

FIELD PROGRAMMER PRO
Microprocessor Network Protector Relay
Remote Interface Software



Man 7387-001

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INTRODUCTION

Electronic Technology Incorporated (ETI) Microsoft Windows compatible remote interface **Field Programmer Pro** (FPP) software (Part Number 521125) provides comprehensive control over ETI's advanced **Microprocessor Network Protector Relay** (MNPR) via an optically isolated serial communications port. This isolation provides electrical protection for the user and allows the MNPR to be completely sealed.

Connection to the MNPR is made with a special Optical-to-DB9 cable (Part Number 521120). The standard length is thirty feet, with custom lengths available. The female DB9 is configured for connection to any standard PC or Laptop computer's 9 pin serial I/O port.

Through the Virtual Control Panel the operator has access to MNPR status, profile data, configuration and control commands. When the MNPR is connected to a Network Protector additional Protector data is available. The operator can save and load MNPR settings and Protector readings to and from data files. Access is also provided to the optional communication and auxiliary input/output ports when this feature is installed in the MNPR.

CONVENTIONS

This document uses the following conventions:

Relay and *MNPR* are used interchangeably.

Protector is the Network Protector controlled by the MNPR.

Brackets enclose a [data field].

Data Fields with [values] shown, are *typical defaults*.

Changeable ▼ marks a user changeable [data field ▼].

Fixed indicates a [data field] not alterable by the user.

Slashes / in a [data field] indicates one *or* the other.

Select ✓ or *Select* ● means select from the choices shown.

Control Commands are **highlighted**.

SETUP

Power Connections

Apply power to the MNPR by any of the following means:

1. Install the MNPR on a Network Protector.
2. Install the MNPR on a three phase test set.
3. Install with a Single Phase Power Block Cord (Part Number GE 131-1047-00 or WH 131-1048-00) to connect the MNPR to a 120 volt single phase source.

Computer Connections

Connect the Optical-DB9 cable between the computer and the MNPR. Make sure the word **TOP** on the Optical connector is facing up.

Software Installation

Before installing or running the Field Programmer Pro software, make sure all windows and programs including TSR's are closed. It is recommended that the operator does not open, close, or move windows around the screen during communication with the MNPR.

The Field Programmer Pro software is contained on two 3.5" diskettes or downloadable from the ETI Website (see Technical Support). Insert the first disk into the A: drive. Click Start then Run and type: A:\setup. If you have downloaded the program Open the file, it is self-extracting. Additional information is contained in the .txt file. The installation is self-prompting. After the FPP software is loaded you need only to go to Start / Programs and click on the FPP icon to run the program. Once the FPP window is open click **Port** on the Task Bar and select the serial port you will be using. This will usually be COM1, which is the default. If you are unsure of the port you're connected to or get a communication error message, see Troubleshooting.

GENERAL OPERATION

When connected to a MNPR, profile data will be uploaded and displayed. To update the display the **Read Settings** or **Update** command must be issued. If changes are made, the new data must be downloaded to the MNPR using the **Load Settings** or **Send** commands before they take effect. The FPP has default values available for most setups, which are reinstated using the **Reset** command. The values are easily changed by clicking on the arrow in the [Data Field ▼]. Commands, unlike data changes, are executed as they are input. However, some commands will require validation. These commands will open a validation window. If not validated to proceed the command will be canceled with no effect. Other message windows will open as needed to guide the user and indicate errors.

VIRTUAL CONTROL PANEL

The following are the various control windows accessible.

Main Control & Profile Window

ETI MNPR Field Programmer v1.28

Task Bar

File

Export Data (save data to a file)

Exit (terminates the program)

Port (serial port for communication)(select ✓)

✓ COM1 (default)

COM2

COM3

COM4

Units (trip current display units)(select ✓)

Percent

Relay

✓ Protector (default)

Aux I/O

Configure (accesses the optional Input/Output features)

Help

About (displays information about this program)

Status Display (MNPR status)(fixed)

[BLOCK / AUTO]

[OPEN / TRIP / FLOAT]

Information Display (fixed)

Model: [GE/WH]

General Electric or Westinghouse.

