

GTEC Transfer switch Open transition



> **Specification sheet**
40 - 2000 amp

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Description

GTEC transfer switches combine reliability and flexibility in a small, economical package for transferring loads between a utility and a generator set, or between two generators.

The microprocessor control monitors utility and emergency standby generator power. When utility power fails or is unsatisfactory, the control starts the generator, then transfers the load from the utility to the generator. When stable utility power returns, the switch automatically transfers the load back to the utility.

For genset-to-genset applications, the genset that is connected to the utility side of the control is the lead genset. If the lead genset goes down or is taken offline, the transfer switch starts the second genset and transfers the load. The control can be programmed to alternate between the two gensets at a set interval up to 300 hours.

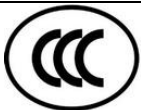
The fully integrated controller is designed for practical functionality, with LED indicators and digital push-buttons for ease of operator use.



All switches meet IEC 60947-6-1 AC31B.



All switches bear the CE mark.



40–1250 amp switches are CCC certified by the China Quality Certification Centre.



This transfer switch is designed and manufactured in facilities certified to ISO9001.

Features

Microprocessor control - Easy-to-use, standard control. LEDs displays transfer switch status; pushbuttons allow operator to activate control test, exercise timing and transfer mode.

Advanced transfer switch mechanism – True transfer switch mechanism with break-before-make action.

Manual operation – Standard removable handle can be used to manually operate the switch after the power source has been properly disconnected.

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

Main contacts -Silver alloy contacts with multi-leaf arc chutes are rated for 100% load interruption. They require no routine contact maintenance and provide 100% continuous current ratings.

Easy to service – Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; no tool is required.

Complete product line - Cummins Power Generation offers 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 powerful, economical AC solenoid operates GTEC transfer switches.
- Independent break-before-make action is used for 2-pole, 3-pole and 4-pole switches. On 4-pole/switched neutral switches, this action prevents the 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.

Specifications

Voltage rating	Up to 480VAC, 50 or 60 Hz
Arc interruption	Multiple leaf arc chutes provide dependable arc interruption.
Neutral bar	A full current-rated neutral bar 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 5 amps continuous at 100VAC or 2.5 amps continuous at 200VAC.
Operating temperature	-30° C (-22° F) to 60° C (140° F)
Storage temperature	-40° C (-40° F) to 60° C (140° F)
Humidity	Up to 95% at 20° C
Altitude	Up to 2,000 m (6,561 ft) without derating
Total transfer time (source-to-source)	Will not exceed 100 msec with normal voltage applied to the actuator and without programmed transition enabled.
Manual operating handle	Transfer switches are equipped with a removable operating handle which allows operation during servicing to facilitate troubleshooting with sources of power disconnected.

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Microprocessor control

- Simple, easy-to-use control provides transfer switch information and operator controls
- LED lamps for source availability and source connected indication, exercise mode, and test mode. LED status lamps also provided for control set-up and configuration
- Pushbutton controls for initiating test, overriding time delays and setting exercise time
- Field-configurable for open or programmed transition
- Integral exerciser clock
- Control is prototype-tested to withstand voltage surges per EN 60947-6-1
- Gold-flashed generator start contacts



Control functions

Under-voltage sensing: All phases on the normal source, and single phase on generator source.

Normal source pickup: adjustable 80-95%

Dropout: adjustable 70-90% of nominal voltage

Generator source pickup: 90%

Dropout: 75% of nominal voltage.

Over-voltage sensing: All phases on the normal source.

Source pickup: 120%

Dropout: 125%

Under-frequency sensing: Default setting is OFF.

Generator source pickup: 90% of nominal frequency

Dropout: 85% of nominal frequency

Normal source pickup: 80%

Dropout: 70%

Over-frequency sensing: Default setting is OFF

Normal source pickup: 130%

Dropout: 140%.

Genset-to-genset sensing: Same functions as above, for lead and secondary generators.

