KOHLER® POWER SYSTEMS

# Monitor III Software

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

## Software for Monitoring and Control of:

Decision-Maker™ 550 generator set controller

Decision-Maker™ 340 generator set controller

Decision-Maker™ 3+ generator set controller

MPAC™ 1500 automatic transfer switch controller

MPAC™ 1000 automatic transfer switch controller

M340 and M340+ automatic transfer switch controllers

PM340 Power Monitor

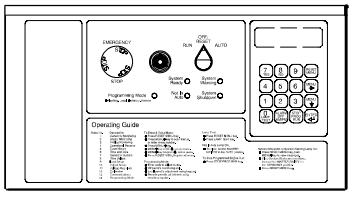
## New Features

- Now monitor and control MPAC™ 1500 ATS controllers

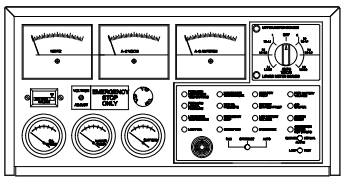
## Standard Software Features and Functions

- Monitor and control the power system generator sets and transfer switches from a personal computer using a single software package
- Monitor and control systems through a Windows®-based graphical user interface
- View the status of all devices on one site overview screen
- Password-protected data access: Guest, User, and Supervisor
- Monitor and control systems over a local area network, remotely via a modem connection, or through an Ethernet connection
- Connect up to 247 controller devices on a local area network
- Monitor data from multiple devices on the same local area network simultaneously
- Start or stop the generator set from a PC
- Read and adjust trip points, time delays, and system parameter settings
- Assign inputs and outputs
- View ECM data for ECM-equipped engines
- View system run time history
- View up to 100 recent events including engine starts, faults, shutdowns, and warnings
- Device data windows automatically update
- Software kits include hardware for either local or remote communications

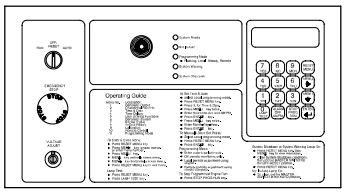
## Applicable Controllers



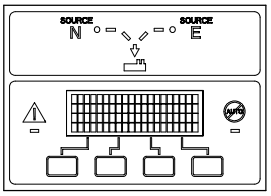
Decision-Maker™ 550



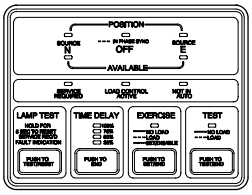
Decision-Maker™ 3+



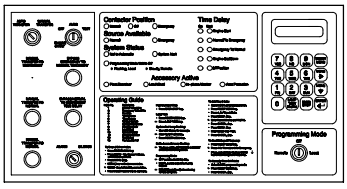
Decision-Maker™ 340



MPAC™ 1500



MPAC™ 1000



M340+

PM340 Power Monitor (not shown)

Windows® is a registered trademark of Microsoft Corporation.

## Monitoring and Control Software

Use Monitor III software to create screens containing data windows that display system information, controller settings, and operating status for connected generator sets, transfer switches, and power monitors. For more information, see TP-6347, Monitor III Software Operation and Installation Manual.

- Easily select, create, arrange, or delete data windows.
- Create data windows for multiple devices in a network.
- Create and save multiple screen configurations.
- Display screens show system status and settings.
- Password-protected setup windows allow remote operation and adjustment.

Kohler publishes Modbus® data register maps for its products. Modbus protocol manual TP-6113 is available through Kohler distributors.

Modbus® is registered trademark of Schneider Electric.

## Minimum System Requirements

- 133 MHz or higher Intel® Pentium®-compatible CPU
- 32 MB RAM
- CD-ROM drive and 75 MB hard drive space available for installation
- 800 x 600 or better color monitor (1024 x 768 recommended)
- Windows® 2000 or Windows XP® operating system with Internet Explorer version 4.0 or higher
- COM port numbered between 1 and 255, capable of baud rate 9600 or 19200 (for direct local connection)
- PC network interface card (NIC) (for applications using ethernet connections only)
- Adobe® Acrobat® or Adobe® Reader® (to display the Help file)

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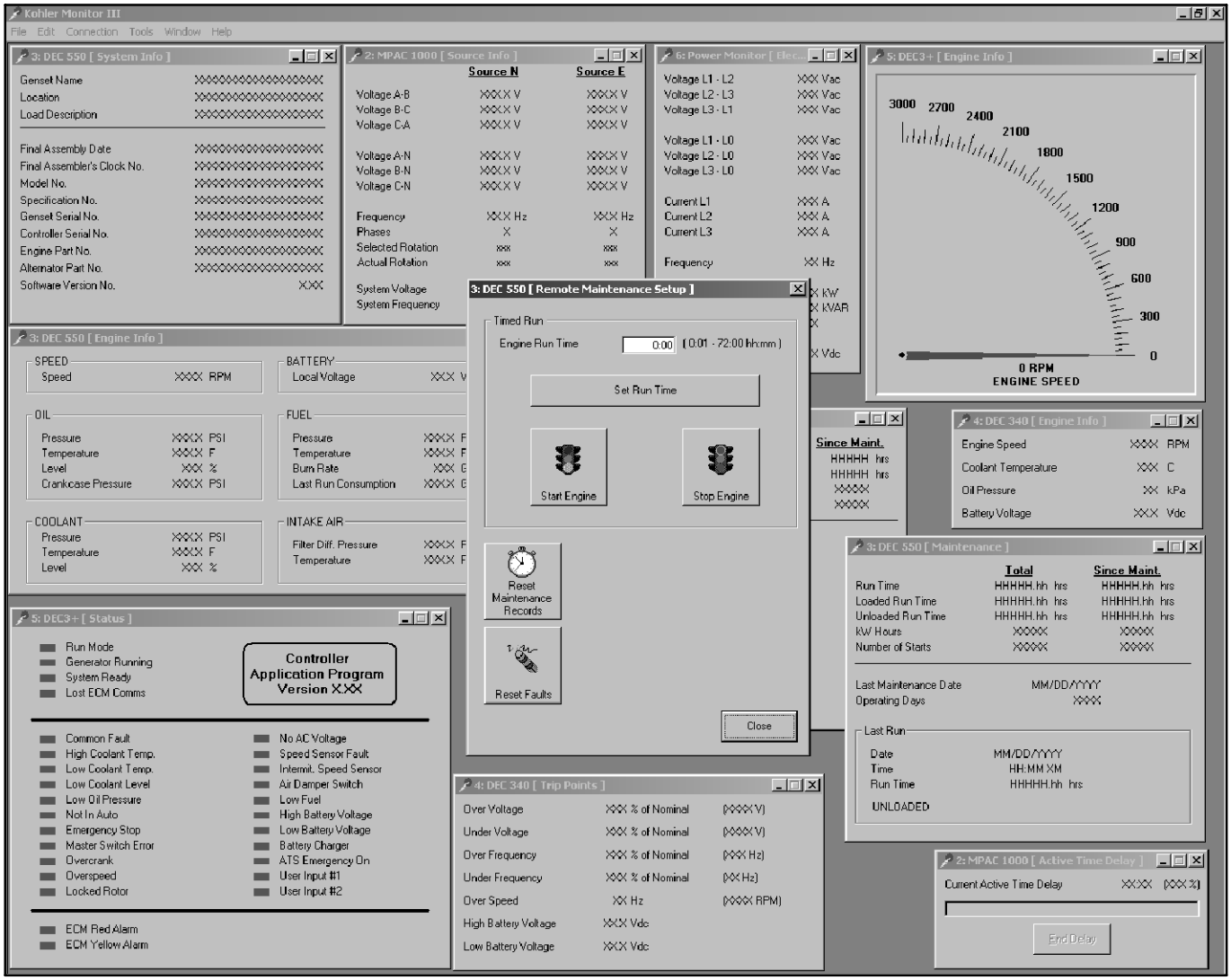


