

ISIS USERS MANUAL

I.S.I.S. 550B



INDUSTRIES, I.S.I.S. DIVISION

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ISIS General Information

RGM Industries Inc. I.S.I.S. Division is proud to present the result of years of extensive research and development on a new monitoring system designed to collect, manage and display all your shipboard information. All the **ISIS** systems are unique in their use of advanced FIBER OPTIC technology for data transmission.

DATA INTERCONNECT UNIT (DIU)

The DIU is the terminal strip where the individual sensors and transducers, up to 16 per DIU, are physically connected. The DIU is connected to the DAU using a supplied 3' cable. Longer cables can also be ordered. This modular design allows for a variety of mounting alternatives and ease of component repair.

DATA ACQUISITION UNIT (DAU)

The DAU is an integrated device housed in a rugged aluminum enclosure that contains the patented circuitry to convert digital and analog sensor inputs from the DIU for Fiber Optic transmission to the DPU.

DATA PROCESSING UNIT (DPU)

The DPU is the heart of the system. The DPU receives and processes the information supplied by the Data Acquisition Unit (DAU). This sensor information is then transmitted to the DDU (Data Display Unit) via a shielded cable. This component design allows the DPU to be remotely located and uses the latest processor technology to give you more processing speed and reliability.

DATA DISPLAY UNIT (DDU)

The DDU is a high resolution color monitor (1024 x 768) which displays the information in a variety of user defined screens. This information is controlled and accessed by entering commands through the **switch pad/mouse Control Panel**. The Control Panel may be installed in any location that allows the operator to view the information on the DDU.

Units.

ISIS OPERATING PROCEDURE

Turning on the I.S.I.S.

- Turn on the DAU circuit breaker, 12 or 24vdc circuit.
- Turn on the monitor power via the monitor switch or by the breaker controlling the monitor circuits
- Turn on 120VAC that is connected to the ups, then turn on power supply (connected to DPU.) .The power supply's three led's red, yellow, and green will light up, indicating proper power levels, within one minute, the WELCOME (Splash screen picture of your vessel) will appear, followed by the main **PRIORITY SCREEN 1**. Please refer to sample **PRIORITY SCREEN 1**,(figure 1-1) attached.
- **DAU** test status is at the **Info/Config** (Information/Configuration) screen. The status boxes, that are adjacent to the DAU data display, are green when the DAU is transmitting data and red if the DAU is not transmitting data. Any change in the DAU status will automatically be displayed on this screen.
-

SWITCH PAD OPERATION

The switch pad has four buttons, **UP**, **DOWN**, **SELECT** and **EXIT** that are used to navigate through the column of ISIS Menus on the right side of priority screen 1.

The **UP** and **DOWN** buttons move you up and down through the menu buttons. As you move through the menu choices they will become **highlighted**. This makes it easy for you to see where you are in the menu. The **SELECT** button will select the menu option on which you are positioned and the **EXIT** button will exit the displayed screen and return you to the previous screen. Alternatively using the **MOUSE PAD**. you can drag the mouse arrow to select the menu you want to view and left clicking or pressing **SELECT** button to change display.

In the **HISTORICAL** menu option only the mouse pad will be used. The selection usage will be intuitive.

If the annunciator is sounding due to an Alarm, pressing any button on the Switch Pad will silence it. Some ISIS systems may have several remote Switch Pads at different locations throughout the vessel.

ALARM CONDITION

If the red (PORT) or green (STBD) or any other bars ever go above or below the related alarm levels, an alarm message will be shown and the audible alarm will sound. Pressing the **SELECT** button on the Switch Pad or using the mouse pad and selecting "silence alarm", will silence the alarm and return the screen to its previous display. It is important to note that you do not have to be viewing a screen for an alarm to be reported. **Any alarm** on any part of the system will be shown and logged in the **logged alarm** box at the bottom of the priority screen 1. If an alarm occurs on any monitored item, the bar graph or annunciator for that item will change color from red or green to yellow. This allows a quick visual review of past alarms by looking at all the status screens.

If a bar has changed color to yellow, due to an alarm, that item will not set any more alarms until the alarm display is cleared. This prevents an alarm from occurring over and over. Please refer to(FIGURE 1-1) the sample priority screen 1. Any monitored function that is anomalous, will produce an “**ALARM CONDITION**” displayed at the bottom left of the **Main Menu** screen, showing what caused the alarm and the value that triggered it. A sample display is shown below indicating 3 alarms.

ALARM CONDITION

11/20/1999 09:45 PORT Eng Start Batt. 20 volts
10/18/1999 10:17 Stbd Eng Start. 20 volts
08/26/1999 23:05 Aux Freezer Temp 41 degrees F

Select **SILENCE ALARM**, then **CLEAR ALARMS** to acknowledge alarms by mouse or **EXIT** switch and **UP** or **DOWN** arrows on switch pad .

