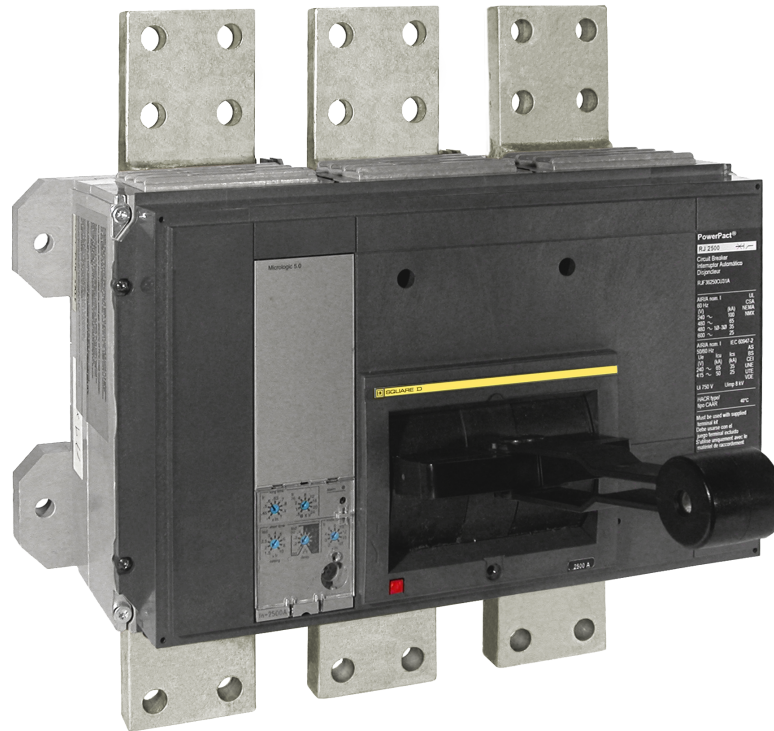


# PowerPact™ R-Frame Circuit Breaker Data Sheets



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## PowerPact R-Frame General Information

PowerPact™ R-frame electronic trip molded case circuit breakers are designed to protect electrical systems from damage caused by overloads, short circuits, and ground faults. All circuit breakers are designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent. Electronic trip molded case circuit breakers use an electronic trip system to signal the circuit breaker to open automatically.

The PowerPact R-frame (3000 A frame size) circuit breakers are dual rated to UL489 and IEC 60947-2.

These molded case circuit breakers are available with either a basic ET 1.0I electronic trip system or with a more advanced Micrologic™ trip system. Electronic trip motor circuit protectors (trip system ET 1.0M), which trip on short circuit only, and automatic molded case switches, which trip at a predetermined self-protection level only, are also available for special applications. All of these circuit breakers are available labeled as Square D™ or Schneider Electric™ (formerly Merlin Gerin™, Federal Pioneer™, or Federal Pacific™).

- Both standard and 100% rated construction circuit breakers are available in 3000 A with a sensor size range of 600–3000 A.
- Interrupting ratings (AIR):

Voltage	G	J	K	L
240 Vac	65 kA	100 kA	65 kA	125 kA
480 Vac	35 kA	65 kA	65 kA	100 kA
600 Vac	18 kA	25 kA	65 kA	50 kA

## PowerPact R-Frame Codes/Standards

R-frame electronic trip circuit breakers and switches are manufactured and tested in accordance with the following standards:

R-Frame Circuit Breakers	R-Frame Switches
UL 489 <sup>1</sup> IEC Standard 60947-2 CSA C22.2 No 5 Federal Specification W-C-375B/GEN NEMA AB1 NMX J-266 UTE, VDE, BS, CEI, UNE, CCC	UL 489 <sup>2</sup> IEC Standard 60947-3 CSA C22.2 No 5 Federal Specification W-C-375B/GEN NEMA AB1 NMX J-266 UTE, VDE, BS, CEI, UNE

Circuit breakers should be applied according to guidelines detailed in the NEC and other local wiring codes.

