

CHAPTER 08

– HOST COMMUNICATION –

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8.1 COMMUNICATION WITH THE HOST COMPUTER

The *Ellipse* can be connected to a host computer for the purpose of facilitating results print-out and patient management.

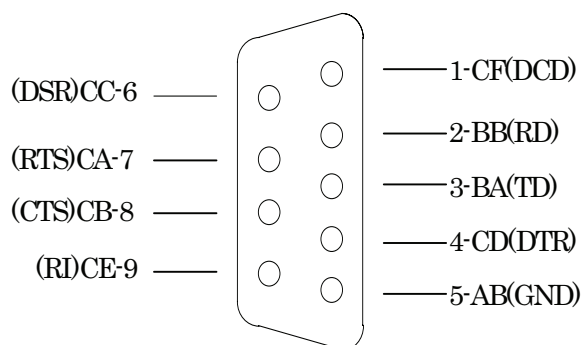
In order to enable communication between the *Ellipse* and the host computer, select the **Host Link** field under **Options** in the **Parameters** menu.

To activate communication between the *Ellipse* and the host computer, select **Host-Tx** (please see the software description in Chapter 03 of the User's Manual)

8.1.1 COMMUNICATION PARAMETERS

The *Ellipse* is linked to the managing computer using an RS-232C serial connector having the following specifications:

- Transmission method : Asynchronous, half duplex
- Baud Rate : 9600 Bit/sec.
- Data bits: : 8
- Parity : None
- Stop bit : 1
- Connector : 9 pin type D (male output from the Ellipse)



Serial connector

8.2 PROTOCOL SPECIFICATIONS

This part of Help (**Protocol Specifications**) contains information for the laboratory computer and analyzer. This exchange of data follows specific **ASTM** protocols:

E 1381-95 Standard Specification for Low-Level Protocol to Transfer Messages between Clinical Laboratory Instruments and Computer Systems;

E 1394-97 Standard Specification for Transferring Information between Clinical Instruments and Computer Systems.

ASTM uses a number of different terms to indicate the way it groups data.

- **Field:** an individual piece of data often referred to as a data field or a data element.
- **Record:** a number of logically related data fields grouped together to form one part of a complete message.
- **Repeat field:** a data field of the same type as the one immediately preceding it. A delimiter separates one instance of a repeat field from the next.
- **Component field:** part of data field that might contain more than one piece of data.

The default communication configuration for the *Analyzer* is the following: "**9600,N, 8,1**".

ASTM uses record types that are common and familiar to all laboratory personnel. It uses the following record types:

- **Header Record (H):** contains identifying information about the sending station, conventions that the device uses for field recognition, and the date and time of send station transmission.
- **Patient Record (P):** contains patient information and identification number.
- **Test Order Record (O):** contains information about the assay or requests themselves and includes other data.
- **Result Record (R):** contains information about the outcome of individual tests for an individual patient and follows a sample program record. The results contain the actual

measurements derived from the test and a comparison of the individual result to certain ranges specified as norms for the laboratory.

- **Message Terminator Record (L)**: although the ASTM protocol supports three additional record types - a Request for Information Record, a Scientific Record and a Manufacturer's Information Record - the *Analyzer* is not implementing these in the first release and will ignore them.
- **Request Information Record (Q)**: is used by either clinical instruments or computer systems for a remote request for information from its reciprocal system.

The instrument does not send or accept comment records.

8.3 HEADER RECORD (H)

Field	Field Title	Down Load	Up Load	Max Len	Description and Valid Values
1	Record Type ID	R	A	1	This is a required field that contains an "H" identifying it as a header record.
2	Delimiters	I	A	4	The <i>Analyzer</i> System uses only the four default values shown here. Delimiters may not be duplicated. The field delimiter follows the escape character to separate the delimiter specification from a subsequent field in the header record. Using default values, the first six characters of the header record will appear using the following characters: H I\^&I Field Delimiter I Repeat Delimiter \ Component Delimiter ^ Escape Delimiter &
3	Message Control ID	I	N		
4	Access Password	I	N		
5	Sender Name or ID	I	A	10	'SHAnalyzer': This is the name of the device that is sending the data.
6	Sender Street Address	I	N		

7	Reserved Field	I	N		
8	Sender Tel. Number	I	N		
9	Characteristics of Sender	I	N		
10	Receiver ID	I	N		
11	Comments or Special Instructions	I	N		
12	Processing	I	N		
13	ASTM Version No.	I	N		
14	Date and Time	I	A	14	Date and Time of transmission: formatted as YYYYMMDDHHMMSS. For example: 3:35 PM on March 1, 1995 would be represented using the following characters: 19950301153500.
Legend:		R Required	D Down Load		
		O Optional	U Up Load		
		I Ignored	N Never		
		A Always	S Sometimes		

Example Header Record Layouts (H)

Download	
Host	H I \ ^ I I I H O S T I I I I I I I I I 19950301153500<CR>
Upload	
Analyzer System	H I \ ^ & S H A n a l y z e r 19950301154000<CR>

8.4 PATIENT RECORD (P)

Field	Field Title	Down Load	Up Load	Max Len	Description and Valid Values
1	Record Type ID	R	A	1	This is a required field that contains a “P” identifying it as a patient record.
2	Sequence Number	R	A	3	This field starts with a “1” for the patient and is incremented by 1 for each additional patient within the transmission.