# Decision-Maker™ 550 Generator Set Controller

All of the following information is available through Decision- Maker™ 550 controller communications. Adjustments and manual operations are password-protected.

| Parameter | View | Adjust |
|---|---|---|
| **Date and Time** | | |
| Date | ● | ● |
| Time | ● | ● |
| Synchronize with computer | | ● |
| **Electrical Information** | | |
| % of rated kW | ● | |
| Current, L1, L2, L3 | ● | |
| Frequency | ● | |
| Voltage, line-line | ● | |
| Voltage, line-neutral | ● | |
| Total kVA, L1, L2, and L3 | ● | |
| Total kVAR, L1, L2, and L3 | ● | |
| Total kW, L1, L2, and L3 | ● | |
| Total power factor, L1, L2, and L3 | ● | |
| **Engine Info** | | |
| Battery voltage (ECM) | ● | |
| Coolant Level | ● | |
| Coolant Pressure | ● | |
| Coolant Temperature | ● | |
| Engine speed (RPM) | ● | |
| Fuel last run consumption | ● | |
| Fuel pressure | ● | |
| Fuel burn rate, liters/hr. or gal./hr. | ● | |
| Fuel temperature | ● | |
| Intake air filter diff. pressure | ● | |
| Intake air temperature | ● | |
| Oil pressure | ● | |
| Oil level | ● | |
| Oil temperature | ● | |
| Oil crankcase pressure | ● | |
| **Event History (100 most recent events)** | | |
| Faults | ● | |
| Warnings | ● | |
| Shutdowns | ● | |
| Input activation | ● | |
| Output activiation | ● | |
| Save history button | ● | ● |
| Time and date of each event | ● | |
| **Generator Info** | ● | ● |
| Battery voltage, nominal | ● | ● |
| Connection, wye or delta | ● | ● |
| Rating, kW | ● | ● |
| NFPA 110 defaults, enabled or disabled | ● | ● |
| Phases, single or three | ● | ● |
| Frequency, nominal | ● | ● |
| Voltage, nominal | ● | ● |
| Operating mode, standby or prime power | ● | ● |

| Parameter | View | Adjust |
|---|---|---|
| **Maintenance** | | |
| kW hours * | ● | |
| Last maintenance date | ● | |
| Last run start date | ● | |
| Last run start time | ● | |
| Loaded/unloaded run time * | ● | |
| Number of starts * | ● | |
| Operating days | ● | |
| Run time * | ● | |
| Last run time, loaded and unloaded | ● | |
| * Total and since last maintenance | | |
| **Maintenance Operations** | | |
| Reset maintenance records button | | ● |
| Reset faults button | | ● |
| **System Info** | | |
| Alternator part number | ● | |
| Controller serial number | ● | |
| Engine part number | ● | |
| Final assembler's clock number | ● | |
| Final assembly date | ● | |
| Generator set serial number | ● | |
| Generator set model number | ● | |
| Genset name (optional, user-defined) | ● | ● |
| Load description (optional, user-defined) | ● | ● |
| Location (optional, user-defined) | ● | ● |
| Device ID | ● | |
| Specification number | ● | |
| Application code version (controller) | ● | |
| **Time Delays** | | |
| Crank on | ● | ● |
| Crank pause | ● | ● |
| Engine cooldown | ● | ● |
| Engine start | ● | ● |
| Load shed | ● | ● |
| Maximum crank cycles | ● | ● |
| Overvoltage | ● | ● |
| Starting aid | ● | ● |
| Undervoltage | ● | ● |
| **Trip Points** | | |
| High battery voltage | ● | ● |
| load shed output | ● | ● |
| Low battery voltage | ● | ● |
| Overfrequency | ● | ● |
| Overspeed | ● | ● |
| Overvoltage | ● | ● |
| Underfrequency | ● | ● |
| Undervoltage | ● | ● |

# Decision-Maker™ 550 Generator Set Controller, continued

## Relay Driver Outputs (RDOs), System Events, and Common Alarms

Assign up to 31 relay driver outputs (RDOs). Define any event as a common fault, except as noted.

| Parameter | View | Adjust |
|---|---|---|
| **Relay Driver Outputs (RDOs), System Events, and Common Alarms** | | |
| High shutdown enable/disable | ● | ● |
| High warning enable/disable | ● | ● |
| Low shutdown enable/disable | ● | ● |
| Low warning enable/disable | ● | ● |
| Assign/remove functions: | ● | ● |
| AC sensing loss | ● | ● |
| Air damper control | ● | ● |
| Air damper indicator | ● | ● |
| Air/fuel module (AFM) remote start | ● | ● |
| Air temperature signal loss | ● | ● |
| Alternator protection shutdown | ● | ● |
| Analog inputs 1–7 | ● | ● |
| Battery charger fault | ● | ● |
| Breaker trip | ● | ● |
| Critical overvoltage | ● | ● |
| Defined common fault (not selectable as common fault) | ● | ● |
| Delay engine cooldown | ● | ● |
| Delay engine start | ● | ● |
| Digital inputs 1–21 | ● | ● |
| EEPROM write failure | ● | ● |
| Emergency power system (EPS) supplying load | ● | ● |
| Emergency stop | ● | ● |
| Fuel valve relay | ● | ● |
| Generator running | ● | ● |
| Ground fault | ● | ● |
| High air temperature shutdown | ● | ● |
| High air temperature warning | ● | ● |
| High battery voltage | ● | ● |
| High coolant temperature shutdown | ● | ● |
| High coolant temperature warning | ● | ● |
| High oil temperature shutdown | ● | ● |
| High oil temperature warning | ● | ● |
| In synch | ● | ● |
| Internal fault | ● | ● |
| Load shed kW over | ● | ● |
| Load shed overtemperature | ● | ● |
| Load shed underfrequency | ● | ● |
| Locked rotor | ● | ● |

