2...HYPERLOGGER™ SYSTEM BASE

SYSTEM BASE OVERVIEW

The HyperLogger main enclosure with its associated battery pack, front panel, wiring terminals, etc is called the System Base. The System Base contains the main microprocessor, memory, power supplies, analog to digital converter, and supporting circuitry. Additionally, the System Base contains connectors for plug-in of Interface Modules. The following major components of the System Base are detailed within this section.

- Enclosure
- System Power and Batteries
- Terminal Strip Adapter; I/O Wiring
- Interface Module Backplane
- Front Panel

ENCLOSURE

The HyperLogger (Figure 2..-1) is housed in a durable plastic weatherproof enclosure that doubles as a carrying case. The enclosure has a gasketed door seal and with proper installation, the HyperLogger can withstand most process and field conditons *with the exception of direct immersion.*

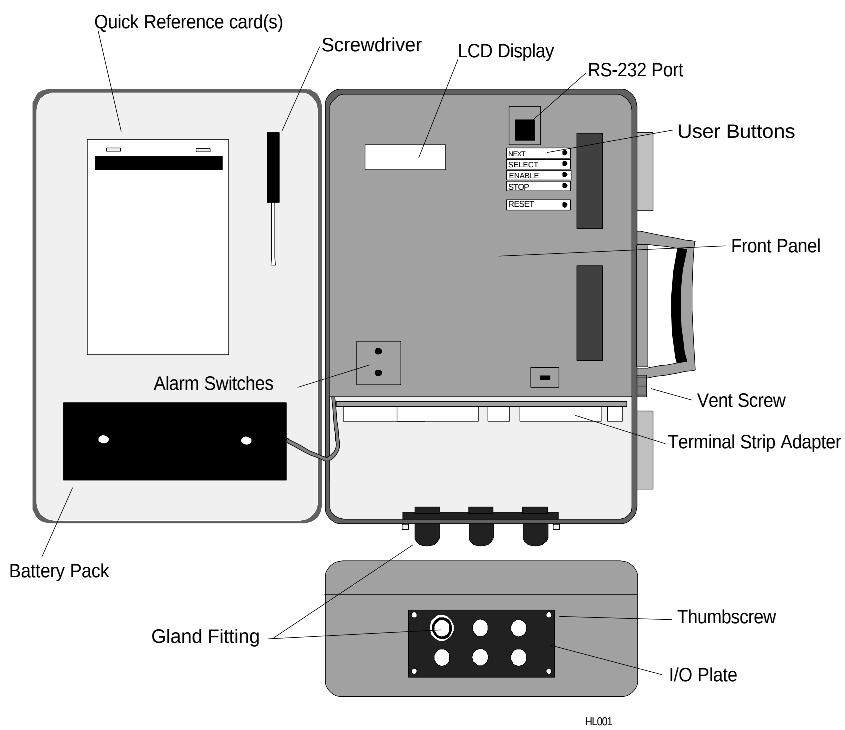

Figure 2..-1: HyperLogger System Base Components

The hinged front door features two latches that are released by pulling outward on the molded tabs. For security, the top latch can be equipped with a padlock.

VENT SCREW

A vent screw is provided (black knob by the carrying handle) for equalization of internal and external pressure during exposure to radically varying barometric conditions such as during transport via airplane or over extreme elevation changes. Loosening this knob a few turns will allow pressures to equalize and re-tightening the knob will seal the vent. In most applications, pressures will be equalized through minor leaks around the wiring egress fittings and use of the vent is not necessary.

INPUT / OUTPUT WIRING PLATE

At the bottom of the enclosure, four thumb-screws hold the I/O Wiring Plate in place. This plate has six holes sized for the supplied gland type sealing fittings. An integral gasket seals the plate to the enclosure. Use of jacketed wire for sensor wiring will result in an excellent seal to the fittings and maintain the integrity of the System Base.

> ***TIP:****For special customer applications, an I/O plate without fitting holes is available from Logic Beach. This plate can be machined by the User for their particular I/O needs.*

MOUNTING

The HyperLogger can be wall mounted by attaching the supplied hanger to the back face of the Hyperlogger enclosure with the supplied machine screws. To attach the hanger refer to Figure 2..-2 and perform the following steps:

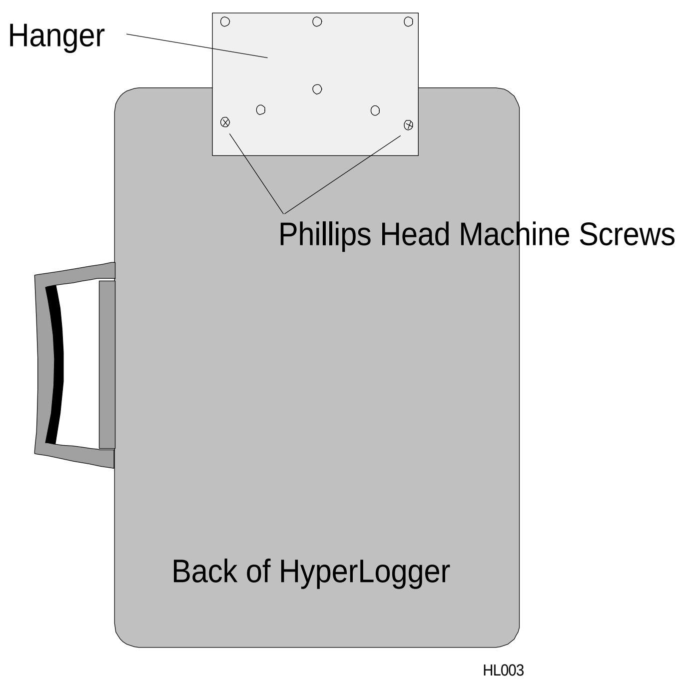

Figure 2..-2: System Base Hanger (back view)

