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*PC-Programmable RTD, T/C, Ohms, mV
and Potentiometer Limit Alarm Trips*

CPA

TPRG

CPA

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CPA

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Introduction

This is the users' manual for the Moore Industries CPA PC-Programmable Alarm (TPRG: RTD, T/C, mV, Ohms and Potentiometer Limit Alarm Trips). It contains all of the information needed to configure, install, operate, and maintain this instrument.

About this Manual

Wherever you see a "**Note**", "**Caution**", or "**WARNING**" pay particular attention.

WARNING - Hazardous procedure or condition that could injure the operator.

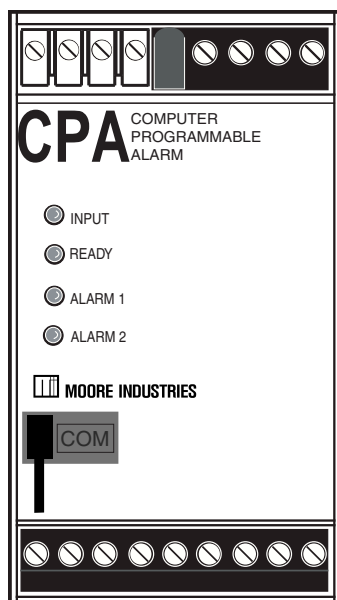
Caution - Hazardous procedure or condition that could damage or destroy the unit.

Note - Information that is helpful for a procedure, condition, or operation of the unit.

The CPA

The CPA (TPRG) is a PC-Programmable, user-configurable alarm. The instrument includes two alarm (relay) outputs and an optional analog output. The alarms can be configured as trip or fault alarms.

Figure 1. The CPA (TPRG)



The CPA has a READY LED to indicate the health of the unit, an INPUT LED to indicate the status of the input and a dual color LED, per relay, to indicate alarm status.

Model and Serial Numbers

Moore Industries uses a system of model and serial numbers to keep track of all of the information on every unit it sells and services. If a problem occurs with your CPA, check for a tag affixed to the unit listing these numbers. Supply the Customer Support representative with this information when calling.

Inputs

Refer to Table 3 of this manual for input ranges and accuracies of the CPA (TPRG).

Outputs

1PRG

This is a one relay output with a 5A@250Vac or 5A@24Vdc, 50/60Hz non-inductive contact rating. It is available in a DPDT arrangement. All relay contacts (NO, NC and COM) are available for use. No jumpers are required.

2PRG

This is a two relay output with a 5A@250Vac or 5A@24Vdc, 50/60Hz non-inductive contact rating. The contact arrangement is SPDT. All relay contacts (NO, NC and COM) are available for use. No jumpers are required.

Options

Analog Output (-AO)

The analog output range of the CPA (TPRG) can be voltage or current. The current output is a configurable source or sink output. Four terminals are provided to allow voltage/current and current sink/source selection without the need for jumpers. The output can be configured to narrower spans from the PC Configuration program. The range of the current output is 0–24mA. The range of the voltage output is -0.5–11V.

RF Option (-RF)

An RF option is also available. This version provides 30V/m RFI/EMI immunity compared to our standard model which offers 10V/m RFI/EMI immunity.

Specifications

<p>Performance</p> <p>Alarm Trip Repeatability: See Table 3</p> <p>Input Accuracy: See Table 3</p> <p>Overall Accuracy: The overall accuracy of the unit is the combined input and output (if any) accuracies. It includes the combined effects of linearity, hysteresis, repeatability, and adjustment resolution. It does not include ambient temperature effect</p> <p>Minimum Span at Specified Accuracy: See Table 3</p> <p>Cold Junction Compensation Accuracy (T/C Inputs Only): ±0.45°C</p> <p>Stability: See Table 1</p> <p>Response Time: 300msec (Defined as time from step change on input to alarm state change when alarm is set to trip midpoint)</p> <p>Alarm Deadband: Programmable from 0-100% of input range</p> <p>Alarm Trip Delay: 0-120 seconds</p> <p>Line Voltage Effect: ±0.002% of span per 1% change in line voltage (ac or dc)</p> <p>Isolation: Standard unit, 1000Vrms between case, input and output. 1500Vrms between power and input and between power and output; Unit with -RF option, 500Vrms between case, input, output and power</p> <p>Power Consumption: 3W typical, 4W max.</p>	<p>Performance (continued)</p> <p>Power Supply Effect: ±0.002% of span per 1% of line change</p> <p>Input Impedance: T/C inputs, 40Mohms, nominal</p> <p>Input Over-Range Protection: ±5Vdc</p> <p>Excitation Current (RTD and Ohm Inputs Only): 250microamps, ±10%</p> <p>WITH ANALOG OUTPUT:</p> <p>Output Accuracy: Current, ±0.01% of max. span (±2 microamps) Voltage, ±0.01% of max. span (±1mV)</p> <p>Response Time: 256msec maximum (128msec typical) for the output to change from 10% to 90% of its scale for an input step change of 0 to 100%</p> <p>Ripple: 50mVp-p maximum on voltage output; 10mVp-p measured across a 250 ohm load resistor for current output. (Frequencies up to 120Hz)</p> <p>Output Limiting: Input over range, -0.2V/0mA and 10.5V/21.4mA; Input failure, -0.5V/0mA and 11V/24mA</p> <p>Output Current Limiting: 25mA max.</p> <p>Load Effect (current outputs): 0.01% of span from 0 to maximum load resistance on current output</p> <p>Maximum Load Resistance: Current outputs, 1kohms; Voltage outputs, 2kohms</p>	<p>Indicators</p> <p>LED Type: INPUT LED: Dual color LED indicates input failure READY LED: Green LED indicates unit is operating properly ALARM 1 & ALARM 2 LED: Dual color LED per relay indicates alarm status</p> <p>Ambient Conditions</p> <p>Operating & Storage Range: -40°C to +85°C (-40°F to +185°F)</p> <p>Relay Range: -25°C to +70°C (-13°F to +158°F)</p> <p>Effect of Ambient Temperature on Cold Junction Compensation (T/C Inputs Only): ±0.005°C per °C change of ambient temperature</p> <p>Relative Humidity: 0-95%, non-condensing</p> <p>Ambient Temperature Effect: ±0.015% of maximum span/°C</p> <p>RFI/EMI Immunity (Standard Unit): 10V/m@20-1000MHz, 1kHz when tested according to IEC1000-4-3-1995 with 0.5% of span or less error</p> <p>RFI Immunity (with -RF Option): 30V/m@20-1000MHz, 1kHz AM when tested according to IEC1000-4-3-1995 with 0.5% of span or less error</p> <p>Noise Rejection: Common mode, 100dB@50/60Hz; Normal Mode, See Table 2</p> <p>Weight 653 g (21 oz)</p>
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Specifications and information subject to change without notice.