1. PowerPact R-frame circuit breaker is in UL File E10027.  
 2. PowerPact R-frame switch is in UL File E33117.

# PowerPact R-Frame Interrupting Ratings

## Interrupting Ratings

Mounting	Circuit Breaker	Ampere Rating (A)		Interrupting Ratings						
		Basic Electronic Trip Units	Micrologic Trip Units	UL/CSA/NMX			IEC 60947-2			
				240 Vac	480 Vac	600 Vac	240 Vac		380/415 Vac	
				Icu	Ics	Icu	Ics	Icu	Ics	
Individually-Mounted Circuit Breakers	RG	1200, 1600, 2000, 2500	600, 800, 1000, 1200, 1600, 2000, 2500, 3000	65 kA	35 kA	18 kA	50 kA	25 kA	35 kA	20 kA
	RJ			100 kA	65 kA	25 kA	65 kA	35 kA	50 kA	25 kA
	RK			65 kA	65 kA	65 kA	85 kA	65 kA	70 kA	55 kA
	RL			125 kA	100 kA	50 kA	125 kA	65 kA	85 kA	45 kA
I-Line™ Circuit Breakers	RG	NA	1000, 1200	65 kA	35 kA	18 kA	50 kA	25 kA	35 kA	20 kA
	RJ			100 kA	65 kA	25 kA	65 kA	35 kA	50 kA	25 kA
	RK			65 kA	65 kA	65 kA	85 kA	65 kA	70 kA	55 kA
	RL			125 kA	100 kA	50 kA	125 kA	65 kA	85 kA	45 kA

## PowerPact R-Frame Automatic Molded Case Switch

Automatic molded case switches are available in unit-mount construction from 1200–3000 A. Automatic switches are similar in construction to electronic trip circuit breakers except that long-time protection is not present. The switches open instantaneously at a non-adjustable magnetic trip point calibrated to protect only the molded case switch itself. They must be used in conjunction with a circuit breaker or fuse of equivalent rating.

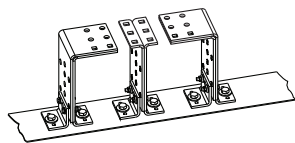
Catalog numbers for automatic switches are designated by “000” in positions 7–9 (ampere rating) and S12, S16, S20, S25, or S30 in positions 11–14 (trip system).

### Automatic Switch Information

Circuit Breaker	Ampere Rating	Catalog Number <sup>3</sup>	Withstand Rating			Trip Point (±10%)
			240 Vac	480 Vac	600 Vac	
RK 2P, 3P	1200	<i>RKF36000S12</i>	65 kA	65 kA	65 kA	57 kA
	1600	<i>RKF36000S16</i>	65 kA	65 kA	65 kA	57 kA
	2000	<i>RKF36000S20</i>	65 kA	65 kA	65 kA	57 kA
	2500	<i>RKF36000S25</i>	65 kA	65 kA	65 kA	57 kA
	3000	<i>RKF36000S30</i>	65 kA	65 kA	65 kA	57 kA
RL 2P, 3P	1200	<i>RLF36000S12</i>	125 kA	100 kA	50 kA	39 kA
	1600	<i>RLF36000S16</i>	125 kA	100 kA	50 kA	39 kA
	2000	<i>RLF36000S20</i>	125 kA	100 kA	50 kA	39 kA
	2500	<i>RLF36000S25</i>	125 kA	100 kA	50 kA	39 kA
	3000	<i>RLF36000S30</i>	125 kA	100 kA	50 kA	39 kA

3. For 2P, replace the leading 3 in the catalog number following the prefix with a 2 (RKP36000S12 becomes RKP26000S12).

## PowerPact R-Frame Termination Information



RLTB Terminal Pad Kit

I-Line circuit breakers have lugs standard on the O/OFF end. Unit-mount circuit breakers and switches are equipped for direct bus connection.

