



# UDC 3500 Application Note

## Input 1 Set Up Group

### Function Prompts

**Table 1 INPUT 1 Group Function Prompts**

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>IN1 TYPE</b></p> <p><b>ATTENTION</b> Changing the input type will result in the loss of Field Calibration values and will restore Factory Calibration values.</p>	<p>DISABLE</p> <p>B TC</p> <p>E TC H</p> <p>E TC L</p> <p>J TC H</p> <p>J TC M</p> <p>J TC L</p> <p>K TC H</p> <p>K TC M</p> <p>K TC L</p> <p>NNM H</p> <p>NNM L</p> <p>NIC H</p> <p>NIC L</p> <p>PLAT H</p> <p>PLAT L</p> <p>R TC</p> <p>S TC</p> <p>T TC H</p> <p>T TC L</p> <p>W TC H</p> <p>W TC L</p> <p>100 PT</p> <p>100 LO</p> <p>200 PT</p> <p>500 PT</p> <p>1000 PT</p> <p>RAD RH</p> <p>RAD RI</p> <p>0-20mA</p> <p>4-20mA</p> <p>0-10mV</p> <p>0-50mV</p> <p>0-100mV</p> <p>0-500mV</p> <p>-10-10m</p> <p>0-1 V</p> <p>0-5 V</p> <p>1-5 V</p> <p>0-10 V</p> <p>-1-1 V</p> <p>TC DIFF</p> <p>CARBON</p>	<p><b>INPUT 1 ACTUATION TYPE</b>—This selection determines what actuation you are going to use for Input 1.</p> <p><b>DISABLE</b>—Disables Input.</p> <p><b>B TC</b>—B Thermocouple</p> <p><b>E TC H</b>—E Thermocouple High</p> <p><b>E TC L</b>—E Thermocouple Low</p> <p><b>J TC H</b>—J Thermocouple High</p> <p><b>J TC M</b>—J Thermocouple Med</p> <p><b>J TC L</b>—J Thermocouple Low</p> <p><b>K TC H</b>—K Thermocouple High</p> <p><b>K TC M</b>—K Thermocouple Med</p> <p><b>K TC L</b>—K Thermocouple Low</p> <p><b>NNM H</b>—Ni-Ni-Moly Thermocouple High</p> <p><b>NNM L</b>—Ni-Ni-Moly Thermocouple Low</p> <p><b>NIC H</b>—Nicrosil-Nisil Thermocouple High</p> <p><b>NIC L</b>—Nicrosil-Nisil Thermocouple Low</p> <p><b>PLATINEL H</b>—Platinel II Thermocouple High</p> <p><b>PLATINEL L</b>—Platinel II Thermocouple Low</p> <p><b>R TC</b>—R Thermocouple</p> <p><b>S TC</b>—S Thermocouple</p> <p><b>T TC H</b>—T Thermocouple High</p> <p><b>T TC L</b>—T Thermocouple Low</p> <p><b>W TC H</b>—W5W26 Thermocouple High</p> <p><b>W TC L</b>—W5W26 Thermocouple Low</p> <p><b>100 PT</b>—100 Ohm RTD High</p> <p><b>100 LO</b>—100 Ohm RTD Low</p> <p><b>200 PT</b>—200 Ohm RTD</p> <p><b>500 PT</b>—500 Ohm RTD</p> <p><b>1000 PT</b>—1000 Ohm RTD</p> <p><b>RAD RH</b>—Radiamatic RH</p> <p><b>RAD RI</b>—Radiamatic RI</p> <p><b>0-20mA</b>—0 to 20 Milliamperes</p> <p><b>4-20mA</b>—4 to 20 Milliamperes</p> <p><b>0-10mV</b>—0 to 10 Millivolts</p> <p><b>0-50mV</b>—0 to 50 Millivolts</p> <p><b>0-100mV</b>—0 to 100 Millivolts</p> <p><b>0-500mV</b>—0 to 500 Millivolts</p> <p><b>-10-10mV</b>— -10 to +10 Millivolts</p> <p><b>0-1 V</b>—0 to 1 Volts</p> <p><b>0-5 V</b>—0 to 5 Volts</p> <p><b>1-5 V</b>—1 to 5 Volts</p> <p><b>0-10 V</b>—0 to 10 Volts</p> <p><b>-1-1 V</b>— -1 to +1 Volts</p> <p><b>TC DIFF</b>—Thermocouple Differential</p>



