rehlko

Automatic Transfer Switches

Your job is *complex*.

We make it easy.

This isn't your typical power system, and it isn't your typical automatic transfer switch (ATS). Because at the heart of your integrated power system is a quality Rehlko automatic transfer switch. A transfer switch that's designed by Rehlko, built by Rehlko, and chosen specifically for your power requirements.

But there's more. Behind that power system is a team of dedicated Rehlko engineers that focuses on every element—generator, transfer switch, switchgear, and controller—to be sure the system you get is the system you need. You'll know that your project is supported by an expert team, customized to your exact needs, brought in on budget and on time.

From spec to startup and service, we do it all.

The ATS *lineup*

Peace of mind starts here.

Bridging the gap between loss of utility and standby power is no small task. Rehlko ATS are designed to meet that challenge, distributing power to feed the critical loads of your facility.

Every transfer switch needs a controller to ensure transfer of power from utility to generator and back again. Rehlko Decision-Maker® MPAC® controllers offer clear choices in matching function to application.

Standard ATS

Standard Features

Multiple Applications

Find the perfect option. Rehlko automatic transfer switches are available in standard, bypass-isolation, and service-entrance configurations with open, closed, and programmed transition operating modes, from 30 to 4000 amps.

Seamless System Integration

Everything works together. Rehlko transfer switches are designed to interface perfectly with Rehlko generators and paralleling switchgear.

Advanced Communications

Every transfer switch comes fully loaded with the technology to do the job. Ethernet and Modbus communications capabilities are available.

Design Support

Transfer switches are UL-listed and have CSA and IBC certifications available.

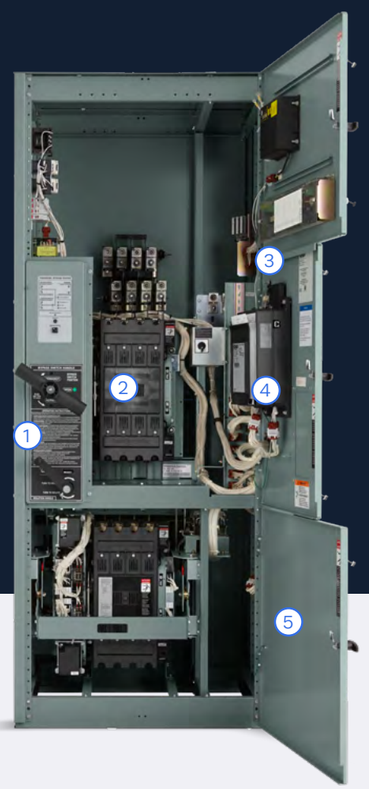
Automatic Transfer *Switches*

They protect your power. And your business.

1. **Bypass Operation**
   Eliminates interruption to the loads during maintenance.
2. **Heavy-Duty Contactor**
   Choose from time based, specific breaker, short time or current-limiting fuse-rated mechanisms
3. **Available Accessories**
   Anticondensation heater, voltage-surge suppressor, line-to-neutral voltage monitoring, seismic certification, and more.
4. **Decision-Maker® Controller**
   Provides a full array of features including communications, I/O, load management, and other advanced functionality.
5. **Certified Enclosures**
   Meet NEMA Type 1, 3R, 12, 4, and 4X enclosure standards

Standard ATS

Service-Entrance ATS

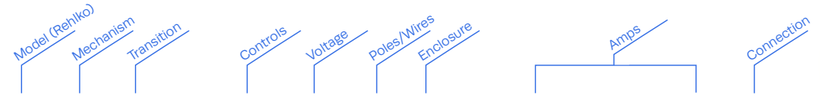


Bypass-Isolation ATS

Custom-*configurations*

The chart tells the story.

You can configure switches by choosing the exact components you need. This streamlined process ensures Rehlko delivers the right switch for your application—fast. Each letter and number represents a specific ATS element. Here's an example.



KBP-DMVA-0150S

Rehlko Automatic Transfer Switch (K)

- Bypass-isolation mechanism (B)
- Programmed transition (P)
- Decision-Maker® MPAC® 1500 controller (D)
- 480 V, 60 Hz (M)
- 4-pole, 4-wire with switched neutral (V)
- NEMA 1 enclosure (A)
- Rated at 150 amps (0150)
- Standard connection (S)

Mechanism	Transition	Controls	Voltage	Poles/Wires
S – Standard (Specific Breaker)	S – Standard	A – MPAC 1200	C – 208 V / 60 Hz	T – 3-Pole / 4-Wire, Solid Neutral
C – Standard (Time Based)	P – Programmed	D – MPAC 1500	D – 220 V / 50 Hz	N – 2-Pole / 3-Wire, Solid Neutral
B – Mechanically Operated Bypass-Isolation	C – Closed	B – MPAC 1200 Nonautomatic	F – 240 V / 60 Hz	V – 4-Pole / 4-Wire, Switched Neutral
A – Electrically Operated Bypass-Isolation		F – MPAC 1500 Nonautomatic	G – 380 V / 50 Hz	W – 4-Pole / 4-Wire, Overlapping Neutral
U – Service Entrance			H – 400 V / 50 Hz	
			J – 416 V / 50 Hz	
			K – 440 V / 60 Hz	
			M – 480 V / 60 Hz	
			N – 600 V / 60 Hz	
			P – 380 V / 60 Hz	
			R – 220 V / 60 Hz	
			S – 400 V / 60 Hz	

Enclosure	Amps	Connection	Utility Disc. (KUS and KUP)	Fault Level (KUS and KUP)
A – NEMA 1	30–4000	S – Standard	U – 80% TM	S – Standard
B – NEMA 12		F – Front	V – 100% TM	H – High Fault
C – NEMA 3R			W – 80% ET	
D – NEMA 4			X – 100% ET	
F – NEMA 4X				
G – Open				

TM = Thermal-Magnetic Trip Unit ET = Electronic Trip Unit

There are thousands of ways to custom configure an Automatic Transfer Switch. Here's how.

