



**Ground Protection for Feeders,
Generators & Industry**

DESCRIPTION

The Current Protection Relay (IPR-D) has been designed to measure the ground RMS current under normal conditions or under disturbances. The current signals are sensed throughout a current transformer (CT). This information is internally processed by the microprocessor in order to take the current protection actions defined under ANSI, IAC or IEC standard.

APPLICATIONS

- Primary and backup ground protection for utility feeders, power plants and industrial distribution systems.

PROTECTION AND FUNCTIONALITY

- **(50G/50N)** Instantaneous ground overcurrent.
- **(51G/51N)** Inverse time ground overcurrent
- ANSI, IAC or IEC/BS142 curves included:
 - Moderately inverse.
 - Normal inverse.
 - Very inverse.
 - Extremely inverse.
 - Definite time.
- Overload alarm pickup level.

COMMUNICATION

- Remote communication using a PC or a PLC by 1 RS232 & 2 RS485 ports.
- Remote programming of the setpoints.
- Protocol used: Modbus RTU.

FEATURES

- CT primary ratio selectable in 5 A steps (5 A to 5000 A).
- Ground RMS current measurement.
- 1 trip relay and 3 programmable auxiliary relay.
- Control power drop or internal fault relay.
- Digital inputs: 1 breaker status & 3 programmable.
- Touchpad programming.
- Breaker operation & trip failure.

SIGNALLING

- LED and LCD display indication.
- Ground current indication.
- Last trip cause and storage of values.
- Indication and storage of fault conditions and their values.
- Threshold LED for 50G/N, 51G/N.

APPLICABILITY

<i>Systems:</i>	Mono phase, 3 or 4-wire three phase system
<i>Frequency</i>	50 and 60 Hz

SPECIFICATIONS

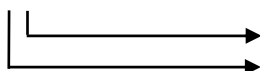
SUPPLY VOLTAGE 24±310 Vdc, -15%, +10% 24±240 Vac, -15%, +20% 50/60Hz	MAX. POWER CONSUPTION 12VA (7W)
TEMPERATURE RANGE Operational: 0 °C a +50 °C Storage: -20 °C a + 70 °C	RELATIVE HUMIDITY Max. 90% (non condensing)
DIELECTRIC WITHSTAND VOLTAGE 2 kVac, 60 s	BURN IN 48 hours at 50 °C
CONSTRUCTION According to VDE, UL, CEI norms.	OUTPUT CONTACT Rated load: 8A DC 150W resistive or 90W inductive (L/R=40 ms) AC 2000VA resistive or 800VA inductive (PF=0.4) Max. operating Voltage: 250 Vac, 125 Vdc
COMMUNICATIONS Type: 1 RS232 port + 2 RS485 ports, Half duplex, 1200 → 19200 baud Protocol: Modbus RTU Functions: Read/Write setpoints Read actual values Execute commands	LED INDICATORS Relay status: Trip Alarm Out of Service System status: Breaker closed, Breaker open, breaker earthed, pickup 50, pickup 51, pickup 50N/G, pickup 51N/G. Display (LCD): 16 x 2 digits
DIGITAL INPUT Type: Dry contacts only, 500 Ohm Max. ON resistance (12 Vdc @ 10 mA provided by relay)	TERMINAL BLOCK Fixed, back connection terminals with 4-mm ² -section cable (10 AWG).
FRAME In ABS auto-extinguish with frontal in polycarbonate (IP54).	ASSEMBLY The relay has to be fixed to the structure with the help of stirrups and screws.
DIMENSION 144 x 144 x 141 mm WEIGHT 1.5 Kg	FRONT PANEL CUTOUT 137 x 137 mm
GROUND CT INPUT Source CT (In): CT (In) 5 A to 5000 A, Steps: 5 A. CT secondary: CT 1 A or 5 A (specified when ordered). Sampling: True RMS, 16 sample/s. CT burden: 0.25 VA at rated secondary current. Continuous: 2xIn. Current withstand capac.: 20 times In for 1 sec. Accuracy: at ≤ 1xCT => ± 0.5% of 1xCT at > 1xCT => ± 0.5% of 20xCT	GROUND TIME OVERCURRENT Pickup level: 4% to 300% of CT, steps of 1% Time multiplier: 0.1 to 20.0 for each shape curve Reset: Time reset to zero each time current level falls below pickup threshold. Accuracy: Pickup: ±3%. Time: ±3% of trip time or ±20 ms
INSTANTANEOUS GROUND OVERCURRENT Pickup level: 4% to 1800% of CT, steps of 1% or 10% Delay time: 0 to 2000 ms, steps of 10 ms Accuracy: Pickup: ±3%. Time: +35ms max	TIME OVERCURRENT CURVES Phase and Ground: ANSI, IAC or IEC Moderately Inverse, Normally Inverse, Very Inverse Extremely Inverse, Definite Time

EMISSION TEST

- Radiated emissions
References: EN 55011; Port : enclosure; Class A, at 10m
- Conducted emissions
References: EN 55011; Port: AC mains; Class A

