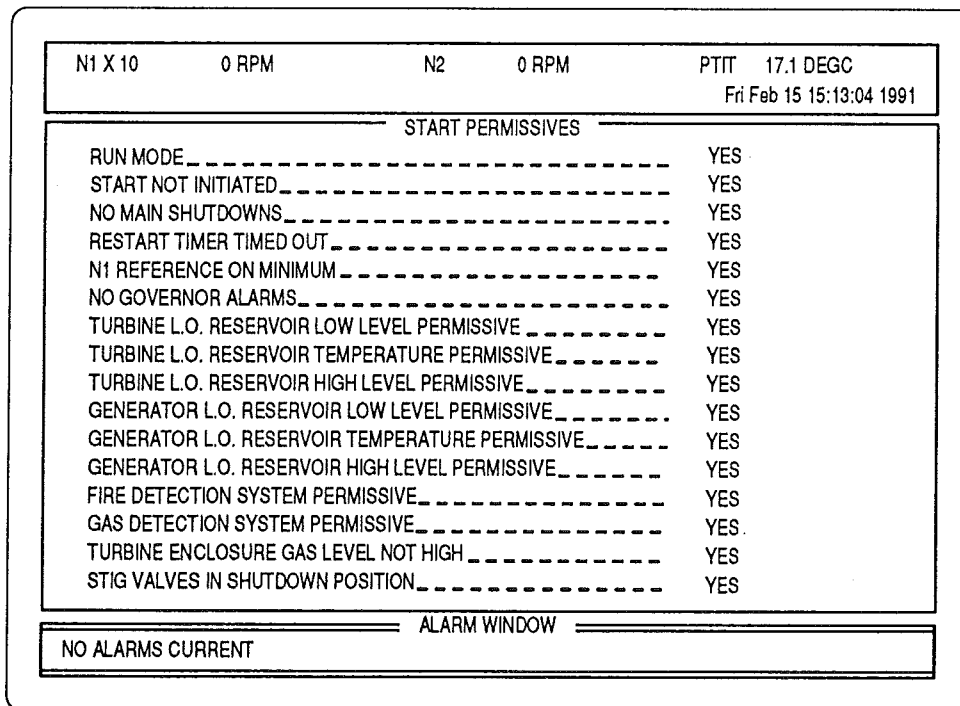


Figure 3.5 - Typical Discreet Screen

- » Analogue History Set-up This function enables the Operator to set the intervals for the data logger print-outs and the time of commencement. As this function requires a local printer, at the time of installation, it can only be activated from the Remote Terminal.

The Configuration Keyboard is used by the Operator to select the main menu item desired and call up that screen page (or sub-menu screen). This is achieved by moving the selection bar with the 'UP' and/or 'DOWN' ARROW Key(s) and the depressing the 'ENTER' Key when the desired item is selected. Alternatively the Key representing the alpha-numeric reference to the left of the desired item can be depressed to activate that selection.

2.3 ANALOGUE SCREENS

This series of screens displays the current analogue variables within the categories of:

- » Temperatures This screen provides a listing of all monitored temperatures for the gas turbine gases; generator; lubrication systems; steam systems and water wash.
- » Pressures This screen provides a listing of all monitored pressures for the lubricating oil; gaseous fuel; turbine air inlet; air inlet filter differential and steam injection.
- » Vibrations A listing of the monitored vibrations for the turbine Gas Generator and Power Turbine, and the Generator Drive and Non-drive End Bearings.
- » Speeds This screen lists the monitored speeds for the Gas Turbine Gas Generator and Power Turbine Rotors.

In addition the setpoints for the Generator Electrical Power Output and the Turbine Steam Injection are listed.

- » Miscellaneous This screen lists those items that do not fall within the previous headings and includes electrical values; fuel and steam flow; thermal power content in exhaust; etc.

The screen colour (and mode) of the analogue value displayed will vary according to the status of that value. For example:

GREEN Value within normal range parameters

YELLOW Value has exceeded parameter and is in alarm state

RED Value has exceeded parameter and is in shut-down state

WHITE A signal failure has been detected and the displayed value will flash

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

2.4 DISCREET (PERMISSIVE, SEQUENCE AND STATUS) DISPLAYS

This series of screens details the operational condition of all functions with a YES/NO flag against the description of the function to indicate current status. These are also known as discrete messages.

Three types of screen are included within this grouping:

- » Permissives This screen lists those discreet values that have to be affirmative prior to permission for the commencement of the start sequence.

N1 X 10	0 RPM	N2	0 RPM	PTIT	17.1 DEGC
Fri Feb 15 15:13:04 1991					
START SEQUENCE					
TURBINE ENCLOSURE VENT FAN START _ _ _ _ _				NO	
HYDRAULIC OIL PUMP 'A' SELECTED AS MAIN _ _ _ _ _				YES	
HYDRAULIC OIL PUMP 'A' START _ _ _ _ _				NO	
HYDRAULIC OIL PUMP 'B' SELECTED AS MAIN _ _ _ _ _				NO	
HYDRAULIC OIL PUMP 'B' START _ _ _ _ _				NO	
GENERATOR L.O. PUMP 'A' SELECTED AS MAIN _ _ _ _ _				YES	
GENERATOR L.O. PUMP 'A' START _ _ _ _ _				NO	
GENERATOR L.O. PUMP 'B' SELECTED AS MAIN _ _ _ _ _				NO	
GENERATOR L.O. PUMP 'B' START _ _ _ _ _				NO	
GAS FUEL PURGE SEQUENCE ENABLED _ _ _ _ _				NO	
GAS FUEL PURGE SEQUENCE COMPLETE _ _ _ _ _				NO	
GAS FUEL LEAK TEST ENABLED _ _ _ _ _				NO	
GAS FUEL LEAK TEST COMPLETE _ _ _ _ _				NO	
GG SEQUENCE PERMISSIVE _ _ _ _ _				NO	
ALARM WINDOW					
NO ALARMS CURRENT					