1. Locate and remove the two phillips style flathead screws on the back (near the top) of the HyperLogger.

2. Align the supplied hanger with the mounting holes and and reinstall the two flathead machine screws, tightening them securely.
3. In the event that the hanger is removed, the two flathead machine screws should be reinstalled into the back of the enclosure and tightened securely to reseal the mounting holes.

SYSTEM POWER

Main Batteries

The HyperLogger is powered from six D-cells mounted in a battery pack on the lid (See Figure 2..-3). To access the batteries, remove the two thumbscrews and the black cover. The batteries can then be replaced by popping them out of the holders and reinstalling new batteries while observing polarity. Align the batteries with the *positive terminal toward the*

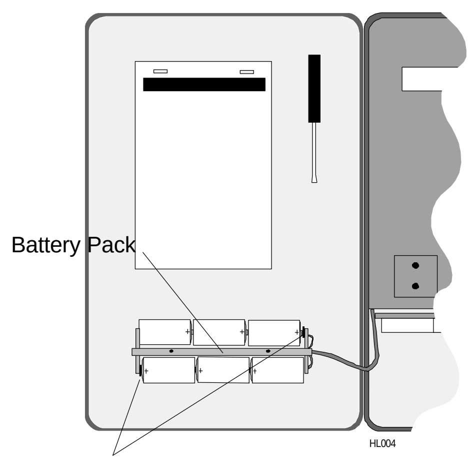

Figure 2..-3: HyperLogger Battery Pack

holder end marked with a red washer. The battery pack cover fits correctly only one way... if it doesn't fit, flip it over.

Alkaline D-cells are recommended as they contain significantly more energy than standard or `heavy-duty' cells and will provide substantially longer recording capability. Depending on the Program Net within the HyperLogger, a fresh set of alkaline D-cells can power the HyperLogger for up to 2 months of logging.

External Power

For long term and/or semi-permanent applications of the HyperLogger, an external power source may be used. If an external power supply is connected to the HyperLogger via the Terminal Strip Adapter (page 2-4) and its supply voltage is greater than approximately 12 VDC, the HyperLogger will operate from the external supply and the batteries will not be used. In the event that the external power fails, the HyperLogger will automatically transfer to battery power and continue operation.

Memory and RTC Power

The HyperLogger utilizes static ram for internal data storage which requires a constant power supply to maintain its memory. Similarly, the Real Time Clock (RTC) that keeps track of the date and time within the HyperLogger runs continually whether the main power switch is ON or OFF.

When the main power is ON, the memory and RTC draw their power from the D-Cell batteries (or a connected external power supply). When the main power is switched OFF, power for memory and the RTC automatically switches to a small coin type lithium cell that is mounted on the main HyperLogger circuit board.

This cell will provide power for the RTC and memory for approximately one year. Any time that the HyperLogger main power is ON extends this lifetime. At any time, the approximate state of charge of the lithium cell can be displayed on the LCD under the SYSTEM STATUS / SUPPLY VOLTAGES menu or from a serially connected PC running HyperWare with the Status Query command. For lithium cell replacement procedure, refer to Appendix D.

TERMINAL STRIP ADAPTER; I/O WIRING

The Terminal Strip Adapter (TSA) is a removable assembly that provides a convenient method of connecting input and output (I/O) wiring to the HyperLogger (see Figure 2..-4). By using the TSA, a large quantity of wires can be connected and disconnected with a minimum of effort. Wiring connections for power, sensor/signal inputs, CJC sensing, and alarm outputs are all handled through the Terminal Strip Adapter.

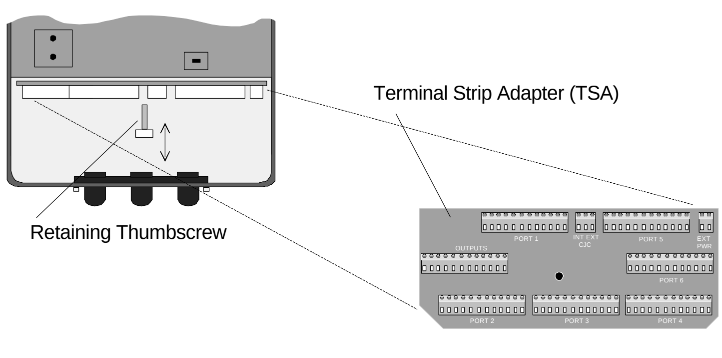

Figure 2..-4: Terminal Strip Adapter (TSA)

Making I/O Wiring Connections

The TSA is held in place with a thumbscrew located in the center of the board. To make wiring connections to the TSA, remove this thumbscrew and unplug the TSA. Wiring can then be routed through the fittings and I/O plate at the bottom of the HyperLogger and secured into the various terminal locations on the TSA.

