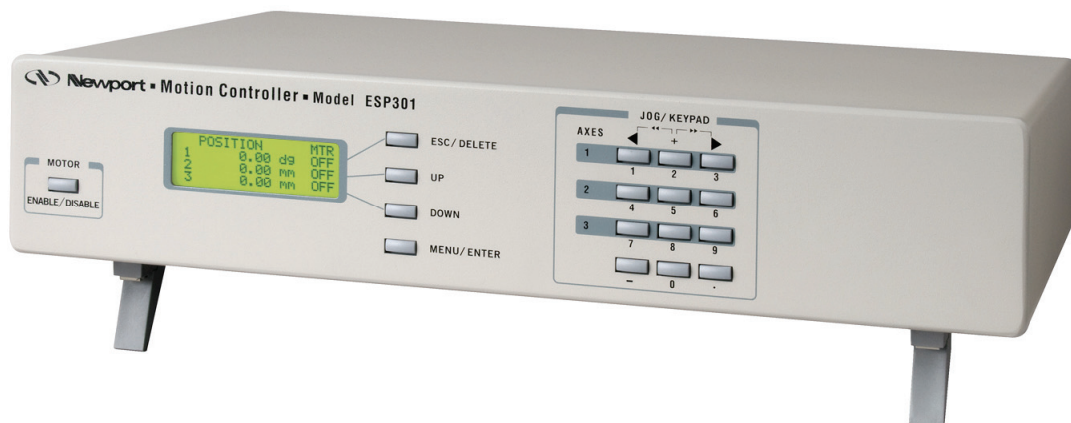


# ESP301

## *Integrated 3-Axis Motion Controller/Driver*



**Newport®**  
Experience | Solutions

## LabVIEW Drivers Manual

V1.0.x

*For Motion, Think Newport™*



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# ESP301

## LabVIEW Drivers Manual

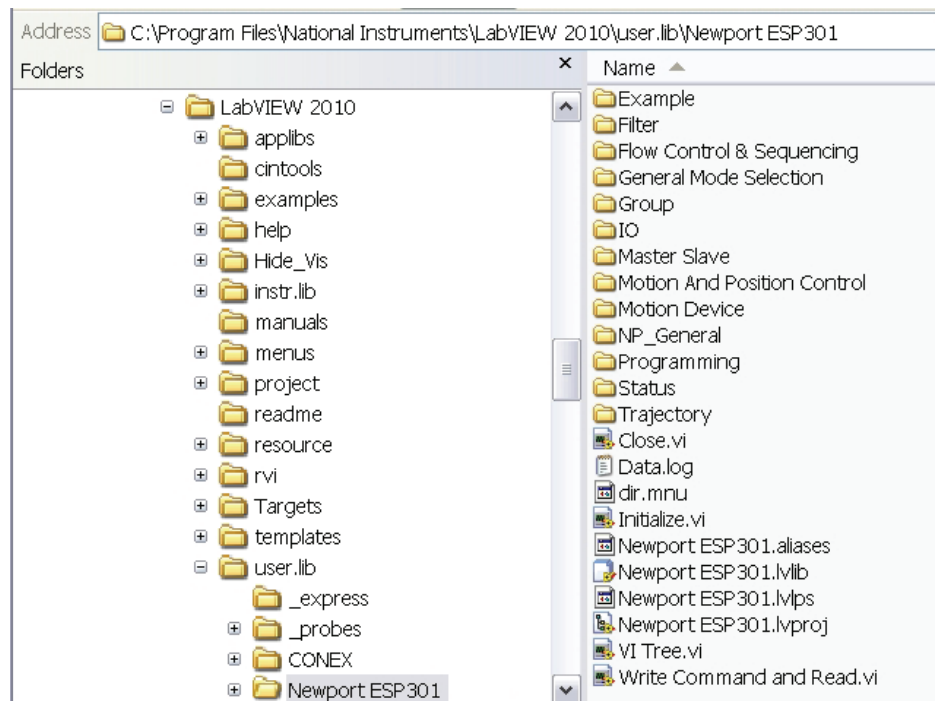
### 1.0 ESP301 LabVIEW Drivers

The ESP301 LabVIEW drivers have been developed under LABVIEW 2010

#### NOTE

You must use at least the [2010](#) of LabVIEW.

Copy the directory Newport ESP301 under the directory **user.lib** (\Newport ESP301) of LabVIEW 20xx.



This directory contains documented vi's, menu to access the different VIs and controls defined to use the ESP301, and the different menus where the VIs will be in LabVIEW:

**Example:** ESP301 Virtual Front panel VIs.

**Filter:** VIs to change filtering parameters

**Flow Control & Sequencing:** VIs to change flow control and control of events in a sequence

**General Mode Selection:** Mode of operation selection.

**Group:** VIs to set and adjust motion grouping.

**IO:** VIs to control input and output settings

**Master Slave:** VIs to setup a master and slave relationship of axis

**Motion and Position Control:** VIs to control position and types of motion

**Motion Device:** VIs to setup motion device.

**NP\_General:** VIs to handle general communication with instruments.

**Programming:** VIs to setup motion programs.

**Status:** VIs to report status of motion and devices.

**Trajectory:** VIs to setup and adjust motion trajectories.

**Motion:** VIs to setup and adjust general motion control.

You select the Newport ESP301 sub-menu from User Libraries:

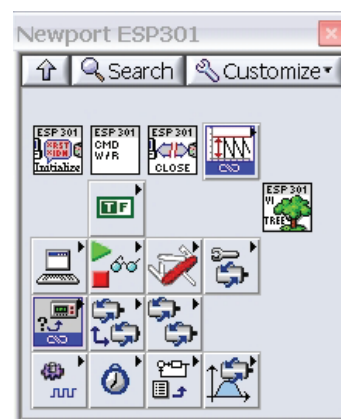


When you activate the Help window, you will see the description of each of the VIs.

Click on a menu then select a VI. Place it and connect it.

You must use the connection vi's to setup connection. The Connect Newport device.vi will find the ESP301 and setup connection for you, so that you can just connect it to the first subvi. These VIs are in the NP\_General sub-menu.

**Newport ESP301 Sub-menu:**



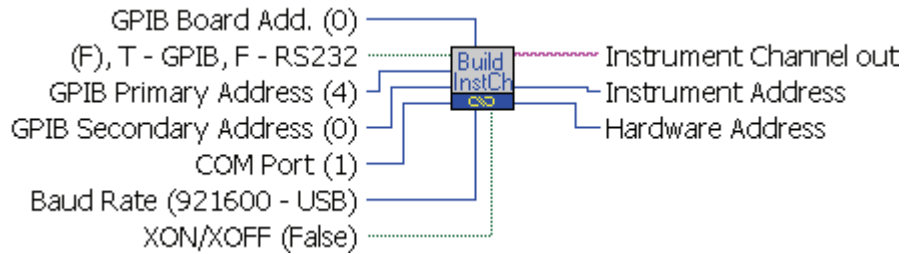
## 2.0 LabVIEW Command VI's


### 2.1 Newport ESP301.lvlib: \_Close Communications.vi



 Instrument Channel

### 2.2 Newport ESP301.lvlib: \_Create Instrument Channel.vi



 (F), T - GPIB, F - RS232

 GPIB Primary Address (4)

 COM Port (1)

 GPIB Secondary Address (0)

 GPIB Board Add. (0)

 Baud Rate (921600 - USB)

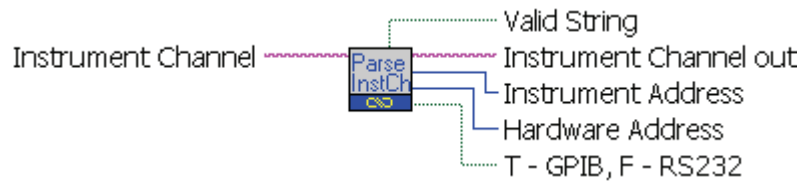
 XON/XOFF (False)







 Instrument Channel out

 Instrument Address

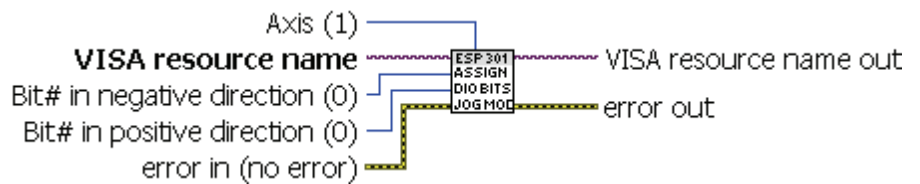
 Hardware Address




### 2.3 Newport ESP301.lvlib:\_Parse Instrument Channel.vi



-  **Instrument Channel**
-  **Instrument Channel out**
-  **Instrument Address**
-  **Hardware Address**
-  **T - GPIB, F - RS232**
-  **Valid String**



### 2.4 Newport ESP301.lvlib:Assign DIO Bits For Jog Mode.vi



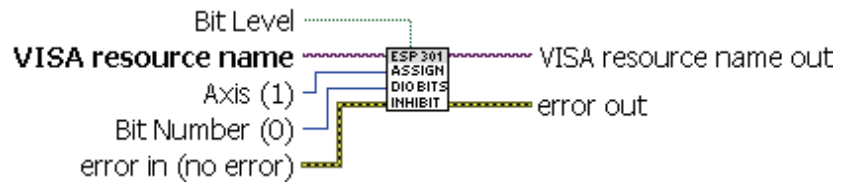
-  **Axis (1)**  
Axis number.
-  **Bit# in negative direction (0)**  
range 0 to 15
-  **Bit# in positive direction (0)**  
range 0 to 15

### 2.5 Newport ESP301.lvlib:Assign DIO Bits to Execute Stored Program.vi



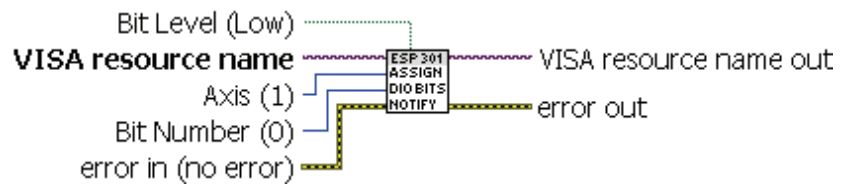
-  **Bit Number (0)**  
bit number (range 0 -> 15) used to trigger stored program execution.
-  **Program Name**  
Name of stored program to be executed.

### 2.6 Newport ESP301.lvlib:Assign DIO Bits To Inhibit Motion.vi



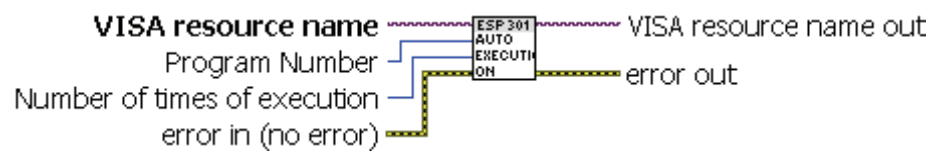
- I32** **Axis (1)**  
Axis number.
- TF** **Bit Level**  
TRUE = high  
FALSE = Low
- I32** **Bit Number (0)**  
integer between 0 and 15.

### 2.7 Newport ESP301.lvlib:Assign DIO Bits To Notify Motion Status.vi



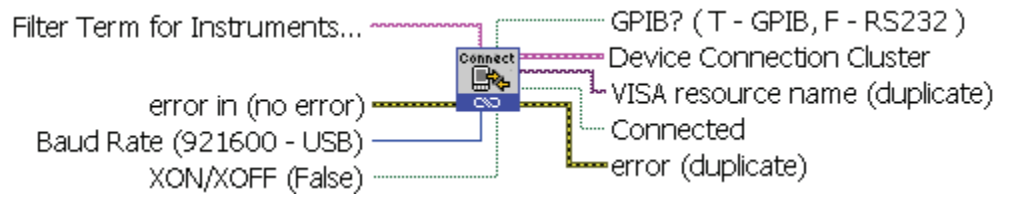
- I32** **Axis (1)**  
Axis number.
- TF** **Bit Level (Low)**  
TRUE = High  
FALSE =Low
- I32** **Bit Number (0)**  
integer between 0 and 15.

### 2.8 Newport ESP301.lvlib:Automatic Execution On Power On.vi



- I32** **Program Number**  
Integer between 1 and 100
- I32** **Number of times of execution**  
Integer between 1 and 2e9. The default value is 1.

## 2.9 Newport ESP301.lvlib:Connect Newport Instrument.vi



**abc** **Filter Term for Instruments (" - none)**  
String used to verify expected device is found.

**I32** **Baud Rate (921600 - USB)**

**TF** **XON/XOFF (False)**

**Cluster** **Device Connection Cluster**  
Connection components:  
VISA Resource name - passed to low level vi's  
Device name - Readable description of device  
Controller address - Channel number  
error - Error reporting (status = true for error)

Note on Controller Address:  
(Important for other devices with multiple RS485 connections, used to match command syntax of these similar RS485 instruments, however, for USB connection only one channel is addressed per USB cable, so all addresses can be set to 1, regardless of number of connected devices.)