STANDARD ATS has a single mechanism that transfers the load from one power source to another power source.

Models	Mechanisms	Transitions	Controllers	Voltages	Poles/Wires	Enclosures	Amps	Connections
K	S	S	A, B	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F, G	30, 70, 104, 150	S
K	S	S	A, B	C, D, F, G, H, J, K, M, P, R, S	N, T, V	A, B, C, D, F, G	200, 230	S
K	S	S	A, B	N	N, T, V, W	A, B, C, D, F, G	230	S
K	S	S	A, B	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V, W	A, B, C, D, F, G	260, 400, 600, 800	S
K	S	S	A, B	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, B, C, D, F, G	1000, 1200	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F, G	30, 70, 104,150	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, P, R, S	N, T, V	A, B, C, D, F, G	200, 230	S
K	C	S	A, B, D, F	N	N, T, V, W	A, B, C, D, F, G	230	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V, W	A, B, C, D, F, G	260, 400, 600, 800	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, B, C, D, F, G	1000, 1200	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, C, G	1600, 2000	F
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, C, G	1600, 2000, 2600, 3000	S
K	C	S	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, C	4000	S
K	C	P	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F, G	150, 225, 260, 400, 600, 800	S
K	C	P	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, B, C, D, F, G	1000, 1200	S
K	C	P	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C, G	1600, 2000	F
K	C	P	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C, G	1600, 2000, 2600, 3000	S
K	C	P	A, B, D, F	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	4000	S
K	C	C	A, D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F	150, 260, 400, 600, 800	S
K	C	C	A, D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, B, C, D, F	1000, 1200	S
K	C	C	A, D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	1600, 2000	F
K	C	C	A, D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	1600, 2000, 2600, 3000, 4000	S

BYPASS–ISOLATION ATS bundles an automatic and a manual transfer switch into a single unit

Models	Mechanisms	Transitions	Controllers	Voltages	Poles/Wires	Enclosures	Amps	Connections
K	B	S	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V, W	A, C	150, 225, 260, 400, 600	S
K	B	S	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, C	800, 1000, 1200	F
K	B	S	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V, W	A, C	800, 1000, 1200, 1600, 2000, 2600, 3000, 4000	S
K	B	P, C	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V,	A, C	150, 225, 260, 400, 600	S
K	B	P, C	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	800, 1000, 1200	F
K	B	P, C	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	800, 1000, 1200, 1600, 2000, 2600, 3000, 4000	S
K	A	S	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V, W	A, C	150, 225, 260, 400, 600	S
K	A	P	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V,	A, C	150, 225, 260, 400, 600	S

SERVICE–ENTRANCE ATS serves as both ATS and utility disconnect; includes service disconnect circuit breakers and contactors are used as the switching mechanism.

MODEL KUS with MPAC Logic (GMKUS)										
K	Mechanisms	Transitions	Logic	Voltages	Poles/ Wires	Enclosures	Amps	Connections	Utility Disconnects	Fault Level
K	U	S	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F	70, 100, 150	S	U, V, W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, P, R, S	N, T, V	A, B, C, D, F	200	S	U, V, W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, P, R, S	N, T, V	A, B, C, D, F	225	S	U, V, W, X	S, H
K	U	S	D	N	N, T, V	A, B, C, D, F	225	S	U, V, W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F	250	S	U, V, W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, N, P, R, S	N, T, V	A, B, C, D, F	400	S	W, X	S
K	U	S	D	N	N, T, V	A, B, C, D, F	400	S	W, X	H
K	U	S	D	C, D, F, G, H, J, K, M, P, R, S	N, T, V	A, B, C, D, F	600, 800	S	W, X	S
K	U	S	D	N	N, T, V	A, B, C, D, F	600, 800	S	W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, P, R, S	T, V	A, B, C, D, F	1000, 1200	S	W,X	S
K	U	S	D	N	T, V	A, B, C, D, F	1000, 1200	S	W, X	S, H
K	U	S	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	1600, 2000	S	W, X	S
K	U	S	D	C, D, F, G, H, J, K, M, N, P, R, S	T, V	A, C	2500, 3000, 4000	S	X	S

MODEL KUP with MPAC Logic (GMKUP)										
K	Mechanisms	Transitions	Logic	Voltages	Poles/ Wires	Enclosures	Amps	Connections	Utility Disconnects	Fault Level
K	U	P	D	C, D, F, G, H, J,K, M, N, P, R, S	N, T, V	A, B, C, D, F	150, 200, 225, 250	S	U, V, W, X	S, H
K	U	P	D	C, D, F, G, H, J,K, M, N, P, R, S	N, T, V	A, B, C, D, F	400	S	W, X	S
K	U	P	D	N	N, T, V	A, B, C, D, F	400	S	W, X	H
K	U	P	D	C, D, F, G, H, J,K, M, P, R, S	N, T, V	A, B, C, D, F	600, 800	S	W, X	S
K	U	P	D	N	N, T, V	A, B, C, D, F	600, 800	S	W, X	S, H
K	U	P	D	C, D, F, G, H, J,K, M, P, R, S	T, V	A, B, C, D, F	1000, 1200	S	W, X	S
K	U	P	D	N	T, V	A, B, C, D, F	1000, 1200	S	W, X	S, H
K	U	P	D	C, D, F, G, H, J,K, M, N, P, R, S	T, V	A, C	1600, 2000	S	W, X	S
K	U	P	D	C, D, F, G, H, J,K, M, N, P, R, S	T, V	A, C	2500, 3000, 4000	S	X	S

Mechanism *types*

Options for every application.

