7 Data Logging

7.1 Documenting Batch Tests

Data logging lets you create detailed records and test documentation when testing a batch of identical cables. You may produce a cable-by-cable record to certify that every unit has been tested, summarize the test results, and measure the performance of the operator. These functions take place from within Macros in response to special Macro instructions. You may either store the test results on a disk file which can be printed later, or directly print the test results as cables are tested. Log files store information as ASCII text, which you may later import into spreadsheets, database programs, or word processors if desired.

Eight special Macro instructions control various aspects of data logging. You will probably never need to use all eight at the same time, but they do offer flexibility for different situations. First, we will present a Macro example without data logging, and the same example again with data-logging instructions present. This should provide a quick look at how logging operates. Then we will describe each of the eight new Macro instructions in detail and provide additional examples. Note that all of the examples we discuss are found on your distribution diskette; you may load and execute any of these just like the other example Macros on your diskette.

Below are the Macro instructions that control data logging. Can you predict what they will do just from their names?

```
OPEN LOG PRINTER
OPEN LOG FILE
PRINT LOG FILE
LOG HEADER
LOG TEST RESULT
LOG SUMMARY
CLOSE LOG FILE
CLOSE LOG PRINTER
```

This Macro loads a DB25 extension cable from the database, and tests ten identical cables before stopping:

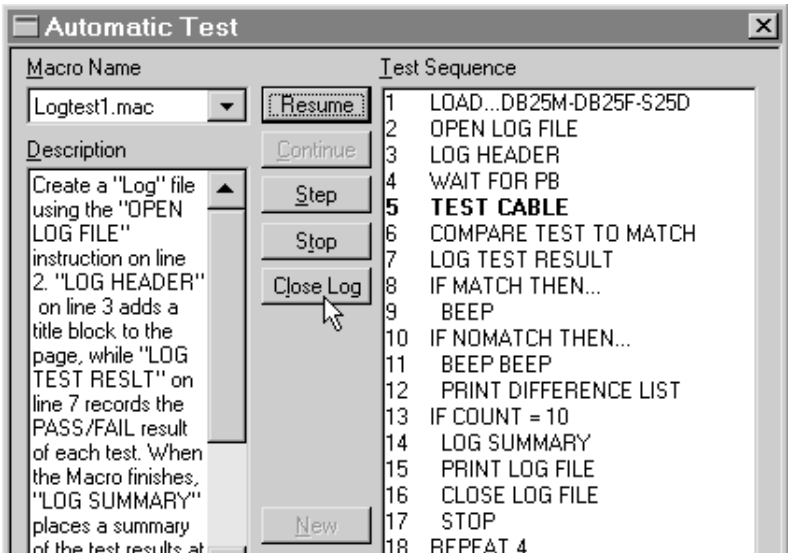
```
1  LOAD...DB25M-DB25F-S25D
2  WAIT FOR PB
3  TEST CABLE
4  COMPARE TEST TO MATCH
5  IF MATCH THEN...
6     BEEP
7  IF NOMATCH THEN...
8     BEEP BEEP
9     PRINT DIFFERENCE LIST
10 IF COUNT = 10
11    STOP
12 REPEAT 2
```

Below you see the same Macro with additional instructions (in italics) to control data logging. In this case, we are saving test results to a disk file which you will name in a pop-up window on Line 2. This appears as **LOGTEST1.MAC** in your CableEye directory.

Example 1: Logging data to disk *Log File Name:* **<anyname>.LOG**

```
1  LOAD . . . DB25M-DB25F-S25D   ;load match data from database
2  OPEN LOG FILE                 ;Operator is asked for log file name
3  LOG HEADER                    ;write a title block to the log file
4  WAIT FOR PB                   ;wait for Operator to load test cable
5  TEST CABLE                    ;measure the test cable
6  COMPARE TEST TO MATCH         ;compare it with match data
7  LOG TEST RESULT               ;write test result to the log file
8  IF MATCH THEN ...             ;if it matches, beep once to confirm
9     BEEP
10 IF NOMATCH THEN ...           ;if it does not match, alert with
11    BEEP BEEP                  ;  double beep,
12    PRINT DIFFERENCE LIST      ;  and then print the differences
13 IF COUNT = 10                 ;have we completed 10 loops yet?
14    LOG SUMMARY                ;if so, write summary block to log file,
15    PRINT LOG FILE             ;  print the complete log file, and
16    CLOSE LOG FILE             ;  close the log file
17    STOP                       ;finally, end the Macro
18 REPEAT 4                      ;repeat if fewer than 10 loops done
```

You can see from this example that we planned to test exactly ten cables before stopping. If you do not know how many cables will be in your batch, or wish to stop early, click "Pause" at any time to suspend the Macro. Then, from the Macro menu, click either "Resume" to continue the Macro at the point you left off, or "Stop" and "Close Log" to end the log session.



