

PR150/SP1B
PR150/SP2B
PR1500/SP7B
PR1500/SP8B

AC/DC CURRENT PROBES



User Instructions

WARNING

Death, serious injury, or fire hazard could result from improper connection of this instrument. Read and understand this manual before connecting this instrument. Follow all installation and operating instructions while using this instrument.

Connection of this instrument must be performed in compliance with the National Electrical Code (ANSI/NFPA 70-2011) of USA and any additional safety requirements applicable to your installation.

Installation, operation, and maintenance of this instrument must be performed by qualified personnel only. The National Electrical Code defines a qualified person as “one who has the skills and knowledge related to the construction and operation of the electrical equipment and installations, and who has received safety training on the hazards involved.”

Qualified personnel who work on or near exposed energized electrical conductors must follow applicable safety related work practices and procedures including appropriate personal protective equipment in compliance with the Standard for Electrical Safety Requirements for Employee Workplaces (ANSI/NFPA 70E-2012) of USA and any additional workplace safety requirements applicable to your installation.

Published by Dranetz
1000 New Durham Road
Edison, NJ 08818-4019 USA
Telephone: 1-800-372-6832 or 732-287-3680
Fax: 732-248-1834
Web site: www.dranetz.com
Copyright ©2012 Dranetz
All rights reserved.

No part of this book may be reproduced, stored in a retrieval system, or transcribed in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without prior written permission from the publisher, Dranetz, Edison, NJ 08818-4019.
Printed in the United States of America.

ADVERTENCIA

Una conexión incorrecta de este instrumento puede producir la muerte, lesiones graves y riesgo de incendio. Lea y entienda este manual antes de conectar. Observe todas las instrucciones de instalación y operación durante el uso de este instrumento.

La conexión de este instrumento a un sistema eléctrico se debe realizar en conformidad con el Código Eléctrico Nacional (ANSI/NFPA 70-2011) de los E.E.U.U., además de cualquier otra norma de seguridad correspondiente a su establecimiento.

La instalación, operación y mantenimiento de este instrumento debe ser realizada por personal calificado solamente. El Código Eléctrico Nacional define a una persona calificada como "una que esté familiarizada con la construcción y operación del equipo y con los riesgos involucrados."

El personal cualificado que trabaja encendido o acerca a los conductores eléctricos energizados expuestos debe seguir prácticas y procedimientos relacionados seguridad aplicable del trabajo incluyendo el equipo protector personal apropiado en conformidad con el estándar para los requisitos de seguridad eléctricos para los lugares de trabajo del empleado (ANSI/NFPA 70E-2012) de los E.E.U.U. y cualquier requisito de seguridad adicional del lugar de trabajo aplicable a su instalación.

AVERTISSEMENT

Si l'instrument est mal connecté, la mort, des blessures graves, ou un danger d'incendie peuvent s'en suivre. Lisez attentivement ce manuel avant de connecter l'instrument. Lorsque vous utilisez l'instrument, suivez toutes les instructions d'installation et de service.

Cet instrument doit être connecté conformément au National Electrical Code (ANSI/NFPA 70-2011) des Etats-Unis et à toutes les exigences de sécurité applicables à votre installation.

Cet instrument doit être installé, utilisé et entretenu uniquement par un personnel qualifié. Selon le National Electrical Code, une personne est qualifiée si "elle connaît bien la construction et l'utilisation de l'équipement, ainsi que les dangers que cela implique".

Le personnel qualifié qui travaillent dessus ou s'approchent des conducteurs électriques activés exposés doit suivre des pratiques en matière et des procédures reliées par sûreté applicable de travail comprenant le matériel de protection personnel approprié conformément à la norme pour des conditions de sûreté électriques pour les lieux de travail des employés (ANSI/NFPA 70E-2012) des Etats-Unis et toutes les conditions de sûreté additionnelles de lieu de travail applicables à votre installation.