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
	OXYGEN	<b>Carbon</b> —Carbon Probe Input <b>Oxygen</b> —Oxygen Probe Input
<b>XMITTER1</b>	B TC            R TC E TC H        S TC E TC L        T TC H J TC H        T TC L J TC M        W TC H J TC L        W TC L K TC H        100 PT K TC M        100 LO K TC L        200 PT NNM H        500 PT NNM L        RAD RH NIC H        RAD RI NIC L        LINEAR PLAT H        SQROOT PLAT L	<p><b>TRANSMITTER CHARACTERIZATION</b>—This selection lets you instruct the controller to characterize a linear input to represent a non-linear one. If characterization is performed by the transmitter itself, then select LINEAR</p> <p><b>ATTENTION</b> Prompt only appears when a linear actuation is selected at prompt IN1 TYPE.</p> <p>FOR EXAMPLE: If Input 1 is a 4 to 20 mA signal, but the signal represents a type K H thermocouple, then configure <b>K TC H</b> and the controller will characterize the 4 to 20 mA signal so that it is treated as a type K thermocouple input (high range).</p> <p>Parameter definitions are the same as in IN1 TYPE.</p>
<b>IN1 HIGH</b>	–999. To 9999. Floating (in engineering units)	<p><b>INPUT 1 HIGH RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.</p> <p>For Inputs with Linear or Square Root transmitter characterization, you can scale the Input signal to display the values you want for 0 % and 100 %.</p> <p>EXAMPLE: Process Variable = Flow Range of Flow = 0 to 250 Liters/Minute Actuation (Input 1) = 4 to 20 mA Characterization (XMITTER 1) = LINEAR Set IN1 HIGH value to 250 Set IN1 LOW value to 0 Then: 4 mA = 0 Liters/Minute 12 mA = 125 Liters/Minute 20 mA = 250 Liters/Minute</p> <p><b>ATTENTION</b> If Input 1 is selected as the PV Source, then the range of the control Setpoint will be limited by the range of units selected here.</p>
<b>IN1 LOW</b>	–999. To 9999. Floating (in engineering units)	<p><b>INPUT 1 LOW RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.</p> <p>See the example in IN1 HI.</p> <p><b>ATTENTION</b> If Input 1 is selected as the PV Source, then the range of the control Setpoint will be limited by the range of units selected here</p>



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<b>RATIO 1</b>	–20.00 to 20.00 Floats to 3 decimal places	<b>RATIO ON INPUT 1</b> —Select the Ratio value you want on Input 1.
<b>BIAS IN1</b>	–999. to 9999. (in engineering units)	<b>BIAS ON INPUT 1</b> —Bias is used to compensate the input for drift of an input value due to deterioration of a sensor, or some other cause. Select the bias value you want on Input 1.
<b>FILTER 1</b>	0 to 120 seconds No filter = 0	<b>FILTER FOR INPUT 1</b> —A software digital filter is provided for Input 1 to smooth the input signal. You can configure the first order lag time constant from 1 to 120 seconds. If you do not want filtering, enter 0.
<b>BURNOUT1</b>	NONE  UP  DOWN	<p><b>BURNOUT PROTECTION (SENSOR BREAK)</b>—Provides most input types with upscale or downscale protection if the input fails.</p> <p><b>ATTENTION</b> For Burnout to function properly on 0-20 mA, 0-10 Volt or –1 to +1 Volt input types (or a 0-5V type that uses a dropping resistor), the dropping resistor must be remotely located (across the transmitter terminals). Otherwise, the input at the instrument terminals will always be 0 (i.e., within the normal operating range) when the sensor opens.</p> <p><b>NO BURNOUT</b>—Pre-configured Failsafe output (selected in the CONTROL Set up Group) applied if failed input is detected (does not apply for an input out of range). Diagnostic message IN1 FAIL is intermittently flashed on the lower display.</p> <p><b>UPSCALE BURNOUT</b>—Forces the Input 1 signal to the full scale value when the sensor fails. Diagnostic message IN1 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the full scale Input 1 signal developed by the Burnout circuitry.</p> <p><b>DOWNSCALE BURNOUT</b>—Forces the Input 1 signal to the lower range value when the sensor fails. Diagnostic message IN1 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the lower range Input 1 signal developed by the Burnout circuitry.</p>