Standard Transfer Switch

A standard transfer switch has a single mechanism that transfers the load from one power source to another power source. It's the most common type of application.

- Available in standard/open, programmed/delayed, and closed transition

Bypass–Isolation Transfer Switch

A bypass–isolation transfer switch bundles an automatic and a manual transfer switch into a single unit.

Bypass isolation is used to transfer power to the manual switch to allow servicing of the ATS while maintaining power to the facility. When the primary automatic transfer switch is in test or isolate position, the manual transfer switch is powering the loads.

Bypass isolation is commonly used in hospitals, data centers, and other critical applications where interruption of power for service or maintenance can't be tolerated.

- One contactor serves as the day–to–day automatic transfer switch
- One contactor serves as a manual transfer switch that bypasses and isolates the automatic switch
- Available in standard/open, programmed/delayed, and closed transition
- Available as mechanically or electrically operated bypass
  - *Mechanically operated bypass includes a transfer handle for operation*
  - *Electrically operated bypass includes single–button operation for each bypass position*

Service Entrance Transfer Switch

A service entrance transfer switch serves as both the automatic transfer switch and the utility disconnect, with service disconnect circuit breakers and contactors utilized as the transfer switch mechanisms.

The breaker on the normal/utility source serves as the main entrance point for the utility.

- 80% or 100% rated circuit breakers
- Thermal magnetic breakers available up to 250 amps
- Electronic trip breakers available for 70–4000 amps
- Available in standard/open and delayed/programmed transition

Enclosure *ratings*

Protect your property.

NEMA ratings were developed by the National Electrical Manufacturers Association to rate enclosures for industrial environments. Also known as UL enclosure–type ratings, they specify standards of protecting equipment against weather, water, dust, and light. Choose a NEMA–rated enclosure based on where you'll install the transfer switch.

NEMA 1—General purpose

- For indoor use under normal conditions
- Protects against dust, light, and indirect splashing of water
- Prevents contact with live electrical parts

NEMA 3R—Weather–resistant

- For indoor or outdoor use
- Provides protection against falling rain and ice formation
- Meets design tests for inadvertent access, external icing, and rust resistance

NEMA 4 and 4X—Watertight and weatherproof

- For indoor or outdoor use
- Provides protection against splashing and hose–directed water
- Constructed of corrosion–resistant material
- 4 = steel
- 4x = stainless steel

NEMA 12—General purpose

- For indoor use
- Protects against circulating particles and dripping of noncorrosive liquids
- Meets drip–, dust–, and rust–resistant tests

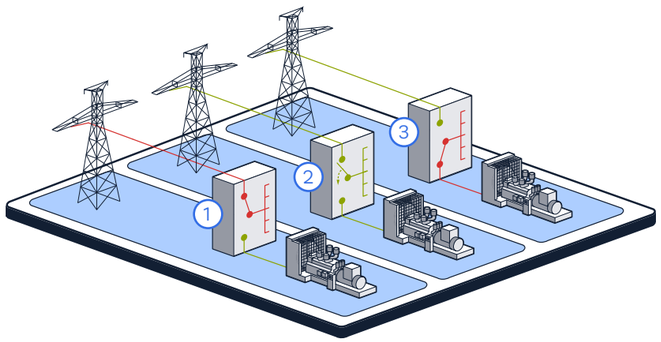
Transition *types*

Factory-configured for mode of operation.

The transfer switch controller manages the power sensing, timing functions, and fault monitoring needed for automatic operation. Depending on your application, the switch can be configured to operate in one of three modes: standard/open transition, programmed/delayed transition, or closed transition.

Standard/Open: Break Before Make

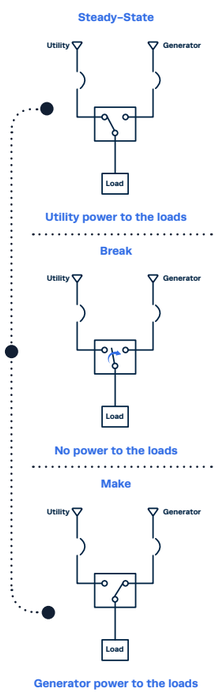
In open transition, the load is disconnected from one source before being connected to the alternate source. This is the most common type of application, used for loads that are not highly inductive or mission-critical.



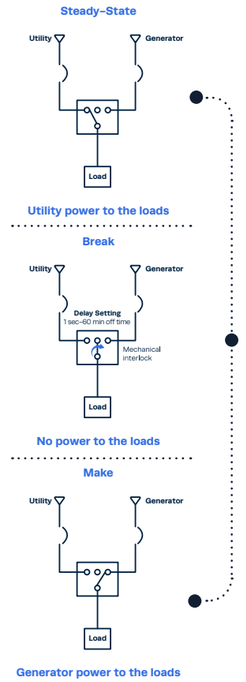
1 ATS loads connected to utility

2 Break Before Make open transition

3 ATS loads connected to emergency generator

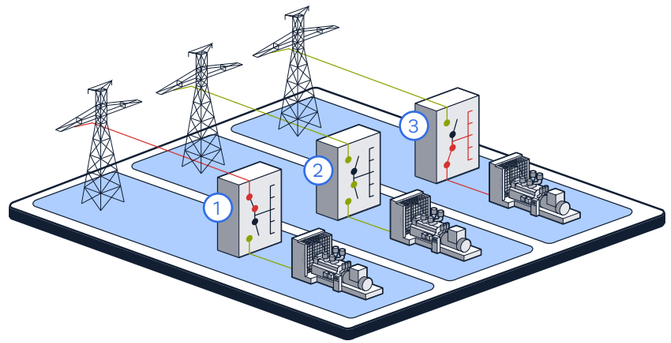


Key:
Green = Safe (de-energized) Red = Live (energized)



Programmed/Delayed: Break Both Sides

Programmed/delayed mode is used with highly inductive loads, such as motor loads and transformers. The load disconnects from one source, then pauses in an "off" position before connecting to the alternate source to protect from power surges. The delay allows the magnetic field to decay to a safe level before transferring. Delayed transition can also be used with the load-shed option for lower-priority loads.



