



Host Interface Specifications

List No. 9D08

NOTES

Revision Status

Document Control Number(s)	Revision Date	Section(s) Revised	Pages Revised And Added
30-0461/R1	6/98	Original Issue	Original Issue
30-1506/R2	3/99	All Sections	All Pages

Trademark Statements

AEROSSETTM is a Trademark of Abbott Laboratories.

FastTrackTM is a Trademark of Abbott Laboratories.

IBMTM is a Trademark of International Business Machines.

ICTTM or Integrated Chip TechnologyTM is a Trademark of Abbott Laboratories.

OSSTM or Optimum Sampling SequenceTM is a Trademark of Abbott Laboratories.

SmartWashTM is a Trademark of Abbott Laboratories.

NOTES

Table of Contents

Overview of the AEROSET System	9
Primary Components	10
System Control Center	10
Analyzer	12
Sampling Area	12
FastTrack™ Sampler	13
Software	15
Screen Layout	15
Information Access Area	17
Action Area	18
Display Area	20
Status Area	20
Run Progress Area	21
AEROSET System Configuration	22
RUN OPTIONS Screen	22
DATABASE Screen	32
Panel Configuration	32
Host Communications Icon	34
Host Configuration	34
Order Options	37
Ordering Patient Samples on the FastTrack Sampler ...	37
Ordering Patient Samples in the Sample Carousel	39
Additional Options on the Order Samples Screen	40
Sample Replicates	40
Manual Dilution	40
Onboard Dilution	41
Patient Demographics	41
Batch Ordering	42
Patient Sample Requirements	44
Sample Bar Code Labels	44
Bar Code Label Specifications	44
Sample ID (Identification) Length	45

Label Length	46
Label Placement	46
Tube Labeling Requirements	46
Running the AEROSSET System with a Host Computer	48
Downloading Orders from Host Computer	48
Host Order Query	48
Transmitting Results to the Host	49
Scope	50
Overview of the AEROSSET Host Interface	50
Hardware Specifications	52
Interface Specifications	52
Communication Configuration	53
Connector Pin Assignment	54
Software Specifications	55
Transmission Timing Chart	55
General Text Format	55
Transmission Protocol	62
Transmission Protocol Confirmation Text Format (AEROSSET System to Host, Host to AEROSSET System)	63
Order Request Text (from AEROSSET System to Host) . . .	63
Order Text (from Host to AEROSSET System)	68
Result Text (from AEROSSET System to Host)	74
Result Request Text (from Host to AEROSSET System) . . .	79
Result Control Text (from Host to AEROSSET System) . . .	80
Initialize Session Request Text (from Host to AEROSSET System)	82
Release MASTER Text	83
Host to AEROSSET System	83
AEROSSET System to Host	84
On-line Operations	85
Text Priority	85
Examples of Sessions	85
Information Handling for Each Protocol Type	90

Type 1	90
Type 1'	91
Type 1"	92
Type 2	93
Type 3	94
Type 4	95
Type 5	96
Error Handling	97
Error Conditions	97
Error Handling	97
Error handling for protocol Types 1, 1', and 1"	104
Error handling for protocol Types 2, 3, 4, and 5	104
Glossary	105
Appendix A	115
AEROSSET Error Codes and Messages	115
Transmitted Error Codes	115
Result Flags	116
Result Error Codes	117
Photometric Assay Result Error Codes	118
ICT™ Assay Result Error Codes	120
Calculation Assay Result Error Codes	121
Calibration Error Codes	121
Assay Specific Error Messages	122
Error Log Messages	125
Appendix B	135
Result Text	136
Order Text	137
Order Query Text	138
ACK Text	138
NAK Text	138
Initialize Session Text	138
Release MASTER Text AEROSSET to Host	138

Release MASTER Text Host to AEROSSET	138
Incomplete Sample is Validated as a Complete Sample	139
Rerun is Cancelled on the Sample	139
Rerun is Ordered on Sample	139
Result Request Text	139
Appendix C	141
ASCII Character Table	142
Description of first 32 characters	143
Index	145

Overview of the AEROSET™ System

The AEROSET System is a fully automated, random and continuous access, high throughput clinical chemistry system. The instrument utilizes a dual pipetting system with a maximum throughput of up to 2000 tests/hour when running both photometric and potentiometric assays. The AEROSET System is an open system which allows the option of using non-Abbott manufactured reagents.



CAUTION: For Abbott applications, assay parameters should not be edited for any previously programmed assay, unless specifically indicated in the **AEROSET Application Manual** provided by Abbott Laboratories. **Editing the assay parameter files incorrectly may affect the calculation of the results and may produce erroneous results.** Verify edits to the assay parameter files against the assay-specific **AEROSET Reagent Application Sheets**.



CAUTION: For non-Abbott applications, the Operator must verify the correct implementation of the assay. **Incorrect implementation may produce erroneous results.**

Primary Components

The primary components of the AEROSET System include the following:

- System Control Center
- Analyzer

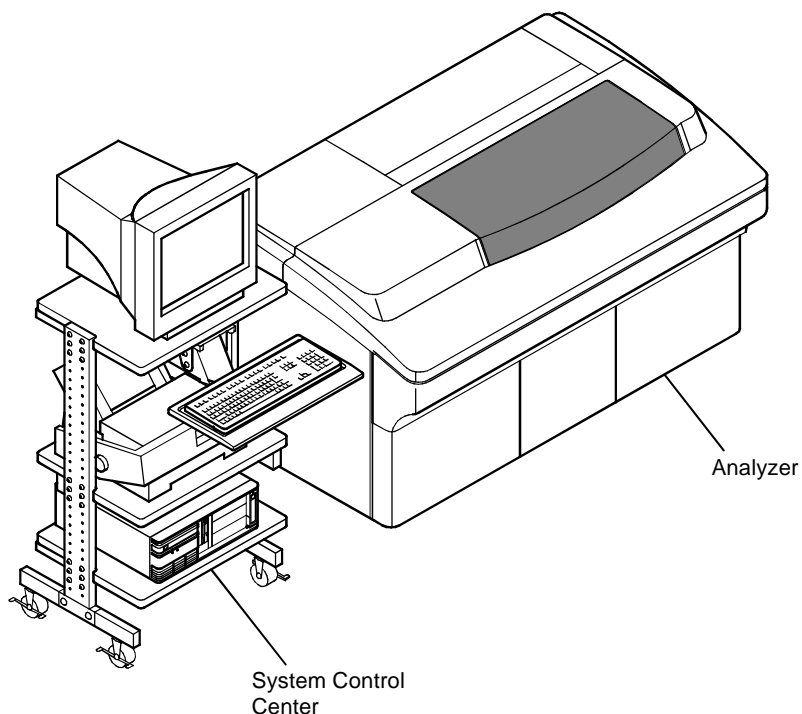


Figure 1.1: Primary Components of the AEROSET System

System Control Center

The System Control Center (SCC) controls the operation of the AEROSET System. It provides the user interface, data management capability, and an interface to a Host computer. Through the System Control Center, the Operator receives orders and transfers results. The Operator can also perform the following:

- Manually enter patient, control, and calibration orders
- Review patient results, control data, and calibration results
- Set up System and assay configurations

The illustration below identifies the basic components of the System Control Center (SCC).

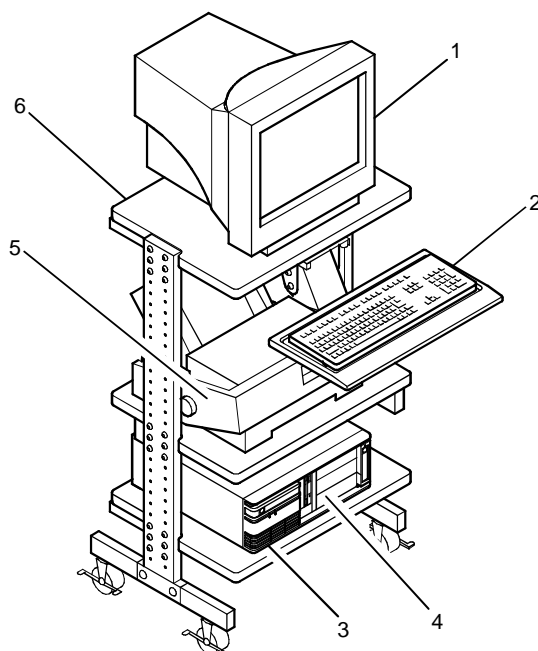


Figure 1.2: System Control Center

Item	SCC Component	Description
1	Color Touchscreen Monitor	17" color CRT with touch function
2	Keyboard	Standard alphanumeric
3	Computer (CPU)	IBM™ PC/AT compatible
4	Floppy Disk Drive	Used to install assay files, upgrade System software, and copy files from the CPU
5	Printer	AEROSSET dot matrix forms printer
6	Component Stand (optional)	Provides support for the SCC

Additional components not illustrated include:

SCC Component	Description
GPIB Communication Cable	Transmits all communications between the SCC and the System
Touchpoint	Can be used as an alternate means of performing Touchscreen functions

Analyzer

The AEROSET System performs all sample processing activities including:

- Identifying and dispensing samples and reagents
- Mixing the sample and reagents
- Performing photometric reads
- Measuring electrolytes
- Washing cuvettes

Sampling Area

The sampling area of the AEROSET System includes the **FastTrack™ Sampler** and **Carousel Sampler**.

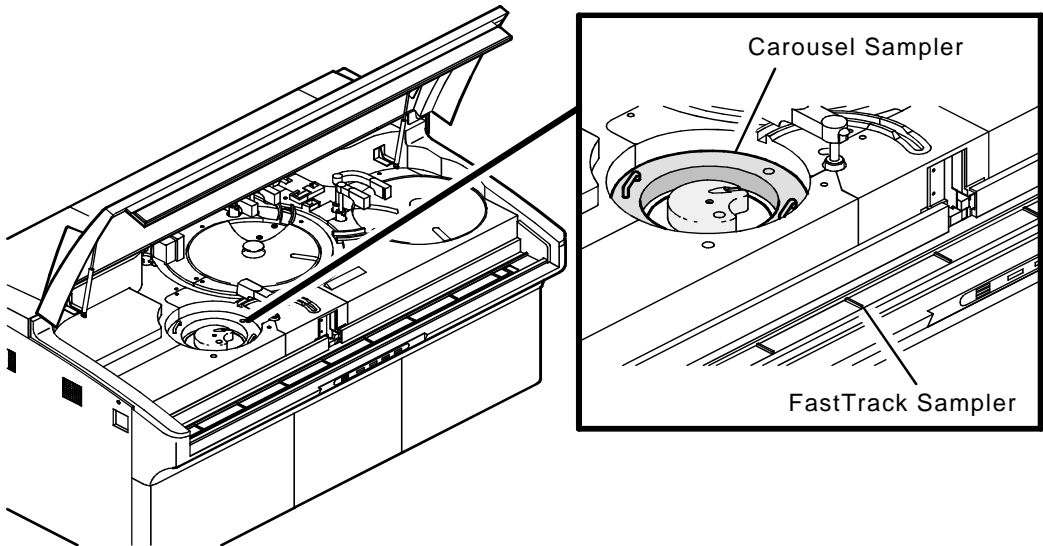


Figure 1.3: Sampling Area

FastTrack™ Sampler

The **FastTrack Sampler** transports routine patient samples to the Sample Arm.

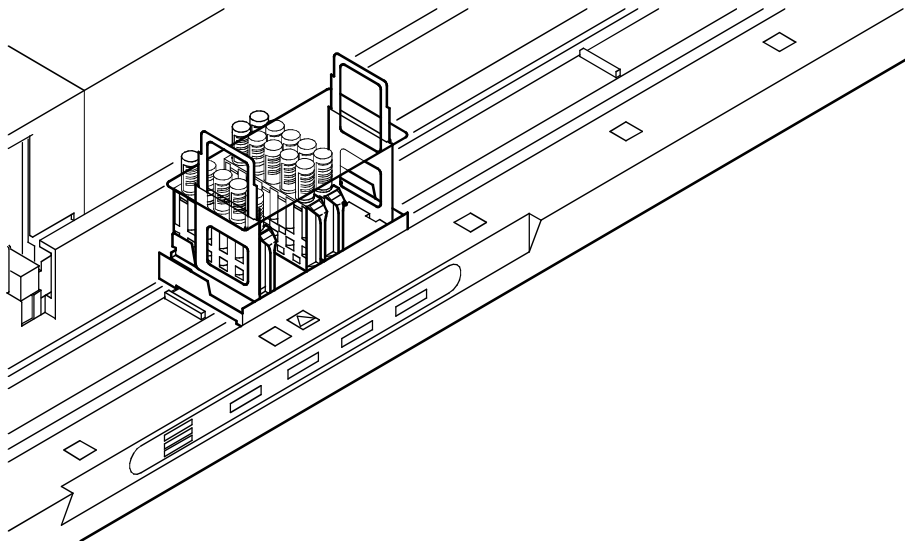


Figure 1.4: FastTrack Sampler

Sample Carriers are used to hold patient samples.

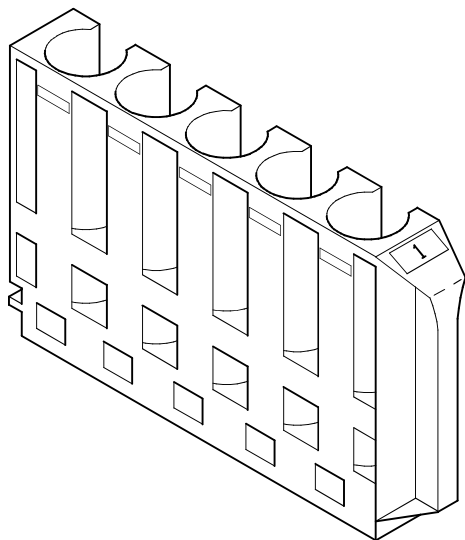


Figure 1.5: Sample Carrier

Sample Carriers are loaded into Sample Carrier Trays for loading onto the **FastTrack™ Sampler**.

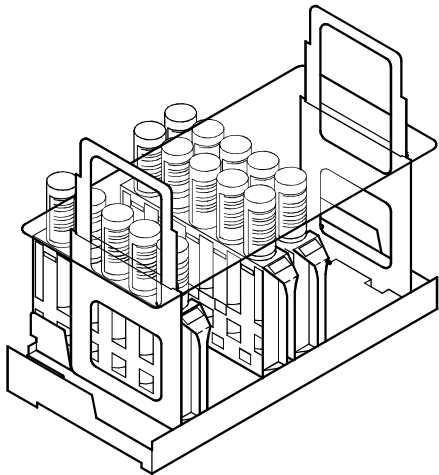


Figure 1.6: Sample Carrier Tray

The total sample capacity on the **FastTrack Sampler** is 200 samples.

- Each Sample Carrier holds up to five samples.
- Each tray holds up to 10 Sample Carriers.
- Up to four Sample Carrier Trays can be loaded onto the **FastTrack Sampler**.

Software

Screen Layout

After **Log On**, the screen for operating the AEROSSET System is displayed. The Main Display is divided into the following sections:

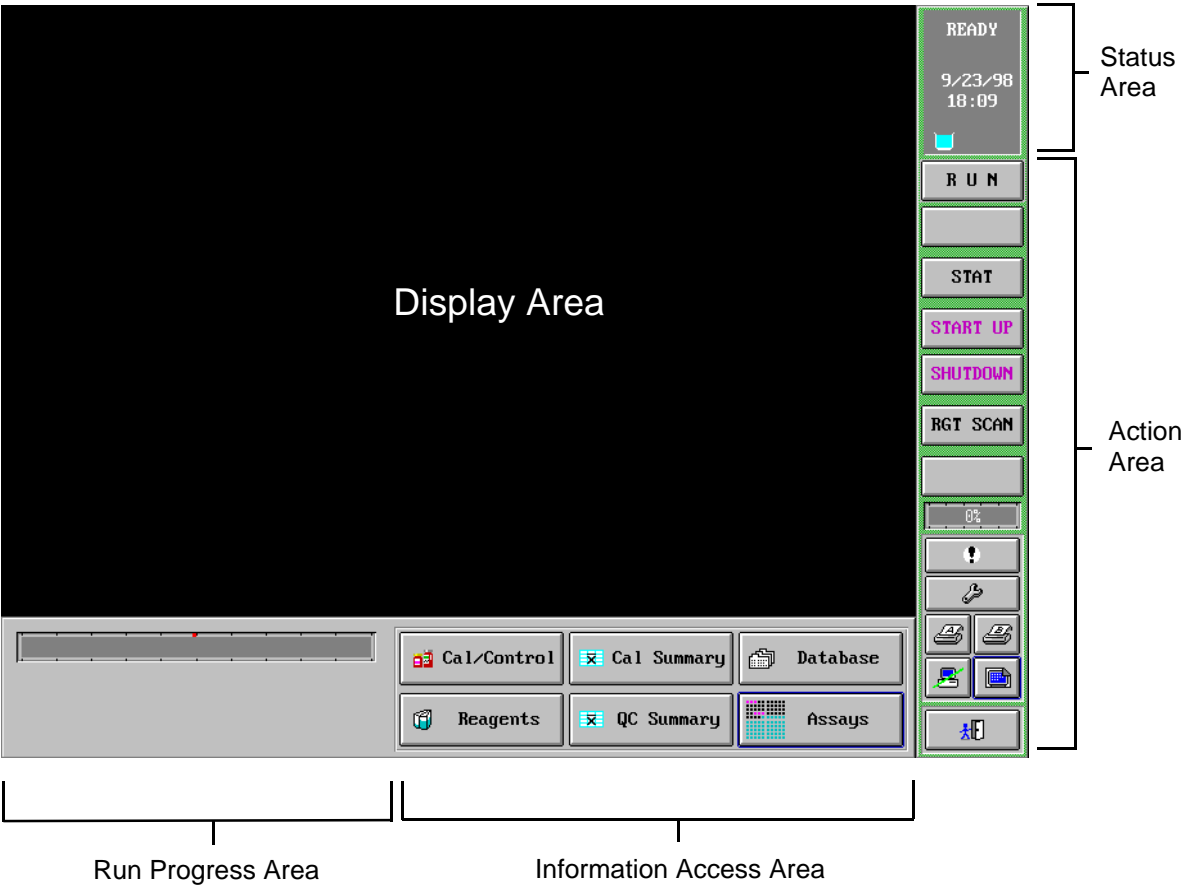
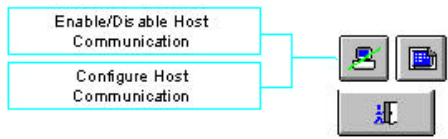
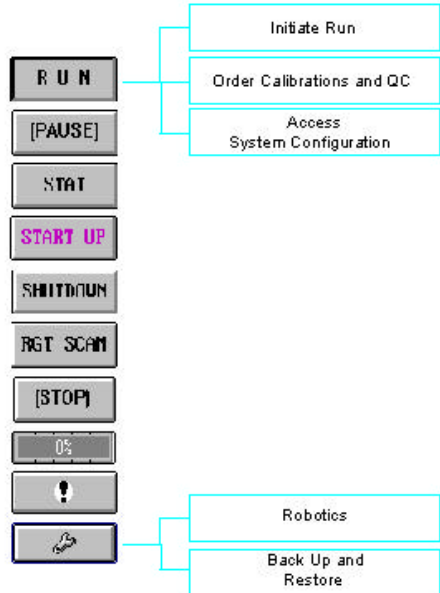


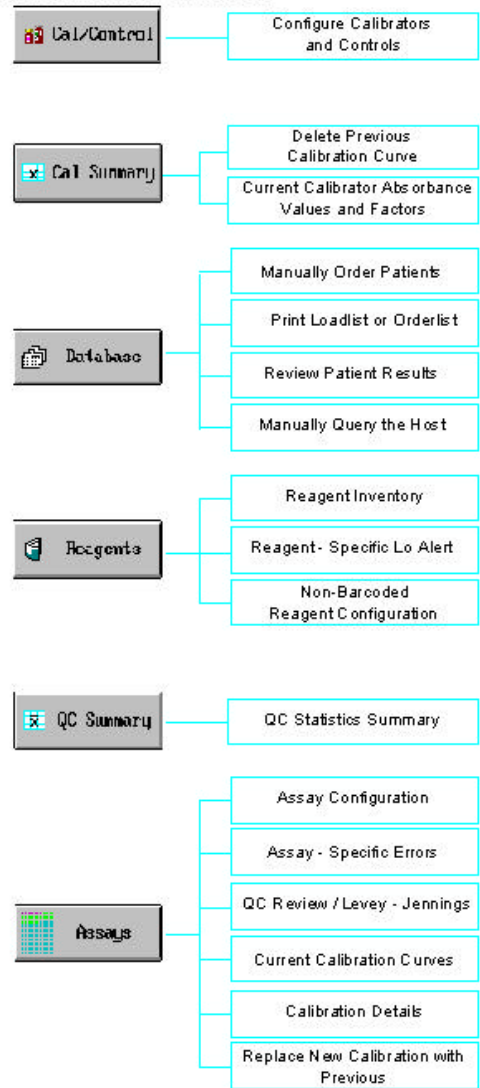
Figure 1.7: Main Display

Screen Hierarchy

Action Area









Information Access Area














Information Access Area

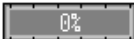








The following table describes the buttons located in the Information Access Area.

