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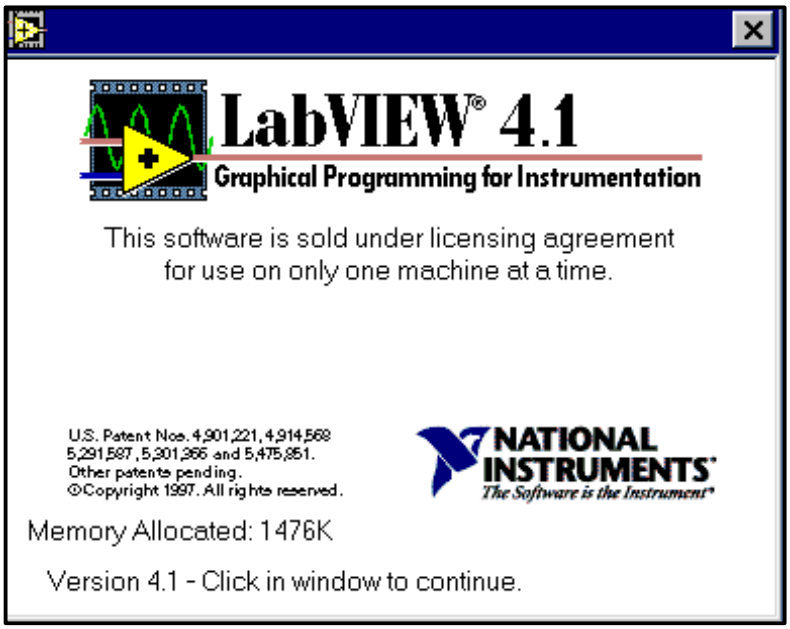
069

Software Application Manual SM 69E

LabView™
Virtual Instrument Libraries
for
E-710 Digital PZT Controller



SID#	069
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Table of Contents :

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1. Introduction

E-710 Digital Motor Controllers are intendent to be used with P-500 series of modular PZT flexure stages and can also be used to control other PZT positioners equipped with capacitive sensors.

Details and format of commands are described in Operating Manuals PZ 80E operating manual.

The E-710 LabView drivers are provided to help the customer to generate his own LabView program. Both RS-232 and IEEE488 interfaces (manufacturer National Instruments) are supported. Prior to use the LabView Vis with the IEEE488 interface, the IEEE488 board and its software has to be installed.

Most commands can be accessed via VIs that can be implemented in your LV program. Connecting the icons with the desired parameter values and function attributes, LV applications using the E-710 are very easy to accomplish.