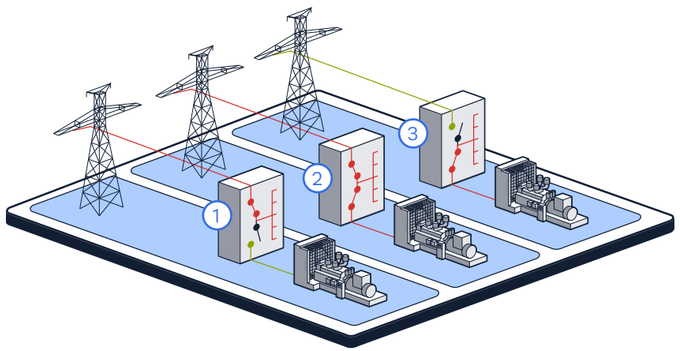
1 ATS loads connected to utility

2 Break Before Make delayed transition (no power)

3 ATS loads connected to emergency generator

Closed Transition: Make Before Break

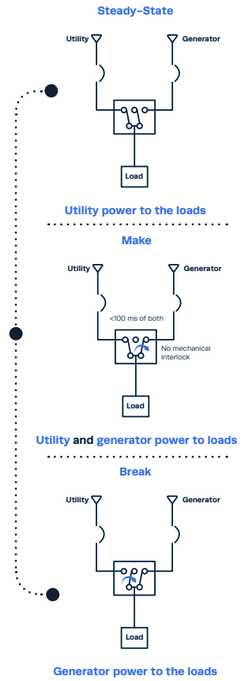
Closed transition is used in mission-critical applications, such as data centers and hospitals, where the system can't withstand a momentary load interruption. The source from which the load is being transferred remains closed until the source to which the load will be transferred is also closed. After both sources are closed, the source from which power is being transferred is opened.



1 ATS loads connected to utility

2 Make Before Break (temporary power to load from both sources)

3 ATS loads connected to emergency generator



Smart controllers

Technology so *advanced, it's easy.*

Decision–Maker
Automatic Transfer Switch Controllers

The controller is the brain behind your automatic transfer switch. It tells the switch what to do and when, dictating the logic that determines the reaction.

MPAC 1200

A customizable solution for your specific application, the MPAC 1200 gives you full control of system behavior including extended I/O to customize your needs.

MPAC 1500

When you need to manage your loads, use your system as a prime power application, or have a backup for your backup (i.e., a three-source system), the MPAC 1500 gets the job done.

Decision–Maker Model	MPAC 1200	MPAC 1500
Amperage	Up to 4000	Up to 4000
Phases	Single/Three	Single/Three
Poles	2, 3, 4	2, 3, 4
Voltage Range	115–600	115–600
Product Type		
Standard Open Transition	Yes	Yes
Standard Delayed Transition	Yes	Yes
Standard Closed Transition	Yes	Yes
Bypass-Isolation Open Transition		Yes
Bypass-Isolation Delayed Transition		Yes
Bypass-Isolation Closed Transition		Yes
Service Entrance		Yes

Decision–Maker Model	MPAC 1200	MPAC 1500
User Interface		
LED–Contactor Position/Source Available	Standard	Standard
LED–Service Required (Fault Indication)	Standard	Standard
LED–Not In Automatic Mode	Standard	Standard
Display	LCD	LCD
Programming	USB, Display	USB, Display
Voltage and Frequency Settings		
Pickup/Dropout Normal Source Voltage	Programmable	Programmable
Pickup/Dropout Emergency Source Voltage	Programmable	Programmable
Frequency Selection	50/60 Hz	50/60 Hz
Pickup/Dropout Normal Source Frequency		Programmable
Pickup/Dropout Emergency Source Frequency	Programmable	Programmable
Overvoltage Trip	Programmable	Programmable
Overfrequency Trip	Programmable	Programmable
Normal and Emergency Voltage Unbalance	Standard	Standard
In-Phase Monitor	Standard	Standard
Transfer Commit	Standard	Standard
Phase Rotation Sensing	Standard	Standard
Time Delays and Configuration Settings		
Transfer to Emergency/Transfer to Normal	Programmable	Programmable
Engine Cooldown	Programmable	Programmable
Generator Exerciser	21 Exercise Events	21 Exercise Events
Remote Peak Shave	Standard	Standard
Start-Time Delay	Programmable (Emergency Only)	Programmable
Fail to Acquire	Programmable (Emergency Only)	Programmable
Communications		
RS-485	Standard	Standard
Ethernet	Optional	Optional
Accessories		
Programmable Engine Exerciser	Standard	Standard
Extended I/O	Optional (Up to 4 Modules)	Optional (Up to 4 Modules)
Digital Meter	Optional	Optional
Source Priority Selector	Optional	Optional
Extended Engine Start-Time Delay	Optional	Optional
Controller Disconnect Switch	Optional	Optional
Load Shed	Optional	Optional
Load Control	Time-Based	Time- or Current-Based
Three-Source System		Standard
Prime Power		Standard

Poles and neutral *switching*

Ground-fault protection without compromise.

When specifying an automatic transfer switch. A 2-pole/3-pole ATS has a solid, unswitched neutral; a 4-pole ATS has a fully rated switched neutral that follows the contactor position. The neutral switching can be open or overlapping (closed).