Figure 3.6 - Typical Discreet Sequence Screen

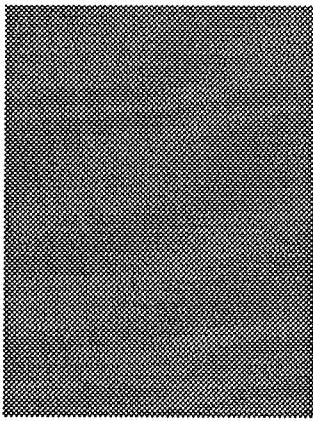
N1 X 10	0 RPM	N2	0 RPM	PTIT	17.1 DEGC
Fri Feb 15 15:13:04 1991					
CONTROL FUNCTIONS					
> POWER FACTOR RAISE POWER FACTOR LOWER POWER FACTOR CONTROLLER ENABLE POWER FACTOR CONTROLLER DISABLE NOZZLE STEAM SYSTEM ENABLE NOZZLE STEAM SYSTEM DISABLE NOX CONTROLLER ENABLE NOX CONTROLLER DISABLE RAISE NOZZLE STEAM RATIO LOWER NOZZLE STEAM RATIO OFF LINE WATER WASH SYSTEM ENABLE OFF LINE WATER WASH SYSTEM DISABLE ON LINE WATER WASH SYSTEM ENABLE ON LINE WATER WASH SYSTEM DISABLE TURBINE INLET HEATER ENABLE TURBINE INLET HEATER DISABLE					
				SP 0.5 KV PV -3.4 MVAR	
ALARM WINDOW					
NO ALARMS CURRENT					

Figure 3.7 - Typical Function Screen

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All the items listed have to be flagged with a 'YES' indication before a start sequence can be commenced from the CONTROL FUNCTION screen.

- » Sequences These screens list the 'milestones' in the start and auxiliary sequences. The Operator can observe the progress of the Start; Steam Injection and Water Wash sequences.
- » Control This screen lists the fuel control discreet flags.

The normal colour (green) of the flag indication will change to indicate that that signal is false. That is:

GREEN Represents a true message

RED Represents a false message

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

2.5 CONTROL FUNCTION SCREEN

This screen provides the Operator with the control of all normal functions.

In comparison with the other screens that use a highlight bar to indicate the item selected, on this screen, it is indicated by an '>' indicator to the left of the item. The indicator is moved with the UP and/or DOWN ARROW Key on the Configuration Keyboard to alongside the function required and then the ENTER Key on the Configuration Keyboard is depressed to instigate that item.

By moving the selection '>' alongside one of those items, that when selected allow the Operator to make adjustments to operating conditions, a secondary window displays the set point (SP) and present value (PV) for that item. The items that will display a secondary window are:

- » N2 (Power Turbine) SPEED RAISE
- » N2 (Power Turbine) SPEED LOWER
- » POWER FACTOR RAISE
- » POWER FACTOR LOWER
- » RAISE NOZZLE STEAM RATIO
- » LOWER NOZZLE STEAM RATIO

When one of the above items are selected by the cursor it is then activated by depressing the ENTER Key on the Configuration Keyboard. The Screen will then change to show the listing of limits for that function. The limit to be changed is selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The setpoint to be changed is then selected with the ENTER Key from the Configuration Keyboard.

The new value can be entered from the Configuration Keyboard and the ENTER Key depressed to activate the change.