Table 1. Long-Term Stability

Stability (% of maximum span)	Input-to-Analog Output (Years)			Input-to-Relay Output (Years)		
	1	3	5	1	3	5
RTD, Ohm, & Pot Inputs	0.066	0.114	0.147	0.47	0.081	0.104
T/C & mV Inputs	0.047	0.082	0.106	0.008	0.014	0.019

Table 2. Normal Mode Rejection Ratio Table

Sensor Type	Max. p-p Voltage Injection for 100dB at 50/60Hz
T/C: J, K, N, C, E	150mV
T/C: T, R, S, B	80mV
Pt RTD: 100, 200, 300 ohms	250mV
Pt RTD: 400, 500, 1000 ohms	1V
Ni: 120 ohms	500mV
Cu: 9.03 ohms	100mV
Resistance	mV
1-4kohms	250-1000
0.25-1kohms	62.5-250
0.125-0.25kohms	31.25-62.5

Table 3. Accuracy with RTD, Thermocouple, Ohms, Potentiometer and Millivolt Inputs

Input	Type	α	Ohms	Conformance Range	Minimum Span	Input Accuracy/Repeatability	Maximum Range
RTD (2-, 3-, 4-Wire)	Platinum	0.003850	100	-200 to 850°C -328 to 1562°F	10°C (18°F)	±0.1°C (±0.18°F)	-240 to 960°C -400 to 1760°F
			200				
			300				
			400				
			500				
		1000					
		0.003902	100	-100 to 650°C -148 to 1202°F			-150 to 720°C -238 to 1328°F
			200				
			400				
			500				
1000							
0.003916	100	-200 to 510°C -328 to 950°F	-240 to 580°C -400 to 1076°F				
Nickel	0.00672	120	-80 to 320°C -112 to 608°F	-100 to 360°C -148 to 680°F			
Copper	0.00427	9.035	-50 to 250°C -58 to 482°F	±0.85°C (±1.53°F)	-65 to 280°C -85 to 536°F		
Ohms	Direct Resistance	n/a	0-4000	0-4000ohms	10ohms	±0.4ohms	0-4000ohms
	Potentiometer		4000 max.	0-100%	10%	±0.1%	0-100%
T/C	J	n/a	n/a	-180 to 760°C -292 to 1400°F	35°C 63°F	±0.25°C (±0.45°F)	-210 to 770°C -346 to 1418°F
	K	n/a	n/a	-150 to 1370°C -238 to 2498°F	40°C 72°F	±0.3°C (±0.54°F)	-270 to 1390°C -454 to 2534°F
	E	n/a	n/a	-170 to 1000°C -274 to 1832°F	35°C 63°F	±0.2°C (±0.36°F)	-270 to 1013°C -454 to 1855.4°F
	T	n/a	n/a	-170 to 400°C -274 to 752°F	35°C 63°F	±0.25°C (±0.45°F)	-270 to 407°C -454 to 764.6°F
	R	n/a	n/a	0 to 1760°C 32 to 3200°F	50°C 90°F	±0.55°C (±0.99°F)	-50 to 1786°C -58 to 3246.8°F
	S	n/a	n/a	0 to 1760°C 32 to 3200°F	50°C 90°F	±0.55°C (±0.99°F)	-50 to 1786°C -58 to 3246.8°F
	B	n/a	n/a	400 to 1820°C 752 to 3308°F	75°C 135°F	±0.75°C (±1.35°F)	200 to 1836°C 392 to 3336.8°F
	N	n/a	n/a	-130 to 1300°C -202 to 2372°F	45°C 81°F	±0.4°C (±0.72°F)	-270 to 1316°C -454 to 2400.8°F
	C	n/a	n/a	0 to 2300°C 32 to 4172°F	100°C 180°F	±0.8°C (±1.44°F)	0 to 2338°C 32 to 4240.4°F
mV	DC	n/a	n/a	-50 to 1000mV	4mV	±15 microvolts	-50 to 1000mV

Figure 2. CPA (TPRG) Dimensions

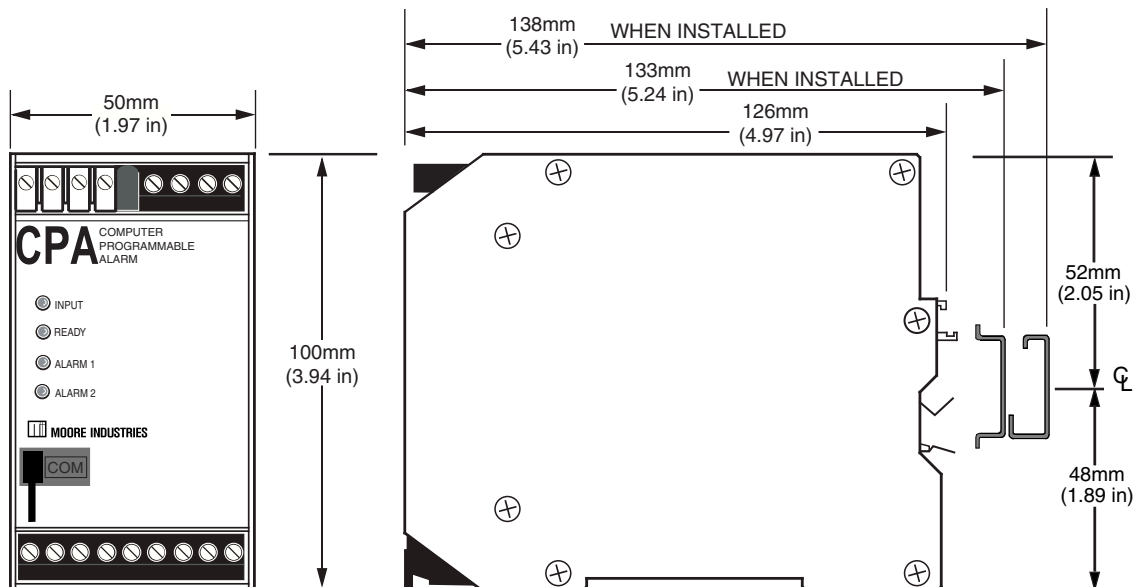


Table 4. Terminal Designations

Input Type	Top Terminals (Left to Right)								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
RTD, Ohm, Potentiometer, T/C & mV Inputs	See Figure 3				Not Present	+IO Source	-IO Source +IO Sink	+VO	-VO -IO Sink