**I70** **VISA resource name**

**abc** **Device name**

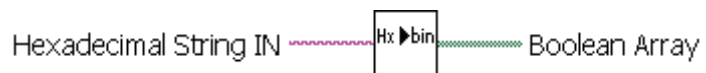
**I32** **Controller address**

**Cluster** **error**

**TF** **Connected**  
Connected = true when connection is successful.

**TF** **GPIB? ( T - GPIB, F - RS232 )**

## 2.10 Newport ESP301.lvlib:Convert Hexadecimal string to a Boolean array.vi



**abc** **Hexadecimal String IN**

**TF** **Boolean Array**

### 2.11 Newport ESP301.lvlib:Create A New Group.vi



**I32** **Group Number (1)**  
Integer between 1 and max Group.

**I32** **Axis Number**

### 2.12 Newport ESP301.lvlib:Define Home.vi



**I32** **Axis (1)**  
Axis number.

**DBL** **Home Position (0 units)**  
double in units between -2e9 and 2e9. Current value of Home position.

### 2.13 Newport ESP301.lvlib:Define Label.vi



**I32** **Number of Label**  
Integer between 1 and 100

### 2.14 Newport ESP301.lvlib:Define Master Slave Relationship.vi



**I32** **Slave Axis**  
integer between 1 and Max Axis.

**I32** **Master Axis**  
integer between 1 and Max Axis.

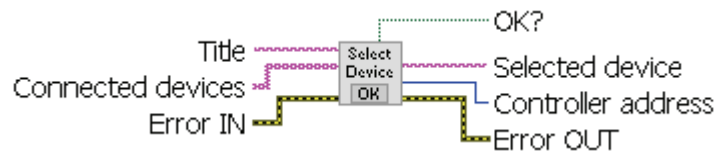
### 2.15 Newport ESP301.lvlib>Delete Group.vi



**I32** **Group Number (1)**  
Integer between 1 and max Group.

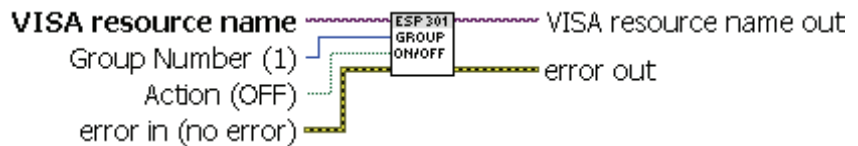
### 2.16 Newport ESP301.lvlib:Dialog box to select a device.vi

Dialog box to select a CONEX device from a list.



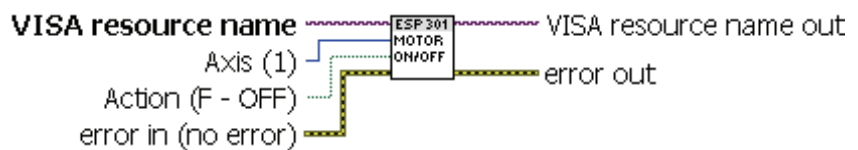
- abc** **Connected devices**
- abc** **Title**
- abc** **Selected device**
- I32** **Controller address**
- TF** **OK?**

### 2.17 Newport ESP301.lvlib:Enable Disable Group.vi



- I32** **Group Number (1)**  
Integer between 1 and max Group.
- TF** **Action (OFF)**  
Boolean. The default setting is OFF.  
ON : Enable the Group  
OFF : Disable the Group

### 2.18 Newport ESP301.lvlib:Enable Disable Motor.vi



- I32** **Axis (1)**  
Axis number.
- TF** **Action (F - OFF)**



2.19 Newport ESP301.lvlib:Enable-Disable Data Acquisition.vi



**TF** Data Acquisition Request (Disable)  
 Enable or disable data acquisition

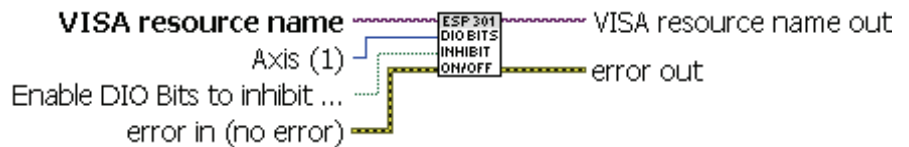
2.20 Newport ESP301.lvlib:Enable-disable DIO Bits For Jog Mode.vi



**I32** Axis (1)  
 Axis number.

**TF** Enable DIO bits (disable)

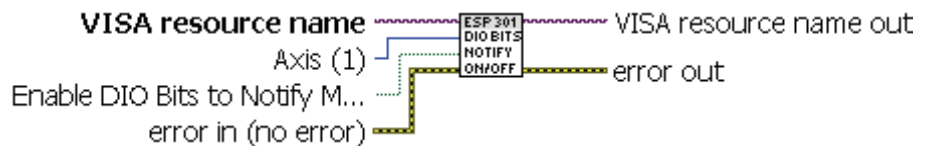
2.21 Newport ESP301.lvlib:Enable-Disable DIO Bits To Inhibit Motion.vi



**I32** Axis (1)  
 Axis number.

**TF** Enable DIO Bits to inhibit motion (disable)  
 Boolean  
 TRUE = Enable  
 FALSE = Disable

2.22 Newport ESP301.lvlib:Enable-Disable DIO Bits to Notify Motion Status.vi



**I32** Axis (1)  
 Axis number.

**TF** Enable DIO Bits to Notify Motion Status (Disable)  
 Boolean  
 TRUE = Enable  
 FALSE = Disable

### 2.23 Newport ESP301.lvlib:Enter Program Mode.vi



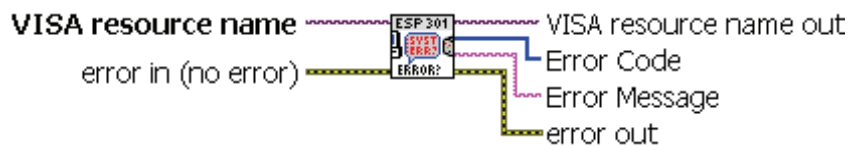
**I32** Program Number (1)

### 2.24 Newport ESP301.lvlib:Erase Program.vi



**I32** Program # (1)  
 Program Number (1) is an integer between 1 and 100.

### 2.25 Newport ESP301.lvlib:Error Query.vi



**I32** Error Message  
 Message returned by the instrument describing the instrument error(s).

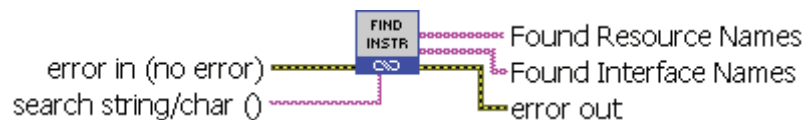
**abc** Error Code  
 The instrument-specific error code(s) returned by the instrument.

### 2.26 Newport ESP301.lvlib:Execute Program.vi



**abc** Program Name  
 String. Name of the program like it has been entered in the controller.

### 2.27 Newport ESP301.lvlib:FindInstrument.vi



**abc** search string/char ()

**abc** Found Resource Names

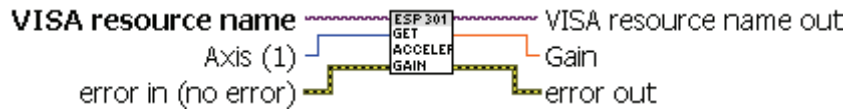
**abc** Found Interface Names

**2.28 Newport ESP301.lvlib:Generate Service Request.vi**



**I32** **Interrupt Number (0)**  
integer between 0 and 31

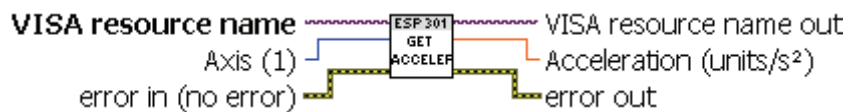
**2.29 Newport ESP301.lvlib:Get Acceleration Feed-Forward Gain.vi**



**I32** **Axis (1)**  
Axis number.

**DBL** **Gain**  
Double

**2.30 Newport ESP301.lvlib:Get Acceleration.vi**



**I32** **Axis (1)**  
Axis number.

**DBL** **Acceleration (units/s<sup>2</sup>)**  
Double in units/s<sup>2</sup>

**2.31 Newport ESP301.lvlib:Get Acquisition Data.vi**



**I32** **Bytes to read (0)**

**I32** **Data**

### 2.32 Newport ESP301.lvlib:Get Amplifier IO Configuration.vi



**Axis (1)**  
Axis number between 1 and Max Axis.



**Amplifier I/O Configuration**



**enable amplifier fault input checking**



**disable motor on amplifier fault event**



**abord motion on amplifier fault event**



**reserved**



**reserved**



**amplifier fault input (F:active low, T:active high)**



**configuration Step motor control outputs (F:STEP/DIRECTION, T:+STEP/-STEP)**



**Enable STEP output (F:active low, T:active high)**



**Configure DIRECTION output for negative move (F:active low, T:active high)**



**invert servo DAC output polarity**



**amplifier enable output (F:active low, T:active high)**



**stepper motor winding (F:FULL, T:HALF)**



**reserved**



**reserved**



**reserved**



**reserved**



**reserved**



**reserved**



**reserved**



**reserved**



**reserved**










**reserved**



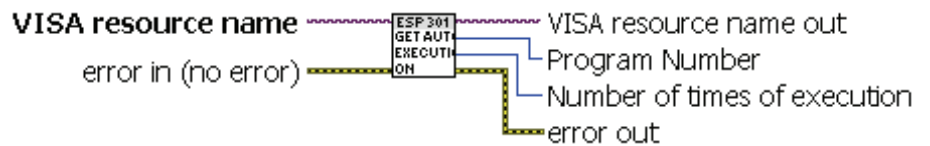
**reserved**





**reserved**

-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

**2.33 Newport ESP301.lvlib:Get Automatic Execution On Power On.vi**



 **Program Number**  
Integer

 **Number of times of execution**  
Integer

**2.34 Newport ESP301.lvlib:Get Average Motor Voltage.vi**



 **Axis (1)**

 **Voltage**  
Double

**2.35 Newport ESP301.lvlib:Get Axis Displacement Units.vi**



 **Axis (1)**

 **Units**  
enum

### 2.36 Newport ESP301.lvlib:Get Axis Motion Status.vi



**Axis (1)**

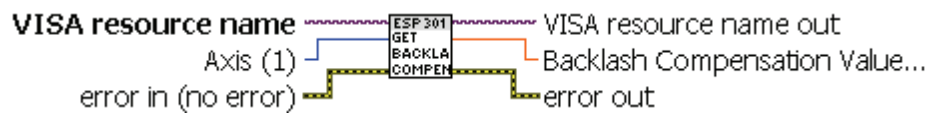
Axis number.  
The default value is 1. Axis (1) is an integer between 1 and Max Axis.



**Motion Done**

Boolean  
False = The axis (motor) is moving  
True = The axis (motor) is not moving

### 2.37 Newport ESP301.lvlib:Get Backlash Compensation.vi



**Axis (1)**

Axis number.



**Backlash Compensation Value (units)**

Double in units.

### 2.38 Newport ESP301.lvlib:Get Base Velocity For Step Motor.vi



**Axis (1)**

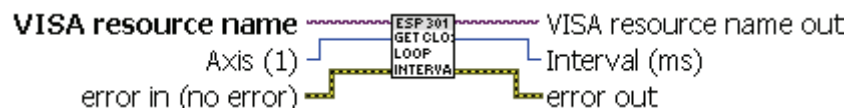
Axis number.



**Base Velocity (units/s)**

Double in units/s

### 2.39 Newport ESP301.lvlib:Get Closed Loop Update Interval.vi



**Axis (1)**

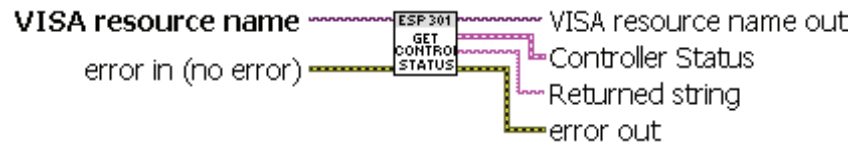
Axis number.



**Interval (ms)**

Closed loop update interval

### 2.40 Newport ESP301.lvlib:Get Controller Status.vi



#### Controller Status

Cluster which returns each state of the controller

Axis1 moving : boolean. Axis1 is moving or not

Axis2 moving : boolean. Axis2 is moving or not

Axis3 moving : boolean. Axis3 is moving or not

Axis4 moving : boolean. Axis4 is moving or not

Motor power of at least one axis : boolean. At least one motor is enable.

Reserved : The default value is 0

Reserved : The default value is 1

Reserved : The default value is 0



Axis1 moving



Axis2 moving



Axis3 moving



Axis4 moving



Motor Power of at least one axis



Reserved



Reserved



Reserved



Axis5 moving 2



Axis6 moving 2



Reserved



Reserved



Motor Power of at least one axis



Reserved



Reserved



Reserved



Returned string

### 2.41 Newport ESP301.lvlib:Get Created Group.vi



**Group Number (1)**

Integer between 1 and max Group.



**Axis**

Array 1D of doubles in units.

### 2.42 Newport ESP301.lvlib:Get DAC Offset.vi



**Axis (1)**

Axis number.



**DAC Offset**

Double.

