Windows®-Based Software for Monitoring and Control of:

Generator sets equipped with the Kohler® Decision-Maker™ 550 Controller

Generator sets equipped with the Kohler® Decision-Maker™ 340 Controller

Automatic transfer switches equipped with the M340 or M340+ Controller

Systems using the Kohler® PM340 Power Monitor

Software Features

- Windows®-based graphical user interface
- User-defined custom screens built from modular data windows
- Choice of metric (SI) or English (IP) measurements
- Selected data displayed in text or graphical format
- Automatically updated screens
- Password-protected data access
- Multiple data windows from different devices can be displayed on a single screen
- Communication hardware offered as factory-installed options or field-installed kits

Software Functions

- Monitor and control the power system’s generator sets and transfer switches from a personal computer using a single software package
- Read and adjust trip points, time delays, and system parameters
- Assign inputs and outputs
- Control system equipment over a local area network or remotely via a modem connection
- Connect up to 128 devices on a local area network
- Monitor data from multiple devices on the same local area network simultaneously
- Save controller settings to a disk file as a backup

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Monitoring and Control System Features

Create custom 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-6194, Monitor II Software Operation and Installation Manual.

- Easily select, create, arrange, and delete data windows.
- Create data windows for multiple devices in a network on the same screen.
- Create and save multiple screen configurations for different applications.
- Change controller settings, time delays, and system parameters.
- Assign analog and digital inputs and outputs.
- View up to 100 of the most recent system events including engine starts, faults, shutdowns, and warnings.
- Start or stop the engine or reset the controller from a remote PC. (550 controller)
- Select Cooldown Temperature Override to run the engine for the entire cooldown period after operation. (550 controller)

Minimum System Requirements

- 100% IBM® PC-compatible, 133 MHz or higher Pentium®-compatible CPU
- Windows® 98, Windows® 2000 Professional, Windows NT® Workstation Version 4.0 or Windows® XP operating system
- 16 MB RAM
- CD-ROM drive and 5 MB available hard drive space for installation
- VGA resolution video adapter compatible with the operating system
- Internal modem connected to an available serial COM port numbered between 1 and 256, or an available RS-232 serial COM port numbered between 1 and 256 and an external modem
- Serial port and modem must support 1200, 2400, or 9600 baud for the Decision-Maker™ 550 controller, or 2400, 4800, or 9600 baud for the Decision-Maker™ 340 controller, the M340 or M340+ ATS controller, or the PM340 Power Monitor
- Communication hardware such as RS-232 to RS-485 port converters or modems depending upon the connection type
- Customer-provided system wiring and/or telephone lines

Applicable Controllers

Decision-Maker™ 550
Generator Set Controller

Decision-Maker™ 340
Generator Set Controller

M340+ Transfer Switch Controller
(shown with available options)

PM340 Power Monitor

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All of the following information is available through Decision-Maker™ 550 controller communications. “Read only” indicates parameters that can be monitored but not adjusted through Monitor II. “Read and write” indicates parameters that can be monitored and adjusted using Monitor II.

### Monitoring
- **Engine Brief (read only)**
  - Coolant Temperature
  - Countdown
  - ECM equipped (yes or no)
  - Engine speed (RPM)
  - Number of engine starts
  - Local Battery voltage
  - Oil pressure
  - Run time
- **Engine Coolant (read only)**
  - Level
  - Pressure
  - Temperature
- **Engine Fuel (read only)**
  - Fuel used last run
  - Pressure
  - Rate, liters/hr. or gal./hr.
  - Temperature
- **Engine Miscellaneous (read only)**
  - ECM ambient temperature
  - ECM battery voltage
  - ECM serial number
  - Engine model number
  - Engine serial number
  - ECM unit number
  - Intake air pressure
  - Intake air temperature
- **Engine Speed (read only)**
- **Event History (read the 100 most recent events)**
  - Faults
  - Warnings
  - Shutdowns
  - Input activation
  - Output activation
  - Time and date of each event
- **Frequency (read only)**
- **kVA, analog or digital display (read only)**
- **kVAR, analog or digital display (read only)**
- **kW, analog or digital display (read only)**
- **% Maximum kW Load (read only)**
- **Line Current, L1, L2, L3, analog or digital display (read only)**
- **Line-Line Voltage, analog or digital display (read only)**
- **Line-Neutral Voltage, analog or digital display (read only)**
- **Operational Summary (read only)**
  - Duration of run
  - Factory test date
  - Last start date
  - Last start time
  - Loaded/unloaded
  - Reset date
  - Reset days of operation
  - Reset kW hours
  - Reset number of starts
  - Reset run time
- **Reset run time unloaded
- Reset run time loaded
- Total kW hours
- Total number of starts
- Total run time
- Total run time loaded
- Total run time unloaded
- **Operational Summary Setup Mode (read and write)**
  - Run time
  - Reset maintenance records button
  - Start/stop engine button
  - Reset faults button
- **Power Factor, analog or digital display (read only)**
- **Time and Date (read and write)**