Output Type/Power	Bottom Terminals (Left to Right)								
	B1	B2	B3	B4	B5	B6	B7	B8	B9
Single Alarm (DPDT Relay)	NO1	CM1	NC1	NO2	CM2	NC2	AC/DC	ACC/DCC	GND
Dual Alarms (SPDT Relays)	Relay 1 NO1	Relay 1 CM1	Relay 1 NC1	Relay 2 NO2	Relay 2 CM2	Relay 2 NC2	AC/DC	ACC/DCC	GND

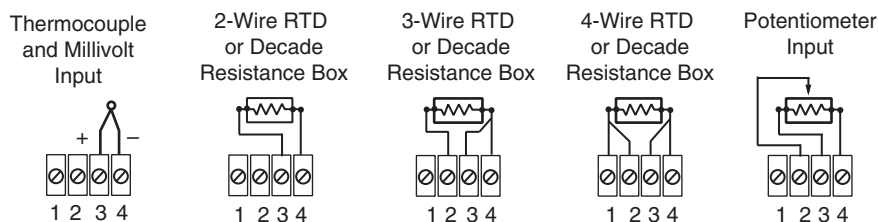
NOTES:

- Terminal blocks can accommodate 14-22 AWG solid wiring.
- \pm IO/ \pm VO labeling is present only when the unit is equipped with the Analog Output (-AO) option.

KEY:

AC/DC = Power Input	IO = Current Output	Source = Current Source
ACC/DCC = Power Input	NO = Normally Open	SPDT = Single-Pole/Double-
COM = Common	NC = Normally Closed	VO = Voltage Output
DPDT = Double-Pole/Double-Throw	Sink = Current Sink	
GND = Ground		

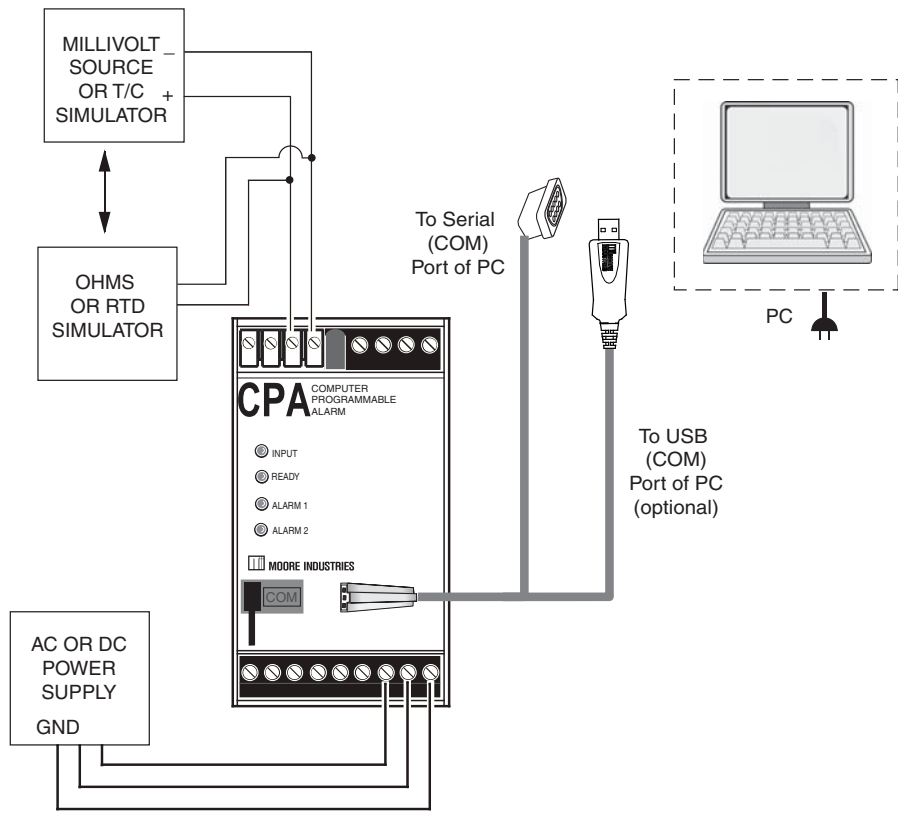
Figure 3. Temperature Sensor Hook-Up Guide



CPA

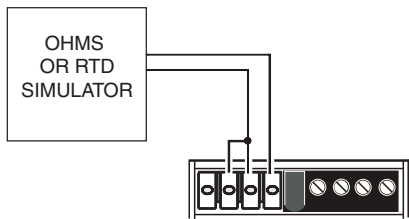
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Figure 4. Use the PC Configuration Software to program the CPA (TPRG)

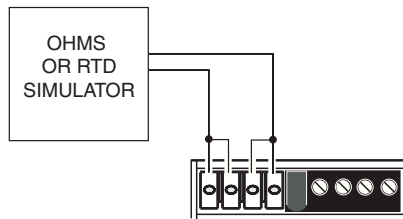


INPUT HOOKUP CONNECTIONS

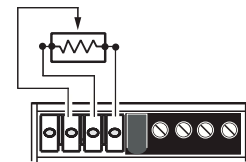
3-Wire RTD or Decade Resistance Input



4-Wire RTD or Decade Resistance Input



Potentiometer Input



Configuring the CPA

One of the benefits of this alarm is that there are no internal or external controls to adjust or settings to change. All operating parameters are set using a PC and Moore Industries' Intelligent PC Configuration software.

The software settings are downloaded to the instrument in the form of a Configuration File and stored in the instruments' memory. You can save a backup copy of the file on your PC hard drive or disk. The alarm communicates with the PC through an RS-232 connection to the PC's serial port.

Installing the Configuration Software

Refer to Table 5 for the equipment needed.

1. Insert the *Moore Industries Interface Solution PC Configuration Software* CD into the CD drive of the PC. Access the CD and open the "CPA CPT PC Configuration Software" folder.
2. Double-click the installation program located in the folder. Follow the prompts to correctly install the program.

Once the Configuration Program is installed on the PC, the CPA can be connected to equipment to simulate input and monitor output. You can then change the operating parameters of the alarm.

No Alarm Needed

It is not necessary to connect the CPA to a PC to create configuration files using the software. The Configuration Program can be run without connecting an alarm, and **most** parameters can be set without benefit of input from a sensor or CPA.

This makes it easy to create a set of operating parameters, save them to disk, and download them to one or more instruments at a later time.

The CPA **must** be connected to the PC in order to: trim input, trim output, assign a tag, perform a loop test, receive (via download) a configuration file, and save the configuration file from the alarm's memory.

Connecting the CPA to the PC

Connect the RS-232 end of the cable to the PC's COM port.

See Table 5 for information on the necessary equipment.

