



# UDC 3200 Application Note

## Alarms Set Up Group

### Introduction

An alarm is an indication that an event that you have configured (for example—Process Variable) has exceeded one or more alarm limits. There are two alarms available. Each alarm has two setpoints. You can configure each of these two setpoints to alarm on various controller parameters.

There are two alarm output selections, High and Low. You can configure each setpoint to alarm either High or Low. These are called single alarms.

You can also configure the two setpoints to alarm on the same event and to alarm both high and low. A single adjustable Hysteresis of 0 % to 100 % is configurable for the alarm setpoint.

See the *Installation* section for Alarm relay contact information.

The prompts for the Alarm Outputs appear whether or not the alarm relays are physically present. This allows the Alarm status to be shown on the display and/or sent via communications to a host computer.

### Function Prompts

#### ALARMS Group Function Prompts

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<b>A1S1 VAL</b>	Value in engineering units	<b>ALARM 1 SETPOINT 1 VALUE</b> —This is the value at which you want the alarm type chosen in prompt A1S1TYPE to actuate. The value depends on what the setpoint has been configured to represent. No setpoint is required for alarms configured for Communications SHED. For SP Programming the value is the segment number for which the event applies.  This prompt does not appear for “Alarm on Manual” type alarm. For example: A1S1TYPE = MANUAL.
<b>A1S2 VAL</b>	Value in engineering units	<b>ALARM 1 SETPOINT 2 VALUE</b> —This is the value at which you want the alarm type chosen in prompt A1S2TYPE to actuate.  The details are the same as A1S1 VAL.
<b>A2S1 VAL</b>	Value in engineering units	<b>ALARM 2 SETPOINT 1 VALUE</b> —This is the value at which you want the alarm type chosen in prompt A2S1TYPE to actuate.  The details are the same as A1S1 VAL.



# UDC 3200 Application Note

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<b>A2S2 VAL</b>	Value in engineering units	<p><b>ALARM 2 SETPOINT 2 VALUE</b>—This is the value at which you want the alarm type chosen in prompt A2S2TYPE to actuate.</p> <p>The details are the same as A1S1 VAL.</p>
<b>A1S1TYPE</b>	NONE INPUT 1 INPUT 2 PV DEV OUTPUT SHED EV ON EV OFF MANUAL REM SP F SAFE PV RATE DIG INP 1 DIG INP 2 DEV 2 BREAK TCWARN TCFail PVHOLD	<p><b>ALARM 1 SETPOINT 1 TYPE</b>—Select what you want Setpoint 1 of Alarm 1 to represent. It can represent the Process Variable, Deviation, Input 1, Input 2, Output, and if you have a model with communications, you can configure the controller to alarm on SHED. If you have setpoint programming, you can alarm when a segment goes ON or OFF.</p> <p><b>NO ALARM</b>  <b>INPUT 1</b>  <b>INPUT 2</b>  <b>PROCESS VARIABLE</b>  <b>DEVIATION</b>  <b>OUTPUT (NOTE 1)</b>  <b>SHED FROM COMMUNICATIONS</b>  <b>EVENT ON (SP PROGRAMMING)</b>  <b>EVENT OFF (SP PROGRAMMING)</b>  <b>ALARM ON MANUAL MODE (NOTE 2)</b>  <b>REMOTE SETPOINT</b>  <b>FAILSAFE</b>  <b>PV RATE OF CHANGE</b>  <b>DIGITAL INPUT 1 ACTUATED (NOTE 7)</b>  <b>DIGITAL INPUT 2 ACTUATED (NOTE 7)</b>  <b>DEVIATION FROM LSP 2 (NOTE 3)</b>  <b>LOOP BREAK (NOTE 4)</b>  <b>THERMOCOUPLE WARNING (NOTE 5)</b>  <b>THERMOCOUPLE FAIL (NOTE 6)</b>  <b>PV HOLD</b></p> <p><b>ATTENTION</b></p> <p>NOTE 1. When the controller is configured for Three Position Step Control, alarms set for Output will not function.</p> <p>NOTE 2. Alarm 1 is not available if the Timer is enabled because Alarm 1 is dedicated to Timer output.</p> <p>NOTE 3. This Deviation Alarm is based upon deviation from the 2nd Local Setpoint or Remote SP regardless of whichever SP is active.</p> <p>NOTE 4. Loop Break monitors the control loop to determine if it is working. When enabled, the control output is checked against the minimum and maximum output limit settings. When the output reaches one of these limits, a timer begins. If the timer expires and the output has not caused the PV</p>



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		<p>to move by a pre-determined amount, then the alarm activates, thus signaling that the loop is broken. The loop break timer value must be configured by the operator as the AxSx VAL entry. This value is in seconds with a range of 0 to 3600 seconds. A setting of 0 is equivalent to an instantaneous loop break when the output reaches one of its limit values.</p> <p>NOTE 5. Thermocouple Warning means that the instrument has detected that the Thermocouple Input is starting to fail. Not valid for other input types.</p> <p>NOTE 6. Thermocouple Failing means that the instrument has detected that the Thermocouple Input is in imminent danger of failing. Not valid for other input types.</p> <p>NOTE 7: For the Digital Input selections, DIG INP1 can be either enabled or disabled in the Options Group (See <i>Sub-Section <b>Error! Reference source not found.</b></i>), but DIG INP2 must be enabled in the Options Group for the alarm to function properly.</p>
<p><b>A1S1 H L</b></p>	<p>HIGH LOW</p>	<p><b><i>If Setpoint Programming is disabled or if the Alarm Type is not configured for Event On/Off:</i></b></p> <p><b>ALARM 1 SETPOINT 1 STATE</b>—Select whether you want the alarm type chosen in prompt A1S1TYPE to alarm High or Low.</p> <p><b>HIGH ALARM</b> <b>LOW ALARM</b></p>