| Parameter | View | Adjust |
|---|---|---|
| Loss of ECM communications | ● | ● |
| Loss of field shutdown | ● | ● |
| Low battery voltage | ● | ● |
| Low coolant level | ● | ● |
| Low coolant temperature shutdown | ● | ● |
| Low coolant temperature warning | ● | ● |
| Low fuel | ● | ● |
| Master switch error | ● | ● |
| Master switch not in AUTO | ● | ● |
| Master switch off | ● | ● |
| Master switch open | ● | ● |
| Block heater control (for future MDEC applications) | ● | ● |
| Yellow alert (for future MDEC applications) | ● | ● |
| Red alert (for future MDEC applications) | ● | ● |
| NFPA 110 fault | ● | ● |
| No coolant temperature signal | ● | ● |
| No oil pressure signal | ● | ● |
| Oil pressure shutdown | ● | ● |
| Oil pressure warning | ● | ● |
| Oil temperature signal loss | ● | ● |
| Overcrank | ● | ● |
| Overcurrent shutdown | ● | ● |
| Overcurrent warning | ● | ● |
| Overfrequency | ● | ● |
| Overpower shutdown | ● | ● |
| Overspeed | ● | ● |
| Overvoltage | ● | ● |
| Prelube relay | ● | ● |
| Protective relay common (for switchgear) | ● | ● |
| Reverse power shutdown (for switchgear) | ● | ● |
| Software-controlled relay driver outputs (SCRDOs) 1–4 (on/off) | ● | ● |
| Speed sensor fault | ● | ● |
| Starting aid | ● | ● |
| System ready | ● | ● |
| Underfrequency | ● | ● |
| Undervoltage | ● | ● |
| Weak battery | ● | ● |

# Decision-Maker™ 550 Generator Set Controller, continued

## Inputs

Assign up to 7 analog inputs and 21 digital inputs.

| Parameter | View | Adjust |
|---|---|---|
| **Digital Inputs (assign up to 21)** | | |
| Delay time | ● | ● |
| Inhibit time | ● | ● |
| Enable/disable | ● | ● |
| Assign/remove functions: | ● | ● |
| Warning | ● | ● |
| Shutdowns, type A and B | ● | ● |
| Voltage raise | ● | ● |
| Voltage lower | ● | ● |
| Variable PF (power factor) mode | ● | ● |
| Remote shutdown | ● | ● |
| Remote reset | ● | ● |
| Air damper | ● | ● |
| Low fuel (level or pressure) | ● | ● |
| Field overvoltage | ● | ● |
| Idle mode active (ECM only) | ● | ● |
| Battleswitch | ● | ● |
| Ground fault | ● | ● |
| Battery charger fault | ● | ● |
| High oil temperature (non-ECM) | ● | ● |
| Low coolant level | ● | ● |
| Low coolant temperature (not user-selectable) | ● | |
| Enable synch (not user-selectable) | ● | |
| AFM (air-fuel module) shutdown † | ● | ● |
| Knock shutdown † | ● | ● |
| Detonation warning † | ● | ● |
| Detonation shutdown † | ● | ● |
| Low fuel shutdown † | ● | ● |
| Breaker closed (not user-selectable) | ● | ● |

† Waukesha engines only

| Parameter | View | Adjust |
|---|---|---|
| **Analog Inputs (assign up to 7)** | | |
| High shutdown value | ● | ● |
| High warning value | ● | ● |
| Inhibit time | ● | ● |
| Low shutdown value | ● | ● |
| Low warning value | ● | ● |
| Shutdown delay | ● | ● |
| Shutdown enabled | ● | ● |
| Warning delay | ● | ● |
| Warning enabled | ● | ● |
| Description (optional, user-defined) | ● | ● |
| Battery voltage | ● | |

## Remote Operation (password-protected)

| Manual Operation | Control |
|---|---|
| Generator set run time | ● |
| Set run time | ● |
| Start generator set | ● |
| Stop generator set | ● |
| **Maintenance Operations** | |
| Reset maintenance records button | ● |
| Reset faults button | ● |

# Decision-Maker™ 340 Generator Set Controller

All of the following information for Decision- Maker™ 340 generator set controllers can be monitored through Monitor III. Manual operations are password-protected. A Modbus/KBUS converter is required for this device.

| Parameter | View |
|---|---|
| **Auxiliary inputs** | |
| Delay time | ● |
| Description | ● |
| Inhibit time | ● |
| **Common faults (1–6)** | ● |
| **Date/Time** | ● |
| **Electrical Info** | ● |
| Current, L1, L2, and L3 | ● |
| Frequency | ● |
| Power level (percent of alternator kilowatt rating) | ● |
| Power factor | ● |
| Total kilowatts | ● |
| Voltage, line-to-line for all phases | ● |
| Voltage, line-to-neutral for all phases | ● |
| **Engine parameters** | |
| Battery voltage | ● |
| Coolant temperature | ● |
| Engine speed | ● |
| Oil pressure | ● |
| **History** (since initial startup and since last maintenance record reset) | |
| Days of operation | ● |
| Last run time (duration) | ● |
| System startup date and time | ● |
| Energy delivered, kilowatt hours | ● |
| Last start date | ● |
| Last start time | ● |
| Number of starts | ● |
| Run time loaded | ● |
| Run time unloaded | ● |
| Shutdown history, date and description (code) | ● |
| **Relay driver output assignments (1–10)** | ● |
| **System information** | |
| Controller serial number | ● |
| Generator set name | ● |
| Load description | ● |
| Location | ● |
| Model number | ● |
| Generator set serial number | ● |
| Specification number | ● |

| Parameter | View |
|---|---|
| **System summary** | |
| Generator set kilowatt rating | ● |
| Battery voltage (12 or 24), nominal | ● |
| Generator status (stopped/running/cranking) | ● |
| Master switch position | ● |
| Programming mode | ● |
| System status including current shutdown or warning | ● |
| System voltage (nominal) | ● |
| System frequency (nominal) | ● |
| **Time delay settings** | |
| Crank on | ● |
| Crank pause | ● |
| Engine cooldown | ● |
| Engine start | ● |
| Maximum number of crank cycles | ● |
| Overvoltage | ● |
| Undervoltage | ● |
| Starting aid | ● |
| **Trip point settings** | |
| Low battery voltage | ● |
| High battery voltage | ● |
| Overfrequency | ● |
| Underfrequency | ● |
| Overspeed | ● |
| Overvoltage | ● |
| Undervoltage | ● |

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Reset faults | ● |
| Generator set run time | ● |
| Set run time (start/stop generator set) | ● |

# Decision-Maker™ 3+ Generator Set Controller with Communications

All of the following information for Decision-Maker™ 3+ generator set controllers can be monitored through Monitor III. The Decision-Maker™ 3+ controller with communications (red main logic board) and the Modbus® communication board are required. Manual operations are password-protected.