Table 5. *Assembling the equipment needed to configure the CPA (TPRG)*

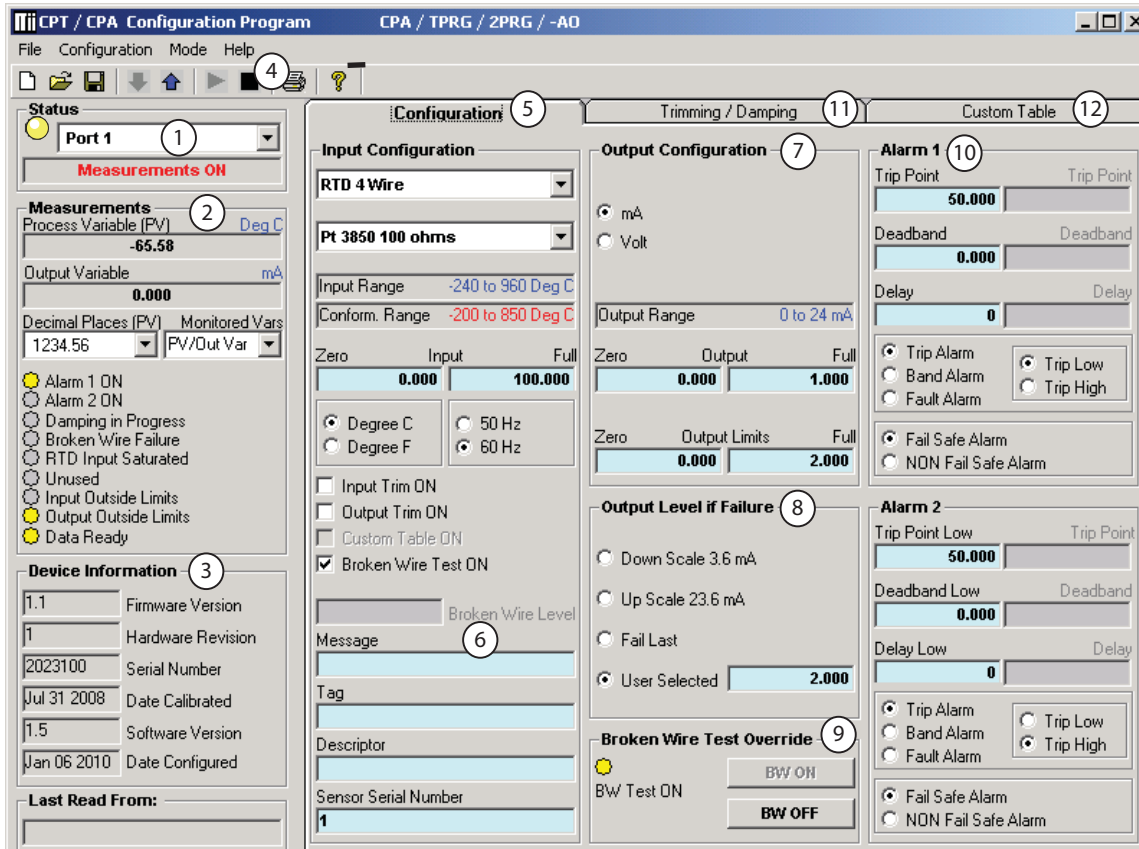
Device	Specifications
Variable Input Simulator for Thermocouple, RTD, Millivolt, Potentiometer, or Decade Resistance Box	Variable; Accurate to $\pm 0.05\%$ of unit span
Power Supply	24Vdc, $\pm 10\%$ or 117/230Vac (depending on configuration)
Multimeter (optional)	Accurate to $\pm 0.009\%$ of span; e.g., HP Model 3478A
Personal Computer	80386-based(or faster) IBM PC, or 100% compatible; 4Mb free RAM; 8Mb recommended; 20Mb free disk space on hard drive (More RAM & hard disk space is required for Windows NT, 2000, XP, Vista, or 7) Microsoft Windows® NT, 2000, XP, Vista, or 7 Internet Explorer 3.0+ 1 (one) serial port (COM 1, 2, 3, or 4) set to 9600 baud, no parity, 8 data bits, and 1 stop bit or one available USB port (with optional USB cable)
Moore Industries PC Configuration Software	Version 1.0 or greater, successfully installed to the hard drive
Communication Cable	Part# 803-053-26 or optional USB cable, Part# 208-236-00A

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PC Configuration Software Summary

Figure 5. Most of the CPA (TPRG) Operating Parameters can be set from the Main Screen of the Configuration Program



Once the default configuration has been saved to disk, it is safe to program other parameters. The PC Software is made up of these sections:

1. Status– This portion of the program displays the activity of the connected unit. It will show the COM Port being used and the Measurement Mode.

2. Measurements– Displays current software processes and indications. Allows you to select the decimal place of your process variable (*Decimal Places (PV)*) indication and monitor up to two configuration variables (*Monitored Vars*).

3. Device Information– This “read-only” display indicates firmware version, hardware revision, serial number, calibration date, software version, configuration date and the last configuration source.

4. Communication– From here you may enable *Start Measurements* and *Stop Measurements*, upload your configuration to PC or download your configuration to the unit, save your configuration to a file, and print out your configuration settings.

5. Input Configuration– Set 50/60Hz Rejection Selection and selection of °C or °F. Allows you to choose input type. You may also enable *Input Trim*, *Output Trim*, *Custom Table* and *Broken Wire Test* functions.

6. Device Configuration– Use this parameter to place an identifying “Message” (32 alphanumeric characters max.), select an “I.D. Tag” (8 alphanumeric characters max.) and a “Descriptor” (16 alphanumeric characters max.).

7. Output Configuration– Use this section to select your output configuration and output limits.

8. Output Level if Failure– Used to select configuration of Upscale/Downscale Drive failure detection of sensor or sensor wiring. Refer to *Output Level if Failure* section for a complete description.

9. Broken Wire Test Override- Allows you to enable or disable the Broken Wire Test by clicking the “BW ON” or “BW OFF” buttons. Refer to the *Broken Wire Test Override* section for a complete description.

10. Alarm Parameters– Use this to choose an alarm mode and configure as either a Trip, Fault or Band alarm. Select whether to use as a Fail Safe or NON Fail Safe Alarm. You may also choose a Delay (0-120sec) and a Deadband (0-100%). Refer to the *Alarms* section for a complete description.

11. Trimming/Damping Tab– Selecting this parameter allows you to perform Sensor Trim, Output Trim and Output Damping functions. Refer to the *Trimming/Damping* section for a complete description.

12. Custom Table Tab– The CPA has two modes of operation: linear mode and custom mode. In linear mode, the scaled output is proportional to the scaled input. In custom mode, reached by selecting the *Custom Table* Tab, you define a special linearization function. Refer to the *Custom Table* section for a complete description.

