MPAC® 500 Controller Features

- User-friendly interface with easy-to-read international symbols
- Source available and contactor position indicators
- LED indication of system faults
  - Failure to acquire standby source
  - Failure to transfer
  - Auxiliary switch fault
- Common fault contact: latches closed on system faults shown above
- Engine start contact: provides contact closure to start the generator set
- Load control contact: allows 5-minute delay in startup of selected loads
- Test button (with or without load)
- Exercise set button
  - Weekly 20-minute generator set exercise
  - With or without load
- Single-phase voltage sensing on both sources, ±5%
- Line-to-line frequency sensing, ±2%
- Fixed time delays

Standard Features

- UL listed
  - UL 1008 listed, file #E58962
  - Models with load centers use UL 67 listed components
- cUL listed
  - 100 and 200 amp models with load centers
- CSA certification available, file #LR58301 (not applicable to service entrance or load center models)
- 220/240 VAC, 50/60 Hz (selectable)
- 100, 200, and 400 amp models available
- Two-pole, single-phase open-transition transfer switch
- Contactor electrically and mechanically interlocked
- Double throw inherently interlocked design
- Solid neutral
- Contactor manually operable for maintenance purposes
- Silver alloy main contacts
- All models are 100% equipment rated and can be applied at the rated current without derating
- 100 and 200 amp models available with or without prewired Square D type QO load center
  - 100 amp load center models use up to 16 circuit breakers (up to 8 tandem breakers can be used for a maximum of 24 circuits)
  - 200 amp load center models use up to 24 circuit breakers
  - 200 amp service entrance model with 42-circuit breaker load center is available
- Two enclosures available
  - NEMA Type 1 steel ANSI 49 gray enclosure for indoor installation. 100 amp and 200 amp models without load centers can be recess-mounted between wall studs (not service entrance model)
  - NEMA Type 3R corrosion-resistant aluminum ANSI 49 gray padlockable enclosure. Approved for indoor or outdoor installation
- Five-year limited warranty
- See page 5 for available accessories

Service Entrance Model Features

- 200 and 400 amp service entrance rated automatic transfer switches available
- Service disconnect circuit breaker on the normal (utility) source (80% rated)
- NEMA 3R aluminum ANSI 49 gray enclosure
- Circuit breaker for generator set battery charger
- See page 5 for available SE model accessories
Environmental Specifications

- Operating temperature: -20°C to 70°C (-4°F to 158°F)
- Storage temperature: -40°C to 80°C (-40°F to 185°F)
- Humidity: 5 to 95% noncondensing

Contact Ratings

- Engine start: 0.5 A @ 125 VAC; 2 A @ 30 VDC
  SPST normally closed (NC)
- Common fault: 0.5 A @ 125 VAC; 2 A @ 30 VDC
  SPST normally open (NO)
- Load control: 10 A @ 120 VAC
  SPST normally open (NO)
- Auxiliary contacts (optional): 15 A @ 277 VAC
  Form C

Source Sensing

- Undervoltage dropout: 80%
- Undervoltage pickup: 85%
- Underfrequency dropout: 90%
- Underfrequency pickup: 96%

Time Delays

<table>
<thead>
<tr>
<th>Time Delay</th>
<th>Factory Setting</th>
<th>Range</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine start</td>
<td>3 seconds</td>
<td>1-10 seconds</td>
<td>1 second</td>
</tr>
<tr>
<td>Transfer from Normal to Emergency</td>
<td>3 seconds</td>
<td>1-10 seconds</td>
<td>1 second</td>
</tr>
<tr>
<td>Retransfer from Emergency to Normal</td>
<td>6 minutes</td>
<td>3-30 minutes</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Engine cooldown</td>
<td>5 minutes</td>
<td>1-10 minutes</td>
<td>1 minute</td>
</tr>
<tr>
<td>Exercise run time</td>
<td>20 minutes</td>
<td>5-50 minutes</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Exercise interval</td>
<td>1 week</td>
<td>1 week/2 week</td>
<td>DIP switch</td>
</tr>
<tr>
<td>Load control connection delay</td>
<td>5 minutes</td>
<td>5 or 10 minutes</td>
<td>DIP switch</td>
</tr>
<tr>
<td>Failure to acquire Emergency source</td>
<td>78 seconds</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Undervoltage dropout</td>
<td>0.5 second</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Underfrequency dropout</td>
<td>3 seconds</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

* Optional accessory board required for time delay adjustments
NA = not adjustable

