PERTRONIC INDUSTRIES LTD

DATASHEET

F220 Net2 Network Card

NET2CARD

Product Overview

The Pertronic F220 Net2 Network Card (NET2CARD) is the central building block for the Pertronic F220-Net2 Network System.

An F220 Net2 Network Card may be configured to interface one of the following devices to an F220-Net2 Network:

- Pertronic F220® fire panel and/or multiple Net2 NCU or Net2 remote displays (See note 1, page 2)
- Pertronic FireMap® workstation
- Modbus master device
- ASCII text-based system including nurse-call, printer, or pager

NCUs and Remote Displays

Each network card provides a Network Peripheral Bus for communicating with Net2-compatible RS-485 peripherals. The bus is capable of addressing up to eight Net2 NCUs or Net2 Mini-Mimics.

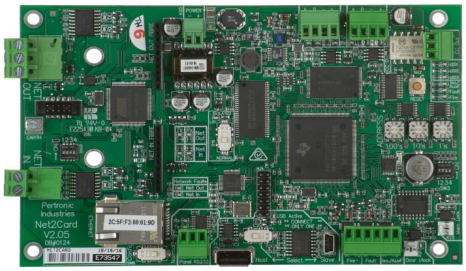
Pertronic FireMap® Interface

When configured as a FireMap interface, the F220 Net2 Network Card interfaces the entire network with a FireMap workstation over a TCP/IP Ethernet connection.

Modbus Interface

When configured as a Modbus interface, the F220 Net2 Network Card provides a supervised bi-directional interface between an F220-Net2 Network System and a Modbus master device such as a building management system.

The network card provides 3,000 Boolean Nodal Mapping Objects (NMO). NMOs may be configured as Modbus coils, discrete inputs, holding registers, or input registers. (A Modbus register can hold up to 16 NMOs). Any F220 fire panel object or event within the F220-Net2 Network may be mapped to any NMO.



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ASCII Text Interface

When configured as an ASCII text interface, the F220 Net2 Network Card exports selected fire system events as ASCII text, suitable for printers, pagers, nurse-call systems, or other text-based systems. The output message format is defined in FireUtils® using a simple and versatile template.

Architecture

The F220 Net2 Network Card connects with the Net2 Ring Circuit via two bi-directional ports. The standard ports are electrically-isolated half-duplex RS-485 connections. The ports may be configured as single-mode or multi-mode fibre-optic ports by installing Pertronic Net2 Fibre-Optic Converter (FIBNET) modules.

Please refer to the “F220-Net2 Network” datasheet for more information about the Pertronic F220-Net2 Network.

Features

- Up to 133 F220 Net2 Network Cards may be connected in a single F220-Net2 Network System
- Two half-duplex RS-485 network ports (Net In, Net Out) with built-in terminating resistors
- Optional dual fibre-optic full-duplex network ports (single-mode or multi-mode versions)
- Isolates any faulty ring segment
- The Net2Card’s Network Peripheral Bus provides an RS-485 data circuit and a 24 V dc power circuit.
- The bus data circuit communicates with
  - Up to 8 Net2 NCUs or Net2 mini-mimics, and
  - Up to 8 LED display controllers (such as the Pertronic LAC485 or Pertronic PDB12)
- The bus power circuit powers 1 or 2 Net2 NCUs or Net2 mini-mimics, depending on brightness settings
- Additional Net2 NCUs or Net2 mini-mimics require suitable power supplies (for example, the main power supply of a fire indicator panel)
- Three rotary switches for configuring the network node address
- Bi-directional Modbus interface provides:
  - 3,000 Boolean Nodal Mapping Objects (NMOs)
  - Ability to map up to 8 timers from any panels on the network to Modbus registers. (Multiple timers may be mapped to a single register. The total number of mapped timers must not exceed 8.)
  - Mappable I/O watchdog
- On-board clock with super-capacitor backup power maintains system time for at least 24 hours without system power
- Automatically creates a complete configuration backup of all network card and networked panels whenever a USB stick is plugged in
- Earth fault detection on the Net Out port
- Communicates with an F220 fire panel via the F220 Internal High-Speed RS-485 Bus
- USB host port
- RJ45 10/100 Ethernet port for Modbus, FireMap or ASCII Text (printer/pager/nurse call) interfaces
- RS-232 port (non-isolated) for text interface (note 4)