> ***TIP:*** *When constructing a Program Net from within HyperNet, one of the menu options will print out a TSA wiring connection list for use during field wiring of the HyperLogger. Details on generating this printout are covered in the HyperNet Chapter.*

After making the desired connections, plug the TSA back into the HyperLogger and organize the wiring within the compartment, sliding extra wire out through the the fittings. Reinstall the TSA retaining thumbscrew and tighten the fittings.

Terminal Strip Connections

The TSA has silkscreen markings indicating specific I/O wiring connections for the various terminal strips. Additional details for these connections follow:

Port 1 to 6

The terminal strips labeled with a port number refer to one of the Interface Module ports. When the Interface Module is installed, all interface wiring (signal input, control output, etc) required by the Interface Module is routed through the System Base and out to the TSA. Each Interface Module has unique input and output wiring requirements and is available on the Interface Module instruction sheet or can be reviewed onscreen or printed out from within HyperNet (Chapter 7).

CJC

Integral to the TSA is a cold junction compensation (CJC) sensor. This sensor is a 10 Kohm @25C (Fenwall curve 16) thermistor which is located by the long white DIN connector on the side opposite the terminal strips. The CJC sensor senses the temperature of the terminal strips (Internal Mode) which in turn, is used in thermocouple measurements. Additionally, the CJC sensor can be used within a Program Net to monitor the temperature inside the HyperLogger enclosure.

INTERNAL CJC SENSING APPLICATIONS:
For HyperLogger applications with thermocouple inputs to the TSA, a wire jumper must be installed across terminals 1 and 2 (marked INT for internal). The HyperLogger is shipped from the factory with this jumper installed.

> *NOTE: If thermocouples are directly connected to the TSA, a wire jumper must be installed across the CJC terminal strip terminals marked INT or erroneous readings will occur..*

EXTERNAL CJC SENSING APPLICATIONS:
If thermocouples are not being directly connected to the TSA, this CJC sensor can be used to measure temperatures (or limited range resistance) outside of the enclosure. A 10 Kohm thermistor (with the specified resistance curve) or a resistance type sensor can be connected across the terminals marked *EXT*

on the CJC terminal strip. Refer to the CJC Icon in Appendix A for additional details.

For external sensing applications, copper lug potted thermistors with 10' leads are available from Logic Beach.

EXT PWR

A two position terminal strip is provided for connection of an external low-voltage power source. A power source supplying 9-16 VDC or 10-20 VACat 250mA can be connected to the terminals. Polarity is not critical. In normal operation, the HyperLogger will only draw 3 to 30mA of current from this supply, however with relays, LEDs, modems, etc the current level can be higher.

If an external power supply is connected to the HyperLogger via the Terminal Strip Adapter and its supply voltage is greater than the internal battery voltage by approximately 1.2 VDC, the HyperLogger will operate from the external supply and the batteries will not be used. In the event that the external power drops, the HyperLogger will automatically transfer to battery power and continue operation.

OUTPUTS

One 12 position TSA terminal strip is marked with OUTPUTS for the first 10 terminal positions and GPDI INPUT for positions 11 and 12. The Outputs follow:

R1
Wiring connections for Relay 1. The relay is a normally open device with contacts rated for 500 ma MAX at 32VDC MAX.

R2
Wiring connections for Relay 2. The relay is a normally open device with contacts rated for 500 ma MAX at 32VDC MAX.

DO1, DO2, AND DO3
Wiring connections for Digital Output 1, 2, and 3. A low current 5VDC rated digital output is available from each of these single terminals. These terminals are the outputs under control from the Digital Output icons within HyperNet. The output swings from 0 to 5VDC relative to the GND terminals (below) and is intended

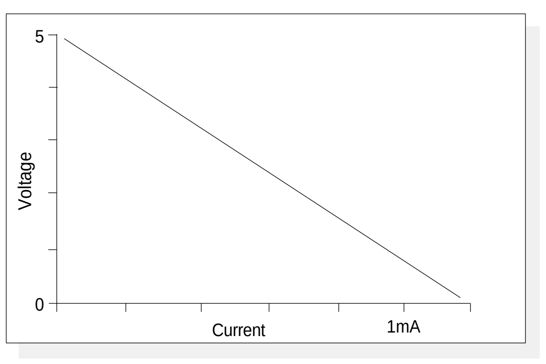

Figure 2..-5: System Base Digital Output Current Sourcing Characteristics

for sourcing and sinking *signal level loads only.* The output is current limited with an internal 4.3Kohm series resistor which results in varying output voltage levels as a function of load or sourced current as shown in Figure 2..-5. These Digital Outputs provide sufficient current for control of the Logic Beach RPS-1, Rechargable Power Supply which can be used for powering/ exciting higher current sensors such as 4-20mA transmitters (see Accessories in Appendix H).

GND

This pair of terminals serves as a common or ground connection for the Digital Outputs and for the +5V supply. It is connected directly to the HyperLogger circuit ground.

+5V

This terminal provides a current limited +5 VDC supply for low level current applications.