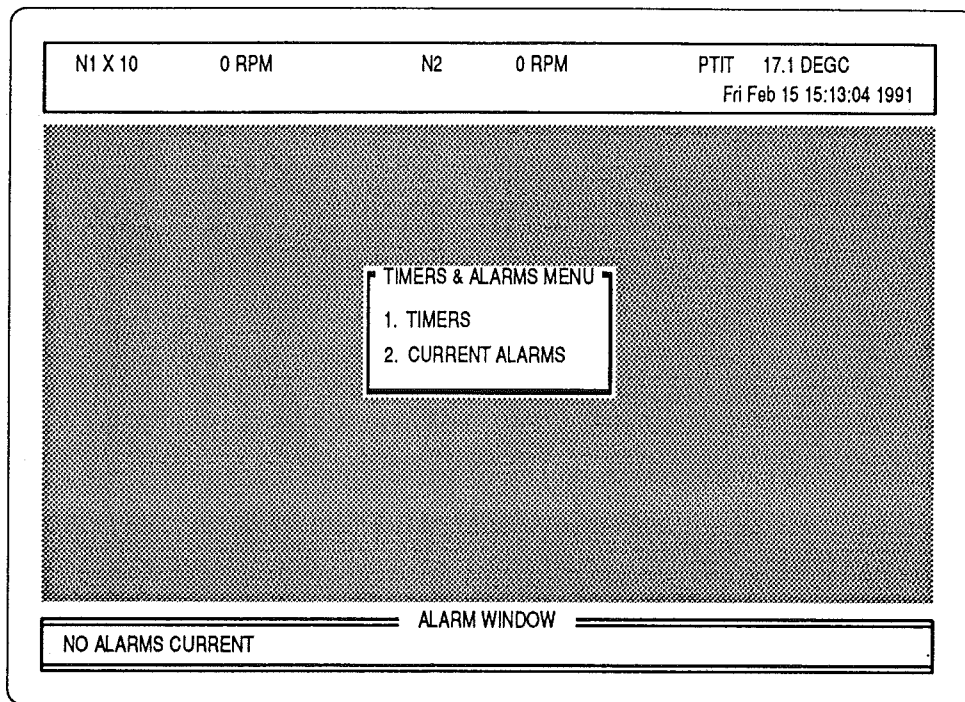


Figure 3.8 - Timers & Alarms Sub-menu

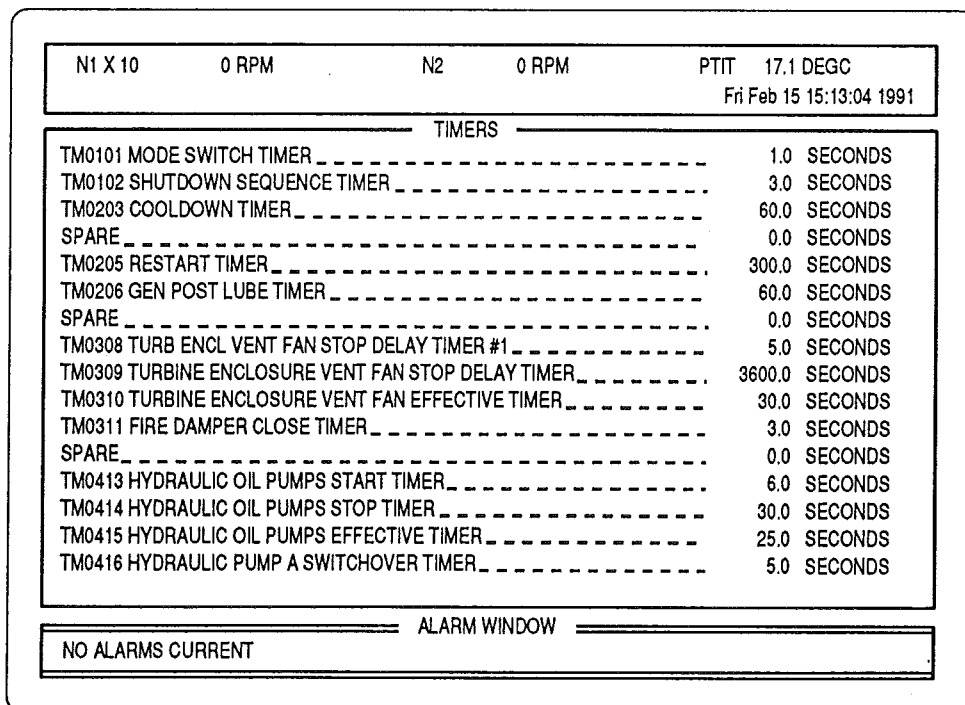


Figure 3.9 - Typical Timers Screen

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The normal colour of the displayed function will change to indicate that that function is currently active.

The reference colours are:

WHITE That function is inactive or reset

YELLOW That function is active

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

2.6 TIMERS AND ALARM SCREENS

Selecting this 'TIMERS & ALARMS' item on the Main Menu Screen will call up a sub-menu screen containing two items:

1. TIMERS

2. CURRENT ALARMS

The Configuration Keyboard is used by the Operator to select the main menu item desired and call up that screen page (or sub-menu screen). This is achieved by moving the selection bar with the 'UP' and/or 'DOWN' ARROW Key(s) and the depressing the 'ENTER' Key when the desired item is selected.

Alternatively the Key representing the numeric reference to the left of the desired item can be depressed to activate that selection.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

The required screen is selected from the menu to access the following.

2.6.1 Timer Pages

Accessing the TIMER page will display a list of the timers in the system. The system can support up to 16 Timers per screen display.

Timers that are active the elapsed time indication will count up from zero to that timer's parameter.

The colour indication of the timer value will indicate the current condition as follows:

GREEN Reset (Non-active)

YELLOW Timing (active)

WHITE Timed-out

Any timers set to a very short duration, may go directly to a timed out (elapsed=preset) indication due to the frequency of the screen refreshing.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the TIMERS & ALARMS MENU Screen.

