APPENDIX TABLE OF CONTENTS

INTRODUCING LCx® ANALYZER PARAMETERS

This appendix provides information about the two major types of parameters that are used in the LCx® Analyzer. These are:

- system parameters
- assay parameters

For Assay Parameters, general information is provided; however, the user should also refer to the assay insert for specific information.

For System Parameters, this appendix includes:

- an overview of each type of parameter
- Superuser parameter access information
- brief lists of parameter file names/numbers (Parameter "Maps")
- Quick Reference Charts that provide these details about each parameter:
  - file name/number
  - default, maximum and minimum values
  - Is the parameter editable/visible?
  - brief definition

SYSTEM PARAMETERS

Overview

The System Parameters control analyzer operation. Some parameters are editable; others are preset. The Quick Reference Charts provide this information for each system parameter.

Parameters marked "not in use" are reserved for future use. In addition, Boom Location files 24 through 29 (filenames BL24 throughBL29) are reserved for research and/or future use.

File number	File Name	Chart on page
1	Configuration	B-14
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Superuser access to system parameters
All system parameters, except the two listed below, are visible and editable in Superuser mode.

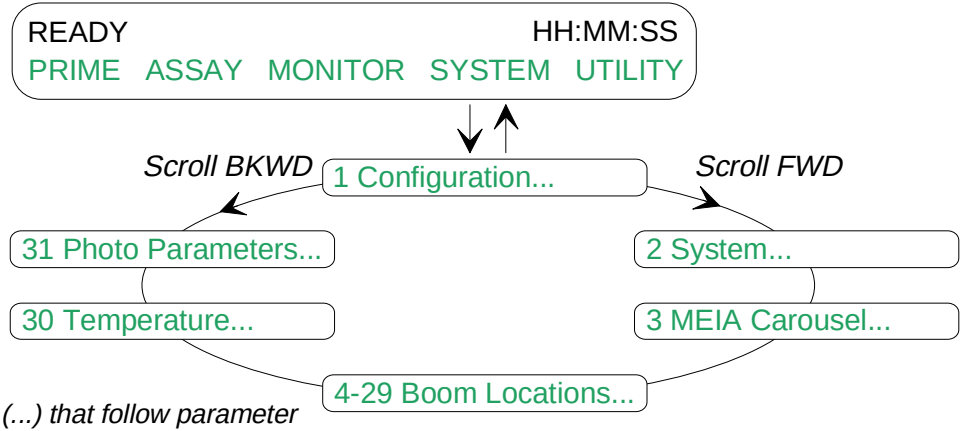
These system parameters in the Configuration File are not editable:

- Parameter 1.1 System Rev
- Parameter 1.2 Rev Date

A chart of Superuser codes is at the end of this appendix.

Do not give Superuser codes to Customers.

System Parameters Menu



NOTE: Three dots (...) that follow parameter name indicate that additional parameters are available after selecting this parameter.

sys-map.ds4

System Parameters List

1. CONFIGURATION PARAMETERS
   - .1 SYSTEM REVISION
   - .2 REVISION DATE
   - .3 SERIAL NUMBER
   - .4 DOOR SENSOR
   - .5 DATE FORMAT
   - .6 COM1 BAUD
   - .7 COM1CHR LEN
   - .8 COM1 STOP BIT
   - .9 COM1 PARITY
   - .10 COM2 BAUD
   - .11 COM2 CHR LEN
   - .12 COM2 STOP BIT
   - .13 COM2 PARITY
   - .14 DIL 1 V1 POS
   - .15 DIL 2 V1 POS
   - .16 V1 DISP POS
   - .17 LINE FEEDS
   - .18 HOST INTERFACE
   - .19 CRSL ID 1=ON
   - .20 SPOOLER WARN
   - .21 not in use
   - .22 NUM RGTS
   - .23 not in use
   - .24 not in use
   - .25 not in use
   - .26 DISPLAY DIM
   - .27 KEY CLICKS 1=ON
   - .28 REPORT REDIR
   - .29 XOFF TIMEOUT

System Parameters List (cont)

2. SYSTEM PARAMETERS

.1	TOT DIL 2 VOL	(1000)
.2	DEAD VOL 2	(50)
.3	CURRENT DIL 2	
.4	TOT DIL 1 VOL	(900)
.5	DEAD VOL 1	(50)
.6	CURRENT DIL 1	
.9	WASTE TOT VOL	
.7 – .9	not in use	
.10	RT SYRG SLOPE	
.11	LT SYRG SLOPE	
.12	PRIME VOL LT	
.13	PRIME VOL RT	
.14	PRIME SPEED	
.15	PRIME CYCLES	(6)
.16	not in use	
.17	REAG BC START	(15)
.18	REAG BC END	(200)
.19	LS CHECK	(115)
.20	SAFETY DEPTH	(24)
.21	LS CHECK LOW	(55)
.22	RINSE CHECK	(1)
.23	PBCD PROBE VOL	
.24	PBCD PROBE REP	
.25	PBCD RINSE VOL	
.26	PBCD RINSE REP	
.27	DSP CK AVG LO	
.28	DSP CK AVG HI	
.29	DSP CK RANGE	

(Default parameters are in parentheses.)

System Parameters List (cont)

3. MEIA CAROUSEL PARAMETERS

.1	CAR HFLG STEP	(10)
.2	STEPS PER REV	(1800)
.3	SLOTS	
.4	SAMPLE DIR	
.5	HOME SAMP NUM	
.6	PIP1 SAMP NUM	
.7	PIP2 SAMP NUM	
.8	READ SAMP NUM	
.9	DET. SAMP NUM	
.10	HOME OFFSET	
.11	PIPET1 OFFSET	
.12	PIPET2 OFFSET	
.13	READ OFFSET	(24)
.14	DETECT OFFSET	(24)
.15	BAR CODE START	(75)
.16	BAR CODE END	(1725)
.17	LOCK POS	(623)
.18	UNLOCK POS	(662)
.19	CAROUSEL ID	(0)
.20	CRSL BC OFFSET	(38)
.21	not in use	

(Default parameters are in parentheses.)