Configuration

Output Level if Failure

In the *Output Level if Failure* section you will notice Down Scale and Up Scale selection. Using its output, the CPA can be configured to provide a special warning of a breakdown or failure. Use this setting to configure the instrument to drive its output either up or down when a failure is detected. For current outputs, limits are 3.6mA (downscale) and 23.6mA (upscale); for voltage outputs, limits are -0.5V (downscale) and 11.0V (upscale).

When a failure is detected, the “Fail Last” feature, if enabled, holds the last measured value before the failure occurred.


If the “User Selected” feature is enabled, you may enter any value, within the range, to view at the output when a failure is detected.

Broken Wire Test Override

During operation, the CPA sends random microamp pulses through input wiring to check for broken wiring or a burned out sensor.

Upon power-up Broken Wire Test is enabled. If a problem is detected, “Broken Wire Failure” in the *Process Information* section of the configuration program will light to indicate a problem. The Broken Wire Test may be temporarily disabled by clicking the “BW OFF” button in the *Broken Wire Test Override* section.

Note:

Once you have configured all parameters, download to the unit by either selecting “Download Configuration” in the Configuration dropdown menu located in the Communications bar or by clicking the  button.

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Alarms

Trip Low and Trip High Alarms

In the Alarm Parameters portion of the Configuration Program you may choose a “Trip Low” and “Trip High” limit. In choosing your limits you are setting the parameters for your unit to notify you if your process input drops below (Trip Low) or exceeds (Trip High) your trip point setting.

Deadband

Deadband (0-100%) is a type of buffer zone. It allows an alarm to remain tripped even after the process input has returned to, or passed, the trip point. If no deadband is set, the alarm will reset itself once reaching the trip point.

Fail Safe/NON Fail Safe Alarms

A Fail Safe alarm, if in the alarm condition, will remain in the alarm condition even if power to the unit is removed.

Fail Safe alarm trip relays are energized whenever the process input is in a non-alarm condition (including any deadband setting). These relays de-energize when the process input trips the alarm.

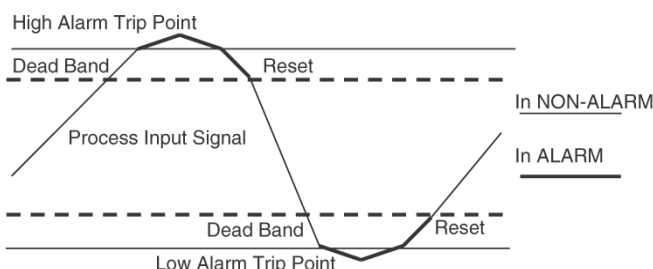
NON Fail Safe alarm trip relays are energized whenever the process input is in an alarm condition. These relays de-energize when the process input returns to the reset point (including any deadband).

Band Alarm

The Band Alarm incorporates Low and High Trip points, Deadband and Delay (0-120sec).

The Band Alarm combines two Trip Alarm settings. The first alarm is always configured as Low Trip (Trip Point Low) and the second as High Trip (Trip Point High). See Figure 6 for information on alarm parameters.

Figure 6. Band Alarm Parameter Graph

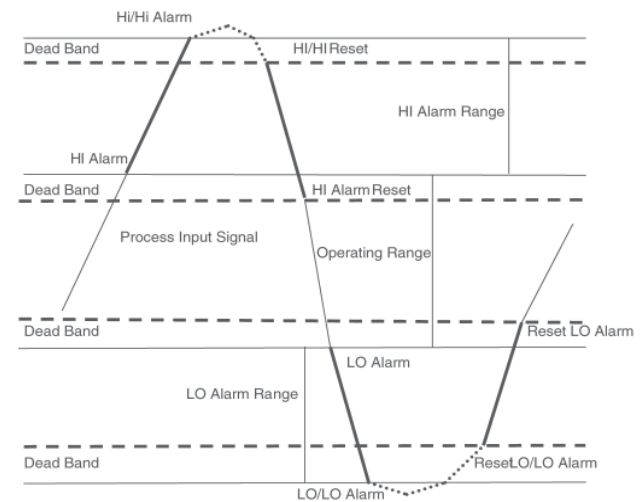


The Band Alarm is activated when the Process Variable is outside of the Low/High Trip point ranges. The Trip Low is always lower than the Trip High and their deadbands are inside the range of Low/High Trip. The span between the Low and High Trip is not limited which allows control of measurements in a very narrow range.

The two alarms can be set in any combination. For example, Alarm 1 can be set as the Band Alarm and Alarm 2 as the Fault Alarm. Conversely, both alarms can also be set as Band Alarms.

The HI/LO Alarm can be used when the input signal reaches a critical level. The HI/LO Alarm is used to provide early warning that an action is required before a dangerous level is reached. See Figure 7 for details.