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
	NO FS	<b>NO FAILSAFE</b> —This selection does not provide input failure detection and should only be used when a thermocouple input is connected to another instrument which supplies the Burnout current. (For this selection, no burnout signal is sent to the sensor.) <b>ATTENTION</b> The Thermocouple Health feature is disabled when NO FS is configured.
<b>EMISSIV1</b>	0.01 to 1.00	<b>EMISSIVITY</b> —A correction factor applied to the Radiamatic input signal that is the ratio of the actual energy emitted from the target to the energy which would be emitted if the target were a perfect radiator. Available only for Radiamatic inputs



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## Input 2 Set Up Group

### Function Prompts

Table -2 INPUT 2 Group Function Prompts

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>IN2 TYPE</b></p> <p><b>ATTENTION</b> Changing the input type will result in the loss of Field Calibration values and will restore Factory Calibration values.</p>	<p>DISABLE</p> <p>B TC</p> <p>E TC H</p> <p>E TC L</p> <p>J TC H</p> <p>J TC M</p> <p>J TC L</p> <p>K TC H</p> <p>K TC M</p> <p>K TC L</p> <p>NNM H</p> <p>NNM L</p> <p>NIC H</p> <p>NIC L</p> <p>PLAT H</p> <p>PLAT L</p> <p>R TC</p> <p>S TC</p> <p>T TC H</p> <p>T TC L</p> <p>W TC H</p> <p>W TC L</p> <p>100 PT</p> <p>100 LO</p> <p>200 PT</p> <p>500 PT</p> <p>1000 PT</p> <p>RAD RH</p> <p>RAD RI</p> <p>0-20mA</p> <p>4-20mA</p> <p>0-10mV</p> <p>0-50mV</p> <p>0-100mV</p> <p>0-500mV</p> <p>-10-10m</p> <p>0-1 V</p> <p>0-5 V</p> <p>1-5 V</p> <p>0-10 V</p> <p>-1-1 V</p> <p>TC DIFF</p>	<p><b>INPUT 2 ACTUATION TYPE</b>—This selection determines what actuation you are going to use for Input 2.</p> <p><b>DISABLE</b>—Disables Input.</p> <p><b>B TC</b>—B Thermocouple</p> <p><b>E TC H</b>—E Thermocouple High</p> <p><b>E TC L</b>—E Thermocouple Low</p> <p><b>J TC H</b>—J Thermocouple High</p> <p><b>J TC M</b>—J Thermocouple Med</p> <p><b>J TC L</b>—J Thermocouple Low</p> <p><b>K TC H</b>—K Thermocouple High</p> <p><b>K TC M</b>—K Thermocouple Med</p> <p><b>K TC L</b>—K Thermocouple Low</p> <p><b>NNM H</b>—Ni-Ni-Moly Thermocouple High</p> <p><b>NNM L</b>—Ni-Ni-Moly Thermocouple Low</p> <p><b>NIC H</b>—Nicrosil-Nisil Thermocouple High</p> <p><b>NIC L</b>—Nicrosil-Nisil Thermocouple Low</p> <p><b>PLATINEL H</b>—Platinel II Thermocouple High</p> <p><b>PLATINEL L</b>—Platinel II Thermocouple Low</p> <p><b>R TC</b>—R Thermocouple</p> <p><b>S TC</b>—S Thermocouple</p> <p><b>T TC H</b>—T Thermocouple High</p> <p><b>T TC L</b>—T Thermocouple Low</p> <p><b>W TC H</b>—W5W26 Thermocouple High</p> <p><b>W TC L</b>—W5W26 Thermocouple Low</p> <p><b>100 PT</b>—100 Ohm RTD High</p> <p><b>100 LO</b>—100 Ohm RTD Low</p> <p><b>200 PT</b>—200 Ohm RTD</p> <p><b>500 PT</b>—500 Ohm RTD</p> <p><b>1000 PT</b>—1000 Ohm RTD</p> <p><b>RAD RH</b>—Radiamatic RH</p> <p><b>RAD RI</b>—Radiamatic RI</p> <p><b>0-20mA</b>—0 to 20 Milliamperes</p> <p><b>4-20mA</b>—4 to 20 Milliamperes</p> <p><b>0-10mV</b>—0 to 10 Millivolts</p> <p><b>0-50mV</b>—0 to 50 Millivolts</p> <p><b>0-100mV</b>—0 to 100 Millivolts</p> <p><b>0-500mV</b>—0 to 500 Millivolts</p> <p><b>-10-10mV</b>— -10 to +10 Millivolts</p> <p><b>0-1 V</b>—0 to 1 Volts</p> <p><b>0-5 V</b>—0 to 5 Volts</p> <p><b>1-5 V</b>—1 to 5 Volts</p> <p><b>0-10 V</b>—0 to 10 Volts</p> <p><b>-1-1 V</b>— -1 to +1 Volts</p> <p><b>TC DIFF</b>—Thermocouple Differential</p>