- A 2-pole or 3-pole ATS has a solid, unswitched neutral.
- A 4-pole ATS has a fully rated switched neutral that follows the contactor position.
- Neutral switching can be either open or overlapping (closed).

The emergency system grounding and ground-fault protection method determine whether a 2-pole/3-pole or 4-pole transfer switch should be used.

Solid

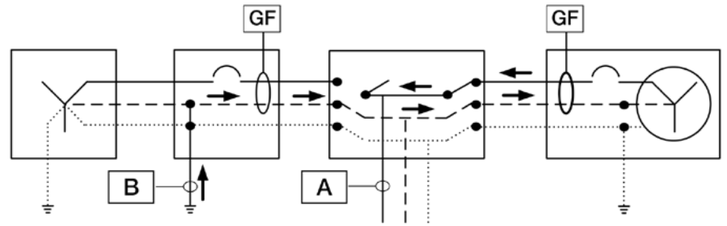
- 2-pole or 3-pole
- Constant contact
- Generator is not a separately derived source

Switched

- 4-pole
- Break-before-make on neutral
- Switching neutral with phase contacts
- Generator is a separately derived source

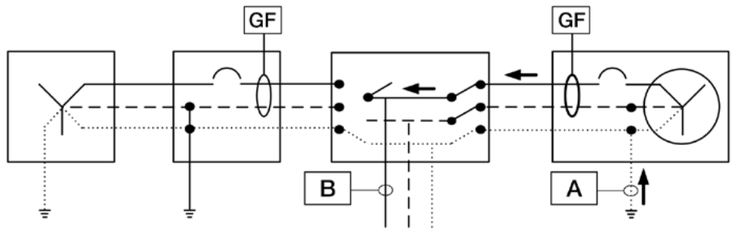
Overlapping

- 4-pole
- Make-before-break on neutral
- Neutral contact momentarily tied between two sources while switching sources
- Generator is a separately derived source



Two-Pole/Three-Pole Transfer Switches

A 2-pole/3-pole transfer switch has a solid neutral; the neutral connection is not dependent upon the position of the switch. In this system, the generator is not a separately derived source, and there is no neutral-to-ground link at the generator. Should a ground fault occur, it cannot be sensed by the generator breaker. In this example, it is sensed at the switchgear. If there is a ground fault at point A, the current will leave at point A and must find a way back to the generator (along the neutral). Its only option is to flow along the ground and return into the system at the neutral-to-ground bond at the switchgear (shown at point B).



Four-Pole Transfer Switches

In order for the generator's current-based ground fault sensor to detect the ground fault and trip the generator unit-mounted circuit breaker, a 4-pole transfer switch is needed. Because the neutral is switched and not continuous, the generator is a separately derived source that needs a neutral-to-ground link at the generator. In this example, if there is a ground fault at point B, the current will leave at point B, and it needs to find a way back to the generator (along the neutral). Its only option is to flow along the ground and return into the system at the neutral-to-ground bond at the generator (shown at point A). Because the sum of the current flow through the ground-fault sensor is above its trip point, the breaker will trip.

National Electrical Code (NEC) and National Fire Protection Association (NFPA) regulations specify how ground-fault protection (GFP) must be handled for a generator system, which in turn determines the number of poles and neutral switching type required of the transfer switch. These regulations also determine whether or not a system needs the generator as a separately derived source.

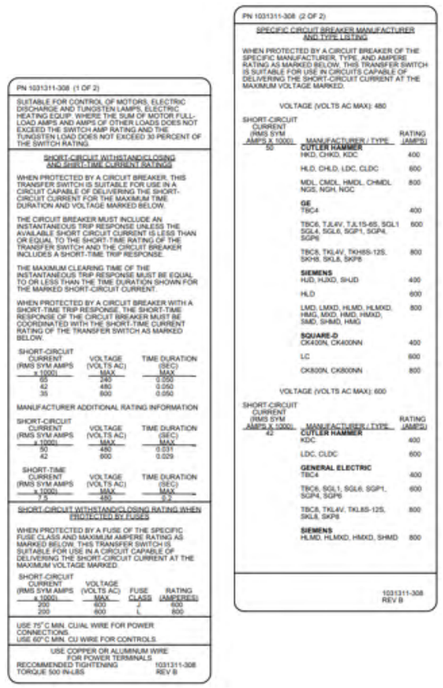
Withstand and close-on *rating*

Ensure the reliability of your ATS.

Withstand and close-on rating (WCR) is comprised of two measurements: the ability of the transfer switch to withstand fault (short circuit) current for a specific period of time while maintaining functionality and the ability of the transfer switch to close into a fault and continue to operate. The time period is determined by the time it takes for an upstream protective device to interrupt the current.

The required WCR level for a given application is driven by the electrical system's short-circuit study. Based on calculated available fault current at the transfer switch installation point and selective breaker trip times required to isolate and clear a fault at the point closest to the fault event, a realistic understanding of the transfer switch's withstand capability can be seen.

Choosing the correct WCR is important. Selecting a transfer switch with an unnecessarily high withstand rating results in overspecification and added expense. On the other hand, a transfer switch with an insufficient withstand rating can incur significant damage to itself or other installed electrical equipment.



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SUITABLE FOR CONTROL OF MOTORS, ELECTRIC DISCHARGE AND TUNGSTEN LAMPS, ELECTRIC HEATING EQUIP. WHERE THE SUM OF MOTOR FULL-LOAD AMPS AND AMPS OF OTHER LOADS DOES NOT EXCEED THE SWITCH AMP RATING AND THE TUNGSTEN LOAD DOES NOT EXCEED 30 PERCENT OF THE SWITCH RATING.