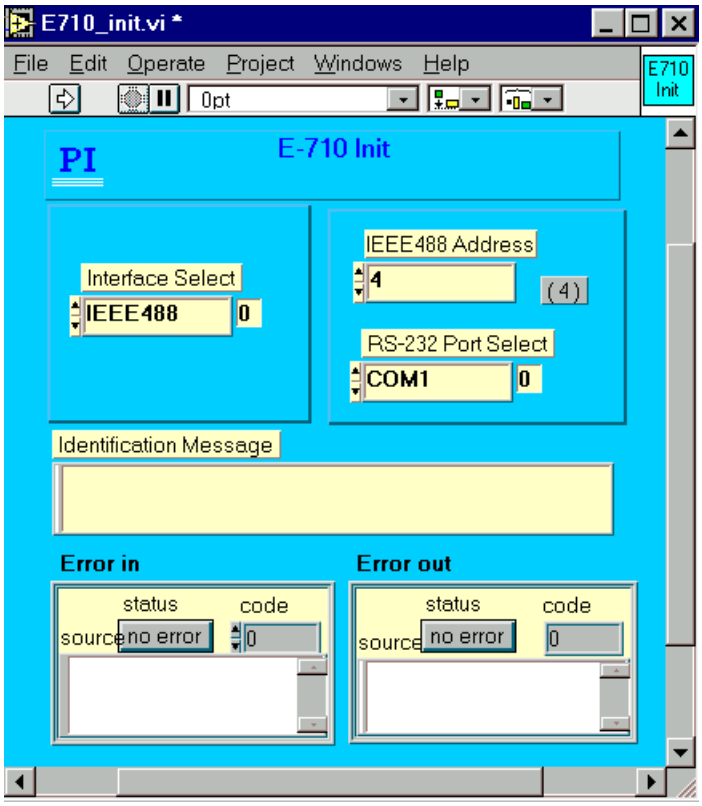
2. E-710 Virtual Instruments

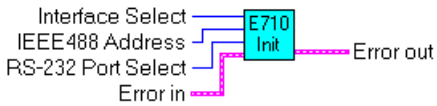
List of Vis:

VI Name	**Function**
System related Vis	
E710_PortGlobe.vi	This Vi contains some globar variables regarding the selected interface.
E710_init.vi	Performs initialization procedures
E710_Send.vi	Send a command string
E710_Receive.vi	Receives a report string
E710_query.vi	Requests a report
Command related Vis	
E710_AZ.vi	Auto Zero
E710_GH.vi	Go Home
E710_MA.vi	Move Absolute
E710_MR.vi	Move Relative
E710_SL.vi	Set Servo Loop
E710_SP.vi	Set p-Term
E710_SV.vi	Set Velocity
E710_TA.vi	Tell A/D value
E710_TP.vi	Tell Position
E710_TV.vi	Tell Velocity
E710_VR.vi	Voltage Relative
E710_VS	Voltage Set
E710_VT	Voltage Tell
E710_ZM	Zoom Mode

3. Virtual Instruments Usage

The first VI that has to be called in a working session is the E710_init.vi.





E710_init.vi

This Vi initializes the interface and reports the GI report of the E710 device.

Inputs:

Interface Select:	0=IEEE488 1=RS232
IEEE488 Address:	Device Address (only if IEEE488 is selected)
RS232 Port Select:	0=COM1 1=COM2 2=COM3 3=COM4
Error in:	Standard cluster

Output:

Error out:	Standard cluster

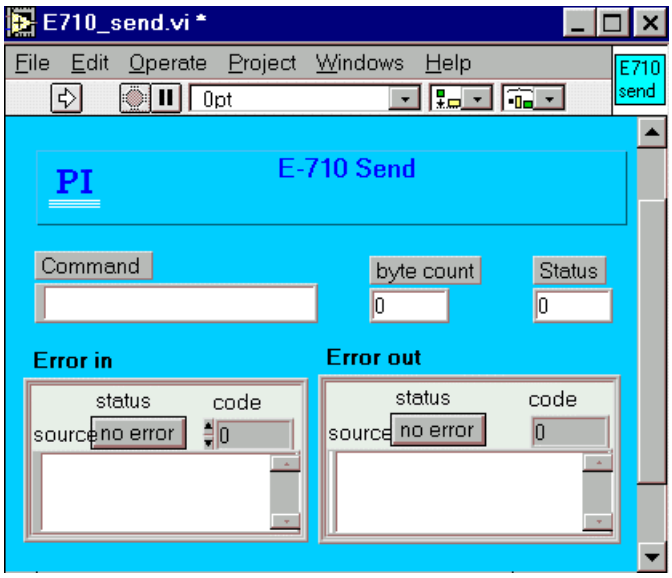
4. VI Reference

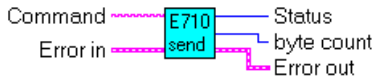
4.1. E710_init.vi

see chapter 3

4.2. E710_send.vi

VI Library : E710LV10.LLB





E710_send.vi

sends a command to the device using IEEE488 or RS232 interface

Inputs:

