ADVANCED CONTROL SYSTEMS LLC

Backup Generator Load Shed System

GenMax

User Access Terminal (UAT)

Operating Guide

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In General

The User Access Terminal is the connection to your GenMax control system. With it you can observe the status of your backup generator and control the circuits during an outage.

The User Access Terminal is a graphical user interface which is a self contained unit and offers among others the following:

- Informs about the ON/OFF status of the circuits
- Visualization of generator current
- Easy forcing of circuits
- History of outages and generator runs & faults
- Configuration settings for setup & installation

Operation of the User Access Terminal

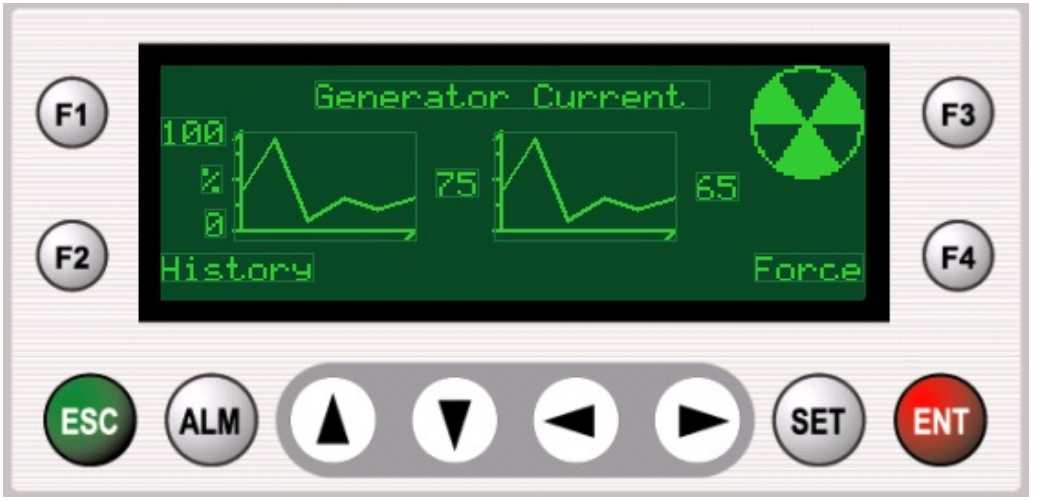


FIGURE 1.1 input keys

With the function keys it is possible to go from one screen to another and to force circuits ON and OFF.

- Function Key F2 – History Review Screen
- Function Key F4 – Force Circuits ON/OFF
- ESC to clear alarms and to access screen navigation
- ▲ ▼ ◀ ▶ to move, scroll and change data values
- SET to adjust settings
- ENT to enter settings