Specification

Network Connections: Fibre-Optic		ST or SC	**Modbus Protocol**		Modbus/TCP
Network Connections: RS-485		Screw Terminals	**Modbus Objects**		Any combination of coils, discrete inputs, holding registers, and input registers, up to a total of 3000 bits (each register can hold up to 16 NMOs)
Network Data Rate (Copper & Fibre)		230.4 kbit/s			
Peripheral Bus Data Rate (RS-485)		115.2 kbit/s			
Ethernet Connection		RJ45 10/100			
Ethernet/Modbus Data Rate		100 Mbit/s (maximum)			
Supply Voltage		18 to 30 V dc	**Nodal Mapping Objects (Boolean)**		3000
Standby Current, excl. Peripheral Bus		45 mA			
Operating Current (2 Copper Ports)		75 mA	**Modbus/FireMap IP Address**		Configurable
Operating Current (1 Copper, 1 Fibre)		90 mA	**Modbus/FireMap/Text IP Port**		Configurable
Operating Current (2 Fibre Ports)		105 mA	**ASCII Text Interface (note 4)**	**Output**	TCP/IP (Client or Server), UDP (Client), Serial (RS-232)
Peripheral Bus Capacity	**NCU and Mini-Mimics**	Up to 8			
	LED Display Controllers	Up to 8		**Data Rate**	300 bit/s to 230,400 bit/s
				Parity	None, Even, Odd, Mark & Space
Peripheral Bus Current		175 mA (maximum)			
Screw Terminals (stranded cable)	**Net In, Net Out**	0.5 to 2.5 mm²		**Char Length**	7 to 8 bits per character
	Other	0.2 to 1.5 mm²		**Stop Bits**	1, 1.5, or 2
Dimensions (W x H x D)		167 x 101 x 23 mm	**Weight**		124 g
Operating Temperature		-10 °C to +50 °C	**Relative Humidity**		≤ 95 % non-condensing

Configuration Options for Network Ports

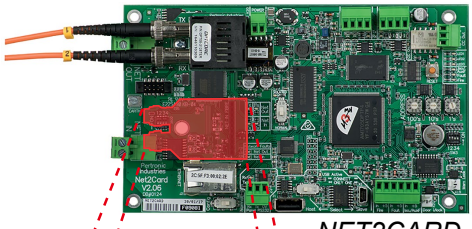
The F220 Net2 Network Card connects with the Net2 Ring Circuit via two bi-directional ports: Net In and Net Out.

Data arriving at either port is regenerated and transmitted from the other port. The standard ports are electrically-isolated half-duplex RS-485 connections with built-in terminating resistors.

The ports may be configured as single-mode or multi-mode fibre-optic ports by installing Net2 Fibre-Optic (FIBNET) converters.

The FIBNET converter may be fitted to either or both of the Network Ports (Net In, Net Out). The converter plugs in to a connector on the port and is retained by a mounting screw and stand-off.

Please refer to the “Net2 Fibre-Optic Converter” datasheet for full details of the fibre-optic converter modules.



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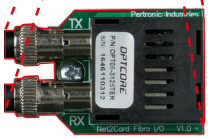
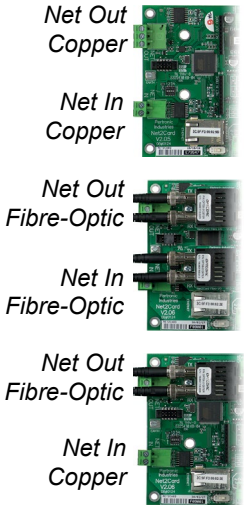


FIBNET fibre-optic converter module

Port Configuration Examples:



Ordering Information and Notes

Product Code	Description
NET2CARD	F220 Net2 Network Card
FIBNET-MMF	Multi-mode Fibre Converter for NET2CARD (2 km), ST Connector
FIBNET-MMF-SC	Multi-mode Fibre Converter for NET2CARD (2 km), SC Connector
FIBNET-SMF	Single-mode Fibre Converter for NET2CARD (20 km), ST Connector
FIBNET-SMF-SC	Single-mode Fibre Converter for NET2CARD (20 km), SC Connector

1. To satisfy regulatory requirements in Australia, the F220 Net2 Network Card should be co-located with an AS 7240.4-compliant power supply.
2. An F220 Net2 Network Card configured as FireMap, Modbus, or ASCII Text (printer/pager/nurse call) interface can not be used to interface an F220 fire panel to the F220-Net2 Network. Each FireMap, Modbus, or ASCII Text interface requires a dedicated F220 Net2 Network Card. A Net2 Network system may include multiple FireMap, Modbus, or ASCII Text interfaces.
3. On Net2 Network Cards configured as FireMap, Modbus, or ASCII Text interfaces, the Network Peripheral Bus can not be used.
4. When interfaced via RS-232 with an external system, the Net2 network card should be powered from an isolated 24 V dc power supply such as a dc-dc converter.
5. Please refer to the “Net2 Network” and “Net2 Fibre-Optic Converter” datasheets for more information about the Pertronic Net2 System.