

April 1995

Data Sheet 15.15

Description

Moore Industries' PDC DC Voltage Transducer and Ground Fault Detector simultaneously monitors both voltage level and ground faults in a floating battery system. The PDC eliminates the need for separate devices to perform these very important functions.

The PDC accepts a dc input from a battery. It accurately converts the input to a proportional current (0-1mA or 4-20mA) signal output ready for interface with a readout device or a SCADA system.

While monitoring power usage, the PDC continuously checks the battery system for leakage to ground. Battery leakage can quickly render a system useless, and also present a safety hazard. When a fault is detected, the PDC outputs a contact closure signal that activates a light, buzzer or similar warning device.

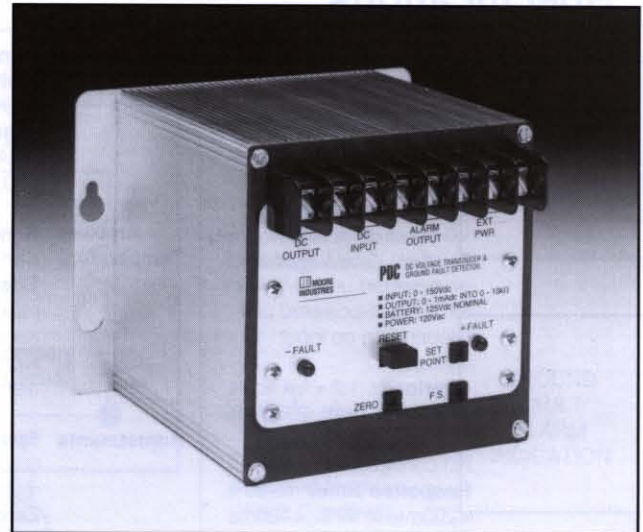
For applications not requiring dual monitoring, single-function PDC's are also available. The PD configuration performs only as a dc voltage transducer, while the PG configuration acts only as a ground fault detector.

Easy Installation and Maintenance—All Moore Industries power transducers are enclosed in rugged and rustproof extruded aluminum housings that provide superior heat dissipation. Keyhole cutout screw holes allow installation and removal by loosening the mounting screws.

All circuitry is attached to the PDC's front panel to allow quick access to the circuitry without removing the entire housing. The circuit boards slide smoothly out of the housing on PC board guides that run the entire length inside the unit's housing.

Ordering Information

To order, use the bold face data from the Ordering Specifications table. For assistance, refer to the model number example located at the bottom of the table.



Unique keyhole-slotted mounting flanges allow the PDC to be removed and re-installed by loosening the mounting screws.

Features

- **Combination power monitor and alarm trip.** One compact PDC continuously monitors battery drain, and provides an alarm trip output when a ground fault is detected.
- **±0.2% of reading accuracy.** The PDC is the perfect choice when precise power monitoring is demanded.
- **Works with any battery type.** Models are available that accommodate all common battery voltages (24 to 600Vdc) and ground short sensitivities (5 to 300K ohms).
- **Self-powered option.** The PDC can be powered by the battery source (-SP option) to eliminate the need for an additional dedicated power supply.
- **Stable in outdoor environments.** Ambient temperature effect on the PDC is typically only ±0.01%/°C over a -20°C to +70°C operating range.