Command:	Command string example: "1MR50.234"
Error in:	Standard cluster

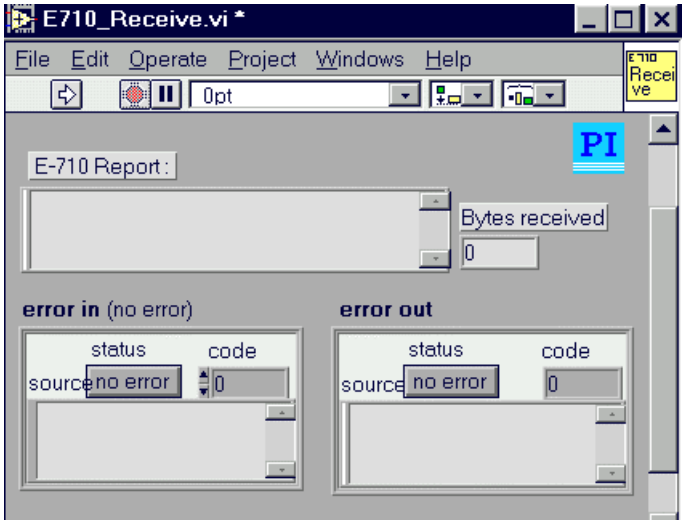
Output:

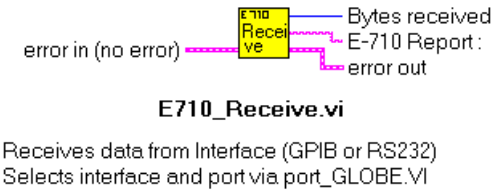
Status:	Status byte
byte count:	number of bytes sent to the device
Error out:	Standard cluster

Function : This VI sends a command string. It should not request an answer, so query commands should be send with the query vi for convenient report handling.

4.3. E710_Receive.vi

VI Library : E710LV10.LLB





Inputs:

Error in: Standard cluster

Output:

bytes received: number of bytes received from the device

E-710 report: report string

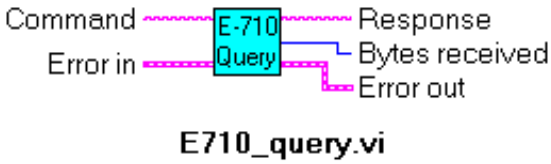
Error out: Standard cluster

Function : This VI reads the report of a previously send query command. If none report is available, an error message occurs.

4.4. E710_Query.vi

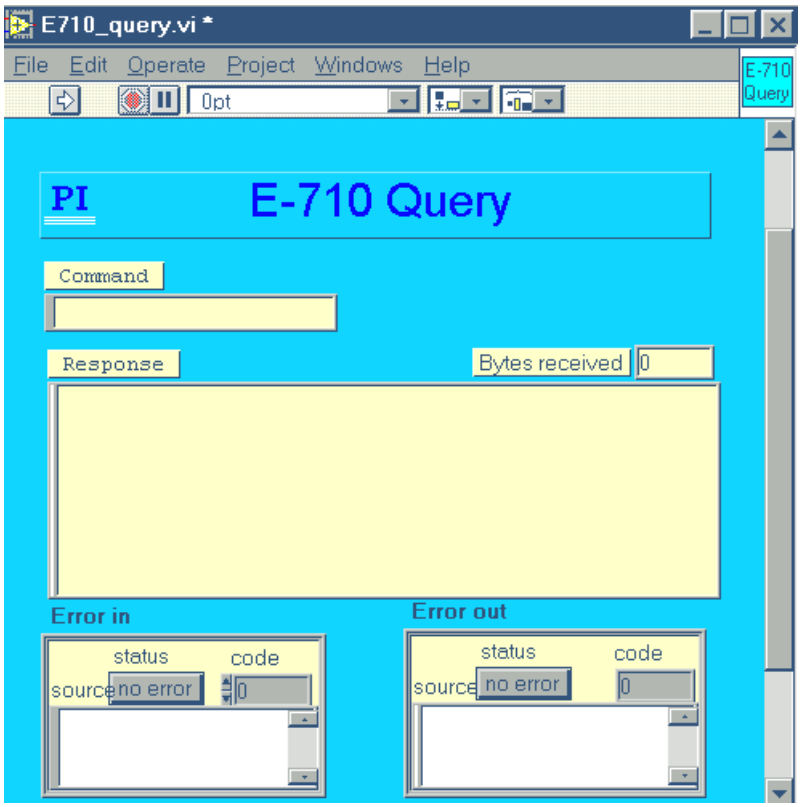
VI Library : E710LV10.LLB

Purpose: Reads a report string



E710_query.vi

This Vi requests a report from the E-710.
Command example: "1TP", "1TA"