| Parameter | View |
|---|---|
| **Status (on/off indicators)** | |
| Run mode | ● |
| Generator running | ● |
| System ready | ● |
| Lost ECM communications | ● |
| Common fault | ● |
| High coolant temperature | ● |
| Low coolant temperature | ● |
| Low coolant level | ● |
| Low oil pressure | ● |
| Not in auto | ● |
| Emergency stop | ● |
| Master switch error | ● |
| Overcrank | ● |
| Overspeed | ● |
| Locked rotor | ● |
| No AC voltage | ● |
| Speed sensor fault | ● |
| Intermittent speed sensor | ● |
| Air damper switch | ● |
| Low fuel | ● |
| High battery voltage | ● |
| Low battery voltage | ● |
| Battery charger | ● |
| ATS emergency on | ● |
| User input #1 | ● |
| User input #2 | ● |
| ECM red alarm | ● |
| ECM yellow alarm | ● |
| Controller application code version | ● |

| Parameter | View |
|---|---|
| **ECM Information *** | |
| Communication protocol, J1939, MTU, or MTU with VSG | ● |
| DC voltage at ECM (analog) | ● |
| ECM hours of operation | ● |
| ECM fault code | ● |
| **Engine Information (analog)** | |
| Engine speed, RPM | ● |
| Coolant temperature * | ● |
| Fuel temperature * | ● |
| Charge air temperature * | ● |
| Oil pressure * | ● |
| Fuel pressure * | ● |
| Charge air pressure * | ● |
| **DIP Switch Settings** | |
| Overspeed: 60 or 70 Hz | ● |
| Temperature cooldown: enabled or disabled | ● |
| Crank mode: continuous or cyclic | ● |
| Engine: non-ECM, DDC/MTU, J1939, or MTU with VSG | ● |

* For ECM-equipped engines only

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Start engine | ● |
| Stop engine | ● |
| Reset faults | ● |

Modbus® is a registered tradmark of Schneider Electric.

# MPAC™ 1500 Automatic Transfer Switch Controller

The following information is available for both the Normal and Emergency sources. Adjustment screens are password-protected.

| Parameter | View | Adjust |
|---|---|---|
| **Active Time Delay** | | |
| Time delay name | ● | |
| Time remaining, seconds | ● | |
| Graphic display, time delay elapsed/remain | ● | |
| End time delay button | ● | |
| **Common Alarms** | | |
| Common alarms, available and assigned | ● | |
| Audible alarms, available and assigned | ● | |
| **Date/Time** | | |
| Date | ● | |
| Time | ● | |
| Synchronize with computer button | | ● |
| Daylight saving time enable/disable | | ● |
| Clock ahead/behind month, week, day | | ● |
| **DIP Switch Settings** | | |
| Password enable/disable RO | ● | |
| Maintenance/run mode RO | ● | |
| Spare switch on/off (2) RO | ● | |
| **Event History** | | |
| Lost preferred source: last time, date, and duration | ● | |
| Events: | ● | |
| Contactor position changes (transfers) | ● | |
| Faults | ● | |
| Input activation | ● | |
| Output activation | ● | |
| DIP switch position changes | ● | |
| Other events as described in ATS manual | ● | |
| Test button activation/release | ● | |
| Time and date of each event | ● | |
| Save history | | ● |
| Clear history | | ● |
| **Event History View** | | |
| View events for a selected time period | ● | ● |
| Start date | ● | ● |
| End date | ● | ● |
| Get events | ● | ● |
| Save history button | | ● |
| **Exercise Calendar Mode** | | |
| Event number | ● | |
| Next start date | ● | |
| Enable/disable each event | ● | ● |
| Start date | | ● |
| Start time | ● | ● |
| Run time | ● | ● |
| Loaded/unloaded | ● | ● |
| Interval | ● | ● |
| Repeat rate (setup only) | | ● |

| Parameter | View | Adjust |
|---|---|---|
| **Frequency Set Points (Source N, E)** | | |
| Overfrequency dropout | ● | ● |
| Overfrequency pickup | ● | ● |
| Underfrequency pickup | ● | ● |
| Underfrequency dropout | ● | ● |
| Frequency dropout time, seconds | ● | ● |
| **Voltage Set Points (Source N, E)** | | |
| Overvoltage dropout | ● | ● |
| Overvoltage pickup | ● | ● |
| Undervoltage pickup | ● | ● |
| Undervoltage dropout | ● | ● |
| Unbalanced voltage enable/disable | | ● |
| Unbalanced voltage dropout | ● | ● |
| Unbalanced voltage pickup | ● | ● |
| Debounce time, seconds | ● | ● |
| **I/O State (on=green, off=gray)** | | |
| Logic board input status | ● | |
| Logic board output status | ● | |
| I/O module input status | ● | |
| I/O module output status | ● | |
| **Load Control Time Delays (up to 9 loads)** | | |
| Disconnect before transfer time delay, N to E and E to N | ● | ● |
| Reconnect after transfer time delay, N to E and E to N | ● | ● |
| **Maintenance History** | | |
| Time not in preferred * | ● | |
| Time in standby * | ● | |
| Operation time * | ● | |
| Switch transfers * | ● | |
| Lost preferred source * | ● | |
| Failures to transfer * | ● | |
| System start date | ● | ● |
| Last maintenance reset date | ● | |
| Transfer time, N to E, mS | ● | |
| Transfer time, E to N, mS | ● | |
| Reset maintenance records button | | ● |
| * Total and since reset | | |
| **Programmable Inputs** | | |
| Forced transfer to off | ● | ● |
| Peak shave mode | ● | ● |
| Inhibit transfer | ● | ● |
| Remote end time delay | ● | ● |
| Remote test | ● | ● |
| Low battery voltage | ● | ● |
| Remote common alarm | ● | ● |
| Bypass contactor disable | ● | ● |
| 3 source system disable | ● | ● |
| Remotely monitored inputs #1–4 | ● | ● |