Press this Button...	To Access This Information	Description
 Cal/Control	Calibrator/Control Carousel Display and Configuration	When selected, displays the configuration of the Calibrator/Control Carousel (expected values can be entered).
 Reagents	Reagent Supply Display and Configuration	When selected, displays the Reagent Supply Center inventory. The Operator can view the position in which the reagent is located and the remaining reagent volume, both by number of tests remaining and by % volume remaining.
 Cal Summary	Calibration Summary	When selected, displays the current Calibration Absorbance Values, and Factors for all assays. The data can be saved so that the averages for a month can be displayed. It also allows for the deletion of previous calibration curves.
 QC Summary	Quality Control Summary	When selected, accesses the QC SUMMARY screen in which the Operator can view a summary of the QC statistics for all assays and levels. The Operator can also access the Levey-Jennings Graphs and QC details from this screen.
 Database	Database	When selected, displays the DATABASE screens. These screens are used to create patient sample orders, view completed results, view Result Error Codes, and result handling functions.
 Assays	Assays Display	<p>When selected, displays the ASSAYS screen to enable access to the ASSAY STATUS screens for each assay. Displayed on the ASSAY STATUS screen are the current calibration curve, reagent status, and a summary of the QC statistics. The Assay Configuration, Levey-Jennings Graph, and Calibration Details are also accessed from this screen. The assay-specific button in the ASSAYS screen displays different colors to indicate assay status:</p> <ul style="list-style-type: none"> • Pink - The reagent is expired or empty, or the calibration is expired. • Yellow - The reagent is below the alert level or a calibration error has occurred. • Black - An assay parameter is defined incorrectly. • Green - The assay is OK. <p>Select <Status> on the ASSAY STATUS screen for an explanation of the cause of the color change to the button.</p>

Action Area


The following table describes the buttons located in the Action Area.

Press this Button...	To Perform this Action	Description
	Initiate a run or perform System configuration	When selected, accesses the RUN OPTIONS screen. From this screen, the Operator selects the types of samples to be run and initiates the run process. Calibrations and controls are ordered from this screen. SYSTEM CONFIGURATION is also accessed from this screen.
	Pause the System during a run	<p>When selected, accesses the RUN OPTIONS screen. From this screen the Operator can PAUSE the System which temporarily stops the movement of the Reagent 1 Probes, Sample Probes, Carousel Sampler and FastTrack™ Sampler.</p> <p> WARNING: If a diluted sample has been dispensed, the Sample Arm may move after the status has changed to PAUSE. Wait 20 seconds before accessing the Carousel Sampler Area.</p> <p> WARNING: The AEROSSET System does not stop the movement of the Reagent 2 Probes, ICT™ Unit, Mixers, or Cuvette Washers so the Assay Read Times are not affected.</p> <p> CAUTION: The System completes the dispensing and mixing of any sample and reagent already aspirated. Confirm the PAUSE status in the System Status Area and confirm that the R1 indicator on the LUI Control Panel is illuminated before proceeding.</p>
	Order and start a STAT sample	When selected, accesses the screen to order a sample in the Reserved STAT Position and initiates the processing.
	Initiate the START UP Procedure	When selected, allows the Operator to define and initiate the START UP Procedures.
	Initiate the SHUTDOWN Procedure	When selected, allows the Operator to define and initiate the SHUTDOWN Procedures.
	Scan bar code labeled Reagent Cartridges	When selected, initiates a scan of the bar codes on the Reagent Cartridges in the Reagent Supply Centers .
	Stop the System during a run	<p>When selected, completely stops a run (all movement and processing ceases). Any samples in progress are not completed and remain pending. When the run is reinitiated by selecting <RUN>, these samples are re-pipetted.</p> <p> WARNING: The System attempts to home all robotics before movement stops. Confirm the READY status in the System Status Area before proceeding.</p>

Press this Button...	To Perform this Action	Description
	Process progress display	This button cannot be selected to perform an action, but instead shows the progress of processes, such as, when multiple reports have been selected to print, or multiple samples are being sent to the Host computer. This button displays a green bar and the percent completed.
	Review the Error Log	When selected, displays the Error Message Log. The background color of the Error icon changes to indicate that an error has occurred and indicates the error level. <ul style="list-style-type: none"> • Yellow - Low level error • Pink - Medium level error • Red - High level error The System can also be configured to generate an audible alarm when an error occurs.
	Perform Maintenance Utilities	When selected, displays the MAINTENANCE UTILITIES screens in which components can be moved using the Touchscreen for maintenance and troubleshooting purposes. These screens also allow software Backup and Restore features.
	Define options for Printer A	When selected, allows clearing of the printer buffer and defines the automatic report printing options.  NOTE: The format of the Patient Reports is configured in the DATABASE screen.
	Define options for Printer B	When selected, allows most of the same options as Printer A for an optional second printer that can be connected to the SCC computer.
	Define options for the Host interface connections	When selected, allows access to the Host interface functions. The Operator has the ability to enable, disable, and configure the communications with the laboratory Host computer.
	Print a copy of the screen	When selected, prints a copy of the currently displayed screen. This button cannot be selected when any other Action Area screen is displayed (Example: START UP OPTIONS and SHUTDOWN OPTIONS screens).
	Exit the System software	When selected, exits the System software and returns to the Log On dialog window. The Log On dialog window can be used to SHUTDOWN the System software prior to Powering OFF or prior to Log On with another Password.

Display Area

This area of the screen displays the information or actions corresponding to the button selected in the Information Access Area or Action Area. For example, if the **Cal/Control** button is selected, the **Calibrator/Control Carousel** display appears in the Display Area.

 **NOTE:** Unless the Operator exits the displayed screen (typically by selecting <OK>), before selecting a new option, the new screen overlays the earlier screen.

Status Area

This area displays the System status, date, time, water bath level, and High-Concentration Waste full indicator.

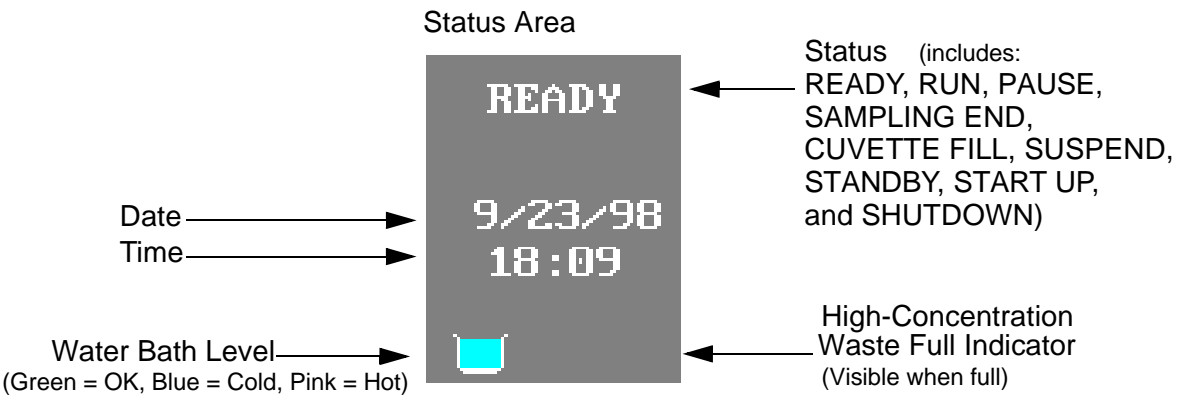


Figure 1.8: Status Area of the Main Display

Run Progress Area

This area shows the progress of assay analysis. When measurement is started, a colored bar appears at the left end of the Run Progress display, then moves toward the right as the measurement continues. When the bar reaches the red mark in the center of the display, the second reagent is dispensed (where appropriate). When the bar reaches the right end, the sample is complete and the results are displayed in the **DATABASE** screen.



NOTE: The Run Progress Area bar represents approximately 10 minutes of processing time (divided into approximately one minute intervals).

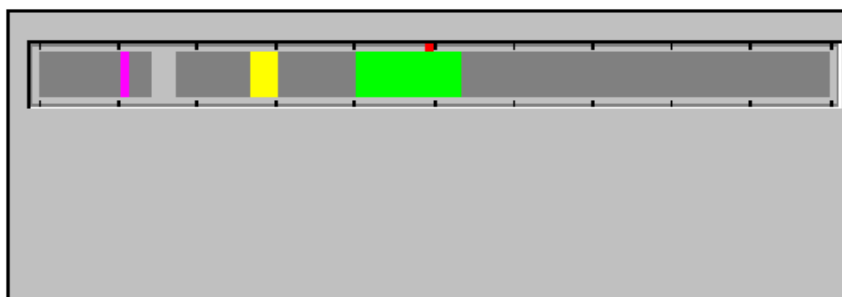


Figure 1.9: Run Progress Area of the Main Display

The bar color indicates the type of sample currently being analyzed. The following table describes the colors that appear.

Color	Sample Type
Green	Calibrator
Pink	STAT Sample
Gray	Patient Sample
Yellow	Control

AEROSSET™ Host Interface Specifications
30-1506/R2—March 1999

Figure 1.10: RUN OPTIONS Dialog Window

The following items can be configured in the **RUN OPTIONS** screen:

Field	Description
Priority	Patient samples in the Sample Carousel are prioritized over samples loaded on the FastTrack™ Sampler when this option is selected. The default is ON (selected).
Auto Return	The System can be configured to automatically return samples identified for rerun to the Sample Arm. When configured, all reruns are presented to the Sample Arm regardless of whether they are: <ul style="list-style-type: none"> • Manually ordered reruns • Auto Reruns The default is OFF (unselected).
Car'r	Allows the Operator to define the carrier numbers that are used when ordering samples to run in the Sample Carousel . Refer to Ordering Patient Samples in the Sample Carousel in <i>Section 5, Operating Instructions</i> . The default settings are: A = 1000, B = 2000, C = 3000, D = 4000, E = 5000, and F = 6000.

- 2. Select <SysCfg> from the right-hand column of the RUN OPTIONS screen.

The **SYSTEM CONFIGURATION** screen is displayed.

SYSTEM CONFIGURATION

☐ Auto Rerun

☒ Run Suspend Time(m) 10

☒ Enable Cal Edits

☒ Smart Sampling ☒ Saving Mode

1st Car'r for No-Barcode Smpls 1000

Cycle time(0.1sec) 45

☒ Query by Car'r ID

☒ Alphanumeric Sample ID

Barcode Length-Skip-ID 20 0 20

☒ Auto Order Calculations

☐ Auto Validate

☒ Enable Demog. Edits at Anytime

Characters for L/H Flags L H

☐ Sample Barcodes

☐ Fixed Digits

☒ Reagent Barcodes

Rgt Lo Alert(#T) 20

☐ External Robotics

ICT

☐ Error UFO

☐ Crsl Done No Beep

☐ Track Done No Beep

☐ STAT Done NG

☐ Suspend Finish-1

☐ Ready Finish-2

ScreenSaver (min) 10

OK


Cancel



SmplSeq


QC Rule


Figure 1.11: **SYSTEM CONFIGURATION** Screen

- 3. Configure the following items:


Field	Description
Auto Rerun	<div>The Auto Rerun function allows the Operator to configure the System to automatically reorder assays for those samples that meet user specified criteria (Rerun Rules), on an “assay by assay” basis. To activate the Auto Rerun function, the Operator must select this option and define the assay-specific rerun rules on the Assay Configuration screen.</div> <div><div></div><div>NOTE: The samples are not returned to the Sample Arm automatically unless the Auto Return options are selected from the RUN OPTIONS screen.</div></div>

Field	Description
Run Suspend Time (m)	Allows the Operator to configure how long the System waits (in minutes) once a run is complete. While in the SUSPEND status, an abbreviated run initialization is used (when the next run is initiated). The default setting is 10 minutes.
Enable Cal Edits	Allows the Operator to enter read values (<i>i.e.</i> , absorbances) for calibrators in the ASSAY STATUS screen. The default setting is ON .  NOTE: If configured to ON , only a Log On level of “super” can edit calibrator values.
Smart Sampling	Allows the System to determine the assay sampling order, to maximize processing speed and reduce the number of empty Reaction Cuvettes. The default setting is ON .
Saving Mode	Allows the System to pick up the over-aspiration volume once for the same sample, when aspirating more than one test, rather than each time a test is aspirated. The default setting is ON .  NOTE: Over-aspiration is an additional volume of sample aspirated before the actual sample volume required for analysis. This prevents the sample from being diluted with System water in the probe.
1 st Car'r for No-Bcode Smpls (samples)	Allows the Operator to configure the System to limit samples without bar code labels to specific Sample Carriers. This option must be configured in order to run samples without bar code labels or with damaged bar code labels. The default entry is 1000. • Example: If this was configured to 1000, the System would allow samples without bar code labels to be run in sample carriers with IDs 1000 or higher only.

Field	Description
Cycle time (0.1 sec)	Allows the Operator to enter the length of time, in tenths of seconds, for each quarter turn of the Reaction Carousel . The default setting is: 45 (x 0.1 sec = 4.5 seconds).
Save by Car'r ID	Orders are tracked in the database by carrier and position when this is selected. The default setting is ON .  NOTE: If samples have bar code labels and the Sample Bar Codes option is configured to ON , the Query by Car'r ID must be OFF .
Alphanumeric Sample ID	Allows the Operator to configure for numeric or alphanumeric Sample ID. The default setting is ON . <ul style="list-style-type: none">• When set to OFF, the Sample ID is numeric only and increments automatically on the ORDER SAMPLES screen. In addition, the leading empty spaces are filled by zeros to complete the configured ID character field (configured in the Bar Code Length-Skip-ID).• When set to ON, the Sample ID is alphanumeric, does not auto-increment, and does not fill in empty spaces with zeros.
Bar Code Length-Skip-ID	Allows the Operator to configure: <ul style="list-style-type: none">• Total length of the bar code• Number of characters to skip at the beginning of the bar code (bar code information which is not part of the Sample ID)• Number of characters allowed in the Sample ID. The default setting is 20-0-20. This indicates that there are up to 20 characters in the total length of the bar code and all are part of the Sample ID.

Field	Description
Auto Order Calculations	Allows the System to automatically perform calculations configured when the constituent assays are ordered. The default setting is ON .
Auto Validate	Allows the System to automatically validate the patient results in the database if no Result Error Codes were generated. The default setting is OFF .
Enable Demog. Edits in RESULT	Allows the Operator (Log On level of “super” only) to edit patient demographics from the RESULT screen. The default setting is ON .
Characters for L/H Flags	Allows the Operator to select single characters for the Low and High result flags. The default setting is L and H.  NOTE: These flags appear next to patient samples when they are below or above the configured reference range. These flags also appear next to QC samples when they are outside the defined 2 SD range.
Sample Bar Codes*	Allows the Operator to require the System to match sample bar codes with the entered Sample ID. Orders are tracked in the database by Sample ID when this is selected. The default setting is OFF .
Fixed Digits*	Allows the Operator to require the same number of characters for every bar code Sample ID. The default setting is OFF .
Reagent Bar Codes*	Allows the System to read Reagent Bar Code labels. This can be initiated by selecting < RGT SCAN > from the Action Area. The default setting is ON . If a Reagent Cartridge does not have a bar code label, the reagent position must be configured by the Operator. Refer to Reagent Configuration in <i>Section 2, Installation Procedures and Special Requirements</i> , in the AEROSSET System Operations Manual .

Field	Description
Rgt (reagent) Lo Alert (#T)	Allows the Operator to configure the System to alert the Operator when any Reagent Cartridge level falls below the defined number of tests. The alert level applies to all Reagent Cartridges. The default setting is 20 tests. This alert can also be configured for an individual Reagent Cartridge through the REAGENTS screen. Refer to Reagent Configuration in <i>Section 2, Installation Procedures and Special Requirements</i> , in the AEROSET System Operations Manual .
External Robotics*	Used with Laboratory Automation Systems. The default is OFF .
ICT™*	The default setting is ICT. Allows the System to use the ICT.
Audible Alerts	Audible alerts can be configured for the following conditions: <ul style="list-style-type: none">• An error• All samples have been accessed from the Carousel Sampler• All samples have been accessed from the FastTrack™ Sampler• A STAT is sampled• The System goes into the SUSPEND status• The System goes into the READY status
ScreenSaver (min)	Allows the Operator to enter the number of minutes the System permits for no screen interaction prior to initiating the screensaver. The default setting is 10 minutes.
*The Operator is required to cycle the System power after editing any of these options.	

Field	Description
Smpl.Seq (Sampling Sequence)	<p>Allows the Operator to override the System default for assay sampling order.</p> <p> NOTE: System level requirements for maximizing throughput cannot be overridden. The following list indicates these requirements in the order of sampling:</p> <ul style="list-style-type: none"> ➤ Normal assays ➤ Assay pairs ➤ ICT™ ➤ SmartWash™ pairs ➤ Dilutions ➤ Assays with a sample volume > 15 µL <p>The sampling sequence defined is used within each of the System level requirements.</p> <ul style="list-style-type: none"> • Select <SmplSeq> from the right-hand column of the SYSTEM CONFIGURATION screen. • Select the first assay from the Not Selected (left-hand) column and select <Add> from the right-hand column of the Sampling Sequence dialog window to add the assay to the Sampling Sequence (right-hand) column. • Repeat this step for all assays in the order desired. • To remove an assay from the sampling sequence, select the assay in the Sampling Sequence column and select <Remove> from the right-hand column of the Sampling Sequence dialog window.

To configure Westgard Rules, perform the following steps:

- 4. Select <QC Rule> from the right-hand column of the **SYSTEM CONFIGURATION** screen. The **QC Rules** dialog window is displayed. The default selection uses all rules defined in the figure below.

QC Rules

Nun	R	SD
1	<input type="checkbox"/> R	2
0	<input type="checkbox"/> R	0
1	<input type="checkbox"/> R	3
2	<input type="checkbox"/> R	2
2	<input checked="" type="checkbox"/> R	4
4	<input type="checkbox"/> R	1
10	<input type="checkbox"/> R	0
0	<input type="checkbox"/> R	0

In Control

Out of Control

OK

Cancel

Default

Figure 1.12: QC Rules Dialog Window

- a. The following table describes the **QC Rules** selections:

AEROSSET QC Rule	Westgard Rule	Description
1- <input type="checkbox"/> R-2	1 _{2s}	1 point is outside 2 SD
1- <input type="checkbox"/> R-3	1 _{3s}	1 point is outside 3 SD
2- <input type="checkbox"/> R-2	2 _{2s}	2 consecutive points are outside 2 SD on the same side of the mean
2- <input checked="" type="checkbox"/> R-4	R _{4s}	Range of 2 points is greater than 4 SD
4- <input type="checkbox"/> R-1	4 _{1s}	4 consecutive points exceed 1 SD on the same side of the mean
10- <input type="checkbox"/> R-0	10 _{\bar{x}}	10 consecutive points are above or below the mean

b. To edit the QC Rule configuration:

To...	Perform the following:
Define the number of points evaluated	Enter the number desired in the left-hand box of the rule. An entry of zero indicates that the rule is not used.
Evaluate the range between the number of points desired	Select the checkbox <input checked="" type="checkbox"/> next to R.
Evaluate the points against the mean	Deselect the checkbox <input type="checkbox"/> next to R.
Define the number of standard deviations	Enter the number in the right-hand box of the rule. An entry of zero indicates the use of the actual mean.

c. Select <OK> at the bottom of the **QC Rules** dialog window.




NOTE: The Use QC Rule checkbox (☒) must be selected on the **QC** page of each assay configuration to allow the System to apply the Westgard Rules for that assay.

5. Select <OK> from the top right-hand corner of the **SYSTEM CONFIGURATION** screen to save the selections.
6. Select <OK> from the **Save Settings** confirmation dialog window.

3. Select <PanelCfg> from the right-hand column of the **Order Samples** screen. The **Panel Configuration** screen is displayed.

Figure 1.14: Panel Configuration Screen

4. Select an empty panel button from the bottom two rows of the **Panel Configuration** screen. This button position selection defines the panel display order.
5. On the **Panel Configuration** screen, enter the following information:

Field	Description
Panel Number	Enter the number from 1 to 9999. The panel number must not be the same as any assay number used in the Assay Configuration screen.  NOTE: If a Host (interface) is connected, the panel number must match the one used by the Host.
Panel Name	Enter the profile name (up to seven characters).

6. Select the assays to be included in the panel. The selected assay buttons turn green.
7. When configuration is complete, select <OK> from the upper right-hand corner of the **Panel Configuration** screen.

Host Communications Icon

Sample information can be communicated through a Host computer via two methods:

- Host download
- Host query

Refer to *Section 5, Operating Instructions*, in the **AEROSSET System Operations Manual** for details on using the **Host computer**.

Host Configuration

Perform the following steps to configure the AEROSSET System for Host communication.

1. Select the **Host Communication** icon at the lower portion of the Action Area of the Main Display.



2. The **HOST COMMUNICATION** dialog window is displayed. Select **<Config>** at the bottom of the dialog window.



Figure 1.15: HOST COMMUNICATION Dialog Window

3. The **ONLINE CONFIGURATION** dialog window is displayed.

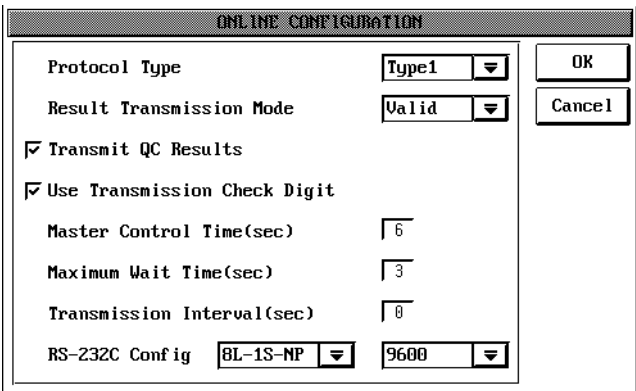


Figure 1.16: ONLINE CONFIGURATION Dialog Window

4. Configure the following information:

Field	Description
Protocol Type	Options include: Offline (default), Type 1, Type 1', Type 1'', Type 2, Type 3, Type 4, and Type 5.
Result Transmission Mode	Determines the release mode of results. Options include: <ul style="list-style-type: none"> Valid (validated results only) Request (manual release of results specified by the Operator). All results selected will be sent including reruns, replicates, and results with Result Error Codes. This is the default. All results will be sent including reruns, replicates, and results with Result Error Codes. (each result as it is completed)
Transmit QC Results	Select the checkbox (☑) if control results should be transmitted. The default is ON (selected).
Use Transmission Check Digit	When this setting is: <ul style="list-style-type: none"> Selected - messages and check digit (check for errors in message transmission) are accepted. This is the default. Unselected - only messages are accepted.
Master Control Time (sec)	Enter the minimum time period for which the System remains the master. The default is 6 seconds.
Maximum Wait Time (sec)	Enter the time period within which a delayed response to a transmitted message can be detected. The default is 3 seconds with a range of 0 - 99 seconds, however, greater than 20 seconds is not recommended due to impact on throughput. If no response is detected during this period, an error is generated in the Error Log.
Transmission Interval (sec)	Enter the interval (0 - 99 seconds) before the System transmits the next message. The default setting is 0 seconds.