Figure 7. Two Alarm Functionality Graph



Fault Alarm

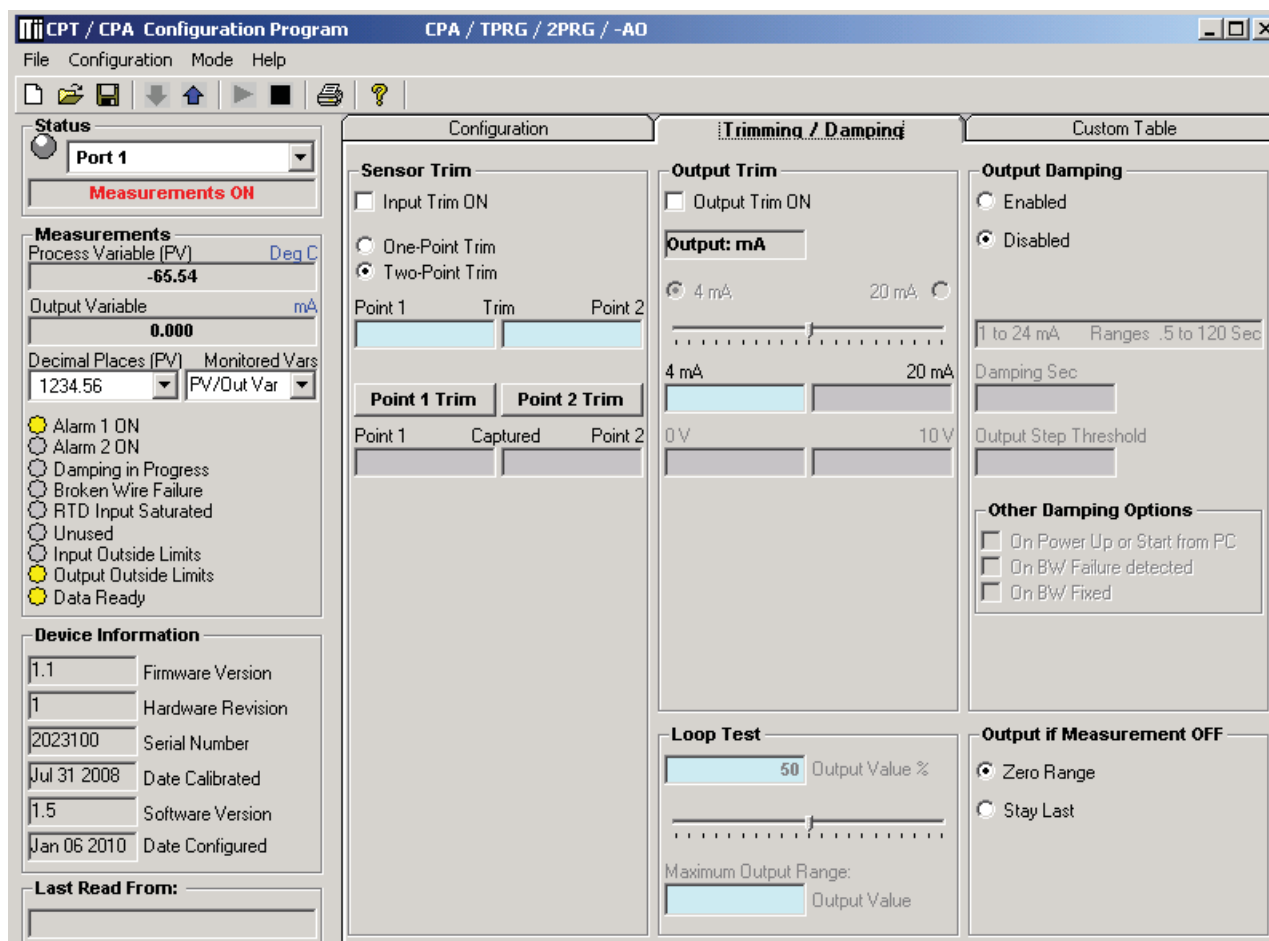
To simply be alerted in the case of any fault that may arise, select the “Fault Alarm” button. This requires no parameters to be set and will notify you anytime a fault is sensed.

Note:

Once you have configured all parameters, download to the unit by either selecting “Download Configuration” in the Configuration dropdown menu located in the Communications bar or by clicking the  button.

Trimming/Damping

Figure 8. PC Configuration Software Trimming/Damping Tab



To access the Trim feature, click the *Trimming/Damping* tab. Trimming increases the measurement accuracy of the parameter you are trimming by either matching the reading of its actual input to its scaling (Sensor Trimming) or calibrating the output to the device receiving the output (Output Trimming). Damping allows you to introduce a delay into the response of your transmitter in order to stop short-lived spikes from setting off alarms. Refer to Figure 9 for hookup.

Sensor Trim

Sensor Trimming increases the measurement accuracy of your CPA by matching the reading of its actual input to either a calibrated source or the device to which it is connected. This verifies that the input from the sensor to the alarm is being interpreted correctly.

The CPA can trim any point along the scale. Note that one-point trimming applies an offset to the sensor reading, while two-point trimming applies both an offset and a gain.

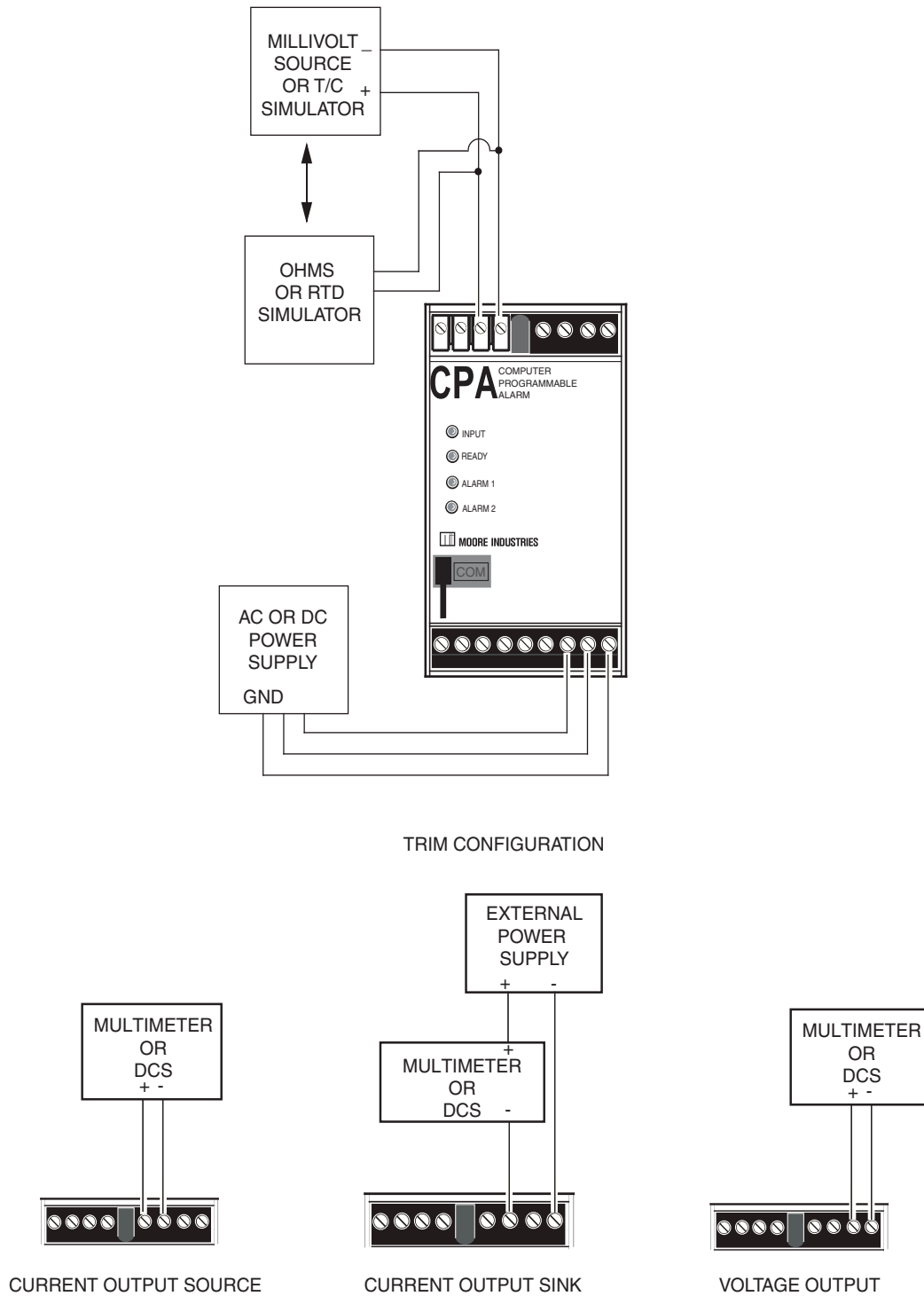
Before you attempt to perform the Sensor Trim function ensure that the *Status* section of the screen indicates “Measurements On”. Sensor Trim can be done only when the measurements are on. To do this click the *Mode* dropdown box, from the menu bar, and select “Measurements On”.

