

### **4.4.5 Excitation Voltage Output Command Set**

Command Syntax	Command Name	Description	I/O module
\$AA6	Get Excitation Voltage Output Value	Returns either last value sent to specified module by \$AA7 command, or start-up output voltage.	4016
\$AA7	Excitation Voltage Output	Direct output excitation voltage data to a specified module	4016
\$AAS	Start-up Voltage Output Configuration	Stores a default value in a specified module. The output value will take effect upon startup.	4016
\$AAE	Trim Calibration	Trims specified module a number of units up/down	4016
\$AAA	Zero Calibration	Tells the module to store parameters for zero calibration	4016
\$AAB	Span Calibration	Tells the module to store parameters for span calibration	4016

**\$AA6**

<b>Name</b>	Get Excitation Voltage Output Value
<b>Description</b>	The addressed strain gauge input module is instructed to return the latest output value it received from Excitation Voltage Output command. If the module hasn't received an Excitation Voltage Output command since startup, it will return its Start-up Output value.
<b>Syntax</b>	<p>\$AA6(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>6 is the get excitation voltage output command.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(data)(cr) if the command is valid.</p> <p>?AA(cr) if an invalid command was issued.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! delimiter character indicating a valid command was received.</p> <p>? delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(data) is the value that is returned by analog output channel. The format of the data is in engineering unit.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command:   \$0A6(cr)</p> <p>response:   !0A+03.000(cr)</p> <p>The command tells the strain gauge input module at address 0Ah to return the last excitation voltage output value it received from an Excitation Voltage Output command.</p> <p>The strain gauge input module returns the value +03.000V.</p>

**\$AA7**

<b>Name</b>	Excitation Voltage Output
<b>Description</b>	Send a value to the analog output channel of the addressed strain gauge input module. Upon receipt, the analog output channel will output this value.
<b>Syntax</b>	<p>\$AA7(data)(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>7 is the excitation voltage output command.</p> <p>(data) is the value that has to be output through the analog output channel. The data format is engineering unit and the range is between 0 to 10 V.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command is valid.</p> <p>?AA(cr) if a value was sent that is out of range.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! delimiter character indicating a valid command was received.</p> <p>? delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command:   \$337+05.000(cr)</p> <p>response:   !33(cr)</p> <p>The command sends the value +05.000V to the analog output channel of the strain gauge input module at address 33h. The module responds that the command is valid. Its output data format is in engineering unit, the value is +05.000V.</p>

## \$AAS

<b>Name</b>	Start-up Voltage Output Configuration
<b>Description</b>	Stores the present analog output value of the strain gauge input module with address AA in the module's non-volatile register. The output value will take effect upon start-up or after a brownout.
<b>Syntax</b>	<p>\$AAS(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module whose analog output is to be set.</p> <p>S is the start-up voltage output configuration command.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command is valid.</p> <p>?AA(cr) if an invalid command was issued.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! delimiter character indicating a valid command was received.</p> <p>? delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>

**NOTICE:** A strain gauge input module requires a maximum of 6 milliseconds after it received a Startup Voltage Output Configuration command to let the settings take effect. During this interval, the module can not be addressed to perform any other actions.

**\$AAS****Example**

command: \$0AS(cr)

response: !0A(cr)

Presume the present output value of the output channel of the strain gauge input module with address 0A is +05.000V. The command tells the module store the present output value, in its non-volatile memory. When the module is powered up or reset, its default output value will be +05.000V.

The response of the strain gauge input module indicates that the command has been received.

## \$AAE

<b>Name</b>	Trim Calibration
<b>Description</b>	Trims the output voltage of the strain gauge input module a specified number of units up or down.
<b>Syntax</b>	<p>\$AAE(number of counts)(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module to be calibrated.</p> <p>E is the trim calibration command.</p> <p>(number of counts) is the 2-character twos complement hexadecimal value that represents the number of counts by which to increase or decrease the output voltage. Each count equals approximately 1mV. Values range from 00 to 7F and from 80 to FF, where 00 represents 0 counts, 7F represents 127 counts, 80 represents -128 counts and FF represents -1 counts. Negative values decrease and positive values increase the output voltage according to the number of counts.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command is valid.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exist.</p> <p>! delimiter character indicating a valid command was received.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command: \$07E14(cr)</p> <p>response: !07</p> <p>The command tells the analog output of the strain gauge input module at address 07h to increase its output value by 20 (14h) counts which is approximately 20 mV.</p> <p>The strain gauge input module confirms the increase.</p> <p>In order to perform this trim calibration, a voltmeter should be connected to the module's output. (See also the zero calibration command and span calibration command of the strain gauge input module and Chapter 5, Calibration, for a detailed description.)</p>

**\$AAA**

<b>Name</b>	Zero Calibration
<b>Description</b>	Stores the voltage output value of the addressed strain gauge input module as zero voltage reference.
<b>Syntax</b>	<p>\$AAA(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module who's output channel is to be calibrated.</p> <p>A is the zero calibration command.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command is valid.</p> <p>?AA(cr) if an invalid command was issued.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! delimiter character indicating a valid command was received.</p> <p>? delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>

Before issuing the Zero Calibration command, the analog output should be trimmed to the correct value with the Trim Calibration command. A voltmeter should be connected to the module's output channel.(See also the strain gauge input module's Trim Calibration command and Chapter 5, Calibration, for a detailed description.)

## \$AAB

<b>Name</b>	Span Calibration
<b>Description</b>	Stores the voltage output value of the addressed strain gauge input module as 10V reference.
<b>Syntax</b>	<p>\$AAB(cr)</p> <p>\$ is a delimiter character.</p> <p>AA(range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module who's output channel is to be calibrated.</p> <p>B is the span calibration command.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command is valid.</p> <p>?AA(cr) if an invalid command was issued.</p> <p>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! delimiter character indicating a valid command was received.</p> <p>? delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the strain gauge input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>

Before issuing the Span Calibration command, the analog output should be trimmed to the correct value with the Trim Calibration command. A voltmeter should be connected to the module's output channel.(See also the strain gauge input module's Trim Calibration command and Chapter 5, Calibration, for a detailed description.)