

GTEC Transfer switch Open transition



> Specification sheet

40 - 2000 amp

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Power Generation

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 generator set that is connected to the utility side of the control is the lead genset. If the lead generator set goes down or is taken offline, the transfer switch starts the second generator set and transfers the load. The control can be programmed to alternate between the two generator set 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.



40-1250 amp switches are third-party certified as meeting IEC 60947-6-1 AC31A.



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. LED displays indicate transfer switch status. Pushbuttons allow operator to activate test, exercise timing and transfer mode.

Programmed transition: Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period. Recommended for inductive loads to prevent nuisance tripping.

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 completely disconnected.

Multi-voltage rating: The multiple selectable voltage setting is field adjustable, and allows GTEC to be applied to voltage ranging from 110V to 277V without using external transformers.

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. Protective covers for lugs are available.

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 load-generated voltages decay to a safe level before connecting to an energized source. Recommended method of dealing with significantly inductive loads to prevent nuisance tripping. 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 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 (M032): 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.

Programmable exerciser clock (J030): 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.

Manual restore (S006): 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 either circuit breakers or fuses. The following WCR ratings are available when protecting the transfer switch with a circuit breaker or fuse. Short circuit ratings are stated in symmetrical RMS amperes.

Fuse protection

Transfer switch ampere	Overload current (make-break test)	Endurance cycles at current (operational performance capability)	WCR at 480V max with current limiting fuse	Max fuse, size and type
40, 63	95 amps	6000 at 63 amps	26,000 amps	RT16NT-00 63 amp IEC NH Fuse type
100, 125	188 amps	6000 at 125 amps	26,000 amps	RT16NT-00 125 amp IEC NH Fuse type
160, 200, 225, 250	375 amps	6000 at 125 amps	38,000 amps	RT16NT-2 250 amp IEC NH Fuse type
350, 400, 500	750 amps	1000 at 0 amps 2000 at 500 amps	50,000 amps	RT16NT-3 500 amp IEC NH Fuse type
630, 800	1200 amps	1000 at 0 amps 2000 at 800 amps	55,000 amps	RT16NT-4 800 amp IEC NH Fuse type
1000, 1250	1875 amps	1500 at 0 amps 1500 at 1250 amps	65,000 amps	RT16NT-4 1250 amp IEC NH Fuse type
1600, 2000	3000 amps	1500 at 0 amps 500 at 2000 amps	120,000 amps	KRP-C 3000 amp Class L Fuse type

Circuit breaker protection

Transfer switch ampere	Max breaker rating	Specified Circuit breaker protection manufacturer, model and type
40, 63	63A	Schneider: NSX160FTM, EZD100, NSD100F, NSD100K Siemens: 3VU, 3RV1, 3VT1 ABB: Isomax S1, S2X80, Sim100
100, 125	125A	Schneider: NSX160FTM, NSD160K Siemens: 3VL, 3VT1 ABB: Isomax S2, Isomax S3, S3X, Sim250
160, 200, 225, 250	250A	Schneider: NSX250NTM, NSD250K Siemens: 3VL, 3VT2 ABB: Isomax S3, S4X, Sim250
350, 400, 500	500A	Schneider: NSX630NTM, NSD630K Siemens: 3VL, 3VT3 ABB: Isomax S4, S6X, Sim500
630, 800	800A	Schneider: MT08, MT10, NW08 Siemens: 3VL, 3WT, 3VT4 ABB: Isomax S6, E1B, E1N, E1S
1000, 1250	1250A	Schneider: MT12, NW16 Siemens: 3VL, 3WT, 3VT5 ABB: Isomax S7, E2B, E2L
1600, 2000	2000A	Schneider: MT20, MT25, NW20, NW25 Siemens: 3WT ABB: E1N, E2N, E2S, E3S

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Enclosures

The transfer switch and control are mounted in a key-operated locked enclosure. Enclosures meet IEC 60947-6-1 standard. 40-500 amp switches are front-connected. 630-2000 amps are rear-connected. Standard enclosure is grey. Green is available as an option (P152).

Cable tie bars are available to relieve stress on lugs for switches smaller than 500 amps.

Dimensions: IP32

Amp rating	Height		Width		Door closed		Door open		Weight		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	23.5	598	11.6	296	31.0	788	110	50	0500-4559
100, 125	34.0	864	23.5	598	11.6	296	31.0	788	110	52	0500-4559
160, 200, 225, 250	41.9	1064	31.6	804	11.6	296	39.0	991.8	143.3	65	0500-4560
350, 400, 500	41.9	1064	31.6	804	11.6	296	39.0	991.8	160.9	73	0500-4560
630, 800	53.9	1370	29.5	750	26.6	676	51.9	1319		188	0500-4561
1000, 1250	53.9	1370	29.5	750	26.6	676	51.9	1319	414.5	188	0500-4561
1600, 2000	78.9	2004	39.2	996	45.3	1150	83.7	2126	892.9	405	A026M050

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Submittal detail: options

Current ratings

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

Voltage ratings

- R060 110 to 139
- R061 220 to 240
- R062 255 to 277
- R063 110 to 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 Protective shield

Control voltage

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

Control options

- J030 Add-on programmable exercisor clock
- M032 Relay signal module
- 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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