

POWERCOMMAND® OTEC TRANSFER SWITCH

POWERCOMMAND® 40-11 CONTROL | OPEN TRANSITION | 40 A-1000 A
AUTOMATIC TRANSFER SWITCH | SERVICE ENTRANCE RATED

DESCRIPTION

The OTEC series transfer switch provides the basic features typically required for primary source and generator set monitoring, generator set starting and load transfer functions for emergency standby power applications. They are suitable for use in emergency, legally required, and optional standby circuits in commercial and light industrial applications. The OTEC transfer switch features the new PowerCommand® 40-11 control with a comprehensive feature list to suit a wide variety of ATS applications.

FEATURES

PowerCommand® 40-11 control – A fully featured microprocessor-based control with LCD digital display and tactile-feel soft-switches for easy operation and screen navigation. Control highlights include front panel PC software configuration, three phase sensing on both sources, sync check, phase rotation and imbalance sensing, and event logging. Additional optional features include load shed from standby source, Modbus RTU and TCP network communication, and configurable output contact modules. Completely network compatible with the new Cummins transfer switch remote annunciator. Please see the S-6560 PowerCommand® 40-11 control specification sheet for the full description, benefits, and features.

Overcurrent disconnect device – Square D UL Listed 489 molded case circuit breaker.

Programmed transition – Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period, as recommended by NEMA MG-1 for transfer of inductive loads.



Advanced transfer switch mechanism – Unique bi-directional linear actuator provides virtually frictionless constant force, straight-line transfer switch action during automatic operation.

Positive interlocking – Mechanical and electrical interlocking prevent source-to-source connection through the power or control wiring.

Main contacts – Heavy-duty silver alloy contacts used with multi-leaf arc chutes are rated for motor loads or total system load transfer. They require no routine contact maintenance. Continuous load current not to exceed 80% of switch rating and tungsten loads not to exceed 30% of switch rating.

Ease of service and access – Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; no special tools are required.

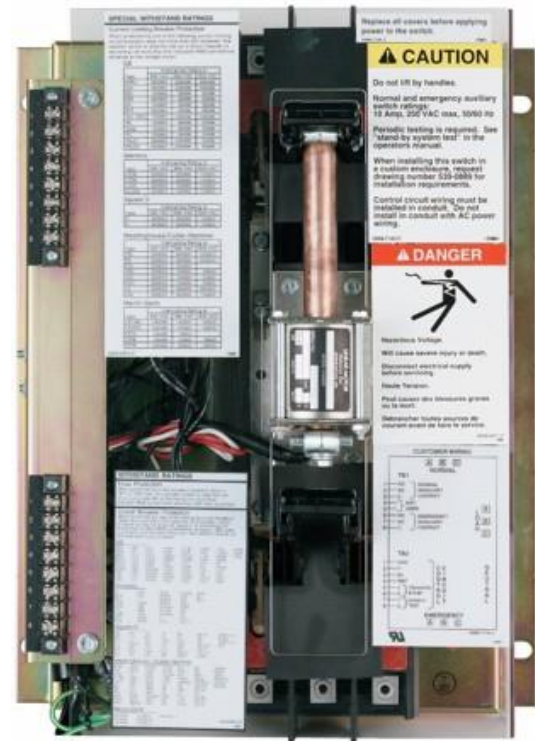
Complete product line – Cummins is a single source supplier with a wide range of equipment, accessories, and services to suit virtually any backup power application.

Warranty and service - Products are backed by a comprehensive warranty and a worldwide network of distributors with factory-trained service technicians.



TRANSFER SWITCH MECHANISM

- A bi-directional linear motor actuator powers the transfer switch. This design provides virtually friction-free, constant force, straight-line transfer switch action with no complex gears or linkages.
- Independent break-before-make action is used for both 3-pole and 4- pole/switched neutral switches. On 4-pole/switched neutral switches, this action prevents objectionable ground currents and nuisance ground fault tripping that can result from overlapping designs.
- A mechanical interlock prevents simultaneous closing of normal and emergency contacts.
- Electrical interlocks prevent simultaneous closing signals to normal and emergency contacts and interconnection of normal and emergency sources through the control wiring.
- High pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contacts are mechanically held in both normal and emergency positions for reliable, quiet operation.
- Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. A transparent protective cover allows visual inspection while inhibiting inadvertent contact with energized components.