Serial Number: [00000]

Unique number matches the MNPR unit if connected.

Revision Number: [2.09]

Revision of the MNPR software.

Data Fields (changeable ▼)

Reclose Voltage: [1.4 ▼]

Minimum three phase average differential voltage necessary to close the Protector.

Reclose Angle: [-5 ▼]

Reclose curve lower limit. The Protector will not close if the phase angle is below this value regardless of the differential voltage.

CT Ratio: [1600 ▼]

Selects input scaling for the Protector current sensors.

Phase Compensation: [5 ▼]

For GE relays, compensation for CT phase shift is set automatically for standard CT ratios, or by selecting [Special] using the ▼ for the [CT Ratio] above.

Trip Mode (select ●)

● Sensitive (default)

The MNPR will trip the Protector when reverse net power exceeds the [Sensitive Trip] setting.

Time Delay

After the reversed net power exceeds the [Sensitive Trip] setting the MNPR will wait the [Time Delay] setting before tripping the Protector. If, during that period, the absolute value current of any phase exceeds the [Instant Current] setting, the MNPR will immediately trip the Protector. The user can also program a delay for the [Instant Current] called the [Extended Delay].

Insensitive

The MNPR will trip the Protector only when reverse net power exceeds the [Sensitive Trip] setting and the absolute current in any phase exceeds the [Insensitive Trip] current setting.

Watt-Var

The MNPR's trip region is rotated counter clockwise to ensure that the network Protector will trip under certain circumstances. The user can program the current at which the MNPR will rotate the trip region [Watt-Var] current and the number of degrees to shift the trip region [WV] angle.

Reclose

Regardless of the Trip Mode, if the MNPR is not Blocked, it will close the Protector when the transformer exceeds the network voltage by the [Reclose Voltage] setting, and the phase angle of that differential voltage is greater than the [Reclose Angle] and within the close region.

Trip Data (changeable ▼ depending on the selected mode above)

Sensitive (Amps): [2.40 ▼]

Insensitive (Amps): [800 ▼]

Instant (Amps): [800 ▼]

Time Delay (Seconds)
Standard: [150 ▼]
Extended: [0 ▼]

Watt-Var (Amps): [800 ▼]

WV Angle (Degrees): [60 ▼]

Control Buttons

Reset

Display and send the default Profile Data to the MNPR.

Clear Settings

Returns the Profile Data displayed to the default settings.

Load Settings

Sends the Profile Data to the MNPR.

Read Settings

Requests the Profile Data from the MNPR.

Block

Blocks open the Relay. The Relay will not close while it is blocked.

Auto

Unblocks the Relay. The Relay can now close as required.

Trip

Trips the Relay. If conditions do not exist to keep the Relay open the Relay will reclose unless blocked.

Put in File

Save the present Profile Data with the date, time and comments.

Get From File

Retrieve Profile Data from a file.

Comments

Add, view, or change comments saved with Profile Data.

View Data

Opens the Protector's Currents and Voltages window.

Waves

Opens the Protector's Waveform Display window.

Exit

Exits the FPP software.

Aux I/O Configuration Window

Configuration

Data Name Analog 1, Analog 2, Analog 3, Analog 4
Identifies the four analog input channels.

Data Label [Analog 1] [Analog 2] [Analog 3] [Analog 4]
User defined identification.

Raw Min [Analog 1] [Analog 2] [Analog 3] [Analog 4]
User defined input minimum. [0]

Raw Max [Analog 1] [Analog 2] [Analog 3] [Analog 4]
User defined input maximum. [255]

User Min [Analog 1] [Analog 2] [Analog 3] [Analog 4]
User defined minimum relative value. [-9999]

User Max [Analog 1] [Analog 2] [Analog 3] [Analog 4]
User defined maximum relative value. [9999]

Data Name Digital In1, Digital In2, Digital Out1, Digital Out2, Logo
Identifies the Digital Channels and Logo field.