> ***Note:*** *Heavy loading of the +5 output will significantly reduce battery life.*

GPDI INPUT (+/-)

Two terminals are provided for signal input to the General Purpose Digital Input (GPDI). Integral to the System Base is this single digital input channel that can be configured under HyperNet as an Event or Counter type input. The GPDI input signal (either a contact closure or 0 to 15VDC max driven signal) is applied across theses two terminals observing polarity.

The operation of the GPDI is configured during construction of the Program Net within HyperNet and programming and applications are described in the Master Icon Reference in Appendix A.

Field Disconnect Feature

Through the use of the TSA and the I/O Wiring Plate, a HyperLogger can readily be disconnected from its I/O wiring and temporarily moved to a new location for another test or application. With the following method, it is not necessary to disconnect, then reconnect all of the discrete wiring each time the HyperLogger is shared with another site or application.

To disconnect I/O wiring from the HyperLogger, refer to Figure 2..-6 and perform the following steps:

1. Switch HyperLogger power OFF
2. Remove the TSA retaining thumbscrew
3. Loosen the liquid-tight fittings so the wiring is free to slide
4. Unplug the TSA and pull some additional wiring in through the fittings
5. Remove the four I/O plate retaining thumbscrews
6. Tilt the I/O Wiring Plate and the TSA and feed them out of the rectangular opening in the bottom of the HyperLogger enclosure.

1. The TSA and I/O Wiring Plate can then be left on site and the HyperLogger moved to a new location. Additional I/O Wiring Plates and TSA's can be obtained from Logic Beach.

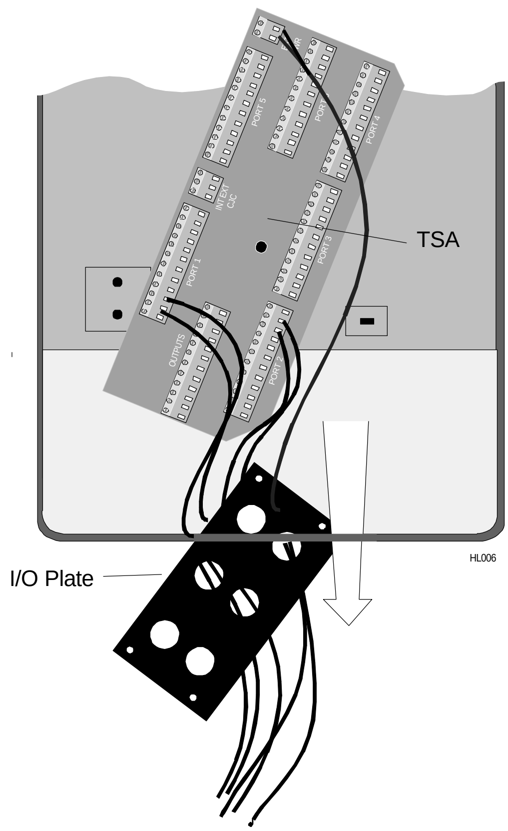

Figure 2..-6: Removal of TSA through I/O Wiring Opening

INTERFACE MODULE BACKPLANE

HyperLogger Interface Modules plug into the System Base and provide various functions such as signal / sensor interface, modem and PCMCIA memory card support. The Interface Modules plug into a backplane that is located behind the front panel of the HyperLogger. Access is gained to this backplane as follows Refer to Figure 2..-7 and perform the following steps:

1. Remove the TSA retaining thumbscrew and unplug the TSA.
2. Remove the two thumbscrews at the top of the HyperLogger enclosure.

1. Slowly, tug on the front panel handle (located near the top of the front panel) and the front panel will swing open on its hinge.

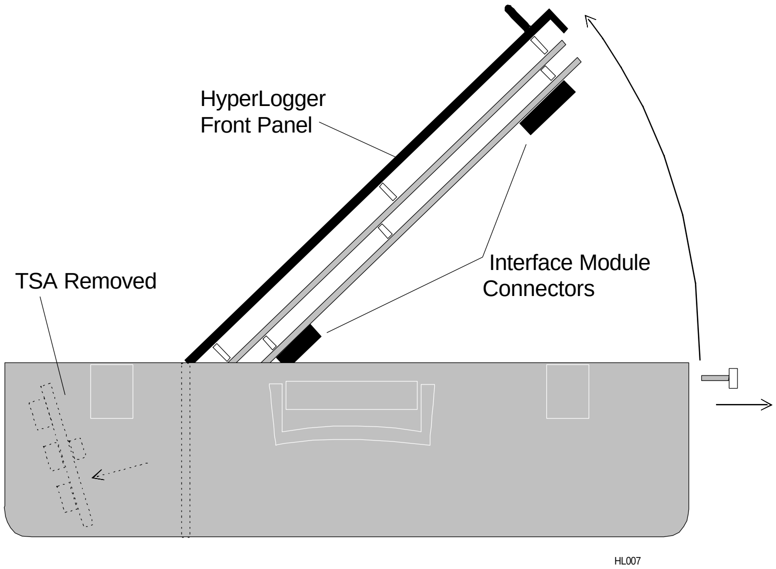

Figure 2..-7: Accessing the Backplane for Interface Module installation

When the front panel is open, black connectors on the backplane for the six numbered ports are available. Details on installation and configuration of the Interface Modules are contained in Chapter 3.