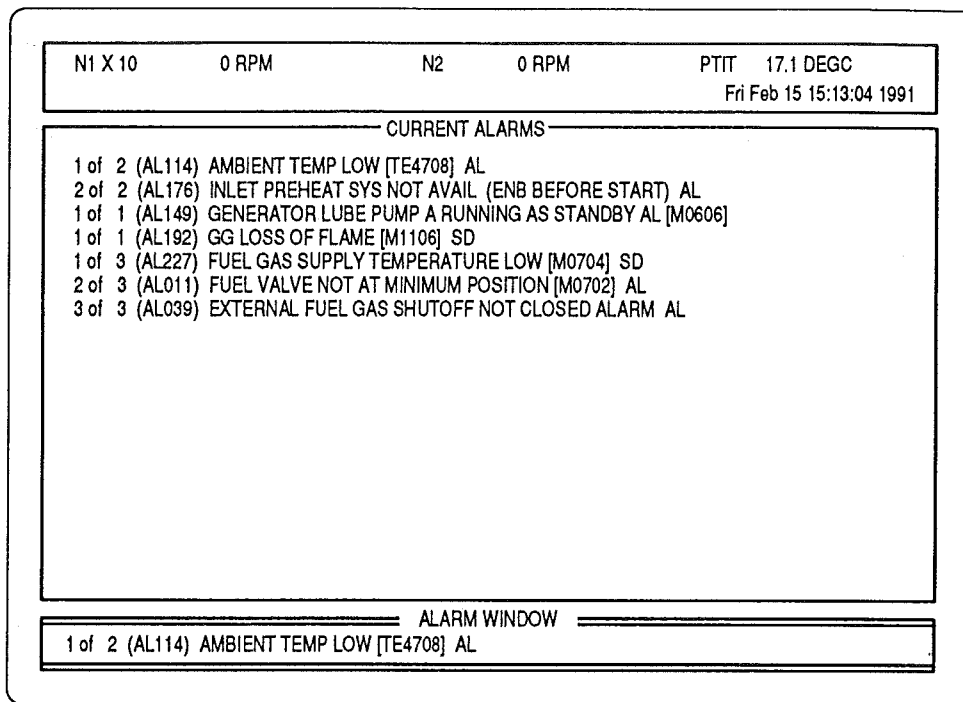


Figure 3.10 - Typical Alarm Screen

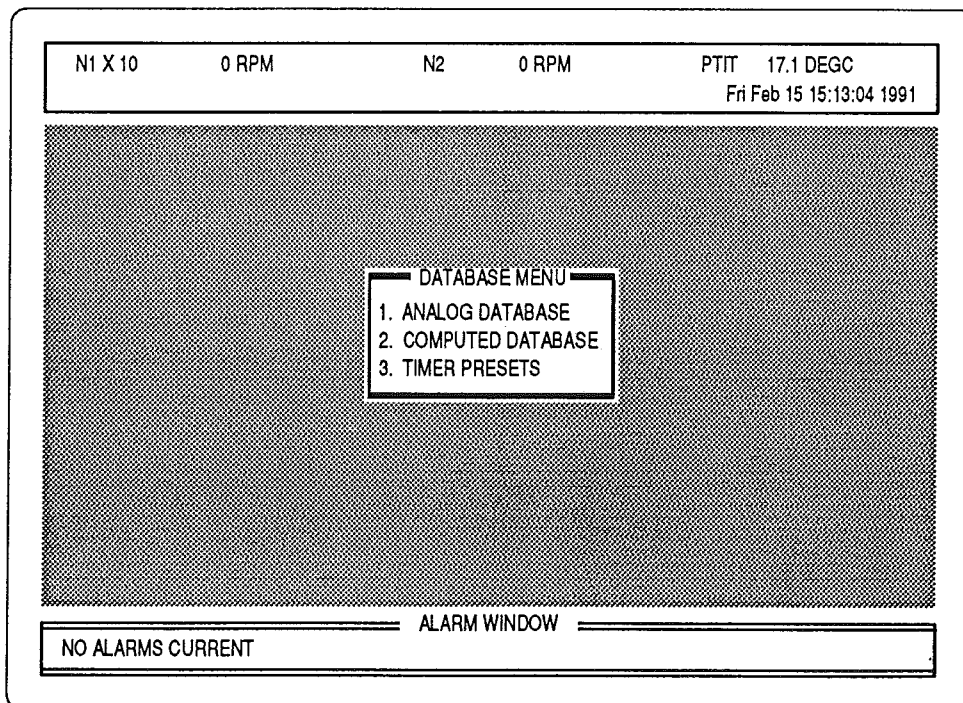


Figure 3.11 - Database Sub-menu Screen

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2.6.2 Alarm Pages

The ALARM PAGES list those alarms that have been tripped or not reset. The respective items are identified with the indication of it being an alarm or a shut-down condition.

Each alarm as it is instigated will be automatically displayed in a single line banner at the bottom of the current screen page or menu. Therefore only the latest alarm will be displayed at the bottom of the screen and where a shut-down has occurred a series of alarms may be generated.

To enable the 'first-out' alarm to be identified it may be necessary to view this ALARM LIST screen to identify the sequence of events by the date and time record of occurrence.

Up to a total of 75 alarms may be listed on this page with the most recent group of alarms at the top of the page. A total of 16 lines can be viewed at one time on the screen display; to page can be 'scrolled' to view prior items.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the TIMERS & ALARMS MENU Screen.

2.7 DATABASE AND LIMITS SCREENS

Selecting this 'DATABASE & LIMITS' item on the Main Menu Screen will call up a sub-menu screen containing three items:

1. ANALOGUE DATABASE
2. COMPUTED DATABASE
3. TIMER PRESETS

NOTE: The resetting of limit values is not permitted from the Remote Terminal. Therefore the procedures discussed here are only viable for the local Turbine Control Panel Operator Interface.

All parameter limits accessible for change from the local Turbine Control Panel are protected by an security access code to prevent unauthorized changes.

The Configuration Keyboard is used by the Operator to select the main menu item desired and call up that screen page (or sub-menu screen). This is achieved by moving the selection bar with the 'UP' and/or 'DOWN' ARROW Key(s) and the depressing the 'ENTER' Key when the desired item is selected.

Alternatively the Key representing the numeric reference to the left of the desired item can be depressed to activate that selection.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

The required screen is selected from the menu to access the following.