Inputs:

Command: Command string

Error in: Standard cluster

Output:

Response: Response string

Bytes received: number of bytes received from the device

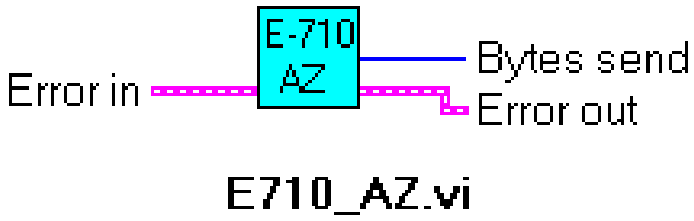
Error out: Standard Error Cluster

Note : This VI can be used with commands creating a report string. If non report string is available after 50 ms, a timeout occurs.

4.5. E710_AZ.vi

VI Library : E710LV10.LLB

Purpose: Starts a zero point calibration for the entire system.



Inputs:

Error in: Standard cluster

Output:

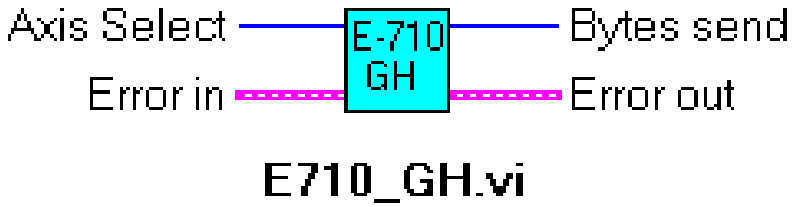
Bytes send: number of bytes sent to the device

Error out: Standard Error Cluster

4.6. E710_GH.vi

VI Library : E710LV10.LLB

Purpose: Starts a move to the home position.



Inputs:

Axis Select: Select active axis

Error in: Standard Error Cluster

Output:

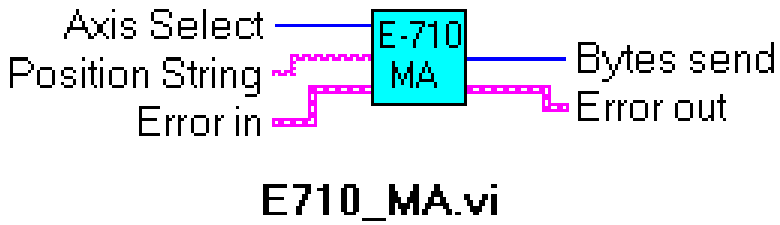
Bytes send: number of bytes sent to the device

Error out: Standard Error Cluster

4.7. E710_MA.vi

VI Library : E710LV10.LLB

Purpose: Starts a move to the absolute Position.



E710_MA.vi

Inputs:

Axis Select:	Select active axis
Position String:	
Error in:	Standard Error Cluster

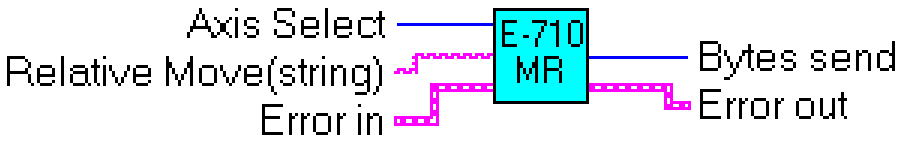
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.8. E710_MR.vi

VI Library : E710LV10.LLB

Purpose: Starts a move relative from the current position.