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<b>XMITTER2</b>	B TC            R TC E TC H        S TC E TC L        T TC H J TC H        T TC L J TC M        W TC H J TC L        W TC L K TC H        100 PT K TC M        100 LO K TC L        200 PT NNM H        500 PT NNM L        RAD RH NIC H        RAD RI NIC L        LINEAR PLAT H       SQROOT PLAT L	<p><b>TRANSMITTER CHARACTERIZATION</b>—This selection lets you instruct the controller to characterize a linear input to represent a non-linear one. If characterization is performed by the transmitter itself, then select LINEAR.</p> <p><b>ATTENTION</b> Prompt only appears when a linear actuation is selected at prompt IN1 TYPE.</p> <p>FOR EXAMPLE:            If Input 2 is a 4 to 20 mA signal, but the signal represents a type K H thermocouple, then configure <b>K TC H</b> and the controller will characterize the 4 to 20 mA signal so that it is treated as a type K thermocouple input (high range).</p> <p>Parameter definitions are the same as in IN2 TYPE.</p>
<b>IN2 HIGH</b>	–999. To 9999. Floating (in engineering units)	<p><b>INPUT 2 HIGH RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.</p> <p>See the example in IN1 HI.</p>
<b>IN2 LOW</b>	–999. To 9999. Floating (in engineering units)	<p><b>INPUT 2 LOW RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.</p> <p>See the example in IN1 HI.</p>
<b>RATIO 2</b>	–20.00 to 20.00 Floats to 3 decimal places	<b>RATIO ON INPUT 2</b> —Select the Ratio value you want on Input 2.
<b>BIAS IN2</b>	–999. to 9999. (in engineering units)	<b>BIAS ON INPUT 2</b> —Bias is used to compensate the input for drift of an input value due to deterioration of a sensor, or some other cause. Select the bias value you want on Input 2.
<b>FILTER 2</b>	0 to 120 seconds No filter = 0	<b>FILTER FOR INPUT 2</b> —A software digital filter is provided for Input 2 to smooth the input signal. You can configure the first order lag time constant from 1 to 120 seconds. If you do not want filtering, enter 0.



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>BURNOUT2</b></p>	<p>NONE</p>	<p><b>BURNOUT PROTECTION (SENSOR BREAK)</b>— Provides most input types with upscale or downscale protection if the input fails.</p> <p><b>ATTENTION</b> For Burnout to function properly on 0-20 mA, 0-10 Volt or –1 to +1 Volt input types (or a 0-5V type that uses a dropping resistor), the dropping resistor must be remotely located (across the transmitter terminals). Otherwise, the input at the instrument terminals will always be 0 (i.e., within the normal operating range) when the sensor opens.</p>
	<p>UP</p>	<p><b>NO BURNOUT</b>—Pre-configured Failsafe output (selected in the CONTROL or CONTROL2 Set up Group) applied if failed input is detected (does not apply for an input out of range). Diagnostic message IN2 FAIL is intermittently flashed on the lower display.</p> <p><b>UPSCALE BURNOUT</b>—Forces the Input 2 signal to the full scale value when the sensor fails. Diagnostic message IN2 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the full scale Input 2 signal developed by the Burnout circuitry.</p>
	<p>DOWN</p>	<p><b>DOWNSCALE BURNOUT</b>—Forces the Input 2 signal to the lower range value when the sensor fails. Diagnostic message IN2 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the lower range Input 2 signal developed by the Burnout circuitry.</p>
	<p>NO FS</p>	<p><b>NO FAILSAFE</b>—This selection does not provide input failure detection and should only be used when a thermocouple input is connected to another instrument which supplies the Burnout current. (For this selection, no burnout signal is sent to the sensor.)</p> <p><b>ATTENTION</b> The Thermocouple Health feature is disabled when NO FS is configured.</p>



