

Innovative Electrical Automation Solutions

IES NETOWORK PROTECTION BOARD With Inverter Distribution Installation and User Manual



Model IPS-04

CONTAINS IMPORTANT INSTALLATION AND TESTING PROCEDURES THAT MUST BE FOLLOWED TO ENSURE COMPLIANCE WITH THE DISTRIBUTION NETWORK SERVICE PROVIDER.

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Designed and Manufactured by

Disclaimer

The Information contained in this document is subject to change without notice. Integrelec reserves the right to make modifications and/or improvements to this document as well as to the products that this document refers to. Such changes will be incorporated into new editions of this document.

The IPS series feed-in limiters and grid protection devices are designed and manufactured by Integrelec.

The design, installation and certification the solar installation (including the equipment this manual refers to) must also be done in accordance with all regulations and requirements of the local distribution network service provider.

Warranty Information

This product is supplied with 12 months manufacturer warranty.

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1 Product Overview

The IPS range of Inverter Energy System Grid Feed-In Limiters (GFIL) and Grid Protection Boards have been developed specifically to meet the requirements set by Energex and Ergon Energy for small and medium scale inverter installations. These are also suitable for use in other states and territories subject to local regulations.

The IPS-04 model provides secondary network protection as well as inverter power distribution for up to 200A of inverter capacity and 6 inverters. Export control is not provided but space provisions in the board have been made to accommodate inverter manufacturer's export control, monitoring and communications systems.

Other products in the IPS range include:

- IPS-01 (export control only)
- IPS-02 (export control and secondary network protection)
- $\circ~$ IPS-03 (secondary network protection only 3^{rd} party export control systems can be fitted)



Figure 1 – IPS-04 Internal Layout



1.1 Functional Description

- After switching on, a start delay of 60 seconds will occur while the network protection relay monitors for fault conditions. Stable network supply must be observed for 60 seconds before the system allows inverters supplied from the distribution chassis to energise via the internal contactor.
- Once in normal operation, if the network protection relay detects a network fault, the relay will isolate all inverters via the internal contactor. All inverters remain isolated for the duration of the fault or power outage and for a further 60 seconds of no-fault conditions. This allows loads to come back online and the grid to stabilise before allowing the inverters to attempt to synchronise and re-connect.
- The protection relay is supplied preconfigured with the network protection settings as required by Energy Queensland, current at the time of manufacture.



2 Package Contents

- 1 x Installation and User Manual
- 1 x IPS-04 IES Network Protection Board

In addition, the installer must also supply:

- 4C+E cable from Main Switch Board to IPS-04 Board
- 1 x 3 phase circuit breaker rated to protect cable from Main Switch Board to IPS-04 board.
- Circuit breakers for each inverter.

3 Safety instructions

Installation and testing of this device must be performed by a licenced electrician in accordance with AS3000, AS4777 and other applicable standards.

4 Installation

For the IPS-03 to function as an approved network protection device in accordance with Energy Queensland requirements as discussed in Sec. 1, it must be installed as follows.

4.1 Mounting

Wall mount the board as close as possible to the main switch board, downstream of all inverters.



4.2 Configuration

Figure 2 shows the overall cable topology for installation.



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4.3 Electrical Connections

Main Supply

Connect the main supply at the main switch and earth / neutral bars. Cable selection and circuit protection should be in accordance with AS3000 and AS4777 to accommodate the supply from all connected inverters.

Inverter Supply

Connect each inverter at the distribution chassis and earth / neutral bars. (Circuit breakers not included with supply of IPS-04). Cable selection and circuit protection should be in accordance with AS3000 and AS4777 for the respective inverter.

Inverter cables may be passed through the opennings beneath the distribution chassis for easier cable management.

Note that additional equipment such as export control or monitoring gear must not be supplied off the distribution chassis as this supply is disconnected during a network protection relay trip. Spare terminals (81, 82, 83, N) are supplied for this purpose.

4.3.1 Network Protection Relay

The network protection relay is supplied preconfigured to comply with Energex / Ergon requirements, current at the time of manufacture. Testing and verification must be carried out at the time of final commissioning by the RPEQ engineer certifying the installation.

5 End User Guide

Once installed and tested, the IPS-04 is a fully automated system that requires no end user interaction. The two built in status indicators – 'fault' and 'running' show current status of the protection system.

5.1 Network Protection Relay

If there is a network fault or power outage, the protection relay will isolate the inverters from the electricity grid via contactors. If there is still power supplied to the IPS-04, the red 'fault' indicator on the front of the panel will be lit to show that the inverters have been disconnected.

The green 'running' indicator shows that all faults are clear and inverters are energised.

The IPS-04 is supplied with the network protection relay settings preconfigured as required by Energy Queensland, current at the time of manufacture.

6 Technical Data

Parameter	MODEL	
MODEL	IPS-04	
Phases	3	
Input Voltage	415V (3P + N)	
Power Consumption	10W	
Dimensions	1200(h)x600(w)x300(d)	
Weight	60kg	
Warranty	12 months	
Supply Networks	Energex, Ergon Energy	

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