E710_MR.vi

Inputs:

Axis Select:	Select active axis
Relative Move:	Relative move in µm as string, e.g "5.8"
Error in:	Standard Error Cluster

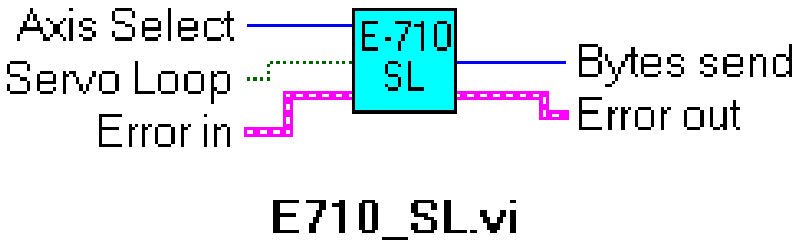
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.9. E710_SL.vi

VI Library : E710LV10.LLB

Purpose: Set servo loop on/off



E710_SL.vi

Inputs:

Axis Select:	Select active axis
Servo Loop:	Boolean value: TRUE = servo on, FALSE = servo off
Error in:	Standard Error Cluster

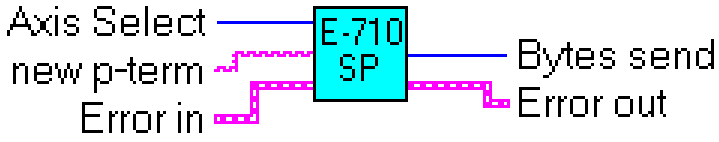
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.10. E710_SP.vi

VI Library : E710LV10.LLB

Purpose: Set the p-term (proportional filter term)



E710_SP.vi

Inputs:

Axis Select:	Select active axis
new p-term:	p-term value as string
Error in:	Standard Error Cluster

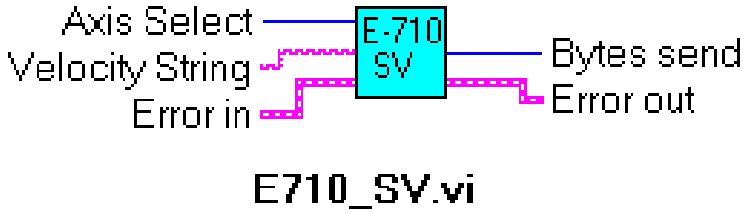
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.11. E710_SV.vi

VI Library : E710LV10.LLB

Purpose: Set velocity



E710_SV.vi

Inputs:

Axis Select:	Select active axis
Velocity String:	new velocity as string format
Error in:	Standard Error Cluster

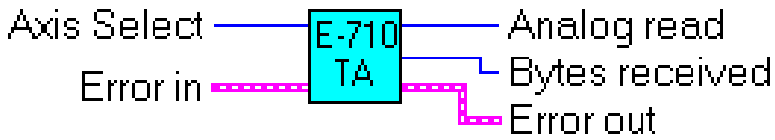
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.12. E710_TA.vi

VI Library : E710LV10.LLB

Purpose: Tell Analog, reads the last converted analog value of the A/D converter.



E710_TA.vi

Inputs:

Axis Select:	Select active axis
Error in:	Standard Error Cluster

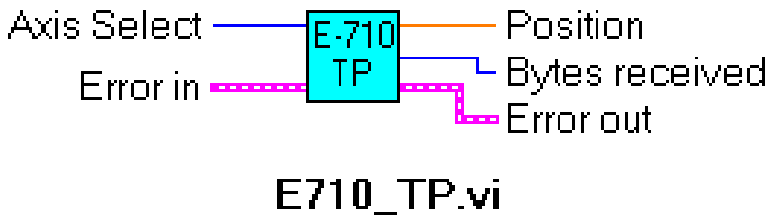
Output:

Analog read:	numeric value of the read value
Bytes received:	number of bytes received from E-710
Error out:	Standard Error Cluster

4.13. E710_TP.vi

VI Library : E710LV10.LLB

Purpose: Reads the sensor position of the indicated axis.