4. through 29.: BOOM LOCATIONS

Filenames: Files 4-29

4. WASH STATION
5. REAGENT 1
6. REAGENT 2
7. REAGENT 3
8. REAGENT 4
9. REAGENT 5
10. MATRIX
11. PRE WASH
12. INC WELL FRT
13. INC WELL CTR 1
14. INC WELL CTR 2
15. MEIA PRE FRT
16. MEIA PRE CTR 1
17. MEIA PRE CTR 2
18. MEIA SMP WELL
19. BOOM PARK
20. DISP WELL
21. VIAL
22. LCx RCT WELL
23. WASH TARGET
24. BL 24 (for future/research use)
25. BL 25 (for future/research use)
26. BL 26 (for future/research use)
27. BL 27 (for future/research use)
28. BL 28 (for future/research use)
29. BL 29 (for future/research use)

4. through 29.: BOOM LOCATIONS (cont)

Filenames: Files 4-29

For Files 4 through 29 these are used:

.1 ON OFF CAR
.2 CAR OFFSET
.3 R BOOM
.4 Z LS DEFAULT
.5 LS BKGRND
.6 Z LS DELTA
.7 Z ABOVE
.8 Z DISP 1
.9 Z DISP 2
.10 Z DISP 3
.11 Z DISP 4
.12 Z DISP 5
.13 Z DISP 6
.14 Z DISP 7
.15 Z DISP 8
.16 Z ASPLIM
.17 Z BTMLIM
.18 HVR
.19 5 BOTTL HVR ADJ
.20 DIVE DEPTH
.21 5 BOTTL R ADJ
.22 LS ADD
.23 LS GAIN
.24 LS DELTA
.25 LS GUARD BAND
.26 LS BKGRND MAX
.27 LS ADJ

System Parameters List (cont)

30.	TEMPERATURE PARAMETERS	
.1 – .14		not in use
.15	IDLE REAG TP	(35.0)
.16	MEIA AIR SET	(36.0)
.17	MEIA WARMUP TP	(53.0)
.18	MEIA PID DEV	(0.5)
.19	MEIA ADJUST SP	(36.0)
.20	MEIA INC TIME	(1800)
.21	MEIA CAL TIME	(600)
.22	MEIA DELTA SP	(0.6)
.23	PID INFO 1= OFF	(1)
.24	RMT ALARM DEV	(1.5)
.25	PID CONTROL	(0)
.26	PID GAIN	(64.0)
.27	PID INTEGRAL	(0.05)
.28	PID DERIVATIVE	(0.0)
.29	PID BIAS	(116.0)
.30	IDLE AIR TEMP	(40.0)

(Default parameters are in parentheses.)

System Parameters List (cont)

31.	PHOTO PARAMETERS	
.1 – .10		not in use
.11	MEIA STD B	(0)
.12	MEIA STD M	(1000)
.13	MEIA STD H	(1)
.14	M % DIFF	(5.00)
.15	H % DIFF	(10.00)
.16	H THRESHOLD	(10000)
.17	INIT SLOPE	(0.0)
.18	INIT INTRCPT	(0.0)
.19	MEIA SLOPE	(7.7)
.20	MEIA INTRCPT	(-41.0)
.21	B HI LIM	(1000)
.22	STATIC PREC	(0.50)
.23	DYNAMIC PREC	(1.00)
.24	MEIA INC TIME	(600)
.25	MEIA LMP REF#	(1)
.26	MEIA LMP 1=ON	(0)
.27	MEIA LOW I	(4.20)
.28	MEIA CAL VOLT	(0)
.29	MTRX DET VOLT	(0)
.30	MTRX DET REF	(0)
.31	CRSL CAL HOLE	(0)
.32	CRSL CAL CELL	(0)

(Default parameters are in parentheses.)

SYSTEM PARAMETERS QUICK REFERENCE CHARTS

Overview

The following tables define the parameters for the assays on the LCx® Assay Module 2, version 1.0.

Description of table columns

No./Title
The number and name of the parameter.

Default value
The typical default value. Default values may vary with the assay.

Min/Max values
Minimum and maximum values for the parameter.

Access
Indicates whether the parameter is visible to the customer and if the customer can edit the parameter.

Description
A brief description of the parameter.

not in use
Parameters identified as ‘not in use’ are not utilized for assay operations. The default value for each of these parameters is zero.

System Parameters File 1: Configuration

No.	Title	Default Value	Min/Max Values	Access	Description
.1	SYSTEM REV	XX.XX	0.00 – 100.00	Visible	XX.XX - The installed System Software revision number
.2	REVISION DATE	MM/DD/ YYYY	01/01/1995 – 12/31/2094	Visible	MM/DD/YYYY- Date of the installed software revision.
.3	SERIAL NUMBER	1	0-9999999	Editable	Serial number of the analyzer (must be re-entered manually if File 1 is reloaded)
.4	DOOR SENSOR	0	0 – 1	Editable	0=check door, 1=override check
.5	DATE FORMAT	0	0 – 2	Editable	0=(USA) MM/DD/YYYY 1=(Europe) DD/MM/YYYY 2=(Japan) YYYY.MM.DD
.6	COM1 BAUD	1200	300 – 19200	Editable	Baud rate for COM Port 1
.7	COM1 CHR LEN	8	7, 8	Editable	COM Port 1 character length
.8	COM1 STOP BIT	1	1, 2	Editable	Number of stop bits

System Parameters File 1: Configuration (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.9	COM1 PARITY	0	0 – 2	Editable	Parity bit used to check communication: 0=none, 1=odd, 2=even
.10	COM2 BAUD	9600	300 – 19200	Editable	Baud rate for COM Port 2
.11	COM2 CHR LEN	8	7, 8	Editable	COM Port 2 character length
.12	COM2 STOP BIT	1	1, 2	Editable	Number of stop bits
.13	COM2 PARITY	0	0 – 2	Editable	Parity bit used to check communication: 0=none, 1=odd, 2=even
.14	DIL 1 V1 POS	150	0 – 400	Invisible	Valve position (steps from home) when aspirating diluent A
.15	DIL 2 V1 POS	50	0 – 400	Invisible	Valve position (steps from home) when aspirating diluent B
.16	V1 DISP POS	0	0 – 400	Invisible	Valve position (steps from home) when dispensing (Home/idle position is 0 steps.)