Exercise mode: The control exerciser clock can be set to operate on a 7, 14, 21 or 28-day cycle with a fixed exercise period duration of 20 minutes. A convenient 12-hour offset feature offsets the exercise time by 12 hours, without having to reprogram the timer. The control can be programmed to exercise the generator with or without load.

Test mode: When manually or remotely activated from the control panel, the control will start the generator and run until stopped. Can be configured to test with or without load.

Transition modes

Open transition/programmed: Controls the time required for the device to switch from source to source, 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 0-10 seconds, default 0 seconds.

Open transition/in-phase: Initiates open transition transfer when in-phase monitor senses both sources are in phase. Operates in a break-before-make sequence. Includes ability to enable programmed transition as a back-up. If sources are not in phase within 120 seconds, the system will transfer using programmed transition.

Time-delay functions

Engine start: Prevents nuisance genset starts due to momentary power system variation or loss.

Adjustable 0-10 seconds, default 3 seconds.

Transfer normal to emergency: Allows genset to stabilize before application of load. Prevents power interruption if normal source variation or loss is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays transfer of load from lead to secondary generator.

Adjustable 0-300 seconds, default 5 seconds.

Re-transfer emergency to normal: Allows the utility to stabilize before re-transfer of load. Prevents needless power interruption if return of normal source is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays re-transfer of load from secondary back to lead generator.

Adjustable 0-30 minutes, default 10 minutes.

Engine stop: Maintains availability of the genset for immediate reconnection if the normal source fails shortly after transfer. Allows gradual genset cool down by running unloaded.

Adjustable 0-30 minutes, default 10 minutes.

Elevator signal relay: Requires optional elevator signal relay (M032). Delays transfer for specified interval to prevent a power interruption during elevator operation.

Options

Elevator signal relay: Provides relay output contacts for sending a load-disconnect warning signal to the elevator control. Transfer/re-transfer delay time is selectable for 0, 1, 2, 3, 5, 30, 120 or 300 seconds. (M032).

Programmable exerciser clock: Provides a fully-programmable 7-day clock to provide greater flexibility in scheduling exercise periods than standard integral exerciser. Peaking function feature allows for generator operation during periods of high utility rates. (J030)

Manual restore: Provides a key switch on the front door to allow the operator to control when the switch transfers to the available normal source.

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Electrical performance

The transfer switches listed below must be protected by fuses. The following WCR ratings are available when protecting the transfer switch with a fuse. Short circuit ratings are stated in symmetrical RMS amperes.

Transfer switch ampere	Overload current (make-break test)	Endurance cycles at current (operational performance capability)	Operating frequency	Fuse protection	
				WCR at 480V max with current limiting fuse	Max fuse, size and type
40, 63	95 amps	4500 at 0 amps 1500 at 63 amps	1 per minute	26,000 amps	RT16NT-00 63 amp
100, 125	188 amps	5000 at 0 amps 1000 at 125 amps	1 per minute	26,000 amps	RT16NT-00 125 amp
160, 200, 225, 250	375 amps	5000 at 0 amps 1000 at 125 amps	1 per minute	38,000 amps	RT16NT-2 250 amp
350, 400, 500	750 amps	2500 at 0 amps 500 at 500 amps	1 per minute	50,000 amps	RT16NT-3 500 amp
630, 800	1200 amps	2500 at 0 amps 500 at 800 amps	1 per minute	55,000 amps	RT16NT-4 800 amp
1000, 1250	1875 amps	2500 at 0 amps 500 at 1250 amps	1 per 3 minutes	65,000 amps	RT16NT-4 1250 amp
1600, 2000	3000 amps	1500 at 0 amps 500 at 2000 amps	1 per 6 minutes	120,000 amps	KRP-C 3000 amp

Enclosures

The transfer switch and control are mounted in a key-locking enclosure. Enclosures meet IEC 60947-6-1 standard. 40-500 amp switches are front-connected. 630-2000 amps are rear-connected.