If you close the log manually, you may print the result by clicking the "Log Print" button and selecting the log file you just created.

In short, data logging lets you summarize the results of a series of tests as a concise, line-by-line report for each unit tested. These results may be printed, retained on disk for future reference, or exported to word processor, spreadsheet, or database software. Use the printed results for ISO9000 documentation or certification for your customers. As shown on the right, test results include a summary with total cables tested, number of failures, number of passes, average test time per cable, and total time required.

CableEye Log Report **TEST SUMMARY** 10-5-99 9:48 AM

Log File Name: TESTLOG1.LOG ALL LINE DIRECT EXTENSION

Made by Corrian Cable Company, West Bridgewater Division, Tel: (512) 345-6789, G.B. Selmer Sales Agent

	CONNECTORS		CABLE NAME
	LEFT	RIGHT	
MATCH DATA	DB25 Male	DB25 Female	DB25M-DB25F-S25D

COUNT	RESULT	PROBLEM	TIME
1	PASS		8:23:42 AM
2	PASS		8:24:15 AM
3	PASS		8:24:55 AM
4	PASS		8:25:10 AM
5	**F A I L**	**L-13 R-13 OPEN**	8:25:40 AM
6	PASS		8:26:20 AM
7	PASS		8:26:55 AM
8	PASS		8:27:22 AM
9	**F A I L**	**L-9 R-9 SHORT, L-10 R-10 OPEN, . . .**	8:27:48 AM
10	PASS		8:28:41 AM

Total Units Tested: 10
Total Units Failed: 2
Accuracy: 80%
Total Test Time: 4 min 59 sec
Average Time per Unit: 30 sec

CableEye™ by CAMI Research Inc.

7.2 Macro Instructions for Data Logging

In this section, we describe those Macro instructions that are specifically intended for data logging. For additional applications, refer to the three examples in Section 7.4.

OPEN LOG FILE – create and open a log file at runtime. A pop-up window appears asking the operator to enter the Log file name. Once entered, a disk file is opened. All log file names end in "**.LOG**". The pop-up window shows the current list of LOG files in your directory. The log file name you choose must be unique; if you choose a name that already exists, you will be asked if you wish to overwrite it. Once you close a log file at the end of a session, you cannot reopen it or append anything to it.

CLOSE LOG FILE – close the currently open log file. If no file is open, no action is taken. You may also close a log file manually by clicking the "Close Log" button.

PRINT LOG FILE – print the currently open log file. If no log file is open, an error message appears and the Macro continues. Use this instruction at the end of a batch test to print the log results that have been saved to a file. Use the OPEN LOG PRINTER instruction, described next, for print-as-you-go logging. Before using any log printing commands for the first time, be sure to select a log printer in Log Printer Setup ("File" menu). Once selected, you will not need to open this setup screen again unless you make a change in the selection.

OPEN LOG PRINTER – activate the currently chosen log printer to print *as you test*. You would need to use a dot matrix printer to see the results, line by line, as you test cables; laser printers will not produce output until the internal page buffer is completely full.

You may print labels while a Log Printer is active as long as you have selected a label printer in Label Printer Setup ("File" menu) and the printer is available.

CLOSE LOG PRINTER – generate a form feed to eject the last printed page, and release the printer.

LOG HEADER – write a header to the active Log File or Log Printer (either or both). Typically, the LOG HEADER command executes once at the beginning of a Macro. The

CableEye Log Report **TEST SUMMARY** 10-5-99 10:20 AM

Log File Name: TESTLOG1.LOG (first line of Match Data Notes)

Enter your custom company text here; usually includes company name, phone number, and operator name.