FRONT PANEL DETAILS

The HyperLogger front panel (see Figure 2..-8) contains numerous User buttons, switches and the liquid crystal display. Details on these components follow:

System Power Switch

Power for the HyperLogger is controlled with the System Power switch. When the power is off, the batteries and any connected external power source are disconnected.

The System Power does not affect data in memory or the Real Time Clock date and time as both have a separate lithium battery backup power source. This separate memory back-up battery will protect stored data for approximately one year at normal room temperatures. Cell replacement details are covered in Appendix D.

Power must be turned off to the System Base when installing Interface Modules, replacing the lithium cell, EPROM, and any time the front panel is opened. Additionally, to preserve battery life, turn the main power off whenever the HyperLogger is not being used.

RS-232 Serial Communications Port

A female 6/6 RJ-12 modular phone type jack is provided on the front panel for RS-232 communications. A mating 6 conductor cable is supplied with the HyperLogger for communication between the PC and the HyperLogger via this port. *This port is not for direct connection of a telephone line.*

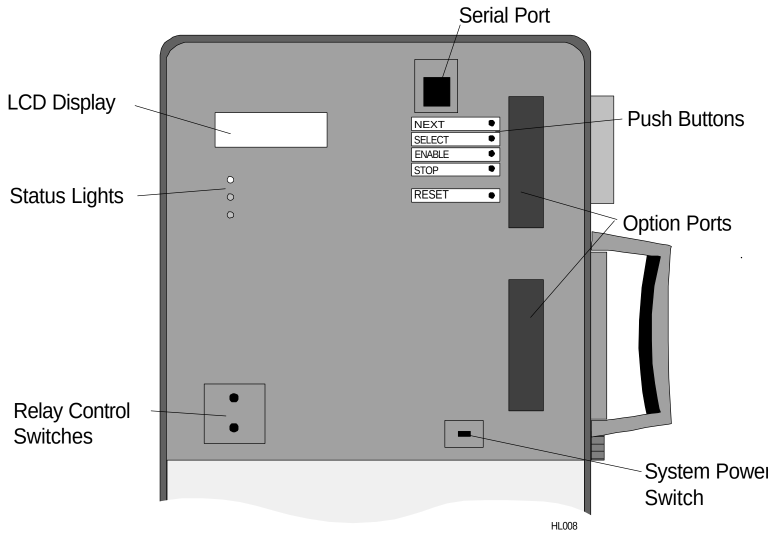

Figure 2..-8: HyperLogger Front Panel

> **CAUTION**
>
> **The RS-232 jack is only for connection of RS-232 type signals (via the supplied cable and adapters) and is not for direct connection of a telephone line.**
>
> **For telephone modem communication with the HyperLogger, utilize the HyperLogger Modem Interface Module.**
>
> **Direct connection of a telephone line to this jack will result in permanent damage to the HyperLogger.**

For longer communication distances, a longer cable can be used. Longer cables can be purchased from Logic Beach or from stores handling standard phone supplies. If a cable is procured from a source other than Logic Beach, insure that the cable is 6 conductor and has the plugs installed correctly. Refer to Appendix I for wiring details.

Although the RS-232 specification is only for communication distances up to 50', communication with the HyperLogger via RS-232 at Baud rates up to 19.2 Kbaud has been successfully achieved with 100' of cable.

The HyperLogger RS-232 communication circuitry powers up when a cable is plugged into the port and a connection is established from within the HyperWare Software. When the communication circuitry is powered up, an additional load of approximately 30 mA is put on the power supply resulting in shortened battery life.

For this reason, when not communicating with the Hyperlogger, disconnect the RS-232 cable. For extended communication sessions battery life can be preserved by powering the HyperLogger from an external power supply.

TIP: *For relative reference, with the communication circuitry powered up, a new set of batteries will discharge in approximately 3 days.*

Option Ports

Two Option Ports are provided on the HyperLogger front panel. The port openings are available for installation of special Interface Modules such as a modem or PCMCIA socket. These ports are normally covered by rectangular covers unless one or more of the optional Interface Modules are installed (special bezels are provided with any of the Interface Modules using these ports.

Push Buttons

Located at the top right corner of the front panel are five momentary push buttons providing basic HyperLogger operational control. Details on the button functions follow:

NEXT and SELECT

The NEXT and SELECT buttons are used for User control of the liquid crystal display (LCD) information displays. Pressing NEXT will advance the LCD display to the next menu item at the current menu level. Pressing the SELECT button selects that menu item and a new level of menus or results are displayed.

A detailed explanation of the operation of the NEXT and SELECT buttons is covered in a later section on the Display.

ENABLE

The ENABLE button initiates the execution of the current Program Net residing in HyperLogger memory. Upon press of the ENABLE button, the LCD will change to display ENABLED on the second line.

Note that operation of the ENABLE button may be inhibited if Rotary Memory Logging mode is set within the Global icon while building a Program Net.   Refer to the Master Icon Reference in Appendix for details on the Global icon. Settings under the Global icon include:

LOG TO FULL MEMORY...
If the HyperLogger is running in one of the *Log to Full Memory* modes, multiple logging sessions can be retained in memory before a download of data to a PC is required.