### 2.43 Newport ESP301.lvlib:Get Data Acquisition Done Status.vi



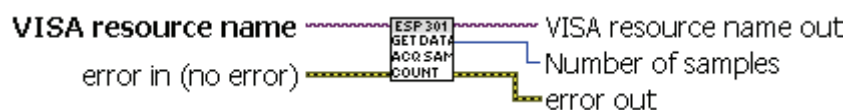
**Data acquisition status**

Boolean

True : Data acquisition is done

False : Data acquisition is not done

### 2.44 Newport ESP301.lvlib:Get Data Acquisition Sample Count.vi





**Number of samples**

Integer





**2.45 Newport ESP301.lvlib:Get Deceleration.vi**



-  **Axis (1)**  
Axis number.
-  **Deceleration (units/s<sup>2</sup>)**  
Double in units/s<sup>2</sup>

**2.46 Newport ESP301.lvlib:Get Derivative Gain.vi**



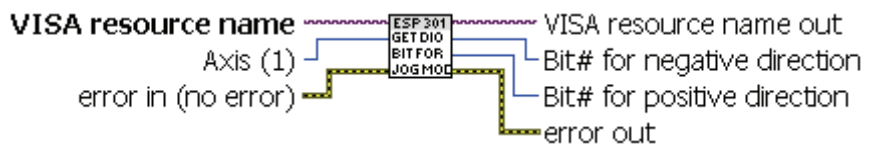
-  **Axis (1)**  
Axis number.
-  **Kd**  
Kd : Double  
Derivative gain factor




**2.47 Newport ESP301.lvlib:Get Device Adress.vi**



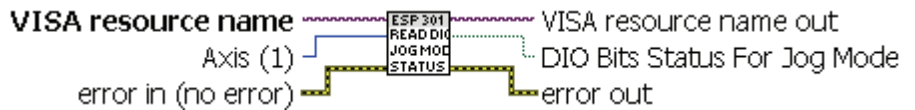
-  **Adress Number**  
integer

**2.48 Newport ESP301.lvlib:Get DIO Bits For Jog Mode Assignment.vi**



-  **Axis (1)**  
Axis number.
-  **Bit# for negative direction**  
Bit Number for jogging in negative direction
-  **Bit# for positive direction**  
Bit Number for jogging in positive direction

2.49 Newport ESP301.lvlib:Get DIO Bits For Jog Mode Status.vi



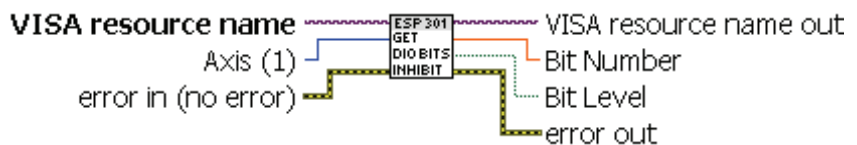
- I32** Axis (1)  
Axis number.
- TF** DIO Bits Status For Jog Mode

2.50 Newport ESP301.lvlib:Get DIO Bits to Execute Stored Program Status.vi



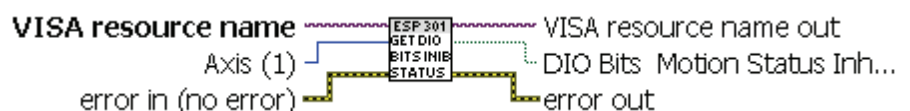
- abc** Program Name  
Name of executed program.

2.51 Newport ESP301.lvlib:Get DIO Bits To Inhibit Motion Assignment.vi



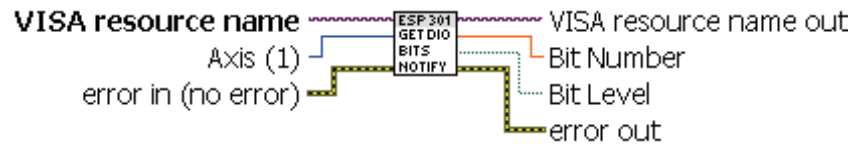
- I32** Axis (1)  
Axis number.
- DBL** Bit Level  
TRUE = high  
FALSE = Low
- TF** Bit Number  
integer between 0 and 15.

2.52 Newport ESP301.lvlib:Get DIO Bits To Inhibit Motion Status.vi



- I32** Axis (1)  
Axis number.
- TF** DIO Bits Motion Status Inhibition  
Boolean  
True=Enable  
False=Disable

2.53 Newport ESP301.lvlib:Get DIO Bits To Notify Motion Status.vi



**I32** **Axis (1)**  
Axis number.

**TF** **Bit Level**  
Boolean  
TRUE = High  
FALSE = Low

**DBL** **Bit Number**  
integer between 0 and 15.

2.54 Newport ESP301.lvlib:Get DIO Port A, B, C direction.vi



**TF** **Port A, B direction**

**TF** **Port A (T:output, F:input)**

**TF** **Port B (T:output, F:input)**

### 2.55 Newport ESP301.lvlib:Get DIO Port AB Bit Status.vi



#### DIO Port A status

- Port A bit-0 at logic level
- Port A bit-1 at logic level
- Port A bit-2 at logic level
- Port A bit-3 at logic level
- Port A bit-4 at logic level
- Port A bit-5 at logic level
- Port A bit-6 at logic level
- Port A bit-7 at logic level
- Port B bit-0 at logic level
- Port B bit-1 at logic level
- Port B bit-2 at logic level
- Port B bit-3 at logic level
- Port B bit-4 at logic level
- Port B bit-5 at logic level
- Port B bit-6 at logic level
- Port B bit-7 at logic level

### 2.56 Newport ESP301.lvlib:Get E-Stop Configuration.vi



#### Axis (1)

Axis number.  
Axis (1) is an integer between 1 and Max Axis.



#### E-Stop Configuration

- enable E-Stop checking
- disable motor power on E-stop event
- abort motion on E-stop event

-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
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-  reserved
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-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

### 2.57 Newport ESP301.lvlib:Get E-stop Deceleration.vi



**Axis (1)**  
Axis number.



**E-stop Deceleration (units/s<sup>2</sup>)**  
Double in units/s<sup>2</sup>

### 2.58 Newport ESP301.lvlib:Get Encoder Full Step Resolution.vi



**Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.



**Encoder Full Step Resolution (units)**  
Double in units

### 2.59 Newport ESP301.lvlib:Get Encoder Resolution.vi



**Axis (1)**



**Encoder resolution**  
Double

### 2.60 Newport ESP301.lvlib:Get ESP System Configuration.vi



**ESP system Configuration**



**axis 1 universal driver detected**



**axis 2 universal driver detected**






























**axis 3 universal driver detected**



**axis 4 universal driver detected**



**axis 5 universal driver detected**

-  axis 6 universal driver detected
-  reserved
-  reserved
-  Axis 1 ESP compatible motorized positionner detected
-  Axis 3 ESP compatible motorized positionner detected
-  Axis 4 ESP compatible motorized positionner detected
-  Axis 5 ESP compatible motorized positionner detected
-  Axis 6 ESP compatible motorized positionner detected
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
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-  reserved
-  reserved
-  reserved
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-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

## 2.61 Newport ESP301.lvlib:Get Feedback Configuration.vi



### Axis (1)

Axis number.

Axis (1) is an integer between 1 and Max Axis.



### Feedback Configuration



enable feedback error checking



disable motor on feedback error event



abort motion on feedback error event



reserved



reserved



invert encoder feedback polarity



reserved



reserved



use encoder feedback for stepper positioning



enable stepper closed-loop positioning



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved

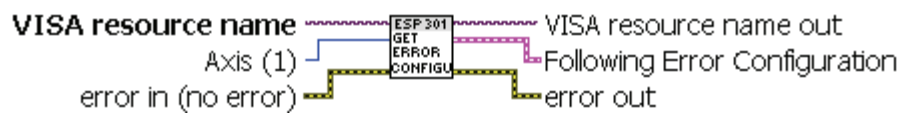



reserved
















-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

### 2.62 Newport ESP301.lvlib:Get Following Error Configuration.vi



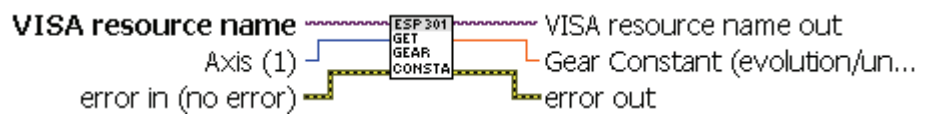
 **Axis (1)**  
Axis number.



 **Following Error Configuration**

-  enable motor following error checking
-  disable motor power on following error event
-  abort motion on following error event
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
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-  reserved
-  reserved
-  reserved



### 2.63 Newport ESP301.lvlib:Get Gear Constant.vi



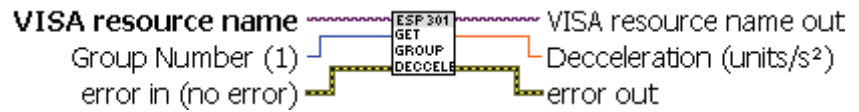
-  **Axis (1)**  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.
-  **Gear Constant (evolution/units)**  
Double in evolution/units

### 2.64 Newport ESP301.lvlib:Get Group Acceleration.vi



-  **Group Number (1)**  
range : 1 to MAX GROUPS
-  **Acceleration (units/s<sup>2</sup>)**  
Double in units/s<sup>2</sup>

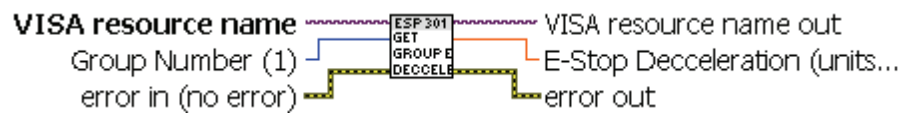
2.65 Newport ESP301.lvlib:Get Group Deceleration.vi



**I32** Group Number (1)

**DBL** Deceleration (units/s<sup>2</sup>)  
Double

2.66 Newport ESP301.lvlib:Get Group E-Stop Deceleration.vi



**I32** Group Number (1)  
Group number between 1 and Max Axis.

**DBL** E-Stop Deceleration (units/s<sup>2</sup>)  
Double

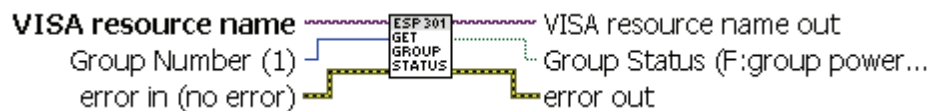
2.67 Newport ESP301.lvlib:Get Group Jerk.vi



**I32** Group Number (1)  
Group number between 1 and Max Groups.

**DBL** Jerk (units/s<sup>3</sup>)  
Double

2.68 Newport ESP301.lvlib:Get Group Status.vi



**I32** Group Number (1)  
Integer between 1 and max Group.

**TF** Group Status (F:group power is OFF)  
Boolean

### 2.69 Newport ESP301.lvlib:Get Group Velocity.vi



**I32** **Group Number (1)**  
Integer between 1 and max Group.

**DBL** **Velocity (units/s)**  
Double in units/s
















### 2.70 Newport ESP301.lvlib:Get Hardware Limit Configuration.vi



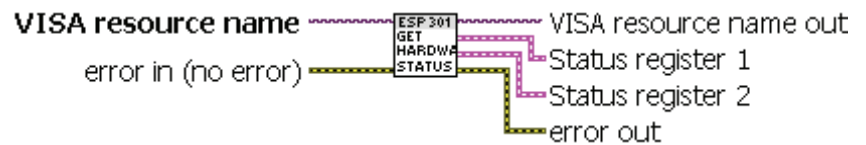
**I32** **Axis (1)**  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**PC** **Hardware limit Configuration**













- TF** enable Hardware limit error checking
- TF** disable motor on Hardware limit error event
- TF** abort motion on Hardware limit error event
- TF** reserved
- TF** reserved
- TF** hardware limit input (F:active low, T:active high)
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved
- TF** reserved

































-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved























2.71 Newport ESP301.lvlib:Get Hardware Status.vi



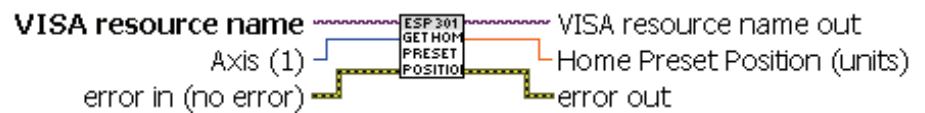
Status register 1


-  axis 1 +hardware travel limit
-  axis 2 +hardware travel limit
-  axis 3 +hardware travel limit
-  axis 4 +hardware travel limit
-  axis 5 +hardware travel limit
-  axis 6 +hardware travel limit
-  reserved
-  reserved
-  axis 1 -hardware travel limit
-  axis 2 -hardware travel limit
-  axis 3 -hardware travel limit
-  axis 4 -hardware travel limit


	axis 5 -hardware travel limit
	axis 6 -hardware travel limit
	reserved
	reserved
	axis 1 amplifier fault input
	axis 2 amplifier fault input
	axis 3 amplifier fault input
	axis 4 amplifier fault input
	axis 5 amplifier fault input
	axis 6 amplifier fault input
	reserved
	reserved
	reserved
	reserved
	reserved
	100-pin emergency stop (unlatched) low
	auxiliary I/O emergency stop (latched)
	100-pin connector emergency stop (latched)
	auxiliary I/O connector emergency stop (latched)
	100-pin cable interlock
	Status register 2
	axis 1 home signal
	axis 2 home signal
	axis 3 home signal
	axis 4 home signal
	axis 5 home signal
	axis 6 home signal
	reserved
	reserved
	axis 1 index signal
	axis 2 index signal
	axis 3 index signal