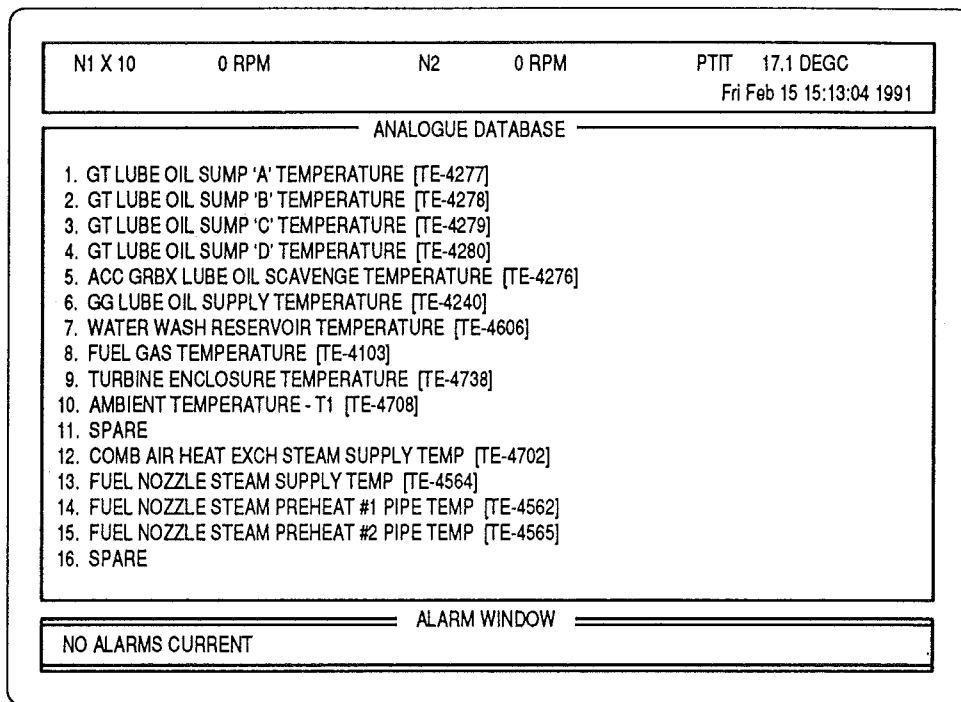


Figure 3.12 - Typical Analogue Limits Screen

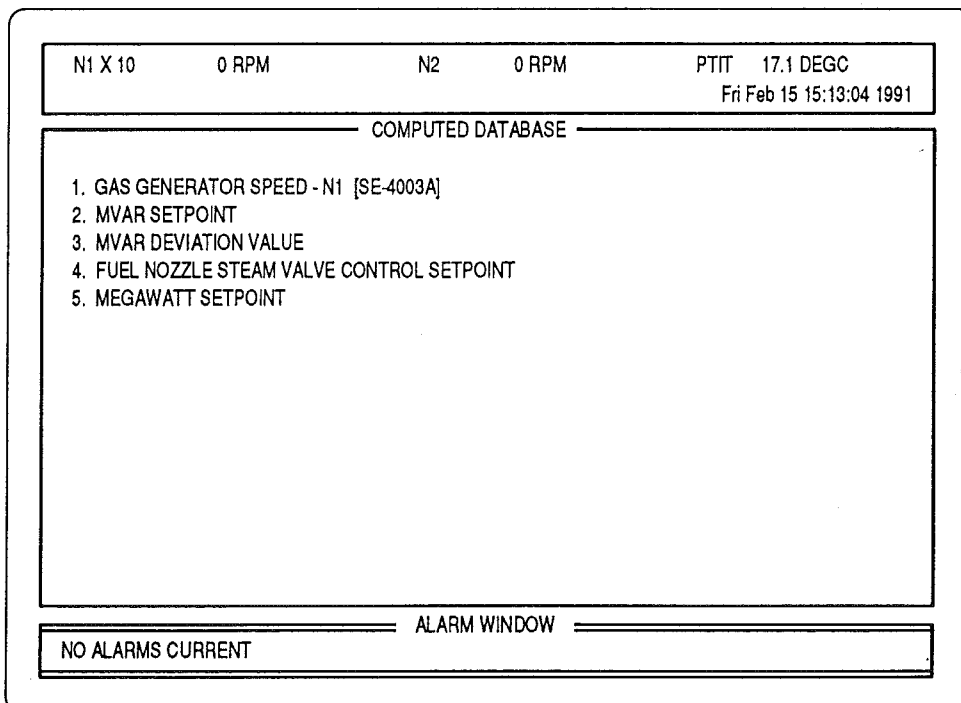


Figure 3.13 - Typical Computed Limits Screen

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2.7.1 Analogue Database

The display screen lists those analogue limits within the categories of Temperature; Pressure; Vibration; and Miscellaneous all contain preset values that may be changed, subject to authorization, due to operating experience.

When one of the items are selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The ENTER Key on the Configuration Keyboard is depressed to change the screen to show the listing of limits for that function. The limit to be changed is selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The limit to be changed is then selected with the ENTER Key from the Configuration Keyboard.

NOTES: The system will then request an access code be entered to allow that limit to be changed. Each change of limit will require the entering of the access code. Once the access code has been entered the existing limit should be deleted by depressing the BACKSPACE Key on the Configuration Keyboard the required number of times. The new value can be entered from the Configuration Keyboard and the ENTER Key depressed to activate the change.

Resetting of parameters at the extreme of the recommended range, to overcome alarm registers, is not recommended. Therefore changes to the parameter settings should only be carried out by, or with the authority of, **Dresser-Rand Power**.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the DATABASE & LIMITS MENU Screen.

2.7.2 Computed Database

The display screen lists those computed limits within the categories of Turbine Gas Generator Speed; MVAR Setpoint; Fuel Nozzle Steam Valve Control Setpoint and Megawatt Setpoint all contain preset values that may be changed, subject to authorization, due to operating experience.

When one of the items are selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The ENTER Key on the Configuration Keyboard is depressed to change the screen to show the listing of limits for that function. The limit to be changed is selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The limit to be changed is then selected with the ENTER Key from the Configuration Keyboard.

NOTES: The system will then request an access code be entered to allow that limit to be changed. Each change of limit will require the entering of the access code. Once the access code has been entered the existing limit should be deleted by depressing the BACKSPACE Key on the Configuration Keyboard the required number of times. The new value can be entered from the Configuration Keyboard and the ENTER Key depressed to activate the change.

Resetting of parameters at the extreme of the recommended range, to overcome alarm registers, is not recommended. Therefore changes to the parameter settings should only be carried out by, or with the authority of, **Dresser-Rand Power**.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the DATABASE & LIMITS MENU Screen.