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<b>Function Prompt</b> Lower Display	<b>Selections or Range of Setting</b> Upper Display	<b>Parameter Definition</b>
<b>EMISSIV2</b>	0.01 to 1.00	<b>EMISSIVITY</b> —A correction factor applied to the Radiamatic input signal that is the ratio of the actual energy emitted from the target to the energy which would be emitted if the target were a perfect radiator. Available only for Radiamatic inputs.



# UDC 3500 Application Note

## Input 3 Set Up Group

### Function Prompts

Table -3 INPUT 3 Group Function Prompts

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>IN3 TYPE</b></p> <p><b>ATTENTION</b> Changing the input type will result in the loss of Field Calibration values and will restore Factory Calibration values. Selecting Position Proportional Control in the Output Setup Group forces Input 3 to the Slidewire Selection.</p>	<p>DISABLE B TC E TC H E TC L J TC H J TC M J TC L K TC H K TC M K TC L NNM H NNM L NIC H NIC L PLAT H PLAT L R TC S TC T TC H T TC L W TC H W TC L 100 PT 100 LO 200 PT 500 PT 1000 PT RAD RH RAD RI 0-20mA 4-20mA 0-10mV 0-50mV 0-100mV 0-500mV -10-10m 0-1 V 0-5 V 1-5 V 0-10 V -1-1 V SLIDEW</p>	<p><b>INPUT 3 ACTUATION TYPE</b>—This selection determines what actuation you are going to use for Input 3.</p> <p><b>DISABLE</b>—Disables Input. <b>B TC</b>—B Thermocouple <b>E TC H</b>—E Thermocouple High <b>E TC L</b>—E Thermocouple Low <b>J TC H</b>—J Thermocouple High <b>J TC M</b>—J Thermocouple Med <b>J TC L</b>—J Thermocouple Low <b>K TC H</b>—K Thermocouple High <b>K TC M</b>—K Thermocouple Med <b>K TC L</b>—K Thermocouple Low <b>NNM H</b>—Ni-Ni-Moly Thermocouple High <b>NNM L</b>—Ni-Ni-Moly Thermocouple Low <b>NIC H</b>—Nicrosil-Nisil Thermocouple High <b>NIC L</b>—Nicrosil-Nisil Thermocouple Low <b>PLATINEL H</b>—Platinel II Thermocouple High <b>PLATINEL L</b>—Platinel II Thermocouple Low <b>R TC</b>—R Thermocouple <b>S TC</b>—S Thermocouple <b>T TC H</b>—T Thermocouple High <b>T TC L</b>—T Thermocouple Low <b>W TC H</b>—W5W26 Thermocouple High <b>W TC L</b>—W5W26 Thermocouple Low <b>100 PT</b>—100 Ohm RTD High <b>100 LO</b>—100 Ohm RTD Low <b>200 PT</b>—200 Ohm RTD <b>500 PT</b>—500 Ohm RTD <b>1000 PT</b>—1000 Ohm RTD <b>RAD RH</b>—Radimatic RH <b>RAD RI</b>—Radimatic RI <b>0-20mA</b>—0 to 20 Milliampers <b>4-20mA</b>—4 to 20 Milliampers <b>0-10mV</b>—0 to 10 Millivolts <b>0-50mV</b>—0 to 50 Millivolts <b>0-100mV</b>—0 to 100 Millivolts <b>0-500mV</b>—0 to 500 Millivolts <b>-10-10mV</b>— -10 to +10 Millivolts <b>0-1 V</b>—0 to 1 Volts <b>0-5 V</b>—0 to 5 Volts <b>1-5 V</b>—1 to 5 Volts <b>0-10 V</b>—0 to 10 Volts <b>-1-1 V</b>— -1 to +1 Volts <b>SLIDEWIRE</b>—Slidewire for Position Proportional</p>