- Switch mechanism, including contact assemblies, is UL 1008 certified to verify suitability for applications requiring high endurance switching capability for the life of the transfer switch. Withstand and closing ratings are validated using the same set of contacts, further demonstrating the robust nature of the design.

| SPECIFICATIONS | |
|--|---|
| Voltage rating | Up to 480 V AC, 50 or 60 Hz. |
| Arc interruption | Multiple leaf arc chutes provide dependable arc interruption. |
| Neutral bar | A full current-rated neutral bar with lugs is standard on enclosed 3-pole transfer switches. |
| Auxiliary contacts | Two isolated contacts (one for each source) indicating switch position are provided for customer use. Contacts are normally open, and close to indicate connection to the source. Wired to terminal block for easy access. Rated at 10 A Continuous and 250 V AC maximum. |
| Operating temperature | -13 °F (-25 °C) to 140 °F (60 °C) |
| Storage temperature | -40 °F (-40 °C) to 140 °F (60 °C) |
| Humidity | Up to 95 % relative, non-condensing |
| Altitude | Up to 10,000 ft (3,000 m) without derating |
| Surge withstand ratings | Control tested to withstand voltage surges per EN60947-6-1. |
| Total transfer time (source-to-source) | Will not exceed 6 cycles at 60 Hz with normal voltage applied to the actuator and without programmed transition enabled. |
| Manual operation* | Transfer switch mechanisms are equipped with means to manually transfer. All sources must be de-energized before manual operation is attempted. |
| Overcurrent disconnect device | Service entrance switches have a Square D UL 489 listed molded case circuit breaker. 1000 Amp switches also have a current transformer and integral residual ground fault protection |

*See Operator Manual for further details.

POWERCOMMAND® OTEC TRANSFER SWITCH SPEC SHEET - SERVICE ENTRANCE RATED

TRANSITION MODES

Open delayed transition – In this transition mode the time required for the transfer switch to transfer between sources is adjustable so that the load- generated voltages decay to a safe level before connecting to an energized source. Recommended by NEMA MG-1 to prevent nuisance tripping breakers and load damage. Adjustable 0.5 secs - 10 minutes, and default 0.5 seconds.

Open in-phase translation – Initiates open transition transfer when in-phase monitor senses both sources are in phase (voltage, phase, and frequency). Operates in a break-before-make sequence. Includes ability to enable programmed transition as a backup. The module waits indefinitely for synchronization unless the 'Return to programmed transition' function is active in which case after 2 minutes it performs a programmed delayed transfer.

UL 1008 WITHSTAND AND CLOSING RATINGS (WCR)

Withstand and Closing Ratings (WCR) are stated in symmetrical RMS amperes.

| Frame | Amperage | With specific MCCB (kA at 480V) | Square-D breaker part number | Cummins part number | Trip unit |
|--------------------|--------------------|---------------------------------|------------------------------|---------------------|---------------------------|
| A (3-pole only) | 40 | 35 | HGM36040 | 0320-2346-75 | Standard Thermal Magnetic |
| | 70 | | HGM36070 | 0320-2346-74 | |
| | 100 | | HGM36100 | A035E003 | |
| | 125 | | HGM36125 | 0320-2346-73 | |
| B | 150, 200, 225, 250 | 65 | LJM36250CU31X | A046F867 | Micrologic 3.3 (LI) |
| C | 300, 400, 600 | 65 | PJM36060U31C | 0320-2410-02 | Micrologic 3.0 (LI) |
| D | 800 | 65 | RJF36080U31A | A058R115 | Micrologic 3.0A (LI) |
| | 1000 | 65 | RJF36100U44A | 0320-2563-01 | Micrologic 6.0A (LSIG) |

TRANSFER SWITCH LUG CAPACITIES

| Frame | Amperage rating (A) | Emergency and load power cables | | Emergency and load neutral cables | | Service power cables | | Service neutral | |
|-------|---------------------|---------------------------------|---|-----------------------------------|----------------------|----------------------|---|------------------|------------------------|
| | | Cables per phase | Cable size | Number of Cables | Cable size | Cables per phase | Cable size | Number of Cables | Cable size |
| A | 40, 70, 100, 125 | 1 | #12 AWG-2/0 CU/AL Emerg #14 AWG-2/0 CU/AL Load | 2 | #14 AWG-2/0 CU/AL | 1 | #14 AWG-3/0 CU/AL | 1 | #14 AWG-2/0 CU/AL |
| B | 150, 200, 225, 250 | 1 | #6 AWG-400 MCM CU/AL | 2 | #6 AWG-400 MCM CU/AL | 1 | #2 OWG-600 MCM CU or #2 AWG-500 MCM AL | 1 | #6 AWG - 400 MCM CU/AL |
| C | 300, 400, 600 | 2 | 250-500 MCM CU/AL | 4 | 250-500 MCM CU/AL | 3 | 3/0-500 MCM CU/AL | 2 | 250-500 MCM CU/AL |
| D | 800, 1000 | 4 | 250-500 MCM CU/AL | 8 | 250-500 MCM CU/AL | 4 | #2 AWG-600 MCM CU/AL | 4 | 250-500 MCM CU/AL |

*All lugs 90°C rated and accept copper or aluminum wire unless indicated otherwise.

Refer to the latest NFPA 70 Article 310 - Conductors for general wiring for the ampacity calculations.

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ENCLOSURE

The transfer switch and control are wall-mounted in a key-locking enclosure. Wire bend space complies with 2017 NEC.

OTEC SERVICE ENTRANCE DIMENSIONS – TRANSFER SWITCH IN UL TYPE 1 ENCLOSURE

| Frame | Amperage rating (A) | Height | | Width | | Depth | | Weight | |
|-------|--------------------------|--------|------|-------|-----|-------|-------|--------|-----|
| | | in | mm | in | mm | in | mm | lb | kg |
| A | 40, 70, 100, 125, 3-pole | 45.8 | 1164 | 32 | 814 | 16.3 | 413 | 337 | 153 |
| B | 150, 200, 225, 250 | 73.6 | 1869 | 32.3 | 820 | 19.7 | 499 | 523 | 237 |
| C | 300, 400, 600 | 74.5 | 1892 | 34.4 | 873 | 20.1 | 510.4 | 562 | 255 |
| D | 800, 1000 | 90 | 2286 | 39 | 991 | 26.3 | 667 | 825 | 374 |

OTEC SERVICE ENTRANCE DIMENSIONS – TRANSFER SWITCH IN UL TYPE 3R ENCLOSURES

| Frame | Amperage rating (A) | Height | | Width | | Depth | | Weight | |
|-------|--------------------------|--------|------|-------|-----|-------|-------|--------|-----|
| | | in | mm | in | mm | in | mm | lb | kg |
| A | 40, 70, 100, 125, 3-pole | 45.8 | 1164 | 32 | 814 | 16.3 | 413 | 364 | 165 |
| B | 150, 200, 225, 250 | 73.6 | 1869 | 32.3 | 820 | 19.7 | 499 | 611 | 277 |
| C | 300, 400, 600 | 74.5 | 1892 | 34.4 | 873 | 20.1 | 510.4 | 650 | 295 |
| D | 800, 1000 | 90 | 2286 | 39 | 991 | 26.3 | 667 | 1080 | 490 |

OTEC SERVICE ENTRANCEDIMENSIONS – TRANSFER SWITCH IN UL TYPE 12 ENCLOSURE

| Frame | Amperage rating (A) | Height | | Width | | Depth | | Weight | |
|-------|--------------------------|--------|------|-------|-----|-------|-------|--------|-----|
| | | in | mm | in | mm | in | mm | lb | kg |
| A | 40, 70, 100, 125, 3-pole | 45.8 | 1164 | 32 | 814 | 16.3 | 413 | 346 | 157 |
| B | 150, 200, 225, 250 | 73.6 | 1869 | 32.3 | 820 | 19.7 | 499 | 593 | 269 |
| C | 300, 400, 600 | 74.5 | 1892 | 34.4 | 873 | 20.1 | 510.4 | 633 | 287 |
| D | 800, 1000 | 90 | 2286 | 39 | 991 | 26.3 | 667 | 1063 | 482 |

ENCLOSURE ACCESS FOR CABLE INSTALLATION AND MAINTENANCE

All frames allow for top, side, and bottom cable entry. NEC Requires Minimum 36" Front Access. Additional front clearance is needed to remove the mechanism. Refer to the outline drawing.