### System Parameters
- **Generator Info (read and write)**
  - Battery voltage (nameplate)
  - Controller serial number
  - Designation (optional user-defined equipment name)
  - kW rating
  - Load description (optional user-defined description)
  - Location (optional user-defined description)
  - Model number
  - NFPA 110 default settings, yes or no
  - Generator set serial number
  - Phase, single or three, wye or delta
  - Specification number
  - System frequency
  - System voltage
  - Operating mode, standby or prime power
- **Factory Setup (read only)**
  - Alternator model number
  - Controller serial number
  - Days in operation
  - Engine model number
  - Final assembly clock number
  - Final assembly date
  - Generator set serial number
  - Generator set model number
  - Serial number entered during setup
  - Specification number
  - Version number for the controller’s application code
- **Trip Points (read and write)**
  - High battery voltage
  - Load shed output
  - Low battery voltage
  - Overfrequency
  - Overspeed
  - Overvoltage
  - Underfrequency
  - Undervoltage
- **Time Delays (read and write)**
  - Crank cycles
  - Crank on
  - Crank pause
  - Engine cooldown
  - Coolant temperature override selection box (setup window)
  - Engine start
  - Load shed
  - Overvoltage
  - Starting aid
  - Undervoltage
Decision-Maker™ 550 Generator Set Controller, continued

Inputs
Assign up to 7 analog inputs and 21 digital inputs.

- Analog Inputs (read and write)
  - High shutdown value
  - High warning value
  - Inhibit time
  - Low shutdown value
  - Low warning value
  - Shutdown delay
  - Shutdown enabled
  - Warning delay
  - Warning enabled

- Digital Inputs (read and write)
  - 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 [engine control module (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 (Waukesha only)
  - Knock shutdown (Waukesha only)
  - Detonation warning (Waukesha only)
  - Detonation shutdown (Waukesha only)
  - Low fuel shutdown (Waukesha only)
  - Breaker closed (not user-selectable)

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

- Relay Driver Outputs (RDOs), System Events, and Common Faults (read and write)
  - 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 charge 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 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
  - Loss of ECM communications
  - Loss of field shutdown
  - Low battery voltage
  - 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 applications)
  - Protective relay common (for switchgear applications)
  - Reverse power shutdown (for switchgear applications)
  - Software-controller relay driver outputs (SCRDOs) 1 - 4
  - Starting aid
  - System ready
  - Underfrequency
  - Undervoltage
  - Weak battery
All of the following information is available through Decision-Maker™ 340 controller communications. “Read only” indicates parameters that can be monitored but not adjusted through Monitor II. “Read and write” indicates parameters that can be monitored and adjusted using Monitor II.

- Generator output monitoring (read only):
  - Current L1, L2, L3
  - Frequency
  - Percent of alternator kilowatt rating
  - Power factor
  - Total kilowatts
  - Voltage, line-to-line and line-to-neutral for all phases

- Common fault selections (read or write)

- Digital auxiliary inputs (read or write):
  - Delay time before posting events
  - Description
  - Inhibit time after engine starting
  - Warning or shutdown

- Engine parameters (read only):
  - Battery voltage
  - Coolant temperature
  - Engine speed
  - Oil pressure

- Event history of shutdowns or warnings (read only)

- Operational records, total since initial startup and since last maintenance record reset (read only):
  - Days of operation since last maintenance record reset
  - Duration of last run and whether it was loaded or unloaded
  - Initial startup date and time
  - Kilowatt hours
  - Last start date and time
  - Number of starts
  - Run time loaded, unloaded, and total hours

- Relay driver output assignments (read and write)

- Start and run engine (read and write):
  - Reset fault
  - Run time (start engine)
  - Stop engine

- System information (read and write):
  - Alternator kilowatt rating
  - Battery voltage (12 or 24)
  - Controller serial number
  - Designation
  - Load
  - Location
  - Model number
  - Network address (read only)
  - Number of phases
  - Serial number
  - Specification number
  - System voltage
  - System frequency

- System status (read only):
  - Generator status (stopped/running/cranking)
  - Master switch position
  - Programming mode
  - System alert including current shutdown or warning

- Time, date, and day of week (read and write)

- Time delay settings (read and write):
  - Crank on and pause time
  - Engine cooldown
  - Engine start
  - Number of crank cycles
  - Overvoltage and undervoltage
  - Starting aid

- Time delay status (read only):
  - Auxiliary input crank inhibit and event delay
  - Crank on and pause time
  - Engine cooldown
  - Engine start

- Trip point settings (read and write):
  - Low and high battery voltage
  - Overfrequency and underfrequency
  - Overspeed
  - Overvoltage and undervoltage
M340 and M340+ Transfer Switch Controllers

All of the following information is available through M340 and M340+ controller communications. "Read only" indicates parameters that can be monitored but not adjusted through Monitor II. "Read and write" indicates parameters that can be monitored and adjusted using Monitor II.