Screen Structure

1. User: The Main window

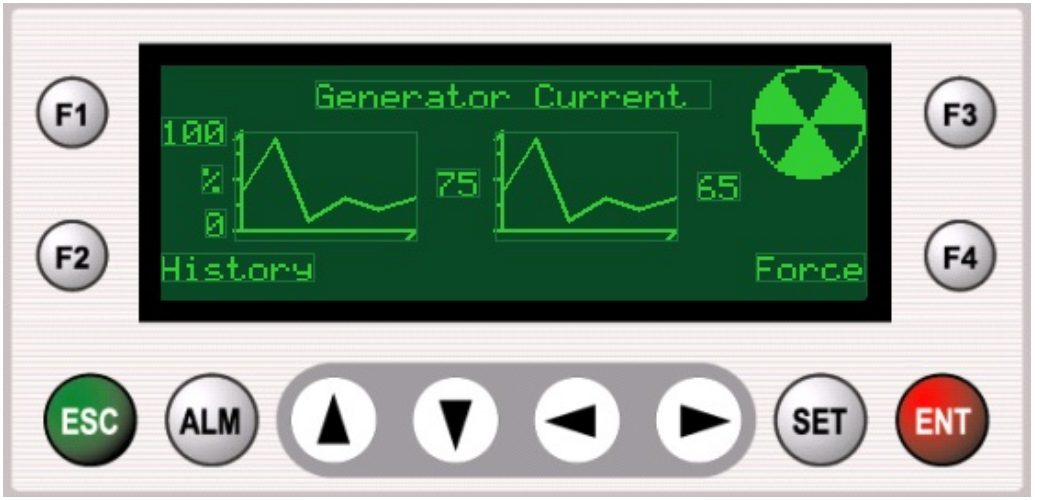


FIGURE 2.1 the main window consists of line trends and numerical displays, a rotation display and navigation function keys.

Line Trend and numerical display fields, for indicating the generator current output are in the center of the main screen. For the LB model two trends show actual current in each phase and the current is the percentage of the maximum generator rated current for the given generator. The actual current is a percentage of 100% (generator rated amps). For the FS model the actual frequency shown is a percentage of 100% (60Hz typical).

Rotation display, for indicating the generator running status is in the upper right-hand side of the main screen. The display will rotate when the generator is running.

An alarm indicator (shown above) & buzzer, for indicating a power outage and transfer to generator power will flash on the screen and sound for 30 seconds or until the ESC or ALM key is pressed.

F2 function key, for navigating to the history review screen is displayed in the bottom left-hand side of the screen.

F4 function key, for navigating to the force select screen is displayed in the bottom right-hand side of the screen.

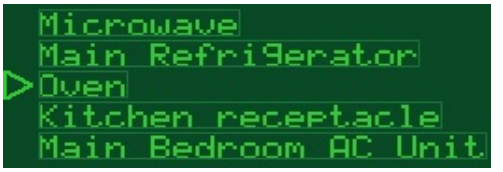
2. User: The Force Select window

FIGURE 3.1 the force select screen consists of an ON/OFF switch object, scrolling, numerical and dynamic text fields and scrolling and navigation function keys.

The force select screen's purpose is to allow the forcing of individual circuits ON and OFF. All of the outputs that are connected to the GenMax controller and have been configured through the GenMax Configuration Software will be able to be forced. Use the "Force" F2 Function key to access the force screen and force the selected output ON or OFF.

Note: the system must be in a generator transfer of power in order to force outputs.

ON/OFF switch object, to indicate the ON/OFF state of the circuit that is being displayed in the selected field indicated by the arrow is located in the right-hand side of the screen. The switch will show the ON/OFF state of the circuit respectively.



Scrolling text fields, for indicating the circuits controllable by the GenMax system are in the center of the screen. The center field, indicated by the arrow, is the circuit that is being analyzed. Use the scroll keys to move through all the circuits and look at the ON/OFF switch object to see if it is ON or OFF.

A dynamic text field, to indicate a circuit that is forced ON or OFF is displayed in the top right-hand side of the screen. A "Forced" indicates the circuit is in a forced state of ON or OFF shown by the switch. If the circuit is not "Forced" nothing will show on the screen.

F1 function key, for navigating back to the main screen is displayed in the top left-hand side of the screen.

F2 function key, for navigating to the force screen is displayed in the bottom left-hand side of the screen.

A numerical field, to indicate the configured controller output is in the top center of the screen, ex. 012, is the 12th configured output being shown by the arrow.

Arrow keys, for scrolling through all the circuits controlled by the GenMax system.

3. User: The Force window

FIGURE 4.1 the force circuit screen consists of dynamic text fields and force and navigation function keys.

A dynamic text field, to indicate the circuit that you selected to force ON/OFF is in the center of the screen.

A dynamic text field, to indicate whether the circuit selected is forced ON, OFF or not forced is at the bottom center of the screen. The status of the circuit, ex. "Forced ON", "Forced OFF" or "No Force" will show on the screen.

F4 function key, for forcing the circuits ON and OFF is located at the bottom right-hand side of the screen.