Cable Sizes

<table>
<thead>
<tr>
<th>Switch Size, Amps</th>
<th>Normal (per phase)</th>
<th>Emergency (per phase)</th>
<th>Load (per phase)</th>
<th>Neutral</th>
<th>Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>(1) #14 - 1/0 AWG</td>
<td>(1) #14 - 1/0 AWG</td>
<td>(1) #14 - 1/0 AWG</td>
<td>(5) #12 - 250 MCM (Cu) or (9) #14 - 6 AWG</td>
<td></td>
</tr>
<tr>
<td>100 B</td>
<td>(1) #14 - 1/0 AWG</td>
<td>(1) #14 - 1/0 AWG</td>
<td>per customer-supplied branch circuit breakers</td>
<td>(26) #14 - #4AWG or (4) #14 - 1/0 AWG</td>
<td>(4) #14 - 1/0 AWG</td>
</tr>
<tr>
<td>200</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>(5) #12 - 250 MCM (Cu) or (38) #14 - #4 AWG</td>
<td>(9) #14 - 6 AWG</td>
</tr>
<tr>
<td>200 B</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>per customer-supplied branch circuit breakers</td>
<td>(38) #14 - #4 AWG or (3) #14 - 1/0 AWG</td>
<td>(4) #14 - 1/0 AWG</td>
</tr>
<tr>
<td>200 BSE</td>
<td>(1) #4 - 300 MCM</td>
<td>(1) #6 - 250 MCM</td>
<td>per customer-supplied branch circuit breakers</td>
<td>(4) #12 - 250 MCM (Cu) or (4) #10 - 250 MCM</td>
<td>(9) #14 - 6 AWG</td>
</tr>
<tr>
<td>200 SE</td>
<td>(1) #4 - 300 MCM</td>
<td>(1) #6 - 250 MCM</td>
<td>(1) #6 AWG - 250 MCM</td>
<td>(5) #12 - 250 MCM (Cu) or (5) #10 - 250 MCM</td>
<td>(4) #14 - 1/0 AWG</td>
</tr>
<tr>
<td>400</td>
<td>(2) #6 – 250 MCM</td>
<td>(2) #6 – 250 MCM</td>
<td>(2) #6 – 250 MCM</td>
<td>(3) #4 – 600 MCM or (6) 1/0 – 250 MCM</td>
<td>(6) #6 – 3/0 AWG</td>
</tr>
<tr>
<td>400 SE</td>
<td>(1) #1 – 600 MCM or (2) #1 – 250 MCM</td>
<td>(2) #6 – 250 MCM</td>
<td>(2) #6 – 250 MCM</td>
<td>(3) #4 – 600 MCM or (6) 1/0 – 250 MCM</td>
<td></td>
</tr>
</tbody>
</table>

B = Load center model
SE = Service entrance model

Note: Data is subject to change. Refer to the transfer switch dimension drawings and wiring diagrams for planning and installation.
Contactor Ratings with Coordinated Circuit Breakers

The transfer switches are UL listed at 240 VAC maximum. The following table lists contactor withstand current ratings (WCR) for 100-400 ampere non-service entrance rated switches with specific manufacturer’s circuit breakers per UL and Canadian safety standards. Suitable for control of motors, electric discharge lamps, tungsten filament lamps and electric heating equipment where the sum of motor full-load ampere ratings and the ampere ratings of other loads do not exceed the ampere rating of the switch and the tungsten load does not exceed 30 percent of switch rating.

