

#### 4.7.4 Digital Output and Alarm Command Set

Command Syntax	Command Name	Description	I/O Module
@AAPN(data)	Set Initial Count Value of Counter N	Sets the initial count value of the module for counter 0 or counter 1	4080
@AAGN	Read Initial Count Value of Counter N	Read the initial count value of counter 0 or counter 1	4080
@AAEAN	Enable Alarm of Counter N	Enable alarm for the specified counter 0 or counter 1	4080
@AADAN	Disable Alarm of Counter N	Disable alarm for the specified counter 0 or counter 1	4080
@AAPA(data)	Set Alarm Limit Value of Counter 0	Download the alarm limit value for counter 0 of the specified module	4080
@AASA(data)	Set Alarm Limit Value of Counter 1	Download the alarm limit value for counter 1 of the specified module	4080
@AARP	Read Alarm Limit Value of Counter 0	Ask the module to return the alarm limit value of counter 0	4080
@AARA	Read Alarm Limit Value of Counter 1	Ask the module to return the alarm limit value of counter 1	4080
@AADO(data)	Set Digital Output Values	Set the values of the module's two digital outputs (ON or OFF)	4080, 4080D
@AADI	Read Digital Output and Alarm Status	Ask the addressed module to return the state of its two digital output channels and the status of its alarm	4080, 4080D

## Command Set

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Command Syntax	Command Name	Description	I/O Module
@AAEAT	Enable Alarm of Counter 0	Enable the alarm of counter 0 in either momentary or latching modes	4080D
@AADA	Disable Alarm of Counter 0	Disable all alarm functions of counter 0	4080D
@AACA	Clear Latch Alarm	Both alarm states of the counter are set to OFF, no alarm	4080D
@AAPA(data)	Set Low-Alarm Count Value of Counter 0	Downloads the low-alarm count value for counter 0 of the specified module	4080D
@AASA(data)	Set High-Alarm Count Value of Counter 0	Downloads the high-alarm count value for counter 0 of the specified module	4080D
@AARP	Read Low-Alarm Count Value of Counter 0	Ask the module to return the low-alarm count value for counter 0	4080D
@AARA	Read High-Alarm Count Value of Counter 0	Ask the module to return the high-alarm count value for counter 0	4080D

**@AAPN(data)**

<b>Name</b>	Set Initial Count Value of Counter 0 (or 1)
<b>Description</b>	Set the initial count value for counter 0 or counter 1 of the specified counter module at address AA.
<b>Syntax</b>	<p>@AAPN(data)(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p><b>PN</b> represents the Set Initial Count Value command.</p> <p>N = 0    represents counter 0</p> <p>N = 1    represents counter 1</p> <p>(data) is the initial count value which must consist of eight hexadecimal digits.</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>! is a delimiter character indicating a command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command:        @12P0000000FF(cr)</p> <p>response:        !12(cr)</p> <p>The command sets the initial count value 000000FF for counter 0 of the counter module at address 12. The addressed module replies that the command has been received.</p>

**@AAGN**

<b>Name</b>	Read Initial Count Value of Counter 0 (or 1)
<b>Description</b>	Read the initial count value of counter 0 or 1 of the specified counter module at address AA.
<b>Syntax</b>	<p><b>@AAGN(data)(cr)</b></p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>GN represents the Read Initial Count Value for counter command.</p> <p>N = 0    represents counter 0</p> <p>N = 1    represents counter 1</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>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 a command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(data) is the initial count value which must consist of eight hexadecimal digits.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command:    @12G0(cr)</p> <p>response:    !12000000FF(cr)</p> <p>The command instructs the module at address 12h to return the initial value of counter 0. The module replies that initial count value of counter 0 is 000000FF.</p>

**@AAEAN**

**Name** Enable Alarm

**Description** Enable Alarm for the specified counter

**Syntax** @AAEAN (cr)

@ is a delimiter character.

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

EA represents the Enable Alarm for counter command.

N = 0 Represents counter 0

N = 1 Represents counter 1

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

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

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 a command was valid.

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

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

**Example** command: @12EA0(cr)

response: !12(cr)

The command sets the Alarm Status as 'Enable' for counter 0 of the counter module at address 12h. It means that the digital output will be triggered while the count value of the counter 0 reaches the alarm limit value. The addressed module replies that the command has been received.

**@AADAN**

<b>Name</b>	Disable Alarm
<b>Description</b>	Disable Alarm for the specified counter
<b>Syntax</b>	<p><b>@AADAN</b> (cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p><b>DAN</b> represents the Disable Alarm Mode for counter command.</p> <p>N = 0    Represents counter 0</p> <p>N = 1    Represents counter 1</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>! is a delimiter character indicating a command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command:        @12<b>D</b>A0(cr)</p> <p>response:        !12(cr)</p> <p>The counter module at address 12h is instructed to disable the alarm functions for counter 0. The module confirms its alarm functions have been disabled.</p>