Field	Description
RS-232C Config	<ul style="list-style-type: none">• Select the list box icon for the communications conditions (default setting is 8L-1S-NP). Select the desired option, then select the return arrow.• Select the list box icon for the baud rate (default setting is 9600). Select the desired option, then select the return arrow.

- 5. Select <OK> in the upper right-hand corner of the **ONLINE CONFIGURATION** dialog window. The **Save Settings** confirmation dialog window is displayed.
- 6. Select <OK>.

Order Options

Ordering Patient Samples on the FastTrack™ Sampler

- 1. Select <Database> from the Information Access Area if the DATABASE screen is not currently displayed.

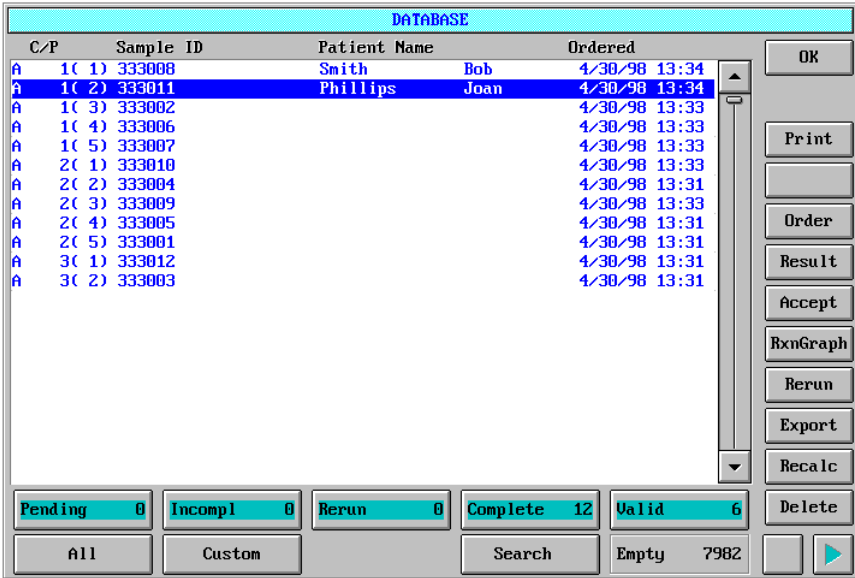


Figure 1.17: DATABASE Screen

- 2. Select <Order> in the right-hand column on the DATABASE screen. If an order already exists and it is highlighted, the Order Samples dialog window is displayed.

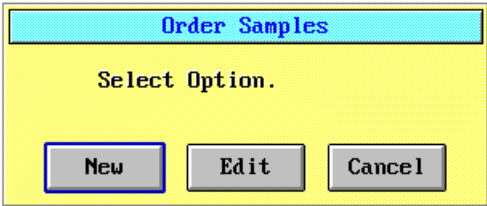



Figure 1.18: Order Samples Dialog Window

3. Select **<New>**. The **Order Samples** screen is displayed.

[illegible]

Figure 1.19: Order Samples Screen

4. Enter the patient sample information.

Field	Action	Description
Sample ID	Enter the Sample ID	The Sample ID field can contain 6 to 20 alphanumeric characters.
Name (L/F)	Enter the patient last and first name, if desired	The Last Name field can contain up to 20 alphanumeric characters and the First Name field can contain up to 10.
C/P	Enter the carrier ID number and position	The C/P is a required field unless the sample has a bar code label and the System is configured for sample bar codes.  NOTE: The information required in this field when ordering samples in the Sample Carousel is described in the following subsection, Ordering Patient Samples in the Sample Carousel .
Order D/T	No action required	The current date and time will automatically be displayed.

5. Select the assays or panels to be run. The first two rows of buttons display the panels configured on the System. If more panels are configured than can be displayed, use the up and down arrow buttons to view the additional panel (up to 100).
6. Select <New> in the right-hand column of the **Order Samples** screen to save the order and continue to the next patient sample order.
7. Repeat steps 4 - 6 for all patient samples to be ordered.
8. When ordering is complete, select <OK> in the right-hand column of the **Order Samples** screen.

Ordering Patient Samples in the Sample Carousel

1. Select <Database> from the Information Access Area if the **DATABASE** screen is not currently displayed.
2. Select <Order> in the right-hand column on the **DATABASE** screen. The **Order Samples** screen is displayed.
3. Enter the Sample ID and name (if desired).
4. In the C/P field, enter the carrier and position number. The Carrier number is defined in the **RUN OPTIONS** screen for each section of the **Sample Carousel**.

Example: If the **Sample Carousel** portion of the **RUN OPTIONS** screen is defined as shown below, the Operator should enter 1000 in the C (Carrier field) and 2 in the P (Position field) on the **Order Samples** screen for a sample placed in Section A/Position 2 of the **Sample Carousel**.

Sample Crsl	Car'r
<input type="checkbox"/> Auto Return	A 1000
	B 2000
<input checked="" type="checkbox"/> Priority	C 3000
	D 4000
	E 5000
Track Sampler	F 6000
<input type="checkbox"/> Auto Return	

5. Select the assay(s) and/or panel(s).
6. Select <New> to order more patient samples or <OK> when ordering is complete.

[illegible]

Figure 1.20: Order Samples Screen

Sample Replicates

Enter the number of replicates desired in the Replicates field.
Up to 5 replicates can be entered.

Example: If 3 replicates are entered, the System will dispense and analyze each selected assay 3 times.

Manual Dilution

Enter a multiplier in the Manual Dil field, if an off-line dilution was performed. The multiplier is used to correct the final result for all assays ordered.

Example: If a 1:5 dilution was performed, enter a 5 in this field. The System will multiply the final result by 5 to correct for the dilution.

Onboard Dilution

The measurement type for each assay can be selected. The options are:

Option	Description
Standard	The default dilution configured
Dil 1	Dilution option 1
Dil 2	Dilution option 2



NOTE: Refer to *Section 2, Installation Procedures and Special Requirements*, in the **AEROSSET System Operations Manual** for details on **configuring dilution options**.

To define the measurement type for each assay, first select the type and then select the Assay button. The measurement type is visually displayed by a colored line on the Assay button.

Option	Line Color
Standard	Green
Dil 1	Blue
Dil 2	Yellow



CAUTION: The Operator must verify the correct dilution is selected for each patient sample order entered manually. Failure to verify dilution may affect patient results.

Patient Demographics

Additional patient information may be entered by selecting **<Demog>** located on the **Order Samples** screen in the upper right-hand corner above the panel buttons.

The screenshot shows a dialog box titled "Patient Demographics". It contains the following fields and controls:

- Patient ID:** A text input field.
- Sex:** A dropdown menu currently showing "Unknown".
- Age (yy mm):** Two numeric input fields, both containing "0".
- Birthdate:** Three numeric input fields separated by slashes (/).
- Doctor:** A radio button that is checked, followed by a text input field.
- Location:** A radio button that is unchecked, followed by a text input field.
- Comment:** A radio button that is unchecked, followed by a text input field.
- Buttons:** "OK", "Cancel", "Add", and "Delete" are located on the right side of the dialog.


Figure 1.21: Patient Demographics Dialog Window

The **Patient Demographics** dialog window allows the Operator to enter the following information:

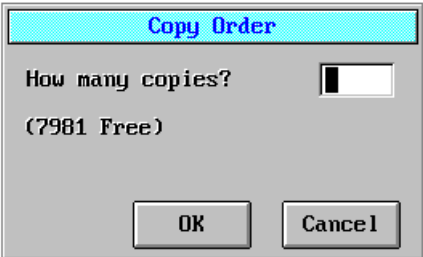
Option	Description
Patient ID	Up to 20 alphanumeric characters can be entered
Sex	Select from Unknown, Male, or Female using the Drop-down list box
Age (yyy mm)	Up to 3 digits are allowed for the year; up to 2 digits are allowed for the month
Birthdate	4 digits are required for the year; up to 2 digits are allowed for the month and day
Doctor	A maximum of 20 alphanumeric characters can be entered or a selection can be made from the list in the Drop-down list box. Entries can be added to the list to appear in the Drop-down list box. <ul style="list-style-type: none">• To add an entry to the list: Select <Add>• To remove an option from the list: Select the option on the list and select <Delete>
Location	
Comment	

Batch Ordering

Batch Ordering is used when the same assays will be ordered for more than one sample.

 **NOTE:** Prior to using the Batch Ordering option, verify that sequentially numbered carrier/positions (C/P) are available for the number of samples in the batch.

1. Enter the first patient sample order.
2. Select <Copy> in the right-hand column of the **Order Samples** screen. The **Copy Order** dialog window is displayed.



3. Enter the number of additional samples in the batch then select <OK>. The order is copied for the specified number of samples. The patient name and demographic information are not copied. The C/P automatically increments. The Sample ID automatically increments, only if it is defined as numeric format in the **SYSTEM CONFIGURATION** screen.



NOTE: Refer to **Sample ID** in *Section 2, Installation Procedures and Special Requirements*, in the **AEROSET System Operations Manual** for details on configuring the Sample ID format.

4. When ordering is complete, select <OK> in the right-hand column of the **Order Samples** screen.

Patient Sample Requirements



Sample Bar Code Labels


Factors that affect positive sample identification follow:

- Bar code labels must meet the recommended specifications.
- Bar code labels must be properly applied to the sample tubes.

Bar Code Label Specifications

Meeting the following specifications allows the highest probability of reading the Sample ID on a bar code label.

Component	Description
Printer type	Thermal printer with a minimum resolution of 300 dpi (dots per inch). Proper maintenance of the bar code printer is essential.  NOTE: Laser jet and ink jet printers that have less than 300 dpi resolution may not produce acceptable labels. Dot matrix printers are not recommended.
Label stock	Good quality white label stock. The black ink used to print the bar codes must be compatible with the label stock used.  NOTE: Labels must meet the American National Standards Institute (ANSI) recommendations, or equivalent, for bar code print quality (grade levels A and B). Contact your bar code label supplier or your print supplier for assistance in grading your labels.

Component	Description
Symbology	<p>Symbologies allowed on the AEROSSET System include:</p> <ul style="list-style-type: none"> • Code 39 • Codabar • Code I 2 of 5 • Code 128 (subset A, B, and C) <p> NOTE: No checksums or start/stop characters are allowed</p>
Quiet zone	<p>The quiet zone is the distance from the first black bar to the left edge of the label and the distance from the last black bar to the right edge of the label.</p> <p>Quiet zone distance: 0.197" (5 mm)</p>
Density (narrow bar width)	Minimum density is 0.0075" (0.19 mm)
Ratio (wide to narrow bar)	<ul style="list-style-type: none"> • 1:2.2 to 1:3.0 (when narrow bar width is < 0.508 mm) • 1:2.0 to 1:3.0 (when narrow bar width is ≥ 0.508 mm)

Sample ID (Identification) Length

The following factors affect the number of characters that can fit on a sample bar code label:

- Label length
- Label placement
- Symbology used (described in preceding table)
- Density (narrow bar width, described in preceding table)
- Ratio (wide to narrow bar ratio, described in preceding table)
- Quiet zone (described in preceding table)

The AEROSSET System allows 4 to 20 characters on the sample bar code label.

Label Length


Both 75 mm and 100 mm length (13 x 75, 13 x 100, 16 x 100, and 16 x 75 mm) tubes are allowed for use on the AEROSET System.

Maximum bar code lengths:

- 2.4 inch (60 mm) label for 75 mm tubes
- 3.4 inch (85 mm) label for 100 mm tubes

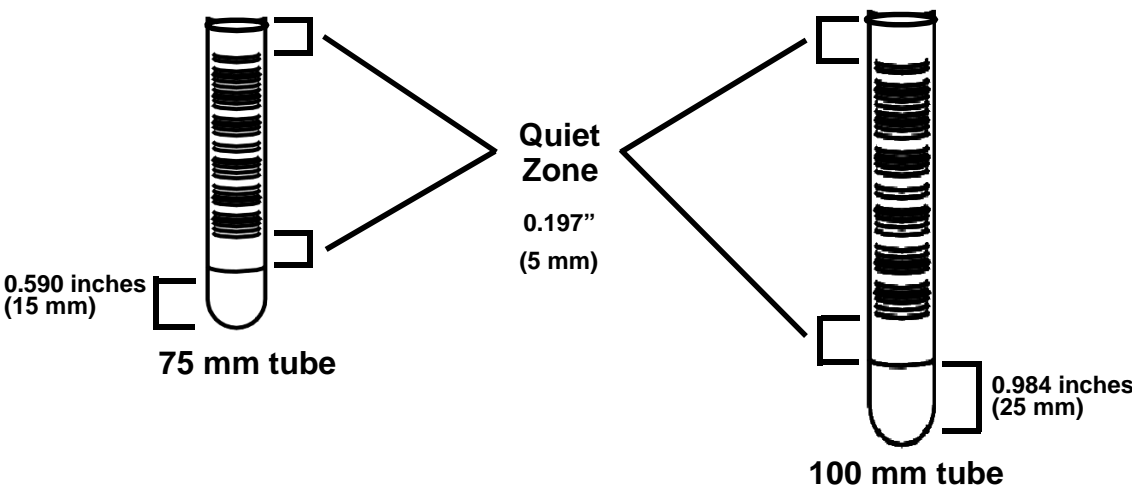
Label Placement

The bar code label should be top-justified (align the edge of the label with the top of the tube). Place the tube in the Sample Carrier and/or the Cup/Tube Adapter so that the bar code fills the width of the window.

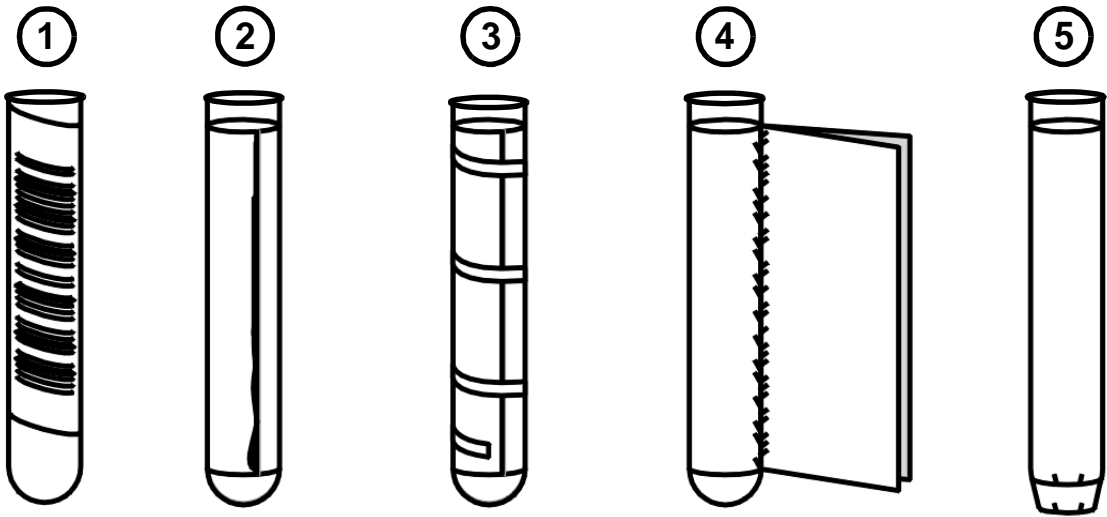
 **NOTE:** Bar code labels must be placed on tubes as vertically straight as possible. If the vertical angle exceeds five (5) degrees, the sample Bar Code Reader may have difficulty locating the required quiet zones. Refer to the following figure for a description of label placement requirements.

Tube Labeling Requirements

The following figures illustrate the correct and incorrect placement of labels on sample tubes.



Correct Label Placement



Incorrect Label Placement

1. Angled placement
2. Edges peeled loose
3. Clear tape over label
4. Flap extending from label
5. Label extending beyond bottom of tube

Running the AEROSET System with a Host Computer

Downloading Orders from Host Computer

To download orders from a Host computer:

- 1. Select <**Database**> from the Information Access Area.
- 2. Select <**Online**> from the right-hand column. The **On-line Data Transfer** dialog window will display.
- 3. Select the desired option:

Option	Description
Order Query	Instructs Host to transmit all pending orders for the AEROSET System.
Order Query by Sample ID	Instructs Host to transmit orders for specified sample(s).
Order Query by C/P	Instructs Host to transmit all orders for the specified C/P.

- 4. The selected patient samples are downloaded and displayed in the **DATABASE** screen.

Host Order Query

The AEROSET System can also be configured for Host Order Query. This feature allows the AEROSET System to query the Host Computer for the tests to be run on a sample when the AEROSET System encounters the sample and identifies it by reading the bar code.

If the AEROSET System is configured for Host Order Query, the Operator loads the bar code labeled samples and initiates a run. The AEROSET System scans the bar code and determines that it does not have orders for the sample, then sends a message to the Host requesting the orders. The AEROSET System then waits for the Host to reply and runs the sample when the order is received.



NOTE: Refer to *Section 2, Installation Procedures and Special Requirements*, in the **AEROSET System Operations Manual** for details on **System configuration**.

Transmitting Results to the Host

Results are transmitted to the Host computer automatically if the AEROSSET System is configured to do so in the **Online Configuration** screen.



NOTE: Refer to *Section 2, Installation Procedures and Special Requirements*, in the **AEROSSET System Operations Manual** for details on **System configuration**.

If the AEROSSET System is not configured to send results automatically or if Host communication was temporarily suspended and results must be resent, perform the following procedure:

1. Select **<Database>** in the Information Access Area, if the screen is not currently displayed.
2. Highlight the sample(s) to be transmitted.
 - To highlight multiple consecutive samples in a list, select the first sample in the list then highlight the remaining samples by holding **[Shift]** and pressing **[↓]** on the keyboard.
 - To highlight multiple random samples, hold **[Ctrl]** while selecting the samples on the screen.
3. Select **<Online>** in the right-hand column. The **On-line Data Transfer** dialog window is displayed.

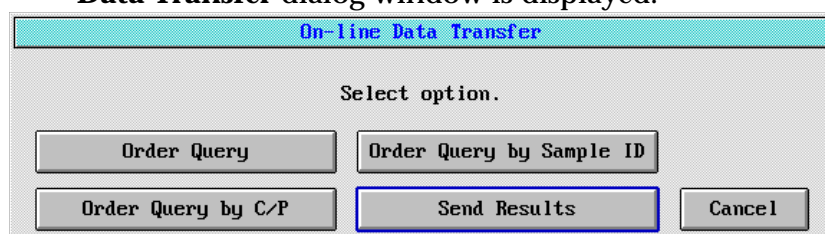


Figure 1.22: On-line Data Transfer Dialog Window

4. Select **<Send Results>**. The results of the highlighted samples will be sent to the Host system.

Scope

These specifications apply to on-line communication between the automated AEROSET System and the Host (external data processing unit).

The responsibility of the AEROSET System for the RS-232C interface ends with the communication connector. The broken line in the figure below shows the boundary of the operating domain.

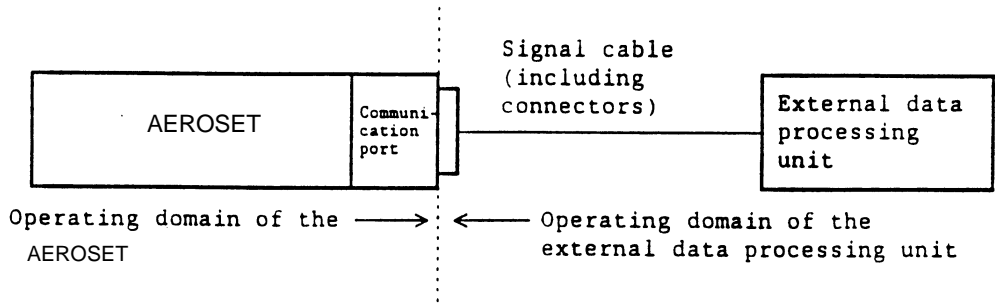



Figure 1.23: Domain Boundary

Overview of the AEROSET Host Interface

The AEROSET System is equipped with an on-line communication function which enables the System to receive sample orders and send the sample results to the Host.

The AEROSET System utilizes seven types of On-line communication (1, 1', 1", 2, 3, 4, and 5).

- When Type 1, 1', or 1" is selected, the AEROSET System is always MASTER.
- When Type 2, 3, 4, or 5 is selected, the AEROSET System and the Host are MASTER alternately.

 **NOTE:** The half-duplex method is employed for all communication; in this method, text is exchanged alternately.

The throughput (rate at which results are generated) may be lowered depending on the RS-232C communication status (the computer status, the duration for which the Host remains MASTER, and the number of ordered tests). Throughput may be optimized by downloading the test orders.

The communication modes are further defined as follows:

Order Transmission Mode (OTM)	Explanation
Host Query	AEROSSET System automatically issues an order request when a sample is present. (Types 1', 1'', 2, 4)
Order Query	The order request is initiated manually by the Operator. (Any type)
Host Download	AEROSSET System does not issue an order request. The Host sends orders without receiving an order request. (Types 2, 3, 5)

Result Transmission Mode (RTM)	Explanation
Valid	Validated result is sent when it is ready.
All	Result is sent when sample is complete.
Request	Results selected by the Operator are sent when the < Send Results > button is pressed.



NOTE: Order Transmission Mode is linked to protocol type. Result Transmission Mode is selected in the **On-line Configuration** screen.