PDC

DC Voltage Transducer
and Ground Fault Detector

Specifications

<p>Performance Accuracy @ 25°C ±2°C: 0.2% of reading, ±0.01% of full scale Isolation: 1500 Vrms, max, between input and output Output Ripple (peak): <0.5% of full scale Burden: 5.5VA typical for ac powered unit; 3-7 watts for -SP self-powered unit (depending on input voltage) Overload: 1.2 x full scale Dielectric Test: 2500Vdc for one minute (unit with PD configuration only) Response Time: To 90%, <200ms; to 99%, <400ms Surge Withstand Capability: ANSI-C37.90a-1974 (IEEE 472) BEAMA 219 Special 5KV, 0.6KV B.I.L (basic insulation level)</p>	<p>Performance (continued) Contact Rating (ground fault alarm output): 1A @ 120Vac, P.F. = 1: 600,000 operations; 0.8A @ 240Vac, P.F. = 0.4: 100,000 operations</p> <p>Ambient Temperature Range: -20°C to +70°C (-4°F to +158°F) Effect: ±0.01%/°C maximum for dc transducer; ±0.2%/°C typical for ground fault alarm trip point</p> <p>Adjustments Span: ±10% of rate output using external multiturn potentiometer Zero: ±2% of rated output using external multiturn potentiometer</p>	<p>Adjustments (continued) Trip Point (models with ground fault detector alarm output): Adjustable from 5K to 300K ohms using an external multiturn potentiometer NOTE: The dynamic control range is 1K to 150K ohms, assuming a leakage of 10K ohms is on the opposite sides of the dc source (i.e., if the positive side has a 10K ohm minimum leakage path, the trip point of the negative side can be set between 1K to 150K ohms, and vice versa. Under normal operating conditions, some interaction will occur between changing leakage currents with respect to the trip points) Alarm Trip Reset: Momentary push of front panel push button</p> <p>Indicators Two front panel LEDs indicate whether the fault is positive or negative; LED remains on until Alarm Trip Reset button on front panel is pushed</p>
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Ordering Specifications

Unit	Input	Output	Configuration	Options	Housings
PDC	<p>Normal Input Spans: 24DC 0-30Vdc 48DC 0-60Vdc 125DC 0-150Vdc 250DC 0-300Vdc 600DC 0-750Vdc</p> <p>Input Spans with -EXP Option: 24DC 15-30Vdc 48DC 30-60Vdc 125DC 75-150Vdc 250DC 150-300Vdc 600DC 375-750Vdc</p> <p>Input Spans with -SP Option: 24DC not available 48DC 30-60Vdc 125DC 75-150Vdc 250DC not available 600DC not available</p> <p>NOTE: Input Spans correspond to 0-100% of analog output</p>	<p>0-1MA into 15,000 ohms 4-20MA into 750 ohms CC Contact Closure (required output for models with PG configuration)</p>	<p>DG Combination dc voltage transducer and ground fault detector PD Single function dc voltage transducer PG Single function ground fault detector only</p>	<p>Power Supply Option (selection of one is required): -SP Self-powered (available only with 48V and 125V input type); note input/output relationship -120AC, ±10% -240AC, ±10%</p> <p>Non-Required Options: -CG Case ground terminal -ER Energized relay (relay is energized in the non-alarm condition and de-energized in the alarm condition to provide failsafe fault detection) -EXP Expanded scale input (note input/output relationship) -LR Latching relay (relay remains energized until fault is corrected and reset button is depressed) -NC Normally closed relay in place of standard normally open relay</p>	<p>SM Surface-mount housing DM DIN-rail mount housing</p>

When ordering, specify: Unit / Input / Output / Configuration / Power Option (required), Options [Housing]

Model Number Example: PDC / 24DC / 0-1MA / DG / -120AC -LR [SM]