- AC system monitoring, both normal and emergency sources (read only):
  - Frequency
  - Phase sequence
  - Voltage, line-to-line for all phases
- Accessory status (read only)
- Event history, including source failures and faults (read only)
- Load shed settings (read and write)
- Operational records, total since initial startup and since last maintenance record reset (read only):
  - Days of operation since last maintenance record reset
  - Hours not in normal position
  - Hours of emergency source
  - Initial startup date
  - Last maintenance date
  - Number of switch transfers
- Plant exerciser schedule (read and write)
- Start and run generator set (read and write):
  - Bypass time delays normal to emergency, emergency to normal
  - Run time (read and write/start engine)
  - Stop engine
  - Transfer loaded or unloaded
- System information (read and write):
  - Controller serial number (read only)
  - Designation, load, branch, location
  - Installed options
  - Network address (read only)
  - Number of phases
  - Number of poles
  - Power switching device type (read only)
  - Serial number (read only)
  - Switch rating
  - System voltage
  - System frequency
- System status (read only):
  - Programming mode
  - Source available
  - Switch position—normal, off, or emergency
  - System alert including current source failures and faults
  - Test switch position
- Time, date, and day of week (read and write)
- Time delay settings (read and write):
  - Emergency to normal
  - Engine cooldown
  - Engine start
  - Load shed
  - Normal to emergency
  - Off to emergency (M340+ only)
  - Off to normal (M340+ only)
- Time delay status (read only):
  - Emergency to normal
  - Engine cooldown
  - Engine start
  - Normal to emergency
  - Off position
- Trip point settings (read and write):
  - Overfrequency and underfrequency
  - Overvoltage and undervoltage

PM340 Power Monitor

All of the following information is available through PM340 Power Monitor communications. "Read only" indicates parameters that can be monitored but not adjusted through Monitor II. "Read and write" indicates parameters that can be monitored and adjusted using Monitor II.

- AC system monitoring (read only):
  - Current L1, L2, and L3
  - Frequency
  - Kilovolt-amps reactive (kVAR)
  - Power factor
  - Total kilowatt load
  - Voltage, line-to-line and line-to-neutral for all phases
- Analog auxiliary inputs (read and write):
  - Description
  - Scaled value (read only)
- ATS test mode (read and write):
  - Manual test
  - Stop test mode
  - Timed test, set ATS test run time
- DC power supply voltage (read only)
- Digital auxiliary inputs (read and write):
  - Delay time before posting events
  - Description
  - Event history including ATS tests (read only)
- Operational records (read only):
  - Hours in each contactor position—normal, off, or emergency
- System information (read and write):
  - ATS rating
  - Controller serial number
  - Designation, load, location
  - Number of phases
  - Network address (read only)
  - Serial number
  - Specification number
  - System voltage
  - System frequency
- System status (read only):
  - Programming mode
  - Switch position—normal, off, or emergency
  - System alert including current source failures and faults
- Time, date, and day of week (read and write)
PC Communication

A PC can communicate with the generator set controller, transfer switch controller, and power monitor devices using four types of connections. See TT-847, Controller Communication Kits, for more detailed connection information.

Local Single Connection
A PC connects directly to the device’s communication port with an RS-232 cable for applications where the PC is within 15 m (50 ft.) from the device or with an RS-485 cable for applications where the PC is up to 1220 m (4000 ft.) from the device.

Remote Single Connection
The PC and device are connected by modems. The PC communicates with the device via a telephone network, and the PC can be located anywhere a telephone line can be accessed.

Local Area Network (LAN)
A PC connects directly to the device’s local area network (LAN). A LAN is a system that connects more than one device to a single PC.

Remote Area Network
A PC is connected to a modem. The devices are connected as a LAN network. The PC communicates with the devices via a telephone network that interfaces with the LAN network. The PC can be located anywhere a telephone line can be accessed.
Figure 8  Power System Communication Network Configuration Using Telephone Lines

Communication Products and Accessories

- Monitor II monitoring and control software kit (PA-361725)
- Cable kit for direct connection to a PC (PA-294992)
- External modem for device or device network; includes a 3 m (10 ft.) RS-232 cable
  - 120 V, 60 Hz device modem (PA-294865)
  - 240 V, 50 Hz device modem (PA-353074)
- External modem for PC; includes a 3 m (10 ft.) RS-232 cable and adapter
  - 120 V, 60 Hz PC modem (PA-294864)
  - 240 V, 50 Hz PC modem (PA-353073)
- RS-232 to RS-485 port converters
    (Use cable kit PA-294992.)
  - Internal version available only for power monitors (PA-353397)
- RS-232 communication modules mount inside the following devices (not required for the Decision-Maker™ 550 generator set controller):
  - Decision-Maker™ 340 generator set controller (PA-354198)
  - M340 and M340+ transfer switch controller (PA-294867)
  - PM340 power monitor (PA-353395)
- RS-485 communication modules mount inside the following devices (not required for the Decision-Maker™ 550 generator set controller):
  - Decision-Maker™ 340 generator set controller (PA-354197)
  - M340 and M340+ transfer switch controller (PA-294866)
  - PM340 power monitor (PA-353396)

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