Hardware Specifications

Interface Specifications

Transmission method	Asynchronous, half-duplex, RS-232C
RS-232 configuration: These options or settings are specified on the On-line Configuration screen.	
• Character length	7 or 8 bits (8 is the default)
• Stop bit	1 or 2 bits (1 bit is the default)
• Parity	1 bit, none, even, odd (selectable) (None is the default)
• Baud Rate	9600, 4800, 2400, or 1200 baud (selectable). (9600 is the default.)
Connector	9-pin D-sub connector, female on the cable side
Signal level (RS-232C)	+5 V ~ +15V: "0" - 3 V ~ -15 V: "1"
Maximum cable length	10 m (RS-232)
Hardware handshake	Handshake is performed by the DSR/RTS control signals

Communication Configuration

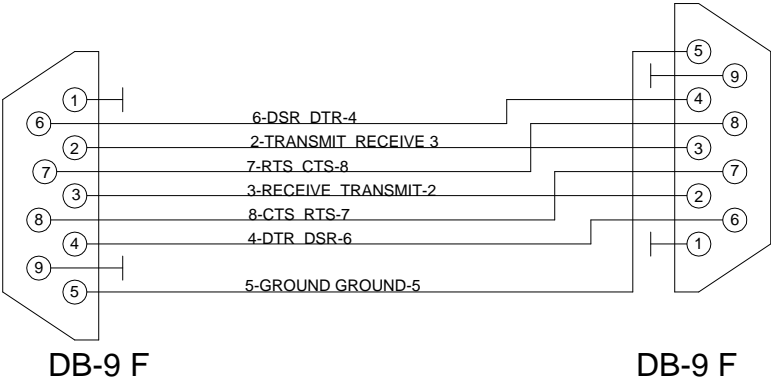
Protocol Type	Off-line, Types 1, 1', 1", 2, 3, 4, 5
Result Transmission Mode	Operator configurable: <ul style="list-style-type: none"> • Valid • All • Request
Transmit QC results	Not enabled
Use Transmission check digit	Not enabled
MASTER - Control Time	Types 1, 1', and 1": Always 0 Types 2, 3, 4, 5: 6 seconds is recommended 0 is not acceptable
Maximum Wait Time	3 seconds (up to 20 seconds may be entered)
Transmission Interval	0 seconds
RS-232C	<ul style="list-style-type: none"> • 8L - 15 - NP (Default) • 9600 (Default baud rate)

Connector Pin Assignment

RS-232: Connected using a female connector with the following pin assignment:

Pin Number	Signal Name
2	Receive data
3	Transmit data
4	Data terminal ready
5	Signal GND
6	Data set ready
7	Request to send
8	Clear to send

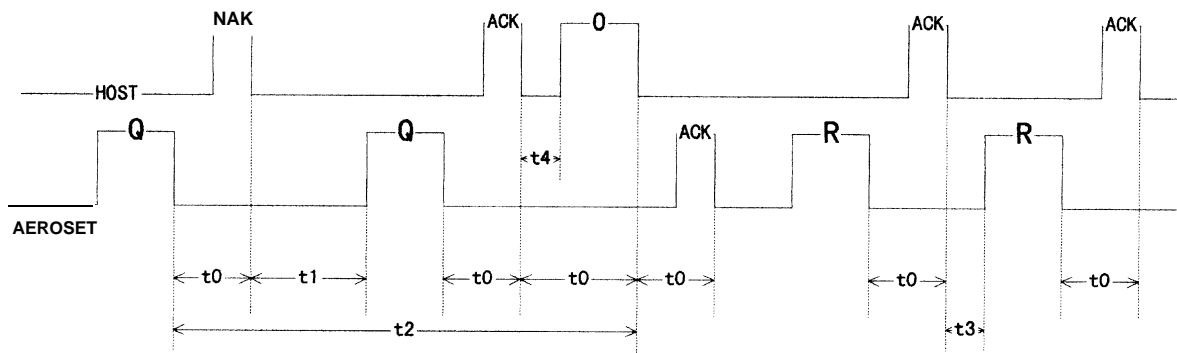
The following diagram shows the recommended cable layout:



Software Specifications

Transmission Timing Chart

The chart below shows the transmission timing of typical text:



Time	Meaning
t0 :	0<= t0 <= maximum wait time. (Default 3 sec.)
t1 :	Transmission Interval (Default 0 sec.) <= t1 <= maximum wait time.
t2 :	t2 <= maximum wait time x 4 However, when t2 > 3.5 seconds, the throughput of the AEROSSET System may not be achieved.
t3 :	Transmission Interval <= t3 When more than one Result Text is transmitted in the batch mode, t3 is the time between texts.
t4 :	0.1 sec. <= t4

General Text Format

The AEROSSET System communicates with the Host using data blocks enclosed with STX (02H) Start Transmission and ETX (03H) End Transmission characters.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

General Format with Check Digit:

Use of a check digit (CD) is recommended. It may be enabled in the **On-line Configuration** screen. The check digit is used for detecting communication errors and, when selected is used for both transmission and reception. The data for this byte is determined by performing exclusive OR (XOR) for all byte data except the STX and CD. When the check digit is in use, the General Format changes to the following:

STX (02H)	FUNC	DATA TEXT	ETX (02H)	CD
--------------	------	--------------	--------------	----

The FUNC, DATA TEXT, and CD sections are the variable sections of the message.

The FUNC section identifies to the Host or the AEROSSET System the intended use of the message. This determines if the message is an Order Request Text, or Order Text, etc. The length of the string is two characters. The types of messages are further defined below.

AEROSSET	Host	FUNC		Definition
Message		First Character	Second Character	
X		Q (51H)	Space (20H)	Order Request Text
	X	O (4FH)	Space (20H)	Order Text
	X	O (4FH)	R (52H)	Order Text (Replacement Order)
X		R (52H)	Space (20H)	Result Text
		T (54H)	Space (20H)	Result Request Text
	X	C (43H)	R (52H)	Result Control Text; Change Sample to Rerun-Waiting Status
	X	C (43H)	C (43H)	Result Control Text; Clear Sample Rerun-Waiting Status
	X	C (43H)	V (56H)	Result Control Text; Validate Incomplete Sample
	X	I (49H)	Space (20H)	Initialize Text
X	X	M (4DH)	Space (20H)	Release MASTER Text

The DATA TEXT section contains the information that is to be utilized as directed in the FUNC section. The DATA TEXT section may contain no information, specialized information, or one or more groups of data such as ID group, order group, patient group, or result group. A group is a consecutive sequence of related fields. ID group: all fields are required for group to be valid. The System ID field will only be contained in messages originating from the AEROSSET System.

Groups are defined as follows:

ID Group Data	Field Length (Characters)	Valid Characters	Comments
System ID	4	20H to 7FH	Common to all AEROSSET System transmissions except for ACK and NAK responses. Not used in all ID group transmissions from the Host.
Sample ID			Numeric or alphanumeric is defined on the SYSTEM CONFIGURATION screen.
• Numeric	20	30H to 39H	Left-justified Unused digits to the right are all set to Spaces (20H)
• Alphanumeric	20	20H to 7FH	Left-justified Unused digits to the right are all set to Spaces (20H)
• STAT	20	20H to 7FH	STAT ID may be input by the Operator or may be generated by the AEROSSET System. If the AEROSSET System generates the ID, then the format will be 20 characters in length, beginning with S (53H) with 19 additional System generated characters.
Carrier*	4	20H, 30H, 39H	Right-justified Unused digits to left are all set to Spaces (20H)
Position*	2	20H, 30H, 39H	Right-justified Unused digits to left are all set to Spaces (20H)
No Terminator			No terminator for this group

*Carrier and position notes:

Sample Type	Carrier Number	Carrier Position
Routine Sample	1 to 9999	1 to 5
Conveyed Sample	0	48
Control	0	1 to 45
STAT	0	47
Not Specified	0	0

Order Group Data	Field Length (Characters)	Valid Characters	Comments
Manual Dilution Ratio	3	1 to 999	Right-justified Unused digits to the left are set to Space (20H) If no manual dilution is performed, specify 1 (31H)
Assay Number	4	30H to 39H	Right-justified Unused digits to the left are set to Space (20H) Assay number is defined in the Assay Configuration File
Sample Volume	1	1 (31H) -or- 2 (32H) -or- 3 (33H)	1 = Std sample vol 2 = Dil 1 sample vol 3 = Dil 2 sample vol
Terminator	1	ETB (17H)	ETB must be sent at the end of this group If there is no order, then ETB only is sent for the Order Group



NOTE: The Assay Number and the Sample Volume fields are repeated as many times as there are tests to order. For examples, refer to *Appendix B*.

Patient Group Data	Field Length (Characters)	Valid Characters	Comments
Order Date and Time	<u>12 Total</u> Year = 4 Month = 2 Day = 2 Hour = 2 Minute = 2	<u>30H to 39H</u> 4 digit year 2 digit month 2 digit day 2 digit hour 2 digit minute	Month, day, hour, and minute must be 2 digit, no zero suppression If not entered, set Zero (30H) for all digits
Patient Name (Surname)	20	20H to 7FH	Left-justified Unused characters to the right are set to Space (20H)
Patient Name (First)	10	20H to 7FH	Left-justified Unused characters to the right are set to Space (20H)
Patient Sex	1	Male (4DH) -or- Female (46H) -or- Space (20H)	If a patient sex is specified, a valid birthdate must be specified as well. <u>Failure to do so, may cause incorrect reference range to be printed on AEROSET printouts.</u>
Patient Birthdate**	<u>8 Total</u> Year = 4 Month = 2 Day = 2	<u>30H to 39H</u> 4 digit year 2 digit month 2 digit day	If not entered, set Zero (30H) for all digits. <u>**If birthdate is sent as all Zeros, send patient sex as Space (20H).</u>
Location	20	20H to 7FH	Left-justified Unused characters to the right are set to Space (20H)
Doctor	20	20H to 7FH	Left-justified Unused characters to the right are set to Space (20H)
Comment	20	20H to 7FH	Left-justified Unused characters to the right are set to Space (20H)
Terminator	1	ETB (17H)	ETB must be sent at the end of this group. If there is no order, then ETB only is sent for the Order Group.



NOTE: All fields in the ID and Order Group must be included in the transmission. All entries in the Patient Group are optional with the following exception: If a field in the Patient Group is defined, then the fields that occur prior to the specified field **must** also be defined; they cannot be omitted. For Example: If in the Patient Data Group, a “Comment” is sent, then all fields from Order Date/Time through Doctor **must** also be sent (even if only as a Space (20H)).

Result Group Data	Field Length (Characters)	Valid Characters	Comments
Order Date and Time	<u>12 Total</u>	<u>30H to 39H</u>	Month, day, hour, and minute must be 2 digit, no zero suppression If not entered, set Zero (30H) for all digits
	Year = 4	4 digit year	
	Month = 2	2 digit month	
	Day = 2	2 digit day	
	Hour = 2	2 digit hour	
	Minute = 2	2 digit minute	
Manual Dilution	3	1 to 999	Right-justified Unused digits to the left are set to Space (20H)
Assay Number	4	30H to 39H	Right-justified Unused digits to the left are set to Space (20H)
Result	6 Including decimal point and sign	Numeric: 20H, 30H to 39H, 2DH, 2EH, 2AH Alphanumeric: 20H to 7FH	Right-justified Unused digits to the left are set to Space (20H) When analysis has not been performed: 6 Spaces (20H) When result cannot be reported due to an error: 6 Spaces (20H) When result exceeds 6 digits: 6 * (2AH) When the result is a negative number: “-” (2DH) is set just before the result. Qualitative results: 6 characters
Error Code	1	20H to 7FH	If no error: Space (20H) A single error code is transmitted; if multiple error codes exist, the highest priority is transmitted. Refer to <i>Appendix A, Transmitted Error Codes</i> for further definition.
Sample Volume	1	1 (31H) -or- 2 (32H) -or- 3 (33H)	1 = Standard sample volume 2 = Dil 1 sample volume 3 = Dil 2 sample volume
Op Flag	1	20H, 41H, 44H, 45H, 52H, 53H, 57H	Op flag will be either a Space or 1 alphabetic character A(41H) = Accepted result D(44H) = Deleted result E(45H) = Edited result R(52H) = Rerun order issued S(53H) = Rerun result accepted W(57H) = Result not available (In process or not analyzed yet)
Terminator	1	17H	ETB must be sent at the end of this group

Transmission Protocol

The ACK (acknowledgement)/NAK (non-acknowledgement) protocol is used to ensure reliable data transmission between the AEROSSET System and the Host. Listed below are the valid text messages for the AEROSSET. These will be defined further in the sections.

ACK and NAK Text	(AEROSSET to Host and Host to AEROSSET)
Initialize Session Text	(Host to AEROSSET System)
Release MASTER Text	(Host to AEROSSET System)
Release MASTER Text	(AEROSSET System to Host)
Order Request Text	(AEROSSET System to Host)
Order Text	(Host to AEROSSET System)
Result Text	(AEROSSET System to Host)
Result Request Text	(Host to AEROSSET System)
Result Control Text	(Host to AEROSSET System)

Transmission Protocol Confirmation Text Format
(AEROSSET System to Host, Host to AEROSSET System)

When the text is received properly, ACK (06H) is returned to the sender as a response. Otherwise, NAK (15H) is returned.

The composition of the response text is shown below:

ACK Response:

STX 02H	ACK 06H	ETX 03H
------------	------------	------------

NAK Response:

STX 02H	NAK 15H	ETX 03H
------------	------------	------------

Other responses to ACK:

- When a code other than ACK or NAK is received within the ACK wait time, the received code is recognized as NAK.
- When no character is received within the ACK wait time (maximum wait time), it is recognized as NAK.
- For the response procedure in the case where either of the above mentioned situations occur, refer to **Error Handling**.

Order Request Text (from AEROSSET System to Host)

The Order Request Text is used to request an order for a sample from the Host. The SID or the C/P is read by the Bar Code Reader or can be entered manually on the **Order Samples** screen.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

The DATA TEXT component of the message will contain the ID group information.

Format	Field	Length
STX	(02H)	1 character
FUNC	Q (51H) and a Space (20H)	2 characters
DATA TEXT	ID Group	30 characters
ETX	(03H)	1 character

Refer to *Appendix B* for an example.

- 1. FUNC: Q (51H) and a Space (20H)

Field length: 2 bytes.

Example:

Q	
---	--

- 2. DATA TEXT

- a. ID group

- 1. ID (AEROSSET System): System ID

Field length: 4 bytes (20H to 7FH)

The Host recognizes the AEROSSET System, which sends text using this ID. This ID is common to all the texts sent by the AEROSSET, except for the response text. If it is necessary to change IDs, contact your Abbott Representative.

Example:

0	0	0	1
---	---	---	---

2. ID: Sample ID

- Numeric

A numeric value up to 20 digits in length (30H to 39H) may be used.

The number of digits is specified on the **SYSTEM CONFIGURATION** screen.

If the number of digits in the Sample ID is less than the number of digits specified, the remaining digits to the left are all set to zero (30H). This ID, with the specified length, is left-justified. The digits following the specified number of digits are set to Spaces (20H). When the ID is not specified, all 20 digits are set to Spaces (20H).

The example below shows the case of an 8-digit Sample ID (00123456) read by the Bar Code Reader with the number of digits set to 14:

0	0	0	0	0	0	0	0	1	2	3	4	5	6						
---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--

- Alphanumeric

Up to 20 alphanumeric characters (20H to 7FH) may be used. Alphanumeric characters can be used only when the use of alphabetical characters is configured to available for the Sample ID on the **SYSTEM CONFIGURATION** screen.

The Sample ID is left-justified, and the digits following the specified number of characters are set to Spaces (20H).

The example below shows a 6-character Sample ID (ABC123) read by the Bar Code Reader:

A	B	C	1	2	3														
---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- STAT Sample ID

If the Operator does not enter the STAT Sample ID on the **Select Assay for STAT** screen, the System automatically issues a STAT Sample ID.

The example below is for a STAT sample with a 20-digit Sample ID. The **last 4 digits represent the identification number automatically issued by the AEROSET System:**

S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

3. Carrier position:

Field length: 6 digits (20H, 30H to 39H).

First 4 digits: Carrier number

Last 2 digits: Carrier position

A carrier position is right-justified. Unused digits to the left of the carrier number and carrier position are set to Spaces (20H).

Example:

		2	0		1
--	--	---	---	--	---

Sample Type	Carrier Number	Carrier Position
Routine sample	1 to 9999	1 to 5
Conveyed sample	0	48
Control	0	1 to 45
STAT	0	47
Not specified	0	0

Order Request Text		Order Text	
Sample ID	Carrier ID	Sample ID	Carrier ID
Not specified	Specified	The Sample ID in the Order Text is valid	Must be the same as the Carrier ID in the Request Text
Specified	Not Specified	Must be the same as the Sample ID in the Request Text	The Carrier ID in the Order Text is valid
Specified	Specified	Must be the same as the Sample ID in the Request Text	Must be the same as the Carrier ID in the Request Text

Example of the complete text for an order request
(text length: 34 bytes)

													STX	Q		0	0	0	1	
													1	2	4			7		
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7	
8													27							
															2	0		1	ETX	
													28	31			32	33	34	

Order Text (from Host to AEROSSET System)

When the Host has no order for a sample requested through an order request from the AEROSSET System, the Host must reply by sending an Order Text with no test.

The Order Text is sent in response to the Order Request Text. Refer to the **Transmission Timing Chart** in Software Specifications for applicable requirements. When protocol Type 2, 3, or 5 are used, the Order Text can be downloaded.

When the Host is MASTER, the Host can send an order (the Order Text) to the AEROSSET System without receiving the Order Request Text.

The first function character (O) is common to both cases.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

The Order Text message FUNC section may have two configurations:

- 1. 0(4FH) and a Space (20H)
- 2. 0(4FH) and an R (52H)

Format	Field	Length
STX	(02H)	1 character
FUNC <ul style="list-style-type: none">• (1st Option)• (2nd Option)	<div>0 (4FH) and a Space (20H)</div> <div>0 (4FH) and an R (52H)</div>	<div>2 characters</div> <div>2 characters</div>
DATA TEXT	ID Group	26 characters (No System ID for Host to AEROSSET messages)
	Order Group	Variable, terminated by ETB (17H)
	Patient Group	Variable, terminated by ETB (17H)
ETX	(03H)	1 character

1. FUNC:

- a. O (4FH) and a Space (20H): These function characters are used for a new order and an additional order.
- b. O (4FH) and R (52H): For replacing an order. These function characters are used for replacing an order already sent to the AEROSSET System which has not been processed. To cancel an order sent to the AEROSSET System which has not been processed, send this function character without a replacement order. This function is effective only for the downloaded tests.
- c. Field length: 2 bytes

Example:

O	R
---	---

2. DATA TEXT

- a. ID group:

The definition of the ID group field is the same as that for the Order Request Text. Refer to **Order Request Text (from AEROSSET System to Host)**. The System ID is not included in the Order Text.

When the Host returns the Order Text in response to the Order Request Text from the AEROSSET System, the contents of these two ID groups must match.

- b. Order group:

1. Manual dil: Manual dilution ratio

Field length: 3 bytes (1 to 999)

The manual dilution ratio is right-justified and the unused digits on the left are set to Space (20H). When a manual dilution is not performed, be sure to specify 1. The test result is converted using the dilution ratio and is then transmitted from the AEROSSET System to the Host.

Example:

		1
--	--	---

2. Order: Order test is specified.

Field length: 5 bytes

First 4 bytes: Order test code in the test parameters. The order test code is set right-justified and the unused digits on the left are set to Space (20H).

Last byte: Sample volume

Normal sample volume: 1 (31H)

Dilution sample volume 1: 2 (32H)

Dilution sample volume 2: 3 (33H)

Example:

		1	2	1
--	--	---	---	---



NOTE: The order group text is terminated with ETB. When there is no order, only ETB is sent. The manual dilution ratio must be specified before an order can be sent.

c. Patient data group:

1. Order Date/Time: Date and time when the patient sample is ordered (30H to 39H)

Field length: 12 bytes

First 4 bytes: Year

Next 2 bytes: Month (without zero suppression)

Next 2 bytes: Day (without zero suppression)

Next 2 bytes: Hour (24-hour format, without zero suppression)

Last 2 bytes: Minute (without zero suppression)

When not entered: 000000000000

Example:

1	9	9	7	0	3	0	8	1	4	3	2
---	---	---	---	---	---	---	---	---	---	---	---

2. Name: Patient name (20H to 7FH)

The first 20 bytes are used when a search is initiated in the AEROSET System. In order to search by last name, put the last name in the first 20 bytes and the first name in the last 10 bytes. To search by last and first name, put both names in the first twenty bytes and Spaces (20H) in the last 10 bytes.