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
	TC DIFF SW EMUL	<b>TC DIFF</b> —Thermocouple Differential <b>SLIDEWIRE EMULATION</b> —Herculine Slidewire Emulation
<b>XMITTER3</b>	B TC            R TC E TC H        S TC E TC L        T TC H J TC H        T TC L J TC M        W TC H J TC L        W TC L K TC H        100 PT K TC M        100 LO K TC L        200 PT NNM H        500 PT NNM L        RAD RH NIC H         RAD RI NIC L         LINEAR PLAT H        SQROOT PLAT L	<b>TRANSMITTER 3 CHARACTERIZATION</b> —This selection lets you instruct the controller to characterize a linear input to represent a non-linear one. <b>ATTENTION</b> Prompt only appears when a linear actuation is selected at prompt IN3 TYPE. FOR EXAMPLE: If Input 3 is a 4 to 20 mA signal, but the signal represents a type K thermocouple, then select <b>K TC H</b> and the controller will characterize the 4 to 20 mA signal so that it is treated as a type K thermocouple input (high range). Parameter definitions are the same as in IN3 TYPE.
<b>IN3 HIGH</b>	–999. To 9999. Floating (in engineering units)	<b>INPUT 3 HIGH RANGE VALUE</b> —This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization. See the example in IN1 HI.
<b>IN3 LOW</b>	–999. To 9999. Floating (in engineering units)	<b>INPUT 3 LOW RANGE VALUE</b> —This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization. See the example in IN1 HI
<b>RATIO 3</b>	–20.00 to 20.00 Floats to 3 decimal places	<b>RATIO ON INPUT 3</b> —Select the Ratio value you want on Input 3.
<b>BIAS IN3</b>	–999. to 9999. (in engineering units)	<b>BIAS ON INPUT 3</b> —Bias is used to compensate the input for drift of an input value due to deterioration of a sensor, or some other cause. Select the bias value you want on Input 3.
<b>FILTER 3</b>	0 to 120 seconds No filter = 0	<b>FILTER FOR INPUT 3</b> —A software digital filter is provided for Input 3 to smooth the input signal. You can configure the first order lag time constant from 1 to 120 seconds. If you do not want filtering, enter 0.



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Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>BURNOUT3</b></p>	<p>NONE</p>	<p><b>BURNOUT PROTECTION (SENSOR BREAK)</b>— Provides most input types with upscale or downscale protection if the input fails.</p> <p><b>ATTENTION</b> For Burnout to function properly on 0-20 mA, 0-10 Volt or -1 to +1 Volt input types (or a 0-5V type that uses a dropping resistor), the dropping resistor must be remotely located (across the transmitter terminals). Otherwise, the input at the instrument terminals will always be 0 (i.e., within the normal operating range) when the sensor opens.</p>
	<p>UP</p>	<p><b>NO BURNOUT</b>—If Input 3 is being used in the Control Algorithm (such as the PV or RSP input parameter), then the pre-configured Failsafe output (selected in the CONTROL Set up Group) is applied when a failed input is detected (does not apply for an input out of range). Diagnostic message IN3 FAIL is intermittently flashed on the lower display.</p>
	<p>DOWN</p>	<p><b>UPSCALE BURNOUT</b>—Forces the Input 3 signal to the full scale value when the sensor fails. Diagnostic message IN3 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the full scale Input 3 signal developed by the Burnout circuitry.</p>
	<p>NO FS</p>	<p><b>DOWNSCALE BURNOUT</b>—Forces the Input 3 signal to the lower range value when the sensor fails. Diagnostic message IN3 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the lower range Input 3 signal developed by the Burnout circuitry.</p> <p><b>NO FAILSAFE</b>—This selection does not provide input failure detection and should only be used when a thermocouple input is connected to another instrument which supplies the Burnout current. (For this selection, no burnout signal is sent to the sensor.)</p> <p><b>ATTENTION</b> The Thermocouple Health feature is disabled when NO FS is configured.</p>



# UDC 3500 Application Note

<b>Function Prompt</b> Lower Display	<b>Selections or Range of Setting</b> Upper Display	<b>Parameter Definition</b>
<b>EMISSIV3</b>	0.01 to 1.00	<b>EMISSIVITY</b> —A correction factor applied to the Radiamatic input signal that is the ratio of the actual energy emitted from the target to the energy which would be emitted if the target were a perfect radiator. Available only for Radiamatic inputs.



