4.4.2 Data Conversion and Display Command Set

Command Syntax	Command Name	Description	I/O Module
$AA3	Read Source High/Low Values for Linear Mapping	Read the high/low limit values from the specified module for linear mapping.	4014D
$AA5	Read Target High/Low Values for Linear Mapping	Read the mapped input high/ low limit values from the specified module for linear mapping.	4014D
$AA6 (data_A)(data_B)	Write Source High/Low Values for Linear Mapping	Write the high/low limit values to the specified module for linear mapping. The module will only activate the source values after new target high/low values are written (Command $AA7).	4014D
$AA7 (data_C)(data_D)	Write Target High/Low Values for Linear Mapping	Write the mapped input high/ low limit values to a specified module for linear mapping. This command is only valid if its was preceded by a $AA6 command.	4014D
$AAAV	Enable/Disable Linear Mapping	Enables or disables the linear mapping function of the specified analog input module.	4014D
$AA8V	Select LED Data Origin	Select whether LED will display data from the input module directly or from the host PC	4014D
$AA9(sign_data)	Send LED Data	The PC sends data to the module's LED display. This command is valid only after selectting LED to display from PC ($AA8V)	4014D

$AA3

Name Read Source High/Low Values for Linear Mapping

Description Read the high/low limit values from a specified module for linear mapping.

Syntax $AA3(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of the analog input module that you want to interrogate.

3 identifies the command to read the module's high/low limit value for linear mapping.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(data_A)(data_B)(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(data_A) is the module's low limit value for linear mapping. The data must consist of an "+" or "-" sign followed by five decimal digits and a fixed decimal point.

(data_B) is the module's high limit value for linear mapping. The data must consist of an "+" or "-" sign followed by five decimal digits and a fixed decimal point.

(cr) the terminating character, carriage return (0Dh).

$AA3

Example

command: $133(cr)
response: !13+04.000+20.000(cr)

The module is configured for an ±20 mA input current range. The linear mapping function should already have been executed. The module's input high/low limit values are +20.000 and +04.000. The command requests the analog input module at address 13 to return its input limit values for linear mapping. The module at address 13 returns its input high/low limit values which are +20.000 and +04.000.

$AA5

Name Read Target High/Low Values for Linear Mapping

Description Read the mapped input high/ low limit values from a specified module for linear mapping.

Syntax $AA5(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of the analog input module that you want to interrogate.

5 is the command to read the mapped high/low limit value for linear mapping.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(data_C)(data_D)(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(data_C) is the mapped low limit value for linear mapping. The data must consist of a "+" or "-" sign followed by five decimal digits and a fixed decimal point.

(data_D) is the mapped high limit value for linear mapping. The data must consist of a "+" or "-" sign followed by five decimal digits and a fixed decimal point.

(cr) is the terminating character, carriage return (0Dh).

$AA5

Example

command: $135(cr)
response: !13+000.000+200.00(cr)

The module is configured for a ±20mA input current range. The linear mapping function had been executed and the mapped input high/low limit values were +200.00 and +000.00. The command requests the analog input module at address 13 to return its mapped input limit values for linear mapping. The addressed module returns the mapped input high/low limit values at address 13 are +200.00 and +000.00.

$AA6(data_A)(data_B)

Name Write Source High/Low Values for Linear Mapping

Description Write the high/low limit values to a specified module for linear mapping. The module will only activate the source values after new target high/low values are written (Command $AA7).

Syntax $AA6(data_A)(data_B)(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of the analog input module.

6 identifies the set high/low limit value for linear mapping command.

(data_A) is the low limit input value of the module for linear mapping. This value must be lower than the module's high limit input value for linear mapping (data_B). The data format is the same as the module's input current range. The minimum value allowed is equal to the minimum input value of the current range.

(data_B) is the high limit input value of the module for linear mapping. This value must be greater than the module's low limit input value for linear mapping (data_A). The data format is the same as the module's input current range, and the maximum value allowed is equal to the maximum input value of the current range.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(cr) if the command is valid.

The addressed module stores the high/low input values in a buffer. The module updates these values only after the command $AA7(data_C) (data_D) is executed.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(cr) is the terminating character, carriage return (0Dh).

$AA6(data_A)(data_B)

Example

command: $136+04.000+20.000(cr)
response: !13(cr)

The module is configured for a ±20 mA input current range. The command orders the module at address 13 to change its analog input range from +04.000 mA to +20.000 mA. The addressed module stores these values in a buffer and will only update the high/low limit value of the input current range when command $137(data_C)(data_D) is executed (see command $AA7(data_C)(data_D)).