7. Comment: Comment (20H to 7FH)

Field length: 20 bytes

Example:

F	A	S	T	I	N	G													
---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--



NOTE: The patient data group is terminated by ETB. When none of the items are specified, ETB is the only character in the group. If a field is specified, the fields prior to it cannot be omitted. For example, when "Comment" is to be specified, the fields "Order Date/Time", "Patient Name", "Sex", "Date of Birth", "Location", and "Doctor" cannot be omitted.

d. Example of an Order Text with no test:

STX	0	
1	2	3

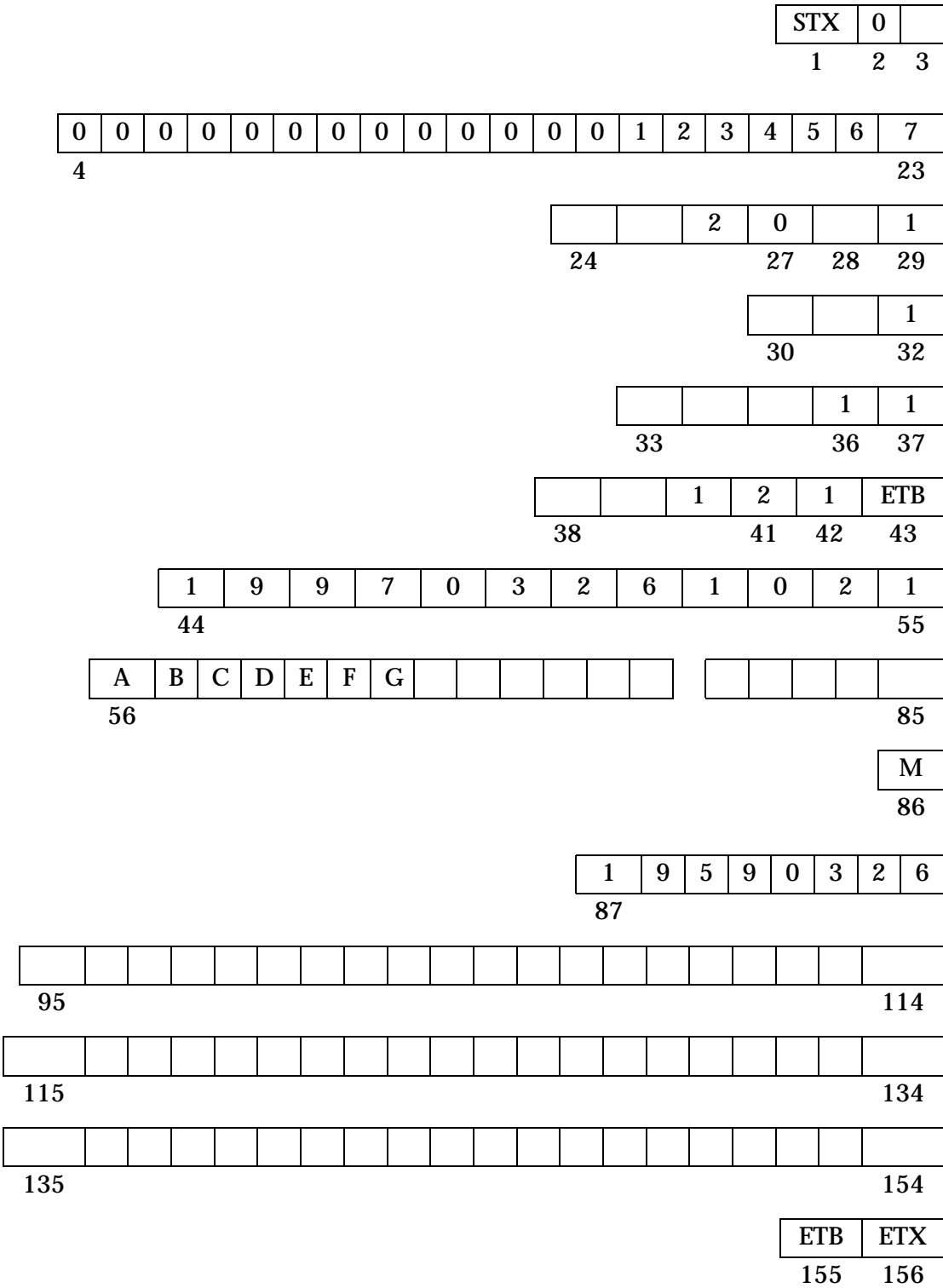
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7
4																			23
														24		27	28		29

ETB	ETB	ETX
30	31	32

e. Text length:

- 535 (100 tests with no patient data)
- 646 (100 tests with complete patient data)


f. Example of an Order Text with complete patient data:



Result Text (from AEROSET System to Host)

The AEROSET System sends Result Text to the Host when:

- All the test results for a sample have been completed or
- <Send Results> button is touched or
- The Host has asked the AEROSET System for patient data

 **NOTE:** The results of calculated tests can also be transmitted.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

Format	Field	Length
STX	(02H)	1 character
FUNC	R (52H) and a Space (20H)	2 characters
DATA TEXT	ID Group	30 characters
	Result Group	Variable, terminated by ETB (17H)
	Patient Group	Variable, terminated by ETB (17H)
ETX	(03H)	1 character

Refer to *Appendix B* for examples.

1. FUNC: R (52H) and a Space (20H)

Field length: 2 bytes

Example:

R	
---	--

2. DATA TEXT

- a. ID group: The format of the ID group field is identical to the format of the Order Request Text. Refer to **Order Request Text (from AEROSET System to Host)**.
- b. Result group

1. Date/Time: Date and Time of sample analysis (30H to 39H)

Field length: 12 bytes

First 4 bytes: Year

Next 2 bytes: Month (without zero suppression)

Next 2 bytes: Day (without zero suppression)

Next 2 bytes: Hour (24-hour format, without zero suppression)

Last 2 bytes: Minute (without zero suppression)

When not entered: 000000000000

Example:

1	9	9	7	0	3	0	8	1	4	3	2
---	---	---	---	---	---	---	---	---	---	---	---

2. Manual dil: The definition of manual dilution ratio is the same as that for the Order Text. Refer to **Order Text** (from Host to AEROSSET System).

3. Test code:

Field length: 4 bytes

The test code is right-justified and the unused digits on the left are set to Space (20H).

Example:

		1	1
--	--	---	---

4. Result: Test results (20H, 30H to 39H, 2DH, 2EH, 2AH).

Results are right-justified and the unused digits on the left are set to Space (20H).

- When analysis has not yet been performed: Space (20H) is set to 6 bytes.
- When the result cannot be reported due to an error: Space (20H) is set to 6 bytes.
- When number of digits of the result exceeds 6: "*" (2AH) is set to 6 bytes.
- When the result is a negative number: "-" (2DH) is set before the number.

- For qualitative analysis (including serum indices): 6 alphanumeric characters.
- When quantitative analysis results exceed the range: 6 alphanumeric characters.

Field length: 6 bytes including the sign and decimal point

Example:

		1	.	2	3
--	--	---	---	---	---

5. Error: Error code (20H to 7FH)

Field length: 1 byte

Definition: Refer to *Appendix A* in this manual for an explanation of error codes.

When there is no error: Space (20H)

Only a single error code (the code with the highest priority) is transmitted.

Example:

S

6. Sample vol: Sample volume

Field length: 1 byte

Standard sample volume: 1(31H)

Rerun sample volume 1:2 (32H)

Rerun sample volume 2:3 (33H)

Example:

1

7. Op flag: Operation flag (an alphabetical character or a Space (20H))

Field length: 1 byte

A (41H): The result was accepted automatically or by the Operator.

D (44H): The result was deleted by the Operator. (The result field is filled with spaces.)

E (45H): The result was edited by the Operator.

R (52H): A rerun order was issued.

S (53H): The rerun result was accepted.

W (57H): The sample is not analyzed yet or analysis is in progress and the results are not available yet. (The result field is filled with spaces.)

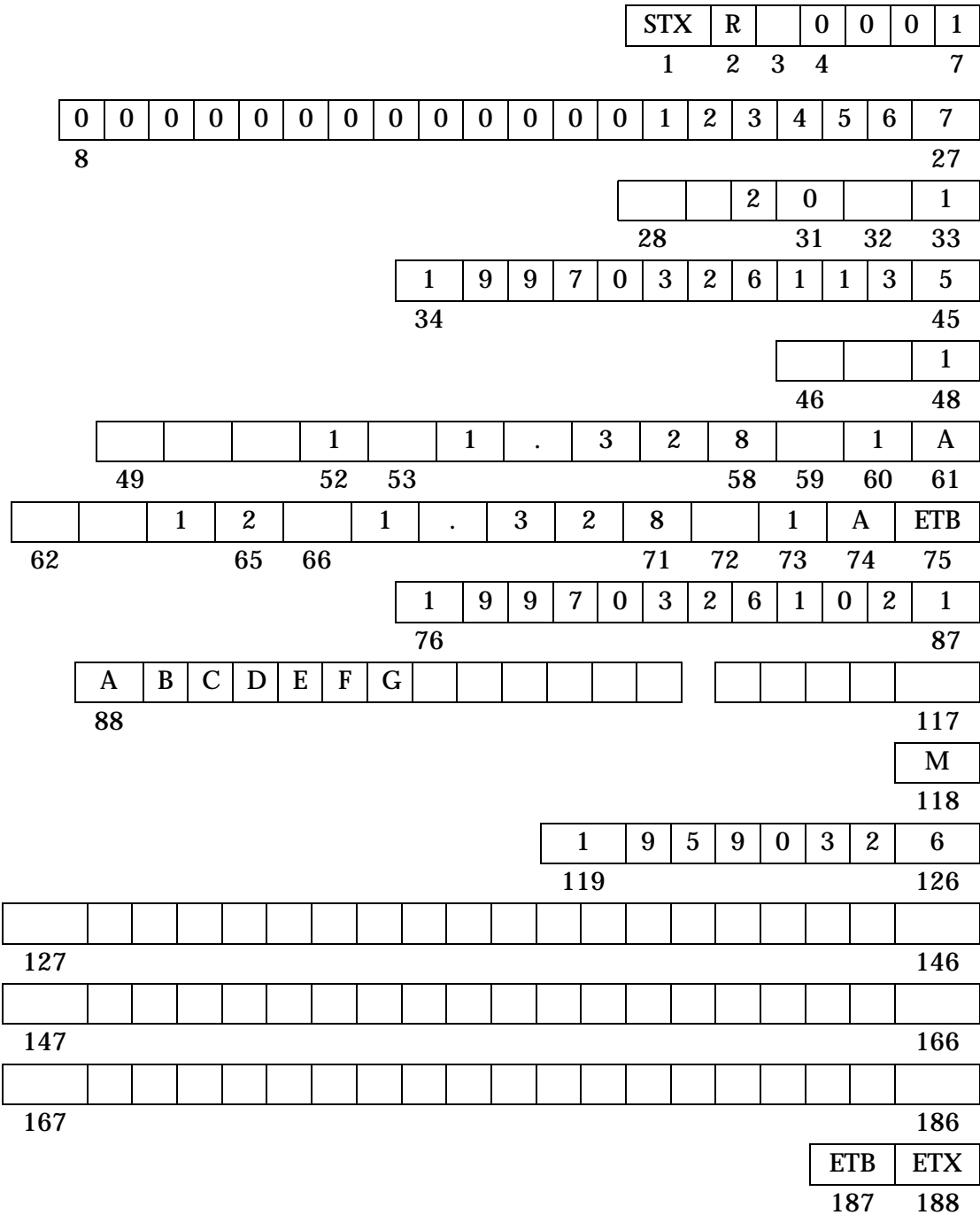
Space (20H): The results are present but not validated.

Example:

D

- c. Text length: 1141 (84 tests with no patient data) or 1282 (84 tests with complete patient data)

d. Example of a Result Text with complete patient data:



Result Request Text (from Host to AEROSSET System)

The Host sends a Result Request Text to the AEROSSET System to obtain the results for a sample. In response, the AEROSSET System returns the corresponding Result Text for that Sample ID. This message may be used only with protocol Types 2, 3, 4, or 5. The AEROSSET transmits only the accepted or validated results. Individual rerun results cannot be transmitted.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

Format	Field	Length
STX	(02H)	1 character
FUNC	T (51H) and a Space (20H)	2 characters
DATA TEXT	ID Group Only	26 characters (No System ID in this message)
ETX	(03H)	1 character

Refer to *Appendix B* for an example.

- 1. FUNC: T (54H) and a Space (20H)

Field length: 2 bytes

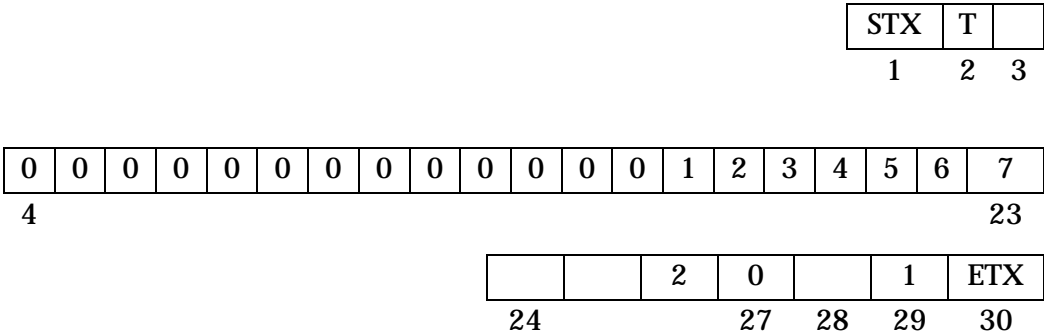
Example:

T	
---	--

- 2. DATA TEXT

- a. ID group: The format of the ID group field is identical to the format of the Order Request Text. Refer to **Order Request Text (from AEROSSET System to Host.)** The System ID is not included in the result request message.
- b. Text length: 30 bytes

c. Example of a Result Request Text:



Result Control Text (from Host to AEROSSET System)

The Host controls the sample result record stored in the AEROSSET System internal database using the result control text. This text can only be used with a protocol Type 4. The following three types of controls may be performed.

- 1. The sample is set to rerun-waiting status.
- 2. The sample’s rerun-waiting status may be cancelled.
- 3. An incomplete sample may be validated as a complete sample.

General Format:

STX (02H)	FUNC	DATA TEXT	ETX (03H)
--------------	------	--------------	--------------

Format	Field	Length
STX	(02H)	1 character
FUNC <ul style="list-style-type: none">• 1st Option• 2nd Option• 3rd Option	C (43H) and R (52H) C (43H) and C (43H) C (43H) and V (56H)	2 characters
DATA TEXT	ID Group Only	26 characters (No System ID in this message)
ETX	(03H)	1 character

Refer to *Appendix B* for examples.

a. FUNC:

- C (43H) and R (52H): Sets the sample to rerun-waiting status.
- C (43H) and C (43H): Cancels the rerun-waiting status.
- C (43H) and V (56H): Validates an incomplete sample as a complete sample.

Field length: 2 bytes

Example:

C	V
---	---

b. DATA TEXT

1. ID group: The format of the ID group field is identical to the format of the Order Request Text. Refer to **Order Request Text (from AEROSSET System to Host.)** The System ID is not included in the result control text message.
2. Text length: 30 bytes
3. Example of a result control text:

																		STX	C	V																		
																		1	2	3																		
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	4	5	6	7																			
4																		23																				
																				2	0		1	ETX														
																		24		27		28	29	30														

Initialize Session Request Text (from Host to AEROSSET System)

This text is used only for protocol Types 2, 3, 4, and 5, and is used by the Host prior to all exchanges to inform the AEROSSET System of the start of a session or resumption of the session after a halt.

When this procedure is completed, the Host is MASTER. The AEROSSET System may return a NAK response to the Host if the AEROSSET is MASTER when the initialize command is received. The Host must be MASTER to send the initialize session Request Text command. In this case, the Host must send the initialize session Request Text to the AEROSSET System again after a period which is longer than the maximum wait time specified on the **On-line Configuration** screen of the AEROSSET System. The Host must repeat the above procedure until it receives an ACK response from the AEROSSET System.

General Format:

STX (02H)	FUNC	ETX (03H)
--------------	------	--------------

Format	Field	Length
STX	(02H)	1 character
FUNC	I (49H) and a Space (20H)	2 characters
ETX	(03H)	1 character

- 1. FUNC: I (49H) and a Space (20H)

Field length: 2 bytes

Example:

I	
---	--

- 2. Example of initialize session Request Text (The text length is fixed)

STX	I		ETX
1	2	3	4

Release MASTER Text

Host to AEROSET System

This text is used for protocol Types 2, 3, 4, and 5. When the Host is MASTER, the Host transmits this text to enable the AEROSET System to become MASTER.

The Host shall transmit this text to the AEROSET System as soon as possible and within the Master Control Time. When the Host is MASTER, the AEROSET System cannot transmit Order Request Texts to the Host and therefore test throughput is reduced, especially for protocol Types 2 and 4.

Format	Field	Length
STX	(02H)	1 character
FUNC	M (4DH) and a Space (20H)	2 characters
DATA TEXT	4 spaces (20H)	4 characters
ETX	(03H)	1 character

- 1. FUNC: M (4DH) and a Space (20H)
Field length: 2 bytes
Example:

M	
---	--
- 2. Reserved field: Spaces (20H) for 4 characters
- 3. Text length: 8 bytes
- 4. Release MASTER Text (from Host to AEROSET System)
(The text length is fixed)

Example:

STX	M						ETX
1	2	3	4			7	8

AEROSET System to Host

This text is used for protocol Types 2, 3, 4, and 5. When the AEROSET System is MASTER, the AEROSET System transmits this text to enable the Host to become MASTER.

The AEROSET System remains MASTER during the period specified as the MASTER-Control Time on the **On-line Configuration** screen. During this period, the AEROSET System transmits Order Request Texts and/or Result Texts. The priority of the release MASTER Text is lower than that of Order Request Text and Result Text. Therefore, there are cases where the AEROSET System does not transmit the release MASTER Text even after the MASTER-Control Time expires.

Format	Field	Length
STX	(02H)	1 character
FUNC	M (4DH) and a Space (20H)	2 characters
DATA TEXT	ID Group	4 characters
ETX	(03H)	1 character

- 1. FUNC: M (4DH) and a Space (20H)

Field length: 2 bytes

Example:

M	
---	--

- 2. DATA TEXT

- a. ID group

- 1. ID (AEROSET System): System ID

Field length: 4 bytes (20H to 7FH)

The Host recognizes the AEROSET System, which sends text using this ID. This ID is common to all the texts sent by the AEROSET, except for the response text. If it is necessary to change IDs, contact your Abbott Representative.

Example:

0	0	0	1
---	---	---	---

2. Text length: 8 bytes

- b. Release MASTER Text (from AEROSET System to Host)
(The text length is fixed)

STX	M		0	0	0	1	ETX
1	2	3	4			7	8

On-line Operations

Text Priority

1. When the AEROSET System is MASTER:

The table below shows the priority of texts transmitted from the AEROSET System.

Priority Level	Text
1	Order Request Text
2	Result Text
3	Release MASTER Text

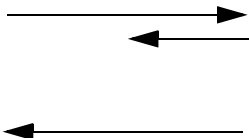

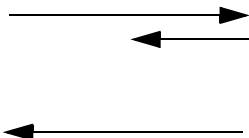

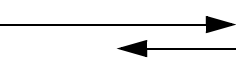
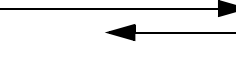
2. When the AEROSET System is SLAVE:

The AEROSET System responds to Request Texts sent from the Host.

Examples of Sessions

1. Protocol Types 1, 1', and 1"
- Type 1: The AEROSET System requests and receives orders from the Host in Order Query Mode in response to screen operation, and orders reruns if necessary. The AEROSET System then transmits the test results to the Host.
 - Type 1': The AEROSET System requests and receives orders from the Host in Host Query Mode and orders reruns if necessary. The AEROSET System then transmits the test results.

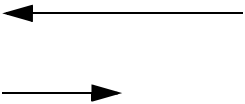
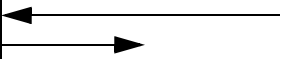
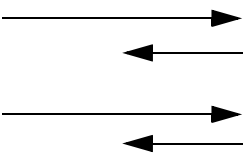

- Type 1”: The AEROSSET System requests and receives orders and rerun orders from the Host in Host Query Mode, and transmits the test results to the Host. The AEROSSET System automatic rerun function is disabled with this protocol.

AEROSSET System		HOST
Order Request Text Q1		ACK Order Text O1
ACK		
Order Request Text Q2		ACK Order Text O2
ACK		
Result Text R1		ACK
Result Text R2		ACK

2. Protocol Types 2, 3, 4, and 5

- Type 2: The AEROSSET System requests and receives orders from the Host in Host Query Mode or the Host Download Mode, orders reruns if necessary, and transmits the test results to the Host. The functions of this protocol are identical to protocol Type 1” however, protocol Type 2 uses the MASTER Release Text.
- Type 3: The AEROSSET System receives orders from the Host in Host Download Mode, orders rerun if necessary, and transmits the test results to the Host.
- Type 4: The AEROSSET System requests and receives orders from the Host in Host Query Mode and transmits test results to the Host. Rerun instructions are issued by the Host, and test result categorization is performed by the Host. The AEROSSET System automatic rerun function is not available with this protocol.
- Type 5: The AEROSSET System receives orders from the Host in Host Download Mode and transmits test results to the Host. Rerun instructions are issued by the Host. The AEROSSET System Automatic Rerun function is not available with this protocol.

AEROSSET System		HOST
ACK		Initialize session Request Text I
ACK Order Request Text Q1 ACK		Release MASTER Text M ACK Order Text O1
Order Request Text (Q2) ACK		ACK Order Text (O2)
Release MASTER Text M ACK Result Text (R3)		ACK Result Request Text (T3) ACK
ACK Result Text (R4) ACK		Result Request Text (T4) ACK Result Control Text (C4) (Type 4 only)

AEROSET System		HOST
ACK		Order Text (O5) (Types 2, 3, and 5 only)
ACK		Release MASTER Text
Result Text (R6) Result Text (R7)		ACK ACK
		

Information Handling for Each Protocol Type

Examples of the information handling for each protocol Type are given below.

Type 1

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	X	X				

Standard operation:

The AEROSSET System is always MASTER.

Order requests are transmitted via Order Query. The result transmission mode may be All, Valid, or Request (manual).

The AEROSSET System searches the internal database for orders. When no orders are found in the database or if an order is found but no tests are included in the order, measurement is not performed.

The **Order Samples** screen of the AEROSSET System can also be used for entering orders.

The following additional operations are possible for protocol Type 1:

- The sample result may be sent to the Host automatically (Result Transmission Mode) without using an Order Request Text.
- Order requests are transmitted in the Download Mode and the results of complete samples only are automatically sent to the Host. Since registered orders from the Host are sent beforehand in the Order Query Mode, the communication load on the Host decreases.

Type 1'

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	X	X				

Standard operation:

- The AEROSSET System is always MASTER. Order requests are transmitted in Host Query Mode. The result transmission mode may be All, Valid, or Request (manual).
- The AEROSSET System searches the internal database for orders first. If no order is found, the AEROSSET System initiates a query by transmitting an Order Request Text to the Host.
- If the order in the AEROSSET System database or the order from the Host does not include tests, measurement is not performed. Only results for complete samples are transmitted to the Host.
- The Request Result Transmission Mode can also be used for transmitting the results.
- Order Query by SID may also be used to retransmit order requests.