System Parameters File 1: Configuration (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.17	LINE FEEDS	18	0 – 30	Editable	Number of blank lines that separate files when printed
.18	HOST INTERFACE	0 (default) 7598=active	0 – 9999	Editable	Activates Host interface 7598=On/Active 0, all other values except 7598=Off/Inactive (if ON, overrides param .28 REPORT REDIT)
.19	CRSL ID 1=ON	1	0, 1	Editable	1=CRSL ID prints on assay printout
.20	SPOOLER WARN	1	1 – 3	Editable	On-screen warning tells number of assay runs (1, 2, 3) that spooler can hold before reaching capacity
.22	NUM RGTS	4	4, 5	Invisible	Number of reagent bottles installed
.26	DISPLAY DIM	300	10 – 999	Editable	Time delay until display dims ("screen saver")

Parameter .21 and parameters .23 –.25 are not in use.

System Parameters File 1: Configuration (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.27	KEY CLICKS 1=ON	1	0, 1	Editable	1=on (keys make clicking noise) 0=off (no noise)
.28	REPORT REDIR	0	0 – 9999	Editable	8000=display, 1000=printer only, 100=COM1 port, 200=COM2 port. Can combine printer and a port. *Example*: 1100=COM1 & printer) Can't combine COM1 and COM2. *NOTE: If Config parameter .18 is ON/ACTIVE, it will override param .28 REPORT REDIR.*
.29	XOFF TIMEOUT	20	0 – 300	Visible	COM waits this time (when 1000-character buffer is full) for slow host computer to catch up, then printer resumes printing.

System Parameters File 2: System Parameters

No.	Title	Default Value	Min/Max Values	Access	Description
.1	TOT DIL 2 VOL	1000	1000 – 10000	Visible	Total vol (mL) of full bottle of system diluent
.2	DEAD VOL 2	50	50 – 5000	Visible	Dead volume (mL) for system diluent bottle
.3	CURRENT DIL 2	0	0 – 10000000	Editable	Volume (µL) of system diluent left (Volume updates continuously.)
.4	TOT DIL 1 VOL	900	900 – 10000	Visible	Total volume (mL) of full bottle of inactivation diluent
.5	DEAD VOL 1	50	50 – 5000	Visible	Dead vol (mL) for inactivation diluent bottle
.6	CURRENT DIL 1	0	0 – 10000000	Editable	Volume (µL) of inactivation diluent left (Volume updates continuously.)
.10	RT SYRG SLOPE	4688	400 – 5000	Invisible	Number of steps/µL for right syringe (should always be 4688)
.11	LT SYRG SLOPE	469	400 – 5000	Invisible	Number of milli-steps/µL for left syringe (should always be 469)

Parameters .7 – .9 are not in use.

System Parameters File 2: System Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.12	PRIME VOL LT	2000	10 – 2475	Visible	Volume of diluent used in each stroke of left syringe during prime issued from front panel or during assay prologue
.13	PRIME VOL RT	150	10 – 250	Visible	Volume of diluent used in each stroke of right syringe during prime issued from front panel or during assay prologue
.14	PRIME SPEED	400	100 – 800	Invisible	Max. stepping velocity (after acceleration) for syringe motors during prime issued from front panel or during assay prologue
.15	PRIME CYCLES	6	1 – 10	Visible	Number of priming cycles executed in assay prologue
.17	REAG BC START	15	0 – 220	Invisible	R-boom position at which reagent bar code read starts

Parameter .16 is not in use.

System Parameters File 2: System Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.18	REAG BC END	200	0 – 220	Invisible	R-boom position at which reagent bar code read ends
.19	LS CHECK	115	0 – 356	Visible	Sample windowing function at vial location. 0=disables 1-356=enables and sets upper window limit
.20	SAFETY DEPTH	24	0 – 24	Visible	Aspiration safety dive depth (number of steps Z-boom takes during aspiration command after initial level sense established)
.21	LS CHECK LOW	55	0 – 360	Visible	Sets lower window limit for sample windowing function
.22	RINSE CHECK	1	0 – 1	Visible	0=disables (do not perform rinse check) 1=enables (perform rinse check/level sense feature at wash station during a rinse)

System Parameters File 2: System Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.23	PBCD PROBE VOL	100	10 – 250	Visible	Volume of solution used in Probe Cleaning procedure under UTILITY menu
.24	PBCD PROBE REP	10	1 – 10	Visible	Number of repetitions of probe aspirate-dispense cycle in Probe Cleaning procedure
.25	PBCD RINSE VOL	2100	10 – 2500	Visible	Volume of diluent in final rinse after Probe Cleaning procedure
.26	PBCD RINSE REP	7	1 – 100	Visible	Number of repetitions of final rinse after Probe Cleaning procedure
.27	DSP CK AVG LO	113	0 – 550	Visible	Lower limit (in steps) of the average liquid height for successful Dispense Check
.28	DSP CK AVG HI	125	0 – 550	Visible	Upper limit (in steps) of the average liquid height for successful Dispense Check
.29	DSP CK RANGE	6	0 – 50	Visible	Max. allowable range (in steps) for height of liquid in each of the 4 dispense check groups

System Parameters File 3: MEIA Carousel

No.	Title	Default Value	Min/Max Values	Access	Description
.1	CAR HFLG STEP	10	0 – 30	Invisible	Number of motor steps carousel moves after edge of home flag is detected during homing function
.2	STEPS PER REV	1800	0 – 1800	Invisible	Number of motor steps required to rotate carousel 360 degrees
.3	SLOTS	25	21 – 25	Invisible	Number of sample slots including the blank or bar code area (MEIA carousel has 25 slots, each slot is 72 steps wide.)
.4	SAMPLE DIR	0	0 – 1	Invisible	Direction carousel moves when moving from one sample to next sample: 0=CCW, 1=CW
.5	HOME SAMP NUM	24	1 – 25	Invisible	Sample slot closest to home station when carousel is homed
.6	PIP1 SAMP NUM	24	1 – 25	Invisible	Sample slot closest to pipette station #1 when carousel is homed

