

Critical Environment Technologies

“Peripheral Devices”
For PDC Programmable Controllers
*Analog Output Module, Relay Output Module,
External Power Supply*



INSTALLATION / OPERATION MANUAL

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6.0 REMOTE RELAY OUTPUT MODULE

This peripheral device is not yet available for sale or use. When it is available, a new revision of this manual will outline all required information.

7.0 REMOTE POWER SUPPLY MODULE

This peripheral device is being modified and is not currently available. When it is available, a new revision of this manual will outline all required information.

IMPORTANT NOTICES

READ AND UNDERSTAND THIS OPERATION MANUAL PRIOR TO USING THIS INSTRUMENT.

THIS EQUIPMENT SHOULD BE INSPECTED AND MAINTAINED BY A QUALIFIED AND TRAINED TECHNICIAN. FOR MORE INFORMATION REFER TO OTHER SECTIONS OF THIS MANUAL.

THIS INSTRUMENT HAS NOT BEEN DESIGNED TO BE INTRINSICALLY SAFE OR EXPLOSION-PROOF. FOR YOUR SAFETY, DO NOT USE IT IN CLASSIFIED HAZARDOUS AREAS (EXPLOSION-RATED ENVIRONMENTS).

THIS MANUAL INCLUDES INSTALLATION AND OPERATION DETAILS AND SPECIFICATIONS FOR THE DST SERIES SENSOR / TRANSMITTERS, WHICH ARE USED EXCLUSIVELY WITH THE DIGITAL VERSION OF THE PDC CONTROLLER.

PURCHASE DATE: _____

PURCHASED FROM: _____

WARNINGS

- DISCONNECT POWER BEFORE SERVICING

WARRANTY POLICY

CRITICAL ENVIRONMENT TECHNOLOGIES CANADA INC. WARRANTS THESE PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWO (2) YEARS FROM THE DATE OF PURCHASE. THE WARRANTY STATUS MAY BE EFFECTED IF THIS EQUIPMENT HAS NOT BEEN MAINTAINED AS PER THE INSTRUCTIONS INDICATED IN THIS MANUAL OR HAS BEEN ABUSED OR DAMAGED IN ANY WAY. THIS INSTRUMENT IS ONLY TO BE USED FOR PURPOSES STATED HEREIN.

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5.2 ANALOG OUTPUT MODULE PROGRAMMING CODE DESCRIPTIONS, CONT'D.

Calibrate Lower "1331" Limit and Upper "1332" Limit: This function is for factory use only. It allows a trained technician to calibrate each of the analog outputs. Before attempting to perform this function, disable all of the channels of the PDC controller so that the word "HOLD" appears on the digital display. A good digital multi-meter and eight accurate (1%) 100 ohm, 1/4 watt resistors will be required to perform this function.

Lower Limit: Enable the output channel to be calibrated (normally all eight channels). Terminate all outputs with a 100 ohm, 1% resistor. Attach the meter leads from the digital multi-meter to the test points "TP-1" and "TP-2", for channel one. Set the meter range to "0 to 2 volts". Enter code "1331". Use button "3" or "1" to increment or decrement the meter value to achieve a reading of 0.400 +/- 1 digit. Press button "2" when done then move the meter leads to the next channel. Repeat this process for all eight channels.

Upper Limit: Repeat the steps indicated above, using code "1332" and setting all meter readings to 2.000 VDC. When done, you have completed the calibration process.

Note: All calibration values are stored on the analog output module circuit. That way if the module is moved to another system, it will not have to be calibrated again.

5.2 ANALOG OUTPUT MODULE PROGRAMMING CODE DESCRIPTIONS

Channel Selection - "On/Off" "3231": This code allows the user to select (switch on or off) the number of channels that are to be utilized. This is determined by the number of analog output signals desired. To achieve this, input the code "3231", then depress the "3" button to turn a channel "On" or depress the "1" button to turn a channel "OFF". Depress the "2" push-button to scroll to the next channel. Any channel that has been disabled (switched off) will remain at the current output it last received from the controller. Powering the unit down then back up will set all the outputs to default to 4.0 mA.

I.D. Code "3232": This code allows the user to enter the ID code assigned to each remote analog output module. Only one ID code is assigned by the factory for each module covering 8-channels. This means the same code should be entered in the first eight channels. If a second eight channels is installed, a different code must be entered in the second set of eight channels.