The following additional operations are possible for protocol Type 1'.

- By using the **Order Samples** screen of the AEROSSET System, orders can be entered prior to orders from the Host. This method is useful for processing samples not registered in the Host.

Type 1"

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	X	X				

Standard operation:

- The AEROSSET System is always MASTER. Order requests are transmitted in Host Query Mode. The result transmission mode may be All, Valid, or Request (manual).
- The AEROSSET System searches the internal database for orders first and then, if necessary, transmits an Order Request Text to the Host.
- If the orders in the AEROSSET System database or the orders from the Host do not include tests, measurement is not performed. All results may be transmitted to the Host in All, Valid, or Request Result Transmission Mode.
- The Send Results operation can also be used for transmitting the results. It is useful for retransmission, etc.

The following additional operations are possible for protocol Type 1".

- Using the **Order Samples** screen, orders may be entered or existing orders may be edited. This method is useful for the addition of tests to the orders received from the Host.

Type 2

DL: Download

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	XDL	X	X		X	X

Standard operation:

- The AEROSSET System and the Host are MASTER alternately. Order requests and results are transmitted in Host Query Mode and Order Query Mode. The result transmission mode may be All, Valid, or Request (manual), or the Host may issue a result request.
- The AEROSSET System searches the internal database for orders first. If no orders are found, the AEROSSET System initiates a query by transmitting an Order Request Text to the Host.
- If the order in the AEROSSET System database or orders from the Host do not include tests, measurement is not performed.
- Results for samples may be transmitted to the Host in All, Valid, or Request Result Transmission Mode.
- The Order Query can also be used for transmitting the order requests.

The following additional operations are possible for the protocol Type 2.

- By using the **Order Samples** screen of the AEROSSET System, orders can be entered prior to orders from the Host. This method is useful for processing samples not entered into the Host.
- Order requests are transmitted in the Host Query Mode or downloaded from the Host. Orders from the Host sent beforehand in Order Query Mode decreases the communication load on the Host.
- Result Request Text can also be used.

Type 3

DL: Download

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	XDL	X	X		X	X

Standard operation

- The AEROSET System and the Host are MASTER alternately. Order requests are transmitted in the Order Query Mode, and results are transmitted in the Real Time Mode. The result transmission mode may be All, Valid, or Request (manual), or the Host may issue a result request.
- The AEROSET System searches the internal database for orders. If no orders are found in the database or if an order is found but no tests are included in the order, measurement is not performed.
- The **Order Samples** screen of the AEROSET System can also be used for entering and editing orders. Only results for complete samples are transmitted to the Host in the Real Time Mode.
- The Send Results function can also be used for transmitting the results.

Type 4

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	X	X	X	X	X	X

Standard operation

- The AEROSSET System and the Host are MASTER alternately. Order requests are transmitted in Host Query Mode. The result transmission mode may be All, Valid, or Request (manual), or the Host may issue a result request.
- The AEROSSET System searches the internal database for orders first and then transmits a query to the Host.
- The AEROSSET System processes orders entered in the System database and orders transmitted from the Host. If the orders in the AEROSSET System database, or orders from the Host, do not include any tests, measurement is not performed.
- When the Host transmits a rerun order or configures the rerun sample to a complete sample, the Host must transmit a result control text.
- The Send Results function can also be used for transmitting the results.

The following additional operations are possible for protocol Type 4:

- By using the **Order Samples** screen of the AEROSSET System, orders can be entered prior to orders from the Host. This method is useful for measuring samples not entered in the Host.
- Using the **Order Samples** screen, orders may be entered or existing orders edited. Orders downloaded from the Host may be edited as well.

Type 5

DL: Download

Text	Order request	Order	Result	Result request	Result control	Initialize session request	Release MASTER
Use	X	XDL	X	X		X	X

Standard operation

The AEROSSET System and the Host are MASTER alternately. Order requests are transmitted in the Order Query or Download Mode. The result transmission mode may be All, Valid, or Request (manual), or the Host may issue a result request.

The AEROSSET System searches the internal database for orders. If no orders are found in the database or if an order is found but no tests are included in the order, measurement is not performed.

The **Order Samples** screen of the AEROSSET System can also be used for entering and editing orders. Reruns and additional runs are transmitted by the Host using Order Texts.

The Send Results function can also be used for transmitting the results.

Error Handling

Error Conditions

Error messages are displayed when the following conditions exist:

1. A discrepancy in the transmission conditions, check digit (option), or a hardware error (framing error, parity error, etc.) is detected.
2. Text with an illegal or undefined format is received.
3. An inappropriate text is received. (Example: An Order Text is returned in response to a Result Text.)



NOTE: This includes the case where a character other than ACK or NAK is received when an ACK or NAK response is expected.

4. A time-out is detected during checking of the maximum wait time, *i.e.*, when the AEROSSET System has not received the ACK response within the maximum wait time.
5. The maximum intervals between characters exceeds 10 seconds.
6. The Host is off-line.
7. A text with STX or ETX missing is received.



NOTE: The STX code is essential for recognition of the start of a text, and ETX is essential for recognition of the end of a text.

Error Handling

The AEROSSET System retransmits the text according to one of the following three conditions:

1. It receives the NAK response or no response from the Host within the specified maximum wait time. The same text can be retransmitted up to three times.

If an ACK response is received as a result of the retransmission, the System proceeds to the next process. If the ACK response is not received even after retransmitting the same text three times, the error handling process described below is initiated.

Error Log Messages

40

Host Communication, No Response from Host

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host ON-LINE configuration is incorrect.	Obtain the required settings from the Host Computer Administrator and configure the AEROSET System to match Host requirements. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details. Refer to the AEROSET Host Interface Specifications for details.
Host computer is down.	Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.	Reconnect the cable to the AEROSET System Host port.
SCC computer is defective.	Contact your Abbott Representative.
DSR signal has been lost.	Check cable, replace if damaged.

41

Invalid Host Request, Data Format Error

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host ON-LINE configuration is incorrect.	Obtain the required settings from the Host Computer Administrator and configure the AEROSET System to match Host requirements. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details. Refer to the AEROSET Host Interface Specifications for details.
Host interface cable is disconnected.	Reconnect the cable to the AEROSET System Host port.
Host computer software or hardware has changed.	Contact the Host Computer Administrator.
Framing error, parity, or digit error has occurred.	Contact Host Computer Administrator.

Error Log Messages

**42 Invalid Host Request, Out of Phase Error Level
3**

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host ON-LINE configuration is incorrect.	Obtain the required settings from the Host Computer Administrator and configure the AEROSSET System to match Host requirements. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details. Refer to the AEROSSET Host Interface Specifications for details.
Host computer is down.	Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.	Reconnect the cable to the AEROSSET System Host port.
SCC computer is defective.	Contact your Abbott Representative.
Unexpected text received from Host. Host computer software or hardware has changed.	Contact Host Computer Administrator.

**43 Host Communication, Unable to Send to Host Level
3**

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host interface cable is: <ul style="list-style-type: none"> • not connected • damaged • the incorrect type 	Reseat the cable connection. If the cable is damaged, replace the cable. If the cable is not the correct type, replace it with the correct type. Refer to the AEROSSET Host Interface Specifications for details.
Host ON-LINE configuration is incorrect.	Obtain the required settings from the Host Computer Administrator and configure the AEROSSET System to match Host requirements. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details. Refer to the AEROSSET Host Interface Specifications for details.
SCC computer is defective.	Contact your Abbott Representative.

Error Log Messages

44

Host Communication, Host Offline

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host ON-LINE configuration is incorrect.	Obtain the required settings from the Host Computer Administrator and configure the AEROSET System to match Host requirements. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details. Refer to the AEROSET Host Interface Specifications for details.
Host computer is down.	Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.	Reconnect the cable to the AEROSET System Host port.
DSR signal has been lost.	Check cable, replace if damaged.

45

Invalid Host request, Smpl ID doesn't match

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host interface cable is disconnected.	Reconnect the cable to the AEROSET System Host port.
Host interface cable is routed near a motor (centrifuge, etc.) causing noise in the line.	Reroute the cable away from motor.
Host computer software or hardware has changed. Sample ID/Carrier ID in Order Text does not match Order Request Text.	Contact Host Computer Administrator.

Error Log Messages

46

Invalid Host Request, Invalid Assay ID

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
The assay file has been edited to a new assay number.	Verify that the assay file has the same assay number as configured on the Host computer.
Assay order transmitted to the AEROSSET System in error.	Contact the Host Computer Administrator. Verify that the Host system transmits only valid assay numbers to the AEROSSET System.
Assay ID unknown by AEROSSET.	Contact Host Computer Administrator

47

Cannot Receive Correct Text in Time

Level
3

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
The Host computer failed to respond to the AEROSSET System within the configured time.	<ol style="list-style-type: none">1. Notify the Host Administrator of the Host failure to respond.2. Increase the maximum wait time in the ON-LINE Configuration screen. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details.
Host computer is down.	Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.	Reconnect the cable to the AEROSSET System Host port.
SCC computer is defective.	Contact your Abbott Representative.
Time interval between characters has been exceeded (more than 10 seconds has elapsed between characters).	Contact Host Computer Administrator

Error Log Messages

48	System Text Buffer Overflow	Level 3
<u>Probable Cause(s)</u>		<u>Corrective Action(s)</u>
Baud rate not configured properly.		Configure baud rate to the proper speed. Refer to <i>Section 2, Installation Procedures and Special Requirements</i> for configuration details.
Host computer is down.		Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.		Reconnect the cable to the AEROSET System Host port.
SCC computer is defective.		Contact your Abbott Representative.
Text exceeded 2,000 bytes due to missing STX or ETX		Contact Host Computer Administrator
49	Invalid Host Request, Invalid Character	Level 3
<u>Probable Cause(s)</u>		<u>Corrective Action(s)</u>
Host interface cable is routed near a motor (centrifuge, etc.) causing noise in the line.		Reroute the cable away from the motor.
Host interface cable is disconnected.		Reconnect the cable to the AEROSET System Host port.
The Host computer sent an incorrect character.		Notify the Host Computer Administrator to review Host communications.
Framing error, parity, or digit error has occurred.		Contact Host Computer Administrator.

Error Log Messages

339 Time Out, Order Not Received from SCC

<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Host computer is down.	Check the Host computer status. Reinitialize the Host computer.
Host interface cable is disconnected.	Reconnect the cable to the AEROSET System Host port.
Host interface cable is defective.	Replace the cable.
SCC computer is defective.	Contact your Abbott Representative.
Maximum wait time for response from Host has been exceeded.	Contact Host Computer Administrator to shorten Host response time to decrease maximum wait time.

2. The AEROSSET System receives an inappropriate text or the received text includes an error, the AEROSSET System returns the NAK response. The same text can be retransmitted up to three times. If the correct text is received as a result of the retransmission, the System proceeds to the next process. If the correct text is not received even after retransmitting the same text three times, the error handling process described below is initiated.
3. The AEROSSET System finds any contradiction in the received text during interpretation, the AEROSSET System may transmit the same Order Request Text again.

The AEROSSET System proceeds to the next process when it receives the correct text. If the AEROSSET System does not receive the correct text, the above procedure is repeated.

Error handling for protocol Types 1, 1', and 1"

No special error handling is provided.

If the retransmission procedure ends with an error, the retransmission procedure is repeated.

Error handling for protocol Types 2, 3, 4, and 5

The AEROSSET System enters the initialize session Request Text waiting status.

Upon receiving the initialize session Request Text from the Host, the AEROSSET System proceeds to the next process.

AEROSET Instrument Terms

Term	Definition
A-Line	Assay configuration that defines the reagent location as the outer segments (A, B, or C) of the Reagent Supply Center.
Action Area	Right hand column area of the Main Display that displays action area buttons.
Application	Describes the assay parameter definition procedures, etc.
Auto Rerun	A function that allows the Operator to configure the System to automatically reorder assays for those samples that meet user specified criteria on an “assay by assay” basis.
Auto Return	A System configuration designed to automatically return samples identified for rerun to the Sample Arm.
B-Line	Assay configuration that defines the reagent location as the inner segment (D) of the Reagent Supply Center.
Biohazard	A situation where the Operator may be exposed to infectious materials or substances.
Button	A screen operation that is selected for a specific action.
Calibrator/Control Carousel	A carousel (located in the Carousel Sampler) that has the capacity of 45 positions for calibrators and controls.
Carousel	A circular conveyor on which samples are placed.
Carousel Sampler	A sampler system on the AEROSET System which contains the Sample Carousel, Reserved STAT Position, and Calibrator/Control Carousel.
CE (CE Marking)	Meets applicable New Approach Directives of the European Union.
Checkbox	A screen operation that utilizes a box to the left of an item. By selecting the box, an item is selected with a check mark.
Color Touchscreen Monitor	A 17" color CRT monitor with Touchscreen.
Computer	Refers to an IBM™ PC/AT compatible computer that is connected to the AEROSET System.
Cuvette Washer	A series of nozzles including a drying nozzle that wash and dry the cuvettes.
Display Area	Area of the Touchscreen that displays the information or actions, corresponding to the button selected, in the Information Access Area or Action Area.
Drop-down list box	A screen operation that shows a single item. Other choices can be seen by selecting the button on the right side of the Drop-down list box.
Drying tip	Placed on the end of the Cuvette Washer nozzle that is used to dry the cuvette before a sample is dispensed.

AEROSET Instrument Terms (Continued)

Term	Definition
FastTrack™ Sampler	The Track Sampler on the AEROSET System has the capacity of holding up to 200 samples.
Hazards	Situations that could cause physical harm to a user or damage to the Analyzer or laboratory environment.
Host	An auxiliary computer system that can communicate with the AEROSET System.
Host Interface Operation	The act of communication between the AEROSET System and a Host computer system.
Host Interface Status Display	Display (via the Touchscreen) in which the Host interface status can be checked.
ICT™ Aspiration Pump	Aspirates the 300 µL of ICT Reference Solution or diluted sample into the ICT Module using a syringe pump.
ICT Module	Contains the Ion-Selective Electrodes.
ICT Reference Solution Preheater	Preheats the ICT Reference Solution in the stainless steel tube located in the water bath before it is used to fill the ICT Reference Solution cup.
ICT Reference Solution Pump	Fills and drains the ICT Reference Solution into the ICT Reference Solution cup.
ICT Unit	Moves the isothermal block equipped with the ICT Module to the ICT Reference Solution cup and to the Reaction Cuvettes.
Information Access Area	Area at the bottom of the Main Display that contains buttons to select information, configuration, and databases.
Integrated Chip Technology™ (ICT)	Solid state Ion-Selective Electrodes utilizing indirect potentiometry for the determination of Na ⁺ , K ⁺ , and Cl ⁻ .
Keyboard	Computer component used for entering information into the AEROSET System Control Center (SCC).
LED	Light emitting diode. Used on the AEROSET System to indicate the status of the Carousel Sampler and FastTrack Sampler systems.
Line Balance™ (LB) Function	A function that improves throughput with efficient utilization of cuvette pairs, minimizing the single-test measurement cycles.
Liquid Level Sensing	Detection of liquid level; measured by the change in capacitance.
Local User Interface (LUI)	Used for manually controlling the FastTrack Sampler and the Reagent Supply Centers.
Main Circuit Breaker Switch	Turns the power ON/OFF for the entire System.
Main Display	Main portion (bottom and right-hand frame) of the Touchscreen user interface.
Maintenance	Procedures performed on the AEROSET System to ensure continued proper functioning.

AEROSET Instrument Terms (Continued)

Term	Definition
Mixer Unit	A unit that houses the Mixers.
Mixers	Blades that mix the sample and reagent together.
Online Configuration	System parameters that can be configured to allow the AEROSET System to communicate with a Host system. For example, communication type, baud rate, message length, etc.
Optimum Sampling Sequence™ (OSS) Function	A function that maximizes the processing speed when the SmartWash™ Feature is in use. It rearranges the sampling sequence so that the number of empty Reaction Cuvettes is minimized.
Panel	A function where multiple tests can be ordered quickly by touching only one button instead of the individual assay buttons.
Photometer	An instrument for measuring luminous intensity, luminous flux, illumination, or brightness.
Photometric Reads	A series of reads taken on each Reaction Cuvette.
Printer	AEROSET dot matrix forms printer.
Probe Guard	A function of the AEROSET System that stops the lowering of the probe when an obstacle is detected.
Qualitative Ranges	A function that reports test results using conditional text (+/-, Pos/Neg) instead of numerical values.
Quantitative Ranges	A function that reports test results as a numerical value.
Reaction Carousel	Carousel that can hold 330 Reaction Cuvettes, and rotates approximately a quarter turn, counterclockwise, every cycle. Reactions take place here.
Reaction Cuvette	Rectangular glass cuvette.
Reaction Temperature Control	Temperature maintained by the water bath.
Reagent Arm	Holds the Reagent Probe. Moves reagent from each Reagent Supply Center to the Reaction Carousel.
Reagent Probe	Dispenses the specified volumes of reagent.
Reagent Segments	Sections (4) of each Reagent Supply Center in which the reagent is placed.
Reagent Supply Center	Dual carousel which holds the Reagent Cartridges. There are two Reagent Supply Centers on the AEROSET System.
Reserved STAT Position	A single fixed position in the Carousel Sampler for running STAT samples.
Result Error Code	Error codes of the AEROSET System reported with the result.
Rotary Power Control Switch	Turns the power ON/OFF for units other than the reagent refrigerator.
Run Progress Area	Area of the Main Display that shows the progress of analysis.

AEROSET Instrument Terms (Continued)

Term	Definition
Sample Arm	Holds the Sample Probes. Carries the Sample Probes from the FastTrack™ Sampler or Sample Carousel to the Reaction Carousel.
Sample Carousel	A carousel (located in the Carousel Sampler) with a capacity of 30 samples.
Sample Carrier	A carrier that can hold up to five samples. Used in the FastTrack Sampler.
Sample Carrier Tray	A tray that can hold up to 10 Sample Carriers. Used in the FastTrack Sampler.
Sample Cup	A type of sample container that can be used in the FastTrack and Carousel Samplers.
Sample Probe	Dispenses samples into Reaction Cuvettes.
Scroll box	A screen operation that displays several tests or other items by scrolling with a scroll bar.
Single selection button	A circular button that allows for selection of one button or the other, but not both, and will not allow both to remain unchecked. Also known as a radio button.
SmartWash™ Feature	A wash process to wash the Reagent Probes, Sample Probes, and Reaction Cuvettes completely when combinations of assays which can cause test-to-test interference are processed.
Solenoid Valve	Six valves located at the top of the Sample and Reagent Syringe drives.
Specifications	Describes the measurement principles, power requirements of the AEROSET System, etc.
Status Area	Area of the Main Display that displays the System status, date and time, water bath level, and High-Concentration Waste Full Indicator.
System Control Center (SCC)	Contains hardware (computer, keyboard, printer, and monitor) and software.
System Control Center Stand	A stand which holds the computer, monitor, keyboard, and printer.
Tab	A screen operation that when selected opens the corresponding page.
Timer Functions	The AEROSET System can be configured to Power ON, initiate START UP, or perform SHUTDOWN operations automatically at a programmed time of day for each day of the week.
Touchscreen	Screen that allows the user to make a selection by touching the screen.

AEROSET Instrument Terms (Continued)

Term	Definition
Warranty	Continues for a period of one year, commencing twenty-one days from the date of shipment to the original purchaser, or until title is transferred from the original purchaser, whichever occurs first (the "Warranty Period").
Wash Solution Pump	Aspirates wash solutions.
Waterbath	Incubator that surrounds the Reaction Cuvettes and maintains the reaction temperature.

AEROSET Chemistry Terms

Term	Definition
1-Point Adjustment	A calibration type that uses the absorbance data for a single calibrator to adjust the calibration curve.
2-Point Adjustment	A calibration type that uses the absorbance data for the reagent blank and a calibrator to adjust the calibration curve.
Absorbance Limit	Configured range of absorbance values that are considered acceptable for measurement purposes. Values outside this range are not used for calculation.
Absorbance Limit Check	A calibration data check that evaluates the absorbance or change in absorbance obtained during sample measurement. If the absorbance or change in absorbance is outside the specified range a Result Error Code is generated.
Absorbance Mode	A calibration mode in which results are based on the absorbance of water and are represented as absorbance in the case of an end-point assay or as absorbance change (rate of absorbance change per minute) in the case of a rate assay.
Blank Correction	A calibration type performed that uses reagent blank data only to adjust the calibration curve.
Calculated absorbance	The rate of change of absorbance calculated using the Linear Least Squares method.
Calibration, Automatic	A calibration that occurs automatically after a Reagent Cartridge change, reagent lot change, or at the end of a calibration interval.
Calibration, Exponent	A calibration mode for assays in which the absorbance or absorbance change diverges as the concentration increases.
Calibration, Linear Mode (1-Point Method)	A calibration mode in which a reagent blank and one type of calibrator are measured and a calibration curve is generated using these two data points.
Calibration, Linear Mode (Multi-Point Method)	A calibration mode in which a reagent blank and two to eight calibrators of different concentrations are measured, and a calibration curve is generated using these data points.
Calibration, Logit-4	A calibration mode for assays in which the absorbance or absorbance change increases as the concentration increases.
Calibration, Logit-5	A calibration mode for assays in which the absorbance or absorbance change increases as the concentration increases. Uses one more parameter than Logit-4.
Calibration, Operator-Specified Calibration	A calibration that is manually requested.
Calibration, Spline	A non-linear calibration mode.
Calibration, Use Fac/Blk (Factor and Blank)	A calibration mode in which the concentration or activity is calculated using the factor and reagent blank from a calibration curve generated for another assay.