# UDC 3500 Application Note

## Input 4 Set Up Group

### Introduction

This data deals with various parameters required to configure Input 4. Input 4 prompts are not available unless Input 2 Type is set to 0-5V, 1-5V, 0-20mA or 4-20mA.

### Function Prompts

**Table -4 INPUT 4 Group Function Prompts**

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>IN4 TYPE</b></p> <p><b>ATTENTION</b> Changing the input type will result in the loss of Field Calibration values and will restore Factory Calibration values.</p> <p>Input 4 prompts will not be available unless Input 2 Type is set to 0-5V, 1-5V, 0-20mA or 4-20mA.</p>	<p>DISABLE 0-20mA 4-20mA 0-5 V 1-5 V</p>	<p><b>INPUT 4 ACTUATION TYPE</b>—This selection determines what actuation you are going to use for Input 4.</p> <p><b>DISABLE</b>—Disables Input  <b>0-20mA</b>—0 to 20 Milliampere  <b>4-20mA</b>—4 to 20 Milliampere  <b>0-5 V</b>—0 to 5 Volts  <b>1-5 V</b>—1 to 5 Volts</p>
<p><b>XMITTER4</b></p>	<p>B TC            R TC E TC H        S TC E TC L        T TC H J TC H        T TC L J TC M        W TC H J TC L        W TC L K TC H        100 PT K TC M        100 LO K TC L        200 PT NNM H        500 PT NNM L        RAD RH NIC H        RAD RI NIC L        LINEAR PLAT H        SQROOT PLAT L</p>	<p><b>TRANSMITTER 4 CHARACTERIZATION</b>—This selection lets you instruct the controller to characterize a linear input to represent a non-linear one.</p> <p><b>ATTENTION</b> Parameter definitions are the same as in IN1 TYPE.</p>
<p><b>IN4 HIGH</b></p>	<p>–999. To 9999. Floating (in engineering units)</p>	<p><b>INPUT 4 HIGH RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.</p> <p>See the example in IN1 HI.</p>



# UDC 3500 Application Note

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<b>IN4 LOW</b>	–999. To 9999. Floating (in engineering units)	<b>INPUT 4 LOW RANGE VALUE</b> —This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization. See the example in IN1 HI
<b>RATIO 4</b>	–20.00 to 20.00 Floats to 3 decimal places	<b>RATIO ON INPUT 4</b> —Select the Ratio value you want on Input 4.
<b>BIAS IN4</b>	–999. to 9999. (in engineering units)	<b>BIAS ON INPUT 4</b> —Bias used to compensate the input for drift of an input value due to deterioration of a sensor, or some other cause. Select the bias value you want on Input 4.
<b>FILTER 4</b>	0 to 120 seconds No filter = 0	<b>FILTER FOR INPUT 4</b> —A software digital filter is provided for Input 4 to smooth the input signal. You can configure the first order lag time constant from 1 to 120 seconds. If you do not want filtering, enter 0.
<b>BURNOUT4</b>	NONE  UP	<p><b>BURNOUT PROTECTION (SENSOR BREAK)</b>— Provides most input types with upscale or downscale protection if the input fails.</p> <p><b>ATTENTION</b> For Burnout to function properly on 0-20 mA, 0-10 Volt or –1 to +1 Volt input types (or a 0-5V type that uses a dropping resistor), the dropping resistor must be remotely located (across the transmitter terminals). Otherwise, the input at the instrument terminals will always be 0 (i.e., within the normal operating range) when the sensor opens.</p> <p><b>NO BURNOUT</b>—If Input 4 is being used in the Control Algorithm (such as the PV or RSP input parameter), then the pre-configured Failsafe output (selected in the CONTROL Set up Group) is applied when a failed input is detected (does not apply for an input out of range). Diagnostic message IN4 FAIL is intermittently flashed on the lower display.</p> <p><b>UPSCALE BURNOUT</b>—Forces the Input 4 signal to the full scale value when the sensor fails. Diagnostic message IN4 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the full scale Input 4 signal developed by the Burnout circuitry.</p>





# UDC 3500 Application Note

## Input 5 Set Up Group

### Introduction

This data deals with various parameters required to configure Input 5. Input 5 prompts are not available unless Input 3 Type is set to 0-5V, 1-5V, 0-20mA or 4-20mA.