# MPAC™ 1500 Automatic Transfer Switch Controller, continued

| Parameter | View | Adjust |
|---|---|---|
| **Programmable Outputs** | | |
| Alarm silenced | ● | ● |
| Audible alarm | ● | ● |
| Preferred source available | ● | ● |
| Standby source available | ● | ● |
| Battery backup low | ● | ● |
| Contactor in preferred poistion | ● | ● |
| Contactor in standby position | ● | ● |
| Contactor in off position | ● | ● |
| Contactor in source N position | ● | ● |
| Contactor in source E position | ● | ● |
| Maintenance mode | ● | ● |
| Not in auto | ● | ● |
| Load control active | ● | ● |
| Low battery on standby source | ● | ● |
| Exerciser active | ● | ● |
| Test mode active | ● | ● |
| Peak shave active | ● | ● |
| Non-emergency transfer | ● | ● |
| Load bank bank active | ● | ● |
| Start source N generator | ● | ● |
| Start source E generator | ● | ● |
| In phase monitor synching | ● | ● |
| Common alarm (1–2) | ● | ● |
| Undervoltage, N and E | ● | ● |
| Overvoltage, N and E | ● | ● |
| Voltage unbalance | ● | ● |
| Loss of phase, N and E | ● | ● |
| Phase rotation error, N and E | ● | ● |
| Overfrequency, N and E | ● | ● |
| Underfrequency, N and E | ● | ● |
| Failure to acquire standby | ● | ● |
| Failure to acquire preferred | ● | ● |
| Failure to transfer | ● | ● |
| I/O module lost comms | ● | ● |
| Aux. switch fault | ● | ● |
| Aux. switch open | ● | ● |
| Load control outputs 1–9 | ● | ● |
| Software-controlled RDO 1–4 | ● | ● |
| 3 source system disable | ● | ● |
| **Remote I/O (Input/Output)** | | |
| Software-controlled relay outputs on/off toggle | ● | ● |
| Remote monitored inputs status | ● | |
| I/O descriptions | ● | ● |
| **Source Information, Normal and Emergency** | | |
| Voltage, line-to-line | ● | |
| Voltage, line-to-neutral | ● | |
| Frequency | ● | |
| Phases, single or three | ● | ● |
| Selected rotation (ABC/CBA/none) | ● | ● |
| Actual rotation (ABC or CBA) | ● | |
| System voltage (nominal) | ● | ● |
| System frequency (nominal) | ● | ● |
| Line current (accessory required) | ● | |

| Parameter | View | Adjust |
|---|---|---|
| **System Information** | | |
| Designation (optional, user-defined) | ● | ● |
| Location (optional, user-defined) | ● | ● |
| Load branch (optional, user-defined) | ● | ● |
| Load description (optional, user-defined) | ● | ● |
| ATS serial number (factory-set) | ● | |
| Contactor serial number (factory-set) | ● | |
| Controller serial number (factory-set) | ● | |
| Software version numbers (controller) | ● | |
| Device ID | ● | |
| MAC address | ● | |
| **System Summary** | | |
| System state | ● | |
| Contactor position | ● | |
| Preferred source, N/E | ● | |
| Mode of operation, gen-utility/gen-gen/ utility-utility | ● | ● |
| Transition mode, open/progammed | ● | ● |
| Preferred source available | ● | |
| Standby source available | ● | |
| Extended engine start time delay, enable/disable | ● | |
| Commit to transfer, enable/disable | ● | ● |
| Peak shave delay bypass, enable/disable | ● | ● |
| In phase monitor, enable/disable | ● | ● |
| Phase angle | | ● |
| Rated current | ● | ● |
| Loaded remote test, enable/disable | ● | ● |
| Supervised transfer, mode and switch position | ● | |
| **Time Delays** | | |
| Source N engine start | ● | ● |
| Source E engine start | ● | ● |
| Source N engine cooldown | ● | ● |
| Source E engine cooldown | ● | ● |
| Preferred to standby | ● | ● |
| Standby to preferred | ● | ● |
| Fail to acquire standby | ● | ● |
| In phase transfer failure | ● | ● |
| Off-to-standby (programmed-transition) | ● | ● |
| Off-to-preferred, (programmed-transition) | ● | ● |

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Peak shave start/stop | ● |
| Unloaded test start/stop (Remote Start/Stop) | ● |
| Loaded test start/stop (Remote Start/Stop) | ● |
| Auto-loaded test start/stop (Remote Start/Stop) | ● |
| Auto test time (1–60 min.) | ● |
| Programmed transition transfer to OFF/resume normal operation | ● |
| End time delay (active time delay window) | ● |
| Software-controlled relay outputs on/off | ● |

# MPAC™ 1000 Automatic Transfer Switch Controller

The following information is available for both the Normal and Emergency sources. Adjustment screens are password-protected.

| Parameter | View | Adjust |
|---|---|---|
| **Active Time Delay** | | |
| Time delay name | ● | |
| Time remaining, seconds | ● | |
| Graphic display, time delay elapsed/remain | ● | |
| End time delay button | ● | |
| **Common Alarms** | | |
| Common alarms, available and assigned | ● | |
| Audible alarms, available and assigned | ● | |
| **Date/Time** | | |
| Date | ● | |
| Time | ● | |
| Synch with system clock | | ● |
| Automatic daylight saving time | | ● |
| **DIP Switch Settings** | | |
| Transfer inhibited/permitted | ● | |
| Test loaded/unloaded | ● | |
| Exercise inhibited/permitted | ● | |
| Manual exercise 1 week/2 week | ● | |
| Exercise loaded/unloaded | ● | |
| Commit/no commit to transfer | ● | |
| Phase rotation ABC/CBA | ● | |
| **Event History** | | |
| Lost preferred source: last time, date, and duration | ● | |
| Events: | ● | |
| Contactor position changes (transfers) | ● | |
| Faults | ● | |
| Input activation | ● | |
| Output activation | ● | |
| DIP switch position changes | ● | |
| Other events as described in ATS manual | ● | |
| Test button activation/release | ● | |
| Time and date of each event | ● | |
| Save history button | | ● |
| **Event History View** | | |
| View events for a selected time period | ● | ● |
| Start date | ● | ● |
| End date | ● | ● |
| Get events | ● | ● |
| Save history button | | ● |
| **Exerciser** | | |
| Mode: manual, calendar, or calendar w/ manual override | ● | ● |
| Next exercise start date | ● | ● |
| Next exercise start time | ● | ● |
| Manual exercise period | ● | ● |
| Loaded/unloaded | ● | ● |
| Run time | ● | ● |
| Manual exercise disable button (setup only) | ● | ● |
| Manual exercise set/end button (setup only) | ● | ● |
| Exercise time remaining | ● | ● |

| Parameter | View | Adjust |
|---|---|---|
| **Exercise Calendar Mode** | | |
| Event number | ● | ● |
| Next start date | ● | ● |
| Enable/disable each event | ● | ● |
| Start time | ● | ● |
| Run time | ● | ● |
| Loaded/unloaded | ● | ● |
| Interval | ● | ● |
| Repeat rate (setup only) | | ● |
| **Frequency Set Points, (Source N, E)** | | |
| Overfrequency dropout | ● | ● |
| Overfrequency pickup | ● | ● |
| Underfrequency pickup | ● | ● |
| Underfrequency dropout | ● | ● |
| Frequency dropout time, seconds | ● | ● |
| **Voltage Set Points, (Source N, E)** | | |
| Overvoltage dropout | ● | ● |
| Overvoltage pickup | ● | ● |
| Undervoltage pickup | ● | ● |
| Undervoltage dropout | ● | ● |
| Debounce time, seconds | ● | ● |
| **Load Control Time Delays (up to 9 loads)** | | |
| Disconnect before transfer time delay, N to E and E to N | ● | ● |
| Reconnect after transfer time delay, N to E and E to N | ● | ● |
| **Maintenance Records** | | |
| Time not in preferred * | ● | |
| Time in standby * | ● | |
| Operation time * | ● | |
| Switch transfers * | ● | |
| Lost preferred source * | ● | |
| Failures to transfer * | ● | |
| System start date | ● | ● |
| Last maintenance reset date | ● | |
| Transfer time, N to E, mS | ● | |
| Transfer time, E to N, mS | ● | |
| * Total and since reset | | |
| **Source Information, Normal and Emergency** | | |
| Voltage, line-to-line RO | ● | |
| Voltage, line-to-neutral RO | ● | |
| Frequency RO | ● | |
| Phases, single or three RW | ● | ● |
| Selected rotation (ABC or CBA) RW | ● | ● |
| Actual rotation (ABC or CBA) RO | ● | |
| System voltage (nominal) RW | ● | ● |
| System frequency (nominal) RW | ● | ● |