-  axis 4 index signal
-  axis 5 index signal
-  axis 6 index signal
-  reserved
-  reserved
-  digital input A
-  digital input B
-  digital input C
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

2.72 Newport ESP301.lvlib:Get Home Preset Position.vi



 **Axis (1)**  
Axis number.

 **Home Preset Position (units)**  
Double in units.

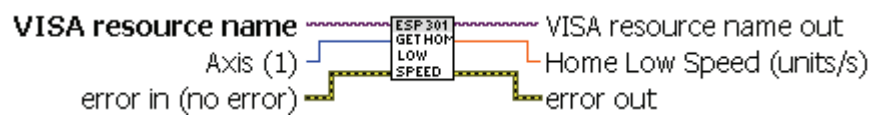
**2.73 Newport ESP301.lvlib:Get Home Search High Speed.vi**



**I32** Axis (1)  
Axis number.

**DBL** Home High Speed (units/s)

**2.74 Newport ESP301.lvlib:Get Home Search Low Speed.vi**



**I32** Axis (1)  
Axis number.

**DBL** Home Low Speed (units/s)

**2.75 Newport ESP301.lvlib:Get Home Search Mode.vi**



**I32** Axis (1)  
Axis number.

**DBL** Home search mode

**2.76 Newport ESP301.lvlib:Get Integral Gain.vi**



**I32** Axis (1)  
Axis number.

**DBL** Ki  
Kd : Double  
integral gain factor



### 2.77 Newport ESP301.lvlib:Get Jerk Rate.vi



**I32** Axis (1)  
Axis number.

**DBL** Jerk (units/s^3)  
Double

### 2.78 Newport ESP301.lvlib:Get Jog High Speed.vi



**I32** Axis (1)  
Axis number.

**DBL** Jog High Speed (units/s)

### 2.79 Newport ESP301.lvlib:Get Jog Low Speed.vi



**I32** Axis (1)  
Axis number.

**DBL** Jog Low Speed (units/s)

### 2.80 Newport ESP301.lvlib:Get Keyboard Locking Status.vi



**I32** Lock Option

### 2.81 Newport ESP301.lvlib:Get Left Travel Limit.vi



**I32** **Axis (1)**  
 Axis number.  
 The default value is 1. Axis (1) is an integer between 1 and Max Axis.

**DBL** **Left Travel Limit (units)**  
 Double in units

### 2.82 Newport ESP301.lvlib:Get Linear Compensation.vi



**I32** **Axis (1)**  
 Axis number.

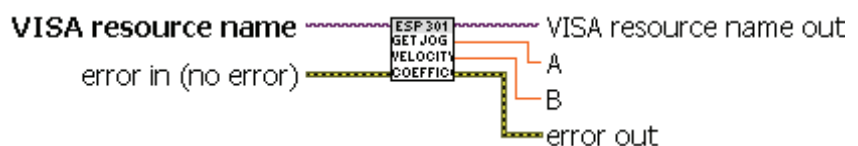
**DBL** **Linear Compensation**  
 Double

### 2.83 Newport ESP301.lvlib:Get list of Groups Assigned.vi



**Str** **List of Groups**  
 string. If no group have been created returns error

### 2.84 Newport ESP301.lvlib:Get Master Slave Jog Velocity Scaling Coefficients.vi



**DBL** **A**  
 jog velocity scaling coefficients

**DBL** **B**  
 jog velocity scaling coefficients

**2.85 Newport ESP301.lvlib:Get Master-Slave Reduction Ratio.vi**



**I32** Axis (1)  
Axis number.

**DBL** Reduction Ratio

**2.86 Newport ESP301.lvlib:Get Master-Slave Relationship.vi**



**I32** Slave Axis  
range : 0 to Max Axis.

**I32** Master Axis  
Integer

**2.87 Newport ESP301.lvlib:Get Master-Slave Velocity Update Interval.vi**



**I32** Interval (ms)  
Jog velocity update interval integer.

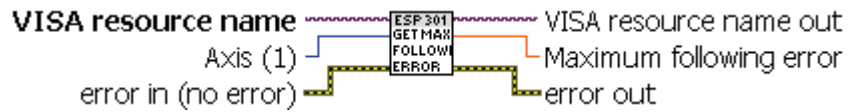
**2.88 Newport ESP301.lvlib:Get Maximum Acceleration and Deceleration.vi**



**I32** Axis (1)  
Axis number.

**DBL** Acceleration (units/s<sup>2</sup>)  
Double in units/s<sup>2</sup>

**2.89 Newport ESP301.lvlib:Get Maximum Following Error Threshold.vi**



- I32** **Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.
- DBL** **Maximum following error**  
Double in predefined units.

**2.90 Newport ESP301.lvlib:Get Maximum Motor Current.vi**



- I32** **Axis (1)**  
Axis number.
- DBL** **Maximum Current**  
Double

**2.91 Newport ESP301.lvlib:Get Maximum Velocity.vi**



- I32** **Axis (1)**  
Axis number.
- DBL** **Maximum Velocity (units/s)**  
Double in units/s

**2.92 Newport ESP301.lvlib:Get Microstep Factor.vi**



- I32** **Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.
- I32** **Microstep factor**  
integer

### 2.93 Newport ESP301.lvlib:Get Motor Power Status.vi



**I32** Axis (1)  
Axis number.

**TF** Power Status  
Boolean.  
1 : Motor power is ON  
0 : Motor power is OFF

### 2.94 Newport ESP301.lvlib:Get Motor Type.vi



**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**I32** Motor Type (Undefined)  
Enum

### 2.95 Newport ESP301.lvlib:Get Move Group Along A Line Status.vi



**I32** Group Number (1)  
Integer between 1 and max axes.

**DBL** Positons (units)  
Arry 1D of doubles in units.

**DBL** numérique

### 2.96 Newport ESP301.lvlib:Get Move Group Along An Arc Status.vi



**I32** Group Number (1)

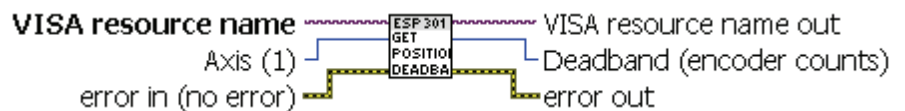
**E06** Arc Parameters  
coordinates in units and angle in degree

**DBL** first coordonate of arc center (units)

**DBL** Second coordonate of arc center (units)

**DBL** arc sweep angle (degrees)

### 2.97 Newport ESP301.lvlib:Get Position Deadband.vi



**I32** Axis (1)  
If 0 is used as an axis number, this command will set the specified deadband value to all the axes.

**I32** Deadband (encoder counts)  
Deadband (encoder counts) : integer in encoder counts.

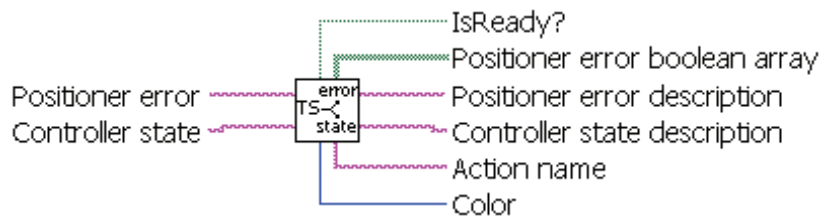
### 2.98 Newport ESP301.lvlib:Get Position Display Resolution.vi











**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**I32** Display Resolution  
Integer



### 2.99 Newport ESP301.lvlib:Get Positioner Error And Controller State Descriptions.vi



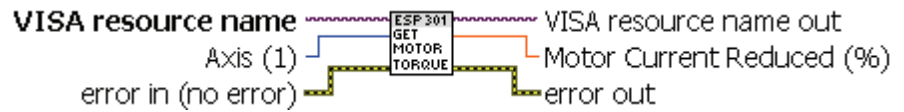
-  **Positioner error**  
Positioner error
-  **Controller state**  
Controller state
-  **Positioner error description**  
Error Description
-  **Controller state description**  
Controller state description
-  **Positioner error boolean array**
-  **Color**  
Color that you want to convert into red, green, and Blue.
-  **Action name**  
Action name
-  **IsReady?**  
Ready?

### 2.100 Newport ESP301.lvlib:Get proportional Gain.vi



-  **Axis (1)**  
Axis number.
-  **Kp**  
Kd : Double  
proportional gain factor

### 2.101 Newport ESP301.lvlib:Get Reduce Motor Torque.vi



**Axis (1)**

Axis number.

Axis (1) is an integer between 1 and Max Axis.



**Motor Current Reduced (%)**

double in % of max. motor current

### 2.102 Newport ESP301.lvlib:Get Right Travel Limit.vi



**Axis (1)**

Axis number.

Axis (1) is an integer between 1 and Max Axis.



**Right Travel Limit (units)**

Double in units

### 2.103 Newport ESP301.lvlib:Get Saturation Level Of Integral Factor.vi



**Axis (1)**

Axis number.



**Ks**

Kd : Double

Saturation level of integrator

### 2.104 Newport ESP301.lvlib:Get Software Limit Configuration.vi



**Axis (1)**

Axis number.

Axis (1) is an integer between 1 and Max Axis.



**Software limit Configuration**


























**Enable software travel limit error checking**



**disable motor on software travel limit event**



-  abort motion on software travel limit event
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

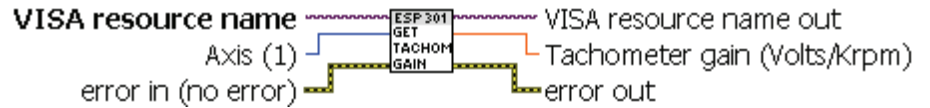


 reserved


 reserved

 reserved

**2.106 Newport ESP301.lvlib:Get Tachometer Gain.vi**





 **Axis (1)**

 **Tachometer gain (Volts/Krpm)**  
Double

**2.107 Newport ESP301.lvlib:Get Trajectory Mode.vi**




 **Axis (1)**  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

 **Trajectory Mode**  
Enum

**2.108 Newport ESP301.lvlib:Get Velocity Feed-Forward Gain.vi**



 **Axis (1)**  
Axis number.

 **Gain**  
Double

### 2.109 Newport ESP301.lvlib:Get Velocity.vi



**I32** Axis (1)  
Axis number.

**DBL** Velocity (units/s)  
Double in units/s.

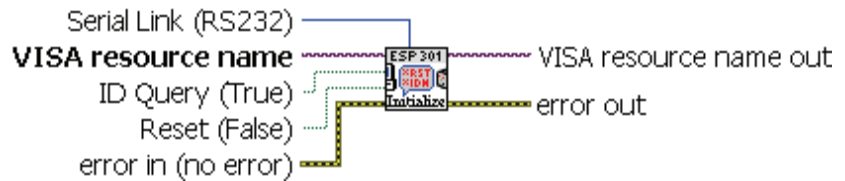
### 2.110 Newport ESP301.lvlib:Get Wait For Group Command Buffer Level.vi



**I32** Group Number (1)

**DBL** level(ms)

### 2.111 Newport ESP301.lvlib:Initialize.vi



**TF** Reset (False)  
Specify whether you want the instrument driver to reset the instrument during the initialization procedure.

**TF** ID Query (True)  
Specify whether you want the instrument driver to perform an ID Query.

**TF** Serial Link (RS232)

2.112 Newport ESP301.lvlib:Jump To Label.vi



**I32** **Label (1)**  
The default value is 1. Axis (1) is an integer between 1 and 100.

**I32** **Loop Count (1)**  
integer between 1 and 65535

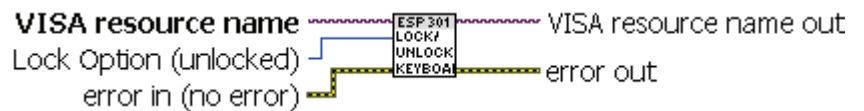
2.113 Newport ESP301.lvlib:List Program.vi



**I32** **Program Number (1)**  
Program Number (1) is an integer between 1 and 100.

**abc** **List Program**  
string

2.114 Newport ESP301.lvlib:Lock Unlock Keyboard.vi



**I32** **Lock Option (unlocked)**

2.115 Newport ESP301.lvlib:Move Absolute.vi



**I32** **Axis (1)**  
Axis (1) is an integer between 1 and Max Axis.

**DBL** **Position (0 units)**  
absolute position destination in defined motion units.

### 2.116 Newport ESP301.lvlib:Move Group Along An Arc.vi



**I32** Group Number (1)

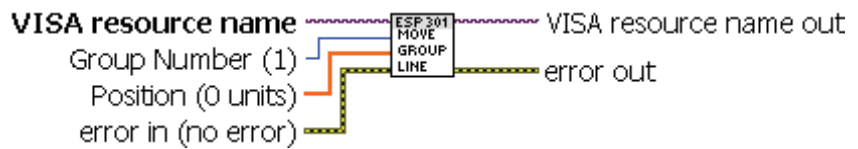
**DBL** Arc Parameters  
 coordinates in units and angle in degree.