SHORT-CIRCUIT WITHSTAND/CLOSING AND SHORT-TIME CURRENT RATINGS

WHEN PROTECTED BY A CIRCUIT BREAKER, THIS TRANSFER SWITCH IS SUITABLE FOR USE IN A CIRCUIT CAPABLE OF DELIVERING THE SHORT-CIRCUIT CURRENT FOR THE MAXIMUM TIME DURATION AND VOLTAGE MARKED BELOW.

THE CIRCUIT BREAKER MUST INCLUDE AN INSTANTANEOUS TRIP RESPONSE UNLESS THE AVAILABLE SHORT CIRCUIT CURRENT IS LESS THAN OR EQUAL TO THE SHORT-TIME RATING OF THE TRANSFER SWITCH AND THE CIRCUIT BREAKER INCLUDES A SHORT-TIME TRIP RESPONSE.

THE MAXIMUM CLEARING TIME OF THE INSTANTANEOUS TRIP RESPONSE MUST BE EQUAL TO OR LESS THAN THE TIME DURATION SHOWN FOR THE MARKED SHORT-CIRCUIT CURRENT.

WHEN PROTECTED BY A CIRCUIT BREAKER WITH A SHORT-TIME TRIP RESPONSE, THE SHORT-TIME RESPONSE OF THE CIRCUIT BREAKER MUST BE COORDINATED WITH THE SHORT-TIME CURRENT RATING OF THE TRANSFER SWITCH AS MARKED BELOW.

SHORT-CIRCUIT CURRENT (RMS SYM AMPS x 1000)	VOLTAGE (VOLTS AC) MAX	TIME DURATION (SEC) MAX
65	240	0.050
42	480	0.050
35	600	0.050

MANUFACTURER ADDITIONAL RATING INFORMATION

SHORT-CIRCUIT CURRENT (RMS SYM AMPS x 1000)	VOLTAGE (VOLTS AC) MAX	TIME DURATION (SEC) MAX
50	480	0.031
42	600	0.029

SHORT-TIME CURRENT (RMS SYM AMPS x 1000)	VOLTAGE (VOLTS AC) MAX	TIME DURATION (SEC) MAX
13	600	0.1

SHORT-CIRCUIT WITHSTAND/CLOSING RATING WHEN PROTECTED BY FUSES

WHEN PROTECTED BY A FUSE OF THE SPECIFIC FUSE CLASS AND MAXIMUM AMPERE RATING AS MARKED BELOW, THIS TRANSFER SWITCH IS SUITABLE FOR USE IN A CIRCUIT CAPABLE OF DELIVERING THE SHORT-CIRCUIT CURRENT AT THE MAXIMUM VOLTAGE MARKED.

SHORT-CIRCUIT CURRENT (RMS SYM AMPS x 1000)	VOLTAGE (VOLTS AC) MAX	FUSE CLASS	RATING (AMPERES) MAX
200	600	J	600
200	600	L	600

USE 75°C MIN. CU/AL WIRE FOR POWER CONNECTIONS
USE 60°C MIN. CU WIRE FOR CONTROLS

USE COPPER OR ALUMINUM WIRE FOR POWER TERMINALS
RECOMMENDED TIGHTENING TORQUE 500 IN-LBS

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SPECIFIC CIRCUIT BREAKER MANUFACTURER AND TYPE LISTING

WHEN PROTECTED BY A CIRCUIT BREAKER OF THE SPECIFIC MANUFACTURER, TYPE, AND AMPERE RATING AS MARKED BELOW, THIS TRANSFER SWITCH IS SUITABLE FOR USE IN CIRCUITS CAPABLE OF DELIVERING THE SHORT-CIRCUIT CURRENT AT THE MAXIMUM VOLTAGE MARKED.

VOLTAGE (VOLTS AC MAX): 480

SHORT-CIRCUIT CURRENT (RMS SYM AMPS X 1000)	MANUFACTURER / TYPE	RATING (AMPS)
65	**COUTLER HAMMER**	
	HKD, CHKD, KDC	400
	HLD, CHLD, LDC, CLDC	600
	MDL, CMDL, HMDL, CHMDL, NGS, NGH, NGC	800
	GE	
	TBC4	400
	TBC6, TJL4V, TJL15-65, SGL1 SGL4, SGL6, SGP1, SGP4, SGP6	600
	TBC8, TKL4V, TKH8S-12S, SKH8, SKL8, SKP8	800
	SIEMENS	
	HJD, HJXD, SHJD	400
	HLD	600
	LMD, LMXD, HLMD, HLMXD, HMG, MXD, HMD, HMXD, SMD, SHMD, HMG	800
	SQUARE-D	
	CK400N, CK400NN	400
	LC	600
	CK800N, CK800NN	800

VOLTAGE (VOLTS AC MAX): 600

SHORT-CIRCUIT CURRENT (RMS SYM AMPS X 1000)	MANUFACTURER / TYPE	RATING (AMPS)
42	**CUTLER HAMMER**	
	KDC	400
	LDC, CLDC	600
	GENERAL ELECTRIC	
	TBC4	400
	TBC6, SGL1, SGL6, SGP1, SGP4, SGP6	600
	TBC8, TKL4V, TKL8S-12S, SKL8, SKP8	800
	SIEMENS	
	HLMD, HLMXD, HMXD, SHMD	800

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Breaker-Rating Label (Example)

Sample breaker-rating label that appears inside every automatic transfer switch enclosure. The information will vary depending on rating.

Time-Based ("Any breaker")

An ATS that passes the any breaker test (in accordance with UL 1008) can withstand a fault of a given magnitude for 3 cycles (or 1.5 cycles for transfer switches with a rating smaller than 230 A). This allows an ATS to be used with any UL 489 circuit breaker.