# MPAC™ 1000 Automatic Transfer Switch Controller, continued

| Parameter | View | Adjust |
|---|---|---|
| **System Information** | | |
| Designation (optional, user-defined) | ● | ● |
| Location (optional, user-defined) | ● | ● |
| Load branch (optional, user-defined) | ● | ● |
| Load description (optional, user-defined) | ● | ● |
| ATS serial number (factory-set) | ● | |
| Contactor serial number (factory-set) | ● | |
| Controller serial number (factory-set) | ● | |
| Software version numbers | ● | |
| **System Summary** | | |
| System state | ● | |
| Contactor position | ● | |
| Preferred source, N/E | ● | |
| Mode of operation, gen-utility/gen-gen/utility-utility | ● | |
| Transition mode, open/progammed | ● | |
| Extended engine start time delay, enabled/disabled | ● | |
| Preferred source available | ● | |
| Standby source available | ● | |
| Supervised transfer mode | ● | |
| Supervised transfer switch position | ● | |
| Commit to transfer, enabled/disabled | ● | |
| Peak shave delay bypass, enabled/disabled | ● | |
| In phase monitor, enabled/disabled | ● | |
| Rated current | ● | |
| I/O modules expected | ● | |
| **Time Delays** | | |
| Source N engine start | ● | ● |
| Source E engine start | ● | ● |
| Source N engine cooldown | ● | ● |
| Source E engine cooldown | ● | ● |
| Preferred to standby | ● | ● |
| Standby to preferred | ● | ● |
| Acquire standby source | ● | ● |
| In phase monitor synch | ● | ● |
| Off-to-standby (programmed-transition) | ● | ● |
| Off-to-preferred, (programmed-transition) | ● | ● |
| **Programmable Inputs** | | |
| Forced transfer to off | ● | ● |
| Peak shave mode | ● | ● |
| Inhibit transfer | ● | ● |
| Remote end time delay | ● | ● |
| Remote test | ● | ● |
| Low battery voltage | ● | ● |
| Remote common alarm | ● | ● |
| Bypass contactor disable | ● | ● |
| 3 source system disable | ● | ● |

| Parameter | View | Adjust |
|---|---|---|
| **Programmable Outputs** | | |
| Preferred source available | ● | ● |
| Standby source available | ● | ● |
| Contactor in preferred poistion | ● | ● |
| Contactor in standby position | ● | ● |
| Contactor in off position | ● | ● |
| Contactor in source N position | ● | ● |
| Contactor in source E position | ● | ● |
| Maintenance mode | ● | ● |
| Not in auto | ● | ● |
| Load control active | ● | ● |
| Low battery on standby source | ● | ● |
| Exerciser started | ● | ● |
| Test mode active | ● | ● |
| Peak shave active | ● | ● |
| Non-emergency transfer | ● | ● |
| Load bank bank active | ● | ● |
| Start source N generator | ● | ● |
| Start source E generator | ● | ● |
| In phase monitor waiting for synch | ● | ● |
| Common alarm (1–2) | ● | ● |
| Undervoltage, N and E | ● | ● |
| Overvoltage, N and E | ● | ● |
| Loss of phase, N and E | ● | ● |
| Phase rotation error, N and E | ● | ● |
| Overfrequency, N and E | ● | ● |
| Underfrequency, N and E | ● | ● |
| Failure to acquire standby | ● | ● |
| Failure to transfer | ● | ● |
| I/O module lost comms | ● | ● |
| I/O module not found | ● | ● |
| Aux. switch fault | ● | ● |
| Aux. switch open | ● | ● |
| Load control outputs 0–8 | ● | ● |
| Software-controlled RDO 1–4 | ● | ● |
| 3 source system disable | ● | ● |

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Peak shave start/stop | ● |
| System test start/stop (Remote Start/Stop) | ● |
| Programmed transition transfer to OFF/resume normal operation | ● |
| End time delay (active time delay window) | ● |
| Modbus-controlled relay outputs | ● |

# M340 and M340+ Transfer Switch Controllers

All of the following information for M340 and M340+ transfer switch controllers can be viewed through Monitor III. A Modbus/KBUS converter is required for this device.

| Parameter | View |
|---|---|
| **Date/Time** | |
| Date | ● |
| Time | ● |
| **Frequency Setpoints (Source N, E)** | |
| Overfrequency dropout | ● |
| Overfrequency pickup | ● |
| Underfrequency pickup | ● |
| Underfrequency dropout | ● |
| **Voltage Setpoints (Source N, E)** | |
| Overvoltage dropout | ● |
| Overvoltage pickup | ● |
| Undervoltage pickup | ● |
| Undervoltage dropout | ● |
| **Maintenance History** | |
| Time not in normal position * | ● |
| Time in emergency * | ● |
| Days of operation * | ● |
| Number of transfers * | ● |
| Last maintenance date | ● |
| System start date | ● |
| Exercise time remaining | ● |
| Last exercise date | ● |
| Last outage date | ● |
| Last outage time | ● |
| Last outage duration | ● |
| * Total and since last maintenance | ● |
| **Source Info for Source N and Source E** | |
| Line-to-line voltage | ● |
| Frequency | ● |
| System voltage | ● |
| System frequency | ● |

| Parameter | View |
|---|---|
| **System Info** | |
| ATS name | ● |
| Location | ● |
| Load description | ● |
| Branch | ● |
| ATS serial number | ● |
| Controller serial number | ● |
| Number of phases | ● |
| Switch size | ● |
| **System Summary** | |
| Alert code | ● |
| Switch position | ● |
| Programming mode | ● |
| System status messages | ● |
| **Time Delays** | |
| Engine start | ● |
| Normal to emergency | ● |
| Emergency to normal | ● |
| Engine cooldown | ● |
| Before emergency | ● |
| After emergency | ● |
| Sequence to emergency | ● |
| Return to emergency | ● |
| Before normal | ● |
| After normal | ● |
| Sequence to normal | ● |
| Return to normal | ● |

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Engine run time | ● |
| Set run time (starts engine) | ● |

# PM340 Power Monitor

The following information for the Power Monitor can be viewed through Monitor III software. A Modbus/KBUS converter is required for this device.