System Parameters File 3: MEIA Carousel (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.7	PIP2 SAMP NUM	24	1 – 25	Invisible	Sample slot closest to pipette station #2 when carousel is homed
.8	READ SAMP NUM	6	1 – 25	Invisible	Sample slot closest to MEIA read station when carousel is homed
.9	DET. SAMP NUM	6	1 – 25	Invisible	Sample slot closest to MEIA read station when carousel is homed
.10	HOME OFFSET	0	-60 – +60	Invisible	Number of steps required to align HOME SAMP NUM with home station
.11	PIPET1 OFFSET	5	-60 – +60	Visible	Number of steps required to align PIP1 SAMP NUM with pipette station #1 (determined during MEIA Boom Cal)
.12	PIPET2 OFFSET	5	-60 – +60	Invisible	Number of steps required to align PIP2 SAMP NUM with pipette station #1 (determined during MEIA Boom Cal)

System Parameters File 3: MEIA Carousel (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.13	READ OFFSET	24	-60 – +60	Visible	Number of steps required to align READ SAMP NUM with MEIA read station (determined during MEIA Carousel Cal)
.14	DETECT OFFSET	24	-60 – +60	Visible	Number of steps by which carousel must be offset to detect Matrix
.15	BAR CODE START	75	0 – 1800	Invisible	Starting R-boom position for reading carousel bar code
.16	BAR CODE END	1725	0– 1800	Invisible	Ending R-boom position for reading carousel bar code
.17	LOCK POS	623	0 – 1800	Visible	Number of steps from home where carousel lock detector looks for presence of MEIA carousel lock tab

System Parameters File 3: MEIA Carousel (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.18	UNLOCK POS	662	0 – 1800	Visible	Number of steps from home where carousel lock detector looks for absence of MEIA carousel lock tab
.19	CAROUSEL ID	0	0 – 999	Invisible	Stores carousel bar code ID number for carousel used in assay or buffer run
.20	CRSL BC OFFSET	38	-99 – +99	Visible	Aligns bar code reader over carousel bar code label

Parameter .21 is not in use.

Files 4-29: Boom Locations

File 4:	Wash Station	File 11:	Pre Wash	File 21:	Vial
File 5:	Reagent 1	File 12:	Inc Well Frt	File 22:	LCx® RCT Well
File 6:	Reagent 2	File 13:	Inc Well Ctr 1	File 23:	Wash Target
File 7:	Reagent 3	File 14:	Inc Well Ctr 2	File 24*:	BL 24
File 8:	Reagent 4	File 15:	MEIA Pre Frt	File 25*:	BL 25
File 9:	Reagent 5	File 16:	MEIA Pre Ctr 1	File 26*:	BL 26
File 10:	Matrix	File 17:	MEIA Pre Ctr 2	File 27*:	BL 27
		File 18:	MEIA Smp Well	File 28*:	BL 28
		File 19:	Boom Park	File 29*:	BL 29
		File 20:	Disp Well		

* Files 24 through 29 reference boom locations that are for research and/or future use.

Default values for visible System Parameters in files 4 through 29

NOTE: The default value changes with each position.

File	.2 Car Offset	.3 R Boom	.16 Z ASP LIM
4	0	185	340
5	0	145	451
6	0	112	452
7	0	80	452
8	0	38	443
9	0	38	443
10	0	214	166

File	.2 Car Offset	.3 R Boom	.16 Z ASP LIM
11	0	177	140
12	8	228	269
13	-3	228	280
14	-3	228	280
15	6	236	278
16	-1	236	281
17	-1	236	281
18	4	248	279
19	0	0	0
20	3	214	306

Default values for visible System Parameters in files 4 through 29 (cont)

NOTE: The default value changes with each position.

File	.2 Car Offset	.3 R Boom	.16 Z ASP LIM
21	-3	234	360
22	0	248	273
23	0	174	0
24 – 29	0	0	0

Files 4 through 29: Boom Locations

No.	Title	Default Value	Min/Max Values	Access	Description
.1	ON OFF CAR	0	0 – 5	Invisible	Defines location as on or off carousel. If on, also indicates well number in the disposable. Software uses well number for tracking volume. 0=off carousel 1=Vial or Reaction Well 2=LCRW or Predil Well 3=Sample Well 4=Matrix or Disp Well
.2	CAR OFFSET	0	0 – 40	Visible	After alignment with station by PIP1 OFFSET amount, sample is adjusted by CAR OFFSET for aspiration or dispensing in current location
.3	R BOOM	185	0 – 310	Visible	R-boom position (number of steps from home) for current location
.4	Z LS DEFAULT	0	0 – 510	Invisible	Z position (number of steps from home) at which level sense operation starts before aspiration

System Parameters Files 4 through 29: Boom Locations (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.5	LS BKGRND	-999	-999 – +75 * +50	Invisible	Sets level sense reading value determined at Boom Cal. Negative value indicates Boom Cal was not performed. (* Files 5-9 MAX VALUE = +50)
.6	Z LS DELTA	15	0 – 510	Invisible	Number of steps to subtract from actual Z position after successful level sense (safety margin so next level sense operation does not start too deep)
.7	Z ABOVE	0	0 – 510	Invisible	Z position to which Z-boom is raised before moving to another location
.8	Z DISP 1	200	0 – 510	Invisible	Probe's Z position at dispense height #1
.9	Z DISP 2	220	0 – 510	Invisible	Probe's Z position at dispense height #2
.10	Z DISP 3	240	0 – 510	Invisible	Probe's Z position at dispense height #3
.11	Z DISP 4	260	0 – 510	Invisible	Probe's Z position at dispense height #4
.12	Z DISP 5	280	0 – 510	Invisible	Probe's Z position at dispense height #5