AEROSET Chemistry Terms (Continued)

Term	Definition
Calibration, Use Factor (Factor Only)	A calibration mode in which the concentration or activity is calculated using the factor from a calibration curve generated for another test. Reagent blank measurement is required even if the calibration curve of another assay is used.
Color Correction	Performed on the absorbance data (in the absorbance window) to correct for sample color.
END RATIO	Ratio of absorbances (A/B) used as a reaction check for Prozone.
END SUB	Difference between absorbances (A-B) used as a reaction check for Prozone.
End-Point Assay	An assay in which the concentration is calculated using the absorbance data obtained in the Main Read Time specified on the Base page of the ASSAY CONFIGURATION screen.
Extrapolated Calculation	For the calculation of patient samples with concentrations higher than the calibrators, the calibration curve may be extrapolated.
Factor Mode	A calibration mode in which only the reagent blank is measured and a user defined factor is used to calculate results.
FlexRate™ Method	To extend the linear range of an enzymatic assay and reduce the necessity of a rerun, data points in the Flex Read Time are used for high-activity and high-concentration samples (data are identified by "FLX").
Full Calibration	A calibration type performed for all data points specified for the reagent blank and calibrators.
ICT™ (Integrated Chip Technology)™	Method in which Na ⁺ , K ⁺ , and Cl ⁻ are measured potentiometrically.
Isozyme Mode	A calibration mode in which the isozyme activity is calculated from samples which contain two types of isozymes.
Levey-Jennings Graphs	Control charts that are used to monitor mean and range of control measurement values from run to run.
Linearity %	A check of a rate assay to ensure that the reaction remains linear during the Main Read Time. This parameter is used to check for substrate depletion.
Linearity Range	The minimum and maximum reportable values of an assay.
MaxAbsVar	The stability of the reaction of an end-point assay during the Main Read Time.
Panic Value High (PVH)	Result code that notifies the Operator that the result generated is higher than the configured High Panic Value.
Panic Value Low (PVL)	Result code that notifies the Operator that the result generated is lower than the configured Low Panic Value.
Photometric timing	Represents the elapsed time at each of the 33 photometric points with the first photometric point defined at 0 seconds.

AEROSET Chemistry Terms (Continued)

Term	Definition
Prozone Reaction Check	In immune reactions, if the antigen concentration in the sample greatly exceeds the antibody concentration in the reagent, the result is falsely low due to antibody depletion.
Quality Control	The process of tracking and analyzing historical results via standardized graphing techniques.
Rate Assay	An assay in which activity is calculated using the change of absorbance in the Main Read Time specified on the Base page of the ASSAY CONFIGURATION screen.
RATE Linearity	The linearity of the absorbance change within the read time.
RATE RATIO	A ratio of absorbance changes (A/B) used as a reaction check for Prozone.
RATE SUB	Differences between absorbance changes (A-B) used as a reaction check for Prozone.
Reference Range	Normal clinical range of an analyte.
Reportable Range	The range of an assay.
Sample Blank Test	Measurement used for correcting the absorbance data obtained during the Main Read Time. There are two kinds of Sample Blank Tests (Self Blank and Non-Self Blank).
Sample Blank Test, Non-Self Blank	Sample Blank Test used to eliminate the effect of endogenous substances. Performed in a second Reaction Cuvette.
Sample Blank Test, Self Blank	Sample Blank Test used to correct the absorbance for sample coloring due to lipemia, hemolysis, bilirubin, etc. Performed in the same Reaction Cuvette.
Test Limiting Function	A function that allows the Operator to exclude some tests, previously scheduled for the patient sample, without changing the order.
Westgard Multi-Rule	A series of statistical control rules for interpreting control data that keep the probability for false rejections low and improve the probability for error detection. Can be adapted to existing Levey-Jennings graphs by addition of one or two sets of control limits.

AEROSET Accessories and Consumables Terms

Term	Definition
Accessory	An item that is used repeatedly.
Acid Wash Solution	Used to clean Reagent and Sample Probes and Reaction Cuvettes.
Alkaline Wash Solution	Used to clean Reagent and Sample Probes and Reaction Cuvettes.
Consumable	An item that is exhausted in the process of running tests.
ICT™ Cleaning Fluid	Used to clean the ICT Probe and the ICT Module.
ICT Diluent	The reagent used for ICT assays.
ICT Reference Solution	Used to rinse the ICT Module between samples and used as a baseline when calculating ICT results.
ICT Reference Solution Bottle	Holds the ICT Reference Solution. A sensor detects the remaining volume by monitoring weight changes and issues a warning when the volume is less than the specified level.
Water Bath Additive	A solution added when the bath water is changed to inhibit bacterial growth and prevent bubble formation.

NOTES

AEROSET™ Error Codes and Messages

Transmitted Error Codes

For each Result Error Code or Calibration Error Code, a single letter code is included in the result transmission to the Host Interface system. To display the Result Error Code or Calibration Error Code when reviewing results at the Host, the Host system must be defined with an interpretation table and display the equivalent code.

Photometric Test, Serum Indices, Calculation Tests		ICT™ Tests	
Error Code	Cause	Error Code	Cause
h	Hardware error	h	Hardware error
w, s, r, g, d, b	Error in the sample aspiration/dispensing system	w, s, r, g, d, b, m	Error in the sample aspiration/dispensing system
l, A	Error in the photometric system	a	Error in the ICT™ system
K, G, X, Y, Z, R, L, P, C, T, N, U, O, F, I, S, M, E	Error in the concentration calculation system	D, V, C, T, P, U, O, S, M, E	Error in the concentration calculation system

Result Error Code or Calibration Error Code	Character Sent to the Host
A#0	X
A#1	Y
A#2	Z
ABS	G
BLK	C
CAL	C
CON	C
DEV	C
EXP	T
EXT	N
FAC	C
FLX	F
HW	h
INV	E
IOR	C
IRL	m
IRD	D
IRO	V
LMP	I
MON	C

Result Error Code or Calibration Error Code	Character Sent to the Host
MVR	a
NDC	K
PHO	A
PRM	S
PSP	P
PVH	O
PVL	U
RCD	P
RF	R
RL%	L
SD	C
SLP	C
SPN	C
SR	r
SS	s
SWR	d
SWS	g
UTC	M
WB	b
WTR	w

Result Flags

Result flags are displayed on the **DATABASE** and **RESULT** screens and can be printed on patient reports.

Code	Explanation
L	The result is less than the defined lower Reference Range
H	The result is greater than the defined upper Reference Range

Result Error Codes

Result Error Codes are displayed on the **RESULTS** and **REACTION GRAPH** screens and can be printed on patient reports.

The Result Error Codes are listed below and have been divided into, Photometric, ICT™, and Calculation Assay tables.

- The priority is given in the Priority column with 1 = highest priority and 14 = lowest priority.
- If more than one Result Error Code is generated for a result, the Result Error Code with the highest priority will be displayed in the **RESULT** screen and printed on the patient report.
- If more then one Result Error Code with the same priority is generated for a result, the first to occur will be displayed in the **RESULT** screen and printed on the patient report.
- To view all Result Error Codes generated for a result, access the **REACTION GRAPH** screen.
- Results will not be calculated for results with Result Error Codes of priority 1 or priority 2.

Photometric Assay Result Error Codes

Code	Explanation	Priority
A#0	None of the photometric reads during the Main or Flex Read Time had a measured absorbance within the defined Absorbance Limit.	6
A#1	Only 1 read during the Main or Flex Read Time had a measured absorbance within the defined Absorbance Limit .	6
A#2	Only 2 reads during the Main or Flex Read Time had a measured absorbance within the defined Absorbance Limit .	11
ABS	Absorbance out of range (0.1 - 3.0).	2
CAL	A calibration error occurred.	8
CON	Convergence error.	7
EXP	The defined calibration interval has been exceeded.	9
EXT	The result measured is above the Extrapolation % defined for the calibration curve.	2
FLX	The result was calculated using the read data in the Flex Read Time. FLX does not indicate that an instrument error occurred.	12
HW	Hardware error.	4
INV	Invalid Result: Occurs when the System is unable to calculate the result and cannot identify the specific cause.	14
IRD	ICT™ Reference Solution Drift - The difference between the electrical potential of the ICT Reference Solution before and after sample measurement is greater than allowed.	5
IRL	ICT Reference Solution Low - Insufficient volume of ICT Reference Solution aspirated.	2
IRO	ICT Reference Solution Out of Range - The electrical potential of the ICT Reference Solution is outside the allowable range.	6
LMP	Lamp intensity low.	2
MVR	mV Range - The electrical potential of the ICT Unit is outside the measurable range.	1
NDC	No Data for Calculation - An error occurred for one of the assays used to perform the calculation.	1
PHO	Photometer error.	1
PRM	An assay parameter is defined incorrectly. Access the Error Status screen from the ASSAY STATUS screen for more information.	13
PSP	Previous Sample Panic Value - The concentration of the previous sample was outside the defined Panic Value Range.	7
PVH	Panic Value High.	10
PVL	Panic Value Low.	10
RCD	Reaction Check - Substrate Depletion: Reaction Check value is outside the range defined to check for prozone effect.	5

Code	Explanation	Priority
RF	Read Fluctuation: For end-point assays, the absorbance reads during the Main Read Time varied by more than the defined Abs Stability .	8
RL%	For rate assays, the absorbance linearity during the Main or Flex Read Time was outside the defined Linearity %.	8
SR	Short reagent.	1
SS	Short sample.	1
SWR	SmartWash™ Reagent Probe Wash: Insufficient volume aspirated of the solution used for washing the Reagent Probes in a SmartWash pair.	3
SWS	SmartWash™ Sample Probe Wash: Insufficient volume aspirated of the solution used for washing the Sample Probes in a SmartWash pair.	3
UTC	Unable to calculate the result due to incorrect assay parameter definition or an error that occurred during the run.	1
WB	Water bath temperature or level error.	4
WTR	The System water was insufficient while a sample was processed.	2

ICT Assay Result Error Codes

Code	Explanation	Priority
CAL	A calibration error occurred. Check the ASSAY STATUS screen for the specific Calibration Error Code.	7
EXP	Calibration is expired.	8
HW	Hardware error.	4
INV	Invalid Result: Occurs when the System is unable to calculate the result but cannot identify the specific cause.	12
IRL	ICT™ Reference Solution Low: Insufficient volume of ICT Reference Solution aspirated.	2
IRD	ICT Reference Solution Drift: The difference between the electrical potentials of the ICT Reference Solution before and after sample measurement is greater then allowed.	5
IRO	ICT Reference Solution Out of Range: The electrical potential of the ICT Reference Solution is outside the allowable range.	6
MVR	mV Range: The electrical potential of the ICT Unit is outside the measurable range.	1
PRM	An assay parameter is defined incorrectly. Check the Status screen in Assay Status/Configuration for more information.	11
PSP	Previous Sample Panic Value: The concentration of the previous sample was outside the defined Panic Value Range.	10
PVH	Panic Value High.	9
PVL	Panic Value Low.	9
SR	Short reagent.	1
SS	Short sample.	1
SWR	SmartWash™ Reagent Probe Wash: Insufficient volume aspirated of the solution used for washing the Reagent Probes in a SmartWash pair.	3
SWS	SmartWash Sample Probe Wash: Insufficient volume aspirated of the solution used for washing the Sample Probes in a SmartWash pair.	3
UTC	Unable to calculate the result due to incorrect assay parameter definition or an error that occurred during the run.	1
WB	Water bath temperature or level error.	4
WTR	The System detected that the input water was insufficient while a sample was processed.	2

Calculation Assay Result Error Codes

Code	Explanation	Priority
INV	Invalid Result: Occurs when the System is unable to calculate the result but cannot identify the specific cause.	5
NDC	No Data for Calculation: An error occurred for one of the assays used to perform the calculation.	1
PRM	An assay parameter is defined incorrectly. Check the Status screen in Assay Status/Configuration for more information.	4
PVH	Panic Value High.	3
PVL	Panic Value Low.	3
UTC	Unable to calculate the result due to incorrect assay parameter definition or an error that occurred during the run.	1

Calibration Error Codes

These error codes are displayed in the **ASSAY STATUS** screen and the **Reaction Graph** screen. When these codes are generated the Result Error Code **CAL** will be displayed in the **RESULT** screen.

Code	Explanation
BLK	One or more absorbance readings for the blank calibrator is outside the defined BLK Abs Range or an error occurred while calculating a blank calibrator value.
CON	<u>For non-linear curves only</u> : Coefficient calculation did not converge.
DEV	Calibrator Deviation too Large: The absorbance readings of the replicates of a calibrator varied by more than the absorbance defined in the C1-C8 Range field.
EXP	The calibration curve has exceeded the defined Interval .
FAC	The factor calculated between the blank and C1 calibrator varied by more than 10% from the same factor in the previous curve.
MON	The calibration curve is not monotonic.
SD	<u>For non-linear curves only</u> : The sum of the differences between the measured absorbance and the fit absorbance for each calibrator exceeded the value defined in SD .
SLP	<u>For ICT™ assays only</u> : The slope of the calibration curve is < 45%.
SPN	The difference in the absorbance readings between the blank and the calibrator identified in the Span field is outside the range defined in Span Abs Range .

Assay Specific Error Messages


These messages are displayed when <Status> is selected on the **ASSAY STATUS** screen. When an assay button appears in any other color except green, an Assay-Specific Error Message has been generated and can be viewed on the **ASSAY STATUS** screen.

	Assay Specific Error Message
1	Panic range defined with Panic-L > Panic-H
2	Reference range defined with Low Value > High Value
3	Linearity Range defined with Min > Max
6	Calibration Expired
7	Calibration Error Occurred
8	Unable to Calculate Calibration Results
9	Calibration Curve is not Monotonic
10	Reagent 1 is Low, Expired or Empty
11	Reagent 2 is Low, Expired or Empty
12	Diluent is Low, Expired or Empty
13	Reagent 1 is below Alert Level
14	Reagent 2 is below Alert Level
15	Diluent is below Alert Level
16	Sample or Diluted Sample (Standard) volume is defined as 0
17	Sample or Diluted Sample (Dil 1) volume is defined as 0
18	Sample or Diluted Sample (Dil 2) volume is defined as 0
19	Sample or Diluted Sample (BLK) volume is defined as 0
20	Sample or Diluted Sample (C1) volume is defined as 0
21	Sample or Diluted Sample (C2) volume is defined as 0
22	Sample or Diluted Sample (C3) volume is defined as 0
23	Sample or Diluted Sample (C4) volume is defined as 0
24	Sample or Diluted Sample (C5) volume is defined as 0
25	Sample or Diluted Sample (C6) volume is defined as 0
26	Sample or Diluted Sample (C7) volume is defined as 0
27	Sample or Diluted Sample (C8) volume is defined as 0
28	Reagent 1 or Reagent 2 volume is defined as 0
29	Value entered in Main Read Time must be 1-33
30	Main Read Time must have >1 Read Point for Rate assay

	Assay Specific Error Message
31	Assay selected for Sample Blank is not defined
32	Value entered in Blank Read Time must be 0-33
33	Blank Read Time must have >1 Read Point for rate assay
34	Value entered in Flex Read Time must be 0-33
35	Flex Read Time must have >1 Read Point for rate assay
36	Value entered in Abs Window must be 0-33
37	Value entered in Read Time-A/B must be 0-33
38	Read Time-A/B must have >1 Read Point for rate assay
39	Assay selected for Use Factor is not defined
40	No Blank or Calibrators are defined
41	React.-mode of T-AMY is not FACTOR/LINEAR
42	Reaction Mode of assay used for Reference Factor is invalid
43	Reaction-mode of UIBC-test is invalid
44	Calibrators are incompletely defined
45	Value in Main Read Time of Sample Blank Assay must be 1-33
46	Main Read Time of Sample Blank Assay must have >1 Read Point
47	Total Volume (Sample Blank) insufficient for Main Read Time
48	Total Vol (Smpl Blank,Dil 1) insufficient for Main Read Time
49	Total Vol (Smpl Blank,Dil 2) insufficient for Main Read Time
50	Total Volume (Standard) insufficient for Main Read Time
51	Total Volume (Dil 1) insufficient for Main Read Time
52	Total Volume (Dil 2) insufficient for Main Read Time
53	Total Volume (BLK) insufficient for Main Read Time
54	Total Volume (C1) insufficient for Main Read Time
55	Total Volume (C2) insufficient for Main Read Time
56	Total Volume (C3) insufficient for Main Read Time
57	Total Volume (C4) insufficient for Main Read Time
58	Total Volume (C5) insufficient for Main Read Time
59	Total Volume (C6) insufficient for Main Read Time
60	Total Volume (C7) insufficient for Main Read Time
61	Total Volume (C8) insufficient for Main Read Time
62	Total Volume (Standard) insufficient for Blank Read Time
63	Total Volume (Dil 1) insufficient for Blank Read Time
64	Total Volume (Dil 2) insufficient for Blank Read Time

	Assay Specific Error Message
65	Total Volume (BLK) insufficient for Blank Read Time
66	Total Volume (C1) insufficient for Blank Read Time
67	Total Volume (C2) insufficient for Blank Read Time
68	Total Volume (C3) insufficient for Blank Read Time
69	Total Volume (C4) insufficient for Blank Read Time
70	Total Volume (C5) insufficient for Blank Read Time
71	Total Volume (C6) insufficient for Blank Read Time
72	Total Volume (C7) insufficient for Blank Read Time
73	Total Volume (C8) insufficient for Blank Read Time
74	Total Volume (Standard) insufficient for Flex Read Time
75	Total Volume (Dil 1) insufficient for Flex Read Time
76	Total Volume (Dil 2) insufficient for Flex Read Time
77	Total Volume (BLK) insufficient for Flex Read Time
78	Total Volume (C1) insufficient for Flex Read Time
79	Total Volume (C2) insufficient for Flex Read Time
80	Total Volume (C3) insufficient for Flex Read Time
81	Total Volume (C4) insufficient for Flex Read Time
82	Total Volume (C5) insufficient for Flex Read Time
83	Total Volume (C6) insufficient for Flex Read Time
84	Total Volume (C7) insufficient for Flex Read Time
85	Total Volume (C8) insufficient for Flex Read Time
88	Formula is not defined for calculation test
89	Assay selected in calculation formula is not defined
92	Reference Assay is not defined
96	Concentration of low calibrator is not defined

Error Log Messages

- These messages are displayed when the Error Log Button  is selected. When an Error Log Message is generated, the Error Log button changes colors to alert the Operator that an error has occurred and the level of the error.

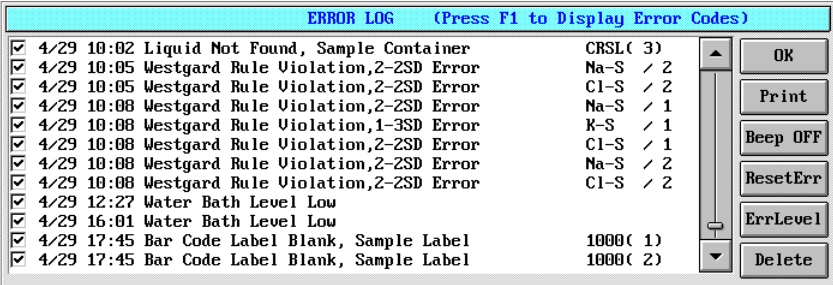


Figure 1.24: ERROR LOG Screen



NOTE: To display the Error Code number for an Error Log Message, press [F1] on the keyboard.

Level	Button Appearance	Action of the System
1	Red background	The System status immediately changes to PAUSE. The System continues to process samples already dispensed, but Result Error Codes are generated for all results. The System cannot be restarted until the error is reset in the Error Log screen. “Super” Log On access is required to reset these errors. If a Level 1 error occurs during the START UP or SHUTDOWN Procedures, the System stops immediately.
2	Pink background	The System status immediately changes to PAUSE. The System continues to process samples already dispensed and Result Error Codes are generated only for those results involved in the error. The System cannot be restarted until the error is reset in the Error Log screen. All levels of Log On access can reset these errors. If a Level 2 error occurs during the START UP or SHUTDOWN Procedures, the System does not stop and continues the procedure.
3	Yellow background	The System does not PAUSE.

The following table lists the Error Log Messages and Error Level.