User Label [Digital In1][Digital In2][Digital Out1][Digital Out2][Logo]
User defined identification.

Protector Data Window

Currents and Voltages

Data Fields (fixed)

S/N: [00000]

MNPR serial number.

Date Read: [mm/dd/yy]

Date from the computer running the FPP software.

Counter: [0]

Non resettable count of Relay trips.

Temperature: []°C

This reading from inside the MNPR case will generally be higher than the surrounding temperature because of internal heat generated by the unit.

Current: [Amps] [Amps] [Amps]

Three phase currents flowing through the network Protector.

V (net): [Volts] [Volts] [Volts]

Three phase voltages on the network side of the Protector.

V (diff): [Volts] [Volts] [Volts]

Three phase differential network voltages.

[Analog 1][Analog 2][Analog 3][Analog 4]

Displays the value of the Analog Inputs.

[Digital In 1] [Digital In 2]

Displays status of the Digital Inputs.

Control Buttons

Done

Exit this Window.

Update

Refresh the displayed readings.

Put in File

Save the displayed data to a file. See Using Files section.

Get from File

Load data from a file to the display. See Using Files section.

Get Next

Retrieve successive entries from a data file. See Using Files Section.

Digital Outputs (controls digital outputs)(select ●)

- Both OFF (default)
- 1 ON - 2 OFF
- 1 OFF - 2 ON
- Both ON

Send

Transmits digital outputs selected above.

Protector Waveforms Window

Waveforms

Graph

Graph components are controlled using the Display Select options below. The **Read** command must be given to update the graph when changes are made.

Phase Angle

Only displayed when Current is selected for the Display Mode below.

Display Select (Phase 1, Phase 2, Phase 3)(select ✓)

- ✓ Network Voltage (default)
- ✓ Differential Voltage (default)
- (or) Current (see Display Mode below)

Display Mode (selects data to display)(select ●)

Current

● Differential Voltage (default)

Control Buttons

Put in File

Save the displayed data to a file. See Using Files section.

Read

Update the displayed waveforms.

Done

Exit this window.

USING DATA FILES

Information and data associated with the MNPR and a Network Protector are indexed (grouped or organized) first by the Serial Number of the MNPR and then by the Date and Time of the entry. Data from all MNPR's used with a particular FPP use the same file and are kept separate by the unique Serial Number of each unit. It is important to always insure that the Serial Number displayed matches the number printed on the front of the MNPR unit connected. This insures that all data stored and retrieved will be data that has been identified as belonging to that particular MNPR. If the serial numbers do not match, consult the factory.

If the a MNPR is not connected to a Protector, the FPP file commands merely retrieves previously stored data in ascending Serial Number order.

TROUBLESHOOTING

Communication Error (Serial Port)

Insure that the Optical-DB9 cable is correctly connected. Check for the word **TOP** on the Optical end and make sure it faces up. Also check that no other programs are open or running.

To determine which serial port you are connected to you can merely try them one at a time until a connection is made. If you continue to have problems use the following procedure:

Click: Start / Settings / Control Panel

Double Click: System

Click: Device Manager / [+] Ports (click the plus sign)

The Communication Ports will be shown.

Click: Communication Port COMx / Properties / Port Settings

Settings should be: 9600 / 8 / none / 1 / none.

Change as required and Click: Ok

Close all windows and try again or restart the FPP software.

Warning (Invalid Relay Settings)

To continue you must use the **Reset** command to reinitialize the Relay. If this error continues, consult the factory.

TECHNICAL SUPPORT

Technical support for both the MNPR and the Field Programmer Pro software are available from the following:

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