3	Practice Assigned Patient ID	R	A	15	This field can be assigned by the instrument with no corresponding download.
4	Laboratory Assigned Patient ID	I	N		
5	Patient ID No. 3	I	N		
6	Patient Name	O	S	36	This field has two components: <ul style="list-style-type: none"> • Last Name (up to 20 characters) • First Name (up to 15 characters).
7	Mother's Maiden Name	I	N		
8	Birth Date	O	S	8	Formatted as YYYYMMDD: For example, a birth date of December 1, 1980 would be represented as: 19801201
9	Patient Sex	R	A	1	The valid values are: <ul style="list-style-type: none"> • M for Male • F for Female
10	Patient Race/Ethnic Origin	I	N		The <i>Analyzer</i> System will ignore this field at launch.
11	Patient Address	O	S	60	For <i>Analyzer</i> , this is a four- component field: <ul style="list-style-type: none"> • Address (25 characters) • City (25 characters) • State (2 characters e.g.: NY, IT) • Zip (5 characters)
12	Reserved Field	I	N		
13	Patient Tel Number	I	N		
14	Attending Physician ID	I	N		
15	Special Field 1	I	N		
16	Special Field 2	I	N		
17	Patient Height	I	N		
18	Patient Weight	I	N		
19	Patient Known or Suspected Diagnosis	I	N		
20	Patient Active Medications	I	N		

21	Patient's Diet	I	N		
22	Practice Field No. 1	I	N		
23	Practice Field No. 2	I	N		
24	Admission Date and Discharge Date (if desired)	O	S	8	Admission date only. Formatted as YYYYMMDD.
25	Admission Status	I	N		
26	Location	O	S	20	
27	Nature of Alternative Diagnostic Code and classifiers	I	N		
28	Alternative Diagnostic Code and classification	I	N		
29	Patient Religion	I	N		
30	Marital Status	I	N		
31	Isolation Status	I	N		
32	Language	I	N		
33	Hospital Service	I	N		
34	Hospital Institution	I	N		
35	Dosage Category	I	N		
Legend:		R Required	D Down Load		
		O Optional	U Up Load		
		I Ignored	N Never		
		A Always	S Sometimes		

Example Patient Record (P)

	Download
Host	P 1 B108K MW5910^Smith 19861002 M Park Avenue^New York^NY^10002 20020923 Hematology
Analyzer System	P 1 B108K MW5910^Smith 19861002 M Park Avenue^New York^NY^10002 20020923 Hematology

8.5 TEST ORDER RECORD (O)

Field	Field Title	Down Load	Up Load	Max Length	Description and Valid Values
1	Record Type ID	R	A	1	This is required field that contains an “O” identifying it as an order
2	Sequence Number	R	A	3	This field starts with “1” for the first Test Order Record and is incremented by 1 for each additional Test Order Record within the record. This will be reset to “1” whenever another patient record is transmitted.
3	Specimen ID	R	A	15	Although the operator can manually edit this field at any time, the value of this field is usually assigned by the laboratory computer before down loading. The <i>Analyzer</i> uses and reports its results based on the assigned specimen ID.
4	Instrument Specimen ID	I	N		
5	Universal Test ID	I I I R	N N N A	9	This is a four-component field: <ul style="list-style-type: none"> • Universal Test ID Code (not used) • Universal Test ID Name (not used) • Universal Test ID Type (not used) • Manufacturer's or local code (6 characters): This is the code defined in the <i>Analyzer</i> .
6	Priority	I	N		
7	Request Ordered Date/Time	I	N		
8	Specimen Collected Date/Time	I	N		

9	Collection End Time	I	N		
10	Collection Volume/Units	I	N		
11	Collector ID	I	N		
12	Action Code	I	N		
13	Danger Code	I	N		
14	Relevant Clinical Info.	I	N		
15	Date/Time Specimen Received	I	N		
16	Specimen Type	R	A	1	This is a numeric field indicating the type of specimen: The Imm. System uses the following ASCII characters: 0 = Serum 1 = Urine
17	Ordering Physician	I	N		
18	Physician Tel. Number	I	N		
19	User Field No. 1	I	N		
20	User Field No. 2	I	N		
21	Lab Field No. 1	I	N		
22	Lab Field No. 2	I	N		
23	Date /Time Result Reported Last or Modified	I	N		
24	Instrument Charge	I	N		
25	Instrument Section ID	I	N		