**DBL** first coordonate of arc center (0 units)

**DBL** Second coordonate of arc center (0 units)

**DBL** arc sweep angle (0 degrees)

### 2.117 Newport ESP301.lvlib:Move Group Along Line.vi

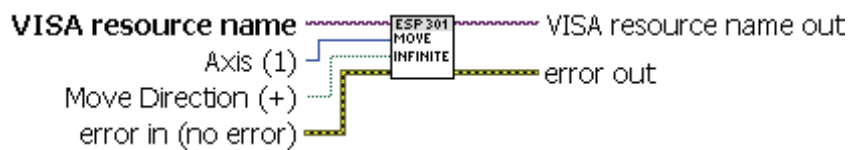


**I32** Group Number (1)  
 Integer between 1 and max Group.

**DBL** Position (0 units)  
 target position (any position within the travel limits) of ith axis in a group, where i can vary from 1 to 6

**DBL** numérique  
 any position within the travel limits

### 2.118 Newport ESP301.lvlib:Move Indefinitely.vi



**I32** Axis (1)  
 Axis number.

**TF** Move Direction (+)  
 Boolean  
 TRUE = +  
 FALSE = -

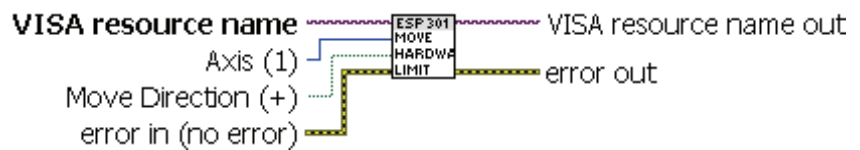
### 2.119 Newport ESP301.lvlib:Move Relative.vi



**I32** **Axis (1)**  
 Axis number.  
 Axis (1) is an integer between 1 and Max Axis.

**DBL** **Position (0 units)**

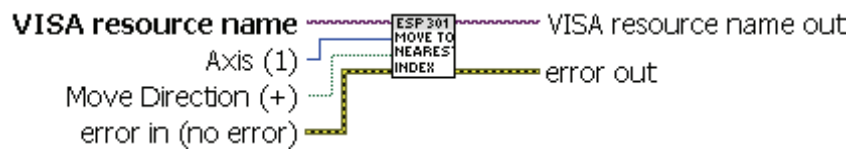
### 2.120 Newport ESP301.lvlib:Move To Hardware Travel Limit.vi



**I32** **Axis (1)**  
 Axis (1) is an integer between 1 and Max Axis.

**TF** **Move Direction (+)**  
 Boolean  
 TRUE = +  
 FALSE = -

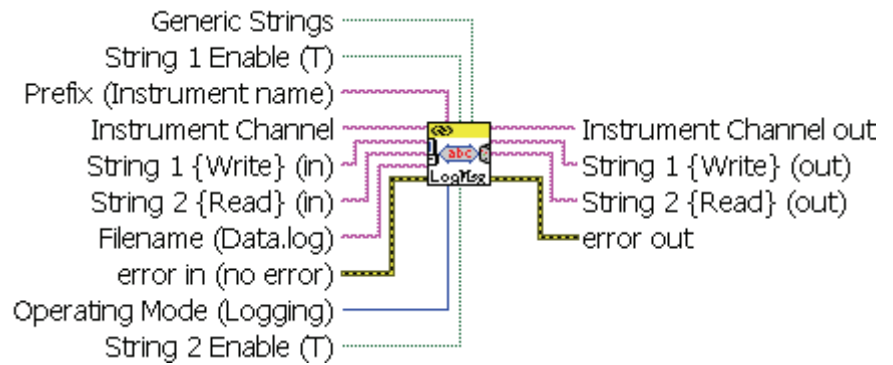
### 2.121 Newport ESP301.lvlib:Move To Nearest Index.vi















**I32** **Axis (1)**  
 Axis number.  
 Axis (1) is an integer between 1 and Max Axis.

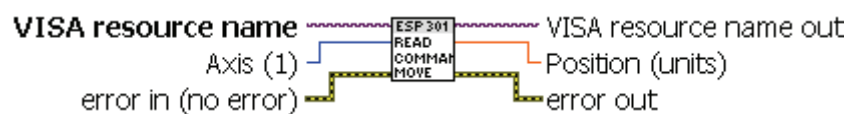
**TF** **Move Direction (+)**  
 Boolean  
 TRUE = +  
 FALSE = -



### 2.122 Newport ESP301.lvlib:NP\_Logging.vi



-  **Operating Mode (Logging)**
-  **String 1 {Write} (in)**
-  **String 2 {Read} (in)**
-  **Filename (Data.log)**
-  **Generic Strings**
-  **String 1 Enable (T)**
-  **String 2 Enable (T)**
-  **Prefix (Instrument name)**
-  **Instrument Channel**
-  **String 2 {Read} (out)**
-  **String 1 {Write} (out)**
-  **Instrument Channel out**

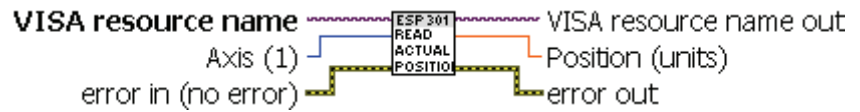
### 2.123 Newport ESP301.lvlib:Read absolute position.vi



-  **Axis (1)**  
Axis number.
-  **Position (units)**



**2.124 Newport ESP301.lvlib:Read Actual Position.vi**



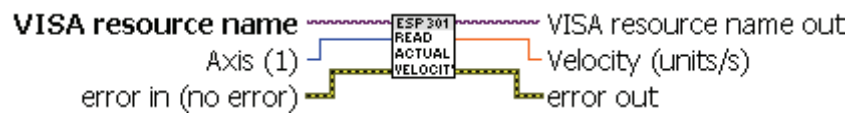
**Axis (1)**

Axis number. Axis (1) is an integer between 1 and Max Axis.



**Position (units)**

**2.125 Newport ESP301.lvlib:Read Actual Velocity.vi**



**Axis (1)**

Axis number.

The default value is 1. Axis (1) is an integer between 1 and Max Axis.



**Velocity (units/s)**

Double in units/s.

**2.126 Newport ESP301.lvlib:Read Controller Activity.vi**



**Controller Activity**

Controller Status : Cluster which returns each activity of the controller



**At least one program is executing**



**Wait command is executing**



**Manual jog mode is active**



**Local mode is inactive**



**At least one trajectory is executing**



**Reserved**

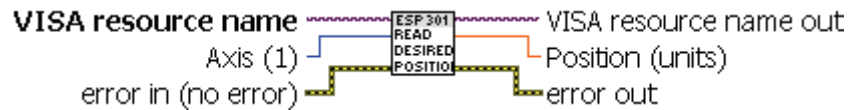


**Reserved**



**Reserved**

### 2.127 Newport ESP301.lvlib:Read Desired Position.vi



**I32** Axis (1)  
Axis number. Axis (1) is an integer between 1 and Max Axis.

**DBL** Position (units)  
Double

### 2.128 Newport ESP301.lvlib:Read Desired Velocity.vi



**I32** Axis (1)  
Axis number.  
The default value is 1. Axis (1) is an integer between 1 and Max Axis.

**DBL** Velocity (units/s)  
Double in units/s.

### 2.129 Newport ESP301.lvlib:Read Group Position.vi



**I32** Group Number (1)

**DBL** Position (units)  
Each array element is individual axis in a group.

**DBL** numérique

### 2.130 Newport ESP301.lvlib:Read Group Size.vi



**I32** Group Number (1)  
Integer between 1 and max Group.

**I32** Number of axis  
integer

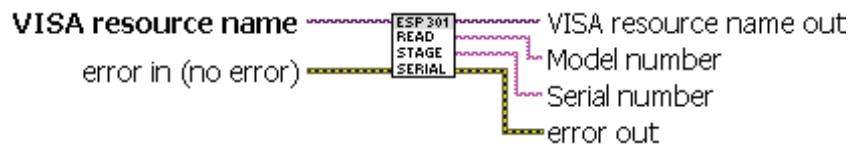
**2.131 Newport ESP301.lvlib:Read Home.vi**



**I32** **Axis (1)**  
Axis (1) is an integer between 1 and Max Axis.

**DBL** **Home Position (units)**  
double in units. Current value of Home position.

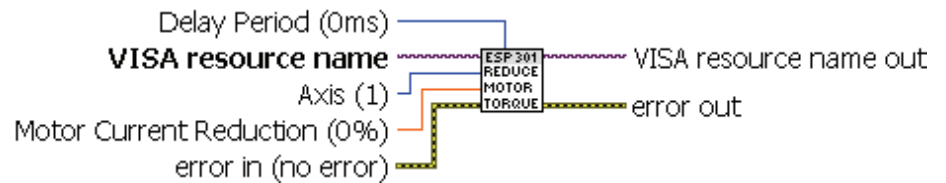
**2.132 Newport ESP301.lvlib:Read Stage Model And Serial Number.vi**



**abc** **Serial number**  
Name of executed program.

**abc** **Model number**

**2.133 Newport ESP301.lvlib:Reduce Motor Torque.vi**

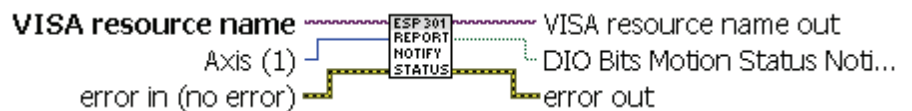


**I32** **Axis (1)**  
Axis number.

**I32** **Delay Period (0ms)**  
integer between 0 and 60000.

**DBL** **Motor Current Reduction (0%)**  
double in % of max. motor current.

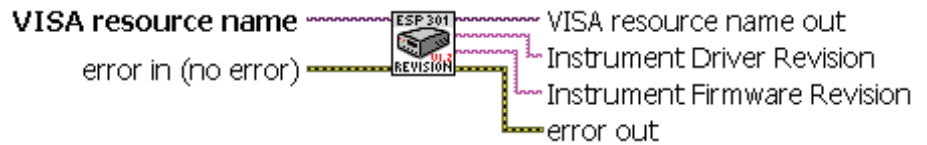
**2.134 Newport ESP301.lvlib:Report DIO Bits to Notify Motion Status.vi**



**I32** **Axis (1)**  
Axis number.

**TF** **DIO Bits Motion Status Notified**  
Boolean  
True=Enable  
False=Disable

### 2.135 Newport ESP301.lvlib:Revision Query.vi



#### Instrument Firmware Revision

Returns the instrument firmware revision numbers in the form of a string. This version and its capabilities are set by the instrument manufacturer.



#### Instrument Driver Revision

Returns the instrument driver software revision in the form of a string.

### 2.136 Newport ESP301.lvlib:Search For Home.vi



#### Axis (1)

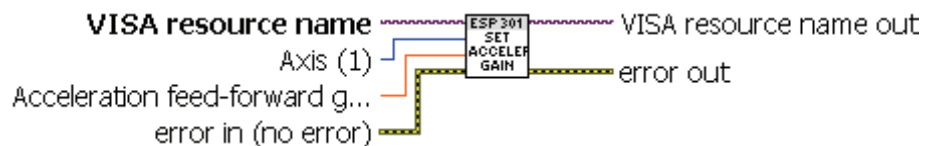
Axis (1) is an integer between 0 and Max Axis.

If Axis (1) = 0, a home search routine is initiated sequentially on all installed axes.



#### Home mode

### 2.137 Newport ESP301.lvlib:Set Acceleration Feed-Forward Gain.vi



#### Axis (1)

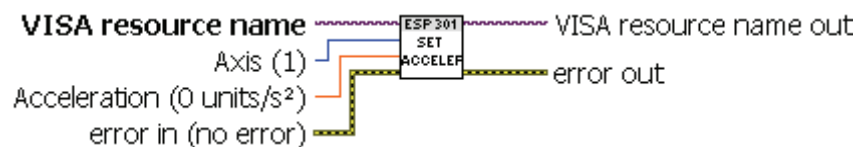
Axis number.



#### Acceleration feed-forward gain factor (0)

Double between 0 and 2e9.

### 2.138 Newport ESP301.lvlib:Set Acceleration.vi



#### Axis (1)

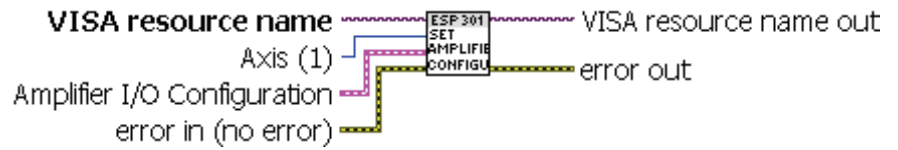
Axis number.



