

INDEX TABLE OF CONTENTS

Index overview

Abbreviations	I- 2
CD-ROM links	I- 2
Page numbers	I- 2

Index Alpha Locator:

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

INDEX OVERVIEW (pg 1 of 1)

Abbreviations

As needed to accommodate space requirements, these abbreviations have been used:

Adjust.	for Adjustment	Cal.	for Calibration
Config.	for Configuration	P/N	for Part Number
Param.	for Parameter	P/S	for Power Supply
Disconn.	for Disconnect(ed)		
Decon.	for Decontamination		
Temp.	for Temperature		

CD-ROM links

Links (jumps) are included in the index of the CD-ROM version of this service manual. Select the letter of the alphabet from the alphabet links on page one of this index. After you've found the desired index entry, click on the page number given for that entry.

Page numbers

The page number given is the first on which that information appears. For example:

Monitor Menu, D-7

indicates that the information begins on page D-7 and may continue on subsequent pages.

Page numbers aid the user of the paper-based manual. In the CD-ROM edition, page numbers also serve as a confirmation that the appropriate linked information has been located.

1 SPOOL LOCKOUT, assay param., B-48
1.1 SYSTEM REVISION, system param., B-4, B-14
1.2 REVISION DATE, system param., B-4, B-14
1.3 SERIAL NUMBER, system param., B-14
1.4 DOOR SENSOR, system param., B-14
1.5 DATE FORMAT, system param., B-14
1.6 COM 1 BAUD, system param., 1-39, B-14
1.7 COM 1 CHR LEN, system param., 1-39, B-14
1.8 COM 1 STOP BIT, system param., 1-39, B-14
1.9 COM 1 PARITY, system param., 1-39, B-15
1.10 COM2 BAUD, system param., 1-40, B-15
1.11 COM2 CHR LEN, system param., 1-40, B-15
1.12 COM2 STOP BIT, system param., 1-40, B-15
1.13 COM2 PARITY, system param., 1-40, B-15
1.14 DIL 1 V1 POS, system param., B-15
1.15 DIL 2 V1 POS, system param., B-15
1.16 V1 DISP POS, system param., B-15
1.17 LINE FEEDS, system param., B-16

1.18 HOST INTERFACE, sys. param., 1-40, B-16
1.19 CRSL ID 1=ON, system param., B-16
1.20 SPOOLER WARN, system param., 1-40, B-16
1.28 REPORT REDIR, system param., 1-39, B-16
1.22 NUM RGTS, system param., B-16
1.26 DISPLAY DIM, system param., B-16
1.27 KEY CLICKS 1=ON, system param., B-17
1.28 REPORT REDIR, system param., B-17
1.29 XOFF TIMEOUT, system param., B-17
2.1 TOT DIL 2 VOL, system param., B-18
2.2 DEAD VOL 2, system param., B-18
2.3 CURRENT DIL 2, system param., B-18
2.4 TOT DIL 1 VOL, system param., B-18
2.5 DEAD VOL 1, system param., B-18
2.6 CURRENT DIL 1, system param., B-18
2.9 WASTE TOT VOL, system param., B-18
2.10 RT SYRG SLOPE, system param., B-18
2.11 LT SYRG SLOPE, system param., B-18

2.12 PRIME VOL LT, system param., B-19
2.13 PRIME VOL RT, system param., B-19
2.14 PRIME SPEED, system param., B-19
2.15 PRIME CYCLES, system param., B-19
2.17 REAG BC START, system param., B-19
2.18 REAG BC END, system param., B-20
2.19 LS CHECK, system param., B-20
2.20 SAFETY DEPTH, system param., B-20
2.21 LS CHECK LOW, system param., B-20
2.22 RINSE CHECK, system param., B-20
2.23 PBCD PROBE VOL, system param., B-21
2.24 PBCD PROBE REP, system param., B-21
2.25 PBCD RINSE VOL, system param., B-21
2.26 PBCD RINSE REP, system param., B-21
2.27 DSP CK AVG LO, system param., B-21
2.28 DSP CK AVG HI, system param., B-21
2.29 DSP CK RANGE, system param., B-21
3.1 CAR HFLG STEP, system param., B-22

3.2 STEPS PER REV, system param., B-22
3.3 SLOTS, system param., B-22
3.4 SAMPLE DIR, system param., B-22
3.5 HOME SAMP NUM, system param., B-22
3.6 PIP1 SAMP NUM, system param., B-22
3.7 PIP2 SAMP NUM, system param., B-23
3.8 READ SAMP NUM, system param., B-23
3.9 DET. SAMP NUM, system param., B-23
3.10 HOME OFFSET, system param., B-23
3.11 PIPET1 OFFSET, system param., B-23
3.12 PIPET2 OFFSET, system param., B-23
3.13 READ OFFSET, system param., B-24
3.14 DETECT OFFSET, system param., B-24
3.15 BAR CODE START, system param., B-24
3.16 BAR CODE END, system param., B-24
3.17 LOCK POS, system param., B-24
3.18 UNLOCK POS, system param., B-25
3.19 CAROUSEL ID, system param., B-25

3.20 CRSL BC OFFSET, system param., B-25
4. WASH STATION, system param., B-26
5. REAGENT 1, system param., B-26
6 EQUIV ZONE LO, assay param., B-48
6. REAGENT 2, system param., B-26
7 EQUIV ZONE HI, assay param., B-48
7. REAGENT 3, system param., B-26
8 LS CHECK LO, assay param., B-48
8. REAGENT 4, system param., B-26
9 LS CHECK HI, assay param., B-48
9. REAGENT 5, system param., B-26
10 AIR TEMP, assay param., B-48
10. MATRIX, system param., B-26
11 AIR DEV, assay param., B-48
11. PRE WASH, system param., B-26
12. INC WELL FRT, system param., B-26
13 REAG TEMP, assay param., B-49
13. INC WELL CTR 1, system param., B-26

14 REAG DEV, assay param., B-49
14. INC WELL CTR 2, system param., B-26
15. MEIA PRE FRT, system param., B-26
16 DIL TEMP, assay param., B-49
16. MEIA PRE CTR 1, system param., B-26
17 DIL DEV, assay param., B-49
17. MEIA PRE CTR 2, system param., B-26
18. MEIA SMP WELL, system param., B-26
19 REMOTE TEMP, assay param., B-49
19. BOOM PARK, system param., B-26
20 REMOTE DEV, assay param., B-50
20. DISP WELL, system param., B-26
21. VIAL, system param., B-26
22. LCx RCT WELL, system param., B-26
23. WASH TARGET, system param., B-26
(4-29).1 ON OFF CAR, system param., B-29
(4-29).2 CAR OFFSET, system param., B-27, B-29
(4-29).3 R BOOM, system param., B-27, B-29

(4-29).4 Z LS DEFAULT, system param., B-29
(4-29).5 LS BKGRND, system param., B-30
(4-29).6 Z LS DELTA, system param., B-30
(4-29).7 Z ABOVE, system param., B-30
(4-29).8 Z DISP 1, system param., B-30
(4-29).9 Z DISP 2, system param., B-30
(4-29).10 Z DISP 3, system param., B-30
(4-29).11 Z DISP 4, system param., B-30
(4-29).12 Z DISP 5, system param., B-30
(4-29).13 Z DISP 6, system param., B-31
(4-29).14 Z DISP 7, system param., B-31
(4-29).15 Z DISP 8, system param., B-31
(4-29).16 Z ASPLIM, system param., B-27, B-31
(4-29).17 Z BTMLIM, system param., B-31
(4-29).18 HVR, system param., B-31
(4-29).19 5 BOTTLE HVR ADJ, system param., B-31
(4-29).20 DIVE DEPTH, system param., B-32
(4-29).21 5 BOTTLE R ADJ, system param., B-32

(4-29).22 LS ADD, system param., B-32
(4-29).23 LS GAIN, system param., B-32
(4-29).24 LS DELTA, system param., B-33
(4-29).25 LS GUARD BAND, system param., B-33
(4-29).26 LS BKGRND MAX, system param., B-33
(4-29).27 LS ADJ, system param., B-33
30.15 IDLE REAG TP, system param., B-34
30.16 MEIA AIR SET, system param., B-34
30.17 MEIA WARMUP TP, system param., B-34
30.18 MEIA PID DEV, system param., B-34
30.19 MEIA ADJUST SP, system param., B-35
30.20 MEIA INC TIME, system param., B-35
30.21 MEIA CAL TIME, system param., B-35
30.22 MEIA DELTA SP, system param., B-35
30.23 PID INFO 1= OFF, system param., B-35
30.24 RMT ALARM DEV, system param., B-36
30.25 PID CONTROL, system param., B-36
30.26 PID GAIN, system param., B-36