For cable connections, optional terminal pad RLTB or equivalent bus structure is required. RLTB kits are included with 2500 A 100% rated circuit breakers. The RL3TB kits are included with the 3000 A, 80% and 100% rated circuit breakers. For other circuit breakers, order terminal pad kit RLTB and optional lugs separately.

For cable connection to a terminal pad, use *AL2500RK* lug.

### Terminal Pad Kits for R-Frame Circuit Breakers

R-Frame Circuit Breaker	Terminal Pad Kit	Lugs per Phase	Field-Installable Kits	
	Usage		3P (One End Only)	4P (One End Only)
3000 A, 100% Rated	Required for Cable or Bus	9	<i>RL3TB</i> <sup>4</sup>	RL3TB4
3000 A, Standard (80% Rated)	Required for Cable or Bus	8	<i>RLTB</i> <sup>4</sup>	RLTB4
2500 A, 100% Rated	Required for Cable or Bus	8	<i>RLTB</i> <sup>4</sup>	RLTB4
2500 A, Standard (80% Rated)	Required for Cable, Optional for Bus	8	<i>RLTB</i>	RLTB4
All Other R-Frame Circuit Breakers	Required for Cable, Optional for Bus	8	<i>RLTB</i>	RLTB4

## PowerPact R-Frame Application Information

### PowerPact R-Frame Voltage, Frequency and Withstand Ratings

The voltage rating is the highest voltage for the electrical system on which the circuit breaker can be applied. The frequency rating indicates the system frequency for which the circuit breaker is intended. The withstand rating is used to improve system coordination by maximizing the current level at which the circuit breaker trips with no intentional delay. The withstand rating is the level of RMS symmetrical current that a circuit breaker can carry in a closed position for a stated period of time.

#### Voltage, Frequency and Withstand Ratings

Circuit Breaker	Voltage Rating	Frequency Rating	Withstand Rating at 480 Vac
R-frame (RG, RJ, RK, RL)	600 Vac	50/60 Hz (UL and IEC)	32 kA (3 sec)

4. Supplied as standard with the R-frame circuit breaker.

## PowerPact R-Frame Enclosure Sizes

All type ET electronic trip UL/IEC M-frame, P-frame and R-frame circuit breakers are available as standard rated circuit breakers. Micrologic electronic trip UL/IEC circuit breakers are also available in 100% rated constructions. Because the additional heat generated when applying circuit breakers at 100% of continuous current rating, the use of specially designed enclosures and 194°F (90°C) rated wire sized per the 167°F (75°C) NEC chart is required.

Circuit breakers with 100% rating can also be used in applications requiring only 80% continuous loading.

### Minimum Enclosure Sizes for Fixed-Mounted Circuit Breakers

Circuit Breaker Rating	Enclosure Dimensions (h x w x d)		Ventilation Area	
	3P Circuit Breaker	4P Circuit Breaker	Top	Bottom
R-Frame, Standard Rated <sup>5</sup>	30 x 21 x 7 in. (762 x 533 x 178 mm)	30 x 25.5 x 7 (762 x 648 x 178 mm)	—	—
R-Frame, 100% Rated <sup>5</sup>	30 x 21 x 7 in. (762 x 533 x 178 mm)	30 x 25.5 x 7 in. (762 x 648 x 178 mm)	40.25 in. (26,000 mm)	40.25 in. (26,000 mm)

## PowerPact R-Frame Operation Ratings

### Temperature Re-Rating Values

To meet the requirements of the UL489 Standard, molded case circuit breakers are designed, built and calibrated for use on 50/60 Hz ac systems in a 40°C (104°F) ambient environment. Electronic trip circuit breakers, however, are designed to react only to the magnitude of the current flowing through the circuit breaker and are inherently ambient insensitive. Both UL/IEC and IEC-only circuit breakers may be operated at temperatures between -25°C and +70°C (-13°F and 158°F). For temperatures other than 40°C (104°F), the circuit breakers must be re-rated as shown.