OTEC DRAWING PART NUMBERS

| Frame | Amperage rating (A) | Outline Drawing Type 1, 3R, or 12 |
|-------|------------------------------|--------------------------------------|
| A | 40, 70, 100, 125 (3-pole) | A074K704 |
| B | 150, 200, 225, 250 | A074K715 |
| C | 300, 400, 600 | A074K729 |
| D | 800, 1000 | A074K743 |

WIRING DIAGRAM PART NUMBERS

| Frame | Amperage rating (A) | Wiring Diagram | |
|-------|------------------------------|------------------------------------|-----------------|
| | | Utility to Genset (120 – 480 V) | Interconnection |
| A | 40, 70, 100, 125 (3-pole) | A074P733 | A065H780 |
| B | 150, 200, 225, 250 | A074P729 | |
| C | 300, 400, 600 | | |
| D | 800, 1000 | | |

SUBMITTAL DETAIL

The Product codes below have been shortened for brevity. In long form, each four-letter product code will be preceded with an OTECSEX, where X = A, B, C, D. For example, OTECSEB_A045-7

Model

- 40, 70, 100, 125 A, (3-pole)
- 150, 200, 225, 250 A
- 300, 400, 600 A
- 800, 1000 A

Poles

- A028 Poles – 3 (solid neutral)
- A029 Poles – 4 (switched neutral) (not available for 40-125 A)

Application

- A035 Utility-to-genset

Frequency

- A044 60 Hz
- A045 50 Hz

Phase

- A041 single phase, 2-wire or 3-wire
- A042 three phase, 3-wire or 4-wire

Voltage ratings

- R020 120V
- R038 190V
- R021 208V
- R022 220V
- R023 240V
- R024 380V
- R025 416V
- R035 440 V
- R026 480 V

Enclosure

- B001 Type 1: Indoor use, provides some protection against dirt (similar to IEC type IP30)
- B002 Type 3R: Intended for outdoor use, provides some protection from dirt, rain and snow (similar to IEC type IP34)
- B010 Type 12: Indoor use, some protection from dust (similar to IEC type IP61).

Standards

- S043 Listing-UL 1008 certification
- A080 IBC seismic certification

Control voltage

- M033 12V, Genset starting voltage
- M034 24V, Genset starting voltage

Control options

- M032 Elevator signal relay
- M081 MODBUS RS485 Communication module
- M079 integral control power supply provides DC voltage to control from source power.
- M086 Ethernet communication module.
- L216 1X auxiliary relay I/O module
- L217 2X auxiliary relay I/O module

Auxiliary relays

Relays are UL Listed, and factory installed. All relays provide (2) normally closed isolated contacts rated 10A @ 600 VAC. Relay terminals accept (1) 18 gauge to (2) 12-gauge wires per terminal.

- L101 24 VDC coil - installed, not wired (for customer use).
- L102 24 VDC coil - emergency position – relay energized when switch is in source 2 (emergency) position.
- L103 24 VDC coil - normal position - relay energized when switch is in source 1 (normal) position
- L201 12 VDC coil installed, not wired (for customer use)
- L202 12 VDC coil - emergency position – relay energized when switch is in source 2 (emergency) position
- L203 12 VDC coil - normal position - relay energized when switch is in source 1 (normal) position

Optional features

- M080 Anti-condensation heater for outdoor enclosures.
- L214 Load shed from standby source
- M085 Load power monitoring

Accessories

- AC-170 Accessories specification sheet

Miscellaneous

- M003 Terminal block - 30 points (not wired)

Warranty

- G004 2-years, comprehensive
- G007 5-years, comprehensive
- G014 3-years, comprehensive
- G015 10-years, comprehensive





Shipping

- A051 Packing - export box (800 – 1000 A)
- Request for quotation (RFQ)
- Z555 Nonconfigurable spec [ETO]

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POWERCOMMAND® OTEC TRANSFER SWITCH SPEC SHEET - SERVICE ENTRANCE RATED

| CODES AND STANDARDS | | | |
|---|---|-------------|---|
|  | All switches are UL 1008 Listed and labeled suitable only for use as service equipment – normal source only, with UL 50E Type Rated cabinets and UL Listed CU-AL terminals. | NEC® | Suitable for use in emergency, legally required and Standby and Critical Operations Power Systems (COPS) applications per NEC 700, 701, 702 and 708. |
|  | All switches comply with NEMA ICS 10. | ISO® | All switches are designed and manufactured in facilities certified to ISO 9001. |
|  | All switches comply with NFPA 70, 99 and 110 (Level 1). | IBC® | All switches are certified to IBC 2021. |
|  | All switches comply with IEEE 446 Recommended Practice for Emergency and Standby Power Systems. | EMC | Display controllers meet the following Electromagnetic Compatibility (EMC) standards: EN 61000-6-2 Generic Immunity Standard for the Industrial Environment. EN 61000-6-4 Generic Emission Standard for the Industrial Environment. |

For more information, please contact your local Cummins distributor or visit cummins.com.

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