#### Acceleration (0 units/s<sup>2</sup>)

Double in units/s<sup>2</sup> between 0 and the maximum programmed value in AU ("set maximum acceleration and deceleration" function)

### 2.139 Newport ESP301.lvlib:Set Amplifier IO Configuration.vi



**Axis (1)**  
Axis number between 1 and Max Axis.



**Amplifier I/O Configuration**



enable amplifier fault input checking



disable motor on amplifier fault event



abord motion on amplifier fault event



reserved



reserved



amplifier fault input (F:active low, T:active high)



configuration Step motor control outputs  
(F:STEP/DIRECTION, T:+STEP/-STEP)



Enable STEP output (F:active low, T:active high)



Configure DIRECTION output for negative move (F:active low, T:active high)



invert servo DAC output polarity



amplifier enable output (F:active low, T:active high)



stepper motor winding (F:FULL, T:HALF)



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved




reserved



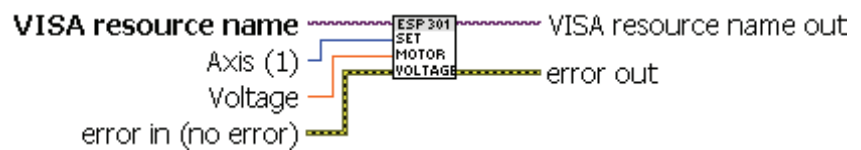
reserved




reserved

-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

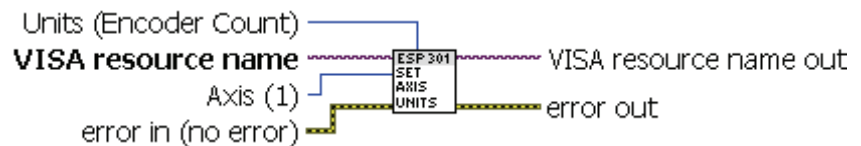
**2.140 Newport ESP301.lvlib:Set Average Motor Voltage.vi**




 Axis (1)

 Voltage  
Double between 0 and the maximum driver rating

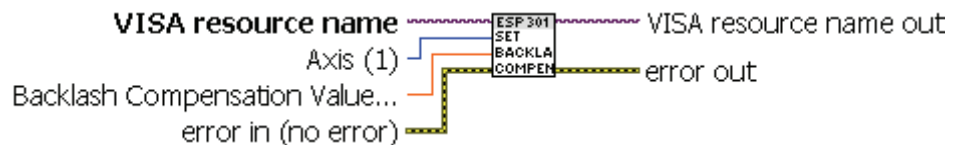
**2.141 Newport ESP301.lvlib:Set Axis Displacement Units.vi**





 Axis (1)

 Units (Encoder Count)  
enum

**2.142 Newport ESP301.lvlib:Set Backlash Compensation.vi**



 Axis (1)  
Axis number.

 Backlash Compensation Value (0 units)  
to distance equivalent to 10000 encoder counts (user units)

2.143 Newport ESP301.lvlib:Set Base Velocity For Step Motor.vi

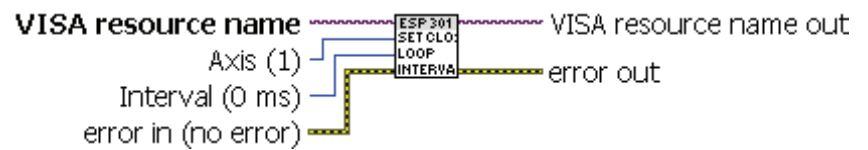


**Axis (1)**  
Axis number.



**Base Velocity (0 units/s)**  
range: 0 to maximum value allowed by VU command

2.144 Newport ESP301.lvlib:Set Closed Loop Update Interval.vi

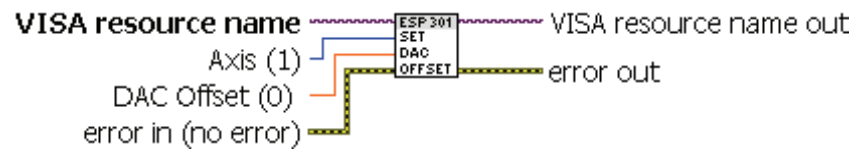


**Axis (1)**  
If "0" is used as an axis number, this command will set the specified interval to all the axes.



**Interval (0 ms)**  
interger between 0 and 60000.

2.145 Newport ESP301.lvlib:Set DAC Offset.vi

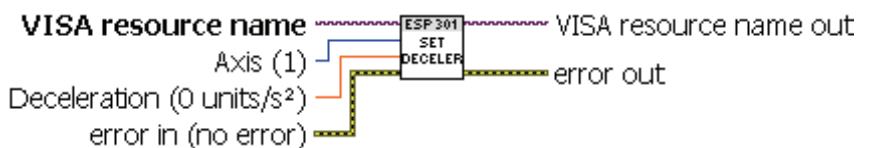


**Axis (1)**  
Axis number.



**DAC Offset (0)**  
range : -10 to +10

2.146 Newport ESP301.lvlib:Set Deceleration.vi

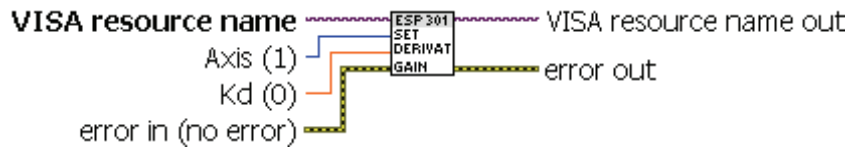


**Axis (1)**  
Axis number.



**Deceleration (0 units/s<sup>2</sup>)**  
Double in units/s<sup>2</sup> between 0 and the maximum programmed in "set maximum acceleration and deceleration" VI.

2.147 Newport ESP301.lvlib:Set Derivative Gain.vi



**I32** Axis (1)  
Axis number.

**DBL** Kd (0)  
range : 0 to 2e9

2.148 Newport ESP301.lvlib:Set Device Address.vi



**I32** Address Number (1)  
range : 1 to 30.

2.149 Newport ESP301.lvlib:Set DIO Port A, B, C direction.vi



**FT** Port A, B direction

**TF** Port A (T:output, F:input)

**TF** Port B (T:output, F:input)



### 2.150 Newport ESP301.lvlib:Set DIO Port AB Bit Status.vi



**DIO Port status**

- Port A bit-0 at logic level
- Port A bit-1 at logic level
- Port A bit-2 at logic level
- Port A bit-3 at logic level
- Port A bit-4 at logic level
- Port A bit-5 at logic level
- Port A bit-6 at logic level
- Port A bit-7 at logic level
- Port B bit-0 at logic level
- Port B bit-1 at logic level
- Port B bit-2 at logic level
- Port B bit-3 at logic level
- Port B bit-4 at logic level
- Port B bit-5 at logic level
- Port B bit-6 at logic level
- Port B bit-7 at logic level






### 2.151 Newport ESP301.lvlib:Set E-Stop Configuration.vi



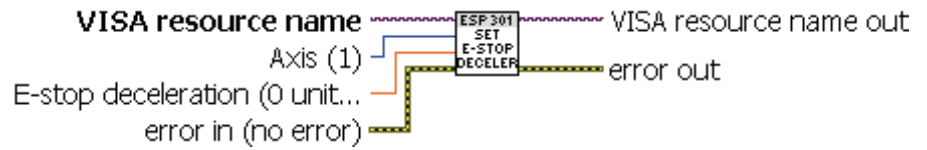
**Axis (1)**  
 Axis number.  
 Axis (1) is an integer between 1 and Max Axis.

**E-Stop Configuration**

- enable E-Stop checking
- disable motor power on E-stop event

	abort motion on E-stop event
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved

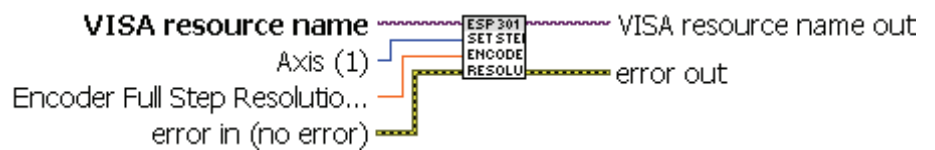
2.152 Newport ESP301.lvlib:Set E-stop Deceleration.vi



**I32** Axis (1)  
Axis number.

**DBL** E-stop deceleration (0 units/s<sup>2</sup>)  
Double in units/s<sup>2</sup>. range : curren normal deceleration to 2e9\* encoder resolution.

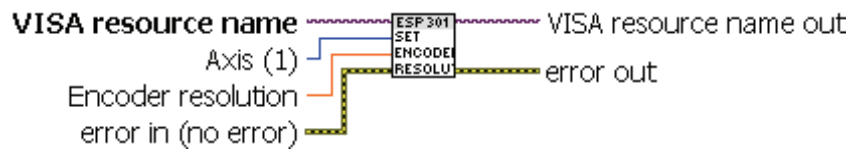
2.153 Newport ESP301.lvlib:Set Encoder Full-Step Resolution.vi



**I32** Axis (1)  
Axis number. Axis (1) is an integer between 1 and Max Axis.

**DBL** Encoder Full Step Resolution (1 units)  
Double in units between 0 and 2e9.

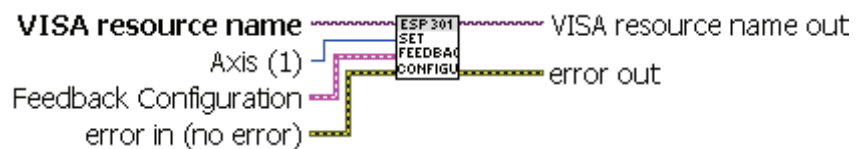
2.154 Newport ESP301.lvlib:Set Encoder Resolution.vi



**I32** Axis (1)

**DBL** Encoder resolution  
Double between 2e-9 and 2e9.

































2.155 Newport ESP301.lvlib:Set Feedback Configuration.vi



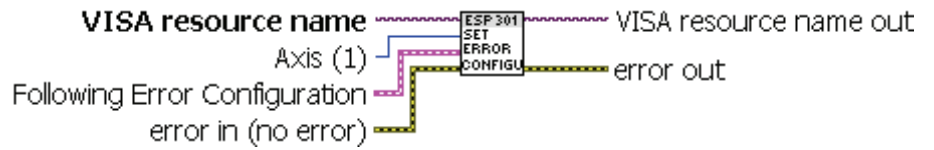
**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**FTI** Feedback Configuration

**TF** enable feedback error checking

-  disable motor on feedback error event
-  abort motion on feedback error event
-  reserved
-  reserved
-  invert encoder feedback polarity
-  reserved
-  reserved
-  use encoder feedback for stepper positioning
-  enable stepper closed-loop positioning
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

### 2.156 Newport ESP301.lvlib:Set Following Error Configuration.vi



**I32** Axis (1)

**FT** Following Error Configuration

**TF** enable motor following error checking

**TF** disable motor power on following error event

**TF** abort motion on following error event

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved

**TF** reserved






**TF** reserved

**TF** reserved

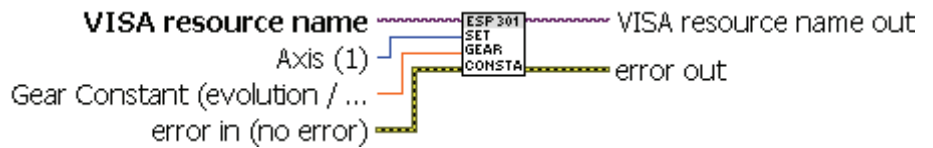
**TF** reserved



**TF** reserved

**TF** reserved

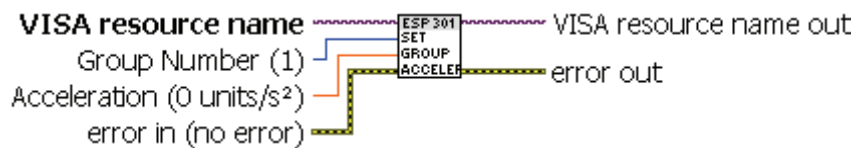
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved



**2.157 Newport ESP301.lvlib:Set Gear Constant.vi**



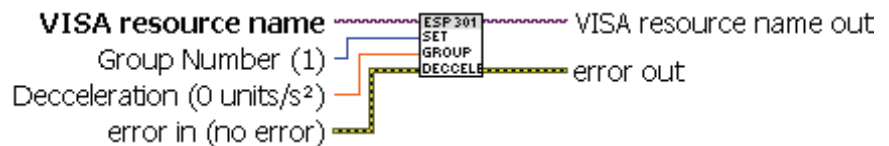
-  **Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.
-  **Gear Constant (evolution / unit of measure)**  
Double in evolution / unit of measure between 0 and 2e9.



**2.158 Newport ESP301.lvlib:Set Group Acceleration.vi**



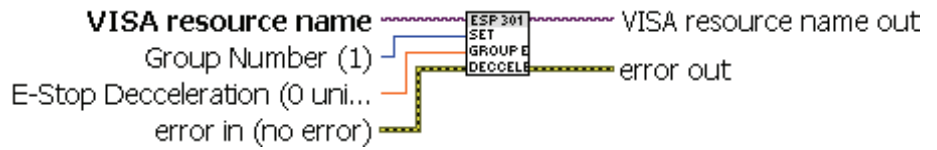
-  **Group Number (1)**  
range : 1 to MAX GROUPS
-  **Acceleration (0 units/s<sup>2</sup>)**  
range : 0 to minimum of the maximum acceleration values of all axes assigned to this group.

**2.159 Newport ESP301.lvlib:Set Group Deceleration.vi**



-  **Group Number (1)**
-  **Deceleration (0 units/s<sup>2</sup>)**  
range : 0 to minimum of the maximum deceleration values of all axes assigned to this group.