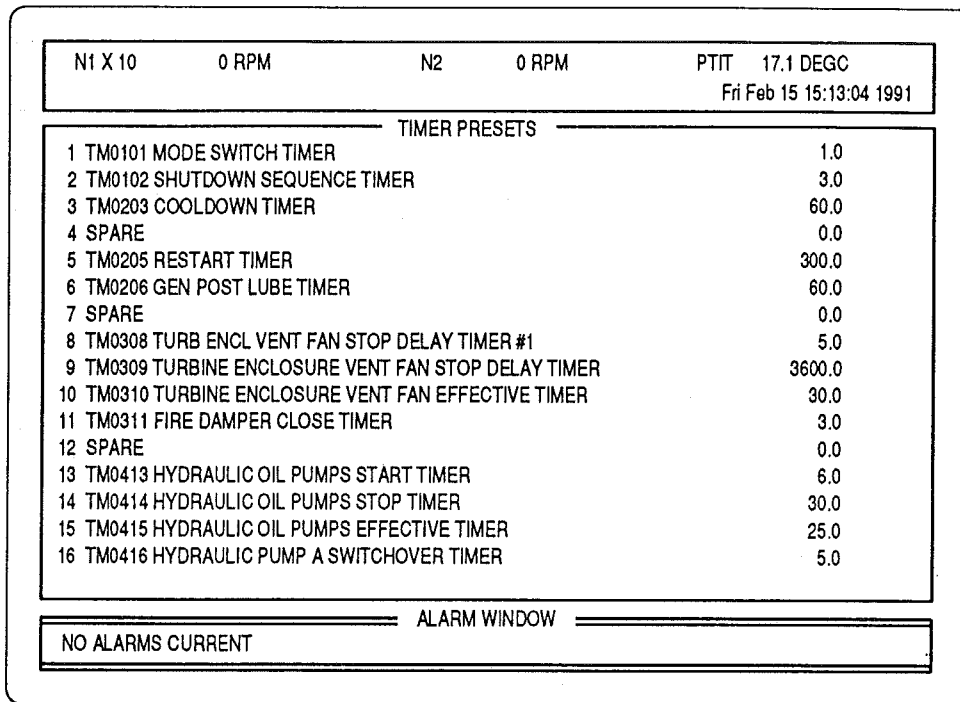


Figure 3.14 - Typical Timer Preset Screen

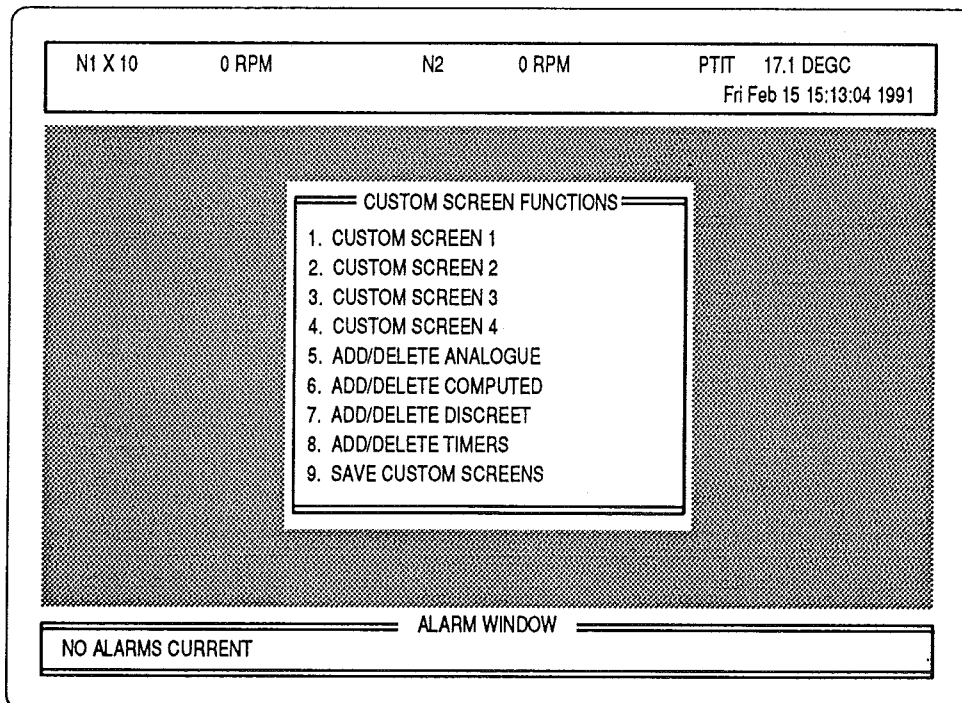


Figure 3.15 - Custom Screen Menu

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2.7.3 Timer Limits

The display screen lists the various sequence timers and their set value that may be changed, subject to authorization, due to operating experience.

When one of the items are selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The ENTER Key on the Configuration Keyboard is depressed to change the screen to show the limit for that timer. The limit is selected with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. Then depress the ENTER Key on the Configuration Keyboard.

NOTE: The system will then request an access code be entered to allow that limit to be changed. Each change of limit will require the entering of the access code.

Once the access code has been entered the existing limit should be deleted by depressing the BACKSPACE Key on the Configuration Keyboard the required number of times. The new value can be entered from the Configuration Keyboard and the ENTER Key depressed to activate the change.

NOTE: Resetting of the timer parameter at the extreme of the recommended range, to overcome alarm registers, is not recommended. Therefore major changes to the timer settings should only be carried out by, or with the authority of, Dresser-Rand Power.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the DATABASE & LIMITS MENU Screen.

2.8 CUSTOM SCREENS

The Operator can group together those analogue and discreet items most commonly referred to on custom made screens. Selecting this item will call the CUSTOM SCREEN FUNCTIONS MENU to the screen. The Operator may select to view the Custom Screens already built or edit Custom Screen(s).

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the MAIN MENU Screen.

The first four entries are to view the Custom Screens 1 through to 4 which are the maximum number of screens that can be built.

The Operator may select to add or delete an Analogue; Computed; Discreet or Timer item to a Custom Screen. When instigating an editing function by selecting the item with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. Then depress the ENTER Key on the Configuration Keyboard. The screen will display the listing of the selected type. Use the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard to highlight the required item.

To add the item to a Custom Screen depress the Number Key (1 - 4) on the Configuration Keyboard to indicates the screen you wish to add that item to. The item will change colour and the screen page number will appear highlighted.

To delete the item from a Custom Screen depress the DELETE Key followed by the Number Key (1 - 4) on the Configuration Keyboard to indicates the screen you wish to delete that item from.

Depressing the 'ESCAPE' Key on the Configuration Keyboard will return the display to the CUSTOM SCREEN FUNCTIONS MENU Screen. Select the 'SAVE CUSTOM SCREENS' entry to save the Custom Screen Changes.

N1 X 10	0 RPM	N2	0 RPM	PTIT	17.1 DEGC
Fri Feb 15 15:13:04 1991					

NUMBER OF DATA SAMPLES	0	
	SHORT TERM HISTORY	LONG TERM HISTORY
DATA SAMPLE INTERVAL	00:00:00	00:00:00
AUTO PRINT ENABLE	N	Y
AUTO PRINT INTERVAL	00:00:00	00:30:00
NEXT PRINT START TIME	00:00:00	12:30:00
DATALOGGER ENABLE	Y	
ALARM PRINT ENABLE	Y	