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<b>A1S1 EV</b>	BEGIN END	<p><i>If Setpoint Programming is enabled and if the Alarm Type is configured for Event On/Off:</i></p> <p><b>ALARM 1 SEGMENT EVENT 1</b>—Select whether you want the alarm type chosen in prompt A1S1TYPE to alarm the beginning or end of a segment in setpoint Ramp/Soak programming.</p> <p><b>BEGINNING OF SEGMENT</b> <b>END OF SEGMENT</b></p> <p><b>ATTENTION</b> Alarms configured for events will not operate on Setpoint Program segments of zero length.</p>
<b>A1S2TYPE</b>	Same as A1S1 TYPE	<p><b>ALARM 1 SETPOINT 2 TYPE</b>—Select what you want Setpoint 2 of Alarm 1 to represent. The selections are the same as A1S1TYPE.</p>
<b>A1S2 H L</b>  <b>A1S2 EV</b>	HIGH LOW  BEGIN END	<p><b>ALARM 1 SETPOINT 2 STATE</b>—Same as A1S1 H L.</p> <p><b>ALARM 1 SEGMENT EVENT 2</b>—Same as A1S1 EV.</p>
<b>A2S1TYPE</b>	Same as A1S1 TYPE	<p><b>ALARM 2 SETPOINT 1 TYPE</b>—Select what you want Setpoint 1 of Alarm 2 to represent. The selections are the same as A1S1TYPE.</p> <p><b>ATTENTION</b> Not available with Relay Duplex or Position Proportional output types unless using Dual Relay PWA.</p>
<b>A2S1 H L</b>  <b>A2S1 EV</b>	HIGH LOW  BEGIN END	<p><b>ALARM 2 SETPOINT 1 STATE</b>—Same as A1S1 H L.</p> <p><b>ALARM 2 SEGMENT EVENT 1</b>—Same as A1S1 EV.</p>
<b>A2S2TYPE</b>	Same as A1S1 TYPE	<p><b>ALARM 2 SETPOINT 2 TYPE</b>—Select what you want Setpoint 2 of Alarm 2 to represent. The selections are the same as A1S1TYPE.</p> <p><b>ATTENTION</b> Not applicable with Relay Duplex or Position Proportional output types unless using Dual Relay PWA.</p>
<b>A2S2 H L</b>  <b>A2S2 EV</b>	HIGH LOW  BEGIN END	<p><b>ALARM 2 SETPOINT 2 STATE</b>—Same as A1S1 H L.</p> <p><b>ALARM 2 SEGMENT EVENT 2</b>—Same as A1S1 EV.</p>



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<b>AL HYST</b>	0.0 to 100.0 % of span or full output as appropriate	<p><b>ALARM HYSTERESIS</b> A single adjustable Hysteresis is provided on alarms such that when the alarm is OFF it activates at exactly the alarm setpoint; when the alarm is ON, it will not deactivate until the variable is 0.0 % to 100 % away from the alarm setpoint.</p> <p>Configure the Hysteresis of the alarms based on INPUT signals as a % of input range span.</p> <p>Configure the Hysteresis of the alarm based on OUTPUT signals as a % of the full scale output range.</p>
<b>ALM OUT1</b>	NO LAT LATCH	<p><b>LATCHING ALARM OUTPUT 1</b>—Alarm output 1 can be configured to be Latching or Non-latching.</p> <p><b>NO LAT</b>—Non-latching <b>LATCH</b>—Latching</p> <p><b>ATTENTION</b> When configured for latching, the alarm will stay active after the alarm condition ends until the RUN/HOLD key is pressed.</p>
<b>BLOCK</b>	DISABLE BLOCK 1 BLOCK 2 BLOCK12	<p><b>ALARM BLOCKING</b>—Prevents nuisance alarms when the controller is first powered up. The alarm is suppressed until the parameter gets to the non-alarm limit or band. Alarm blocking affects both alarm setpoints.</p> <p><b>DISABLE</b>—Disables blocking <b>BLOCK 1</b>—Blocks alarm 1 only <b>BLOCK 2</b>—Blocks alarm 2 only <b>BLOCK12</b>—Blocks both alarms</p> <p><b>ATTENTION</b> When enabled on power up or initial enabling via configuration, the alarm will not activate unless the parameter being monitored has not been in an alarm condition for a minimum of one control cycle (167 ms).</p>
<b>DIAGNOST</b>	DISABLE ALARM 1 ALARM 2	<p><b>DIAGNOSTIC</b> Monitors the Current Output and/or Auxiliary Output for an open circuit condition. If either of these two outputs falls below about 3.5 mA, then an Alarm is activated. This configuration is in addition to whatever was selected for AxSxTYPE.</p> <p><b>DISABLE</b>—Disables Diagnostic Alarm <b>ALARM 1</b>—Alarm 1 is diagnostic alarm <b>ALARM 2</b>—Alarm 2 is diagnostic alarm</p>