TYPICAL ALARM SCREEN

NOTE: The “**ALARM**” and “**MAINTENANCE DUE**” messages displayed on the screen will only be displayed if there is an alarm that has not been cleared or maintenance is still due

BAR GRAPH SCREENS

General Understandings

The priority 1 screen can display up to 8 bar graphs. The screen shows (Section 2 Page 1) up to 4 items each for PORT and STARBOARD engines. (The Priority 1 screen can only be configured at the factory).Each displayed item has small **yellow arrows** at the top and sometimes the bottom. These arrows represent the **alarm levels** which you can change from the Restricted Access Mode.

MAIN MENU SCREEN

The right side column of categories lets you select groups of ISIS monitoring functions:

The following is a sample of categories

Engine Status of all engine related items in this group, displayed in bar graphs or gages.

Generators Bar graph, gages or digital status of all items in this group.

Fuel Bar graph displays of fuel tanks or related items in this group.

Water Tanks Bar graph displays of Fresh, Gray, Black Water Tanks or related functions.

Batteries Bar graph or meter displays of batteries or related DC power functions.

Electrical . Bar graph , meter or digital displays of AC electrical functions.

Bilge's- Status of bilge pumps, and high water alarms, with locations of all items in this group.

Ship Systems Status of all general items related to this group.

Security- Status of doors and hatches status.

Info/Config Restricted access menu's.

CONFIGURATION AND INFORMATION MENU

Using the switch or mouse pad, selecting **"nfo/config"** Bar opens the **"Information & Setup"** screen. This screen accesses the following- **"Diagnostics"**, **"View Historical Data"** **"View Alarm Log"**, **"View Run Timers"**, **"View Maintenance Due"**. The Restricted Access Items include **"Set/Reset Intrusion Mode"**, **"Setup Entry Alarm"**, **"Setup Priority 2"**, **"Acknowledge Maintenance"**, **"Tank Calibration"**, **"Setup Add/Del Channel"**, **"Setup Bar Graph Range"**, **"Setup Alarm Levels"**, **"Set Time/Date"**, **"Setup Maintenance"**, **"Clear Alarm Log"**, and **"Pass Code Entry Systems"**.

NOTE: These screens can only be navigated by the mouse pad.

"DIAGNOSTICS" will open the **"I.S.I.S. Diagnostics"** screen. This enables **"DAU Data Display"** that indicates the data from each DAU and channel (1-16). This allows verification of sender data values to determine if the sender is good or bad and the calibrated DAU valve.

This screen also provides the ability to test **"SONALERT"** and **"Klaxon"** operation, if used.

"HISTORICAL DATA"(ISIS 550B) The ISIS stores data for all monitored functions on a periodic interval. The data is stored for up to 30,000 run hours on engines and generators, and all other shipboard functions. The engine and generator history will only be stored if the corresponding engine or generator is running, thus they represent run time, not actual clock time. The engines/generators) will be recorded once a minute. All other data will be recorded once every 10 minutes From the **Info/Config. MENU**, select **HISTORICAL DATA**. Select the appropriate category and another menu will appear showing the items available to graph. Select up to 4 of the listed items. The ISIS will then plot the selected items on the screen. Notice that the color is different for each item. Match the colors with the numbers along the side of the graph to see the logged values. The system will plot data left to right with the oldest data on the left. Data will be stored up to a maximum of 87,760 hours.. Please see SAMPLE HISTORICAL DATA SCREEN Section 2 page 4.

The HISTORICAL DATA feature is extremely useful for spotting dangerous trends in monitored functions (engine oil pressure for example)

"VIEW ALARM LOG" will allow you to select logged alarms of specific categories to display. Also, you may display all logged alarms that occurred. Using the mouse and selecting the up or down arrows you will be able to scroll through all monitored functions.

Any channel alarm that shows up on the screen is also recorded in the alarms log. An alarm message will appear in the upper left corner of all screens until all alarms are reset. You can review all alarms by using the **VIEW LOGGED ALARMS** function. Critical running items such as pressures, temperatures, fluid levels and others should be taken care of as soon as possible.

Any reference to **LOCAL ALARMS** in this manual means that the SONALERT buzzer on the ISIS unit is activated. Any reference to **INTRUSION ALARM** means that the external horn will be sounded if connected

Keep an accurate log of all changes you make to alarm bar graph and digital alarm trip levels Please see section 2, page 6.

“VIEW RUN TIMERS” displays run time counter for engines, generators, water maker, ISIS run time or any other programmed function. The Run Timers will only run if the corresponding engine or generator or specific item is running.