NO ALARMS CURRENT	ALARM WINDOW
-------------------	--------------

Figure 3.16 - Data Logger Configuration Screen

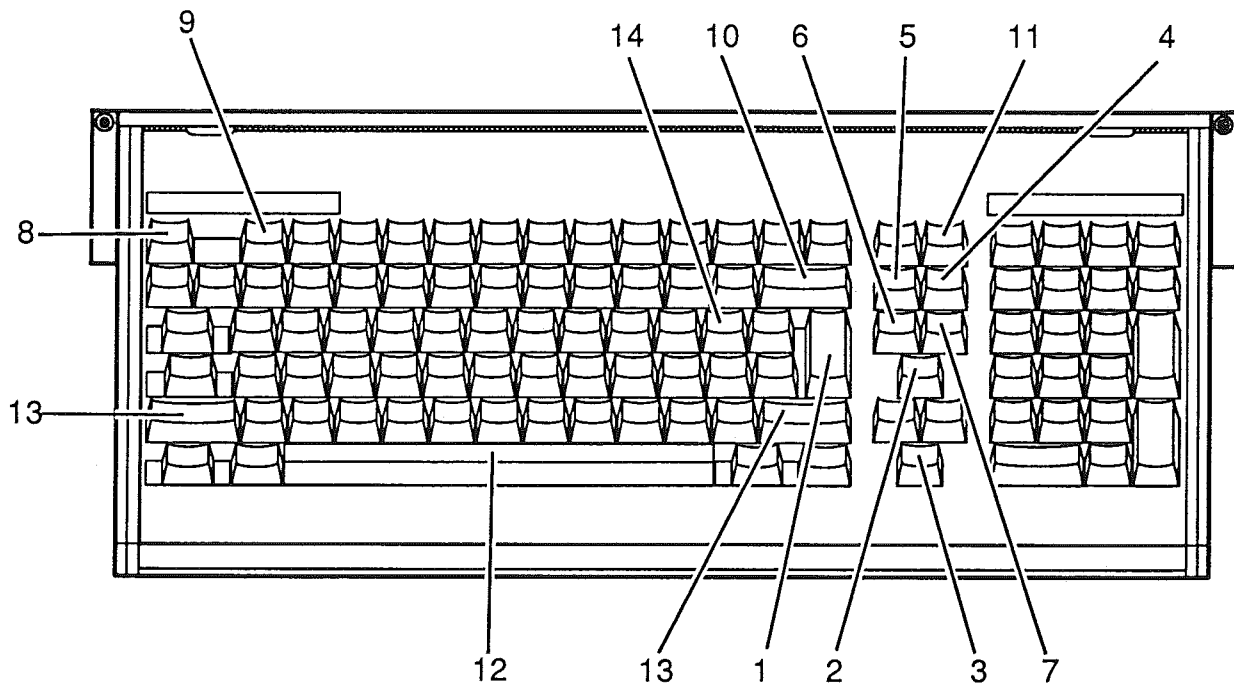


Figure 3.17 - Configuration Keyboard

2.9 ANALOGUE HISTORY SET-UP

This facility enables the Operator to set the real time of commencing the data logging print-out and the intervals for short and long term print-outs.

As this facility requires a local printer, at the time of installation, is only functioning from the Remote Terminal. Any attempt to carry out this procedure from the local Turbine Control Panel will result in an error message in the top screen window that the Printer is not connected/functioning.

On selecting this option the logging screen will be displayed. Select the item required with the cursor bar using the 'UP' and/or 'DOWN' ARROW Keys on the Configuration Keyboard. The new value is entered in the format Hours : Minutes : Seconds.

The Long term history is to provide a regular status print-out over a long time period. The Short Term History is automatically printed at the time of a shut-down and is intended to give a record of conditions at the time of the shut-down. By setting the number of Data Samples and a suitable sample interval the record can be used to show the trend a few minutes prior to the actual shut-down alarm.

The AUTO PRINT ENABLE entry has to be set to 'Y' (Yes) to enable the respective History Print-out to be produced.

NOTE: The Printer and Print Buffer also have to be switched 'On' and be indicating that they are 'On Line' to receive data.

3 CONFIGURATION KEYBOARD

The keyboard for the local Turbine Control Panel is mounted in a pull-out draw that enables it to be stowed when the turbine is being operated in the 'remote' mode.

The keyboards at the local and remote terminals are used to 'call-up' the required information display on the respective video display unit. The keyboards are of a conventional computer terminal key-switch type having alpha-numeric and numeric keypads with additional special function keys. The layout shown opposite is that for the local Turbine Control Panel the Remote Terminal Keyboard is similar in layout.

The alpha-numeric keys are used to select the page to be displayed or for entering new setpoints. Note that numerals are to be entered from those keys along the top row of the alpha-numeric keypad; the numeric keypad to the right of the keyboard cannot be used to enter numerals.

The other keys on the keyboard having prescribed functions are as follows:-

ENTER (1)

This key is used to 'enter' the following:

- » The cursor selected 'Menu' item for the desired display Menu or Page.
- » To activate a selected function
- » To confirm the entry of new values - where permitted

UP ARROW (2)

This cursor control key is used to move the screen cursor, in an upward direction, for the selection of an item. The menu item, parameter or status selected with the screen cursor can then be activated (or modified where this facility exists). When the top line of the screen window is reached will scroll that screen one line at a time to the top of the 'Page'.

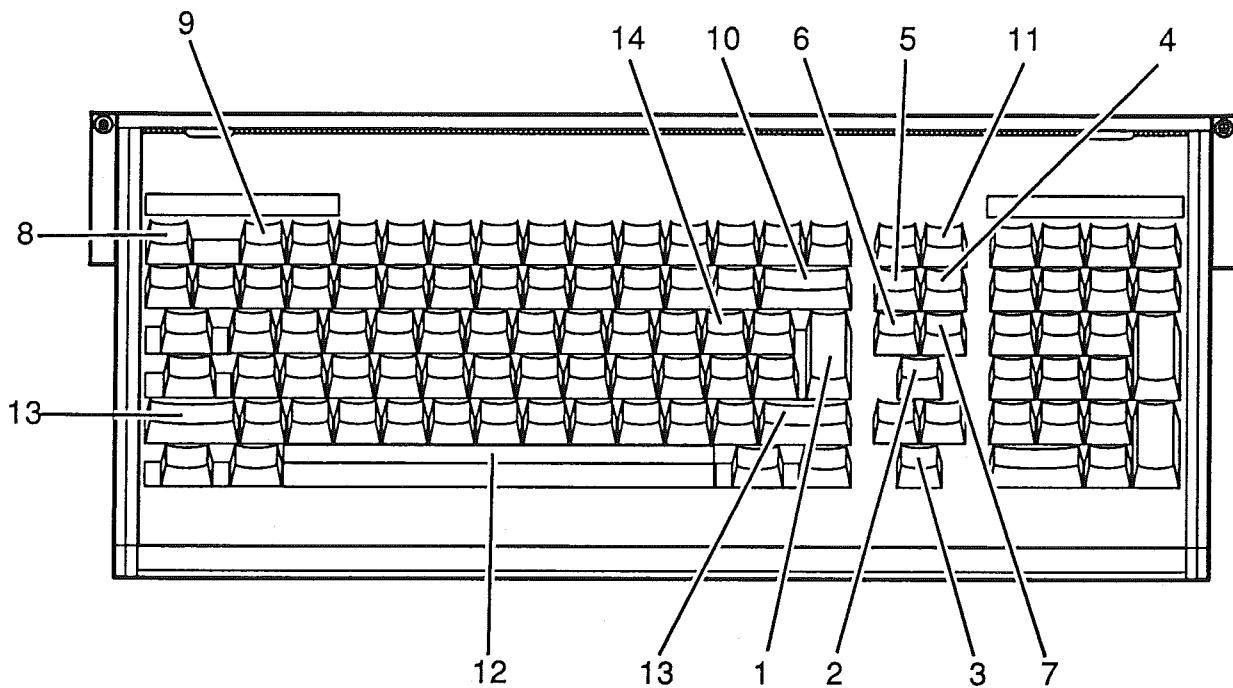


Figure 3.17 - Configuration Keyboard

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DOWN ARROW (3)

This cursor control key is used to move the screen cursor, in an downward direction, for the selection of an item. The menu item, parameter or status selected with the screen cursor can then be activated (or modified where this facility exists).