IMMUNITY TEST

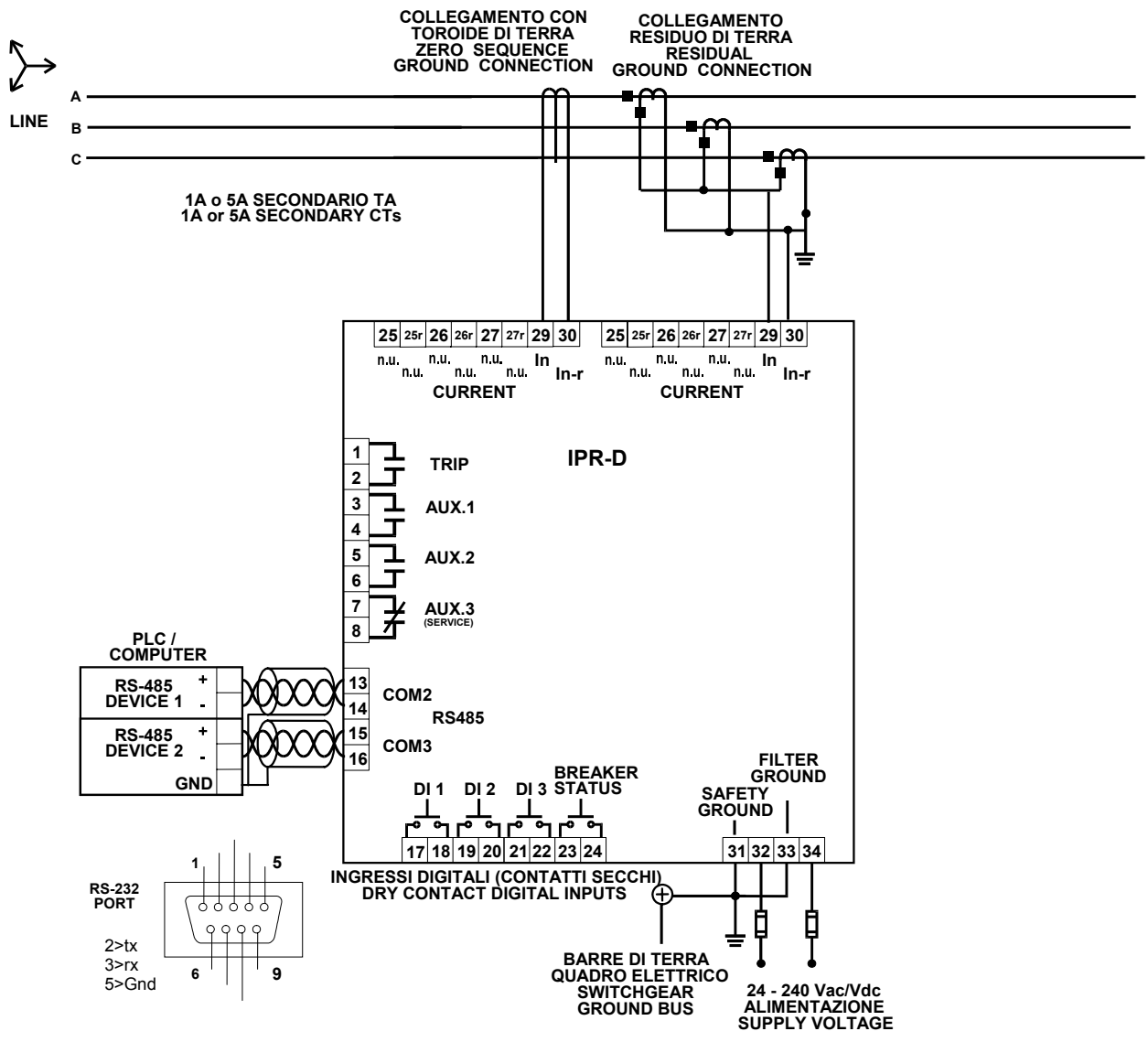
- Conducted disturbances induced by RF field
References: EN 61000-4-6; Port: AC mains and signal lines
- Radiated electromagnetic field
References: EN 61000-4-3; Port: enclosure
- Electrostatic discharge
References: EN 61000-4-2; Port: enclosure
- Fast transients (burst)
References: EN 61000-4-4; Port: AC mains and signal lines
- Surge
References: EN 61000-4-5 ; Port: AC mains
- Voltage dips and short interruptions
References : EN 61000-4-11 ; Port: AC mains

ORDER CODE:**IPR – DXX****GROUND CT SECONDARY**

1: 1 A CTs
1: Standard

5: 5 A CTs
X: Special Version

**GROUND SECONDARY CT
MODEL**



ORION ITALIA Srl
 Via G. Orsi 35, 29100 Piacenza [PC] -Italia
 Phone: + 39 0523591161 – Fax: + 39 0523593898 – www.orionitalia.com