WARNUNG

Der falsche Anschluß dieses Gerätes kann Tod, schwere Verletzungen oder Feuer verursachen. Bevor Sie dieses Instrument anschließen, müssen Sie die Anleitung lesen und verstanden haben. Bei der Verwendung dieses Instruments müssen alle Installation- und Betriebsanweisungen beachtet werden.

Der Anschluß dieses Instruments muß in Übereinstimmung mit den nationalen Bestimmungen für Elektrizität (ANSI/NFPA 70-2011) der Vereinigten Staaten, sowie allen weiteren, in Ihrem Fall anwendbaren Sicherheitsbestimmungen, vorgenommen werden.

Installation, Betrieb und Wartung dieses Instruments dürfen nur von Fachpersonal durchgeführt werden. In den nationalen Bestimmungen für Elektrizität wird ein Fachmann als eine Person bezeichnet, welche "mit der Bauweise und dem Betrieb des Gerätes sowie den dazugehörigen Gefahren vertraut ist."

Qualifiziertes Personal, das an bearbeiteten oder herausgestellten angezogenen elektrischen Leitern sich nähert, muß anwendbare Sicherheit bezogener Arbeit Praxis und Verfahren einschließlich passender persönlicher schützender Ausrüstung gemäß dem Standard für elektrische Sicherheitsauflagen für Angestellte-Arbeitsplätze (ANSI/NFPA 70E-2012) der Vereinigten Staaten und alle zusätzlichen Arbeitsplatzsicherheitsauflagen folgen, die auf Ihre Installation anwendbar sind.

SAFETY PRECAUTIONS

The following safety precautions must be followed whenever any type of voltage or current connection is being made to the instrument.

- When connecting to electric circuits or pulse initiating equipment, open their related breakers. DO NOT install any connection of the instrument on live power lines.
- Connections must be made to the instrument first, then connect to the circuit to be monitored.
- Wear proper personal protective equipment, including safety glasses and insulated gloves when making connections to power circuits.
- Hands, shoes and floor must be dry when making any connection to a power line.
- Make sure the unit is turned OFF before connecting probes to the rear panel.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.
- If the equipment is used in a manner not specified in this user's guide, the protection provided by the equipment may be impaired.
- These safety precautions are repeated where appropriate throughout this manual.

INTRODUCTION

These user instructions provide descriptive and operational information about the optional PR150/SP1B, PR150/SP2B, PR1500/SP7B and PR1500/SP8B current probes.

The PR150/SP1B, PR150/SP2B, PR1500/SP7B and PR1500/SP8B current probes have been designed for accurate non-intrusive measurement of AC and DC current.

The PR150/SP1B, PR150/SP2B, PR1500/SP7B and PR1500/SP8B conform to the latest directives concerning safety and electromagnetic compatibility.

- European Low Voltage Directives *73/23/EEC* and *93/68/EEC*
- European EMC Directive *89/336/EEC*

Safety Standards

EN61 01 0-1: 1993, General Requirements
Safety requirements for electrical equipment for measurement, control and laboratory use

EN61010-2-032: 1995, IEC1010-2-032: 1994-12.
Particular requirements for hand held current clamps for electrical measurement and test

EN61010-2-031: 1995, IEC1010-2-031: 1993-12.
Particular requirements for hand held current clamps for electrical measurement and test

600V Cat III Pollution degree 2

EMC Standards

EN50082-1: 1992 Generic Immunity Standard
Part 1. Residential, commercial & light industry

EN50081-1: 1992 Generic Emission Standard
Part 1. Residential, commercial & light industry

CONNECTION PROCEDURE

The PR150/SP1B, PR150/SP2B, PR1500/SP7B and PR1500/SP8B are designed to be safe under the following conditions:

- indoor use
- altitude up to 2000 m
- temperature 0°C to + 50°C
- maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 40% relative humidity at 50°C

Use of the probe on **uninsulated conductors** is limited to 600V RMS or DC and frequencies below 1 kHz. Safety in its use is the responsibility of the operator who must be a suitably qualified or authorized person. When using the probe ensure that your fingers are behind the protective barrier (see Figure 1).