Example

command: $016-100.00+100.00(cr)
response: !01(cr)

The module is configured for a ±150 mV input range. The command orders the module at address 01 to change its analog input range from -100.00 mV to +100.00 mV. The addressed module stores these values in a buffer and will only update the high/low limit value of the input current range when command $017(data_C)(data_D) is executed.

$AA7(data_C)(data_D)

Name Write Target High/Low Values for Linear Mapping

Description Write the mapped input high/low limit values to a specified module for linear mapping. This command is only valid if it was preceded by a $AA6 command.

Syntax $AA7(data_C)(data_D)(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of the analog input module that you want to interrogate.

7 is the command to set the mapped high/low limit value for linear mapping.

(data_C) is the low mapped limit input value for linear mapping from the addressed module's low limit input value. This value need not be lower than the mapped high limit input value (data_D). The data format must consist a "+" or "-" sign followed by five decimal digits and a fixed decimal point. The allowed maximum value is 19999.

(data_D) is the high mapped limit input value for linear mapping from the addressed module's high limit input value. The data format must include a "+" or "-" sign followed by five decimal digits and a fixed decimal point. The allowed maximum value is 19999.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(cr) if the command is valid.

The addressed module update the input limit value of the range, and transform the data to a new value by linear mapping. This command is valid only after the command $AA6(data_A)(data_B) had been executed for each time. Notice that this command will enable linear mapping function.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(cr) is the terminating character, carriage return (0Dh).

$AA7(data_C)(data_D)

Example

command: $137+000.00+200.00(cr)
response: !13(cr)

The module is configured for ±20 mA input current range. Previously the module executed the command $136+04.000+20.000, which ordered the module with address 13 to map data from +4.0 mA and +20.0 mA. The current command defines the range (0 and 200) to which these values will be mapped to. From now on, if the input signal is 12 mA, then the output will be 100.00. Notice that the addressed module will also update the input limit values to +04.000 mA and +20.000 mA for the previous command $136+04.000+20.000. Input signals out of this range will cause invalid output data.

Example

command: $017+100.00-100.00(cr)
response: !01(cr)

The module is configured for a ±150 mV input voltage range and already executed command $016-100.00+100.00. The current command requests the module at address 01 to map data from the earlier specified -100.00 mV and +100.00 mV to the range +100.00 and -100.00. Therefore, if an input signal of 50 mV is received, then the output will be -50.00. Notice that the addressed module will also update the input limit value to be -100.000 mV and +100.00 mV because of the previous command $136-100.00+100.00. Input signals out of this range will cause invalid output data.

$AAAV

Name Enable/Disable Linear Mapping

Description Enables or disables the linear mapping function of the specified analog input module.

Syntax $AAAV(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of analog input module

A selects the linear mapping function

V is either 0 or 1 which determines the linear mapping function to be enable or disabled. 1 means linear mapping function is enable, and 0 means disabled.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(cr) is the terminating character, carriage return (0Dh).

Example command: $01A1(cr)
response: !01(cr)

The command enables the linear mapping function of the analog input module at address 01.

$AA8V

Name Select LED Data Origin

Description Select whether LED will display data from the input module directly or from the host PC

Syntax $AA8V(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of analog input module that you want to interrogate.

8 is the select LED driver command.

V is either 1 or 2 to select which is going to send data to the LED. 1 means the driver is the addressed module, and 2 means the host PC will send data..

(cr) is the terminating character, carriage return (0Dh)

Response !AA(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(cr) is the terminating character, carriage return (0Dh).

Example command: $0181(cr)
response: !01(cr)

The command sets the analog input modules at address 01 to display data sent by the host PC. After this command, the PC can use command $AA9(data) to send the data to the addressed module.

$AA9(data)

Name Send LED Data

Description PC sends data to LED display. This command is valid only after selecting LED to display from PC ($AA8V)

Syntax $AA9(data)(cr)

$ is a delimiter character.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module

9 identifies the PC send data to LED command.

(data) is the data which must consist of an "+" or "-" sign followed by five decimal digits and a fixed decimal point. The maximum value is 19999.

(cr) is the terminating character, carriage return (0Dh)

Response !AA(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

There is no response if the module detects a syntax error or communication error or if the specified address does not exist

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of an analog input module.

(cr) is the terminating character, carriage return (0Dh).

Example command: $019+1999.9(cr)
response: !01(cr)

The command sends display data (+1999.9) to the analog input module at address 01. This command is only valid when it is preceded by command $0181. (See command $AA8V.)

Example command: $019-00290.(cr)
response: !01(cr)

The command sends display data -00290 to the analog input module at address 01. Note that even when sending an integer the data must contain a decimal point.