System Parameters Files 4 through 29: Boom Locations (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.13	Z DISP 6	300	0 – 510	Invisible	Probe's Z position at dispense height #6
.14	Z DISP 7	320	0 – 510	Invisible	Probe's Z position at dispense height #7
.15	Z DISP 8	340	0 – 510	Invisible	Probe's Z position at dispense height #8
.16	Z ASPLIM	340	0 – 510	Visible	Probe will not travel below this level during high level operations, including aspiration (*see details below)
.17	Z BTMLIM	350	0 – 510	Invisible	Number of steps to bottom of the well (adjusted during Boom Cal) (*see details below)
.18	HVR	1610	0 – 4000	Invisible	Height-to-volume ratio (steps/µL) for the location
.19	5 BOTTL HVR ADJ	0	-4000 – +4000	Invisible	Value added to HVR (in 5-bottle mode)

* .16 Z ASPLIM and .17 Z BTMLIM: For positions over Carousel, parameter is adjusted during level sense portion of Boom Cal. For positions over reagent vials, parameter is adjusted during reagent pack portion of Boom Cal. For Rinse and Pre-wash positions, parameter is adjusted during Boom Cal of the Wash Station.

System Parameters Files 4 through 29: Boom Locations (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.20	DIVE DEPTH	0	0 – 10	Invisible	Number of steps probe dives into liquid after fluid (level sense) is detected. System uses this parameter with HRV 1 to calculate maximum volume that can be aspirated after each dive, fluid is aspirated, probe dives again, or until entire desired volume is obtained or Z ASPLIM is reached.
.21	5 BOTTL R ADJ	0	-20 – +20	Invisible	Value added to R-boom position (in 5-bottle mode)
.22	LS ADD	1	0, 1	Invisible	Analog-to-digital converter (ADC) channel read during each liquid level search 0=read channel 0, 1=read channel 1
.23	LS GAIN	0	0, 1	Invisible	Selectable input gain switch on Level Sense Bd. 0=closes input gain switch (causes input amplifier to have gain of 1); 1=opens (gain of 2)

System Parameters Files 4 through 29: Boom Locations (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.24	LS DELTA	40	0 – 255	Invisible	Minimum number of ADC counts required during liquid level search for a particular signal to be considered a liquid level sense signal
.25	LS GUARD BAND	15	0 – 255	Invisible	Maximum ADC count difference allowed between current and last readings for level sense reference value to be set equal to current reading value
.26	LS BKGRND MAX	30	0 – 130	Invisible	Level sense hardware is in error if background level sense value exceeds this value
.27	LS ADJ	200 0*	0 – 255	Invisible	If the initial read taken is greater than (LSBKGRND + Z LS DELTA + LS ADJ), error message "46 Liquid Level Too High" is displayed. * Files 5-9, Default value is 0

System Parameters File 30: Temperature

No.	Title	Default Value	Min/Max Values	Access	Description
.15	IDLE REAG TP	35.0	0.0 – 40.0	Invisible	System default reagent temperature
.16	MEIA AIR SET	36.0	0.0 – 100.0	Visible	Remote Temperature setpoint at which temperature of liquid in reaction cell was maintained at 36°C at time of last MEIA Temperature Calibration
.17	MEIA WARMUP TP	53.0	0.0 – 100.0	Visible	Air temperature at which PID stabilization is performed (Temperature is measured with thermistor located under duct cover.)
.18	MEIA PID DEV	0.5	0.0 – 100.0	Visible	Number of degrees below MEIA AIR SET at which PID stabilization is discontinued. PID controller starts when remote temperature reaches or exceeds setpoint minus MEIA PID DEV value.

Parameters .1 –.14 are not in use.

System Parameters File 30: Temperature (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.19	MEIA ADJUST SP	36.0	0.0 – 100.0	Visible	Air set value adjustment by Temp Cal
.20	MEIA INC TIME	1800	0 – 6553	Visible	Incubation time (sec.) to allow for temperature equilibration in MEIA Temp Check and for first equilibration period in MEIA Temp Cal
.21	MEIA CAL TIME	600	0 – 6553	Visible	Incubation time (sec.) for second, and all subsequent equilibration periods after unsuccessful iterations of MEIA Temp Cal
.22	MEIA DELTA SP	0.6	0.0 – 99.0	Visible	Degrees by which remote temp is adjusted during air temp change cycles in MEIA Temp Cal
.23	PID INFO 1= OFF	1	0 – 1	Invisible	PID parameter information display flag. 0=sends info. to COM1; 1=supresses info.

System Parameters File 30: Temperature (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.24	RMT ALARM DEV	1.5	0.0 – 100.0	Visible	Amount remote temperature can deviate from MEIA AIR SET during an MEIA procedure
.25	PID CONTROL	0	0 – 3	Visible	PID mode: 0= automatically enabled/disabled 1= not implemented* 2= immediately enables* *Do not use if running a procedure that engages PID automatically. 3= disabled completely
.26	PID GAIN	64.0000	0.0000 – 999.0000	Visible	A PID tuning constant

System Parameters File 30: Temperature (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.27	PID INTEGRAL	0.0500	0.0000 – 9999.9990	Visible	Air temperature setting (measured by thermistor under duct cover). Used when analyzer is in READY state. PID controller is not active in this state.
.28	PID DERIVATIVE	0.0000	0.0000 – 100.0000		A PID tuning constant
.29	PID BIAS	116.0	-255.0 – +255.0		A PID tuning constant
.30	IDLE AIR TEMP	40.0	0.0 – 55.0		Air temperature setting, measured by thermistor under duct cover. Used when analyzer in READY state. PID controller is not active in this state.

System Parameters File 31: Photo Parameters

No.	Title	Default Value	Min/Max Values	Access	Description
.11	MEIA STD B	0	0 – 22500	Editable	Fluorescence reading of the blank standard. 0=system will perform Photo Cal initialization at next Photo Cal. MEIA STD M must also be set to the label value to do this.
.12	MEIA STD M	1000	0 – 22500	Editable	Label value of medium standard (must be entered manually before Photo Cal initialization). MEIA STD B must also be set to do this.
.13	MEIA STD H	1	1 – 22500	Editable	Fluorescence reading of high standard (recorded by last successful MEIA Photo Cal initialization)
.14	M % DIFF	5.00	0.00 – 100.00	Visible	Absolute percent difference between initial and current M standard readings, above which MEIA Photo Cal/Check will fail

Parameters .1 –.10 are not in use.