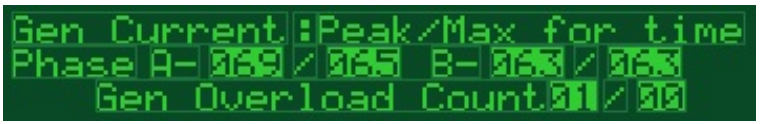
F1 function key, for navigating back to the force review screen is located at the top left-hand side of the screen.

4. User: The Transfer History Review window

FIGURE 5.1 The Transfer History review screen consists of numerical fields and scrolling and navigation keys.

Numerical fields, for indicating the starting and ending date and time of a power outage where power was transferred to the generator are shown in the center of the screen. The year, month, day, hour, minute and seconds are shown (YYYY-MM-DD HH:MM:SS). Additional numerical fields for indicating generator current or frequency values are shown in the bottom center of the screen.

For Load Balance models:



Numerical fields, for indicating the peak value of generator current in each phase and the maximum value maintained for time period is shown, ex. Phase A – 069 /065 represents the peak of 69 amps and 65 amps held for a time period, respectively. The Generator overload count is shown for each phase, ex. 01/00 represents 1 and 0 occurrences of maximum overload conditions in phase A/B respectively were experienced during the generator transfer outage.

For Frequency Sense models:

Numerical fields, for indicating the lowest value of frequency and the low value maintained for a time period is shown, ex. 049/056 represents the lowest of 49 hertz and low of 56 hertz held for a time period, respectively. The Generator overload count is shown, ex. 02/02 represents 2 occurrences of generator overload condition had been experienced during the generator transfer outage.

A numerical field, to indicate the number of the recorded history data is in the top left-hand side of the screen. Up to 51 generator transfers are recorded by the system.

Arrow keys, for scrolling through all the recorded generator transfer histories are at the bottom of the screen.

F2 function key, for navigating to the Run History review screen is displayed in the bottom left-hand side of the screen.

F3 function key, for navigating back to the main screen is displayed in the top right-hand side of the screen.

F4 function key, for navigating to the Fault History review screen is displayed in the bottom right-hand side of the screen.

5. User: The Run History Review window

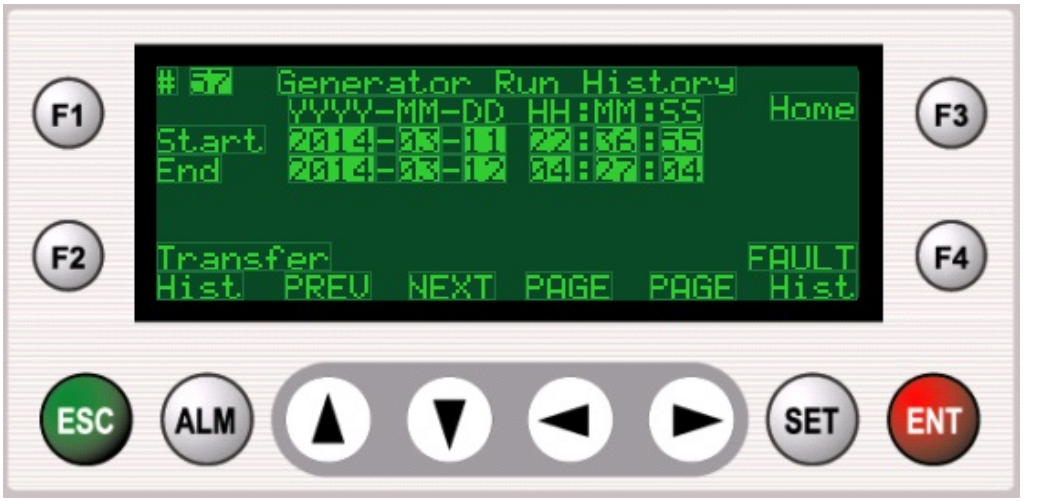


FIGURE 6.1 The Run History review screen consists of numerical fields and scrolling and navigation keys.

