**SPECTRUM**

**List of Commands**

AutomaticDispense = 01

Manual = 02

CanSelection = 03

AutoPurgeRecycle = 04

ValveOpen = 05

ValveClose = 06

TurnTableMotorOn = 07

StirringMotorOn = 08

StepperMotorOnClockWise = 09

StepperMotorOnAntiClockWise = 10

StirringMotorOff = 11

StepperMotorOff = 12

AutoPurgingDispense = 13

SmartPurgingRecycle = 14

SmartPurgingDispense = 15

NozzleCleaning = 16

EmergencyStop = 19

ProgramStartLastCondition = 20

JumpToInitialCondition = 21

CalibrationDispense = 22

TurnTableMotorOff = 23

AgitationTime = 17

CheckCanPresent = 24

DispensingStart = 81

DispensingStop = 82

MovingNextCan = 83

ResetMachine = 62

**Maintenance Screen**

Most of the command require that the machine is set to manual mode i.e. we send "02" followed by the command. You need to set the machine to manual mode only for the first command i.e. we keep track if we have already sent "02" and if sent, we do not send it again till the screen is reopened. ALL commands sent are echoed back.

Notes

1. As part of the response received, I have not repeated the fact that all commands are echoed back, and assumed the same

2. All command / responses are in character and not numbers e.g. command valve open is sent as character "05" and not integer 5.

**Home**

Checked:

Start turn table to move to home position

Command: MachineCommand.TurnTableMotorOn

Response: 85

Unchecked - Stop turn table

Command: MachineCommand.TurnTableMotorOff

Response: <none>

**Agitator**

ON

Command: MachineCommand.StirringMotorOn

Response: <none>

OFF

Command: MachineCommand.StirringMotorOff

Response: <none>

**Pump**

Pump Up

Command: MachineCommand.StepperMotorOnAntiClockWise

Response: <none>

Pump Down

Command: MachineCommand.StepperMotorOnClockWise

Response: <none>

Pump Off

Command: MachineCommand.StepperMotorOff

Response: <none>

**Nozzle Cleaning**

Checked:

Start nozzle cleaning

Command: MachineCommand.NozzleCleaning

Response: 86

**Valve Open / Close**

Open

Command: MachineCommand.ValveOpen

Response: 87 ()

Close

Command: MachineCommand.ValveClose

Response: 88

**Auto Purging**

Recycle

Command MachineCommand.AutoPurgeRecycle + 01010101010101010101010101010101 + <purgequantity>

Dispense

Command: MachineCommand.AutoPurgingDispense + 01010101010101010101010101010101 + <purgequantity>

Response: 90

**Smart Purging Recycle**

Recycle

Command: MachineCommand.SmartPurgingRecycle + <selected cylinders> + <purgequantity>

Dispense

Command: MachineCommand.AutoPurgingDispense + <selected cylinders> + <purgequantity>

a. <selected cylinders>: 32 byte in length with 2 bytes each representing the 16 cylinders in sequential order. 01 indicates recycle/dispense, while 00 indicates skip. e.g.

02XX00010000000000000100000000000000A4BE

recycle / dispense from cylinder no. 2, 9

b. <purgequantity>: 4 byte hex number indicating the quantity to be dispensed. The digits A to F are represented as follows

A as :

B as ;

C as <

D as =

E as >

F as ?

e.g. decimal 5310 - hex 14BE - sent as 14;>

A4BE :4;>

Response: 90

**Fill Cylinder**

Like maintenance mode we send command “02” to indicate manual mode. Again, sent only once.

**Go to canister button**

Move to the first selected cylinder

Command: CanSelection + <selected cylinders>

Response: echo back command i.e. 03

**Next Button**

Moves the next cylinder. If no more cylinders in the list, move to home position.

Command: CanSelection

*Note we only send the can selection command, it is not followed by any other characters.*

Response: echo back command i.e. 03

**Dispense Colourants**

Flow

1. Check can presence
2. If not present – display message – loop until present
3. Dispense colourants
4. On completion wait for can removal
5. Repeat for next can (in case user has selected more than 1 can)

**Check Can Presence**

Command: MachineCommand. CheckCanPresent (send manual mode first, it not already sent)

Result: Expects 63 / 67

**Dispense Colourants**

Command: MachineCommand.AutomaticDispense + <colourant quantities to be dispensed> + <agitator time>

colour quantities: 16 \* 6 bytes – in hex format

2ml Canister 10

16 \* 02010000000000C8000000000000000000000000000000000000000000000000000000000000000000000000000000000000+00

agitator time: in seconds 2 bytes – hex format

10 Decimal A

**Remove Can**

Command: MachineCommand.RemoveCan

**Emergency Stop**

Command: MachineCommand.EmergencyStop

**Start Initial**

Command: MachineCommand.JumpToInitialCondition

**Continue**

Command: MachineCommand.ProgramStartLastCondition

**Responses that we are expecting**

56 – Dispensing complete

63 – Can Present

67 – Can Absent

57 – Can Removed

81 – Colourant being dispensed – pump moving down

82 - Colourant dispensing stopped – pump stopped

83 – Moving to the next cylinder

44 /99 – Can force removal

69 – Hardware emergency stop

36 – Abort dispense

74/75 – Can Force Removal

36 – Abort Dispense