	CONNECTORS		CABLE NAME
	LEFT	**RIGHT**	
MATCH DATA	DB25 Male	DB25 Female	DB25M-DB25F-S25D

COUNT **RESULT** **PROBLEM** **TIME**

header format looks like this when printed:

LOG TEST RESULT – write a test entry to the active Log File or Log Printer (either or

```
1       PASS                                                    8:23:42 AM
```

both). For a cable that passes, the test entry looks like this when printed:

```
9       F A I L   L-9 R-9 SHORT, L-10 R-10 OPEN, . . .          8:27:48 AM
```

For a cable that fails, the entry shows as many problems as space permits:

LOG SUMMARY – write a summary to the active Log File or Log Printer (either or both). The summary looks like this when printed:

Total Units Tested:	`10`	***Total Test Time:***	`4 min 59 sec`
Total Units Failed:	`2`	***Average Time per Unit:***	`30 sec`
Accuracy:	`80%`		

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7.3 Notes and Comments about Data Logging

1 – All of your log files are stored in the "Logs" folder within your CableEye folder. You may drag files out of this folder if you do not want them to appear in the list of log files when you open or print a log file.

2 – If you pause a Macro by clicking "Pause", the current statement number, count variable, and log state are preserved. At this time, you may perform manual tasks, such as viewing a wiring diagram or checking an individual cable, and restart the Macro with "Resume". The Macro resumes with the statement that immediately follows the one that was executing when you clicked "Pause".

Should you wish to end the log after pausing, you should click "Close Log" in the Macro menu and then "Stop". This will insert a log summary and either close the file if a Log File was open, or print the file and eject the page if Log Printer was open.

3 – If you load a new Macro during the suspension of an existing Macro, any existing Log files are closed, and the count variable is reset.

4 – If you exit the program before a paused Macro is resumed, any existing Log files are closed.

5 – You may archive many Log files in your directory, if desired. To print an individual Log, click the "Print Log" button. A window then appears asking you to select from a list of log files in your "Logs" folder. Currently, the software cannot display a log file on the video screen; printing it is the only option.

6 – During Macro execution, you see the following message against a *red* background, with the total number of test cycles and errors shown:

If a log file is open, this will be so indicated, as above. The Test Count and Errors will always appear during Macro execution, even if you are not using data logging.

7 – When you log test data intended for export to another program, you would typically log only the test result unless the destination software package allocated the first three lines for a header and the last line for the summary. You may always edit the log file with a word processor before importing it into the destination software.

7.4 More Data Logging Examples

Here are two more Macro examples for your review. You will find these on the distribution diskette under the Macro file name shown below; we encourage you to actually try them.

Example 2: Logging data directly to a printer
Macro File: **LOGTEST2.MAC** *Log File:* **<anyname>.LOG**

```
1  LEARN CABLE                  ;get match data from golden cable
2  OPEN LOG PRINTER             ;set the printer for log printing
3  LOG HEADER                   ;print the header
4  WAIT FOR PB                  ;wait for test cable to be loaded
5  TEST CABLE                   ;measure the test cable
6  COMPARE TEST TO MATCH        ;compare it with match data
7  LOG TEST RESULT              ;print the test result
8  IF MATCH THEN ...            ;if it matches, confirm by sounding a tone
9     BEEP
10 IF NOMATCH THEN ...          ;if it does not match, sound a double tone
11    BEEP BEEP
12    DISPLAY DIFFERENCE LIST   ; and display the difference list
13 REPEAT 4                     ;continue testing indefinitely
```

In Example 2, there is *no count value set* and the Macro loops indefinitely. When you finish testing, you must click "Stop" to end testing, and then click "Close Log" to write a summary to the printer and eject the page. By not using a "count" variable, you may test any number of cables without knowing in advance how many will be in this batch. Just use "Stop" and "Close Log" when you have tested what you need.