System Parameters File 31: Photo Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.15	H % DIFF	10.00	0.00 – 100.00	Visible	Absolute percent difference between initial and current H standard readings, above which MEIA Photo Cal/Check will fail
.16	H THRESHOLD	10000	0 – 22500	Visible	Lower limit of H standard reading during Photo Cal initialization
.17	INIT SLOPE	0.0000	0.0000 – 10.0000	Visible	Initial slope from MEIA Photo Cal initialization (Value is used in MEIA Photo Check to monitor deterioration of MEIA Optics.)
.18	INIT INTRCPT	0.0000	-100.0000 – 0.0000	Visible	Initial intercept from MEIA Photo Cal initialization (Value is used in MEIA Photo Check to monitor deterioration of MEIA Optics.)

System Parameters File 31: Photo Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.19	MEIA SLOPE	7.7000	0.0000 – 10.0000	Visible	Current slope from MEIA Photo Cal (determined by successful MEIA Photo Cal) (used in calculating actual PMT high voltage corresponding to MEIA gain levels)
.20	MEIA INTRCPT	-41.0000	-100.0000 – 0.0000	Visible	Current intercept from MEIA Photo Cal (determined by successful MEIA Photo Cal) (used in calculating actual PMT high voltage corresponding to MEIA gain levels)
.21	B HI LIM	1000	425 – 22500	Visible	Blank High Limit is upper limit for MEIA STD B readings (used during Photo Cal)
.22	STATIC PREC	0.50	0.00 – 100.00	Visible	%CV of static reads above which MEIA Photo Cal or Photo Check will fail
.23	DYNAMIC PREC	1.00	0.00 – 100.00	Visible	%CV of dynamic reads above which MEIA Photo Cal or Photo Check will fail

System Parameters File 31: Photo Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.24	MEIA INC TIME	600	0 – 3600	Visible	Incubation time (sec.) to allow for temperature equilibration in MEIA Temp Check and for first equilibration period in MEIA Temp Cal
.25	MEIA LMP REF#	1	0 – 99999	Editable	MEIA reference photodiode intensity (set by factory). Should be very close to R = ###### value in MEIA Optics Hand Control display.
.26	MEIA LMP 1=ON	0	0, 1	Editable	0=lamp turned on/off by analyzer 1=lamp always on
.27	MEIA LOW I	4.20	0.00 – 50.00	Visible	Below this MEIA lamp current (mA), analyzer will not execute MEIA procedures.

System Parameters File 31: Photo Parameters (cont)

No.	Title	Default Value	Min/Max Values	Access	Description
.28	MEIA CAL VOLT	0	0 – 900	Visible	PMT high voltage used to verify MEIA standard placement during MEIA Photo Cal or Photo Check (Value is updated if Carousel Cal or Photo Cal is successful.)
.29	MTRX DET VOLT	0	0 – 900	Visible	PMT high voltage used in matrix detect procedure (Value is updated by successful MEIA Carousel Cal.)
.30	MTRX DET REF	0	0 – 32767	Visible	PMT reference level used to determine presence/ absence of reaction cell or blank cell on MEIA carousel
.31	CRSL CAL HOLE	0	0 – 32767	Visible	PMT reading for absence of reaction cell or blank cell (set during MEIA Carousel Cal)
.32	CRSL CAL CELL	0	0 – 32767	Visible	PMT reading for presence of a reaction cell or blank cell (set during MEIA Carousel Cal)

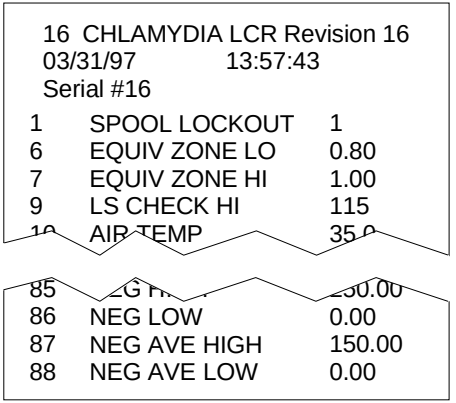
ASSAY PARAMETERS

Overview

The assay parameters provide performance requirements for every assay on the module. These characteristics are defined for each assay parameter file:

- Parameter number and name
- Default value
- Min/max values (allowable minimum and maximum values)
- Access (visibility and editability)
- Description (brief definitions)

Example Assay Parameter printout:



B-print.ds4

Refer to the specific assay package insert for complete information.

Assay list

The assays contained on the LCx® Assay Module 2 version 1.0 are:

Name		Number
CHLAMYDIA LCR	Chlamydia trachomatis Ligase Chain Reaction Assay	#16 (USA only) #10 (ROW only)
GC LCR	Neisseria gonorrhea Ligase Chain Reaction Assay	#12
MTB LCR	Mycobacterium tuberculosis Ligase Chain Reaction Assay	#15 (USA only) #14 (ROW only)
PRFM	Performance Panel Assay	#111
Research		#245

US/ROW

Certain assays may only be available for the USA or for the ROW (Rest of World).

Superuser access to assay parameters
All parameters for all assays on the module are Visible and Editable in the Superuser Mode. In the assay tables, the Access column indicates whether the parameter is Visible/Invisible to the customer and Editable by the customer.

Assay activation
An assay that has Inactive status will require completion of the Activation Procedure to be visible on the assay module. The Activation Procedure utilizes the assay bar code to activate the assay for use.