### Function Prompts

**Table -5 INPUT 5 Group Function Prompts**

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<p><b>IN5 TYPE</b></p> <p><b>ATTENTION</b> Changing the input type will result in the loss of Field Calibration values and will restore Factory Calibration values. Input 5 prompts will not be available unless Input 3 Type is set to 0-5V, 1-5V, 0-20mA or 4-20mA.</p>	<p>DISABLE 0-20mA 4-20mA 0-5 V 1-5 V</p>	<p><b>INPUT 5 ACTUATION TYPE</b>—This selection determines what actuation you are going to use for Input 5.</p> <p><b>DISABLE</b>—Disables Input  <b>0-20mA</b>—0 to 20 Milliampere  <b>4-20mA</b>—4 to 20 Milliampere  <b>0-5 V</b>—0 to 5 Volts  <b>1-5 V</b>—1 to 5 Volts</p>
<p><b>XMITTER5</b></p>	<p>B TC            R TC E TC H        S TC E TC L        T TC H J TC H        T TC L J TC M        W TC H J TC L        W TC L K TC H        100 PT K TC M        100 LO K TC L        200 PT NNM H        500 PT NNM L        RAD RH NIC H        RAD RI NIC L        LINEAR PLAT H       SQROOT PLAT L</p>	<p><b>TRANSMITTER 5 CHARACTERIZATION</b>—This selection lets you instruct the controller to characterize a linear input to represent a non-linear one.</p> <p><b>ATTENTION</b> Parameter definitions are the same as in IN1 TYPE.</p>
<p><b>IN5 HIGH</b></p>	<p>–999. To 9999. Floating (in engineering units)</p>	<p><b>INPUT 5 HIGH RANGE VALUE</b>—This value in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization. See the example in IN1 HI.</p>



# UDC 3500 Application Note

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
<b>IN5 LOW</b>	–999. To 9999. Floating (in engineering units)	<b>INPUT 5 LOW RANGE VALUE</b> —This in engineering units is displayed for all inputs but can only be changed for inputs configured for linear or square root transmitter characterization.  See the example in IN1 HI
<b>RATIO 5</b>	–20.00 to 20.00 Floats to 3 decimal places	<b>RATIO ON INPUT 5</b> —Select the Ratio value you want on Input 5.
<b>BIAS IN5</b>	–999. to 9999. (in engineering units)	<b>BIAS ON INPUT 5</b> —Bias is used to compensate the input for drift of an input value due to deterioration of a sensor, or some other cause. Select the bias value you want on Input 5.
<b>FILTER 5</b>	0 to 120 seconds No filter = 0	<b>FILTER FOR INPUT 5</b> —A software digital filter is provided for Input 5 to smooth the input signal. You can configure the first order lag time constant from 1 to 120 seconds. If you do not want filtering, enter 0.
<b>BURNOUT5</b>	NONE  UP	<p><b>BURNOUT PROTECTION (SENSOR BREAK)</b>— Provides most input types with upscale or downscale protection if the input fails.</p> <p><b>ATTENTION</b> For Burnout to function properly on 0-20 mA, 0-10 Volt or –1 to +1 Volt input types (or a 0-5V type that uses a dropping resistor), the dropping resistor must be remotely located (across the transmitter terminals). Otherwise, the input at the instrument terminals will always be 0 (i.e., within the normal operating range) when the sensor opens.</p> <p><b>NO BURNOUT</b>—If Input 5 is being used in the Control Algorithm (such as the PV or RSP input parameter), then the pre-configured Failsafe output (selected in the CONTROL Set up Group) is applied when a failed input is detected (does not apply for an input out of range). Diagnostic message IN5 FAIL is intermittently flashed on the lower display.</p> <p><b>UPSCALE BURNOUT</b>—Forces the Input 5 signal to the full scale value when the sensor fails. Diagnostic message IN5 FAIL intermittently flashed on the lower display.</p> <p>The controller remains in Automatic control mode and adjusts the controller output signal in response to the full scale Input 5 signal developed by the Burnout circuitry.</p>