	Error Log Messages	Level
1	Hard Disk Read Error	3
2	Hard Disk Write Error	3
3	Floppy Disk Read Error	3
4	Floppy Disk Write Error	3
5	Printer is Offline	3
6	Printer B is Offline	3
20	Power Failure! Auto START UP/SHUTDOWN Mode Failure	3
21	Database Cache Error	3
22	Database Write Error	3
23	Database is Full	2
24	Database Approaching Full (<100R)	3
25	This Sample Can No Longer Be Rerun	3
26	No Orders Found	3
27	Bar Code Label Blank, Sample Label	3
28	Database Index Error	3
29	Abs Database Approaching Full (<1000R)	3
30	Westgard Rule Violation, 1-3SD Error	3
31	Westgard Rule Violation, 2-2SD Error	3
32	Westgard Rule Violation, R-4SD Error	3
33	Westgard Rule Violation, R-1SD Error	3
34	Westgard Rule Violation, 10-XB Error	3
35	Westgard Rule Violation, Additional Rule	3
36	Calibration Expired	3
37	Calibration Failed, Check Assay Status	3
40	Host Communication, No Response from Host	3
41	Invalid Host Request, Data Format Error	3
42	Invalid Host Request, Out of Phase Error	3
43	Host Communication, Unable to Send to Host	3
44	Host Communication, Host Offline	3
45	Invalid Host Request, Smpl ID doesn't match	3
46	Invalid Host Request, Invalid Assay ID	3
47	Cannot Receive Correct Text in Time	3
48	System Text Buffer Overflow	3
49	Invalid Host Request, Invalid Character	3

	Error Log Messages (Continued)	Level
60	Bar Code Label Blank, Reagent 1 Label	3
61	Bar Code Label Blank, Reagent 2 Label	3
62	Invalid Bar Code Type, Rgt Supply Center 1	3
63	Invalid Bar Code Type, Rgt Supply Center 2	3
64	Reagent 1 Expired	3
65	Reagent 2 Expired	3
66	Reagent 1 Level Low	3
67	Reagent 2 Level Low	3
70	GPIB Data Transmission Error	2
71	GPIB Command Transmission Error	2
72	GPIB, No Response	2
73	GPIB SRQ Command, No Response	2
74	GPIB SRQ, No Response	2
75	GPIB Illegal SRQ Appeared	2
86	Inventory Empty, Alkaline Wash	2
87	Inventory Empty, Acid Wash	2
88	Inventory Empty, ICT™ Reference Solution	2
89	Water Bath Level Low	3
90	Cycle Data Was Not Received From Analyzer	2
91	No Response From Analyzer After Power ON	2
93	Temp Out of Range, Water Bath	3
94	Temp Out of Range, Rgt Supply Center 1	3
95	Temp Out of Range, Rgt Supply Center 2	3
96	Temp Out of Range, C/C Carousel	3
97	High Conc Waste Container is Full	2
98	Internal Low Conc Waste Tank Error	2
99	Incoming DI Water Tank Level Low	2
100	DI Water Reservoir Tank Level Low	2
101	Upper Limit Error, Cuvette Wash	1
102	Lower Limit Error, Cuvette Wash	1
103	Step Down Error, Cuvette Washer	1
104	Upper Limit Error, Probe Wash Pump A	1
105	Lower Limit Error, Probe Wash Pump A	1
106	Upper Limit Error, Probe Wash Pump B	1
107	Lower Limit Error, Probe Wash Pump B	1
108	Carrier Slide Movement Error	1

	Error Log Messages (Continued)	Level
109	Carrier Slide Push Error	1
110	Upper Limit Error, Mixer	1
111	Lower Limit Error, Mixer	1
114	Upper Limit Error, Wash Solution Pump	1
115	Lower Limit Error, Wash Solution Pump	1
116	Home Error, Wash Solution Pump	1
117	Upper Limit Error, Cuvette Wash Pump A	1
118	Lower Limit Error, Cuvette Wash Pump A	1
119	Home Error, Cuvette Wash Pump A	1
120	Upper Limit Error, Cuvette Wash Pump B	1
121	Lower Limit Error, Cuvette Wash Pump B	1
122	Home Error, Cuvette Wash Pump B	1
123	Upper Limit Error, High Conc Waste Pump A	1
124	Lower Limit Error, High Conc Waste Pump A	1
125	Home Error, High Conc Waste Pump A	1
126	Upper Limit Error, High Conc Waste Pump B	1
127	Lower Limit Error, High Conc Waste Pump B	1
128	Home Error, High Conc Waste Pump B	1
129	IRef Pump Cycle Error	2
132	Upper Limit Error, ICT™ Aspiration Pump	2
133	Lower Limit Error, ICT Aspiration Pump	2
134	Home Error, ICT Aspiration Pump	2
137	Pump OFF Error, Water Supply	1
138	Pump ON Error, Water Supply	1
139	Pump OFF Error, Wash Cup	1
140	Pump ON Error, Wash Cup	1
145	Pump OFF Error, Water Bath Circulation	1
146	Pump ON Error, Water Bath Circulation	1
147	Pump OFF Error, Cuvette Wash Vacuum	1
148	Pump ON Error, Cuvette Wash Vacuum	1
151	Pump OFF Error, Cuvette Dry Vacuum	1
152	Pump ON Error, Cuvette Dry Vacuum	1
155	Valve OFF Error, Water Bath Drain Motor	1
156	Valve ON Error, Water Bath Drain Motor	1
157	Valve OFF Error, Water Bath Supply	1
158	Valve ON Error, Water Bath Supply	1

	Error Log Messages (Continued)	Level
159	Heater OFF Error, Water Bath	1
160	Heater ON Error, Water Bath	1
161	Valve OFF Error, Sample Probe Wash Cup	1
162	Valve ON Error, Sample Probe Wash Cup	1
163	Valve OFF Error, Reagent Probe Wash Cup	1
164	Valve ON Error, Reagent Probe Wash Cup	1
165	Valve OFF Error, Mixer Wash Cup	1
166	Valve ON Error, Mixer Wash Cup	1
167	Valve OFF Error, Cuvette Wash	1
168	Valve ON Error, Cuvette Wash	1
169	Valve OFF Error, Wash Solution	1
170	Valve ON Error, Wash Solution	1
171	Valve OFF Error, Sample Probe Wash A	1
172	Valve ON Error, Sample Probe Wash A	1
173	Valve OFF Error, Reagent Probe 1 Wash A	1
174	Valve ON Error, Reagent Probe 1 Wash A	1
175	Valve OFF Error, Reagent Probe 2 Wash A	1
176	Valve ON Error, Reagent Probe 2 Wash A	1
177	Valve OFF Error, Sample Probe Wash B	1
178	Valve ON Error, Sample Probe Wash B	1
179	Valve OFF Error, Reagent Probe 1 Wash B	1
180	Valve ON Error, Reagent Probe 1 Wash B	1
181	Valve OFF Error, Reagent Probe 2 Wash B	1
182	Valve ON Error, Reagent Probe 2 Wash B	1
183	Cuvette Suction/Drying Valve OFF Error	1
184	Cuvette Suction/Drying Valve ON Error	1
185	Valve OFF Error, CuvDry/Water Prime Vac	1
186	Valve ON Error, CuvDry/Water Prime Vac	1
187	Valve OFF Error, DI Reservoir Tank Supply	1
188	Valve ON Error, DI Reservoir Tank Supply	1
189	Valve OFF Error, ICT Aspiration	2
190	Valve ON Error, ICT Aspiration	2
191	Fan OFF Error, Bath Heater Cooling	2
192	Fan ON Error, Bath Heater Cooling	2
193	Stop Error, Mixer 1	3
194	Vibration Error, Mixer 1 Stir	3

	Error Log Messages (Continued)	Level
195	Vibration Error, Mixer 1 Wash	3
197	Stop Error, Mixer 2	3
198	Vibration Error, Mixer 2 Stir	3
199	Vibration Error, Mixer 2 Wash	3
201	Rotation Error, Reaction Carousel	1
202	Upper/Lower Limit Error, Sample Arm	1
203	Rotation Error, Sample Arm	1
204	Pump Error, Sample Syringe Drive A	1
205	Pump Error, Sample Syringe Drive B	1
206	Upper/Lower Limit Error, Reagent 1 Arm A	1
207	Upper/Lower Limit Error, Reagent 1 Arm B	1
208	Upper/Lower Limit Error, Reagent 2 Arm A	1
209	Upper/Lower Limit Error, Reagent 2 Arm B	1
210	Rotation Error, Reagent 1 Arm A	1
211	Rotation Error, Reagent 1 Arm B	1
212	Rotation Error, Reagent 2 Arm A	1
213	Rotation Error, Reagent 2 Arm B	1
214	Pump Error, Reagent 1 Syringe Drive A	1
215	Pump Error, Reagent 1 Syringe Drive B	1
216	Pump Error, Reagent 2 Syringe Drive A	1
217	Pump Error, Reagent 2 Syringe Drive B	1
218	Rotation Error, Mixer 1 Motor A	1
219	Rotation Error, Mixer 1 Motor B	1
220	Rotation Error, Mixer 2 Motor A	1
221	Rotation Error, Mixer 2 Motor B	1
222	Rotation Error, Sample Carousel	1
223	Rotation Error, C/C Carousel	1
224	Rotation Error, Rgt Supply Center 1 Outer	1
225	Rotation Error, Rgt Supply Center 1 Inner	1
226	Rotation Error, Rgt Supply Center 2 Outer	1
227	Rotation Error, Rgt Supply Center 2 Inner	1
228	Pull Hook Error, Sample Carrier Handler	1
229	Push Hook Error, Sample Carrier Handler	1
230	FastTrack System Error	1
231	Upper/Lower Limit Error, ICT™ Drive	2
232	Rotation Error, ICT Drive	2

	Error Log Messages (Continued)	Level
240	Level Error Detected, Water Bath Drain	3
241	Level Error Detected, Water Bath Fill	3
242	Level Error Detected, Fluidics System	3
243	Level Error Detected, Water Supply	3
244	Bath Water Temperature Error	3
246	Degasser Pressure Too High	3
247	Level Error Detected, Incoming DI Water Tank	2
248	Level Error Detected, DI Water Reservoir Tank	2
249	Level Error Detected, Internal Low Conc Waste	1
250	Level Error Detected, High Conc Waste	1
255	Level Error Detected, Acid Wash Solution	2
256	Level Error Detected, Alkaline Wash Solution	2
257	Level Error Detected, ICT Reference Solution	2
260	Illegal Interrupt 1	1
261	Illegal Interrupt 2	1
262	Illegal Interrupt 3	1
263	Illegal Interrupt 4	1
264	Analyzer Memory Error	1
268	Auto STARTUP Error	1
271	Air During Aspiration, Sample Container	3
272	Air During Aspiration, Reagent 1 Outer	3
273	Air During Aspiration, Reagent 1 Inner	3
274	Air During Aspiration, Reagent 2 Outer	3
275	Air During Aspiration, Reagent 2 Inner	3
276	Liquid Not Found, Sample Container	3
277	Liquid Not Found, Reagent 1 Outer	3
278	Liquid Not Found, Reagent 1 Inner	3
279	Liquid Not Found, Reagent 2 Outer	3
280	Liquid Not Found, Reagent 2 Inner	3
281	Obstacle Detected, Sample Probe	2
282	Obstacle Detected, Reagent 1 Probe A	2
283	Obstacle Detected, Reagent 1 Probe B	2
284	Obstacle Detected, Reagent 2 Probe A	2
285	Obstacle Detected, Reagent 2 Probe B	2
286	Position Error, Rgt Supply Center 1 Outer	1
287	Position Error, Rgt Supply Center 1 Inner	1

	Error Log Messages (Continued)	Level
288	Position Error, Rgt Supply Center 2 Outer	1
289	Position Error, Rgt Supply Center 2 Inner	1
290	Position Error, Sample Carousel	1
291	Position Error, C/C Carousel	1
292	Tray Detected at FastTrack End Plate	1
293	Sample Carrier Movement Error	1
294	Sample Carrier Pull In Error	1
295	Sample Carrier Push Out Error	1
296	FastTrack™ System Movement Error	1
297	Bar Code Reader Fail, Carrier ID	2
298	Bar Code Reader Fail, Carrier Sample ID	2
299	Bar Code Reader Fail, Carousel Sample ID	2
300	Bar Code Reader Fail, Rgt Supply Center 1	2
301	Bar Code Reader Fail, Rgt Supply Center 2	2
302	Spare RS-232C Port Error	2
305	GPIB Port Error 1	1
306	GPIB Port Error 2	1
312	Optics/ICT™ Measurement Error	3
313	Photometer Error, Lamp Failure	3
314	Trigger Sensor Error	3
315	DAC Board Error	3
316	Air detected in ICT Unit	3
317	ICT Offset Adjustment Error	3
318	SAMPLE ID MISMATCHED	1
319	Bar Code Read Error, Carrier ID	3
320	Bar Code Read Error, Carrier Sample ID	3
321	Bar Code Read Error, Carousel Sample ID	3
322	Bar Code Read Error, Rgt Supply Center 1	3
323	Bar Code Read Error, Rgt Supply Center 2	3
325	START UP Procedure Stopped Due to Error	3
326	SHUTDOWN Procedure Stopped Due to Error	3
327	Liquid Sensed Too High, Sample Probe	2
328	Liquid Sensed Too High, Reagent 1 Probe A	2
329	Liquid Sensed Too High, Reagent 1 Probe B	2
330	Liquid Sensed Too High, Reagent 2 Probe A	2
331	Liquid Sensed Too High, Reagent 2 Probe B	2

	Error Log Messages (Continued)	Level
332	Robotics-Step Table Data Error	3
333	System Configured for Exhibition Mode	3
334	Reagent 1 Outer, Transfer to New Ctg	3
335	Reagent 1 Inner, Transfer to New Ctg	3
336	Reagent 2 Outer, Transfer to New Ctg	3
337	Reagent 2 Inner, Transfer to New Ctg	3
338	Cuvette Integrity Check Failure	3
339	Time Out, Order Not Received from SCC	3

NOTES

Appendix B

The following pages contain text examples of communication between the AEROSSET System and the Host.

Result Text

STX	R	SP	2	3	5	7	5	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3
				System ID				Sample ID																Carrier				Position				

1	9	9	9	0	4	2	7	1	7	4	5	SP	SP	1	SP	SP	SP	1	SP	SP	SP	1	4	5	SP	1	A
Result Date and Time												Manual Dilution		Assay Number				Result				Error	Sample Volume	OP Flag			

SP	SP	SP	2	SP	SP	SP	3	.	4	SP	1	A	SP	SP	SP	3	SP	SP	SP	1	0	0	SP	1	A
Assay Number				Result							Assay Number				Result										

SP	SP	SP	4	SP	SP	SP	SP	2	4	SP	1	A	SP	SP	SP	5	SP	SP	SP	2	2	0	SP	1	A
Assay Number				Result							Assay Number				Result										

SP	SP	SP	6	SP	SP	SP	1	.	6	SP	1	A	SP	SP	SP	7	SP	SP	SP	SP	1	3	SP	1	A	ETB
Assay Number				Result							Assay Number				Result											

1	9	9	9	0	4	2	7	1	0	3	5	J	O	N	E	S	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	M	I	C	H	A	E	L	SP	SP	SP	M
Order Date and Time												Last Name																First Name										Sex	

1	9	7	3	0	5	2	3	C	A	R	D	I	A	C	SP	C	A	R	E	SP	SP	SP	SP	SP	SP	SP	SP
Date of Birth								Location																			

W	I	L	L	I	A	M	S	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	F	A	S	T	I	N	G	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	ETB	ETX				
Doctor																Comment																									

Order Text

0 R

← Order Replacement option

STX

0

SP

2

5

7

4

1

8

3

9

6

SP

SP

SP

SP

SP

SP

SP

SP

SP

SP

SP

SP

2

5

SP

3

Sample ID

Carrier

Position

SP	SP	1	SP	SP	SP	1	1	SP	SP	SP	2	1	SP	SP	SP	3	1	SP	SP	SP	4	1	SP	SP	SP	5	1
Manual Dilution			Assay Number & Sample Volume					Assay Number & Sample Volume					Assay Number & Sample Volume					Assay Number & Sample Volume					Assay Number & Sample Volume				

SP	SP	SP	6	1	SP	SP	SP	7	1	ETB	1	9	9	9	0	4	2	7	1	0	3	5	J	O	N	E	S	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP
Assay Number & Sample Volume					Assay Number & Sample Volume					Order Date and Time										Last Name																							

M	I	C	H	A	E	L	SP	SP	SP	M	1	9	7	3	0	5	2	3	C	A	R	D	I	A	C	SP	C	A	R	E	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP
First Name										Sex	Date of Birth										Location																						

W	I	L	L	I	A	M	S	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	F	A	S	T	I	N	G	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	ETB	ETX	
Doctor																				Comment																						

Order Query Text

STX	Q	SP	2	3	5	7	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3	ETX
-----	---	----	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	---	---	----	---	-----

ACK Text

STX	ACK	ETX
-----	-----	-----

NAK Text

STX	NAK	ETX
-----	-----	-----

Initialize Session Text

STX	I	SP	ETX
-----	---	----	-----

Release MASTER Text AEROSET to Host

STX	M	SP	2	3	5	7	ETX
-----	---	----	---	---	---	---	-----

Release MASTER Text Host to AEROSET

STX	M	SP	SP	SP	SP	SP	ETX
-----	---	----	----	----	----	----	-----

Incomplete Sample is Validated as a Complete Sample

STX	C	V	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3	ETX
-----	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	---	---	----	---	-----

Rerun is Cancelled on the Sample

STX	C	C	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3	ETX
-----	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	---	---	----	---	-----

Rerun is Ordered on Sample

STX	C	R	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3	ETX
-----	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	---	---	----	---	-----

Result Request Text

STX	T	SP	2	5	7	4	1	8	3	9	6	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	2	5	SP	3	ETX
-----	---	----	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	---	---	----	---	-----

NOTES

Appendix C

The following pages contain an ASCII character table, followed by the first 32 ASCII characters and respective meanings.

ASCII Character Table														
Dec	Hex	Char		Dec	Hex	Char		Dec	Hex	Char		Dec	Hex	Char
0	0	NUL		32	20			64	40	@		96	60	`
1	1	SOH		33	21	!		65	41	A		97	61	a
2	2	STX		34	22	“		66	42	B		98	62	b
3	3	ETX		35	23	#		67	43	C		99	63	c
4	4	EOT		36	24	\$		68	44	D		100	64	d
5	5	ENQ		37	25	%		69	45	E		101	65	e
6	6	ACK		38	26	&		70	46	F		102	66	f
7	7	BEL		39	27	‘		71	47	G		103	67	g
8	8	BS		40	28	(		72	48	H		105	68	h
9	9	TAB		41	29	)		73	49	I		105	69	i
10	A	LF		42	2A	*		74	4A	J		106	6A	j
11	B	VT		43	2B	+		75	4B	K		107	6B	k
12	C	FF		44	2C	,		76	4C	L		108	6C	l
13	D	CR		45	2D	-		77	4D	M		109	6D	m
14	E	SO		46	2E	.		78	4E	N		110	6E	n
15	F	SI		47	2F	/		79	4F	O		111	6F	o
16	10	DLE		48	30	0		80	50	P		112	70	p
17	11	DC1		49	31	1		81	51	Q		113	71	q
18	12	DC2		50	32	2		82	52	R		114	72	r
19	13	DC3		51	33	3		83	53	S		115	73	s
20	14	DC4		52	34	4		84	54	T		116	74	t
21	15	NAK		53	35	5		85	55	U		117	75	u
22	16	SYN		54	36	6		86	56	V		118	76	v
23	17	ETB		55	37	7		87	57	W		119	77	w
24	18	CAN		56	38	8		88	58	X		120	78	x
25	19	EM		57	39	9		89	59	Y		121	79	y
26	1A	SUB		58	3A	:		90	5A	Z		122	7A	z
27	1B	ESC		59	3B	;		91	5B	[		123	7B	{
28	1C	FS		60	3C	<		92	5C	\		124	7C	|
29	1D	GS		61	3D	=		93	5D	]		125	7D	}
30	1E	RS		62	3E	>		94	5E	^		126	7E	~
31	1F	US		63	3F	?		95	5F	_		127	7F	DEL

Description of first 32 characters:

Name	Description
NUL	null
SOH	start of heading
STX	start of text
ETX	end of text
EOT	end of transmission
ENQ	enquiry
ACK	acknowledge
BEL	bell
BS	backspace
HT	horizontal tab
LF	NL line feed, new line
VT	vertical tab
FF	NP form feed, new page
CR	carriage return
SO	shift out
SI	shift in
DLE	data link escape
DC1	device control 1
DC2	device control 2
DC3	device control 3
DC4	device control 4
NAK	negative acknowledge
SYN	synchronous idle
ETB	end of transmission block
CAN	cancel
EM	end of medium
SUB	substitute
ESC	escape
FS	file separator
GS	group separator
RS	record separator
US	unit separator

NOTES

A

- ACK 138
- ACK Text Example 138
- AEROSET System Configuration 22
- Aeroset System Configuration 22
- Appendix 115
- ASCII 142
- ASCII Character Table 142
- Assay Specific Error Messages 122

B

- Bar Code Label Specifications 44
 - Length 46
 - Placement 46
 - Sample ID length 45
- Batch Ordering 42

C

- Calculation Assay Result Error Codes 121
- Calibration Error Codes 121
- Calibrator/Control Configuration 37
- Carousel Sampler Description 12
- Check Digits 56
- Communication Configuration 53

D

- DATABASE Screen 32
- Database Screen
 - Panel Configuration 32
- Description 143
- Description of first 32 Characters 143
- Download Order From Host Computer 48

E

- Editing Patient Sample Orders 48
- Error 98
- Error Codes and Messages 115
- Error Log Messages 98, 125

F

- FastTrack™ Sampler Description 12

G

- Glossary 105

H

- Host Communications Icon 34
- Host Configuration 34
- Host Order Query 48

I

- ICT™ Assay Result Error Codes 120

- Incomplete 139

- Incomplete Sample Validated Example 139

- Initialize 138

- Initialize Session Text Example 138

M

- Manual Dilution 40

N

- NAK 138

- NAK Text Example 138

O

- Onboard Dilution 41

- Options on the Order Samples Screen 40

- Order 137, 138

- Order Options 37

- Order Query Text Example 138

- Order Samples Screen 40

- Ordering Patient Samples in the Sample Carousel 39

- Ordering Patient Samples on the FastTrack Sampler 37

- Ordet Text Example 137

- Overview of the AEROSET System 9

P

- Patient Demographics 41

- Patient Samples Requirements 44

- Photometric Assay Result Error Codes 118

- Primary Components

- Analyzer 12

- FastTrack Sampler 13

- Sampling Area 12

- System Control Center 10

- Primary Components (of the AEROSET) 10

R

- Release 138

- Release MASTER Text (from AEROSET to Host) 84

- Release MASTER Text (Host to AEROSET) Example 138

- Release MASTER Text AEROSET to Host Example 138

- Rerun 139

- Rerun Ordered Example 139

- Result 136, 139

- Result Error Codes 117

- Result Flags 116

- Result Request Text Example 139

- Result Text Example 136

- Rrerun Cancelled Example 139

- RUN OPTIONS Screen 22

- Running the AEROSET System with a
 - Host Computer 48

S

- Sample Replicates 40
- Sample Vessel Requirements
 - Bar Code Labels 44
- Software 15, 55
 - Action Area 18
 - Display Area 20
 - Information Access Area 17
 - Run Progress Area 21
 - Screen Layout 15
 - Status Area 20

- Software Specifications 55
- System Control Center (SCC) Description 10

T

- Transmission 62
- Transmission Protocol 62
- Transmission Timing Chart 55
- Transmitted Error Codes 115
- Transmitting Results to the Host 49
- Tube Labeling Requirements 46