| Parameter | View |
|---|---|
| **Analog Inputs** | |
| Analog input reading, (2) | ● |
| **Auxiliary Inputs** | |
| Description | ● |
| Inhibit time | ● |
| **Date/Time** | |
| Date | ● |
| Time | ● |
| **Electrical Info** | |
| Voltage, line-to-line | ● |
| Voltage, line-to-neutral | ● |
| Current, L1, L2, L3 | ● |
| Frequency | ● |
| Total kW | ● |
| Total kVAR | ● |
| Power factor | ● |
| Power supply voltage, VDC | ● |
| **System Info** | |
| Generator set name | ● |
| Location | ● |
| Load description | ● |
| Model number | ● |
| Specification number | ● |
| Generator set serial number | ● |
| Controller serial number | ● |

| Parameter | View |
|---|---|
| **System Summary** | |
| System status | ● |
| Switch position | ● |
| Contactor position | ● |
| Programming mode | ● |
| Test mode timed | ● |
| Test mode active | ● |
| ATS rating | ● |
| Nominal voltage | ● |
| Nominal frequency | ● |
| Phases | ● |
| Connection type | ● |
| **History** | |
| Run time, normal | ● |
| Run time, emergency | ● |
| Run time, off | ● |
| Event history, date and event description (code) | ● |

## Remote Operation (password-protected)

| Operation | Control |
|---|---|
| Engine run time | ● |
| Set run time (starts engine) | ● |

# Connection Types

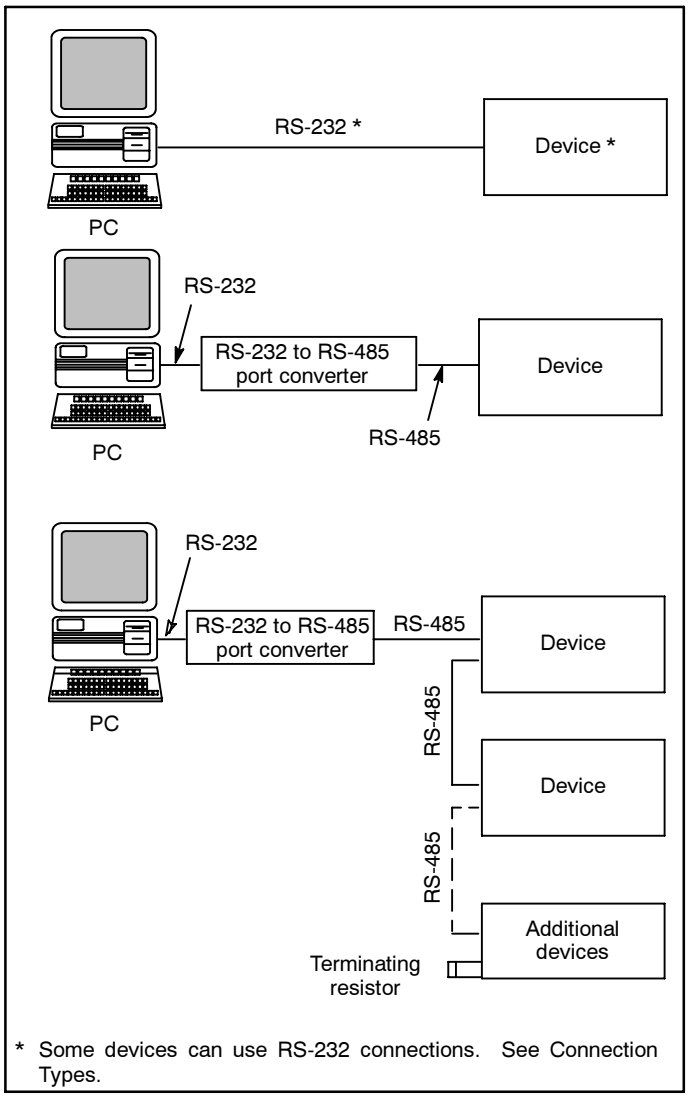
A personal computer (PC) can communicate with generator set controllers, transfer switch controllers, and power monitors using local, remote modem, or remote network (Ethernet) connections.

**Connection Notes:**

- A device in the following diagrams is any generator set controller, transfer switch controller, or power monitor listed on page 1 of this document. All devices must be configured for Modbus communication.
- RS-232 connects up to 15.2 m (50 ft.) from PC's serial port.
- RS-485 connects up to 247 devices with a maximum total cable length of 1220 m (4000 ft.). Use a terminating resistor on the last device in the network. See EIA standards.
- The 550 controller can act as an RS-232 to RS-485 port converter when the controller is located within 15 m (50 ft.) of the PC.
- The Decision-Maker™ 3+ and MPAC™ 1000 controllers must use RS-485 connections for Monitor III communications.
- The Decision-Maker™ 340, M340, M340+, and PM340 Power Monitor require Modbus/KBUS converters.
- The MPAC™ 1500 ATS controller uses RS-485 and Ethernet connections.
- A Modbus/Ethernet converter is required for remote network (Ethernet) connections to all devices except the MPAC™ 1500 ATS controller.

## Local Connections

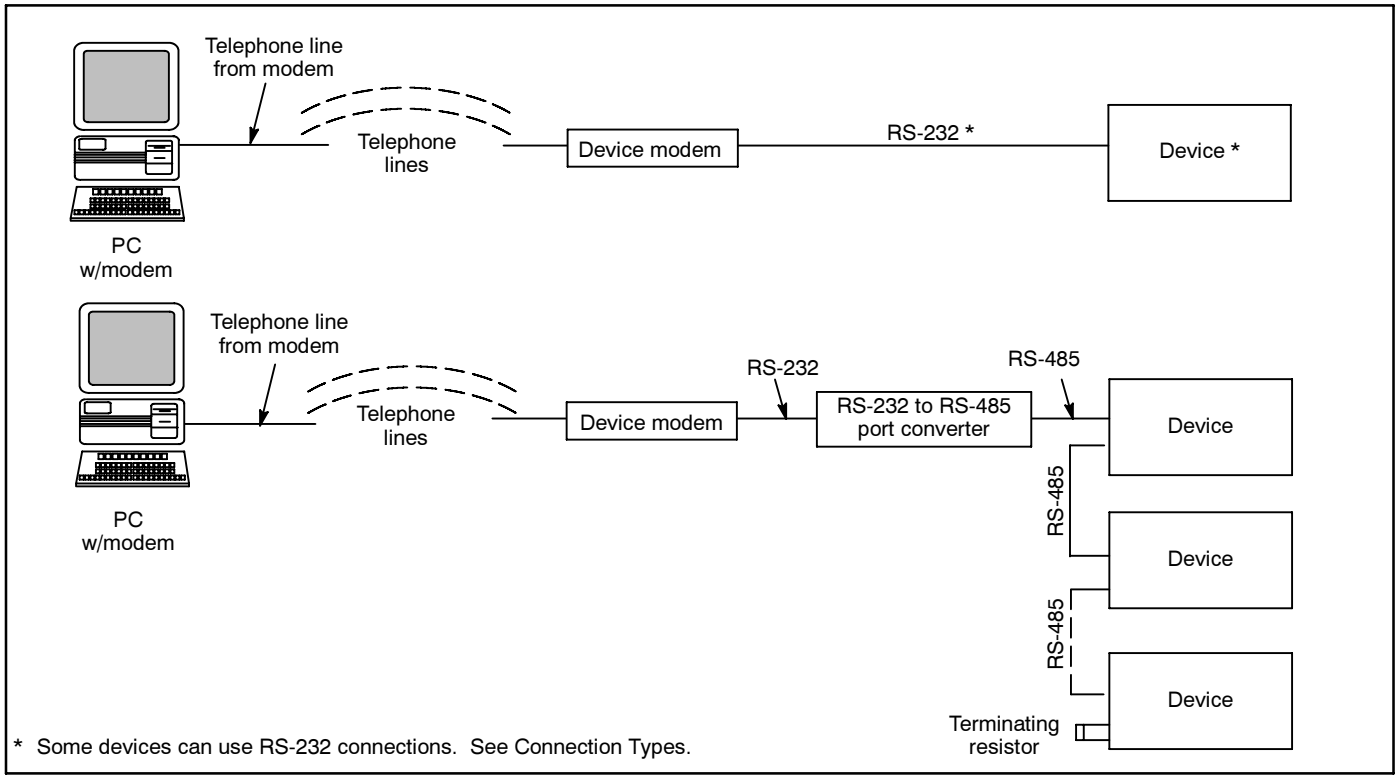
A PC connects directly to a device or network of devices with an RS-232 cable or an RS-485 cable.




