

FDR Communications QuickSheet



FDR Overview

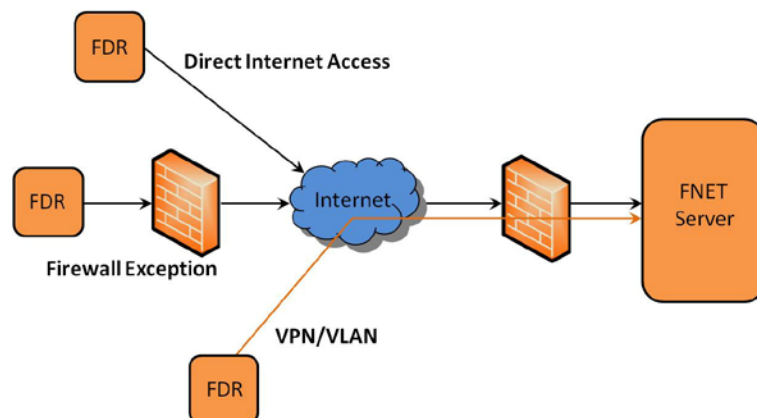
An FDR (Frequency Disturbance Recorder) is an embedded microprocessor system with GPS time synchronization and Ethernet communications capability.

- An FDR measures power system voltage from 110-V (U.S.) or 240-V (European) wall outlets commonly located in homes and offices.
- An FDR takes measurements on a continual basis and calculates power system frequency and phase angle.
- Locally calculated data is time-stamped using a highly accurate GPS clock and streamed to servers at the University of Tennessee ten times per second.

The FNET system enables researchers at the University of Tennessee Power Information Technology Laboratory to study behaviors within interconnected power systems and to propose advanced methods for power system control.

Ethernet Communications

An FDR sends data to an assigned TCP port on the FNET server. The total bandwidth required is about 1.3 kbps. FDRs can communicate from private networks with provisional firewall exceptions or over VPN/VLAN. For installation in private networks, please consult your IT department for their requirements.



FDR Configuration

FDR Ethernet communications settings are configured prior to deployment, including the TCP/IP port number. Therefore, the following parameters are needed by FNET staff for proper configuration:

- IP configuration: DHCP or Static
- If static IP configuration is required: then IP, gateway, subnet mask, and DNS server addresses are needed.

Network Issues FAQ

Q: How do FDRs send data to the server?

The FDR transmits data as ASCII text “in the clear” (i.e., unencrypted) using TCP. Each FDR is assigned its own TCP port on the server. The server then listens on that port for data from the FDR.

Q: Do I need to change my firewall settings for the FDR?

If your firewall allows outbound connections without restriction from within your network, no configuration changes should be required. However, if your firewall restricts connections to certain remote ports, you will need to add an exception for the FDR to allow connections to the server's IP address and port.

Q: Does the FDR support two-way communications?

For security reasons, the FDR does not accept incoming TCP/IP connections. Only outbound connections are supported.

Q: Why does the FDR not work on my network?

There are several possible reasons including: firewall settings, inactive Ethernet ports, improper FDR configuration, etc. Please email us for assistance.

E-mail: FDRinstall@utk.edu
Web: <http://fnetpublic.utk.edu>

Installation video:
www.youtube.com/watch?v=9Vt2OIVoBJc