Do not use the probe if any part of the probe including the lead and connector(s) appear to be damaged or if a malfunction of the instrument is suspected. Clean the case periodically by wiping it with a damp cloth and detergent. Do not use abrasive cleaners or solvents. Do not immerse the probe in liquids.

WARNING

To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to make connections to the instrument with all circuits de-energized. If it is necessary to make connections on energized circuits they must be made by Qualified personnel ONLY.

The National Electrical Code defines a qualified person as “one who has the skills and knowledge related to the construction and operation of the electrical equipment and installations, and who has received safety training on the hazards involved.”

Qualified personnel that work on or near exposed energized electrical conductors must follow applicable safety related work practices and procedures including appropriate personal protective equipment in compliance with the Standard for Electrical Safety Requirements for Employee Workplaces (ANSI/NFPA 70E-2012) of USA and any additional workplace safety requirements applicable to your installation.

Always refer to the applicable User’s Guide for additional information concerning installation, operation, and connections of Dranetz or Original Equipment Manufacturer’s instructions applicable to your installation.

OPERATING INSTRUCTIONS

Refer to Figure 1 and Figure 2.

- 1. Switch On (PR150/SP1B and PR1500/SP7B)**
Connect the external power supply to the probe via the 2.1 mm jack socket, switch on the power source and check that the LED on the handle of the probe is lit.
- 2. Switch On (PR150/SP2B and PR1500/SP8B)**
Switch on the probe using the **On - Off** switch and check that the LED is lit.
- 3. Battery Replacement (PR150/SP2B and PR1500/SP8B)**

SAFETY WARNING

Before removing the battery cover, make sure that the probe is remote from any live electrical circuit.

When the red LED fails to light with the switch in the **On** position, the battery must be replaced. Refer to Figure 2 and use the following procedure to replace the battery.

Unclamp the probe from the conductor, turn it off by using the **On - Off** switch and disconnect the output leads, from external equipment. With a small tool remove the cover of the battery compartment and incline the probe such that the battery can be removed from the compartment. Replace the battery and re-fit the battery cover.

Replacement with other than the specified type of battery will invalidate the warranty. Only fit battery type 9 V PP3, Alkaline 6 LR 61.

- 4. Zero adjustment**
The output zero offset voltage of the probe may change due to thermal shifts and other environmental conditions. To adjust the output voltage to zero, rotate the thumbwheel located on the probe handle. Ensure that the probe is away from the current carrying conductor while the adjustment is made.

5. Current measurement

Connect the output lead to a multimeter. Select the AC or DC mV range on the multimeter as appropriate to the current measurement. If necessary adjust the probe output voltage to zero as described in Step 4. Clamp the jaws of the probe round the conductor ensuring a good contact between the closing faces of the jaws.

Observe and take measurement as required. Positive output indicates that the current flow is in the direction shown by the arrow on the probe.

True RMS readings can be obtained by using an appropriate true RMS reading multimeter. Core eddy current heating is produced when $I_{RMS} \times f > 400.000$. This will limit the maximum measurable current at high frequencies.

BATTERY SUPPLY

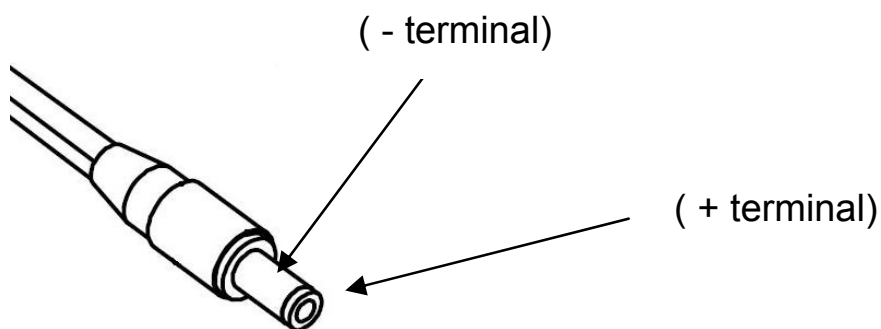
The PR150/SP2B, and PR1500/SP8B current probes are supplied with a 9V battery and will operate on battery power typically for approximately 75 hours of continuous operation.