1. Select either one trim point or two trim points by clicking the appropriate button. Each pair consists of “trim” and “captured” values.
2. Enter the values that need to be trimmed into the corresponding fields.
3. Apply the targeted signal to the input, wait until it settles and click “Point 1 Trim” to capture the measured value. If you chose “Two-point Trim” repeat the step above for the second point and click “Point 2 Trim”.
4. To enable input trim and the values stored, click the “Input Trim ON”.

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Figure 9. Trimming the CPA (TPRG)



Output Trim

Output Trimming increases the measurement accuracy of your CPA by calibrating its analog output to the device that is receiving the output. This ensures that the instrument is being correctly interpreted.

Before you attempt to perform the Output Trim function ensure that the *Status* section of the screen indicates “Measurements Off”. To do this click the *Mode* dropdown box from the Menu bar and select “Measurements Off”.

1. Select either “Output: mA” or “Output: V”, whichever is appropriate for your application.
2. Attach a multimeter to the analog output and select the “4mA” or “0V” button. Use the scroll bar to trim the measured output to your desired value.
3. With the multimeter still connected select the “20mA” or “10V” button. Use the scroll bar to trim the measured output to your desired value.
4. To enable Output Trim and the values stored, click the “Output Trim ON”.
5. Set *Status* back to “Measurements On”.

If selected, the user trim values will be used and the manufacturer settings will be nullified.

Loop Test

A Loop Test may be performed in order to check output performance and accuracy and to trim other instruments in the loop. Your output will be a current value, in mA, or a voltage equal to the value you input. You can check the other current devices on the loop and calibrate them to this signal.

This feature is independent of the input. If you find that the output requires adjustment you may perform the Output Trim function.

1. To use the Loop Test function select the *Mode* dropdown box in the Communications bar and select “Measurements Off”.
2. Next, in the “Output Value %” box, type the percentage of the output value you wish to test. You may also use your mouse, left click and adjust the scroll bar to adjust to your desired value. Hit “Enter”.
3. In the “Output Value” box enter the value, within your configuration range, that you wish to signify as your output value. Hit “Enter”.
4. Perform your test and calibration.
5. When you are finished, return to *Mode* in the Communications bar and reset your status to “Measurements On”.

CPA

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Output Damping

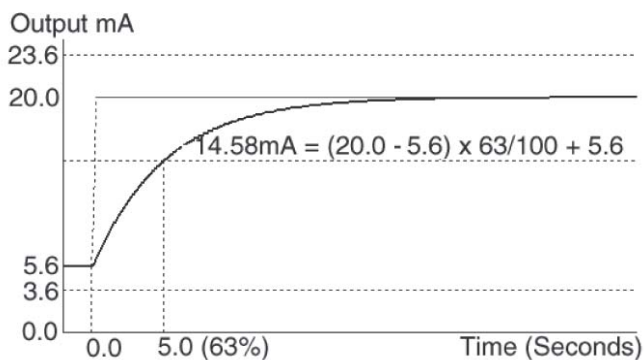
Output Damping allows you to introduce a delay into the response of your unit in order to stop short-lived spikes from setting off alarms. Output Damping is activated when the value set in the "Output Step Threshold" field is exceeded.

1. To enable output damping, select the "Enabled" button. If you do not wish to use the damping feature, then select "Disabled".
2. Insert a value between 1 and 16mA in the "Output Step Threshold" field. This is how much of an output step change is allowed in a specified time frame before flagging the software.
3. Insert a value between .5 and 120sec in the "Damping Sec" field. This is the amount of time it will take for the output to reach 63% of the step output change once the input exceeds the value in the "Output Step Threshold" field.

By checking the appropriate box in the *Other Damping Options* section, you may also choose to select Output Damping to occur upon power up or start up from a PC, upon broken wire failure detection or upon resolution of broken wire failure.

A typical damping situation would be described as a step change in output which causes the output to go from 5.6mA to 20mA. After five seconds the output reaches 14.58mA which equals 63% of the output step change. This is graphed in Figure 10.

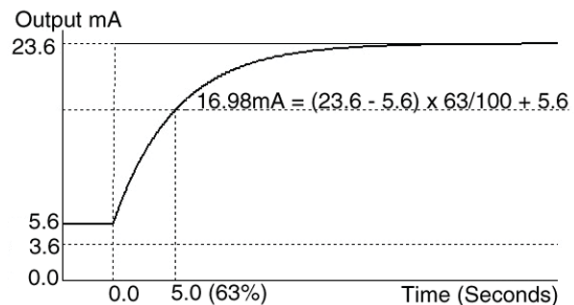
Figure 10. Typical Damping Scenario



A possible source for this occurrence is a rapid change on the input. Another possibility would be an existing output level of 5.6mA upon *Start Measurements* from a PC.

Figure 11 gives another damping example where the output has been driven upscale to 23.6mA. After five seconds the 63% output change is reached at 16.98mA.

Figure 11. Damping When Output Driven Upscale to 23.6mA




In this instance, detection of an open sensor or broken wire could be a cause. An instrument malfunction or Adc/EEPROM failure may also be suspect.

Output if Measurement OFF

Choose "Zero Range" to read zero volts or mA at output if measurement was off.

