BioXC-WACS
Interface Design Description (IDD)

ICx Biodefense
208 Business Center Drive
Reisterstown, MD 21136

REVISION HISTORY

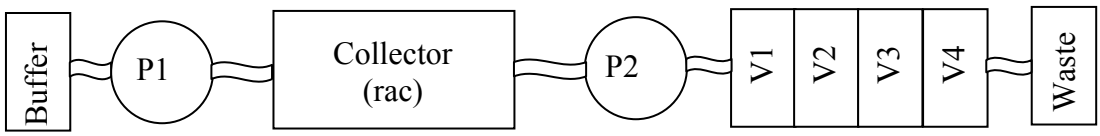
REVISION	DATE	CHANGE DESCRIPTION	AFFECTED SECTIONS/PAGES
1	15 Jan 2010	Draft revision	All

Table of Contents

1. Introduction

This is the Interface Design Description (IDD) document for the BioXC-WACS collector assembly. It includes messages transmitted, commands that can be sent to the unit, and user-configurable timing parameters.

2. Instrument Schematic



Abbreviations

P1 = buffer pump
P2 = sample pump
rac = collector

3. Data Communication Parameters

- 57600 Baud Rate
- 8 data bits
- 1 stop bit
- No parity
- No handshake

4. Commands

Command	Description
$prime,#	# = number of seconds to prime the system (see also $priming1, and $primingd). If $priming1 parameter is made short (1), then the tubing length from the buffer to the collector can be controlled by this parameter.
$collect	Turns dry collector on and purges sample line for a few seconds (see also $timep2)
$collect,0	Turn dry collector off
$collect,1	Turn dry collector on
$sample Y or $sample,Y	Y=1,2,3, or 4; generates wet sample
$clean	Cleans collector by flushing with clean fluid and dumping to waste reservoir
$status	Displays instrument status, unit responds with something like this: $s,1.01,BioXC-WACS-001,idle or this $s,1.01,BioXC-WACS-001,collecting wet sample 3 where 1.01 = firmware revision level and 001= serial number

5. Messages

All output messages are terminated by CR+LF (\r\n).

$info,sample line cleared	A few seconds after $collect command, while collector still running (set by $timep2)
$info,sample complete (#)	When wet sample generation is complete
$info,clean complete	When collector cleaning is complete

There are some additional messages in a similar format at power-up and in response to the various commands. For example, in response to the $sample 1 command, you'll see

$info, beginning collection of sample 1

6. Configurable Timing Parameters

Setting these parameters will cause them to be immediately stored in non-volatile memory such that they will be remembered across a power cycle of the instrument.

Command	Default (seconds)	Parameter Description	Tubing Dependency
$timep2,#	30	Time to run pump 2 at beginning of a collection to purge the tubing of any liquid that might potentially spin off collector. Please note that sample generation cannot be initiated until after this time is complete. This parameter might be set to zero if no residual liquid is found to spin off when collector initially starts.	Tubing length from collector to waste valve
$extrap2,#	30	Time to run pump 2 at end of sample and end of cleaning cycle to purge the tubing	Tubing length from collector to waste valve
$priming1,#	5	Time to run pump 1 at start of priming to fill tubing from bottle to RAC	Tubing length from buffer reservoir to collector
$primingd,#	5	Time to run RAC dry after priming is complete to make sure no residual liquid is left on the collector surface	
$priming2,#	30	Time to run pump 2 at the end of priming to purge the tubing	Tubing length from collector to waste valve
$cl,#	45	Clean cycle time when pump 1 is on and RAC is “pulsing on and off”. During cleaning, pump 1 is on until "cl" time. Once "cl” is reached from the start of the clean cycle, pump 1 will turn off and RAC and pump 2 will be on. 10 seconds later, RAC is off, pump 2 on for the remaining $extrap2 time	Length of time to clean collector
$s,#	45	Sampling cycle time (wet and dry)	Liquid sample volume

7. Sample Session

H = Blue= sent by host
B = Orange= sent by BioXC-WACS

```
B:$info,ICx Biodefense Multi-Sampler, revision 1.00, unit number =
BioXC-WACS-001
B:$info,system ready
H:$prime,1
B:$info,starting priming, setting of 1 seconds
B:$info,priming complete
H:$collect
B:$info,collector on, purging sample line for 30 seconds
B:$info,sample line cleared
H:$status
B:$s,1.00,BioXC-WACS-000,collecting dry sample
H:$sample 1
B:$info,beginning collection of sample 1
B:$info,sample collected
B:$info,end of sample cycle, running p2 for 30 extra seconds
H:$status
B:$s,1.00,BioXC-WACS-000,collecting wet sample 1
B:$info,sample complete (1)
```

8. Additional Information

The $timep2, $extrap2, $priming1, $primingd, and $priming2 parameter values can be viewed by typing ***$sys***.

The $cl and $s parameter values can be viewed by first typing ***$verbose,1*** followed by ***$cfg.*** Make sure to type ***$verbose,0*** or cycle power to the unit before resuming normal operation.

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