Numerical fields, for indicating the starting and ending date and time of generator running are shown in the center of the screen. The year, month, day, hour, minute and seconds are shown (YYYY-MM-DD HH:MM:SS).

A numerical field, to indicate the number of the recorded history data is in the top left-hand side of the screen. Up to 200 generator run histories are recorded by the system.

Arrow keys, for scrolling through all the recorded histories are at the bottom of the screen.

F2 function key, for navigating to the Transfer History review screen is displayed in the bottom left-hand side of the screen.

F3 function key, for navigating back to the main screen is displayed in the top right-hand side of the screen.

F4 function key, for navigating to the Fault History review screen is displayed in the bottom right-hand side of the screen.

6. User: The Fault History Review window

FIGURE 7.1 The Fault History review screen consists of numerical fields and scrolling and navigation keys.

Numerical fields, for indicating the starting and ending date and time of generator faults are shown in the center of the screen. The year, month, day, hour, minute and seconds are shown (YYYY-MM-DD HH:MM:SS).

A numerical field, to indicate the number of the recorded history data is in the top left-hand side of the screen. Up to 30 generator fault histories are recorded by the system.

Arrow keys, for scrolling through all the recorded histories are at the bottom of the screen.

F2 function key, for navigating to the Run History review screen is displayed in the bottom left-hand side of the screen.

F3 function key, for navigating back to the main screen is displayed in the top right-hand side of the screen.

F4 function key, for navigating to the Transfer History review screen is displayed in the bottom right-hand side of the screen.

7. Alarm: Generator Faulted window

FIGURE 8.1 The Generator Faulted screen consists of text fields and a function key.

Text fields, for indicating that the GenMax controller has detected a fault condition are in the center of the screen. The UAT will activate the buzzer until the ESC or ALM key is pressed. To clear the fault screen the generator must be reset and have its fault cleared and/or the generator must be run, depending on the fault that occurred. After resetting the generator and/or running it press the F3-funtion key (Clear) to clear the fault screen. Every 24 hours until the fault is cleared the buzzer will repeat the alarm.

An alarm indicator (shown above) & buzzer, for indicating a generator fault or failure to exercise has occurred will flash on the screen and the buzzer will sound until the ESC or ALM key is pressed.

F3 function key, for clearing the screen and navigating back to the main screen is displayed in the top right-hand side of the screen. Note: to clear the fault screen the generator must first be reset and have its fault cleared and/or the generator must be run, depending on the fault.

8. Alarm: Maximum Current Exceeded window

FIGURE 9.1 The Maximum Current Exceeded screen consists of text fields.

Text fields, for indicating that the GenMax controller has detected an over-current situation and has automatically shed all controllable loads to avoid generator shutdown are in the center of the screen. The generator maximum threshold (default 90% of current for Load Balance setup and 84% of minimum frequency for Frequency setup) must be exceeded for a configurable amount of time in order for the alarm to activate. The maximum current threshold and minimum frequency threshold are adjustable by means of the Constant Adjust Screen.

An alarm indicator (shown above) & buzzer, for indicating the maximum threshold has been exceeded will flash on the screen and the buzzer will sound until the ESC or ALM key is pressed.

9. Alarm: Conditions Stable window

FIGURE 10.1 The Conditions Stable screen consists of text fields.

Text fields, for indicating that the GenMax controller has detected stable current situation with the generator are in the center of the screen. The GenMax controller automatically restores loads after it determines the generator power is below its lower threshold.

10. Alarm: Communications Error window

FIGURE 11.1 The Communications Error screen consists of text and numeric fields and a function key.

Text fields, for indicating that the GenMax controller has detected a communications error are in the center of the screen.

A numerical field, to indicate the number of the remote group module that is not responding is in the center of the screen. Call for service if this error screen is shown.

F1 function key, for navigating back to the main screen is displayed in the top left-hand side of the screen.

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