PAGE DOWN KEY (4)

This key is used at a screen page that is longer than 16 items to go through the page listing downward one screen at a time for each depressing of this key.

PAGE UP KEY (5)

This key is used at a screen page that is longer than 16 items to go through the page listing upward one screen at a time for each depressing of this key.

HOME KEY (6)

This key is used at a screen page that is longer than 16 items to go directly to the top of the page listing.

END KEY (7)

This key is used at a screen page that is longer than 16 items to go directly to the bottom of the page listing.

ESCAPE (Esc) KEY (8)

This key is used to go back to the previous level of screen 'Page' or 'Menu..

F1 FUNCTION KEY (9)

This function key is used to cancel to colour change for the upper window when a computer operating system error message has been displayed and acknowledged by the Spacebar (12)

BACKSPACE KEY (10)

This key is used to delete a limit entry in preparation for keying in the new value.

DELETE KEY (11)

This key is used in conjunction with a numeric key to delete items from the Custom Screens.

SPACEBAR (12)

This key is used to acknowledge and cancel computer operating system error messages that are displayed in the upper window of the screen display.

SHIFT KEY(S) (13)

This duplicated key is used simultaneously with the [Key to exit the Operator Interface Program to the DOS Operating System of the Computer. It is required to enter 'OP' from the screen prompt to return to the Operator Interface Program.

[KEY (14)

This key is used simultaneously with a SHIFT Key to exit the Operator Interface Program to the DOS Operating System of the Computer. It is required to enter 'OP' from the screen prompt to return to the Operator Interface Program.

4 SOFTWARE FACILITIES AND OPERATION

When initially switching on the power to the respective Operator Interface Computer the Video Display Unit will display the MAIN MENU Screen.

NOTE: At the local Turbine Control Panel it is necessary to depress the Computer Reset Button inside the cabinet and below the Video Display Unit when first switching on the unit.

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4.1 STARTING THE PROGRAM

When the screen display, that it is desired to view, is determined from the Menu description either:

Use the UP or DOWN ARROW Key on the Configuration Keyboard to move the highlight bar to the desired item and then depress the ENTER Key.

or

Depress the alpha-numeric Key indicated to the left of the desired item on the Menu. This method of selection only requires a single key-stroke to carry out the operation.

The same method of entry may be used at all Sub-menu Screens.

To return to the previous level of 'Menu' or 'Page' any screen depress the ESCAPE (Esc) Key.

4.2 CHANGING THE STATUS OF A SYSTEM

The status of 'Duty' and 'Standby' systems may be changed at that screen page identified as CONTROL FUNCTIONS.

Select the Control Functions page from the Main Menu. Move the screen cursor '>' using the UP and/or DOWN ARROW Keys on the Configuration Keyboard until it is at a 'Select' entry for the appropriate system. Change to the selected entry by depressing the ENTER Key on the Configuration Keyboard.

Some status indications have a simple ENABLE or DISABLE indication. These will also be found on the CONTROL FUNCTIONS screen page. Examples of which are the TURBINE INLET HEATER and the NOX CONTROLLER.

4.3 STARTING THE TURBINE GENERATOR UNIT

Prior to starting the Turbine Generator Unit all the Start Permissive have to be affirmative. The START PERMISSIVES Screen can be selected from the MAIN MENU and view to ensure that all parameters are flagged with a 'YES' indication. When all conditions are met depress the ESCAPE Key to return to the MAIN MENU and select the CONTROL FUNCTIONS Screen.

Select the START item on the Control Functions Screen with the '>' Cursor and depress the ENTER Key to commence the Start Sequence.

The progress of the Start Sequence can be observed by depressing the ESCAPE Key to return to the MAIN MENU. Select the START SEQUENCE item to call to the screen the Start Sequence Page. As each segment of the sequence becomes active and is completed the indication flag will change to the affirmative ('Yes').

The progress of each stage can also be observed by selecting the TIMERS Screen from the TIMERS & ALARMS Sub-menu.

Each stage of the operation of the unit can be commenced from the CONTROL FUNCTION Screen and the progress observed at the SEQUENCE and/or TIMER Screens.

Current date is Mon 9 - 16 - 1991
Enter new date (mm-dd-yy):

Figure 3.18 - Changing the System Date

Current time is 15:11:06.51
Enter new time:

Figure 3.19 - Changing the System Time

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4.4 CHANGING THE DATE AND TIME

To set or change the system date and/or time it is required to exit the software to the DOS operating system. This is achieved by simultaneously depressing the SHIFT (I) Key and the '[' Key on the Configuration Keyboard. The screen will clear and the prompt C:> will appear in the top left-hand corner.

To change the date:

From the Configuration Keyboard type DATE and then depress the Enter Key. The message will appear 'Current date: YY-MM-DD' where the then current system date is shown.

Enter the required date from the Configuration Keyboard in the same format as displayed. Depress the ENTER Key on the Configuration Keyboard.

To change the time:

From the Configuration Keyboard type TIME and then depress the Enter Key. The message will appear 'Current time: HH-MM-SS' where the then current system time is shown. Enter the required time from the Configuration Keyboard in the same format as displayed. Depress the ENTER Key on the Configuration Keyboard.

NOTE: Depressing the ENTER Key will enter the new value and commence the new time from the point of entry. Therefore for setting the exact time it will be necessary to key in the time a few seconds ahead and delay depressing the ENTER Key until the actual time and that entered coincide.

Once the new date and/or time have been accepted by the system type 'OP' from the Configuration Keyboard. Depress the ENTER Key on the Configuration Keyboard to return to the operating software at the screen that it was exited.

NOTE: Each Computer has its own date and time calendar. Therefore when the clocks are seasonally adjusted it is necessary to carry out this operation at the local Turbine Control Panel and at the Remote Terminal.