26	Record Type	I	A	1	The field indicates the direction of the transmission: O - Down Loading F - Up Loading								
27	Reserved Field	I	N										
28	Location or Ward of Specimen Collection	I	N										
29	Nosocomial Infection Flag	I	N										
30	Specimen Service	I	N										
31	Specimen Institution	I	N										
Legend :	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">R Required</td> <td style="width: 33%;">D Down Load</td> </tr> <tr> <td>O Optional</td> <td>U Up Load</td> </tr> <tr> <td>I Ignored</td> <td>N Never</td> </tr> <tr> <td>A Always</td> <td>S Sometimes</td> </tr> </table>					R Required	D Down Load	O Optional	U Up Load	I Ignored	N Never	A Always	S Sometimes
R Required	D Down Load												
O Optional	U Up Load												
I Ignored	N Never												
A Always	S Sometimes												

Example Test Order Record Layouts (O)

Download	
Host	O 1 AR102 ^^GLU 0 O
Analyzer System	O 1 AR102 ^^GLU 0 F

8.6 RESULTS RECORD (R)

Field	Field Title	Down Load	Up Load	Max Len	
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1	Record Type ID		A	1	This is a required field that contains an “R” identifying it as a Results Record.
2	Sequence Number		A	3	This field starts with “1” for the first result and is incremented by 1 for each additional result within the record. This will be reset to “1” when the results from another test order record are transmitted to the laboratory computer.
3	Universal Test ID	I I I R	N N N A	9	This is a four-component field: <ul style="list-style-type: none"> • Universal Test ID Code (not used) • Universal Test ID Name (not used) • Universal Test ID Type (not used) • Local Manufacturer's or local code (6 characters) this is the code defined in the <i>Analyzer</i>.
4	Data or Measurement value		A	10	‘Data’ is a 10-character, floating point field that includes the decimal point. The number of precision point digits will vary according to the test and is configurable on the <i>Analyzer</i> .
5	Units of Measure		A	6	This is a field for up to 6 characters that the operator defines for analytic measurement.
6	Reference Ranges		A	21	This field has two components; one giving the lower limit and the other the upper limit of the range. The format for this field is N^N.
7	Result Abnormal Flags		A	2	This field indicates the normal status of the result. The following codes are valid values: <p>L - Below Low normal</p> <p>H - Above High normal</p> <p>LL - Below Panic normal</p> <p>HH - Above Panic normal</p> <p>< - Below absolute low (under linearity)</p> <p>> - Above absolute high (over</p>

					linearity) N - Normal A - Abnormal E – Edited
8	Nature of Abnormality Testing		N		
9	Result Status		A	1	The Imm. System currently implements only two valid values: F - final results; V - operator verified/approved result.
10	Date of Change in Instrument Normative Values or Units		N		
11	Operator ID		N		
12	Date/Time Test Started		N		
13	Date/Time Test Completed		A	14	Date and Time of test completion: formatted as YYYYMMDDHHMMSS.
14	Instrument ID		N		
Legend:		R Required	D Down Load		
		O Optional	U Up Load		
		I Ignored	N Never		
		A Always	S Sometimes		

Example Result Record Layouts (R)

Upload	
Analyzer System	R 1 ^^GLU 70.97 UL 70^105 N F 20020923114302

8.7 MESSAGE TERMINATOR RECORD (L)

Field	Field Title	Down Load	Up Load	Max Len	Description and Valid Values
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1	Record Type ID	R	A	1	This is a required field that contains an “L” identifying it as an Message Terminator Record.
2	Sequence Number	R	A	1	For a message terminator, this message should always be “1”.
3	Termination Code	R	A	1	This indicates the cause of termination. The following codes are valid values for the <i>Analyzer</i> : Null or N-normal termination
Legend:		R Required	D Down Load		
		O Optional	U Up Load		
		I Ignored	N Never		
		A Always	S Sometimes		

Example Message Terminator Record Layout (L)

Host	L I I I N
Analyzer System	L I I I N

8.8 REQUEST INFORMATION RECORD (Q):

Field	Field Title	Down Load	Up Load	Max Len	Description and Valid Values
1	Record Type ID		A	1	This is a required field that contains a “Q” identifying it as a request.
2	Sequence Number		A	1	It is always “1”.
3	Starting Range ID Number		A	31	This field can either be: "ALL" - to mean all demographics and tests being ordered should be sent to the instrument at this time, or can have two components: <ul style="list-style-type: none"> • Computer system patient ID No. (up to 15 characters); • Computer system specimen ID No. (up to 15 characters).
4	Ending Range ID Number		N		
5	Universal Test ID		N		

6	Nature of Request Time Limits		N		
7	Beginning Request Results Date and Time		N		
8	Ending Request Results Date and Time		N		
9	Requesting Physician Name		N		
10	Requesting Physician Telephone Number		N		
11	User Field No. 1		N		
12	User Field No. 2		N		
13	Request Information Status Codes		A	1	It is always "O" (requesting test orders and demographics only).

Example Request Information Record Layouts (Q)

Download To	
<i>Analyzer System</i>	H ^& SHAnalyzer 20020927100402 Q 1 ALL O L 1 N