### Temperature Re-Rating Values

Maximum Ambient Temperature												
°F	158	140	122	104	86	77	68	50	32	14	-4	-13
°C	70	60	50	40	30	25	20	10	0	-10	-3	-25
Current	0.75	0.83	0.92	1	1.07	1.11	1.14	1.21	1.27	1.33	1.39	1.42

5. RLTB or RL3TB kits may extend beyond end of enclosure when using minimum enclosure size.

## Altitude Derating Values

Circuit breakers are suitable for use at altitudes up to 13,100 ft. (4000 m). For altitudes higher than 6560 ft. (2000 m), circuit breakers must be derated as shown.

### Altitude Derating Values Per ANSI C37.20.1

Altitude	≤ 6,600 ft. (≤ 2,000 m)	8,500 ft. (2,600 m)	13,000 ft. (3,900 m)
Voltage	1	0.95	0.8
Current	1	0.99	0.96

## PowerPact R-Frame Continuous Current Rating

All circuit breakers marked as 100% rated can be continuously loaded to 100% of their rating. 100% rated circuit breakers are available in unit-mount construction up to 3000 A and in I-Line construction up to 1200 A.

Because of the additional heat generated when applying circuit breakers at 100% of continuous current rating, the use of specially-designed enclosures and 90°C (194°F) wire is required. The 90°C (194°F) wire must be sized according to the ampacity of the 75°C (167°F) wire column in the NEC. Minimum enclosure size and ventilation specifications are indicated on a label on the circuit breaker and in the circuit breaker instruction bulletin.

Circuit breakers with 100% rating can also be used in applications requiring only 80% continuous loading.

## PowerPact R-Frame Trip Unit Details

### Micrologic Electronic Trip Systems

PowerPact R-frame electronic trip circuit breakers can be equipped with the optional Micrologic trip systems listed below:

#### Micrologic Trip Systems

Model	(LS0) Long-time + Short-time + Zero delay (IEC Rated Only)	(LI) Long-time + Instantaneous Protection (UL Listed, IEC Rated)	(LSI) Long-time + Short-time + Instantaneous Protection (UL Listed, IEC Rated)	(LSIG) Long-time + Short-time + Instantaneous Protection + Equipment Ground-Fault Protection (UL Listed, IEC Rated)
Micrologic Basic Trip Unit	2	3	5	—
Micrologic A Trip Unit	2.0A	3.0A	5.0A	6.0A
Micrologic P Trip Unit	—	—	5.0P	6.0P
Micrologic H Trip Unit	—	—	5.0H	6.0H