“SET TIME/DATE” allows you to set hours, minutes, month , day and year. Using the mouse pad, you can increment or decrement any number by clicking on the up or down arrow. Follow instructions on screen to save values.

NOTE: Time basis is **military time**- 00:00 to 24:59. Please see section 3 page 4.

“VIEW MAINTENANCE DUE” Selecting this menu item will cause the system to scan all maintenance logs, and display the hours when they will be due. These can be used to schedule servicing such as engine overhauls. The **RUN TIME LOGS** can be reset as shown in the **RESET COMMANDS** section of this manual.

“SET PRIORITY SCREEN” Use this screen to pick up to 8 channels which will be displayed on the **PRIORITY 2 SCREEN** .Bring this screen up by entering the pass code to activate **RESTRICTED ACCESS MENU**. Then select **Setup Priority 2** button . This menu allows the operator to select and change items for **PRIORITY SCREEN 2**. Using the mouse, maneuver the pointer (arrow) to the **MONITORED ITEMS LIST** selecting the functions that you wish to appear on the priority screen. The up or down arrow allows scrolling beyond the viewed list. Once the function is identified move the mouse to the **SELECT** button and click the mouse. The selected items will appear in the **PRIORITY SCREEN ITEMS** box. When all items are selected move the pointer to the **CREATE PRIORITY 2** box and click the mouse. This new setup will be stored in memory and will remain even if the ISIS is turned off. Please see section 3, page 2.

“SETUPTIME&DATE” Select this screen to update the Marine Log clock. Use the **UP**, **DOWN**, and **SELECT** buttons to set month, day, year, hours, and minute, which are automatically sequenced when you select each one. The System Setup Menu will return when the date and time have been set.

“SETUP ALARM LEVELS” This menu allows the operator to select and change lower and upper levels of alarm tripping. Using the mouse, maneuver the pointer (arrow) to the monitored item's list to select the function that requires a change of alarm level.

Note: The down or up arrow will allow you to scroll beyond the viewed list. When the function (item) is identified (by moving the pointer to the desired item), move the pointer to the green select box and click mouse. The selected item will appear in a red box located towards the upper right-hand corner of the screen. Now use the mouse pointer to raise or lower the alarm level by clicking on the appropriate arrow. Once the desired level is reached move the pointer to the **“SAVE CHANGE”** box (red) and click to lock in the level. Returning to the Main screen by clicking the “ Return to restricted access menu”. or press the EXIT switch on the switch pad.

INFORMATION REVIEW

Here are a few things to remember while you are operating the ISIS:

“CLEAR ALARMS” Clearing all displayed alarms will return any alarmed channel displays to their normal condition. Any old alarms that still exist will again be displayed.

The **ISIS** provides timers for all monitored bilge pumps. The **SHIP STATUS, BILGE/HIGH WATER** Screen will show the status of all bilge pumps. A bilge pump alarm will occur if (1) bilge pump runs for more than 3 minutes or (2) bilge pump shuts off and comes back on in less than 3 minutes. Condition 1 indicates a serious level of water, and condition 2 shows a continuous steady leakage.

Should a DAU stop sending data (led light goes out) an alarm will sound and a message will appear in the alarm box (Main menu screen). If this happens:

Check fiber optic connections.

Check power to DAU and fuse.

RESET SYSTEM DAU'S circuit breaker at the 24vdc panel.

If alarm message reappears, contact R.G.M. Industries I.S.I.S.

The **DAU** will reset automatically once the problem is resolved. To View **DAU** status go to the Diagnostic screen via the Info. /Config screen.

Maintenance timers count down in the direction of zero once every hour while operating. When any one reaches zero, the local alarm will sound for a few seconds, indicating that an item is due for servicing. An alarm screen will appear, showing the item requiring maintenance. A **MAINTENANCE DUE** message will appear in the upper right corner of all screens until all elapsed maintenance timers are reset. You need to look at the **MAINTENANCE LOGS** when this situation exists.

Any channel alarm that shows up on the screen is also recorded in the alarms log. An alarm message will appear in the upper left corner of all screens until all alarms are reset. You can review all alarms by using the **VIEW LOGGED ALARMS** function. Critical running items such as pressures, temperatures, fluid levels and others should be taken care of as soon as possible.

Keep an accurate log of all changes you make to alarm bar graph and digital alarm trip points.

Any reference to **LOCAL ALARMS** in this manual means that the SONALERT beeper on the ISIS keypad is activated.

Any reference to Intrusion Alarm means that the external horn will be sounded if connected.

Most menu items are selected by moving the selection box up or down with the **UP** and **DOWN** keys, then by pressing the **SELECT** button. You can exit the menu by pressing the **EXIT** button.