Specific Breaker

A specific-breaker-rated transfer switch (also referred to as series-rated) is tested in coordination with specific upstream circuit breakers. Based on actual fault-current test curves, breakers that trip within the time/current range of the tested breaker are identified. Only those breakers listed on the transfer switch rating decal may be used (refer to image, right). WCR ratings for specific-breaker-rated transfer switches are typically higher than any breaker ratings.

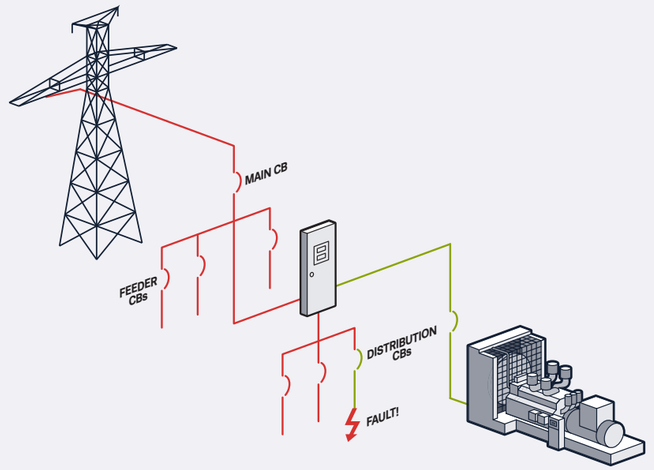
Current-Limiting Fuse

A current-limiting fuse limits the amount of current that passes through during a fault and protects downstream power system components from catastrophic failure.

Short-Time Rating

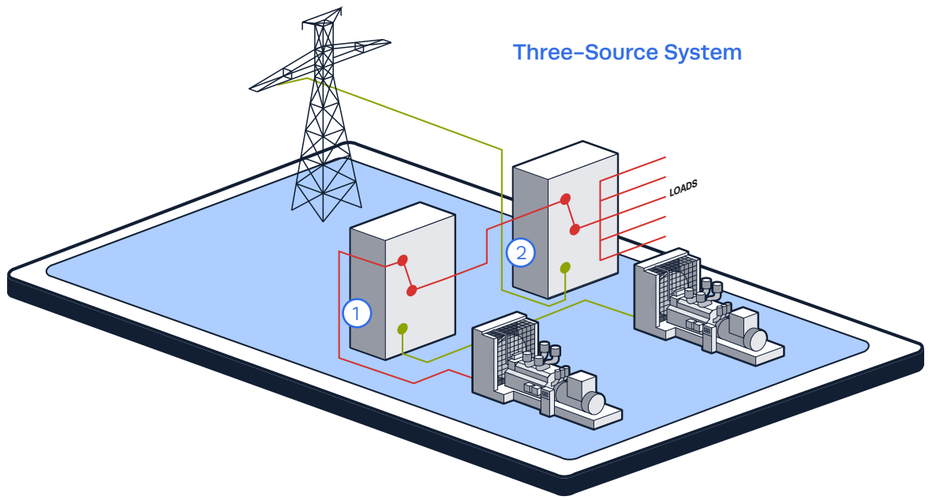
The short-time ratings require longer duration application of fault current and are intended for selective coordination purposes, where an extended delay is needed to allow for downstream protective devices to clear a fault closer to its source. Because the tested ATS needs to carry the fault energy over an extended period, the WCR level that a given switch obtains under short-time ratings is the lowest among the four rating types.

The WCR required for a specific application may dictate the choice of breaker. Current-limiting fuses offer the highest rating, but fuses need to be replaced after a fault event. A specific breaker provides a higher rating but it limits your choice of circuit breaker. A time based breaker provides a lower rating and offers the most flexibility when choosing a breaker or working with existing electrical equipment.



A difference *maker*

Simple solutions to complex problems.



Three-Source System: Backup to Your Backup

A three-source system offers redundancy without the complexity or cost of a paralleling system. Available with the MPAC® 1500 controller, the system is based on two generators and two automatic transfer switches.

1. The first ATS determines which generator is powering the load
2. The second ATS determines if the load is powered by utility or generator

The Benefits Are Many

- One generator is available when the other is being serviced
- You have automatic backup power from the second generator; many critical power applications require this
- By alternating generator runtime and extending the time it takes to accumulate engine hours, you extend time between maintenance and overhauls
- You lengthen the time between refueling, because you have two fuel sources—one for each generator
- You have peace of mind knowing that if one generator fails, the other is automatic—it's backup to your backup

Managing *loads*

Power critical loads at all times.

A generator is only as good as its power output. If the loads exceed the output capacity, the system's voltage and frequency can destabilize and stress the generator. To prevent damage to the system, the generator will shut down.

One way to maintain a stable system is to remove or add certain loads as needed. This keeps the generator powering the more critical loads at all times. Rehlko offers several ways to accomplish this.

Load Shed

Load shed allows a programmed transition switch to transfer to the off position, removing all loads of the ATS from the generator. This should only be used for an ATS that powers lower-priority loads. Once shed, the switch remains in the off position until power is returned to the utility; the switch then transfers to utility. To use this feature, a load-shed module must be installed.

Current-Based Load Control

Current-based load control adds and removes load based on the current measurement of the system. To utilize this feature, a current-sensing kit and I/O modules must be installed. Removing or adding loads based on current can be done at any time during the operation of the ATS.

For example, when output capacity cannot meet the load demands, the system removes slow-priority loads when the current is not within a tolerable limit. By removing the low priority loads, the output of the generator can meet the demand and allow for a stable system.

As the system remains stable, the load control determines if and when additional loads can be added back to the system.

Load Control

Load control allows up to nine individual loads to be added or removed.

Time-Based Load Control

Time-based load control adds and removes loads based on pretransfer and posttransfer of the switch. To use this feature, I/O modules must be installed. The removal and addition of the loads is done only at the time of transfer.

For example, in some applications, several motors might be powered by one generator. Due to the motors' current draw at initial start, the generator can't start all of them at once. Time-based load control allows one or several motors to be placed on a time delay at startup, allowing the generator set to start some motors at initial start-up and then add other motors when the time delay expires. Without the time delay, a larger generator or multiple generators may be required.

Transfer switch *accessories*

While every ATS comes to you fully featured, Rehlko transfer switch accessories allow further customization to suit your facility's unique needs.

Input/Output (I.O) Modules

Programmable Standard I/O Module

This is a separate I/O module with two programmable inputs and six programmable outputs (0.5 A @ 30 VDC/120 VAC).

Programmable High-Voltage Current I/O Module

This is a separate I/O module with two programmable inputs and three programmable outputs (2 A @ 480 VAC or 10 A @ 240 VAC).

Programmable Alarm Module

This module offers a 90–dB alarm horn and programmable values for alarm annunciation. The module allows preferred source, supervised transfer control switch, and Chicago alarm functions. Preferred-source selection lets the operator designate "normal" or "emergency" source. User interface with system-alert LED indicator shows when the alarm is silenced.

External Battery Supply Module

The external battery supply module (EBSM) provides power to the controller while waiting for the generator to start. It allows for an extended generator start-time delay and is required to power the controller on the second ATS in a three-source system. It produces 12 VDC output with 9–36 VDC input and is reverse-polarity protected.

Anticondensation Heater

The strip heater is provided in 125– or 250–W models. A hygrostat, which is user-selectable for proper humidity, is also included.

Controller Disconnect Switch

This switch removes power from the controller to allow servicing or maintenance.

Current-Sensing Kit

The current-sensing kit is sized when the transfer switch is configured. It's installed on the load side of the contactor. A shorting-type terminal block is used to allow safe disconnection to the controller. The current in each line is displayed on the LCD user interface screen, within two percent accuracy.

Digital Meter Kit

The digital meter kit provides an LED display for voltage (phase to phase), amperage (each phase), frequency, power (kilowatts), volt-amperes (VA), reactive volt-amperes (VAR), power factor, and watt demand. Includes two digital inputs/outputs and two relay outputs.

Programmable Standard I/O Module

Programmable High-Voltage Current I/O Module

Programmable Alarm Module

Programmable Extended Battery Supply Module

Generator Connection Box

The generator connection box enables a quick, safe connection of a generator set to the source terminals of a transfer switch. It's designed to function as a permanently installed, inlet-style assembly rated at 600 VAC or less. It has a NEMA 3R enclosure for outdoor or indoor installation with a hinged, lockable door for controlled access.

Line-to-Neutral Voltage Monitor

This module enables the user to view line-to-neutral voltage on 2- and 3-pole transfer switches. Four-pole switches and 30–230 A KCS switches include line-to-neutral voltage monitoring capability as standard.

Load-Shed Module

The load-shed module allows the programmed transition transfer switch to transfer the load from the emergency position to the off position using an external contact closure input.

Remote Annunciator

The remote annunciator allows remote monitoring and testing of up to four transfer switches connected in an RS-485 or Ethernet network.

Engine Start Circuit Monitoring System

The system consists of two modules: ATS Module and GEN Module. When paired together, the modules monitor the integrity of the start circuit wiring between the automatic transfer switch and the generator. The system meets the requirements adopted in NEC 2017.

Supervised Transfer Switch

The three-position selector switch (automanual-transfer) is key-operated to place the ATS in one of three modes:

- Automatic position allows complete automatic function of the controller
- Manual position requires supervised control of the transfer when two sources are available
- Transfer position enables the controller to perform a transfer function

The supervised transfer switch has fail-safe operation; the transfer occurs automatically if the source to which that transfer switch is positioned fails and the alternate source is available.

Surge Protective Devices (SPD)

The surge suppressor is a 10-mode, 100–kA device with LED indication of condition, an auxiliary contact with terminal block and a 30–A circuit breaker disconnect.

User Interface Cover

The cover is hinged and lockable with a padlock and protects the door-mounted user interface.

Total system *integration*

Everything works together. Just as it should.

Rehlko supports mission-critical infrastructure during an outage.

Rehlko Remote Annunciator

A monitoring system that provides a user-friendly display of the generator's status.

Rehlko Automatic Transfer Switch

This product automatically switches a building's power source from the main grid to a backup generator during an outage. When normal power is restored, the ATS reconnects to the main supply to ensure continuous power without manual intervention.

Rehlko Paralleling Switchgear

Paralleling switchgear synchronizes multiple generators to work together, sharing the load and ensuring a reliable power supply. It automatically manages the power distribution, balancing the load between sources and allowing seamless transitions.

Rehlko Generators

Rehlko generators come in a range of sizes and can operate in parallel with multiple units. For added protection, Rehlko offers durable enclosures and user-friendly controls with advanced network communications for seamless operation.

The Rehlko *difference*

Creating an energy resilient world for a better future.

Rehlko continues to innovate and invest in best-in class products with enhanced performance capabilities, delivering clean energy solutions to support businesses and communities worldwide. Together with our team of dedicated associates, we are committed to providing the expertise and support needed to keep businesses powered and running smoothly, while contributing to a more sustainable future.

Service and support: Anytime, anywhere.

- Global distribution network
- 24/7/365 service and support
- Parts availability globally
- Global service training centers
- Maintenance and warranty coverage
- Parts are available to support your generator through its lifecycle
- Preventative maintenance kits provide all the parts required to complete scheduled maintenance events extending the service life and protecting your generator
- Extensive parts inventory is available through our spare parts logistic centers, service centers and global network of distributors to be delivered quickly to any location

For more information, contact your Rehlko source of supply.
Or call toll-free in the U.S. and Canada 800-544-2444

rehlko

powersystems.rehlko.com