* Some devices can use RS-232 connections. See Connection Types.

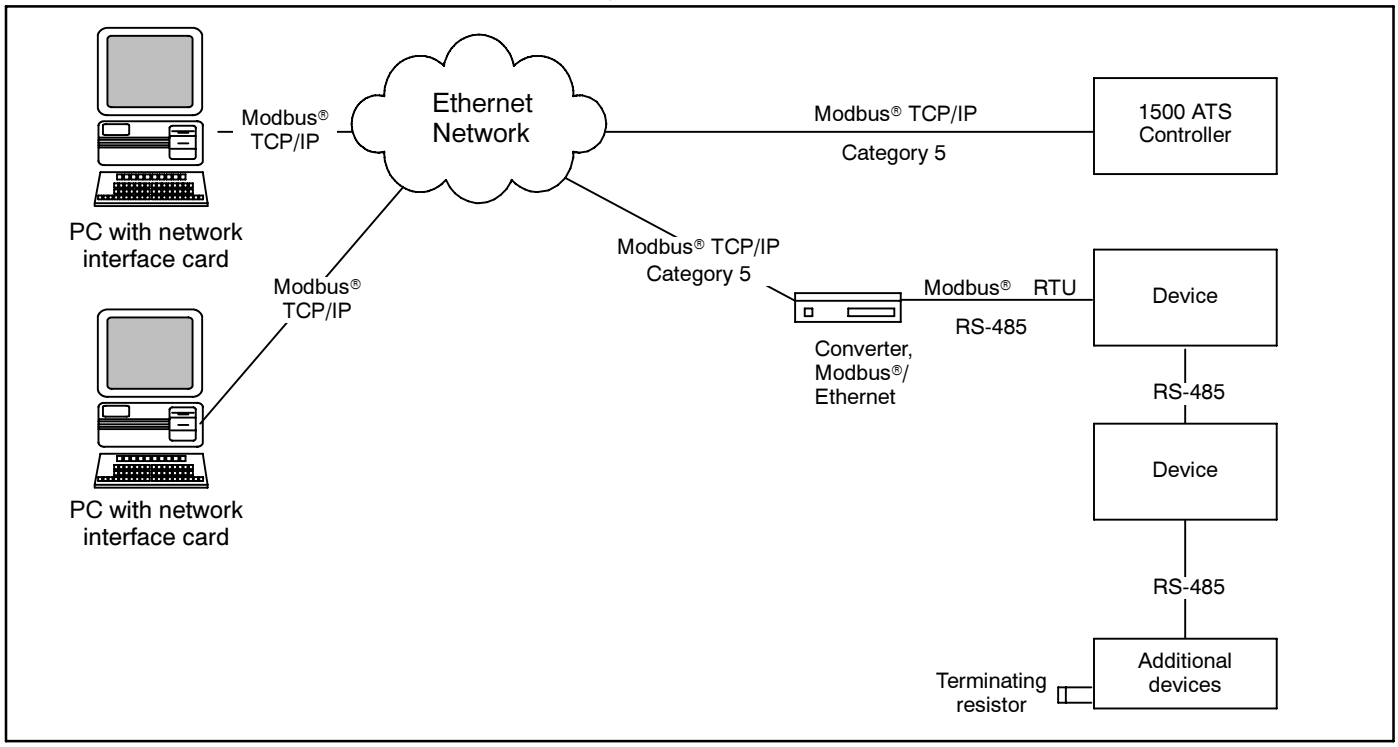
## Remote Modem Connections

The PC and device(s) are connected by modems. The PC communicates with the device or device network via a telephone network, and the PC can be located anywhere a telephone line can be accessed.




## Remote Network Connection (Ethernet)

A PC with a network interface card is connected to the Ethernet network. The 1500 ATS controller has an RJ-45 connector for direct Ethernet connection. Other devices can connect together using RS-485 connections and connect to the Ethernet network through a Modbus®/Ethernet converter. The PC can be located anywhere the site's Ethernet network can be accessed.



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# Network Communication Products and Accessories

- ❑ Monitor III software kit with hardware key. Includes:
  - ○ Software CD-ROM
  - ○ Null modem cable
  - ○ Network termination resistor
  - ○ Operation manual and connection instructions
- ❑ Monitor III software kit with hardware key and device modem for remote connections. Includes:
  - ○ Software CD-ROM
  - ○ AT modem cable
  - ○ Device modem, 120VAC/60Hz, 19.2k baud
  - ○ Optical isolator
  - ○ Converter, RS-232/RS-485
  - ○ Connector, 9-pin/25-pin
  - ○ Null modem, 25-pin
  - ○ Network termination resistor
  - ○ Operation manual and connection instructions
- ❑ Device modem kit, 50Hz, 19.2k baud
- ❑ Modbus®/Ethernet converter kit. Includes DC adapter with universal AC plug. (RS-485/RJ-45 connectors; required for TCP/IP connections. Not required for the MPAC™ 1500 ATS controller).
- ❑ Modbus®/KBUS converter kit for the following devices (required for Monitor III or other Modbus® communication):
  - ❑ Decision-Maker™ 340 generator set controller
  - ❑ M340 and M340+ transfer switch controller
  - ❑ PM340 power monitor
- ❑ Modbus® communication board for Decision-Maker™ 3+ generator set controllers (required for Monitor III or other Modbus® communication)
- ❑ RS-232/RS-485 port converter
- ❑ Null modem cable, 9-pin/9-pin

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