Low Range "1321" / High Range "1322": This code allows the user to scale the channels as desired. For example, if you wish to monitor a CO sensor from 0 to 200 ppm, enter "0" for the low range and "200" for the high range. The output will be 4.0 mA for "0" and 20.0 mA for "200". If the value goes beyond 200, the output will be limited to 20.0 mA and will not show a value beyond 200.

Another example will be if a variable speed fan motor is to be driven with one of the outputs. You may want to set the low range to "25" and the high range to "100". Then the output will begin to rise from 4.0 mA starting at 25 ppm and continue to a maximum of 20.0 mA at 100 ppm.

To achieve this, input code "1321" for the low range or code "1322" for the high range and use the "3" button to increment the value or the "1" button to decrement the value. Depress the "2" push-button to scroll to the next channel.

Activate on Sensor or Zone "2333": This code allows the user to control the outputs from a single sensor or a group of sensors (zone). If "zone" has been selected, the output from the 4-20 mA output channel will be from the sensor in that zone with the highest value reading. Zone numbers placed into this section must match any zone numbers assigned in the sensor input table.

To achieve this, input code "2333" and use the "1" or "3" button to select the desired activation. Use the "2" button to scroll to the next channel.

Monitor Sensor "3113" or Zone "3112": This code allows the user to select the sensor or zone number to be monitored. If "zone" has been selected in the previous menu function, the user will not be able to access code "3113" as it will have been locked out. If "sensor" has been selected in the previous menu function, the user will not be able to access code "3112" as it will have been locked out.

To achieve this, input the code "3113" or "3112", then depress the "3" button or the "1" button to increment or decrement the value. Depress the "2" push-button to scroll to the next channel.

1.0 GENERAL

This manual is designed to provide specifications and information as well as to serve as a guide to installation and operation of peripheral devices that have been designed to operate with the PDC series programmable controllers.

The peripheral devices covered in this manual include the analog output module, relay output module and external power supply.

2.0 SPECIFICATIONS

a) ANALOG OUTPUT MODULE, Rev: B

Physical:	6.5" (165 mm) wide X 8.25" (209 mm) high X 5.31" (84 mm) deep
Materials:	Rugged, heavy wall pvc with secured, hinged door and Lexan label
Indicators:	Internal: a) One green power LED b) eight only red LEDs (open loop indicators)
	External: None
Environmental:	Temperature: 0 deg. C to +40 deg. C (32 deg. F to 104 deg. F)
Power:	a) 24 VAC (external power) b) 24 VDC (external power) c) 24 VDC (from daisy-chain wire run from controller)
Circuit:	Programmable microprocessor
Fuse:	One integral, automatic resetting thermal fuse

b) RELAY OUTPUT MODULE

Physical:	6.5" (165 mm) wide X 8.25" (209 mm) high X 5.31" (84 mm) deep
Materials:	Rugged, heavy wall pvc with secured, hinged door and Lexan label
Indicators:	
Environmental:	Temperature: 0 deg. C to +40 deg. C (32 deg. F to 104 deg. F)
Power:	120 VAC, 60 htz.
Circuit:	Digital
Fuse:	TBA

4.1 ANALOG OUTPUT MODULE DESCRIPTION AND OPERATION

The analog output module consists of eight only 4-20 mA output channels. These outputs are current sourced. Each channel can be independently scaled using the code menu system on the PDC controller. These channels can also be assigned to an individual sensor or to a group of sensors through zoning. If zoned, the output will always be from the sensor with the highest output in the zoned group of sensors.

Once power has been applied to the analog output module circuit board, any enabled outputs without connected loop wiring will illuminate the channel specific red LED.

This circuit utilizes eight red LEDs as “open loop” indicators. If a red LED open loop indicator is illuminated, even though the wiring for that specific 4-20 mA output channel has been terminated, it means there may still be a problem with the wiring connection or one of the output channels has been enabled but not utilized. Double check the wiring or disable any unused output channels.

The analog output module is shipped pre-programmed and calibrated from the factory, as long as the desired operational details have been supplied to us. Without operational details, we input a basic generic program providing one analog output per channel for systems with eight or less sensors. We require operational details for systems with more than eight sensors.

The analog output module is programmed from the PDC controller programming push-buttons. Reference the table of codes and their descriptions on the following pages. This optional device will work only with PDC systems that have software version “PDCa020.726” or later. Earlier version of the PDC software must be updated to utilize this optional module. Contact the factory for information and costs associated with updating your PDC controller.