ROTARY MEMORY
If the HyperLogger is programmed for the *Rotary Memory* mode, only one logging session can be retained in memory before a download is required. When the HyperLogger has logged one session and stopped, the LCD will display *Memory Full.* Pressing ENABLE in this mode with a session already in memory will NOT ENABLE execution of the Program Net, memory must be downloaded or cleared before the HyperLogger can be enabled.

> ***FYI:*** *The label ENABLE was chosen rather than START for a subtle but important reason. When the ENABLE button is pressed, execution of the Program Net commences... but that does not necessarily mean that data logging to memory has started.*
>
> *For example, a Program Net is developed and uploaded to the HyperLogger that includes a setpoint function that controls logging to memory. For example log only when the kiln temperature exceeds 150F. Pressing the ENABLE button merely causes the HyperLogger to take readings of the kiln temperature... but logging to memory STARTS when the temperature rises above the 150F threshold.*

STOP

Pressing STOP at any time causes the HyperLogger to finish sequencing through the currently executing Program Net, then stop executing. The LCD then updates to show *STOPPED*.

RESET

A hardware reset of the HyperLogger microprocessor can be performed by depressing and releasing both the STOP and RESET buttons at the same time. This normally should not be required but in the event that a noise glitch or some other malfunction occurs, this manual Reset capability is provided for a User to force a reset of the microprocessor from the front panel.

WATCH-DOG TIMER RESET

A special automatic reset circuit is incorporated into the System Base to add additional reliability to the HyperLogger system. This circuitry, called a Watch-Dog Timer will force the HyperLogger microprocessor to reset and continue operation where it left off (within 2 seconds) in the event that an unforseen hiccup or noise glitch (for example, from a nearby lightning strike) causes the microprocessor to lose its place or lock-up.

Although this circuit normally should not operate, it adds one more level of robustness to the HyperLogger for handling unforeseen events.

Display

An extended temperature range 2-line by 16 character liquid crystal display (LCD) is provided. Information ranging from Operational Mode to System Status to Alarm Messages to signal readings can all be displayed on the LCD. The LCD is continually ON. Information to be displayed is controlled by a User via the SELECT and NEXT front panel buttons.

Additionally, alarm messages will be automatically displayed on the LCD when User pre-programmed conditions are met. These messages and conditions are defined by the User in the Program Net developed within HyperNet (Chapter 7) and loaded into HyperLogger memory.

Display Operation

Information that can be displayed on the LCD is arranged in a hierarchical format and is accessed by a User via the NEXT and the SELECT buttons on the front panel of the HyperLogger. The menu structure is diagrammed in Figure 2..-9.

Pressing the NEXT button advances the display to the next available item in that menu level. Repetitive presses of the NEXT button will result in a circular sequencing through all of the available menu items on the current level and eventual repeat of the sequence.

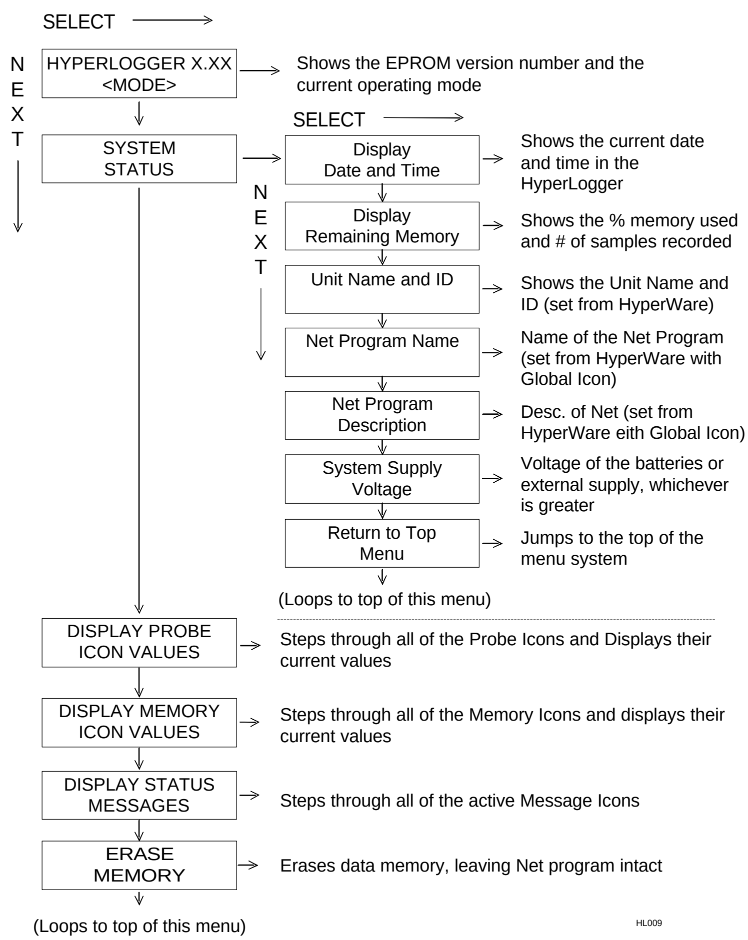

Figure 2..-9: LCD (display) Menu Structure

Pressing the SELECT button selects that menu item and a new level of menus or results are displayed. A detailed description of the various menu items and levels follow.