The **PRIORITY MENUS** can be selected only when you are in the Main Menu, found from anywhere by simply pressing **EXIT** repeatedly.

NOTE: The “**ALARM**” and “**MAINTENANCE DUE**” messages displayed on the above screen will only be displayed if there is an uncleared alarm and maintenance is due.

**Sample Lazzara
(ISIS 550B)
TANK CALIBRATION
PROCEDURE**

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TANK CALIBRATION PROCEDURES

All fuel and water tanks can be calibrated electronically at any time by using a voltmeter and the RGM Sensor Simulator. Because the ISIS reads a voltage from the tank sender to determine the liquid level in a tank, it is **imperative** that the tank sender be correctly set before using this procedure.

For senders with adjustable outputs, the sender must be set to produce **ZERO** volts when empty and the **MAXIMUM** voltage when full (5.0 Vdc for a Centroid sender.) Once this has been set, you can then use the following procedure to electronically enter a tank calibration table into the ISIS.

1. Connect the RGM Sensor Simulator to the correct DIU as follows:
 - A) Connect the **Red** wire to the + DC terminal (+24Vdc).
 - B) Connect the **Black** wire to the - DC terminal (GND).
 - C) Remove the wire presently connected to the DIU channel to be calibrated.
 - D) Connect the **Orange** wire to the DIU channel to be calibrated.

NOTE: Consult your ISIS drawings to determine the correct DIU and Channel numbers for the tank you are calibrating.

To prevent any alarms interrupting the calibration procedure disengage (remove fiber optic cable) all DAU's not related to the tanks being calibrated. Also it is advisable to temporarily RED LINE any items in the remaining DAU that are not required. Please remember to return any RED LINED item back to operational mode.

2. Connect a calibrated voltmeter in parallel with the RGM Sensor Simulator by connecting the voltmeter Black wire to the DIU - DC terminal and the voltmeter Red wire to the Simulator Orange wire. This will allow you to set the voltage to the correct value in the calibration process. (The use of clip leads will simplify this process.)
3. Turn the knob on the Sensor Simulator to set the minimum voltage. Now you are ready to start the ISIS Tank Calibration procedure. Having a second person to run the ISIS will be a big help.
4. Exit from the current screen to the **Main ISIS** screen and press the **Info/Config** button to enter the Information and Setup screen.
5. Enter the access code in enable the **Restricted Access** buttons and then press the **Tank Calibration** button.

6. The Tank Calibration screen lists all **Fuel** and **Water Tanks** that can be calibrated. Highlight the tank to be calibrated and press the **Select** button.
7. Initially you will start with and register the minimum gallon value by setting the **VALUE** buttons and then pressing the **Register** button.
8. Now press the **VALUE** buttons to set the next tank value (e.g. 100 gallons).
9. Using the appropriate Calibration Table, turn the Simulator knob to increase the voltage. Reading the Voltmeter, set the voltage to the value that corresponds to the next tank gallon value (e.g. set the Simulator to 1.88 Vdc for 120 gallons of fuel in the Main Fuel Tank).
10. Press the **REGISTER** button to record this value. Note: the number of points registered indicator should have incremented.
11. Press the **VALUE** buttons to set the next tank value (e.g. 200 gallons).
12. Again, turn the Simulator knob to increase the voltage. Set the Voltmeter reading to the voltage that corresponds to the next gallons value in the table (e.g. 2.81 Vdc for 559 gallons in the Main Fuel Tank).
13. Once the voltage is properly set, press the **REGISTER** button to record it, and then use the **VALUE** buttons to set the next tank value.
14. Proceed in this fashion until you have registered tank levels and voltage values for at least six (6) calibration points.
15. After you have registered the last tank value, press the **SAVE** button to update the calibration table on the hard disk drive.
16. After saving a calibration table, the Corrected Value reading can be used to verify the procedure. By varying the Sensor Simulator voltage, the Corrected Value shows the corresponding tank level value within three percent of full scale. The registered calibration points have been used to

generate a high-order equation that is averaged through the points. Therefore, do not expect the original set points to be exactly the same.

Sample calibrations

Main Fuel Tank Calibration Table
(Centroid Tank Sender)

Voltage	Gallons Fuel
0.00	0
1.10	200
2.57	600
3.25	800
3.95	1000
4.62	1200
5.00	1280

Fresh Water Tank Calibration Table
(Head Hunter Tank Sender)

Voltage	Gallons Water
1.067	0
1.24	50
1.35	100
1.458	150
1.574	200
1.659	250
1.89	280

Waste Water Tank Calibration Table
(Head Hunter Tank Sender)

Voltage	% Full
0.95	0
1.26	20
1.57	40
1.89	60
2.20	80
2.51	100