30.27 PID INTEGRAL, system param., B-37
30.28 PID DERIVATIVE, system param., B-37
30.29 PID BIAS, system param., B-37
30.30 IDLE AIR TEMP, system param., B-37
31 MIN RATE, assay param., B-50
31.11 MEIA STD B, system param., B-38
31.12 MEIA STD M, system param., B-38
31.13 MEIA STD H, system param., B-38
31.14 M % DIFF, system param., B-38
31.15 H % DIFF, system param., B-39
31.16 H THRESHOLD, system param., B-39
31.17 INIT SLOPE, system param., B-39
31.18 INIT INTRCPT, system param., B-39
31.19 MEIA SLOPE, system param., B-40
31.20 MEIA INTRCPT, system param., B-40
31.21 B HI LIM, system param., B-40
31.22 STATIC PREC, system param., B-40
31.23 DYNAMIC PREC, system param., B-40

31.24 MEIA INC TIME, system param., B-41
31.25 MEIA LMP REF#, system param., B-41
31.26 MEIA LMP 1=ON, system param., B-41
31.27 MEIA LOW I, system param., B-41
31.28 MEIA CAL VOLT, system param., B-42
31.29 MTRX DET VOLT, system param., B-42
31.30 MTRX DET REF, system param., B-42
31.31 CRSL CAL HOLE, system param., B-42
31.32 CRSL CAL CELL, system param., B-42
32 MAX NRMSE, assay param., B-50
33 MIN CORR, assay param., B-50
34 MAX INTRCPT, assay param., B-50
35 MUP T DELAY, assay param., B-51
37 LVL 1 HIGH, assay param., B-51
38 LVL 1 LOW, assay param., B-51
43 CT/CAL SETUP, assay param., B-52
44 CAL RANGE, assay param., B-53
45 CAL HIGH, assay param., B-53

46 CAL LOW, assay param., B-53
47 CAL AVE HIGH, assay param., B-53
48 CAL AVE LOW, assay param., B-53
54 NUM POS CNTL, assay param., B-54
55 NUM NEG CNTL, assay param., B-54
60 PRINT OPTION, assay param., B-54
61 % CUT OFF, assay param., B-54
62 FSA, assay param., B-55
65 LVL 2 HIGH, assay param., B-55
66 LVL 2 LOW, assay param., B-55
69 POS RANGE, assay param., B-55
70 POS HIGH, assay param., B-56
71 POS LOW, assay param., B-56
72 POS AVE HIGH, assay param., B-56
73 POS AVE LOW, assay param., B-56
76 INACT PROT, assay param., B-56
77 RGT VOL CHK ORD, assay param., B-57
82 BATCH SIZE, assay param., B-57

83 NUM CAL, assay param., B-57
84 NEG RANGE, assay param., B-57
85 NEG HIGH, assay param., B-58
86 NEG LOW, assay param., B-58
87 NEG AVE HIGH, assay param., B-58
88 NEG AVE LOW, assay param., B-58
90 LVL 3 HIGH, assay param., B-58
91 LVL 3 LOW, assay param., B-58
101 NUM RGNTS, assay param., B-59
105 DATA REDUC, assay param., B-59
106 RGNT DELAY, assay param., B-59
107 POST PRCR, assay param., B-59
108 MODE, assay param., B-59
109 GAIN, assay param., B-59

A

A to D hardware fail (EC-54) (IP-27), 2-104
activating assay params., B-45

activating the ASTM® interface, C-4

Adapter, Assy, Temp. Probe, P/N, 3-4
adjustments

Bar Code Adjust. (VP-5), 5-19

Card Cage Adjust. (VP-3), 5-14

Carousel Bar Code Offset Adjust. (VP-56), 5-99

Carousel Lock Sensor Adjust. (VP-34), 5-78

Carousel Motor and Gear Adjust. (VP-19), 5-51

Enclosure Adjust. (VP-2), 5-12

Level Sense Adjust. (VP-12), 5-39

MEIA Lamp Adjust. (VP-22), 5-57

Reagent Heater Block Adjust. (VP-21), 5-54

Air Deflector, P/N, 3-4, 3-6

Air Duct Cover

P/N, 3-8

RR-2.8, 4-14

Air fan not running (IP-86), 2-228

Air Heater Assy

P/N, 3-11

RR-3.16, 4-38

Air Heater Insulator, P/N, 3-11

Air Heater/Thermistor Cable, P/N, 3-11

Air Purge (VP-57), 5-101

Air temp. high (EC-63) (81), 2-217

Air temp. low (EC-62) (81), 2-217

Air Thermistor Assy, RR-3.13, 4-36

Air Thermistor (Remote) Assy

P/N, 3-14

RR-4.14, 4-57

Alignment, AVR (VP-64), 5-113

I Index

LCx® Analyzer Service Manual (Text P/N 47278-102)

I - 9

Index Alpha Locator
(Index page 1)

Manual
Contents

CD Main
Screen

Amplification Vial
 disposal, 1-26
 location in reaction cell, 5-34
 LLS position and delta voltage, 5-32
 P/N, 3-4
 Amplification Vial Retainer
 P/N, 3-8
 RR-2.11, 4-16
 amplified product
 decontamination, 1-23
 inactivating, 1-18
 Analog Board
 block diagram, A-9
 board layout, A-27
 connector pin callouts, A-28
 P/N, 3-24
 RR-8.3, 4-92
 signal pathway, A-26
 Analog to CPU Cable, P/N, 3-24
 Analog Bd to MEIA Lamp Supply Cable, P/N, 3-14
 Analog to MEIA Lamp P/S, Cable, P/N, 3-24
 Analog Bd to Motor Driver Bd., Cable, P/N, 3-24
 Analog Board cable disconn. (EC-2) (IP-5), 2-45
 Analog/HV P/S cable assy, P/N, 3-25
 Analog/Motor Driver/Display, P/Ns (PL-8), 3-24
 analyzer decon. procedure (VP-60), 5-107
 Analyzer operates too slowly (IP-3), 2-38
 analyzer specifications, 1-32
 Assay done - remove reagents (EC-207), 2-26
 assay file XX, bad value in (IP-46), 2-129
 ASSAY menu, D-5
 assay module
 bad checksum (EC-133) (IP-53), 2-146
 incompatible with system module (EC-134), 2-25
 Assay Module missing (EC-5) (IP-6), 2-47

- assay parameters
 - overview, B-43
 - parameter access, B-45
 - assay activation, B-45
 - list, B-46
 - sample printout, B-43
- assay params. quick ref. chart, B-47
- Assay results incorrect/Controls out of range (IP-4), 2-40
- Assay revisions mismatch (EC-104) (IP-47), 2-130
- ASIC CPU Bd, P/N, 3-22
- Assy, Carousel Pack, P/N, 3-4
- Assy, System Cartridge Pack, P/N, 3-4
- ASTM® interface
 - activating, C-4
 - cable/connector, C-5
 - connecting to the Host computer, C-5

- ASTM® interface (cont)
 - error codes, C-15
 - load list feature, C-8
 - log, clearing (VP-63), 5-112
 - pin assignments (COM2 port), C-6
 - spooler buffer, C-12
 - spooler capacity warning, C-12
 - system params., C-7
 - troubleshooting, C-13
- ASTM® Log, clearing (VP-63), 5-112
- ASTM®-specific error codes, C-15
- audience for this manual, 1-8
- average out of range (EC-199), 2-25
- AVR Alignment (VP-64), 5-113
- AVR Positioning Tool, P/N, 3-4
- AVR Sensor Check (VP-65), 5-115

B

B is out of range (EC-144) (IP-69), 2-176
Bad checksum on Assay Module (EC-133) (IP-53),
2-146
Bad checksum on System Module (EC-132) (IP-53),
2-146
Bad High Voltage Power Supply (EC-74) (IP-34),
2-115
Bad value in assay XX (EC-103) (IP-46), 2-129
Bad values in Boom Cal file XX (EC-10) (IP-8), 2-50
Bar Code Adjust. (VP-5), 5-19
Bar Code Check (VP-4), 5-16
Bar Code device test failed (EC-131) (IP-54), 2-148
Bar code error (EC-42) (IP-20), 2-83
Bar Code Interface block diagram, A-39
Baseplate, P/N, 3-12
Bearing Center Pin, P/N, 3-14
biohazardous material, decon., 1-23, 5-107

blank cells

LLS position and delta voltage, 5-32
P/N, 3-4

block diagrams/voltage and/or signal pathways

Analog Board, A-9, A-26
Bar Code Interface, A-39
boom assembly, A-40
Digital I/O board, A-16
dispense station, A-45
ground cable, A-57
heater assy, A-50
Liquid Level Sense Board, A-9, A-36
MEIA optics, A-55
Motor Driver Board, A-8
Power Supply, Card Cage Assy, A-7
pump assembly, A-47
system block diagram, A-6
system power supply, A-10

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

I - 12

[Index Alpha Locator
\(Index page 1\)](#)

[Manual
Contents](#)

[CD Main
Screen](#)

Board, see specific board by name
board layouts

Analog Board, A-27

Power Supply, A-11

Digital I/O Board, A-17

Liquid Level Sense Board, A-37

Motor Driver Board, A-24

Power Supply, A-11

Boom Assy

block diagram, A-40

connector pin callouts, A-42

P/N, 3-11

RR-3.9, 4-33

voltage pathway, A-40

Boom and Wash Station Screw Lube. (VP-6), 5-21

Boom Cal.

example printout, 5-28

procedure (VP-8), 5-25

boom cal file X, bad values in file (EC-10) (IP-8),
2-50

Boom Check (VP-7), 5-23

Boom locations params. (Files 4-29), B-26

buffer, ASTM® spooler, C-12

buffer bottle door, P/N, 3-5

Buffer Inlet Tubing Assy, P/N, 3-17

Buffer Mgmt, LLS, Analog, Cable Assy, P/N, 3-8

buffer pack, LLS position and delta voltage, 5-32

Buffer Run (VP-46), 5-87

Buffer Sensor Cable

P/N, 3-17

RR-5.8, 4-65

Buffer Sensor Check (VP-15), 5-45

Buffer Tray Assy w/Sensor, P/N, 3-17

I Index

LCx® Analyzer Service Manual (Text P/N 47278-102)

I - 13

[Index Alpha Locator](#)
(Index page 1)

[Manual](#)
[Contents](#)

[CD Main](#)
[Screen](#)

C

cable

- Air Heater/Thermistor, P/N, 3-11
- Analog to CPU, P/N, 3-24
- Analog to MEIA Lamp P/S, P/N, 3-24
- Analog Bd to MEIA Lamp Supply, P/N, 3-14
- Analog Bd to Motor Driver Bd. , P/N, 3-24
- Analog/HV P/S, P/N, 3-25
- Buffer Sensors, P/N, 3-17
 - see also* Buffer Sensor
- Card Cage Fan, P/N, 3-22
- Carousel Lock Sensor, P/N, 3-14
 - see also* Carousel Lock Sensor Cable Assy
- COM 1 external printer, 1-39
- COM 2 host computer, 1-40
- CPU to Printer, P/N, 3-19
- Digital I/O to Analog Bd., P/N, 3-24
- Digital I/O to Motor Driver Bd. , P/N, 3-24

cable (cont)

- Display to I/O Bd. , P/N, 3-25
- Ground, Assy, P/N, 3-27
 - see also* Ground Cable
- host interface connection, C-5
- HV Connector Cable Assy, P/N, 3-14
- Keypad to I/O Bd. , P/N, 3-24
- LLS/Analog, P/N, 3-25
- LLS P/S/ Mtr. Dr./Analog, P/N, 3-19
- Main P/S to Card Cage, P/N, 3-19
- Main P/S to Printer, P/N, 3-19
- Main P/S 110 VAC to Mtr. Dr. Bd. , P/N, 3-19
- MEIA Optics to Analog Bd, P/N, 3-14
- Sensor Bracket, P/N, 3-25
- Cable/Bracket Assy, RS-232, P/N, 3-22
- calibrations
 - Boom Cal. (VP-8), 5-25
 - MEIA Carousel Cal. (VP-30), 5-73
 - MEIA Initialization Photo Cal. (VP-27), 5-63

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

calibrations (cont)
 MEIA Photo Cal. (VP-27A), 5-66
 MEIA Temp. Cal. (VP-29), 5-70
CALIBRATIONS menu, D-7
calibrators, handling/disposal, 1-27
Cap, Drilled, P/N, 3-4
Card Cage
 adjustment, (VP-3), 5-14
 P/Ns (PL-7), 3-22
Card Cage Adjust. (VP-3), 5-14
Card Cage Assy, RR-7.7, 4-81
Card Cage Cover, P/N, 3-22
Card Cage Fan, P/N, 3-22
Card Cage Fan Baffle, P/N, 3-22
Card Cage Fan Cable, P/N, 3-22
Card Cage Spacers, P/N, 3-22
Card Cage, Tilt Back, Procedure (RR-8.0), 4-87

carousel
 decontamination procedure, 5-107
 label read error (EC-40) (IP-20), 2-83
 load error (EC-36) (IP-17), 2-73
 missing steps (EC-23) (IP-79), 2-211
 not locked (EC-20) (IP-10), 2-56
carousel bar code
 ID= (bar code error) (EC-44) (IP-20), 2-83
 label read error (EC-40) (IP-20), 2-83
Carousel Bar Code Offset Adjust. (VP-56), 5-99
Carousel failed home (EC-13) (IP-79), 2-211
Carousel Home Sensor Assy, P/N, 3-11
Carousel Home Sensor Check (VP-18), 5-50
Carousel ID Bar Code, P/N, 3-4
Carousel ID error: Carousel ID (EC-44) (IP-20),
 2-83
Carousel label read error (EC-40) (IP-20), 2-83

Carousel load error (EC-36) (IP-17), 2-73
Carousel Lock Arm not locked (EC-93) (IP-87),
2-229
Carousel Lock Sensor Adjust. (VP-34), 5-78
Carousel Lock Sensor Cable Assy
P/N, 3-14
RR-4.6, 4-52
Carousel Master Packing, P/N, 3-4
Carousel missing steps (EC-23) (IP-79), 2-211
Carousel Motor Adjust. Fixture, P/N, 3-4
Carousel Motor and Gear Adjust. (VP-19), 5-51
Carousel Motor Assy, RR-3.3, 4-25
Carousel Motor/Home Sensor, connector pin
callouts, A-44
Carousel Motor/Sensor/Bracket, P/N, 3-11
Carousel not locked (EC-20) (IP-10), 2-56
Carousel Pack Assy, P/N, 3-4

Carousel Receiver Assy
P/N, 3-12
RR-3.18, 4-41
cautions and warnings
amplified product, 1-18
decontamination, 1-23
disposal, 1-26
handling calibrators, controls, reagents, 1-27
maintenance and service, 1-29
personal protective equipment, 1-22
universal precautions, 1-21
chapter descriptions, 1-9
Check MEIA Lamp XXXXX (EC-108) (IP-48), 2-131
checks
AVR Sensor Check (VP-65), 5-115
Bar Code Check (VP-4), 5-16
Boom Check (VP-7), 5-23
Buffer Sensor Check (VP-15), 5-45

checks (cont)

- Carousel Home Sensor Check (VP-18), 5-50
- Dispense Check (VP-13), 5-42
- Door Sensor Check (VP-20), 5-53
- Fluorescence Background Check (VP-59), 5-105
- HV Linearity Check (VP-58), 5-103
- Level Sense Check (VP-11), 5-37
- LLS Voltage Delta Check (VP-9), 5-29
- Matrix Count Check (VP-31), 5-75
- MEIA Photo Check (VP-26), 5-60
- MEIA Photodiode Check (VP-25), 5-59
- MEIA PMT Check (VP-24), 5-58
- MEIA Temp. Check (VP-28), 5-68
- Power Supply Check (VP-1), 5-11
- Syringe Sensor Check (VP-16), 5-47
- Valve Sensor Check (VP-17), 5-49

CHECKS menu, D-8

checksum error

- assay module (EC-133) (IP-53), 2-146
- directory (EC-100) (IP-45), 2-127
- file (EC-101) (IP-45), 2-127
- system module (EC-132) (IP-53), 2-146
- Chlamydia LCR assay, B-44
- Circuit Bd. Spacer, P/N, 3-25
- cleaning up spills, 1-24
 - see also* Decontamination (VP-60)
- Clearing System, ASTM, and CSC Log (VP-63), 5-112
- COM 1 BAUD, system param. 1.6, 1-39
- COM 1 CHR LEN, system param. 1.7, 1-39
- COM 1 PARITY, system param. 1.9, 1-39
- COM 1 Port error (EC-90) (IP-44), 2-124
- COM 1 port specifications, 1-39
- COM 1 STOP BIT, system param. 1.8, 1-39
- COM 2 BAUD, system param. 1.10, 1-40

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

I - 17

[Index Alpha Locator](#)
(Index page 1)

[Manual](#)
[Contents](#)

[CD Main](#)
[Screen](#)

COM 2 CHR LEN, system param. 1.11, 1-40
 COM 2 PARITY, system param. 1.13, 1-40
 COM 2 port, ASTM interface, pin assignments, C-6
 COM 2 Port error (EC-91) (IP-44), 2-124
 COM 2 port specifications, 1-40
 COM 2 STOP BIT, system param. 1.12, 1-40
 configuration params. (File 1), B-14
 connector pin callouts
 COM 1 external printer, 1-39
 COM 2 host computer, 1-40
 see also specific board in Appendix A
 Continuous Waste Tubing Assy, P/N, 3-8
 controls, handling and disposal, 1-26, 1-27
 conventions used in this manual, 1-11
 Cor. Coef. low (EC-164) (IP-65), 2-160
 cover, Air Duct
 P/N, 3-8
 RR-2.8, 4-14

Cover, Protective Wire
 P/N, 3-8
 RR-2.7, 4-13
 Cover, Interior, P/N, 3-29
 covers, internal, P/Ns (PL-2), 3-8
 Cover, Pump, P/N, 3-17
 covers, VDE, P/Ns (PL-10), 3-29
 CPU/Digital I/O Boards
 P/N, 3-22
 RR-7.1/7.10, 4-75
 CPU to Printer, Cable, P/N, 3-19
 CSC Log, clearing (VP-63), 5-112
 Current liquid temp out of spec (EC-157) (IP-73),
 2-189
 Cuvette Sensor (Carousel Lock Sensor Cable),
 P/N, 3-14

D

date/time reset (EC-8) (IP-7), 2-49

DCE and DTE configuration pinouts, 1-41

decontamination

- amplified product, 1-18, 1-23

- analyzer (VP-60), 1-23, 5-107

- biohazardous material, 1-23

- carousel, 5-107

- defective parts, 1-25, 5-109

- probe, 5-108

- procedure (VP-60), 5-107

- reaction chamber, 5-107

- replaced parts, 1-25, 5-109

- spills, 1-24

- subassemblies, 1-25, 5-109

- tools, 5-109

- waste container, 1-24

- when to perform, 1-23

Decontamination (VP-60), 5-107

defective parts, decontamination procedure, 5-109

Deflector, Air, P/N, 3-4

DI/AS X Y ZZZZ (EC-167) (IP-67), 2-169

Digital I/O Board

- board layout, A-17

- connector pin callouts, A-18

- RR-7.10, 4-75

- signal pathway, A-16

Digital Board timed out (EC-137) (IP-55), 2-149

Digital I/O/CPU Boards

- P/N, 3-22

- RR-7.1/7.10, 4-75

Digital I/O to Analog Bd., Cable, P/N, 3-24

Digital I/O to Motor Driver Bd., Cable, P/N, 3-24

Digital Thermometer, P/N, 3-4

Diluent Bottle not found (EC-49) (IP-23), 2-100

Diluent insufficient/empty XXXX (EC-48) (IP-23),
2-100

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

I - 19

[Index Alpha Locator](#)
(Index page 1)

[Manual](#)
[Contents](#)

[CD Main](#)
[Screen](#)

diluent syringe
 P/N, 3-17
 RR-5.10/12, 4-67
 Diluent Syringe failed home (EC-15) (IP-9), 2-51
 Diluent Syringe missing steps (EC-25) (IP-9), 2-51
 Diluent temp. high ____ °C (EC-61) (IP-33), 2-111
 Diluent temp. low ____ °C (EC-60) (IP-33), 2-111
 Directory checksum error (EC-100) (IP-45), 2-127
 dispense characteristics/specifications, 1-32
 Dispense Check (VP-13), 5-42
 Dispense System, A-45
 Display
 P/Ns (PL-8), 3-24
 Raise procedure (RR-8.1.1), 4-91
 RR-8.1, 4-89
 test, see Display Test
 Display Assy (Touchpad)
 P/N, 3-24
 RR-8.1, 4-89
 Display blank or incorrect (IP-1), 2-33
 Display, Raise, Procedure (RR-8.1.1), 4-91
 Display Test (VP-43), 5-83
 Display to I/O Bd., Cable, P/N, 3-25
 disposal
 amplification vials, 1-26
 calibrators, 1-26
 controls, 1-26
 disposables, 1-26
 inactivation diluent, 1-26
 inactivation reagent, 1-26
 liquid waste containing acid, 1-26
 specimens, 1-26
 Door
 Buffer Bottle, P/N, 3-5
 front, P/N, 3-5
 Personality Module, P/N, 3-5
 printer, P/N, 3-5

Door open (EC-43) (IP-21), 2-88
Door Sensor Assy, P/N, 3-17
Door Sensor Check (VP-20), 5-53
Door Sensor option active (EC-98) (IP-21), 2-88
Door Sensor Reflective Tape, P/N, 3-5
DTE and DCE configuration pinouts, 1-41
Dynamic Precision out of spec (EC-148) (IP-72),
2-186

E

EC-1: Motor Driver cable disconn. (IP-5), 2-45
EC-2: Analog Board cable disconn. (IP-5), 2-45
EC-4: Bad timer device (SM-4), 2-23
EC-5: Assay Module missing (IP-6), 2-47
EC-6: Invalid CMD in Mode sequence (SM-6), 2-23
EC-7: Invalid parameters in command (SM-7), 2-23
EC-8: Time/date reset (IP-7), 2-49

EC-10: Bad values in Boom Cal file XX (IP-8), 2-50
EC-11: Z boom failed Home (IP-78), 2-205
EC-12: R boom failed Home (IP-78), 2-205
EC-13: Carousel failed Home (IP-79), 2-211
EC-14: Multivalve failed Home (IP-80), 2-213
EC-15: Diluent Syringe failed Home (IP-9), 2-51
EC-16: Sample Syringe failed Home (IP-9), 2-51
EC-19: Photo Cal not initialized (SM-19), 2-23
EC-20: Carousel not locked (IP-10), 2-56
EC-21: Z boom missing steps (IP-78), 2-205
EC-22: R boom missing steps (IP-78), 2-205
EC-23: Carousel missing steps (IP-79), 2-211
EC-24: Multivalve missing steps (IP-80), 2-213
EC-25: Diluent Syringe missing steps (IP-9), 2-51
EC-26: Sample Syringe missing steps (IP-9), 2-51
EC-29: Reagent Pack not on module (IP-11), 2-61
EC-30: Reagent bar code mismatch (IP-10), 2-56
EC-31: Invalid assay on module (IP-12), 2-63

EC-32: NOVRAM full (IP-13), 2-65
EC-34: Insufficient tests left XX (IP-15), 2-66
EC-35: No disposables to run (IP-16), 2-68
EC-36: Carousel load error (IP-17), 2-73
EC-37: Printer error (IP-18), 2-80
EC-38: Carousel mismatch (SM-38), 2-23
EC-39: Invalid mode definition (SM-39), 2-23
EC-40: Carousel label read error (IP-20), 2-83
EC-41: Reagent label read error (IP-20), 2-83
EC-42: Bar code error: Reagent ID= (IP-20), 2-83
EC-43: Door open (IP-21), 2-88
EC-44: Carousel ID Error: Carousel ID= (IP-20),
2-83
EC-45: Wash Station overflow (IP-22), 2-90
EC-46: Liquid level too high (IP-22), 2-90
EC-47: Reagent insufficient/empty XXXX (IP-22),
2-90
EC-48: Diluent insufficient/empty X (IP-23), 2-100

EC-49: Diluent bottle not found X (IP-23), 2-100
EC-52: Level sense not found XXXX (IP-22), 2-90
EC-53: F to D hardware fail (IP-26), 2-103
EC-54: A to D hardware fail (IP-27), 2-104
EC-56: MEIA Lamp out (IP-29), 2-105
EC-60: Diluent temp. low ____°C (IP-33), 2-111
EC-61: Diluent temp. high ____°C (IP-33), 2-111
EC-62: Air temp. low ____°C (IP-81), 2-217
EC-63: Air temp. high ____°C (IP-81), 2-217
EC-70: Remote temp. low ____°C (IP-83), 2-222
EC-71: Remote temp. high ____°C (IP-83), 2-222
EC-72: Reagent block temp. low ____°C (IP-85),
2-224
EC-73: Reagent block temp. high ____°C (IP-85),
2-224
EC-74: Bad high voltage power supply (IP-34),
2-115
EC-78: No sample/reagent found XXXX (IP-22),
2-90

- EC-79: File reloaded X Y (IP-45), 2-127
- EC-81: V to F to D overflow error (SM-81), 2-23
- EC-83: Sample inactivation failed XXX (SM-83), 2-23
- EC-84: MEIA stds placed incorrectly (IP-43), 2-119
- EC-90: COM 1 port error (IP-44), 2-124
- EC-91: COM 2 port error (IP-44), 2-124
- EC-92: Incompatible assay module (SM-92), 2-23
- EC-93: Carousel lock arm not locked (IP-87), 2-229
- EC-94: Invalid system module (SM-94), 2-24
- EC-97: Level sense range error XXXX (IP-22), 2-90
- EC-98: Door sensor option active (IP-21), 2-88
- EC-99: Level sense hardware error (IP-22), 2-90
- EC-100: Directory checksum error (IP-45), 2-127
- EC-101: File checksum error (IP-45), 2-127
- EC-102: Initialize database (IP-45), 2-127
- EC-103: Bad value in assay file XX (IP-46), 2-129
- EC-104: Assay revisions mismatch (IP-47), 2-130
- EC-105: File parameter out of range (SM-105), 2-24
- EC-108: Check MEIA Lamp XXXXX (IP-48), 2-131
- EC-109: MEIA lamp ref not initialized (IP-49), 2-139
- EC-110: Time expired for entering temp (IP-50), 2-141
- EC-111: CPU test failed (SM-111), 2-24
- EC-112: Reset test failed (SM-112), 2-24
- EC-113: CPU board configuration error (SM-113), 2-24
- EC-115: Diagnostic checksum error (SM-115), 2-24
- EC-116: NMI Test failed (IP-51), 2-144
- EC-117: U25/CPU test failed (SM-117), 2-24
- EC-118: MEM error XXX:XXXX or UX (IP-51), 2-144
- EC-119: Timer controller test failed (SM-119), 2-24

EC-120: Master pic test failed (SM-120), 2-24
EC-121: CPU slave pic test failed (SM-121), 2-24
EC-122: I/O slave pic test failed (SM-122), 2-24
EC-123: Clock device failed (SM-123), 2-24
EC-124: Bad oscillator frequency (SM-124), 2-25
EC-125: Motor ctrl failed UX (IP-52), 2-145
EC-126: System module missing (IP-53), 2-146
EC-127: Invalid system module (IP-53), 2-146
EC-129: Invalid assay module (IP-53), 2-146
EC-130: Ready to change modules (SM-130), 2-25
EC-131: Barcode device test failed (IP-54), 2-148
EC-132: Bad checksum on system module (IP-53),
2-146
EC-133: Bad checksum on assay module (IP-53),
2-146
EC-134: Incompatible system/assay modules
(SM-134), 2-25
EC-135: Memory board timed out (IP-55), 2-149

EC-136: Memory board IC timed out (IP-55), 2-149
EC-137: Digital board timed out (IP-55), 2-149
EC-138: Unknown NMI contact CSC (IP-55),
2-149
EC-139: Memory board 8255 device failed (IP-55),
2-149
EC-140: H below threshold value (IP-61), 2-152
EC-141: H is not linear (IP-61), 2-152
EC-142: Slope/intercept out of range (IP-68), 2-172
EC-144: B is out of range (IP-69), 2-176
EC-145: M % diff out of spec (IP-70), 2-179
EC-146: H % diff out of spec (IP-70), 2-179
EC-147: Static precision out of spec (IP-72), 2-186
EC-148: Dynamic precision out of spec (IP-72),
2-186
EC-149: Level sense out of range (IP-74), 2-192
EC-150: Group 1 failed (IP-75), 2-194
EC-151: Group 2 failed (IP-75), 2-194

EC-152: Group 3 failed (IP-75), 2-194
EC-153: Group 4 failed (IP-75), 2-194
EC-154: Liquid heater block out of spec (IP-33),
2-111
EC-155: Remote temp out of range (IP-83), 2-222
EC-156: Reagent heater block out of spec (IP-85),
2-224
EC-157: Current liquid temp out of spec (IP-73),
2-189
EC-162: Intercept high (IP-64), 2-155
EC-163: NRMSE too large (IP-65), 2-160
EC-164: Cor. coef. low (IP-65), 2-160
EC-166: Read error (IP-66), 2-164
EC-167: DI/AS X Y ZZZZ (IP-67), 2-169
EC-190: Negative range failed (SM-190), 2-25
EC-191: Negative too high (SM-191), 2-25
EC-192: Negative too low (SM-192), 2-25
EC-193: Positive range failed (SM-193), 2-25

EC-194: Positive too high (SM-194), 2-25
EC-195: Positive too low (SM-195), 2-25
EC-196: Calibrator range failed (SM-196), 2-25
EC-197: Calibrator too high (SM-197), 2-25
EC-198: Calibrator too low (SM-198), 2-25
EC-199: Average out of range (SM-199), 2-25
EC-200: Factory Set (A/Sys/Assay) (SM-200), 2-26
EC-201: MEIA temp. calibration (SM-201), 2-26
EC-202: Boom calibration (SM-202), 2-26
EC-203: MEIA carousel calibration (pass/fail)
(SM-203), 2-26
EC-204: MEIA photo calibration (pass/fail)
(SM-204), 2-26
EC-205: Level Sense calibration (pass/fail)
(SM-205), 2-26
EC-206: CLI invocation (SM-206), 2-26
EC-207: Assay done - remove Reagents (SM-207),
2-26

EC-208: MEIA temp. check (pass/fail) (SM-208), 2-26
EC-209: MEIA photo check (pass/fail) (SM-209), 2-26
EC-210: Dispense system check (pass/fail) (SM-210), 2-26
EC-211: Boom check (SM-211), 2-26
EC-212: Carousel not calibrated (SM-212), 2-27
EC-213: Error while parsing ASTM® message (SM-213), 2-27
EC-214: Error processing ASTM® order (SM-214), 2-27
EC-215: Spooler Run Capacity (message logged) Spooler capacity remaining: N Run(s) (displayed) (SM-215), 2-27
EC-216: ASTM® COMM timeout (SM-216), 2-28
EC-217: Reset fail (SM-217), 2-28
EC-218: Special operation (SM-218), 2-28

EC-220: PMT high voltage out of range (IP-76), 2-28
EC-221: Z boom out of range (SM-221), 2-28
EC-222: R boom out of range (SM-222), 2-28
EC-223: Carousel out of range (SM-223), 2-28
EC-224: Multivalve out of range (SM-224), 2-28
EC-225: Diluent Syringe out of range (SM-225), 2-28
EC-226: Sample Syringe out of range (SM-226), 2-28
EC-229: Open thermistor XXXX (IP-77), 2-199
EC-230: Shorted thermistor XXXX (IP-77), 2-199
EC-231: Z boom timed out (SM-231), 2-29
EC-232: R boom timed out (SM-232), 2-29
EC-233: Carousel timed out (SM-233), 2-29
EC-234: Multivalve timed out (SM-234), 2-29
EC-235: Diluent Syringe timed out (SM-235), 2-29
EC-236: Sample Syringe timed out (SM-236), 2-29

EC-239: Clear System, ASTM®, and CSC logs
(SM-239), 2-29
EC-240: Motor not homed (SM-240), 2-30
EC-243: Motor timed out (SM-243), 2-30
EC-244: Running (SM-244), 2-30
EC-245: Run stopped by operator request
(SM-245), 2-30
EC-246: Not running (SM-246), 2-30
EC-247: ASTM® COMM bad message length
(SM-247), 2-30
EC-248: ASTM® COMM invalid frame type (SM-248),
2-30
EC-249: ASTM® COMM NUM retries exceeded
(SM-249), 2-30
EC-250: ASTM® COMM invalid response (SM-250),
2-31
EC-251: ASTM® COMM invalid frame (SM-251),
2-31

EC-252: ASTM® spooler init (SM-252), 2-31
EC-253: ASTM® COMM bad frame num (SM-253),
2-31
EC-254: Invalid message parameters (SM-254),
2-31
EC-255: Internal error (SM-255), 2-31
electrical specifications, 1-34
Enclosure (w/Doors & Labels), P/N, 3-5
Enclosure Adjust. (VP-2), 5-12
Enclosure Assy, RR-1.3, 4-9
Error Code List (alphabetical order), 2-14
Error Code List (numeric order), 2-4
error codes, ASTM®-specific, C-15
error logs, ASTM®, C-13
example printouts
Boom Cal, 5-28
Dispense Check, 5-43
MEIA Carousel Cal, 5-74
MEIA Performance Panel Run, 5-91

example printouts (cont)
MEIA Photo Cal, 5-67
MEIA Photo Check, 5-62
MEIA Temp Cal, 5-72
MEIA Temp Check, 5-69
Printer Test, 5-81

F

F to D hardware fail (EC-53) (IP-26), 2-103
Factory Set (VP-62), 5-110
Fan & Gasket Assy
 P/N, 3-11
 RR-3.1, 4-19
Fan Baffle for Card Cage Fan, P/N, 3-22
Fan Baffle for Power Supply Fan, P/N, 3-19

Fan Filter, P/N, 3-11
Fan Filter Spacer, P/N, 3-12
Feedback Control, Lamp P/S, P/N, 3-14
File checksum error (EC-101) (IP-45), 2-127
File reloaded X Y (EC-79) (IP-45), 2-127
Filter, Fan, P/N, 3-11
Fitting, Quick Disconnect, P/N, 3-8
Fitting, Waste Disposal, P/N, 3-6, 3-8
Fixture, Carousel Motor Adjust., P/N, 3-4
Flag, Z-Boom Home, P/N, 3-11
Fluorescence Background Check (VP-59), 5-105
Foam, Display, P/N, 3-24
Front Door, P/N, 3-5
Front Panel, P/N, 3-5
Front View (PL-3), 3-11

G

- GC LCR assay, B-44
- Guide, Snap Slide, P/N, 3-5
- Grease, Synthetic, P/N, 3-4
- Ground Cable
 - diagram, A-57
 - P/Ns (PL-9), 3-27
- grounding specifications, 1-34
- Group 1 failed (EC-150) (IP-75), 2-194
- Group 2 failed (EC-151) (IP-75), 2-194
- Group 3 failed (EC-152) (IP-75), 2-194
- Group 4 failed (EC-153) (IP-75), 2-194

H

- H % Diff out of spec (EC-146) (IP-70), 2-179
- H below threshold value (EC-140) (IP-61), 2-152
- H is not linear (EC-141) (IP-61), 2-152
- HAND CONTROLS menu, D-9
- handling reagents, calibrators, and controls, 1-27
- hardware fail
 - A to D (IP-27), 2-104
 - F to D (IP-26), 2-103
- Heater (Air) Assy, RR-3.16, 4-38
- Heater Assembly
 - connector pin callouts, A-52
 - signal pathway, A-50
- Heater Baffle, P/N, 3-11
- Heater block out of spec (EC-156) (IP-85), 2-224
- Heater Block/Reagent Receiver, RR-3.2, 4-22

Heater (Liquid) and Bracket Assy, RR-3.4, 4-28
hinges
 front door, P/Ns, 3-5
 Personality Module door, P/N, 3-6
 printer door, P/N, 3-6
host computer/ASTM® interface, 1-40, Appendix C
host interface
 cable/connector, C-5
 designated port, C-5
 host order load list, C-9
 lock/unlock, C-11
 see also ASTM® interface
HOST INTERFACE, system param. 1.18, 1-40
HV Connector Cable Assy, P/N, 3-14
HV Linearity Check (VP-58), 5-103

I
inactivation
 of amplified product, 1-18
 procedure, manual (VP-14), 5-44
Initialize database (EC-102) (IP-45), 2-127
Insulator, Air Heater, P/N, 3-11
Insufficient tests left XX (EC-34) (IP-15), 2-66
Intercept high (EC-162) (IP-64), 2-155
Interconnect Tubing, P/N, 3-17
Interconnect Tubing w/ Sample Syringe, P/N, 3-17
interface, ASTM®
 see ASTM® interface
 see host interface
Interior Cover, P/N, 3-29
interpreting status messages, 2-23
Invalid Assay Module (EC-129) (IP-53), 2-146

Invalid assay on module (EC-31) (IP-12), 2-63
Invalid System Module (EC-127) (IP-53), 2-146
IP-1: Display blank or incorrect, 2-33
IP-2: No alarm, 2-37
IP-3: Analyzer operates too slowly, 2-38
IP-4: Assay results incorrect/Controls out of range,
2-40
IP-5: ECs 1, 2, 2-45
IP-6: EC-5, 2-47
IP-7: EC-8, 2-49
IP-8: EC-10, 2-50
IP-9: ECs 15, 16, 25, 26, 2-51
IP-10: EC-20, 2-56
IP-11: EC-29, 2-61
IP-12: EC-31, 2-63
IP-13: EC-32, 2-65
IP-15: EC-34, 2-66

IP-16: EC-35, 2-68
IP-17: EC-36, 2-73
IP-18: EC-37, 2-80
IP-20: ECs 40, 41, 42, 44, 2-83
IP-21: ECs 43, 98, 2-88
IP-22: ECs 45, 46, 47, 52, 78, 97, 99, 2-90
IP-23: ECs 48, 49, 2-100
IP-26: EC-53, 2-103
IP-27: EC-54, 2-104
IP-29: EC-56, 2-105
IP-33: ECs 60, 61, 154, 2-111
IP-34: EC-74, 2-115
IP-43: EC-84, 2-119
IP-44: ECs 90, 91, 2-124
IP-45: ECs 79, 100, 101, 102, 2-127
IP-46: EC-103, 2-129
IP-47: EC-104, 2-130

IP-48: EC-108, 2-131
IP-49: EC-109, 2-139
IP-50: EC-110, 2-141
IP-51: ECs 116, 118, 2-144
IP-52: EC-125, 2-145
IP-53: ECs 126, 127, 129, 132, 133, 2-146
IP-54: EC-131, 2-148
IP-55: ECs 135, 136, 137, 138, 139, 2-149
IP-61: ECs 140, 141, 2-152
IP-64: EC-162, 2-155
IP-65: ECs 163, 164, 2-160
IP-66: EC-166, 2-164
IP-67: EC-167, 2-169
IP-68: EC-142, 2-172
IP-69: EC-144, 2-176
IP-70: ECs 145, 146, 2-179
IP-72: ECs 147, 148, 2-186

IP-73: EC-157, 2-189
IP-74: EC-149, 2-192
IP-75: ECs 150, 151, 152, 153, 2-194
IP-76: EC-220, 2-197
IP-77: ECs 229, 230, 2-199
IP-78: ECs 11, 12, 21, 22, 2-205
IP-79: ECs 13, 23, 2-211
IP-80: ECs 14, 24, 2-213
IP-81: ECs 62, 63, 2-217
IP-83: ECs 70, 71, 155, 2-222
IP-85: ECs 72, 73, 156, 2-224
IP-86: Air Fan not running, 2-228
IP-87: Carousel Lock Arm not locked, 2-229
isolation procedures, see specific IP number or
name
Isolation Procedures List, 2-2

J, K

Keyboard Test (VP-42), 5-82
Keypad Enclosure, P/N, 3-24
Keypad to I/O Bd., Cable, P/N, 3-24

L

Lamp, MEIA, P/N, 3-14
Lamp Power Supply, RR-4.4, 4-48
Lamp Power Supply, Feedback Control, P/N, 3-14
Latch, P/N, 3-5
Left, VDE Cover, P/N, 3-29
Level Sense Adjust. (VP-12), 5-39
Level Sense Check (VP-11), 5-37
Level Sense hardware error (EC-99) (IP-22), 2-90
Level Sense not found XXXX (EC-52) (IP-22), 2-90
Level Sense out of range (EC-149) (IP-74), 2-192

Level Sense range error XXXX (EC-97) (IP-22), 2-90
Liquid Heater and Bracket Assy
P/N, 3-11
RR-3.4, 4-28
Liquid Heater out of spec (EC-154) (IP-33), 2-111
Liquid Level Sense Board
block diagram, A-9
board layout, A-37
connector pin callouts, A-38
RR-5.7, 4-63
signal pathway, A-36
Liquid level too high (EC-46) (IP-22), 2-90
liquid waste containing acid, disposal of, 1-26
LLS/Analog Cable Assy, P/N, 3-25
LLS Bd Assy, P/N, 3-17
LLS P/S/ Mtr. Dr./Analog, Cable Assy, P/N, 3-19

LLS Voltage Delta Check (VP-9), 5-29
load list
 feature (ASTM® interface), C-8
 setup, C-8
lock/unlock host interface, C-11

M

M % Diff out of spec (EC-145) (IP-70), 2-179
Main Power Supply
 P/Ns (PL-6), 3-19
 RR-6.13, 4-72
 verifying outputs (VP-1), 5-11
Main Power Supply to Card Cage, Cable, P/N, 3-19
Main Power Supply w/Fan, P/N, 3-19
Main Power Supply to Printer, Cable, P/N, 3-19

Main P/S 110 VAC to Mtr. Dr. Bd., Cable, P/N, 3-19
maintenance, preventive
 procedure, 6-3
 report, 6-6
Manual Inactivation (VP-14), 5-44
manual overview
 cautions and warnings, 1-15
 chapter descriptions, 1-9
 conventions, 1-11
 intended audience, 1-8
 related documents, 1-8
 warnings, 1-15
Matrix Count Check (VP-31), 5-75
Matrix Detection (VP-32), 5-76
MEIA Carousel Cal. (VP-30), 5-73
MEIA Carousel params. (File 3), B-3
MEIA Initialization Photo Cal. (VP-27), 5-63

MEIA Lamp
P/N, 3-14
RR-4.11, 4-54
MEIA Lamp Adjust. (VP-22), 5-57
MEIA Lamp out (EC-56) (IP-29), 2-105
MEIA Lamp Ref not initialized (EC-109) (IP-49),
2-139
MEIA Optical Standards Set, P/N, 3-4
MEIA optical system block diagram, A-56
MEIA Optics Assy
MEIA optics signal pathway, A-55
RR-4.1, 4-45
MEIA Optics to Analog Bd., Cable, P/N, 3-14
MEIA Performance Panel, P/N, 3-4
MEIA Performance Panel Run (VP-47), 5-89
MEIA Photo Cal. (VP-27A) 5-66
MEIA Photo Check (VP-26), 5-60
MEIA Photodiode Check (VP-25), 5-59

MEIA PMT Check (VP-24), 5-58
MEIA Stds placed incorrectly (EC-84) (IP-43), 2-119
MEIA Temp. Cal. (VP-29), 5-70
MEIA Temp. Check (VP-28), 5-68
Mem error XXXXXXXXXX or UX (EC-118) (IP-51),
2-144
Memory Board 8255 device failed (EC-139) (IP-55),
2-149
Memory Board IO timed out (EC-136) (IP-55), 2-149
Memory Board timed out (EC-135) (IP-55), 2-149
Memory Module, System, P/N, 3-22
menus
ASSAY, D-5
CALIBRATIONS, D-7
CHECKS, D-8
HAND CONTROLS, D-9
MONITOR, D-7
overview, D-1

- menus (cont)
 - PRIME, D-4
 - structure, D-2
 - SYSTEM, D-11
 - system params., B-5
 - TESTS, D-10
 - UTILITY, D-12
- MONITOR menu, D-7
- Motor CTRL failed UX (EC-125) (IP-52), 2-145
- Motor Driver, P/Ns (PL-8), 3-24
- Motor Driver Board
 - block diagram, A-8
 - board layout, A-24
 - connector pin callouts, A-25
 - P/N, 3-24
 - RR-8.5, 4-94
- Motor Driver cable disconnected (EC-1) (IP-5), 2-45

- MTB LCR assay, B-44
- Multivalve Block
 - P/N, 3-17
 - RR-5.3, 4-61
- Multivalve failed home (EC-14) (IP-80), 2-213
- Multivalve missing steps (EC-24) (IP-80), 2-213

N

- NMI Test failed (EC-116) (IP-51), 2-144
- No alarm (IP-2), 2-37
- No disposables to run (EC-35) (IP-16), 2-68
- normal operation
 - overview, 1-6
 - procedure, 2-21
- No Sample/Reagent found (EC-78) (IP-22), 2-90

NOVRAM

P/N, 3-22

RR-7.9, 4-84

NOVRAM full (EC-32) (IP-13), 2-65

NRMSE too large (EC-163) (IP-65), 2-160

Nut Retainer, P/N, 3-17

O

Open thermistor XXXXXXXXXXXXXXXX (EC-229)
(IP-77), 2-199

operating procedure, normal, 2-21

Optics Assy, P/N, 3-14

output voltages, specifications, 1-35

Overlay, P/N, 3-24

overview

analyzer, 1-3

analyzer params., B-3, B-43

overview (cont)

assay params., B-43

ASTM® interface, C-3

block diagrams, boards, pinouts, A-3

decontamination, 1-23

disposal, 1-26

isolation procedures, 2-18

menu structure, D-2

normal operation, 1-6, 2-21

parts lists, 3-2

preventive maintenance, 6-2

removal/replacement procedures, 4-7

service manual, 1-8

system params., B-3

total service call, 6-2

troubleshooting, 2-19

verification procedures, 5-8

I Index

LCx® Analyzer Service Manual (Text P/N 47278-102)

I - 37

[Index Alpha Locator](#)
(Index page 1)

[Manual](#)
[Contents](#)

[CD Main](#)
[Screen](#)

P

Paper Feed Switch Assy, P/N, 3-19

Paper Hanger Rod, P/N, 3-19

Paper, Thermal Printer, P/N, 3-20

parameters

assay, B-43

system, B-3

system, for ASTM® interface, 1-40, C-7

parts (replaced/defective), decontamination

procedure, 5-107

parts lists (PLs), see specific PL number

personal protective equipment, 1-22

Personality Module

door, P/N, 3-5

pin hinge, P/N, 3-6

Photo params. (File 31), B-38

pin assignments

ASTM® interface (COM 2 port), C-6

DCE and DTE configurations, 1-41

pinouts, Appendix A

PL-1: Covers, 3-5

PL-2: Internal Covers, 3-8

PL-3: Front View, 3-11

PL-4: Optics, 3-14

PL-5: Pump, 3-17

PL-6: Printer/Main Power Supply, 3-19

PL-7: Card Cage, 3-22

PL-8: Analog/Motor Driver/Display, 3-24

PL-9: Ground Cable, 3-27

PL-10: VDE Covers, 3-29

PMT HV Power Supply

P/N, 3-14

RR-4.5, 4-50

I Index

LCx® Analyzer Service Manual (Text P/N 47278-102)

I - 38

Index Alpha Locator
(Index page 1)

Manual
Contents

CD Main
Screen

PMT High Voltage out of range XXXXXX (EC-220)
 (IP-76), 2-197
port, ASTM, C-5
Power Cord, P/N, 3-19
Power Supply Fan, P/N, 3-19
Power Supply Fan Baffle, P/N, 3-19
Power Supply (Lamp), RR-4.4, 4-48
Power Supply (Main)
 board layout, A-11
 connector pin callouts, A-12
 RR-6.13, 4-72
 voltage pathway, A-10
Power Supply (PMT HV), RR-4.5, 4-50
Power Supply, Card Cage Assy block diagram, A-7
Power Supply Check (VP-1), 5-11
precautions, universal, 1-21

preventive maintenance (PM) and total service call
 procedure, 6-3
 report, 6-6
PRFM assay, B-44
PRIME menu, D-4
Printer Assy
 P/N, 3-19
 RR-6.3, 4-70
printer cable, COM 1 port, 1-39
printer door, P/N, 3-5
printer door pin hinge, P/N, 3-6
Printer error (EC-37) (IP-18), 2-80
Printer/Main Power Supply, P/N (PL-6), 3-19
printer, selecting, 1-39
Printer Test (VP-41), 5-81
Probe Assy
 P/N, 3-11
 RR-3.5, 4-31

Probe Assy Thumb Nut, P/N, 3-12
probe decontamination procedure, 5-108
Probe Holder, P/N, 3-12
Probe LLS Cable Clamp Assy, P/N, 3-12
Probe Positioning Pack Assy, P/N, 3-4
Protective Wire Cover
 P/N, 3-8
 RR-2.7, 4-13
Pump Assy
 diagram, A-47
 P/N, 3-17
 RR-5.1, 4-59
Pump Cover, P/N, 3-17

Q

Quick Disconnect Fitting, P/N, 3-8

R

Raise Display Procedure (RR-8.1.1), 4-91
R boom failed home (EC-12) (IP-78), 2-205
R boom missing steps (EC-22) (IP-78), 2-205
reaction chamber, decon. procedure, 5-107
Read error XXXX (EC-166) (IP-66), 2-164
reagent
 disposal, 1-26
 handling, 1-27
 heater block, *see* reagent heater block
 pack, *see* reagent pack
 receiver, *see* reagent receiver/heater block
 shroud, *see* reagent shroud
Reagent block temp. high (EC-73) (IP-85), 2-224
Reagent block temp. low (EC-72) (IP-85), 2-224
reagent heater block
 see Reagent Receiver/Heater Block

Reagent Heater Block Adjust. (VP-21), 5-54
Reagent insufficient/empty XXXX (EC-47) (IP-22),
2-90
Reagent label read error (EC-41) (IP-20), 2-83
Reagent Pack not on module (EC-29) (IP-11), 2-61
Reagent Receiver Assy, P/N, 3-11
Reagent Receiver/Heater Block
adjustment (VP-21), 5-54
P/N, 3-11
RR-3.2, 4-22
Reagent Shroud
P/N, 3-8
RR-2.3, 4-12
Receiver (Carousel) Assy, RR-3.18, 4-41
Retainer Clip Assy, RR-3.19, 4-43
Remote Air Thermistor Assy
P/N, 3-14
RR-4.14, 4-57

Remote temp. high (EC-71) (IP-83), 2-222
Remote temp. low (EC-70) (IP-83), 2-222
Remote temp. out of range (EC-155) (IP-83), 2-222
removal and replacement procedures
see specific procedure or component by name
REPORT REDIR system param. 1.28, 1-39
retaining ring, P/N, 3-6
Ribbon Cable, MEIA Optics to Analog Bd, P/N, 3-14
RR-1.3: Enclosure Assy, 4-9
RR-2.3: Reagent Shroud, 4-12
RR-2.7: Protective Wire Cover (Interior Cover),
4-13
RR-2.8: Air Duct Cover, 4-14
RR-2.11: Amplification Vial Retainer, 4-16
RR-3.1: Fan & Gasket Assy, 4-19
RR-3.2: Reagent Receiver/Heater Block, 4-22
RR-3.3: Carousel Motor Assy, 4-25
RR-3.4: Liquid Heater/Bracket Assy, 4-28

RR-3.5: Probe Assy, 4-31
RR-3.9: Boom Assy, 4-33
RR-3.13: Air Thermistor Assy, 4-36
RR-3.16: Air Heater Assy, 4-38
RR-3.18: Carousel Receiver Assy, 4-41
RR-3.19: Retainer Clip Assy, 4-43
RR-4.1: MEIA Optics Assy, 4-45
RR-4.4: Lamp Power Supply, 4-48
RR-4.5: PMT HV Power Supply, 4-50
RR-4.6: Carousel Lock Sensor Cable Assy, 4-52
RR-4.11: MEIA Lamp, 4-54
RR-4.14: Remote Air Thermistor Assy, 4-57
RR-5.1: Pump Assy, 4-59
RR-5.3: Multivalve Block, 4-61
RR-5.7: Liquid Level Sense Board, 4-63
RR-5.8: Buffer Sensor Cable, 4-65
RR-5.10/12: Syringes, 4-67

RR-6.3: Printer Assy, 4-70
RR-6.13: Main Power Supply, 4-72
RR-7.1/10: CPU/Digital I/O Boards, 4-75
RR-7.4: RS-232 Cable/Bracket Assy, 4-79
RR-7.7: Card Cage Assy, 4-81
RR-7.9: NOVRAM Replacement, 4-84
RR-8.0: Tilt Back Card Cage, 4-87
RR-8.1: Display Assy (Touchpad), 4-89
RR-8.1.1: Raise Display Procedure, 4-91
RR-8.3: Analog Board, 4-92
RR-8.5: Motor Driver Board, 4-94
RS-232 Bracket Centering (VP-55), 5-98
RS-232 Cable/Bracket Assy
P/N, 3-22
RR-7.4, 4-79
RS-232 COM Port Test (VP-44), 5-84
RS-232 interface specifications, 1-39

S

sample syringe

P/N, 3-17

RR-5.10/12, 4-67

Sample Syringe failed home (EC-16) (IP-9), 2-51

Sample Syringe missing steps (EC-26) (IP-9), 2-51

screws, P/Ns, see specific PL lists

selecting a printer, 1-39

sensor

AVR, 5-45, 5-115

boom, 5-23

buffer, 5-45

carousel home, 5-50

carousel lock, 5-78

door, 5-53

door, option active (EC-98) (IP-21), 2-88

inactivation diluent, 5-45

syringe, 5-47

sensor (cont)

system diluent, 5-45

valve, 5-49

Sensor Bracket Assy, P/N, 3-14

Sensor Bracket Cable, P/N, 3-25

Sensor, Door, Assy, P/N, 3-17

Sensor with Buffer Tray Assy, P/N, 3-17

Serial Number Label, P/N, 3-5

service call, total

procedure, 6-3

report, 6-6

Shipping Container Assy, P/N, 3-4

Shorted thermistor XXXXXXXXXXXXXXXX (EC-230)

(IP-77), 2-199

Shroud (Reagent)

P/N, 3-8

RR-2.3, 4-12

Slope/intercept out of range (EC-142) (IP-68), 2-172

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

I - 43

Index Alpha Locator
(Index page 1)

Manual
Contents

CD Main
Screen

Snap Slide Guide, P/N, 3-5
spacers
 Card Cage, P/N, 3-22
 Circuit Bd. , P/N, 3-25
 Fan Filter, P/N, 3-12
specifications, analyzer
 dimensions, physical, 1-32
 environment, 1-32
 humidity, 1-32
 location, 1-32
specifications, RS-232 interface, 1-39
specimens, disposal, 1-26
spooler buffer, ASTM®, C-12
spooler capacity warning, C-12
SPOOLER WARN, system param. 1.20, 1-40
standards, MEIA Optical, P/N, 3-4
Static Precision out of spec (EC-147) (IP-72), 2-186
status messages, interpreting, 2-23

subassemblies, decontamination procedure, 1-25, 5-109
Superuser
 access code numbers, 5-45, B-60 (VP-45), 5-85
Superuser parameter access
 assay params., B-45
 system params., B-4
supplemental tools/supplies, P/Ns, 3-4
syringes
 P/N, 3-17
 RR-5.10/5.12, 4-67
Syringe Sensor Check (VP-16), 5-47
system block diagrams
 general system overview, A-6
 Power Supply, Card Cage Assy, A-7
 Motor Driver Board, A-8
 Analog and Liquid Level Sense boards, A-9

- System Cartridge Pack Assy, P/N, 3-4
- System File Reloading (VP-53), 5-93
- System Log, clearing (VP-63), 5-112
- System Memory Module, P/N, 3-22
- SYSTEM menu, D-11
- System Module missing (EC-126) (IP-53), 2-146
- system params. (File 2), B-18
- system parameters
 - list, B-6
 - menu, B-5
 - overview, B-3
 - parameter access, B-4
 - quick reference charts, B-14
- System parameters list, B-6
- System parameters menu, B-5
- System parameters quick ref. charts
 - overview, B-13
 - File 1: Configuration, B-14

- System parameters quick ref. charts (cont)
 - File 2: System params., B-18
 - File 3: MEIA Carousel params., B-22
 - Files 4-29: Boom locations params., B-26
 - File 30: Temperature params., B-34
 - File 31: Photo params., B-38

T

- Tape, Door Sensor Reflective, P/N, 3-5
- Temp. Probe Adapter Assy, P/N, 3-4
- temperature control, internal, 1-33
- Temperature params. (File 30), B-34
- tests
 - Display Test (VP-43), 5-83
 - Keyboard Test (VP-42), 5-82
 - Printer Test (VP-41), 5-81
 - RS-232 COM Port Test (VP-44), 5-84

TESTS menu, D-10
Thermal Printer Paper, P/N, 3-20
thermal protection for analyzer, 1-33
Thermistor Assy, Air, P/N, 3-11
Thermometer, Digital, P/N, 3-4
Tilt Back Card Cage procedure (RR-8.0), 4-87
Time/Date reset (EC-8) (IP-7), 2-49
Time expired for entering Temp (EC-110) (IP-50),
2-141
Tool
 Adapt-A-Case, P/N, 3-4
 carousel alignment tool, 5-51
 Hex Key 9/64", P/N, 3-4
 loopback, 5-84
 supplemental tools and supplies, P/Ns, 3-4

total service call
 procedure, 6-3
 report, 6-6
Touchpad Assy (Display), RR-8.1, 4-89
troubleshooting
 ASTM® error codes, C-13
 introduction, 2-19
troubleshooting ASTM® errors
 ASTM®-specific ECs, C-15
 error logs, C-13
 tips, C-14
Tubing Assy, Buffer Inlet, P/N, 3-17
Tubing, Interconnect, P/N, 3-17
Tubing, Interconnect Probe, P/N, 3-11
Tubing, Interconnect, w/ Sample Syringe, P/N, 3-17
Tubing, Waste, Assy, P/N, 3-8

U

universal precautions, 1-21

Unknown NMI...Contact CSC (EC-138) (IP-55),
2-149

unlock/lock host interface, C-11

using this manual, 1-8

UTILITY menu, D-12

V

Valve Sensor Check (VP-17), 5-49

Vials, Amplification, P/N, 3-4

VDE Covers, P/N (PL-10), 3-29

ventilation specification, 1-32

verification procedures, see specific procedure
by name

VP-1: Power Supply Check, 5-11

VP-2: Enclosure Adjust., 5-12

VP-3: Card Cage Adjust., 5-14

VP-4: Bar Code Check, 5-16

VP-5: Bar Code Adjust., 5-19

VP-6: Boom and Wash Station Screw Lube., 5-21

VP-7: Boom Check, 5-23

VP-8: Boom Cal., 5-25

VP-9: LLS Voltage Delta Check, 5-29

VP-11: Level Sense Check, 5-37

VP-12: Level Sense Adjust., 5-39

VP-13: Dispense Check, 5-42

VP-14: Manual Inactivation, 5-44

VP-15: Buffer Sensor Check, 5-45

VP-16: Syringe Sensor Check, 5-47

VP-17: Valve Sensor Check, 5-49

VP-18: Carousel Home Sensor Check, 5-50

I Index

LCx[®] Analyzer Service Manual (Text P/N 47278-102)

I - 47

[Index Alpha Locator](#)
(Index page 1)

[Manual](#)
[Contents](#)

[CD Main](#)
[Screen](#)

VP-19: Carousel Motor and Gear Adjust., 5-51
VP-20: Door Sensor Check, 5-53
VP-21: Reagent Heater Block Adjust., 5-54
VP-22: MEIA Lamp Adjust., 5-57
VP-24: MEIA PMT Check, 5-58
VP-25: MEIA Photodiode Check, 5-59
VP-26: MEIA Photo Check, 5-60
VP-27: MEIA Initialization Photo Cal., 5-63
VP-27A: MEIA Photo Cal., 5-66
VP-28: MEIA Temp. Check, 5-68
VP-29: MEIA Temp. Cal., 5-70
VP-30: MEIA Carousel Cal., 5-73
VP-31: Matrix Count Check, 5-75
VP-32: Matrix Detection, 5-76
VP-34: Carousel Lock Sensor Adjust., 5-78
VP-41: Printer Test, 5-81
VP-42: Keyboard Test, 5-82

VP-43: Display Test, 5-83
VP-44: RS-232 COM Port Test, 5-84
VP-45: Superuser, 5-85
VP-46: Buffer Run, 5-87
VP-47: MEIA Performance Panel Run, 5-89
VP-53: System File Reloading, 5-93
VP-55: RS-232 Bracket Centering, 5-98
VP-56: Carousel Bar Code Offset Adjust, 5-99
VP-57: Air Purge, 5-101
VP-58: HV Linearity Check, 5-103
VP-59: Fluorescence Background Check, 5-105
VP-60: Decontamination, 5-107
VP-62: Factory Set, 5-110
VP-63: Clearing System, ASTM®, and CSC Logs, 5-112
VP-64: AVR Alignment, 5-113
VP-65: AVR Sensor Check, 5-115

W

warnings, *see* cautions and warnings

Wash Station, P/N, 3-8

Wash Station overflow (EC-45) (IP-22), 2-90

washers, P/Ns, *see* specific PL lists

Waste Bottle, P/N, 3-8

Waste Cap, P/N, 3-8

waste container, decontamination, 1-24

Waste Disposal Fitting, P/N, 3-6, 3-8

Waste Tubing, P/N, 3-8

X, Y, Z

Z boom failed home (EC-11) (IP-78), 2-205

Z boom missing steps (EC-22) (IP-78), 2-205