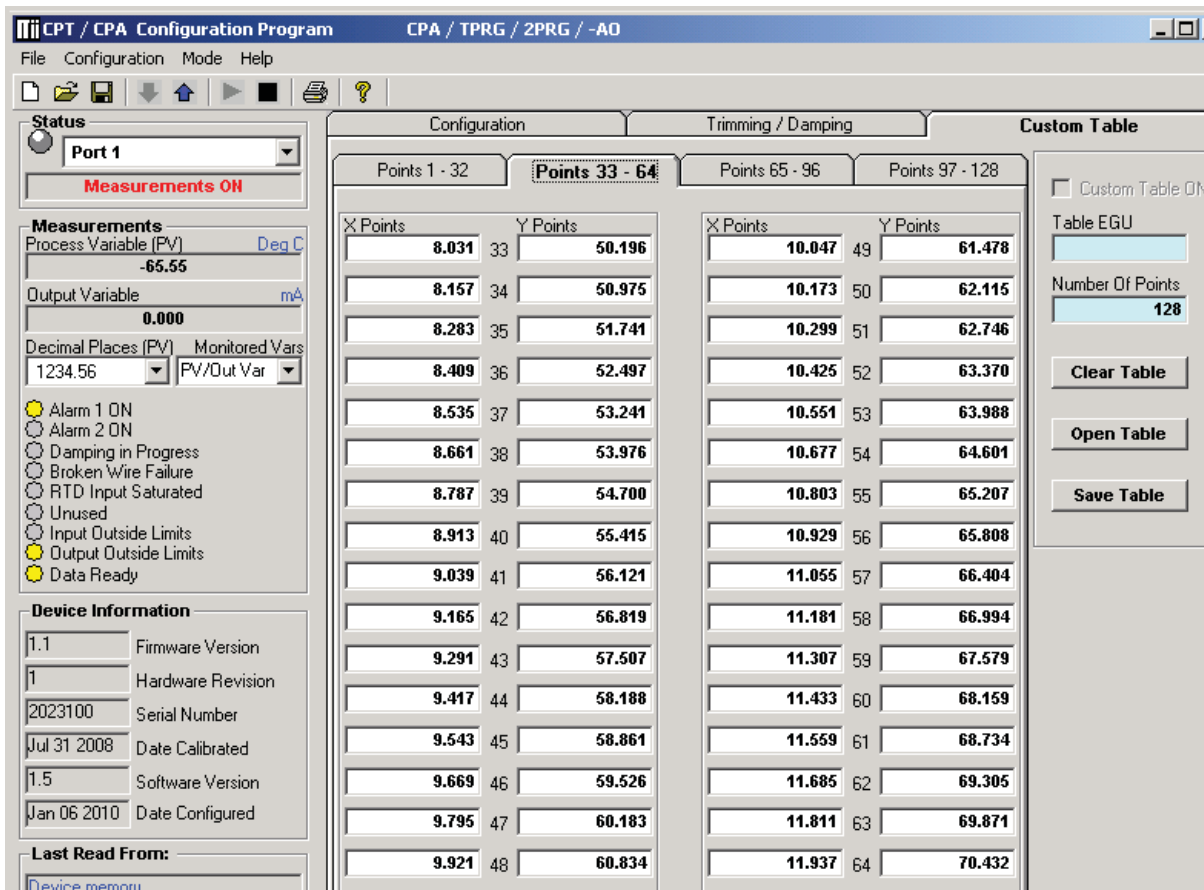
Choose "Stay Last" to read the last value held before the measurement was off.

Note:

Once you have configured all parameters, download to the unit by either selecting "Download Configuration" in the Configuration dropdown menu located in the Communications bar or by clicking the  button.

Custom Table

Figure 12. PC Configuration Software Custom Table Tab



The Custom Table feature allows you to setup your own custom curve table (Figure 12). This allows you to tell the CPA what it should output when it receives a certain input. This feature also allows you the ability to write a table in Microsoft® Excel and save it in a .csv format. The files are saved to/read to/read from the “Moore Industries\Custom Curves” folder. This makes it simple to save the custom table for downloading to multiple units or for backup purposes.

The linearization will be in the form of X, Y coordinates. You may choose up to 128 points.

To access this function click the *Custom Table* tab.

1. Select the number of points you are to set and insert this value into the “Number Of Points” line, hit “Enter”. This will highlight the number of points you have selected.

Note:

To clear the table and start over at any time, click “Clear Table”.

2. Type your individual values in the X and Y columns. Source variables are inserted into the X Column while the corresponding data is inserted into the Y Column.


3. To save the displayed custom table to your hard drive click the “Save Table” button.

To open or use this saved table at a later time, click the “Open Table” button and select the folder in which it has been saved.

Use the “Table EGU” box to enter any alphanumeric engineering unit (up to 6 digits).

To use the Custom Table feature in your operation, check the “Custom Table ON” box.

Note:

Once you have configured all parameters, download to the unit by either selecting “Download Configuration” in the Configuration dropdown menu located in the Communications bar or by clicking the  button.

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Installation

Installation consists of physically mounting the unit and completing the electrical connections.

Mounting the CPA

The CPA can be mounted on standard DIN mounting rails.

Making the Electrical Connections

Please refer to Figure 4 for electrical connections.

Recommended Ground Wiring Practices

Moore Industries recommends the following ground wiring practices:

- Any Moore Industries product in a metal case or housing should be grounded.
- The protective earth conductor must be connected to a system safety earth ground before making any other connections.
- All input signals to, and output signals from, Moore Industries' products should be wired using a shielded, twisted pair technique. Shields are to be connected to an earth or safety ground at the unit itself.
- The maximum length of unshielded input and/or output signal wiring should be two inches.

CE Conformity

Installation of any Moore Industries' products that carry the CE certification **must** adhere to the guidelines above in order to meet the requirements set forth in the European EMC and Low Voltage Directives (EN 61326 and EN 61010). Consult the factory for the most current information on products that have been CE certified.

Operation

Once programmed, calibrated, installed, and supplied with the correct power, the CPA alarm begins to operate immediately. Depending upon environmental conditions, it can be expected to operate unattended for extended periods of time.

Maintenance

Moore Industries suggests a quick check for terminal tightness and general unit condition every 6-8 months. Always adhere to any site requirements for programmed maintenance.

Customer Support

Moore Industries is recognized as the industry leader in delivering top quality to its customers in products and services. We perform a battery of stringent quality assurance checks on every unit we ship. If any Moore Industries product fails to perform up to rated specifications, call us for help. Our highly skilled staff of trained technicians and engineers pride themselves on their ability to provide timely, accurate, and practical answers to your process instrumentation questions.

Factory phone numbers are listed on the back cover of this manual.

If problems involve a particular CPA, there are several pieces of information that can be gathered **before you call the factory** that will help our staff get the answers you need **in the shortest time possible**. For fastest service, gather the complete model and serial number(s) of the problem unit(s) and the job number of the original sale.

RETURN PROCEDURES

To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
 - a) A note listing the symptoms that indicate the unit needs repair
 - b) Complete shipping information for return of the equipment after repair
 - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

WARRANTY DISCLAIMER

THE COMPANY MAKES NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY GOODS OR SERVICES SOLD BY THE COMPANY. THE COMPANY DISCLAIMS ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR TRADE USAGE, AND ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY ACKNOWLEDGES THAT THERE ARE NO WARRANTIES IMPLIED BY CUSTOM OR USAGE IN THE TRADE OF THE BUYER AND OF THE COMPANY, AND THAT ANY PRIOR DEALINGS OF THE BUYER WITH THE COMPANY DO NOT IMPLY THAT THE COMPANY WARRANTS THE GOODS OR SERVICES IN ANY WAY.

ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES, BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER ANY LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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