> ***TIP** - a good comprehension of this LCD menu structure can be achieved by close reading of this section... but better results may be achieved by just `diving in' and poking around with the NEXT and SELECT buttons to develop a feel for the structure. Then read through this section for the details.*

Display Menu Items

Following are descriptions of each of the display menu items identified in Figure 2..-9. Further details may be found in later sections detailing the functions described.

TOP MENU:
When the HyperLogger is powered ON, the Top Menu is displayed in the LCD. The Top Menu indicates the HyperLogger EPROM version on the top line of the LCD (software version residing in an EPROM memory chip within the HyperLogger) and on the bottom line, the current operational mode of the HyperLogger. Displayed Modes include:

ENABLED
Indicates the HyperLogger is currently executing a Program Net that has been developed with HyperNet and transferred to the HyperLogger memory.

STOPPED
The HyperLogger is not executing a Program Net. Since the Net is not executing and updating the net, stepping through various Probe Points will result in values and states that will not be current.

MEMFULL STOPPED
Data memory within the HyperLogger has filled and the execution of the Program Net has stopped. This message will also display if the Rotary Memory mode is utilized (See Global icon in Appendix A) and a logging session has been performed. In Rotary Memory mode, only one logging session can be maintained in the HyperLogger memory.

MEMFULL ENABLED
Memory within the HyperLogger has filled, however execution of the Program Net is continuing. This mode of operation may be User selected when alarming/control functions are to be monitored.... even after the HyperLogger memory has filled. This display will only occur if the User has selected the memory utilization option *Log to Full Memory and Continue Processing* during setup of the Program Net within HyperNet (Global Icon option).

MEMFULL WRAPPING
Displays when the HyperLogger Program Net is configured in the Rotary Memory mode. When memory fills, the HyperLogger starts writing over the first collected data. Since the Program Net is still executing, alarms and control functions continue to be monitored. Rotary Memory mode is enabled during setup of the Program Net under the Global Icon.

RCV'ING NET
Displays momentarily during the actual serial upload of of a Program Net to the HyperLogger.

NO PROGRAM NET
Displays upon first power up of the HyperLogger after the Program Net has been lost. This should only occur after replacement (or initial installation) of the lithium cell used for Data Memory backup. The display indicates that a search for a valid Program Net stored within the HyperLogger memory has failed.

In the event that this message displays, check (and replace if low) the Lithium Cell via the STATUS menu described below. Then reprogram the HyperLogger with a new Program Net.

BAD PROGRAM NET
Displays if an illegal or corrupted Program Net is in memory. This message should only occur if memory containing the Program Net has been corrupted. In the event that this message displays, check (and replace if low) the Lithium Cell via the STATUS menu described below.

CARD ERROR: MISSING FILE
Displays upon power-up of the HyperLogger with an improperly prepared PCMCIA card inserted. The card should be formatted and prepared for use within the HyperLogger as described in Chapter 6.

BAD CONFIG
Displays if User selectable switch settings on the HyperLogger Interface Module do not match the currently loaded Program Net. The message also identifies which Interface Module and channel or incompatible. If this message displays, modify the Program Net to match the hardware or open the HyperLogger and examine the switch settings on the installed Interface Modules and correct the invalid setting(s).

SYSTEM STATUS
From the Top Menu, pressing the Next button once will advance the display to System Status. Pressing SELECT while System Status is displayed results in a new level of display. Menu selections available on this level include:

DATE AND TIME
Press SELECT to display the current Date and Time in the HyperLogger Real Time Clock. This is the date and time to which collected data is referenced. The HyperLogger date and time are set from within HyperComm (Chapter 5).

REMAINING MEMORY
Press SELECT to display the number of samples recorded and the percentage of memory used.

> ***TIP:*** *Depending on the User defined format for data storage and the actual time and values being stored, samples will require varying amounts of memory for storage. For this reason, use caution when extrapolating the remaining logging time.*

UNIT NAME & ID
Press SELECT to display the programmed HyperLogger Name and ID. The HyperLogger Unit name and ID can be User assigned through HyperWare (Chapter 5). This ID can be used for corporate tracking of multiple units, calibration schedules, etc.

PROGRAM NET NAME
Press SELECT to display the currently loaded Program Net name. This name is assigned during the development of a Program Net (Chapter 7).

PROGRAM NET DESCRIPTION
Press SELECT to display a previously programmed description of the Program Net (above).

SYSTEM SUPPLY VOLTAGE
Press SELECT to display the HyperLogger supply voltage and the approximate state of charge of the memory / clock backup lithium cell. If internal batteries are installed in the HyperLogger and an external power supply is also connected, the displayed *Supply Voltage* indicated refers to the greater of the two.

> ***FYI***: *The displayed Supply Voltage is measured at an internal node on the power supply circuitry. Displayed battery voltage is the voltage of the internal batteries . External supply voltage will be approximately 1.2 volts higher than indicated.*

The state of charge display for the lithium cell (used for memory and clock backup) will display *GOOD* or *LOW*. If *LOW* is displayed, download any desired data memory, then replace the lithium cell per the instructions in Appendix D.

RETURN TO TOP MENU
Press SELECT to return to the Top Menu display. Press NEXT to cycle through this level's menu selections again.