Assay Parameters List

1 SPOOL LOCKOUT
6 EQUIV ZONE LO
7 EQUIV ZONE HI
8 LS CHECK LO
9 LS CHECK HI
10 AIR TEMP
11 AIR DEV
13 REAG TEMP
14 REAG DEV
16 DIL TEMP
17 DIL DEV
19 REMOTE TEMP
20 REMOTE DEV
31 MIN RATE
32 MAX NRMSE
33 MIN CORR
34 MAX INTRCPT
35 MUP T DELAY
37 LVL 1 HIGH
38 LVL 1 LOW
43 CT/CAL SETUP
44 CAL RANGE
45 CAL HIGH
46 CAL LOW
47 CAL AVE HIGH
48 CAL AVE LOW
54 NUM POS CNTL
55 NUM NEG CNTL
60 PRINT OPTION
61 % CUT OFF
62 FSA
65 LVL 2 HIGH
66 LVL 2 LOW
69 POS RANGE
70 POS HIGH
71 POS LOW
72 POS AVE HIGH
73 POS AVE LOW
76 INACT PROT
77 RGT VOL CHK ORD
82 BATCH SIZE
83 NUM CAL
84 NEG RANGE
85 NEG HIGH
86 NEG LOW
87 NEG AVE HIGH
88 NEG AVE LOW
90 LVL 3 HIGH
91 LVL 3 LOW
101 NUM RGNTS
105 DATA REDUC
106 RGNT DELAY
107 POST PRCR
108 MODE
109 GAIN

These are not in use:

2 – 5	63 – 64
12	67 – 68
15	74 – 75
18	78 – 81
21 – 30	89
36	92
39 – 42	100
49 – 53	102 – 104
56 – 59	110 – 150

Assay Parameters Quick Reference Chart

The following chart provides the parameters for the assays on the LCx® Assay Module 2, version 1.0.

Description of table columns

No./Title

The number and name of the parameter

Default value

The typical default value. Default values may vary with the assay.

Min/Max values

Minimum and maximum values for the parameter

Access

Indicates whether the parameter is visible to the customer and if the customer can edit the parameter

Description

A brief description of the parameter, including enable/disable, on/off, and similar parameter information

not in use

Assay parameters identified as 'not in use' are not utilized for assay operations. The default value for these parameters is zero.

Assay Parameters Quick Reference Chart

No.	Title	Default Value*	Min/Max Values	Access	Description
1	SPOOL LOCKOUT	1	0/1	Visible	0= lockout results to ASTM spooler and orders from ASTM 1= accept spooling of results/accept orders
6	EQUIV ZONE LO	0.80	0.00/1.00	Editable	Low Equivocal Zone cutoff (1=disable) Never edit above 1.00
7	EQUIV ZONE HI	1.00	1.00/2.00	Editable	High Equivocal Zone cutoff (1=disable) Never edit below 1.00
8	LS CHECK LO	55	0/310	Invisible	Sample Window Low Value
9	LS CHECK HI	115	0/310	Visible	Sample Window High Value
10	AIR TEMP	35.0	0.0/40.0	Visible	Air Heater Temp during assay run
11	AIR DEV	0.5	0.0/40.0	Visible	Air Heater Deviation (high and low limits for DAC during assay run)

Parameters 2 – 5 and 12 are not in use.
** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
13	REAG TEMP	35.0	0.0/40.0	Visible	Reagents are heated to this temp during assay prologue (only turns on if value is >20°C)
14	REAG DEV	0.7	0.0/40.0	Visible	Reagent Deviation (Max/min values allowed when added/subtracted with value stored in assay parameter 13: Reagent Temperature)
16	DIL TEMP	35.0	0.0/40.0	Visible	Diluent Heater is set to this temperature.
17	DIL DEV	0.5	0.0/40.0	Visible	Diluent Heater Deviation (Max/min values allowed when added/subtracted with value stored in assay parameter 16: Diluent Temperature)
19	REMOTE TEMP	0.0	0.0/0.0	Visible	Remote Temp (temperature for Carousel sensor)

Parameters 15 and 18 are not in use.
** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
20	REMOTE DEV	0.0	0.0/0.0	Visible	Remote Deviation (Max/min values allowed when added/subtracted with value stored in assay param 19: Remote Temperature)
31	MIN RATE	40.0	0.0/310.0	Invisible	Minimum rate limit used for NRMSE calculation
32	MAX NRMSE	0.500	-9999.999/ 99999.992	Visible	Maximum allowable NRMSE for 8 reads taken to determine rate for each reaction cell
33	MIN CORR	0.950	-9999.999/ 99999.992	Visible	Minimum allowable correlation of 8 reads taken to determine rate for each reaction cell
34	MAX INTRCPT	12000.0	-999999.9/ 999999.0	Visible	Maximum intercept (Value greater than parameter indicates MUP has been contaminated.)

Parameters 21 – 30 are not in use.

** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
35	MUP T DELAY	3.00	-99999.99/ 999999.00	Invisible	Lag time (sec.) between MUP addition to matrix and first read
37	LVL 1 HIGH	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 1 High Limit used for high/low limit check for MEIA Level 1 Control replicate
38	LVL 1 LOW	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 1 Low Limit used for high/low limit check for MEIA Level 1 Control replicate

Parameters 36 and 39 – 42 are not in use.
** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
43	CT/CAL SETUP	1	1/2	Invisible	Control/Cal set-up describes carousel map (**see details below)

** Default values may vary with the assay.*

** 43 CT/CAL SETUP:

Function 1: Neg control type, neg control, positive control type, pos control, calibrators, samples. (Number of Negative Control replicates is parameter 55: NUM NEG CNTL. Number of Positive Control replicates is value in parameter 54: NUM POS CNTL. Number of Calibrator replicates is value in parameter 83: NUM CAL.)

Function 2: Neg control type, level 1 control, positive control type, level 2 control, level 3 control, no samples. (Number of Level 1 Neg Control Type is number in parameter 55: NUM NEG CNTL. Number of Level 2 and Level 3 Pos Control Types is ONE HALF the number of pos controls in parameter 54: NUM POS CNTL.

NOTE: Parameter 60 (Print Option) is dependent upon parameter 43. If parameter 43 = 1, then parameter 60 must be 23; if parameter 43 = 2, then parameter 60 must be 21.