### WCR Ratings with Specific Manufacturer’s Molded-Case Circuit Breakers

<table>
<thead>
<tr>
<th>Switch Rating, Amps</th>
<th>Voltage, max.</th>
<th>WCR, RMS Symmetrical Amps</th>
<th>Manufacturer</th>
<th>Type or Class</th>
<th>Maximum Size, Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>240</td>
<td>10,000</td>
<td>Any Breaker *</td>
<td>Any Breaker (0.025 seconds max.)</td>
<td>—</td>
</tr>
<tr>
<td>200</td>
<td>240</td>
<td>10,000</td>
<td>Any Breaker *</td>
<td>Any Breaker (0.025 seconds max.)</td>
<td>—</td>
</tr>
<tr>
<td>400</td>
<td>240</td>
<td>35,000</td>
<td>ABB</td>
<td>T5, T6</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eaton</td>
<td>CHKD, CKD, DK, HKD, KD, KDB, KDC, LA TRIPAC, LCL</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CHLD, CLD, CLDC, HLD, LD, LDB, LDC</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HMDL, MDL, NB TRIPAC</td>
<td>800</td>
</tr>
<tr>
<td>400</td>
<td>240</td>
<td>35,000</td>
<td>General Electric</td>
<td>FGH, FGL, FGN, FGP, SGHA</td>
<td>600</td>
</tr>
<tr>
<td>400</td>
<td>240</td>
<td>35,000</td>
<td>Merlin Gerin</td>
<td>CJ400H, CJ400L, CJ400N</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CJ600H, CJ600N</td>
<td>600</td>
</tr>
<tr>
<td>400</td>
<td>240</td>
<td>35,000</td>
<td>Siemens</td>
<td>CJD6, HHJD6, HHJXD6, HJD6, HJGA, HJX6, JD6, JXD2, JXD6, SCJ6, SHJ6, SJ6, NJGA, LJGA</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CLD, HHLX, HLD, HLGA, HLX6, LD, LLGA, LX, NLGA, SCLD, SDL</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CMD, HLMD, HLMX, HMD, HMG, HMXD, LMD, LMG, LMXD, MD, MXD, NMG, SCMD, SHMD, SMD</td>
<td>800</td>
</tr>
<tr>
<td>50,000</td>
<td>Eaton</td>
<td>50,000</td>
<td>Square D</td>
<td>LA, LC, LE, LH, LI, LX, LXi</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DG, DJ, DL, LC, LE, LI, LX, LXi</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>Eaton</td>
<td>50,000</td>
<td></td>
<td>LD</td>
<td>600</td>
</tr>
</tbody>
</table>

* For higher WCR values, contact the factory for additional specific breaker ratings.

**Service Entrance Transfer Switch Ratings**

The service entrance transfer switch is factory-equipped with a normal source disconnect circuit breaker.

<table>
<thead>
<tr>
<th>Switch Rating, Amps</th>
<th>WCR, RMS Symmetrical Amps at 240 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>22,000</td>
</tr>
<tr>
<td>400</td>
<td>35,000</td>
</tr>
</tbody>
</table>
Codes and Standards

The ATS meets or exceeds the requirements of the following specifications:

- Underwriters Laboratories UL 1008, Standard for Automatic Transfer Switches for Use in Emergency Systems, file #E58962
- Underwriters Laboratories UL 508, Standard for Industrial Control Equipment
- CSA certified, file #LR58301 (not applicable to service entrance models)
- NFPA 70, National Electrical Code
- NFPA 110, Emergency and Standby Power Systems
- IEEE Standard 446, IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- NEMA Standard IC10- 1993 (formerly ICS2- 447), AC Automatic Transfer Switches
- ANSI C37.90.1 (IEEE472), 2000, EFT/Surge Relay Systems
- EN61000-4-5 Surge Immunity Class 4 (voltage sensing and programmable inputs only)
- EN61000-4-4 Fast Transient Immunity Severity Level 4
- IEC Specifications for EMI/EMC Immunity
  - CISPR 11, Radiated and Conducted Emissions, Class B
  - IEC 61000-4-2, 2001, Electrostatic Discharge
  - IEC 61000-4-3, 2002, Radiated Immunity
  - IEC 61000-4-4, 2001, Electrical Fast Transients (Bursts)
  - IEC 61000-4-5, 2001, Surge Voltage Immunity
  - IEC 61000-4-6, 2003, Conducted RF Immunity
  - IEC 61000-4-8, Magnetic Field Immunity
  - IEC 61000-4-11, Voltage Dips and Interruptions

Weights and Dimensions

Note: Always use the transfer switch dimension drawing for planning and installation. Weights and dimensions may vary for different configurations. See the Operation/Installation Manual or your local distributor for dimension drawings.

Transfer switch weights and dimensions shown in the table do not include packaging. To estimate the shipping weight, add 3 kg (5 lbs.) or 10% (whichever is larger) to the weight shown.

<table>
<thead>
<tr>
<th>Amps</th>
<th>Load Center</th>
<th>Enclosure Type</th>
<th>Weight</th>
<th>Transfer Switch Dimensions</th>
<th>Dimension Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>kg</td>
<td>H x W x D, mm (in.)</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>None</td>
<td>NEMA 1 (steel)</td>
<td>7 (15)</td>
<td>610 x 330 x 154 * (24.0 x 13.0 x 6.0) *</td>
<td>ADV-8437</td>
</tr>
<tr>
<td>100 B</td>
<td>16 circuits</td>
<td></td>
<td>7 (15)</td>
<td>914 x 406 x 154 (36.0 x 16.0 x 6.0) *</td>
<td>ADV-9181</td>
</tr>
<tr>
<td>200</td>
<td>None</td>
<td>NEMA 1 (steel)</td>
<td>7 (15)</td>
<td>610 x 330 x 154 * (24.0 x 13.0 x 6.0) *</td>
<td>ADV-8438</td>
</tr>
<tr>
<td>200 B</td>
<td>24 circuits</td>
<td></td>
<td>21 (45)</td>
<td>914 x 406 x 154 (36.0 x 16.0 x 6.0) *</td>
<td>ADV-9182</td>
</tr>
<tr>
<td>400</td>
<td>None</td>
<td>NEMA 1 (aluminum)</td>
<td>40 (89)</td>
<td>1067 x 560 x 269 (42.0 x 22.0 x 10.6)</td>
<td>ADV-8439</td>
</tr>
<tr>
<td>100</td>
<td>None</td>
<td>NEMA 3R (aluminum)</td>
<td>7 (15)</td>
<td>613 x 340 x 177 (24.1 x 13.4 x 7.0)</td>
<td>ADV-8440</td>
</tr>
<tr>
<td>100 B</td>
<td>16 circuits</td>
<td></td>
<td>8 (18)</td>
<td>917 x 416 x 177 (36.1 x 16.4 x 7.0)</td>
<td>ADV-9183</td>
</tr>
<tr>
<td>200</td>
<td>None</td>
<td>NEMA 3R (aluminum)</td>
<td>7 (15)</td>
<td>613 x 340 x 177 (24.1 x 13.4 x 7.0)</td>
<td>ADV-8441</td>
</tr>
<tr>
<td>200 B</td>
<td>24 circuits</td>
<td></td>
<td>8 (18)</td>
<td>917 x 416 x 177 (36.1 x 16.4 x 7.0)</td>
<td>ADV-9184</td>
</tr>
<tr>
<td>200 BSE</td>
<td>None</td>
<td></td>
<td>12 (26)</td>
<td>858 x 473 x 163 (33.8 x 18.6 x 6.4)</td>
<td>ADV-8444</td>
</tr>
<tr>
<td>200 SE</td>
<td>42 circuits</td>
<td></td>
<td>32 (70)</td>
<td>967 x 762 x 165 (38.1 x 30.0 x 6.5)</td>
<td>ADV-9185</td>
</tr>
<tr>
<td>400</td>
<td>None</td>
<td></td>
<td>40 (89)</td>
<td>1067 x 560 x 269 (42.0 x 22.0 x 10.6)</td>
<td>ADV-8439</td>
</tr>
<tr>
<td>400 SE</td>
<td>None</td>
<td></td>
<td>46 (101)</td>
<td>1067 x 560 x 269 (42.0 x 22.0 x 10.6)</td>
<td>ADV-8445</td>
</tr>
</tbody>
</table>

B = Load center model
SE = Service entrance model
* Can be recess-mounted between 16 in. O.C. wall studs.
Accessories

- **Auxiliary position-indicating contacts**
  - One closed on normal position and one closed on emergency position
  - Form C contacts rated 15 A @ 250 VAC

- **Accessory board**
  - Alarm horn indicates system faults
  - Adjustable time delays:
    - Engine start
    - Engine cooldown
    - Preferred to standby
    - Standby to preferred
    - Exercise duration
  - Inputs and Outputs:
    - Remote start/stop input (loaded)
    - Programmable exerciser input
    - Generator set supplying load output:
      - 10 A @ 120 V SPST normally open (NO) contact
  - External alarm module connection
  - Dip switches:
    - 1 week/2 week exerciser
    - Load/no load exercise mode (for optional programmable exerciser)
    - Momentary/maintained external start/stop input:
      - Selects momentary (1 second) push button or maintained contact closure for remote start/stop signal
    - Load control, 5 minutes/10 minutes:
      - Allows adjustment of the startup delay after transfer to generator set for selected loads (e.g. air conditioners or other large motor starting loads)
    - Audible alarm disable

- **External alarm module**
  - Alarm horn
  - Alarm silence/lamp test button
  - Remote start/stop button
  - Generator supplying load indicator
  - Fault indicator
  - Fits into standard outlet box
  - Multiple alarm modules can be connected
  - Accessory board required

- **Load shed kit**
  - Automatically sheds non-critical loads when essential appliances are running
  - Prevents generator overload in compliance with NEC 2008
  - Provides two (2) HVAC relays, rated 10 A @ 125 VAC, to control two independent air conditioner loads
  - Includes four (4) pilot relays rated 120VAC, 125VA (pilot duty), 10 A @ 125 VAC (general purpose) to control customer-provided power relays for non-essential loads
  - Mounts inside the ATS enclosure
  - Uses Kohler’s exclusive RBUS communication protocol
  - Requires Kohler® residential generator set with RDC2 or DC2 controller
  - See specification sheet G11-124