DISPLAY PROBE ICON VALUES
During the construction of a Program Net within HyperNet, the User can opt to connect Probe Point icons to various nodes throughout the net. These Probe Point icons allow the User to view the current values on the nodes to which they are connected. (Program Net development is described in Chapter 7 and details on the Probe Point icon are included in Appendix A.) One of the ways that the Probe Point values can be viewed is via the HyperLogger front panel LCD, as follows:

> ***FYI:*** *Probe Point is used for the icon name as connecting these icons to a node on a Net is somewhat analogous to putting a test meter <u>probe</u> on the Net nodes and reading a value.*

From the Top Menu, pressing the NEXT button twice will advance the LCD to *Display Probe Icon Values*. Pressing SELECT while *Display Probe icon Values* is on the LCD will shift the display to a level containing the actual Probe Point values. The top line of this display is the Probe icon Name assigned to the icon during construction of the net and the second line is the value and units.

Repetitively pressing NEXT will step the display through all of the Probe icons previously programmed into the Program Net. To return to the Top Menu, press SELECT when *Return to Top Menu* is displayed.

Displayed Probe icon values will be updated whenever the net node is updated. If the HyperLogger is Stopped (ie not executing the net), the last calculated node value will be displayed.

> ***TIP:*** *Displaying Probe icon Values while the HyperLogger is enabled will slow down the execution of the net. For higher speed data logging applications (eg sub-second sampling rates), faster performance can be achieved by leaving the LCD in a mode where it is not displaying the time/date, battery state of charge, remaining memory, Probe icons, Memory Icons , or Net Values,*

DISPLAY MEMORY ICON VALUES

In addition to display of Probe icon values (previously described), the last value stored to any Memory icon within the executing Program Net can also be displayed on the LCD.

From the Top Menu, pressing the NEXT button three times will advance the LCD to *Display Memory Icon Values*. Pressing SELECT while *Display Memory Icon Values* is on the LCD will shift the display to a level containing the actual last logged values. The top line of this display is the Memory Icon Name assigned to the icon during construction of the net and the second line is the last logged value and units.

To return to the Top Menu, press SELECT when the *Return to Top Menu* message is displayed.

DISPLAY STATUS MESSAGES

Messages can be sent to the LCD due to HyperLogger operational conditions or User programmed Program Net conditions. To view the active messages; from the Top Menu, press NEXT five times and then SELECT while the *Display Status Messages* menu is displayed. Step through the messages with the NEXT button and return to the Top Menu by pressing SELECT when *Return to Top Menu* is displayed.

Depending on the inputs and programmed conditions within the currently executing Program Net, User programmed messages may come and go as the conditions for display are met then not met over time.

During execution of a Program Net, if the conditions (either HyperLogger operational or User defined Program Net) are met for a message display (eg an alarm conditon occurs), the message will display on the LCD immediately... overwriting any current displays. Messages displayed on the LCD will not be cleared *from the LCD* when they become False, however they will be cleared from the internal display queue. Messages will only be cleared from the LCD if another message is displayed or if the User changes the LCD (via the Select/Next buttons) in any way. For additional information on message display capability from within a Program Net,, refer to the Message icon in Appendix A.

ERASE MEMORY

Data memory within the HyperLogger and within an inserted PCMCIA card can be cleared via the SELECT and NEXT buttons. To clear memory, from the Top Menu, press NEXT six times until the message *Erase Memory* appears on the LCD. Then press SELECT a total of five times to clear the memory. Successful erasure of the memory is confirmed with a *Memory has been Erased* message.

Note that at any time during this sequence of SELECT button presses, pressing the NEXT button will abort the Memory Clear sequence and stored data will be preserved.

CAUTION!

All the King's horses and all the King's men can't reassemble erased HyperLogger data again. Please be careful.

Internal HyperLogger memory and PCMCIA card memory can also be cleared via a serial communication link. Refer to the Chapter 5 on HyperComm for details.

Relay Control Switches

The System Base contains two relays for use as low-voltage alarm or control outputs. Wiring connections to these two normally open contact relays is via the TSA.

CAUTION!

The two System Base relays are meant for low-voltage low-current control and alarm applications. Do not connect over 32 VDC potential or in excess of 250 mA of current through the relays.

In the lower left of the HyperLogger front panel are two toggle switches labeled Relay 1 and Relay 2. The switches are three position and are provided for manual override of the relays. Description of operation in the three positions follows:

OFF: In the center position, the relays are disabled and can not be turned ON by the HyperLogger Program Net.

TEST: When the switch is toggled to the right, the relay is forced into an ON state and the relay contacts are closed. This is a `momentary' position and when the switch is released, tit returns to the OFF position.

RUN: In the left position, the relay is under control of the HyperLogger microprocessor. The relays will be switched ON and OFF per the logic contained within the Program Net.

> ***NOTE:*** *If the relay alarm function is used within a Program Net, insure that the switches are set to RUN before leaving the site.*

Status Lights

Three light emitting diode (LED) lights are provided on the front panel, labeled STATUS, ALARM 1 and ALARM 2. The STATUS LED is merely a visual indicator provided for User specified application from within a Program Net. The ALARM LED's provide visual indication of the state of the two output relays (described above). When the ALARM LED is ON, the relay contacts are closed.

NOTES: