

4.7.3 Digital Filter and Programmable Threshold Command Set

Command Syntax	Command Name	Description	I/O Module
\$AA4S	Enable/Disable Digital Filter	Enables or disables the digital filter of the addressed counter/frequency module	4080, 4080D
\$AA4	Read Filter Status	The addressed counter frequency module returns the status of its digital filter	4080, 4080D
\$AA0H(data)	Set Minimum Input Signal Width at High Level	Sets the minimum input signal width at high level for a specified counter/frequency module	4080, 4080D
\$AA0H	Read Minimum Input Signal Width at High Level	Reads the minimum input signal width setting at high level for a specified counter/frequency module	4080, 4080D
\$AA0L(data)	Set Minimum Input Signal Width at Low Level	Sets the minimum input signal width at low level for a specified counter/frequency module	4080, 4080D
\$AA0L	Read Minimum Input Signal Width at Low Level	Reads minimum input signal width setting at low level for a specified counter/frequency module	4080, 4080D
\$AA1H(data)	Set Non-isolated High Trigger Level	Sets the high trigger level of non-isolated input signals for a specified counter/frequency module	4080, 4080D
\$AA1H	Read Non-isolated High Trigger Level	Requests the addressed counter frequency module to return the high trigger level for non-isolated input signals	4080, 4080D
\$AA1L(data)	Set Non-isolated Low Trigger Level	Sets the low trigger level of non-isolated input signals for a specified counter/frequency module	4080, 4080D
\$AA1L	Read Non-isolated Low Trigger Level	Requests the addressed counter/ frequency module to return the low trigger level for non-isolated input signals	4080, 4080D

\$AA4S

Name	Enable/Disable Digital Filter
Description	Enables or disables the digital filter of the addressed counter/frequency module
Syntax	<p>\$AA4S(cr)</p> <p>\$ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of counter/frequency module that you want to interrogate.</p> <p>4 identifies the Enable/Disable Filter command</p> <p>S is the digital filter mode.</p> <p>S = 0 means disable filter</p> <p>S = 1 means enable filter</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Response	<p>!AA(cr) if the command is valid.</p> <p>There is no response if the module detects a syntax or communication error, or if the specified address does not exist.</p> <p>! is a delimiter character indicating the command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter input module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
Example	<p>command: \$0340(cr)</p> <p>response: !03(cr)</p> <p>The command orders the counter/frequency module at address 03 to disable its digital filter. The addressed module returns its address to indicate that it has executed the command successfully.</p>

\$AA4

Name	Read Filter Status
Description	Read the digital filter status of the addressed counter/frequency module
Syntax	<p>\$AA4(cr)</p> <p>\$ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of counter/frequency module that you want to interrogate.</p> <p>4 identifies the Read Filter Status command</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Response	<p>!AAS(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>! is a delimiter character indicating the command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter input module.</p> <p>S is the digital filter mode.</p> <p>S = 0 means filter is disabled</p> <p>S = 1 means filter is enabled</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
Example	<p>command: \$034(cr)</p> <p>response: !030(cr)</p> <p>The command requests the counter/frequency module at address 03 to return whether its digital filter is on or not. The addressed module returns its address to indicate that its digital filter is disabled.</p>

\$AA0H(data)

Name Set Minimum Input Signal Width at High Level

Description: Set the minimum input signal width at high level for a specified counter/frequency module to filter the noise.

Syntax: \$AA0H(data)(cr)

\$ is a delimiter character.

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

0H identifies the Set Minimum Input Signal Width at High Level command

(data) is the minimum width at high level. The unit is μsec (microseconds) and its resolution is 1 μsec . The format is a five digit integer that can range from 2 μsec to 65535 μsec . Out of range values will cause errors.

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

Response: !AA(cr) if the command is valid. The addressed module stores the value and will recognize the input signal "high" only after the input signal continues "high" and for longer than the specified value.

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

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

! is a delimiter character indicating the command was valid.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.