**@AAPA(data)****@AASA(data)**

<b>Name</b>	Set Alarm Limit Value of Counter 0 (or 1)
<b>Description</b>	Set the Alarm limit value of counter 0 (or 1) of the specified counter module at address AA.
<b>Syntax</b>	<p><b>@AAPA(data)(cr)</b></p> <p><b>@AASA(data)(cr)</b></p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p><b>PA</b> represents the Set Alarm Limit value for counter 0 command.</p> <p><b>SA</b> represents the Set Alarm Limit Value for counter 1 command.</p> <p>(data) is the alarm limit value which must consist of eight hexadecimal digits.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Response</b>	<p><b>!AA(cr)</b> 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><b>!</b> is a delimiter character indicating a command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command:       <b>@\$12PA0000FFFF(cr)</b></p> <p>response:       <b>!12(cr)</b></p> <p>The command sets the alarm limit value 0000FFFF for counter 0 of the counter module at address 12h. The addressed module replies that the command has been received.</p>

**@AARP****@AARA**

<b>Name</b>	Read Alarm Limit Value of Counter 0 (or 1)
<b>Description</b>	Read the alarm limit value of counter 0 (or 1) of the specified counter module at address AA.
<b>Syntax</b>	<p><b>@AARP</b>(data)(cr)</p> <p><b>@AARA</b>(data)(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p><b>RP</b> represents the Read Alarm Limit Value for counter 0 command.</p> <p><b>RA</b> represents the Read Alarm Limit Value for counter 1 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>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 a command was valid.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(data) is the alarm limit value which must consist of eight hexadecimal digits.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command:       <b>@12RP</b>(cr)</p> <p>response:       <b>!120000FFFF</b>(cr)</p> <p>The command instructs the module at address 12h to return the alarm limit value of counter 0. The module replies that the alarm limit value of counter 0 is 0000FFFF.</p>



**@AADO**

<b>Name</b>	Set Digital Output
<b>Description</b>	Set the values of the module's two digital outputs (ON or OFF).
<b>Syntax</b>	<p>@AADO(data)(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>DO is the Set Digital Output command</p> <p>(data) is the two-character parameter that sets the state for the two digital output bits of the module, as shown below:</p> <p>00 all D/O bits are OFF</p> <p>01 bit 0 is ON, bit 1 is OFF</p> <p>02 bit 0 is OFF, bit 1 is ON</p> <p>03 all bits are ON</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command was valid</p> <p>?AA(cr) if an invalid parameter was entered</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>? delimiter character indicating the command was invalid</p> <p>AA represents the 2-character hexadecimal address of the responding counter module.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command: @05DO01(cr)</p> <p>response: !05(cr)</p> <p>The counter module at address 05h is instructed to set digital output channel 1 to ON and digital output channel 2 to OFF. The module confirms the settings.</p>

**@AADI**

<b>Name</b>	Read Digital Output and Alarm State
<b>Description</b>	The addressed counter module is instructed to return the value of its two digital output channels and the state of its alarm
<b>Syntax</b>	<p>@AADI(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of an counter module.</p> <p>DI identifies the Read Digital Output and Alarm Status command.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AASOO00(cr) if the command was valid</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>AA represents the 2-character hexadecimal address of the responding counter module.</p> <p>S (for ADAM-4080) is a hexadecimal number that represents the disable or enable status of alarm mode:</p> <p>0h Counter 0 alarm is disabled, counter 1 alarm is disabled</p> <p>1h Counter 0 alarm is enabled, counter 1 alarm is disabled</p> <p>2h Counter 0 alarm is disabled, counter 1 alarm is enabled</p> <p>3h Counter 0 alarm is enabled, counter 1 alarm is enabled</p> <p>S (for ADAM-4080D) is a hexadecimal number that represents the alarm state of counter 0:</p> <p>0h Alarm of counter 0 is disabled</p> <p>1h Alarm of counter 0 is in MOMENTARY mode</p> <p>2h Alarm of counter 0 is in LATCH mode</p> <p>OO is a hexadecimal number representing the Digital Output port's channel 0 and 1 status (00h = D/O channels 0 and 1 are both OFF, 01h = channel 0 is ON, channel 1 is OFF, 02h = channel 0 is OFF, channel 1 is ON, 03h = channel 0 and 1 are both ON).</p> <p>(cr) represents the terminating character, carriage return (0Dh)</p>

**@AA DI****Example**

command: @15DI(cr)

response: !1510000(cr)

(ADAM-4080D)

The counter module at address 15h is instructed to return digital output data and alarm status. The module responds that both digital output channels are OFF and alarm state is Momentary

**Example**

command: @05DI(cr)

response: !0530000(cr)

(ADAM-4080)

The counter module at address 05H is instructed to return digital output and alarm status. The module responds that both digital output channels are OFF and the alarm status for both counters are ENABLED.