Example 3: Suppressing the Log Record for Defective Cables
Macro File: **LOGTEST3.MAC** *Log File:* <anyname>.LOG
Match Cable Name: (your choice)

There may be times when you prefer only to log "good" cables, particularly when the log report will be given to your customer. You may, for example, have a large uncounted bin of cables and need to make up a batch of 50 good cables for a customer. In this case, defective cables are diverted and passed to a rework station, or discarded. Of course, eliminating the log of defective cables makes it impossible to measure batch accuracy or judge operator efficiency.

```
1  ENTER CABLE NAME          ;load the match cable of your choice
2  OPEN LOG FILE             ;create a new log file
3  LOG HEADER                ;record a title block
4  WAIT FOR PB               ;mount a test cable
5  TEST CABLE                ;measure the cable
6  COMPARE TEST TO MATCH     ;compare it with good data
7  IF MATCH THEN...          ;if it matches,
8     LOG TEST RESULT        ;  log the result,
9     BEEP                   ;  and sound a tone to confirm
10 IF NOMATCH THEN...        ;if it does not match,
11    SKIP CABLE COUNT       ;  don't log the result and freeze the loop counter
12    BEEP BEEP              ;then sound a double tone to alert operator
13 REPEAT 4                  ;repeat indefinitely
```

As before in Example 2, you would click "Stop" when you are finished testing, and then "Close Log" to manually end the session. Using "Close Log" automatically adds a summary block to the log file. To print a log saved on disk, click the "Print Log" button and select the file you just created.

Example 4: Data Logging with Intermittent Test and Printing of Serialized Labels
Macro File: **LOGTEST4.MAC** *Log File:* **<anyname>.LOG**
Match Cable Name: (your choice)

Before starting, be sure the Match Data you choose has the placeholder "**<COUNT>**" present in the label text. The actual value of the Macro count variable replaces <count> when printed. You would obtain the same result in the notes text if "**<COUNT>**" were inserted there before printing.

Example Label Text

```
Part Number: G15112
Serial Code: AG<COUNT>-Z3
```

```
1  ENTER CABLE NAME            ;load file with "<COUNT>" embedded
2  ENTER INITIAL COUNT         ;enter the initial serial # value
3  OPEN LOG FILE               ;create a log file
4  LOG HEADER                  ;record a title block
5  WAIT FOR PB                 ;mount a cable to be tested
6  TEST CABLE                  ;measure the cable
7  COMPARE TEST TO MATCH       ;compare it to the golden cable
8  IF MATCH THEN...            ;does it match?
9     BEEP                     ;if so, sound a tone to confirm
10 IF NOMATCH THEN...          ;is there a wiring error?
11    BEEP BEEP                ;if so, sound a double tone to alert operator,
12    LOG TEST RESULT          ;  then log the faulty result,
13    DISPLAY DIFFERENCE LIST  ;  display the differences, and
14    PRINT DIFFERENCE LIST    ;  print them as well
15    REPEAT 5                 ;this cable is bad, so no need to continue
16 CONTINUOUS TEST             ;for good cables, check for intermittents
17 IF MATCH THEN...            ;are there any intermittents?
18    BEEP                     ;if not, then beep to confirm good cable,
19    LOG TEST RESULT          ;  log the positive result, and
20    PRINT MATCH DATA LABEL   ;  print a label with serial number.
21 IF NOMATCH THEN...          ;if intermittents are found,
22    BEEP BEEP                ;  sound a double tone to alert operator,
23    DISPLAY INTERMITTENT CX  ;  display the intermittent connections,
24    LOG TEST RESULT          ;  and log the faulty result
25 IF COUNT = 134              ;has the loop count reached 134 yet?
26    PRINT LOG FILE           ;if so, we're done, so print the log file
27    CLOSE LOG FILE           ;  then close it, and
28    STOP                     ;  end the macro
29 REPEAT 5                    ;if the loop count is less than 134, continue
```

In Example 4, we assume you have a separate label printer connected to an available serial port, with 1-wide labels loaded. We use the primary printer for difference lists when a defective cable is found. A label will be printed only if the cable is correctly wired and has no intermittent connections. Note that bad cables are logged as well as good ones, and that we print a label only for good cables. Thus, the label serial numbers will appear to skip if defective cables are found. You may wish to print a label anyway, perhaps with different text, to affix to defective cables. Alternatively, you may use SKIP CABLE COUNT to suppress label printing in the event a bad cable is detected.

This shows the actual label output assuming the initial count value is set at 13:

```
------------------------
Part Number: G15112
Serial Code: AG13-Z3

------------------------
Part Number: G15112
Serial Code: AG14-Z3

------------------------
Part Number: G15112
Serial Code: AG15-Z3

------------------------
```