Standard enclosure is gray. Green is available as an option (P152).

Dimensions - IP32

Amp rating	Height		Width		Door closed		Door open		Weight 3-pole type		Outline drawing
	in	mm	in	mm	in	mm	in	mm	lb	kg	
40, 63	31.4	800	23.6	600	8.8	226	31.4	800	101.4	46	0500-6004
100, 125	31.4	800	23.6	600	8.8	226	31.4	800	105.8	48	0500-6004
160, 200, 225, 250	39.3	1000	31.4	800	8.8	226	39.3	1000	125.6	57	0500-6005
350, 400, 500	39.3	1000	31.4	800	8.8	226	39.3	1000	143.3	65	0500-6005
630, 800	53.9	1370	29.2	742	24.8	631	53.0	1348	385.8	175	0500-6006
1000, 1250	53.9	1370	29.2	742	24.8	631	53.0	1348	405.6	184	0500-6006
1600, 2000	78.7	2000	39.4	1000	44.3	1126	83.7	2126	888.9	400	A0281839

Dimensions - IP54

Amp rating	Height		Width		Door closed		Door open		Weight		Outline drawing
	in	mm	in	mm	in	mm	in	mm	lb	kg	
40, 63	34.0	864	23.3	598	11.6	296	31.4	800	110.2	50	0500-4559
100, 125	34.0	864	23.3	598	11.6	296	31.4	800	114.6	52	0500-4559
160, 200, 225, 250	41.8	1064	31.6	804	11.6	296	39.3	1000	143.3	65	0500-4560
350, 400, 500	41.8	1064	31.6	804	11.6	296	39.3	1000	160.9	73	0500-4560
630, 800	53.9	1370	29.5	750	26.6	676	53.0	1348	414.4	188	0500-4561
1000, 1250	53.9	1370	29.5	750	26.6	676	53.0	1348	434.3	197	0500-4561
1600, 2000	78.7	2000	39.4	1000	44.3	1126	83.7	2126	892.9	405	A026M050