**@AAEAT**

<b>Name</b>	Enable Alarm
<b>Description</b>	The addressed counter module is instructed to enable its alarm for counter 0 in either Latching or Momentary mode.
<b>Syntax</b>	<p>@AAEAT(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of an counter module.</p> <p>EA identifies the Enable Alarm command.</p> <p>T indicates the alarm type and can have the value M = Momentary alarm state, or L = Latching alarm state.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command was 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 a valid command was received</p> <p>AA represents the 2-character hexadecimal address of the responding counter module.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command: @03EAL(cr)</p> <p>response: !03(cr)</p> <p>The counter module at address 03h is instructed to enable its alarm for counter 0 in Latching mode.</p> <p>The module confirms that the command has been received.</p>

**NOTICE:** *A counter module requires a maximum of two seconds after it receives an Enable Alarm command to let the settings take effect. During this time, the module can not be addressed to perform any other actions.*

**@AADA**

<b>Name</b>	Disable Alarm
<b>Description</b>	Disable all alarm functions for counter 0 of the addressed counter module.
<b>Syntax</b>	<p>@AADA(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of an counter module.</p> <p>DA identifies the Disable Alarm command.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command was valid</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>! is a delimiter character indicating a valid command was received</p> <p>AA represents the 2-character hexadecimal address of the responding counter module.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command: @07DA(cr)</p> <p>response: !07(cr)</p> <p>The counter module at address 07h is instructed to disable all alarm functions for channel 0. The module confirms its alarm functions have been disabled.</p>

**NOTICE:** *A counter module requires a maximum of two seconds after it receives a Disable Alarm command before the settings take effect. During this interval, the module cannot be addressed to perform any other actions.*

**@AACA**

<b>Name</b>	Clear Latch Alarm
<b>Description</b>	Both alarm states (High and Low) of the addressed counter module are set to OFF, no alarm.
<b>Syntax</b>	<p>@AACA(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of an counter module.</p> <p>CA is the Clear Latch Alarm command</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(cr) if the command was valid</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>! is a delimiter character indicating a valid command was valid</p> <p>AA represents the 2-character hexadecimal address of the responding counter module.</p> <p>(cr) represents terminating character, carriage return (0Dh)</p>
<b>Example</b>	<p>command: @05CA(cr)</p> <p>response: !05(cr)</p> <p>The counter module at address 05h is instructed to set both alarm states (High and Low) to OFF. The module confirms that it has done so.</p>

**@AAPA(data)**

<b>Name</b>	Set Low-alarm Count Value for Counter 0.
<b>Description</b>	Set the low-alarm count value for counter 0 of the specified counter module.
<b>Syntax</b>	<p>@AAPA(data)(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address a the counter module.</p> <p>PA identifies the Set Low-alarm Count Value command.</p> <p>(data) is the low-alarm count value which must consist of eight hexadecimal digits. This value should be lower than the high alarm value.</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 exists.</p> <p>! is a delimiter character indicating a valid command was valid</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command: @12PA0000FFFF(cr)</p> <p>response: !12(cr)</p> <p>The command sets the low-alarm count number 0000FFFF(hex) for channel 0 of the counter modules at address 12. The addressed module replies that the command has been received.</p>

**@AASA(data)**

<b>Name</b>	Set Hi-alarm Count Value of Counter 0.
<b>Description</b>	Set the high-alarm count value for counter 0 of the specified counter module.
<b>Syntax</b>	<p>@AASA(data)(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address a the counter module.</p> <p>SA identifies the Set High-alarm Count Value command.</p> <p>(data) is the high-alarm count value which must consist of eight hexadecimal digits. This value should be higher than the low-alarm count value.</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 exists.</p> <p>! is a delimiter character indicating a valid command</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command: @12SAF0000000(cr)</p> <p>response: !12(cr)</p> <p>The command sets the low-alarm count number F0000000(hex) for channel 0 of the counter modules at address 12. The addressed module replies that the command has been received.</p>



**@AARP**

<b>Name</b>	Read Low-alarm Count Value of Counter 0
<b>Description</b>	Read the low-alarm value of counter 0 of the specified counter module.
<b>Syntax</b>	<p>@AARP(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter.</p> <p>RP identifies the Read Low-alarm Count Value 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>There is no response if the module detects a syntax error or communication error or if the specified address does not exists.</p> <p>! is a delimiter character indicating a valid command</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(data) is the low-alarm count value which consists of eight hexadecimal digits.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command: @12RP(cr)</p> <p>response: !120000FFFF(cr)</p> <p>The command instructs the module at address 12 to return its low-alarm count value. The module replies that counter 0's low-alarm count value is 0000FFFF(hex).</p>

**@AARA**

<b>Name</b>	Read High-alarm Count Value for Counter 0.
<b>Description</b>	Requests the addressed counter module to return its high-alarm count value of counter 0.
<b>Syntax</b>	<p>@AARA(cr)</p> <p>@ is a delimiter character.</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>RA identifies the Read High-alarm Count Value command (cr) is the terminating character, carriage return (0Dh)</p>
<b>Response</b>	<p>!AA(data)(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 exists.</p> <p>! a delimiter character indicating a valid command</p> <p>AA (range 00-FF) represents the 2-character hexadecimal address of a counter module.</p> <p>(data) is the high-alarm count value which consists of eight hexadecimal digits.</p> <p>(cr) is the terminating character, carriage return (0Dh).</p>
<b>Example</b>	<p>command: @12RA(cr)</p> <p>response: !12F0000000(cr)</p> <p>The command instructs the module at address 12 to return its high-alarm count value. The module replies that counter 0's high-alarm count value is F0000000(hex).</p>