PERTRONIC INDUSTRIES LTD

INSTALLATION NOTE

Network Concentrator, Issue 1

(Compatible with Pertronic F120A panels, version 4.08.00 and greater)

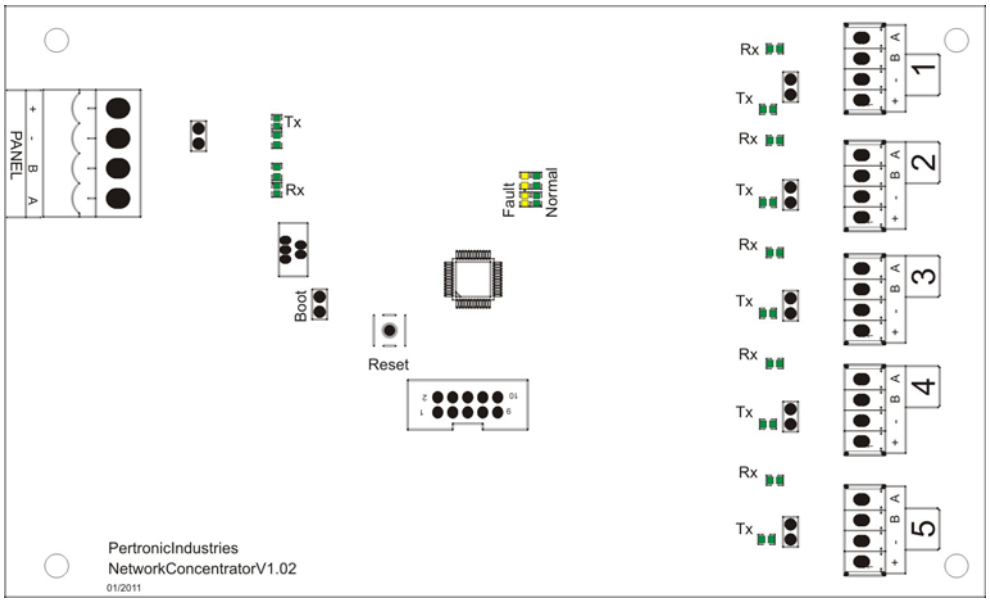
Overview

The Pertronic Network Concentrator enhances the capability of a Pertronic network. Without a Concentrator, a single F120A panel and a network card provides the following:

- A maximum of 128 network inputs, and
- Up to 64 LED outputs transmitted around the network for use as network inputs to other panels.

With the installation of a Network Concentrator, a single F120A panel and network card can communicate with up to 5 panel cards and provides greater capability:

- A maximum of 640 network inputs for the panel, and
- As many as 320 LED outputs transmittable as inputs around the network to other panels.



Operation

The Network Concentrator PCB, shown above, connects to the panel's EXTERNAL RS485 MIMIC port for both power and data. Connection to the panel's INTERNAL sources is impractical due to the limitation of current to the network cards and concentrator (network cards have a nominal current requirement of 75mA each and the Concentrator itself requires 10mA).

Up to five network cards can be connected to the five Slave RS485 ports on the Concentrator. The network cards **must** be connected starting at Port 1, and each additional card is added on the next-higher numbered port. The 1st slave is the Primary Slave, receiving and sending all panel and network data to operate as a normal panel card. The panel communicates with the concentrator card, which in turn communicates with each of the slave network cards, restricting the data flow as required, and reporting network card faults back to the panel as though they had originated from the primary slave network card.

The 2nd and subsequent slaves receive the panel's global LED information, but they do not receive any event data from the panel and cannot request the panel to perform any normal network-related functions (filtered by the concentrator card). Their only function is to generate Network LED data for the network, and Network Input information for the panel.

Within the Pertronic Network Configuration Utility, network mapping is used to map panel LED's to other panel's Network Inputs. Panel LED numbers must be selected between 1 and 512 and only 64 can be mapped via any one network card.

Network Inputs from the network to the panel with the concentrator, are configured as though each of the slave network cards provides Network Inputs 1 to 128. However, the concentrator combines all the Network Inputs from all the connected slave cards and passes them up to the panel as banks of Network Inputs as follows:

Slave Port	Description	Net Input Range
1	Primary	001 – 128
2	Secondary	129 – 256
3	Secondary	257 – 384
4	Secondary	385 – 512
5	Secondary	513 – 640

F120 Control Panels with firmware version 4.08 have the capacity to accept Network Input numbers from 1 to 999, with inputs 129 to 999 for use only as inputs to logic functions.

Configuration

User configuration of the Concentrator is not required. The Concentrator continually communicates with its five slave ports in order to monitor if a network card is connected; the Concentrator sends a *"Network Fault"* indication to the panel if communication has been recognized but is subsequently lost to any of the secondary slaves, and *"Network Missing"* is reported by the panel if the primary slave communication is lost.

A fault is generated in the method described for each of the following conditions:

- There are 4 network cards specified in the network configuration, but only slave ports 1, 2, and 3 are used on the Concentrator. In this case, a fault is generated by the network, not by the Concentrator which has no knowledge of the network configuration. The Concentrator sees no fault because the first 3 slave ports each have a card connected.
- There are 2 network cards specified in the network configuration, but they are connected to slave ports 1 and 3. In this case, the network sees itself as functioning normally—it sees two network cards. The Concentrator, however, expects a response to come from port 2 but sees a response from port 3 instead: so, it generates the fault.

LED Operation

The Normal LED continually flashes (400ms on/off) if the Concentrator is not sensing a fault condition. In a fault arises, the Fault LED flashes 3 times, and then pauses briefly. One or more long flashes among the three indicates a fault at that position, as interpreted by the table below:

Index	Name	Description
1	Panel Timeout	No data received from the panel.
2	Primary Timeout	Primary slave (port 1) has timed out.
3	Secondary Timeout	At least one of the secondary slaves (ports 2-5) has timed out.

Network Isolate

If any of the slave network cards are isolated using its toggle switch, the Concentrator sends a *"Network Isolate"* signal to the panel and adjusts the incoming and outgoing data to make all the slaves behave as though they are isolated. This means that all Network Input data returned to the panel will show the Inputs as Normal, and event messages from the panel are prevented from reaching the primary slave and therefore the network.

Order Code:

Product	Order Code
Network Concentrator Card	NETCONC