E710_TP.vi

Inputs:

Axis Select:	Select active axis
Error in:	Standard Error Cluster

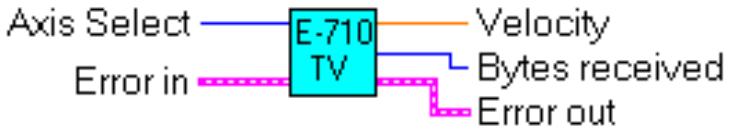
Output:

Position:	read position value
Bytes received:	number of bytes received from E-710
Error out:	Standard Error Cluster

4.14. E710_TV.vi

VI Library : E710LV10.LLB

Purpose: Reads the programmed velocity of the indicated axis.



E710_TV.vi

Inputs:

Axis Select:	Select active axis
Error in:	Standard Error Cluster

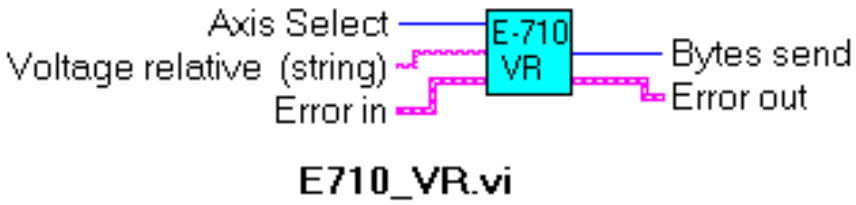
Output:

Velocity:	Read velocity
Bytes received:	number of bytes received from E-710
Error out:	Standard Error Cluster

4.15. E710_VR.vi

VI Library : E710LV10.LLB

Purpose: Voltage Relative, sets the voltage of the indicated channel relative to the current voltage.



E710_VR.vi

Inputs:

Axis Select:	Select active axis
Relative Voltage:	Relative voltage value as string
Error in:	Standard Error Cluster

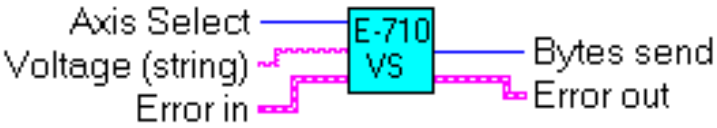
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.16. E710_VS.vi

VI Library : E710LV10.LLB

Purpose: Sets the output voltage in open loop for the indicated axis.



E710_VS.vi

Inputs:

Axis Select:	Select active axis
Voltage(string):	New output voltage as string
Error in:	Standard Error Cluster

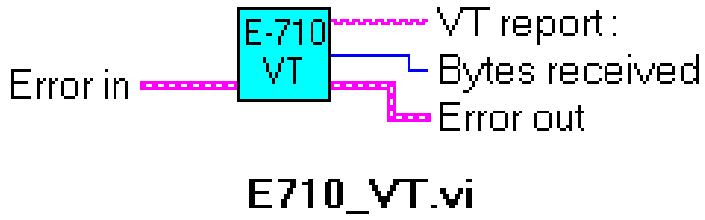
Output:

Bytes send:	number of bytes sent to the device
Error out:	Standard Error Cluster

4.17. E710_VT.vi

VI Library : E710LV10.LLB

Purpose: Reports the output voltages of all 4 channels.



E710_VT.vi

Inputs:

Error in: Standard Error Cluster

Output:

VT report: voltages of all axes

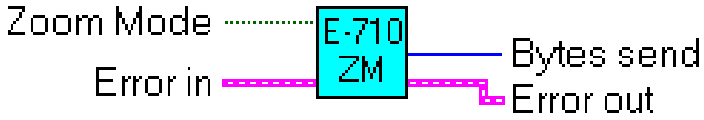
Bytes received: number of bytes received from E-710

Error out: Standard Error Cluster

4.18. E710_ZM.vi

VI Library : E710LV10.LLB

Purpose: Activates the entire device in zoom mode.



E710_ZM.vi

Inputs:

ZOOM Mode: TRUE = Zoom on, FALSE = Zoom off

Error in: Standard Error Cluster

Output:

Bytes send: number of bytes sent to the device

Error out: Standard Error Cluster