EXTERNAL SUPPLY

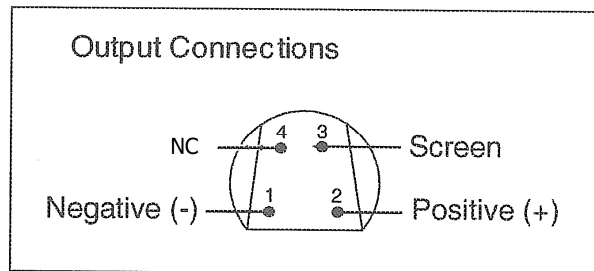
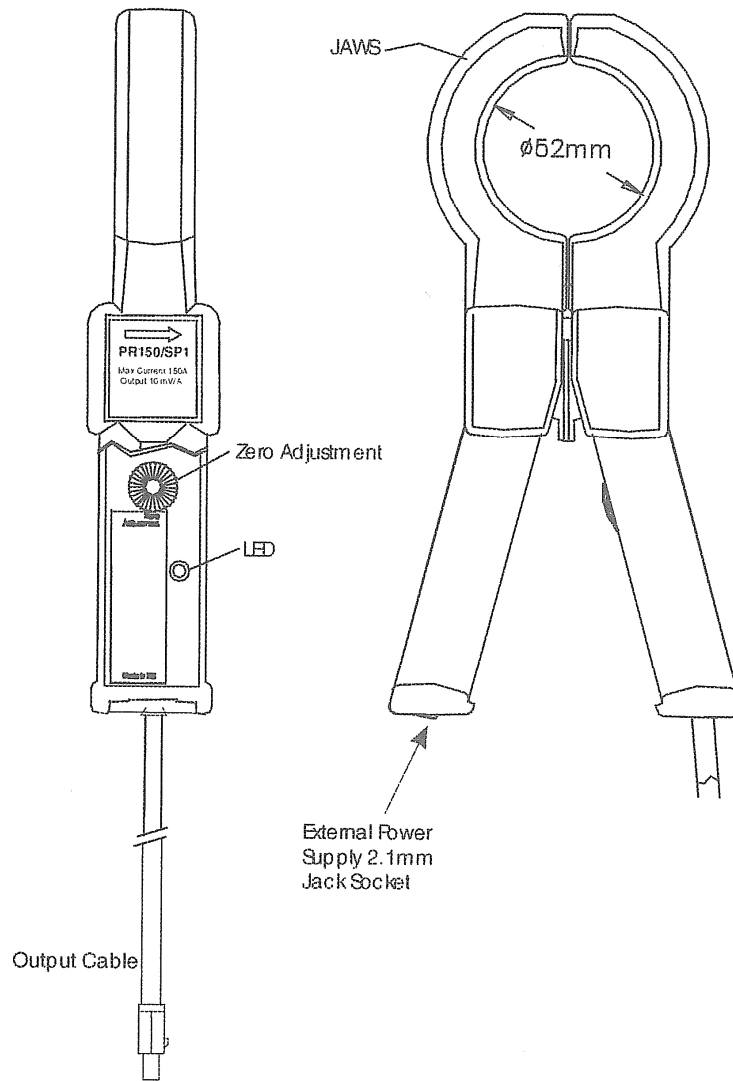
The PR 150/SP1B and PR 1500/SP7B current probes require an external 9V power supply and each probe can be powered by a separate adapter or by one adapter and an optional RR/PS/4A adapter cable which allows the connection of 4 PR series probes to a single 9VDC source . Recommended AC adapter details are as follows.