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GTEC

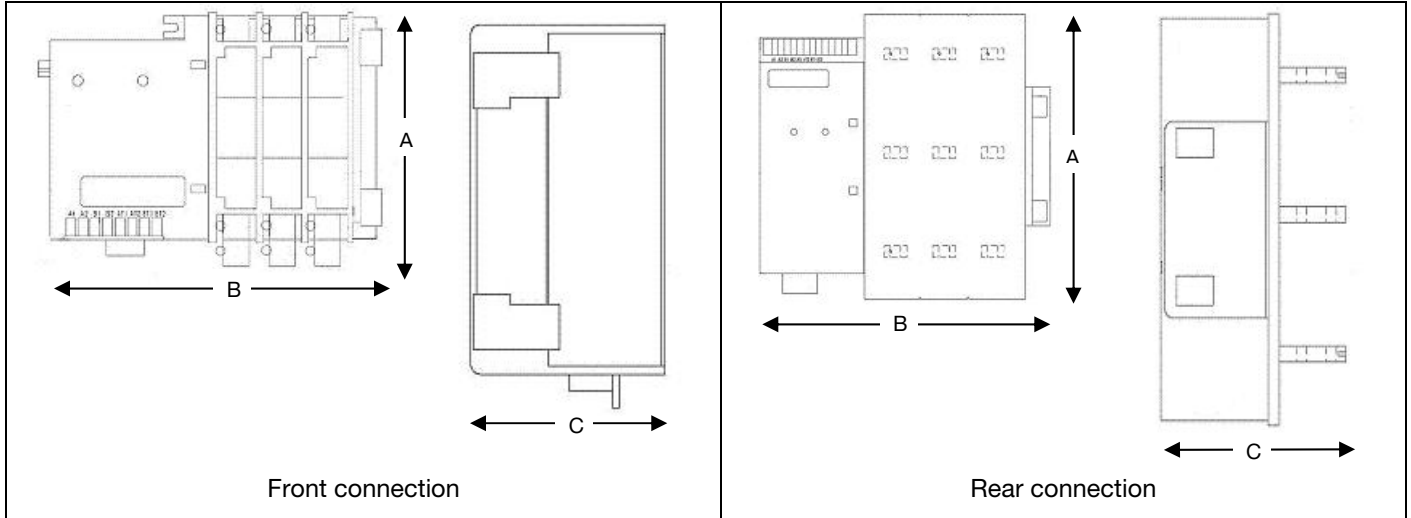
Open construction

40 to 1250 amps

Description

The open construction GTEC transfer switch combines reliability and flexibility for a variety of load transfer applications. The open construction switch has the same rugged switch mechanism, din rails, relays, and control as the standard GTEC.

Dimensions



Open construction

2-pole Transfer switch ampere	Connection	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)	Outline drawing
40, 63	front	193	192	112	4.0	306-5010
100, 125	front	193	209	112	4.5	306-5011
160, 200, 225, 250	front	194	219	112	6.0	306-5012
350, 400, 500	front	290	280	132	11.0	306-5013
630, 800	rear	390	340	210	25.0	306-5014
1000, 1250	rear	390	370	250	31.0	306-5015

3-pole Transfer switch ampere	Connection	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)	Outline drawing
40, 63	front	193	214	112	5.0	306-4992
100, 125	front	193	239	112	6.5	306-4990
160, 200, 225, 250	front	194	254	112	8.0	306-4968
350, 400, 500	front	290	340	132	14.0	306-4970
630, 800	rear	390	405	210	33.0	306-4983
1000, 1250	rear	390	450	250	40.0	306-4985

4-pole Transfer switch ampere	Connection	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)	Outline drawing
40, 63	front	193	235	112	6.5	306-4993
100, 125	front	193	269	112	8.0	306-4991
160, 200, 225, 250	front	194	269	112	10.0	306-4969
350, 400, 500	front	290	400	132	18.0	306-4971
630, 800	rear	390	470	210	42.0	306-4984
1000, 1250	rear	390	530	250	51.0	306-4986

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Submittal detail – options

Amperage ratings

- 40
- 63
- 100
- 125
- 160
- 200
- 225
- 250
- 350
- 400
- 500
- 630
- 800
- 1000
- 1250
- 1600
- 2000

Voltage ratings

- R971 110
- R972 115
- R973 120
- R974 127
- R975 139
- R976 220
- R977 230
- R978 240
- R979 255
- R980 277

Pole Configuration

- A027 Poles - 2 (solid neutral)
- A028 Poles - 3 (solid neutral)
- A029 Poles - 4 (switched neutral)

Frequency

- A044 60 Hertz
- A045 50 Hertz

Application

- A035 Utility-to-genset
- A037 Genset-to-genset

System Options

- A041 Single phase, 2-wire or 3-wire
- A042 Three phase, 3-wire or 4-wire

Enclosure

- B004 Open construction: no enclosure - includes automatic transfer switch and controls (1600—2000 amp open construction not available)
- B901 IP32 general purpose indoor
- B014 IP54 general purpose outdoor
- P152 Optional paint colour: Onan green
- M048 Perspex protective shield

Control voltage

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

Control options

- J030 Add-on programmable exercise clock
- M032 Elevator signal relay
- S006 Manual restore switch

Battery chargers

- K001 2 amps, 12/24 volts

Auxiliary relays

Relays are factory installed. All relays provide two sets of form C (DPDT) contacts rated 5 amps at 250VAC. Relay terminals accept one 0.75 mm to two 4 mm wires per terminal.

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

Warranty

- Warranty: 12 months from commissioning to a maximum 18 months after date of sale.

Accessories

- AC-176 Specification sheet

Cummins Power Generation

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