IMPORTANT NOTE: WHEN UPDATING THE MAIN SOFTWARE IN THE PDC MAIN CIRCUIT BOARD, ALL PREVIOUS PROGRAMMING WILL BE LOST. TAKE WRITTEN NOTE OF THE DETAILS OF THE PREVIOUS PROGRAMMING. IT WILL BE REQUIRED TO SET P THE SYSTEM AGAIN, AFTER INSTALLATION OF THE NEW SOFTWARE.

5.0 PROGRAMMING GENERAL

The PDC controller has an extensive menu system that allows the user maximum flexibility, through programming, to achieve a wide range of system functions. Please carefully read through the programming section of this manual before attempting to make programming changes.

The following table indicates available programmable functions and the codes for the analog output module only. Detailed descriptions for each function code can be found on following pages.

Note: Holding down a button for more than 2 seconds will allow the user to scroll very quickly.

3.1 WIRING ANALOG OUTPUT MODULE

The analog output module can be powered from three alternative sources.

- a) Daisy-chain, 4-wire run from the system power.
- b) Remote 24VAC power source
- c) Remote 24VDC power source

Incoming Wiring

- a) Daisy-chain, 4-wire run connection:

Place a jumper on “J3” and connect the power, 24V and common, to “24V” and “COM” at either of the 4-position terminal strips located along the bottom edge of the circuit board. Either one can be utilized as the incoming terminal strip with the second one assuming the position of outgoing terminal strip. These terminals are clearly marked as “COM”, “B”, “A”, “24v”.

Connect the twisted-pair, communications cable to “B” and “A” of the same terminal. **IMPORTANT: ENSURE THAT THE COMMUNICATION CABLES ARE CONNECTED CORRECTLY. IF A AND B ARE CONNECTED WRONG, THE SYSTEM WILL NOT COMMUNICATE WITH THE ANALOG OUTPUT MODULE AND COMMUNICATION WITH DEVICES FURTHER DOWN THE WIRE RUN MAY BE INTERRUPTED.**

- b) Remote 24VAC Power Source:

Ensure that no jumper is installed at “J3”. Connect the two wires from the remote 24 VAC power source to the first two terminal positions of the 3-position, terminal strip located at the centre, bottom edge of the circuit board. These terminal positions are clearly marked “24VAC”.

Connect the twisted-pair, communications cable to “B” and “A” of the same terminal. **IMPORTANT: ENSURE THAT THE COMMUNICATION CABLES ARE CONNECTED CORRECTLY. IF A AND B ARE CONNECTED WRONG, THE SYSTEM WILL NOT COMMUNICATE WITH THE ANALOG OUTPUT MODULE AND COMMUNICATION WITH DEVICES FURTHER DOWN THE WIRE RUN MAY BE INTERRUPTED.**

- c) Remote 24VDC Power Source:

Ensure that no jumper is installed at “J3”. Connect the positive wire from the remote power source to terminal position one of the 3-position, terminal strip located at the centre, bottom edge of the circuit board. Connect the negative wire from the remote power source to terminal position three of the 3-position, terminal strip located at the centre, bottom edge of the circuit board. These terminal positions are clearly marked “24VAC/DC”.

Connect the twisted-pair, communications cable to “B” and “A” of the same terminal. **IMPORTANT: ENSURE THAT THE COMMUNICATION CABLES ARE CONNECTED CORRECTLY. IF A AND B ARE CONNECTED WRONG, THE SYSTEM WILL NOT COMMUNICATE WITH THE ANALOG OUTPUT MODULE AND COMMUNICATION WITH DEVICES FURTHER DOWN THE WIRE RUN MAY BE INTERRUPTED.**

3.1 WIRING ANALOG OUTPUT MODULE, CONT'D.....

Outgoing Wiring

Connect two wires from remote display device to one or more of the analog output terminal strips. These 2-position terminal strips are located (all together) along the top edge of the circuit board. These terminal strips are clearly marked "+" and "-" as well as by channel number. Eg. "CH1". **IMPORTANT: OBSERVE POLARITY. IF POLARITY IS INCORRECT, THE REMOTE DISPLAY DEVICE WILL NOT COMPLETE THE SIGNAL LOOP AND A SIGNAL WILL NOT BE OBSERVED.**

NOTE-1: DO NOT UTILIZE SOLID-CORE WIRE FOR CONNECTION TO ANY TERMINAL STRIPS SOLDERED ONTO CIRCUIT BOARDS.

NOTE-2: FOR VISUAL CONFIRMATION, REFERENCE THE PHOTO OF THE ANALOG OUTPUT MODULE CIRCUIT BOARD ON THE FOLLOWING PAGE.

4.0 ANALOG OUTPUT MODULE CIRCUIT BOARD PHOTO