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

Example: command: \$130H00020(cr)

response: !13(cr)

The command requests the counter/frequency module at address 13 to set the minimum input width at high level to 20 μsec . The addressed module stores the value and will recognize an input signal to be "high" only if the signal continues to be "high" longer than 20 μsec . This function can be used as a digital filter.

\$AA0H

Name:	Read Minimum Input Signal Width at High Level.
Description:	Read the minimum input signal width at high level for a specified counter/frequency module.
Syntax:	<p><code>\$AA0H(cr)</code></p> <p>\$ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of counter/frequency module that you want to interrogate.</p> <p>0H identifies the Read Minimum Input Signal Width at High Level command</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Response:	<p><code>!AA(data)(cr)</code> if the command is valid.</p> <p><code>?AA(cr)</code> if an invalid operation was entered.</p> <p>There is no response if the module detects a syntax or communication error, or if the specified address does not exist.</p> <p>! is a delimiter character indicating the command was valid.</p> <p>? is a delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.</p> <p>(data) is the minimum width at high level. The unit is μsec (microseconds) and its resolution is 1 μsec. The format is a five digit integer that ranges from 2 μsec to 65535 μsec.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
Example:	<p>command: <code>\$130H(cr)</code></p> <p>response: <code>!1300020(cr)</code></p> <p>The command requests the counter/frequency module at address 13 to read its minimum input signal width at high level. The addressed module replies that its minimum input signal width at high level is 20 μsec.</p>

\$AA0L(data)

Name	Set Minimum Input Signal Width at Low Level
Description:	Set the minimum input signal width at low level for a specified counter/frequency module to filter noise.
Syntax:	<p>\$AA0L(data)(cr)</p> <p>\$ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of counter/frequency module that you want to interrogate.</p> <p>0H identifies the Set Minimum Input Signal Width at Low Level command</p> <p>(data) is the minimum width at low level. The unit is μsec (microseconds) and its resolution is 1 μsec. The format is a five digit integer that can range from 2 μsec to 65535 μsec. Out of range values will cause errors.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Response:	<p>!AA(cr) if the command is valid. The addressed module stores the value and will recognize the input signal "low" only if the input signal continues to be "low" longer than the specified time.</p> <p>?AA(cr) if an invalid operation was entered.</p> <p>There is no response if the module detects a syntax or communication error, or if the specified address does not exist.</p> <p>! is a delimiter character indicating the command was valid.</p> <p>? is a delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Example:	<p>command: \$050L00084(cr)</p> <p>response: !05(cr)</p> <p>The command requests the counter/frequency module at address 05 to set the minimum input width at low level to 84 μsec. The addressed module stores the value and will recognize an input signal to be "low" only if the signal continues to be "low" longer than 84 μsec. This function can be used as digital filter.</p>

\$AA0L

Name:	Read Minimum Input Signal Width at Low Level.
Description:	Read the minimum input signal width at low level for a specified counter/frequency module to filter noise.
Syntax:	<p>\$AA0L(cr)</p> <p>\$ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of the counter/frequency module that you want to interrogate.</p> <p>0H identifies the Read Minimum Input Signal Width at Low Level command</p> <p>(cr) is the terminating character, carriage return (0Dh)</p>
Response:	<p>!AA(data)(cr) if the command is valid.</p> <p>?AA(cr) if an invalid operation was entered.</p> <p>There is no response if the module detects a syntax or communication error, or if the specified address does not exist.</p> <p>! is a delimiter character indicating the command was valid.</p> <p>? is a delimiter character indicating the command was invalid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.</p> <p>(data) is the minimum width at low level. The unit is μsec (microsecond) and its resolution is 1 μsec. The format is a five digit integer that ranges from 2 μsec to 65535 μsec.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
Example:	<p>command: \$050L(cr)</p> <p>response: !0500084(cr)</p> <p>The command requests the counter/frequency module at address 05 to read its minimum input signal width at low level. The addressed module replies that its minimum input signal width at low level is 84 μsec.</p>

\$AA1H(data)

Name: Set Non-isolated High Trigger Level.

Description: Set the high trigger level for non-isolated input signals for a specified counter/frequency module.