Product Number	Input Voltage	Input Plug Type	Output
PR9VUA	100-240 VAC, 50/60 Hz	US, Euro, UK, Australia	+9VDC, 1.11 A

If using other AC adapters not listed above, the probe is to be externally powered by an applicable agency Listed Limited Power supply only. The DC input jack on the side of the probe enclosure accommodates a 2.1 x 5.5 mm barrel connector using the center pin as the positive terminal and the outside barrel connection as the negative terminal. It is recommended that each probe to be powered by one adapter to power each probe if using non-Dranetz accessories.

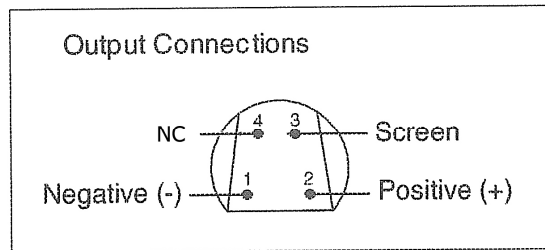
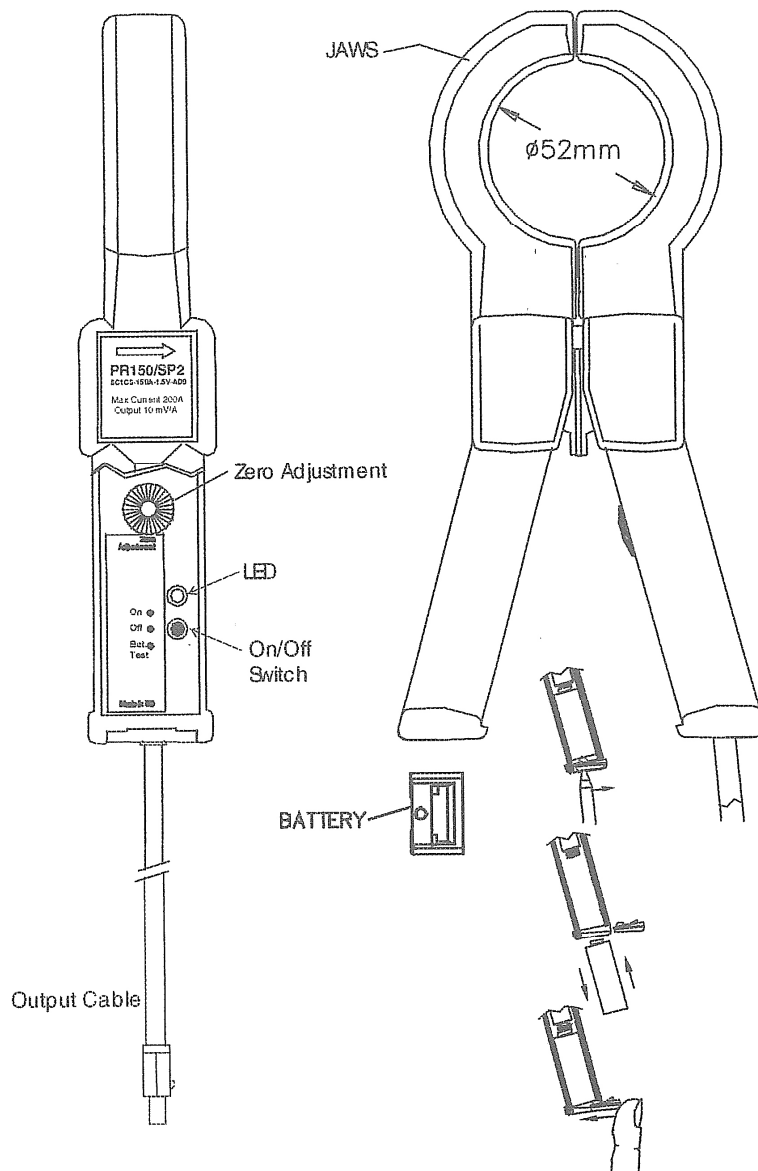


Note: Use of non-Dranetz accessories may be susceptible to noise influencing current measurements and use of one adapter to power 4 probes is not recommended. Each probe should be powered by a separate adapter.