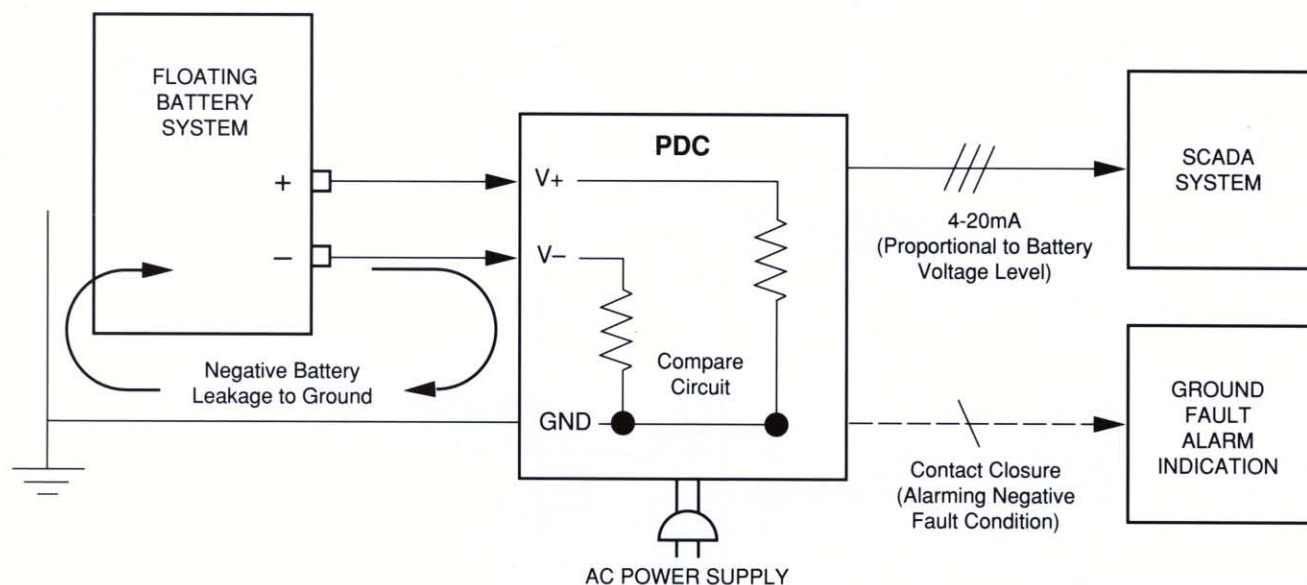


Figure 1. The PDC detects both positive and negative ground faults. In this illustration, the PDC is warning of a negative ground fault while simultaneously transmitting a 4-20mA signal proportional to battery drain.

Combination Monitor and Ground Fault Detector

The PDC (DG configuration) simultaneously monitors power usage and detects ground faults.

Monitor Battery Voltage Level

The PDC continually tracks the amount of power being consumed by a battery-powered device or system. It accepts a dc input from a battery, and converts it to a proportional current (0-1mA or 4-20mA) signal output ready for interface with a readout device or SCADA system. NOTE: With the -EXP or -SP option, the input-to-output relationship is different than standard (e.g., with the 125DC input type, a 75Vdc input will equal a 4mA output).

Ground Fault Detector

The PDC detects leakage to ground in a floating battery back-up system. Ground faults can drain away energy and render the system useless. They can sometimes present a safety hazard as well.

When the PDC senses momentary ground shorts of between 5 and 300K ohms (user-selectable), it outputs a contact closure signal for as long as the condition exists. The signal can be used to call attention to the fault condition via an annunciator panel light, buzzer or other on/off device. Two LEDs on the unit's front panel indicate whether the fault is positive or negative. The LED lit by the fault condition will remain on until reset by a manual push button located on the unit's front panel.

Detects Positive and Negative Faults—The PDC continuously compares the amount of current flowing between the positive terminal and ground, and the negative terminal and ground. Under normal operating conditions, these values would be equal. However, if the PDC senses a difference between the two values, power is leaking to ground. The PDC transmits its constant contact closure signal to call attention to the ground fault. Figure 1 illustrates detection of a negative ground fault.

