

# Using a TCL Script to Execute a PVT Trajectory with Newport XPS Universal Motion Controller

**Scope:** This document describes how a PVT trajectory can be executed from a TCL script using Newport XPS controller

**Prerequisites:**

1. Stages must be configured as a Multiple Axes Group ( see section 4.7 of XPS user’s manual for more details on Group configurations)
2. PVT file, characterizing the desired trajectory, must be created and saved under public/ Trajectories folder of XPS controller ( see section 9.3 and 5.0 of XPS user’s manual respectively for details on PVT trajectory and instructions on how to get to XPS folders )
3. A TCL script to execute the PVT trajectory should be written and stored under public/scripts folder of XPS controller ( see TCL manual for details on XPS TCL programming)

**Execution of the script:**

Once the prerequisites are satisfied the TCLScriptExecute command is used to execute the script. The number of times both the script and the trajectory can be executed is user definable (see “InputArguments” and “ExecutionNumber” parameters respectively in the commands description below).

**TCL**



*Prototype*

**TCLScriptExecute** \$SocketID \$TCLFileName \$TaskName \$InputArguments

*Input parameters*

SocketID ..... integer ..... Socket identifier got from “TCP\_ConnectToServer” function  
 TCLFileName ..... string ..... File name contains the TCL script  
 TaskName ..... string ..... Task name  
 InputArguments ..... string ..... Input argument string (separator is a comma)

*Output parameters*

None

*Return*

TCL error code (0 = success or 1 = syntax error) or Function error code

**TCL**



*Prototype*

**MultipleAxesPVTExecution** \$SocketID \$GroupName \$TrajectoryFileName \$ExecutionNumber

*Input parameters*

SocketID ..... integer ..... Socket identifier got from “TCP\_ConnectToServer” function  
 GroupName ..... string ..... MultipleAxes group name (maximum size = 250)  
 TrajectoryFileName ..... string ..... Trajectory file name (maximum size = 250)  
 ExecutionNumber ..... integer ..... Number of trajectory executions

*Output parameters*

None

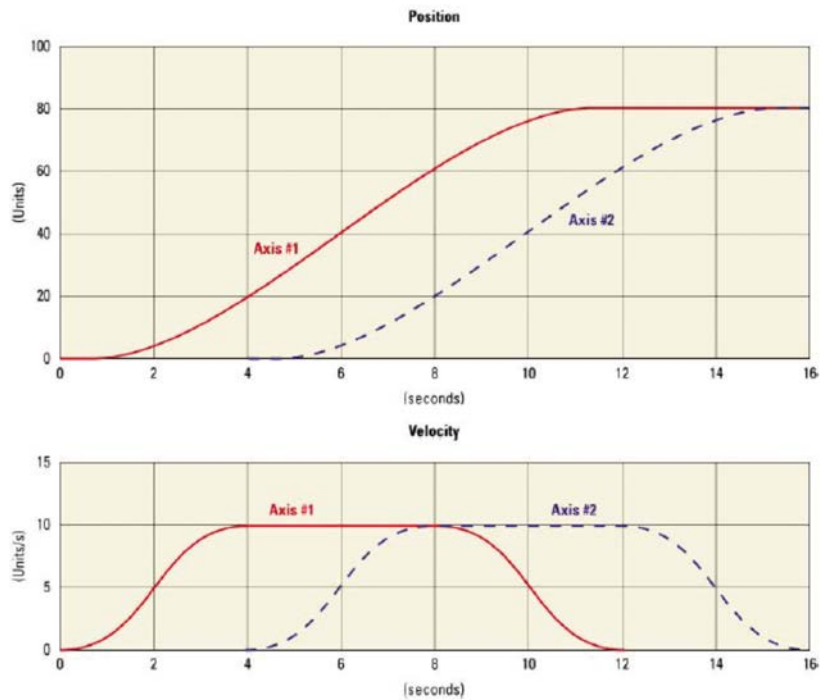
*Return*

TCL error code (0 = success or 1 = syntax error) or Function error code

Example PVT file – with graphical representation to the right – of the trajectory it makes, TCL script and a command to execute the script:

```

1.0 0.4167 1.25 0 0
1.0 2.9167 5.0 0 0
1.0 7.0833 8.75 0 0
1.0 9.5833 10 0 0
1.0 10 10 0.4167 1.25
1.0 10 10 2.9167 5
1.0 10 10 7.0833 8.75
1.0 10 10 9.5833 10
1.0 9.5833 8.75 10 10
1.0 7.0833 5 10 10
1.0 2.9167 1.25 10 10
1.0 0.4167 0 10 10
1.0 0 9.5833 8.75
1.0 0 7.0833 5
1.0 0 2.9167 1.25
1.0 0 0.4167 0
    
```



```

#####
#
# TCL script to execute a PVT.txt trajectory for a group called PVT
#
#####
    
```

```

# Main process
set TimeOut 20
set code 0

# Open TCP socket
OpenConnection $TimeOut socketID
if {$socketID == -1} {
    puts stdout "OpenConnection failed => $socketID"
    return
}

set code [catch "GroupKill $socketID PVT"]
if {$code != 0} {
    DisplayErrorAndClose $socketID $code "GroupKill"
    return
}

set code [catch "GroupInitialize $socketID PVT"]
if {$code != 0} {
    DisplayErrorAndClose $socketID $code "GroupInitialize"
    return
}

set code [catch "GroupHomeSearch $socketID PVT"]
if {$code != 0} {
    
```

```

        DisplayErrorAndClose $socketID $code "GroupHomeSearch"
    return
}

set code [catch "MultipleAxesPVTVerification $socketID PVT PVT.txt"]
if {$code != 0} {
    DisplayErrorAndClose $socketID $code "MultipleAxesPVTVerification"
    return
}

set code [catch "MultipleAxesPVTExecution $socketID PVT PVT.txt 1"]
if {$code != 0} {
    DisplayErrorAndClose $socketID $code "MultipleAxesPVTExecution"
    return
}

# Close TCP socket
TCP_CloseSocket $socketID
    
```

**Command to execute the TCL script described above 10 times:**

TCLScriptExecute(TCL script to execute PVT.tcl,0,10)

**Note: The group name used in the TCL script should match the name the group is configured under XPS system.ini file.**

For more information please contact Newport Corporation Application Engineers at 800.222.6440.



Newport Corporation, Global Headquarters  
1791 Deere Avenue, Irvine, CA 92606, USA

[www.newport.com](http://www.newport.com)

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: [sales@newport.com](mailto:sales@newport.com)

Complete listings for all global office locations are available online at [www.newport.com/contact](http://www.newport.com/contact)

	PHONE	EMAIL		PHONE	EMAIL
Belgium	+32-(0)0800-11 257	belgium@newport.com	Irvine, CA, USA	+1-800-222-6440	sales@newport.com
China	+86-10-6267-0065	china@newport.com	Netherlands	+31-(0)30 6592111	netherlands@newport.com
France	+33-(0)1-60-91-68-68	france@newport.com	United Kingdom	+44-1235-432-710	uk@newport.com
Japan	+81-3-3794-5511	spectra-physics@splasers.co.jp	Germany / Austria / Switzerland	+49-(0)6151-708-0	germany@newport.com
Taiwan	+886 -(0)2-2508-4977	sales@newport.com.tw			

Newport Corporation, Irvine and Santa Clara, California and Franklin, Massachusetts;  
Evry and Beaune-La-Rolande, France; Stahnsdorf, Germany and Wuxi, China have  
all been certified compliant with ISO 9001 by the British Standards Institution.