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
44	CAL RANGE	999999.00	-99999.99/ 999999.00	Invisible	Calibrator Range Limit (maximum allowable difference between highest and lowest calibrator replicates that pass High/Low limit checks)
45	CAL HIGH	2400.00	-99999.99/ 999999.00	Visible	Calibrator High Limit (high limit used for high/low limit check for calibrator replicate)
46	CAL LOW	350.00	-99999.99/ 999999.00	Visible	Calibrator Low Limit (low limit used for high/low limit check for calibrator replicate)
47	CAL AVE HIGH	2200.00	-99999.99/ 999999.00	Visible	Calibrator Average High Limit (high limit used for high/low limit check for calibrator average)
48	CAL AVE LOW	550.00	-99999.99/ 999999.00	Visible	Calibrator Average Low Limit (low limit used for high/low limit check for calibrator average)

** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart cont)

No.	Title	Default Value*	Min/Max	Access	Description
54	NUM POS CNTL	0	0/ 24	Visible	Number of Positive Control Type replicates (see assay parameter 43)
55	NUM NEG CNTL	2	0/ 24	Visible	Number of Negative Control Type replicates (see assay parameter 43)
60	PRINT OPTION	23	21/23	Invisible	Print Option (specifies format of assay result printout). *NOTE:* Dependent upon assay parameter 43 (see assay parameter 43 for details): *If parameter 43 is...* *Then parameter 60 must be...* set to 1 set to 23 set to 2 set to 21
61	% CUTOFF	45.000	0.000/ 99999.000	Visible	Percent Cutoff Value (see also Data Reduction cutoff calculation)

Parameters 49 – 53 and 56 – 59 are not in use.
** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
62	FSA	0.000	0.000/ 0.000	Invisible	FSA (specifies air set adjustment parameter)
65	LVL 2 HIGH	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 2 High Limit (high limit used for high/low limit check for MEIA Level 2 control replicate)
66	LVL 2 LOW	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 2 Low Limit (low limit used for high/low limit check for MEIA Level 2 control replicate)
69	POS RANGE	999999.00	-99999.99/ 999999.00	Invisible	Positive (high) Control Range Limit (maximum allowable difference between lowest and highest positive control replicates that pass high/low limit checks)

Parameters 63, 64, 67, and 68 are not in use.
** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
70	POS HIGH	3000.00	-99999.99/ 999999.00	Invisible	Positive (high) Control High Limit (high limit used for high/low limit check for positive control replicate)
71	POS LOW	300.00	-99999.99/ 999999.00	Invisible	Positive Control Low Limit (low limit used for high/low limit check for positive control replicate)
72	POS AVE HIGH	3000.00	-99999.99/ 999999.00	Invisible	Positive Control Average High Limit (high limit used for high/low limit check for average of positive controls)
73	POS AVE LOW	800.00	-99999.99/ 999999.00	Invisible	Positive Control Average Low Limit (low limit used for high/low limit check for average of positive controls)
76	INACT PROT	2	0/2	Invisible	Inactivation Protocol 0=inactivation protocol not performed 2=inactivation protocol 2 performed

Parameters 74 and 75 are not in use.

** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
77	RGT VOL CHK ORD	1	0/54321	Invisible	Specifies order in which volume in Reagent bottles is checked: 1 = Rgt 1 135 = Rgt 1, Rgt 3, Rgt 5 413 = Rgt 4, Rgt 1, Rgt 3
82	BATCH SIZE	24	0/24	Invisible	Batch size (maximum number of disposables in a batch assay). Must be set to 24.
83	NUM CAL	2	0/24	Visible	Number of Calibrator replicates (see assay parameter 43)
84	NEG RANGE	999999.00	-99999.99/ 999999.00	Invisible	Negative Control Range Limit (max. allowable difference between lowest and highest neg control that passed high/low limit checks)

Parameters 78 – 81 are not in use.

** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
85	NEG HIGH	250.00	-99999.99/ 999999.00	Visible	Negative Control High Limit (high limit used for high/low limit check for neg controls)
86	NEG LOW	0.00	-99999.99/ 999999.00	Visible	Negative Control Low Limit (low limit used for high/low limit check for neg controls)
87	NEG AVE HIGH	150.00	-99999.99/ 999999.00	Visible	Neg Control Average High Limit (high limit used for high/low limit check for average of neg controls)
88	NEG AVE LOW	0.00	-99999.99/ 999999.00	Visible	Negative Control Average Low Limit (low limit used for high/low limit check for average of neg controls)
90	LVL 3 HIGH	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 3 High Limit (high limit used for high/low limit check for MEIA Level 3 control)
91	LVL 3 LOW	0.00	-99999.99/ 999999.00	Invisible	MEIA Control Level 3 Low Limit (low limit used for high/low limit check for MEIA Level 3 control)

Parameters 89 and 92 – 100 are not in use.

** Default values may vary with the assay.*

Assay Parameters Quick Reference Chart (cont)

No.	Title	Default Value*	Min/Max	Access	Description
101	NUM RGNTS	4	1, 5	Invisible	Reagent used (number of reagent bottles that the assay has installed)
105	DATA REDUC	23	21/23	Invisible	Determines which set of Data Reduction functions to use
106	RGNT DELAY	0	0/3276	Invisible	Allowable time between reagent warm-up (temperature equilibration) and assay execution
107	POST PRCR	3	3/3	Invisible	Determines which Post Processor functions to use
108	MODE	1	0/1	Invisible	Mode Index (values to use from mode table) (Table contains assay protocol and volume management files.)
109	GAIN	1000	1/1500	Invisible	Gain (indirectly determines voltage setting of PMT)

Parameters 102 – 104 and 110 – 150 are not in use.

** Default values may vary with the assay.*

SUPERUSER

Instructions: Select the code that corresponds with the day of the month. Use the numeric keypad to enter the code.

Format: Use this format: .nnnn.
Example: On March 29, enter .2988.

Day	Code	Day	Code	Day	Code	Day	Code
1	7121	9	1706	17	0224	25	2935
2	4103	10	6971	18	9001	26	8614
3	1222	11	5121	19	3511	27	7387
4	6211	12	0706	20	0112	28	1020
5	9171	13	0424	21	1999	29	2988
6	0924	14	6109	22	7230	30	2328
7	1210	15	7220	23	3624	31	8421
8	5030	16	0612	24	4784		

Do not give Superuser codes to Customers.