(Viewed from back of connector)

FIGURE 1



(Viewed from back of connector)

FIGURE 2

SPECIFICATIONS

Electrical Data – PR150/SP1B and PR150/SP2B

(All accuracies stated at 23°C ± 1°C)

Nominal Current In	150 A DC and AC _{RMS}
Measuring Range	± 200 A
Overall accuracy (at 23°C)	± 1% of rdg
	(10% to 120%)
	± 2% max.
Resolution	± 100 mA
Output sensitivity	10m V / A
Frequency range	DC to 5 kHz (-3dB)
Dielectric strength	5.5 kV / 50Hz / 1 min

General Data - PR150/SP1B and PR150/SP2B

Operating temperature	-10°C to +50°C
Storage temperature with Battery removed	-20°C to +70°C
Load impedance (minimum)	> 10 kΩ and ≤ 100 pF
Conductor diameter	50 mm max.
Jaw opening	52 mm max.
Weight	600 g
Output cable	2m screened, PVC
Connector Type	Hypertronics D01, 4 pin

PR150/SP1B

External Power Supply	9V DC (± 2 V)/20 mA
	Via 2 .1 mm Jack Plug

PR150/SP2B

Power Supply	9V Alkaline, P3/6LR61
	75Hrs, Low Battery
	Indicator

Electrical Data – PR1500/SP7B and PR1500/SP8B

(All accuracies stated at 23°C ± 1°C)

Nominal Current In	1500 A DC and AC _{RMS}
Measuring Range	± 1800 A
Overall accuracy (at 23°C)	± 1% of rdg
	(10% to 120%)
	± 2% max.
Resolution	± 100 mA
Output sensitivity	1 mV / A
Frequency range	DC to 5 kHz (-3dB)
Dielectric strength	5.5 kV / 50Hz / 1 min

General Data - PR1500/SP7B and PR1500/SP8B

Operating temperature	-10°C to +50°C
Storage temperature with Battery removed	-20°C to +70°C
Load impedance (minimum)	> 10 kΩ and ≤ 100 pF
Conductor diameter	50 mm max.
Jaw opening	52 mm max.
Weight	600 g
Output cable	2m screened, PVC
Connector Type	Hypertronics D01, 4 pin

PR1500/SP7B

External Power Supply	9V DC (± 2 V)/20 mA
	Via 2 .1 mm Jack Plug

PR1500/SP8B

Power Supply	9V Alkaline, P3/6LR61
	75Hrs, Low Battery
	Indicator

SCALE FACTORS

Probe Model Number	Range	Scale Factor
PR 150	150A	100
PR 1500	1500A	1000

STATEMENTS AND NOTICES

Statement of warranty

All products of Dranetz are warranted to the original purchaser against defective material and workmanship for a period of one year from the date of delivery. Dranetz will repair or replace, at its option, all defective equipment that is returned, freight prepaid, during the warranty period. There will be no charge for repair provided there is no evidence that the equipment has been mishandled or abused. This warranty shall not apply to any defects resulting from improper or inadequate maintenance, buyer-supplied hardware/software interfacing, unauthorized modification or misuse of the equipment, operation outside of environmental specifications, or improper site preparation or maintenance.

Statement of reliability

The information in this manual has been reviewed and is believed to be entirely reliable, however, no responsibility is assumed for any inaccuracies. All material is for informational purposes only and is subject to change without prior notice.

Notice regarding proprietary rights

This publication contains information proprietary to Dranetz. By accepting and using this manual, you agree that the information contained herein will be used solely for the purpose of operating equipment of Dranetz.

Copyright

This publication is protected under the Copyright laws of the United States, Title 17 et seq. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form, by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the prior written consent of Dranetz, 1000 New Durham Road, Edison, New Jersey 08818.

Copyright © 2012 Dranetz

All Rights Reserved. Printed in the United States of America.