- **Power relay modules**
  - 50 amp power relay mounted in a NEMA Type 3R enclosure
  - Use up to four modules with the load shed kit
  - UL/cUL listed
  - Dimensions: 172 x 233 x 92 mm (6.8 x 9.2 x 3.6 in.)
  - For more information, see specification sheet G6-143

- **Programmable exerciser**
  - Seven-day programmable timer allows scheduling up to 56 on/off events
  - LCD display indicates day, time, program/run modes, and on/off/skip status
  - Skip next cycle button
  - Lithium backup battery with 5-year expected life
  - Accessory board required

- **Wall-mount bezel (for Type 1 enclosures)**
  - For 100 and 200 amp recess-mounted switches
  - For NEMA type 1 enclosures only (not for NEMA 3R or service entrance switches)

**Additional Accessories for Service Entrance Models**

- **Accessory circuit breaker**
  - For generator set engine heater or other AC accessory
  - 15 A single-pole Square D type QQ circuit breaker

- **Enclosure space heater**
  - 150 Watts
  - Hygrostat (humidity control)
  - Built-in temperature limiter for overheat protection
  - 15 A single-pole Square D type QQ circuit breaker

- **Utility-side surge suppressor**
  - Surge protection reduces transient voltages to harmless levels
  - Protection modes: L-L / L-N / L-G / N-G
  - Replaceable phase and neutral cartridges for service
  - Frequency: 50-60 Hz
  - Operating Temperature Range: -40 to 176°F (-40 to 80°C)
  - Remote contacts for customer-supplied status indicators:
    - Contacts: 1 NO, 1 NC
    - Min Load: 12VDC / 10 mA
    - Max Load: 250 VAC / 1 A
    - Wire Size (max.): 16AWG
  - Fuse protection: 30 amps / 600 V
  - UL 1449, 3rd Edition for Type 2 applications
  - IEC 61-643-1, 2nd Edition T2/11
  - See additional specifications below

### Surge Suppresser Specifications

<table>
<thead>
<tr>
<th>Nominal Voltage (V ± 15%)</th>
<th>Max. Discharge Current (kA)</th>
<th>Phase</th>
<th>Poles</th>
<th>UL VPR 3rd Ed (L-N/N-G/L-G) (kV)</th>
<th>Limiting Voltage, (L-N/N-G/L-G) at 3kA</th>
<th>Limiting Voltage, (L-N/N-G/L-G) at 10kA</th>
<th>Short Circuit Withstand Current (kA)</th>
<th>Maximum Continuous Operating Voltage (VAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>240/120</td>
<td>40</td>
<td>Split</td>
<td>3</td>
<td>0.6 / 1.2 / 0.7</td>
<td>0.6 / 0.4 / 0.6</td>
<td>0.8 / 0.7 / 0.8</td>
<td>200</td>
<td>175 / 350</td>
</tr>
</tbody>
</table>
KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the
US and Canada, phone 1-800-544-2444
KOHLERPower.com

Kohler® Model Designation Key
This chart explains the Kohler® transfer switch model designation system. The sample model designation shown is for a Model R service entrance rated automatic transfer switch that uses a standard-transition contactor with MPAC® 500 electrical controls rated at 240 Volts/60 Hz with 2 poles, 3 wires, and solid neutral in a NEMA 3R enclosure with a current rating of 200 amperes and no load center.

- **Model**
  - R: Model R automatic transfer switch

- **Mechanism**
  - D: Specific-breaker rated

- **Transition**
  - T: Standard transition

- **Electrical Controls**
  - C: MPAC® 500 (Microprocessor ATS Control)

- **Voltage/Frequency**
  - D: 220 Volts/50 Hz
  - F: 240 Volts/60 Hz

- **Number of Poles/Wires**
  - N: 2-pole, 3-wire, solid neutral

- **Enclosure**
  - A: NEMA 1 (steel) *
  - C: NEMA 3R (aluminum)

- **Current Rating**: Numbers indicate the current rating of the switch in amperes:
  - 0100: 100 amps
  - 0200: 200 amps
  - 0400: 400 amps

- **Load Center**
  - A: Without load center
  - B: With load center (not available on 400 Amp models)

- **Service Entrance**
  - SE: Service entrance model (200 and 400 Amp models available)
  - Blank: Not rated for service entrance

*R: NEMA 1 only: 100 and 200 amp models without load centers can be recess-mounted between wall studs. Optional wall-mount bezel available.
The NEMA 1 enclosure for 400 amp models is aluminum.

**SAMPLE MODEL DESIGNATION**
RDT-CFNC-0200ASE

Availability is subject to change without notice. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler® generator distributor for availability.