PDC

DC Voltage Transducer
and Ground Fault Detector

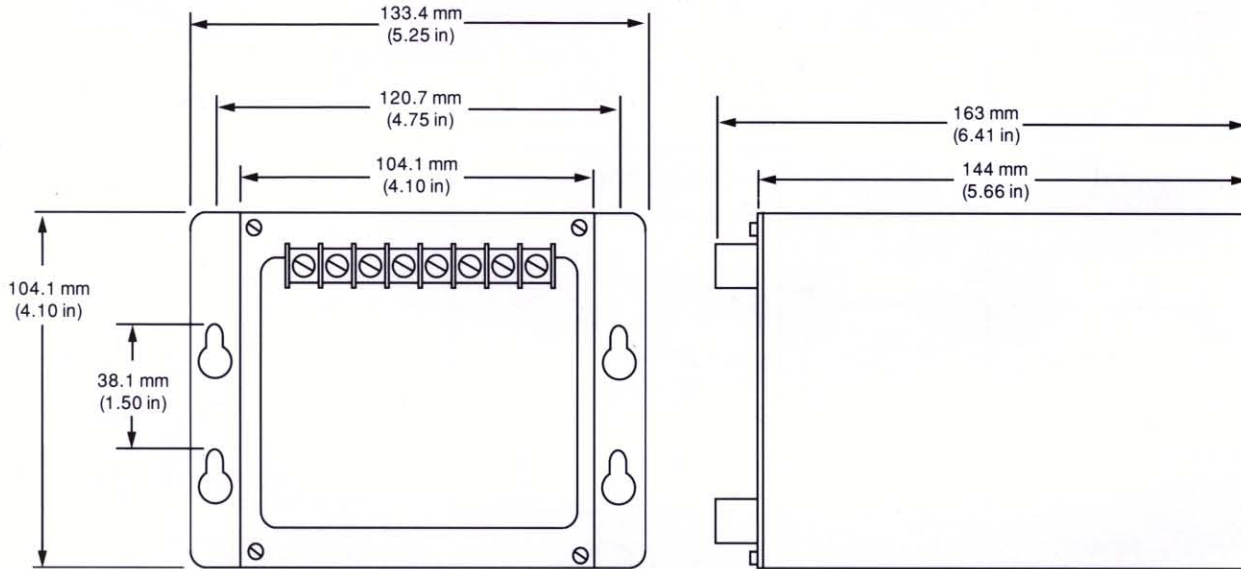


Figure 2. Installation Dimensions

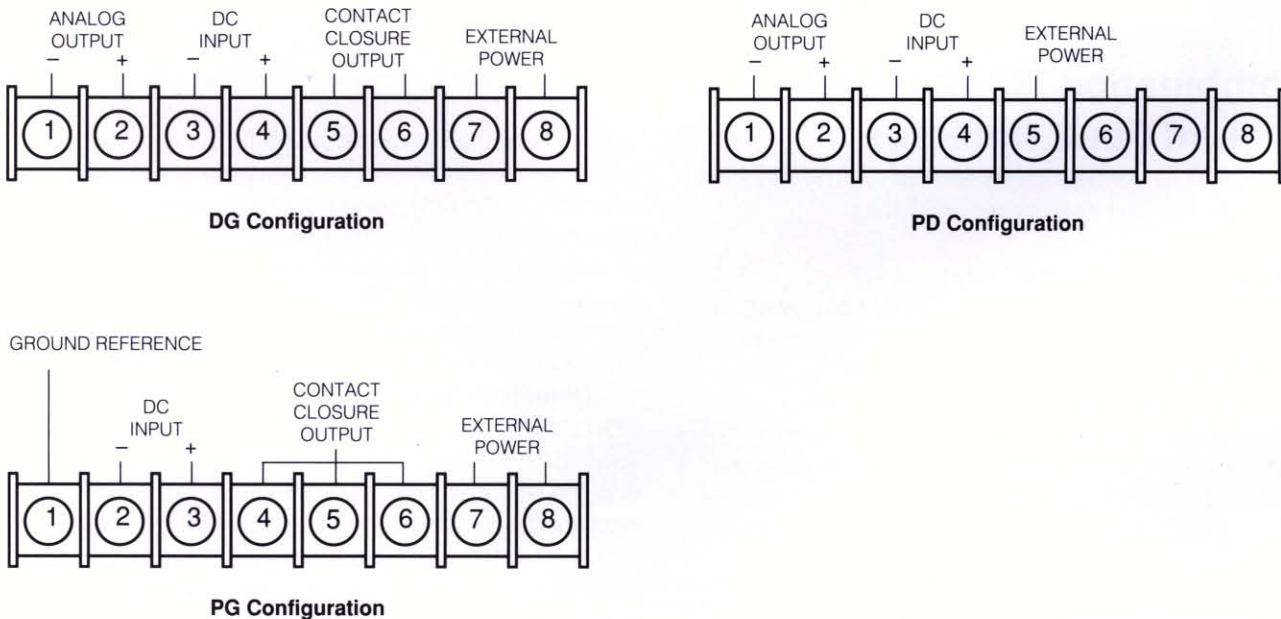


Figure 3. Terminal Designations



The Interface Solution Experts • www.miinet.com

United States • info@miinet.com
Tel: (818) 894-7111 • FAX: (818) 891-2816
Australia • sales@mooreind.com.au
Tel: (02) 8536-7200 • FAX: (02) 9525-7296

Belgium • info@mooreind.be
Tel: 03/448.10.18 • FAX: 03/440.17.97
The Netherlands • sales@mooreind.demon.nl
Tel: (0)344-617971 • FAX: (0)344-615920

China • sales@mooreind.com.cn
Tel: 86-21-68406724 • FAX: 86-21-50623585
United Kingdom • sales@mooreind.com
Tel: 01293 514488 • FAX: 01293 536852