

Valve Description Cyan	Watchdog Safe State	Shutdown	Make Ready & Ready State	Vent Sample (Masking bit for Air/Vac Pumps)	(Aquire) Open Sample Valves	(Stop Aquire) Close Sample Valves	Back Flush	Vacuum to Lever & Shower Stall	Cyan Debubble
Debubble Valve	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	see Table 2
Waste Valve	Open (1)	Closed (0)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	
Lever Waste Valve	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Open (1)	Open (1)	Closed (0)
Sample Pinch Valve	Closed (1)	Open (0)	Closed (1)	Closed (1)	Open (0)	Closed (1)	Open (0)	Closed (1)	Closed (1)
Sample Air / Vent Valve	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Open (1)	Open (1)	Closed (0)	Closed (0)	Closed (0)
Sample Tube Waste Valve	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Open (1)	Closed (0)	Closed (0)
Sample Shield Waste Valve	Open (1)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Open (1)	Closed (0)
Valve Description SMS									
Sheath Cutoff Valve	Closed (0)	Closed (0)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	see Table 2
Debubble Valve	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)
Low / Hi Pressure Valve	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)
Sheath / Clean Select Valve	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)	Sheath (0)
Air / Vacuum Pumps	On (1)	Off (0)	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)
SMS Control									
State Bit 0	Ready	OFF	Sheath	Sheath	Sheath	Sheath	Sheath	Sheath	Sheath
State Bit 1	Low (0)	Low (0)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)
State Bit 2	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)
SMS On	High (1)	Low (0)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)
SMS Reset	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)

1. Toggle Period for "Cyan Debubble" is fixed at 1 sec for "Closed" and set in Registry for "Open" time
2. Toggle Period for "SMS Debubble" is 1 sec
3. Pulse for "SMS Prime" is < 50usec - Note: This cycle is approx. 30sec in duration once activated. During this time, the CMD_0-3 inputs are ignored.

Table 1. Clean & Rinse Cycle		
		Time (seconds)
Clean	SMS Clean Prime	30
	Path 3	60
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 2	120
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	60
Rinse	SMS Rinse Prime	30
	Path 3	60
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 2	120
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	10
	Path 1	10
	Path 3	60

Table 2. Debubble Cycle			
Debubble Valve	Waste Valve	Time	SMS State
Closed *	Open	1	Ready
Open *	Closed	**	Ready
Open	Closed	1	Sheath
* dependent on the "Debubble Count" setting in Summit CyAn preferences			
** dependent on the "Debubble Wait" setting in Summit CyAn preferences			

Valve Description Cyan	SMS Debubble	SMS Clean Prime	SMS Clean Path 1 (Debubble)	SMS Clean Path 2 (T/T cleaning)	SMS Clean Path 3 (Default)	SMS Rinse Prime	SMS Rinse Path 1 (Debubble)	SMS Rinse Path 2 (T/T rinse)	SMS Rinse Path 3 (Default)
		see Table 1 for Clean & Rinse order							
Debubble Valve	Don't Care	Close (0)	Open (1)	Closed (0)	Closed (0)	Close (0)	Open (1)	Closed (0)	Closed (0)
Waste Valve	Don't Care	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)
Lever Waste Valve	Don't Care	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)
Sample Pinch Valve	Don't Care	Closed (1)	Closed (1)	Open (0)	Closed (1)	Closed (1)	Closed (1)	Open (0)	Closed (1)
Sample Air / Vent Valve	Don't Care	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)
	Don't Care	Closed (0)	Closed (0)	Open (1)	Closed (0)	Closed (0)	Closed (0)	Open (1)	Closed (0)
SampleShieldWaste Valve	Don't Care	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)
Sample Tube Waste Valve									
Valve Description SMS									
Sheath Cutoff Valve	Closed (0)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)	Open (1)
Debubble Valve	Open (1)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)	Closed (0)
Low / Hi Pressure Valve	Low (0)	Low (0)	Hi (1)	Hi (1)	Hi (1)	Low (0)	Hi (1)	Hi (1)	Hi (1)
Sheath/Clean Select Valve	Sheath (0)	Clean (1)	Clean (1)	Clean (1)	Clean (1)	Clean (1)	Clean (1)	Clean (1)	Clean (1)
Air / Vacuum Pumps	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)	On (1)
SMS Control									
	Debubble	Low Clean	Clean	Clean	Clean	Sheath	Rinse	Rinse	Rinse
State Bit 0	Low (0)	High (1)	Low (0)	Low (0)	Low (0)	High (1)	Low (0)	Low (0)	Low (0)
State Bit 1	Low (0)	High (1)	High (1)	High (1)	High (1)	Low (0)	High (1)	High (1)	High (1)
State Bit 2	see (2)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	High (1)	High (1)	High (1)
SMS On	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)	High (1)
SMS Reset	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)