2.160 Newport ESP301.lvlib:Set Group E-Stop Deceleration.vi



**Group Number (1)**

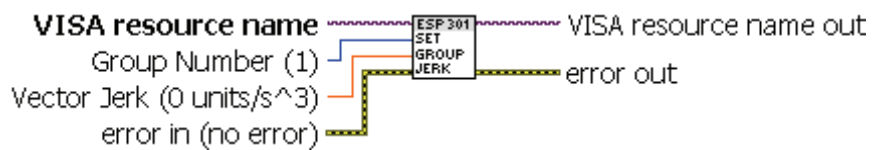
Integer between 1 and max axes. The default value is 1.



**E-Stop Deceleration (0 units/s<sup>2</sup>)**

range : maximum of deceleration values assigned to all axes in the group to 2e9 \* encoder resolution.

2.161 Newport ESP301.lvlib:Set Group Jerk.vi



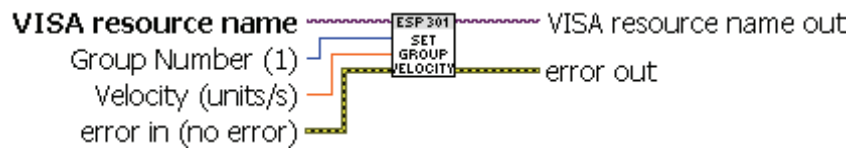
**Group Number (1)**

Integer between 1 and max Group.



**Vector Jerk (0 units/s<sup>3</sup>)**

2.162 Newport ESP301.lvlib:Set Group Velocity.vi



**Group Number (1)**

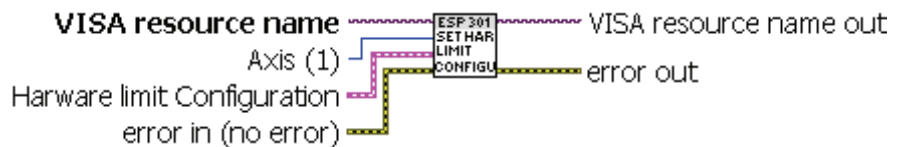
Integer between 1 and max Group.



**Velocity (units/s)**

range: 0 to minimum of the maximum velocity values of all axes assigned to this group.

2.163 Newport ESP301.lvlib:Set Hardware Limit Configuration.vi

































**Axis (1)**



**Hardware limit Configuration**

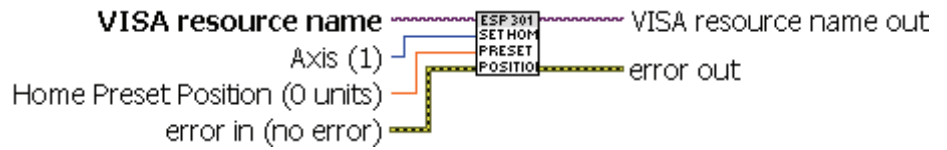
enable Hardware limit error checking

disable motor on Hardware limit error event

	abort motion on Hardware limit error event
	reserved
	reserved
	hardware limit input (F:active low, T:active high)
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved
	reserved



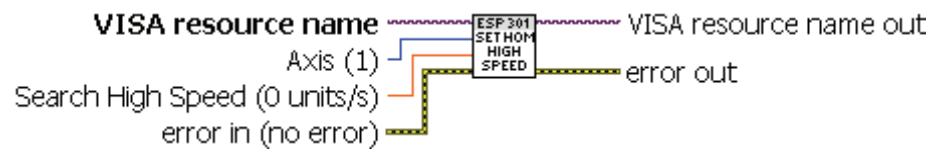
**2.164 Newport ESP301.lvlib:Set Home Preset Position.vi**



**I32** Axis (1)  
Axis number.

**DBL** Home Preset Position (0 units)  
any position within travel limits.

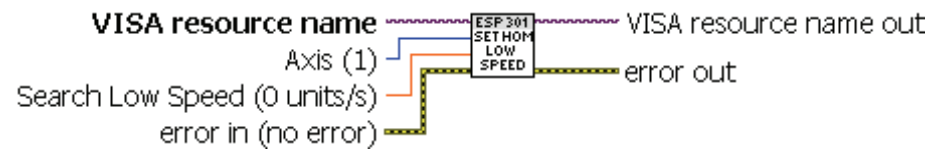
**2.165 Newport ESP301.lvlib:Set Home Search High Speed.vi**



**I32** Axis (1)  
Axis number.

**DBL** Search High Speed (0 units/s)  
in units/s between 0 and the maximum value allowed by "Set maximum speed" command (VU).

**2.166 Newport ESP301.lvlib:Set Home Search Low Speed.vi**



**I32** Axis (1)  
Axis number.

**DBL** Search Low Speed (0 units/s)  
in units/s between 0 and the maximum allowed value by "Set maximum speed" command.

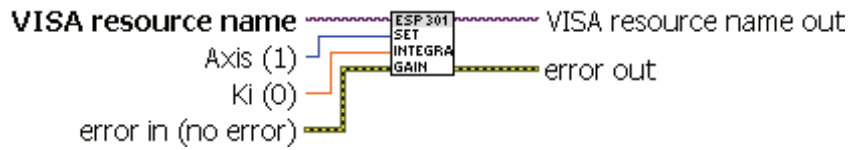
**2.167 Newport ESP301.lvlib:Set Home Search Mode.vi**



**I32** Axis (1)  
Axis number.

**I32** Home mode  
The Axis(1) parameter is overwritten by the "Search For Home.vi" command parameter.

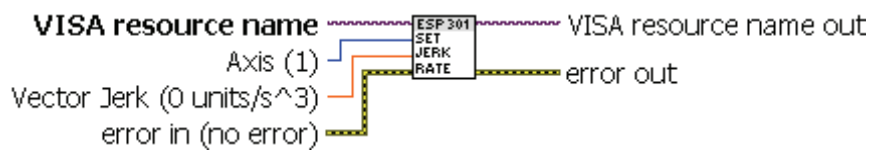
### 2.168 Newport ESP301.lvlib:Set Integral Gain.vi



**I32** Axis (1)  
Axis number.

**DBL** Ki (0)  
Double between 0 and 2e9.  
Derivative gain factor.

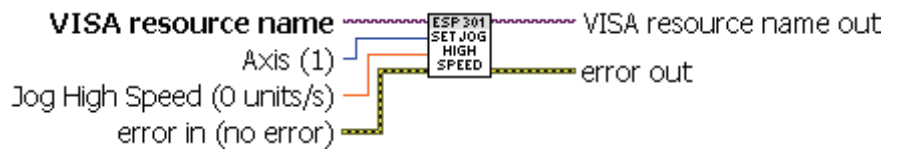
### 2.169 Newport ESP301.lvlib:Set Jerk Rate.vi



**I32** Axis (1)  
Axis number.

**DBL** Vector Jerk (0 units/s<sup>3</sup>)  
Double in units/s<sup>3</sup> between 0 and 2e9. The default value is 320 units/s<sup>3</sup>

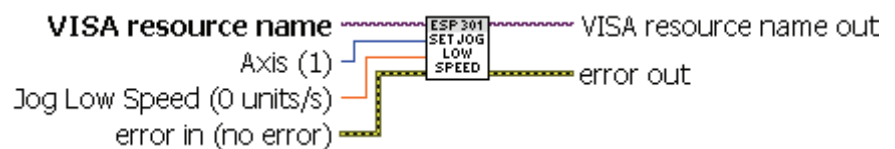
### 2.170 Newport ESP301.lvlib:Set Jog High Speed.vi



**I32** Axis (1)  
Axis number.

**DBL** Jog High Speed (0 units/s)  
in units/s between 0 and the maximum allowed value by VU command (set maximum velocity).

### 2.171 Newport ESP301.lvlib:Set Jog Low Speed.vi



**I32** Axis (1)  
Axis number.

**DBL** Jog Low Speed (0 units/s)

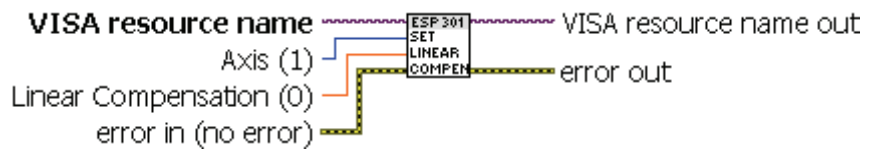
### 2.172 Newport ESP301.lvlib:Set Left Travel Limit.vi



**I32** Axis (1)

**DBL** Left Travel Limit  
Double in units between  $-2e9 \times \text{encoder resolution}$  and 0.

### 2.173 Newport ESP301.lvlib:Set Linear Compensation.vi



**I32** Axis (1)  
Axis number.

**DBL** Linear Compensation (0)  
Double between 0 and  $2e9$ .

### 2.174 Newport ESP301.lvlib:Set Master-Slave Jog Velocity Scalling Coefficients.vi



**DBL** A (0)  
jog velocity scaling coefficients

**DBL** B (0)  
jog velocity scaling coefficients

### 2.175 Newport ESP301.lvlib:Set Master-Slave Jog Velocity Update Interval.vi



**I32** Interval  
range : 1 to 1000

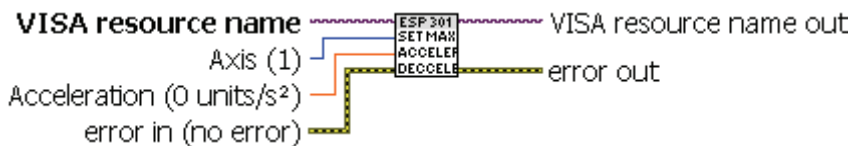
**2.176 Newport ESP301.lvlib:Set Master-Slave Reduction Ratio.vi**



**I32** Axis (1)  
Axis number.

**DBL** Reduction Ratio (0)  
Use **this command very carefully**. The slave axis will have its speed and acceleration in the same ratio as the position. Also, ensure that the ratio used for the slave axis does not cause overflow of this axis\_ parameters (speed, acceleration), especially with ratios greater than 1.

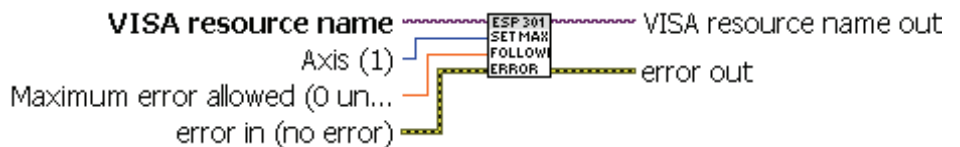
**2.177 Newport ESP301.lvlib:Set Maximum Acceleration and Deceleration.vi**



**I32** Axis (1)  
Axis number.

**DBL** Acceleration (0 units/s<sup>2</sup>)  
Double in units/s<sup>2</sup> between 0 and 2e9.

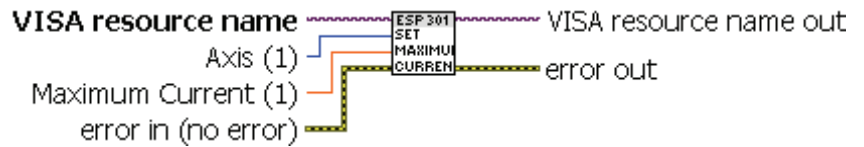
**2.178 Newport ESP301.lvlib:Set Maximum Following Error Threshold.vi**



**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**DBL** Maximum error allowed (0 units)  
Double in units between 0 and 2e9\*encoder resolution.

**2.179 Newport ESP301.lvlib:Set Maximum Motor Current.vi**



**Axis (1)**

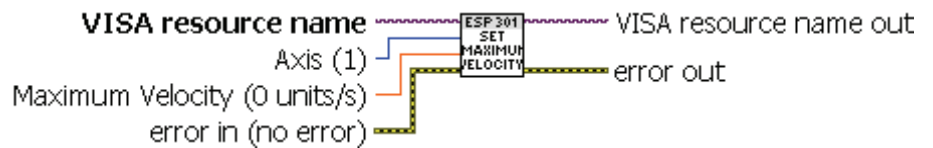
Axis number.  
Axis (1) is an integer between 1 and Max Axis.



**Maximum Current (1)**

Double between 0 and the maximum driver rating.

**2.180 Newport ESP301.lvlib:Set Maximum Velocity.vi**



**Axis (1)**

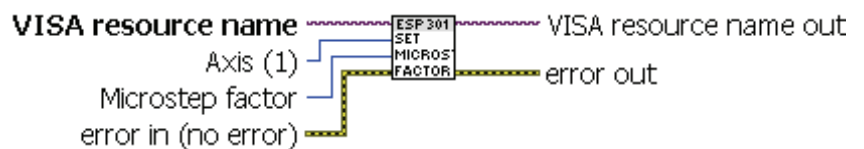
Axis number.



**Maximum Velocity (0 units/s)**

range : 0 to 2e9.

**2.181 Newport ESP301.lvlib:Set Microstep Factor.vi**



**Axis (1)**

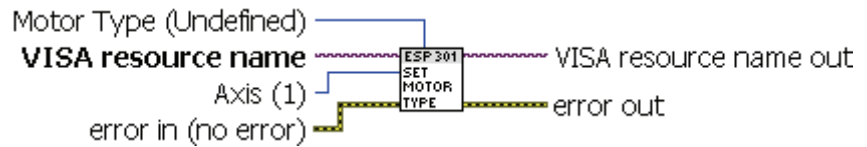
Axis number. Axis (1) is an integer between 1 and Max Axis.