Syntax \$AA1H(data)(cr)

\$ is a delimiter character.

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

1H identifies the Set Non-isolated High Trigger Level command

(data) is the high trigger level for non-isolated input

The unit and resolution are both 0.1 V (voltage). The format is a two digit integer that can range from 1 to 50 (i.e. 0.1 to 5 V). This high trigger level must at all times be higher than the low trigger level, set by the \$AA1L(data) command. When the high trigger level is out of range or lower than the low trigger level an error will be the result.

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

Response: !AA(cr) if the command is valid. The addressed module stores the value and will recognize input signal as “high” only when they exceed the high trigger level

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

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

! is a delimiter character indicating the command was valid.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.

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

Example: command: \$131H30(cr)

response: !13(cr)

The command requests the counter/frequency module at address 13 to set its non-isolated high trigger level to 3 V. The addressed module stores the value and will recognize the input signals to be “high” only after the signals exceed 3 V. This function can be used as a level filter.

\$AA1H

- Name:** Read Non-isolated High Trigger Level.
- Description:** Read the high trigger level for non-isolated input signals of a specified counter/frequency module.
- Syntax:** \$AA1H(cr)
\$ is a delimiter character.
AA (range 00-FF) represents the 2-character hexadecimal address of counter/frequency module that you want to interrogate.
1H identifies the Read Non-isolated High Trigger Level
(cr) is the terminating character, carriage return (0Dh)
- Response:** !AA(data)(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 valid.
? is a delimiter character indicating the command was invalid.
AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency module.
(data) is the high trigger level of non-isolated input signals
The unit and resolution are both 0.1 V (voltage). The format is a two digit integer that can range from 1 to 50 (i.e. 0.1 V to 5 V).
(cr) is the terminating character, carriage return (0Dh).
- Example:** command: \$131H(cr)
response: !1330(cr)
The command requests the counter/frequency module at address 13 to read its non-isolated high trigger level. The addressed module replies that the high trigger level is 3 V.

\$AA1L(data)

Name: Set Non-isolated Low Trigger Level.

Description: Set the low trigger level of non-isolated input signals for a specified counter/frequency module.

Syntax \$AA1L(data)(cr)

\$ is a delimiter character.

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

1L identifies the Set Non-isolated Low Trigger Level command

(data) is the low trigger level for non-isolated input signals.

The unit and resolution are both 0.1 V (voltage). The format is a two digit integer that can range from 1 to 50 (i.e. 0.1 to 5 V).

This low trigger level must at all times be lower than the high trigger level, set by \$AA1H(data) command. When the low trigger level is out of range or higher than the high trigger level an error will result.

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

Response: !AA(cr) if the command is valid. The addressed module stores the value and will recognize input signal as “low” only when it exceeds the low trigger level

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

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

! is a delimiter character indicating the command was valid.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency input module.

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

Example: command: \$051L08(cr)

response: !05(cr)

The command requests the counter/frequency module at address 05 to set its non-isolated low trigger level to 0.8 V. The addressed module stores the value and will recognize the TTL input signal to be “low” only if the signal exceeds 0.8 V. This function can be used as a level filter.

\$AA1L

Name: Read Non-isolated Low Trigger Level.

Description: Read the low trigger level for non-isolated input signals of a specified counter/frequency module.

Syntax: \$AA1L(cr)

\$ is a delimiter character.

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

1L identifies the Read Non-isolated Low Trigger Level

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

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

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

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

! is a delimiter character indicating the command was valid.

? is a delimiter character indicating the command was invalid.

AA (range 00-FF) represents the 2-character hexadecimal address of a counter/frequency module.

(data) is the low trigger level of non-isolated input signal. The unit and resolution are both 0.1 V (voltage). The format is a two digit integer that can range from 1 to 50 (i.e. 0.1 V to 5 V).

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

Example: command: \$051L(cr)

response: !0508(cr)

The command requests the counter/frequency module at address 05 to read its non-isolated input signal low trigger level. The addressed module replies that its low trigger level is 0.8 V.