**Microstep factor**

integer between 1 and 250 for step motors and between 1 and 1000 for commutated step motor.

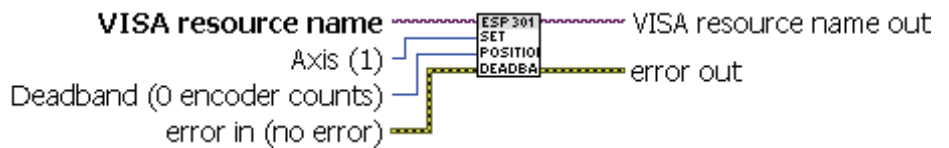
**2.182 Newport ESP301.lvlib:Set Motor Type.vi**



**I32** **Axis (1)**  
 Axis number.  
 Axis (1) is an integer between 1 and Max Axis.

**I32** **Motor Type (Undefined)**  
 Enum

**2.183 Newport ESP301.lvlib:Set Position Deadband.vi**



**I32** **Axis (1)**  
 If 0 is used as an axis number, this command will set the specified deadband value to all the axes.

**I32** **Deadband (0 encoder counts)**  
 range: 0 to 2e9 encoder counts

**2.184 Newport ESP301.lvlib:Set Position Display Resolution.vi**



**I32** **Axis (1)**  
 Axis number.  
 Axis (1) is an integer between 1 and Max Axis.

**I32** **Display Resolution (0)**  
 Integer between 0 and 7

**2.185 Newport ESP301.lvlib:Set Proportional Gain.vi**



**I32** **Axis (1)**  
Axis number.

**DBL** **Kp (0)**  
Double between 0 and 2e9.  
proportional gain factor. The default value is 0.

**2.186 Newport ESP301.lvlib:Set Right Travel Limit.vi**



**I32** **Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.

**DBL** **Right Travel Limit**  
Double in units between 0 and 2e9\*encoder resolution.

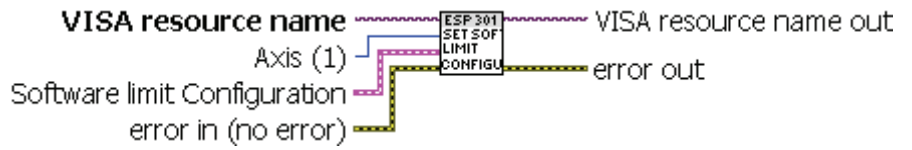
**2.187 Newport ESP301.lvlib:Set Saturation Level Of Integral Factor.vi**



**I32** **Axis (1)**  
Axis number.

**DBL** **Ks (0)**  
saturation level of the integral factor  
Double between 0 and 2e9.

2.188 Newport ESP301.lvlib:Set Software Limit Configuration.vi



**Axis (1)**

Axis number.

Axis (1) is an integer between 1 and Max Axis.



**Software limit Configuration**



Enable software travel limit error checking



disable motor on software travel limit event



abort motion on software travel limit event



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved



reserved























-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

2.189 Newport ESP301.lvlib:Set System Configuration.vi

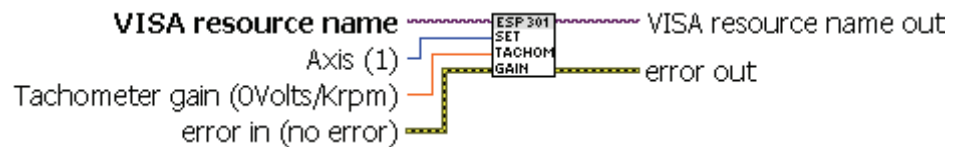




 System Configuration

-  100-pin interlock error checking enabled
-  all axes on 100-pin interlock error event disabled
-  reserved
-  reserved
-  interlock fault logic level (F:low, T:high)
-  reserved
-  reserved
-  route signals to counter channels (F:signal, T:feedback)
-  ESP system-critical settings protected
-  display units along with certain responses
-  timeout during homing disabled
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved

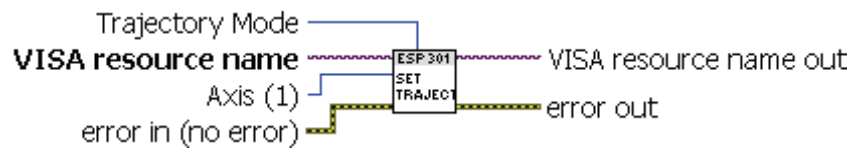
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved
-  reserved



**2.190 Newport ESP301.lvlib:Set Tachometer Gain.vi**



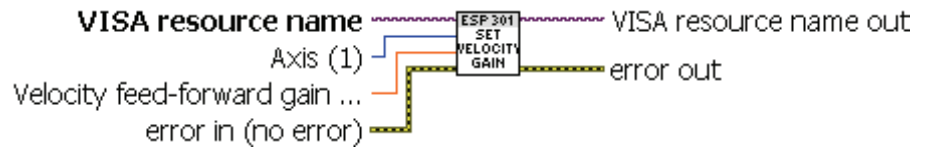
-  **Axis (1)**  
Axis number. Axis (1) is an integer between 1 and Max Axis.
-  **Tachometer gain (0Volts/Krpm)**  
Double between 0 and 20 Volts/Krpm

**2.191 Newport ESP301.lvlib:Set Trajectory Mode.vi**



-  **Axis (1)**  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.
-  **Trajectory Mode**

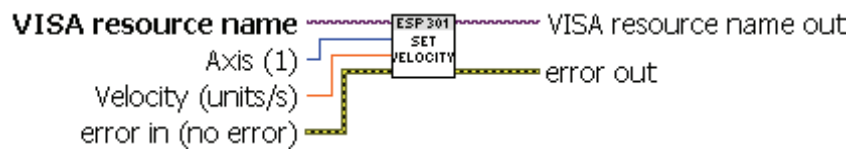
### 2.192 Newport ESP301.lvlib:Set Velocity Feed-Forward Gain.vi



**I32** Axis (1)  
Axis number.

**DBL** Velocity feed-forward gain factor (0)  
Double between 0 and 2e9.

### 2.193 Newport ESP301.lvlib:Set Velocity.vi



**I32** Axis (1)  
Axis number.

**DBL** Velocity (units/s)  
range : 0 to maximum value allowed by set maximum velocity function.

## 2.194 Newport ESP301.lvlib:Setup Data Acquisition.vi



### Data Acquisition Parameters

Integer between 0 and 2.

0 : Start data acquisition immediately.

1 : Start data acquisition when trigger axis starts motion

2 : Start data acquisition when trigger axis reaches slew

Axis used to trigger data acquisition : integer between 1 and Max Axes. Data acquisition is triggered by the motion of an axis specified through this parameter.

Data acquisition parameter 3 : = 0

Data acquisition parameter 4 : Integer between 0 and 7. Identifies the position feedback channels to be collected.

0 : None

1 : channel 1

2 : channel 2

3 : channel 1 & 2

4 : channel 3

5 : channel 1 & 3

6 : channel 2 & 4

7 : channel 1, 2 & 3

Data acquisition rate : The rate at which data is to be acquired is specified through this parameter. The rate specified is in multiples of the rate (400\_s).

Number of data samples to be acquired : double.



### Data acquisition mode



### Axis used to trigger data acquisition (1)

Data acquisition is triggered by the motion of an axis specified through this parameter. Exceptions to this requirement are in the case of data acquisition mode 0. For this case enabling data acquisition is sufficient to start the data acquisition process. For all other modes, two conditions enabling of data acquisition and any mode dependent conditions such as trigger axis starting motion or reaching slew speed must be met in order to start the data acquisition process.



set this value to 0.



### Position feedback channels

This parameter is used to identify the position feedback channels to be collected.



The rate at which data is to be acquired is specified through this parameter. The rate specified is in multiples of the (400\_s) rate. For example, a value of 0 implies data acquisition every servo cycle (400\_s), a value of 1 implies every other servo cycle (400\_s), and so on.



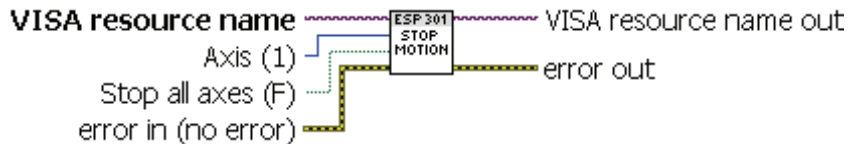
Number of data sample to be acquired

### 2.195 Newport ESP301.lvlib:Stop Group Motion.vi



**I32** Group Number (1)  
Integer between 1 and max Group.

### 2.196 Newport ESP301.lvlib:Stop Motion.vi



**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

**TF** Stop all axes (F)

### 2.197 Newport ESP301.lvlib:Update Motor Driver Settings.vi



**I32** Axis (1)  
Axis number.  
Axis (1) is an integer between 1 and Max Axis.

### 2.198 Newport ESP301.lvlib:Update Servo Filter.vi



**I32** Axis (0)  
If disconnect or set to 0 , the controller updates the filters for all axes.

### 2.199 Newport ESP301.lvlib:Wait For DIO Bit High.vi



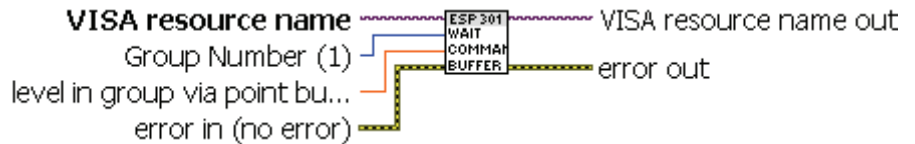
**I32** DIO bit number (0)  
integer between 0 and 15.

2.200 Newport ESP301.lvlib:Wait For DIO Bit Low.vi



**I32** DIO bit number (0)  
range 0 to 15

2.201 Newport ESP301.lvlib:Wait For Group Command Buffer Level.vi



**I32** Group Number (1)

**DBL** level in group via point buffer  
This command stops enqueueing new commands into the via point buffer until the buffer level equals nn.

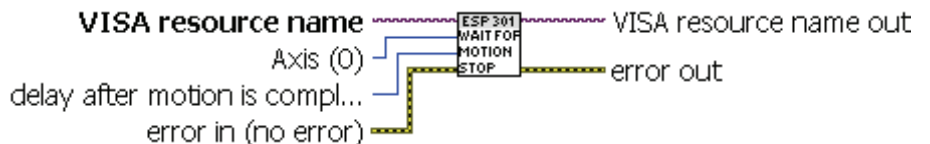
2.202 Newport ESP301.lvlib:Wait For Group Motion Stop.vi



**I32** Group Number (1)  
Integer between 1 and max Group.

**DBL** Delay (0ms)  
If Delay (0ms) is not equal to zero, the controller waits an additional Delay (0ms) milliseconds after the group motion is complete before executing any further commands.  
range: 0 to 60 000ms

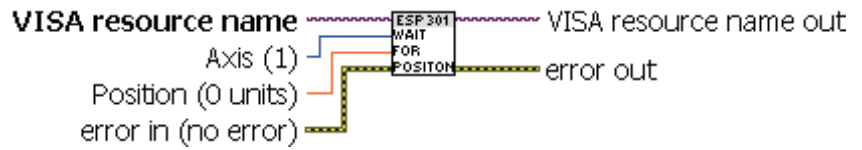
2.203 Newport ESP301.lvlib:Wait For Motion Stop.vi



**I32** Axis (0)  
Axis number.

**I32** delay after motion is complete (0ms)  
delay after motion is complete  
range: 0 to 60000ms

### 2.204 Newport ESP301.lvlib:Wait For Position.vi



**I32** Axis (1)  
Axis number.

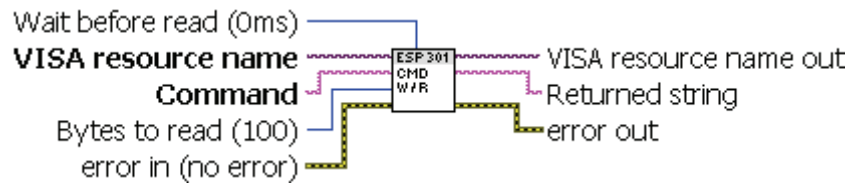
**DBL** Position (0 units)  
range: between the travel limits defined otherwise between -2e9 and 2e9.

### 2.205 Newport ESP301.lvlib:Wait.vi



**I32** Delay (0ms)

### 2.206 Newport ESP301.lvlib:Write Command and Read.vi



**abc** Command

**U32** Bytes to read (100)

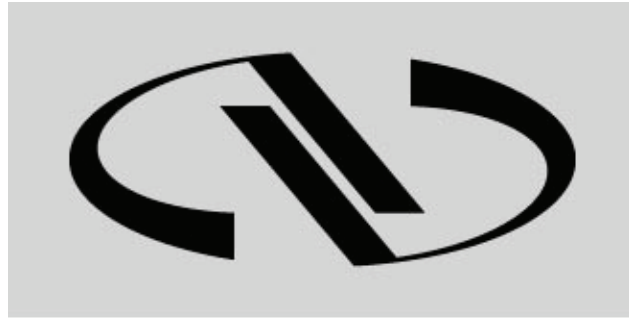
**U32** Wait before read (0ms)

**abc** Returned string









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