## Micrologic Trip Unit Features

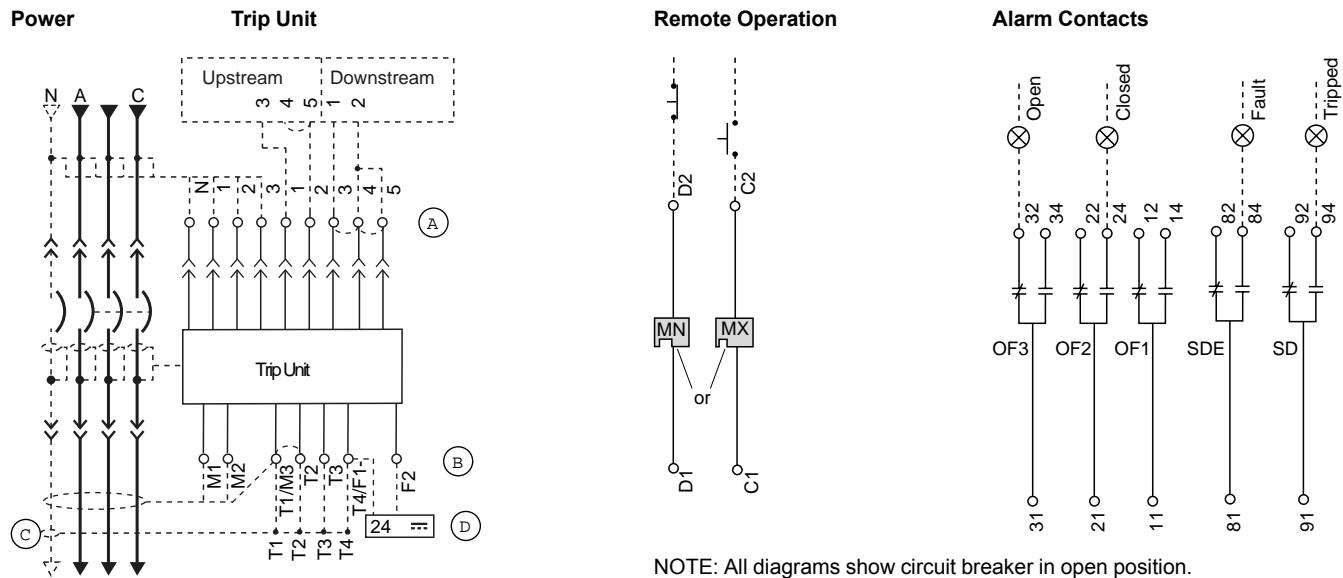
Feature	Micrologic Trip Unit (X = Standard Feature O = Available Option)										
	Standard			Ammeter				Power		Harmonics	
	2	3	5	2.0A	3.0A	5.0A	6.0A	5.0P	6.0P	5.0H	6.0H
Field-Installable	X	X	X	X	X	X	X	X	X	X	X
LI		X			X						
LS0	X			X							
LSI			X			X		X		X	
LSIG/Ground-Fault Trip <sup>6</sup>							X		X		X
Ground-Fault Alarm/No Trip <sup>6,7</sup>								X		X	
Ground-Fault Alarm and Trip <sup>6, 8</sup>									X		X
Adjustable Rating Plugs	X	X	X	X	X	X	X	X	X	X	X
True RMS Sensing	X	X	X	X	X	X	X	X	X	X	X
UL Listed		X	X		X	X	X	X	X	X	X
Thermal Imaging	X	X	X	X	X	X	X	X	X	X	X
Phase-Loading Bar Graph				X	X	X	X	X	X	X	X
LED for Long-Time Pick-Up	X	X	X	X	X	X	X	X	X	X	X
LED for Trip Indication				X	X	X	X	X	X	X	X
Digital Ammeter				X	X	X	X	X	X	X	X
Zone-Selective Interlocking <sup>9</sup>				X		X	X	X	X	X	X
Communications				O	O	O	O	X	X	X	X
LCD Dot Matrix Display								X	X	X	X
Advanced User Interface								X	X	X	X
Protective Relay Functions								X	X	X	X
Neutral Protection <sup>6</sup>								X	X	X	X
Contact Wear Indication								X	X	X	X
Incremental Fine Tuning of Settings								X	X	X	X
Selectable Long-Time Delay Bands								X	X	X	X
Power Measurement								X	X	X	X
Power Quality Measurements										X	X
Waveform Capture										X	X

6. 3Ø, 4W circuits require either a neutral current transformer or a 4-pole circuit breaker.  
 7. Requires M6C Programmable Contact Module  
 8. Requires M6C Programmable Contact Module.  
 9. Not available for 2.0A trip units as upstream devices.

## Micrologic Control Wiring

Control wiring for unit-mount and I-Line construction is connected to terminals located under the circuit breaker accessory cover. Control wiring for drawout construction is connected to terminals located on the cradle.

### Accessory Control Wiring Diagrams for R-Frame Circuit Breakers



A—Do not remove factory-installed jumpers between Z3, Z4 and Z5 unless ZSI is connected.

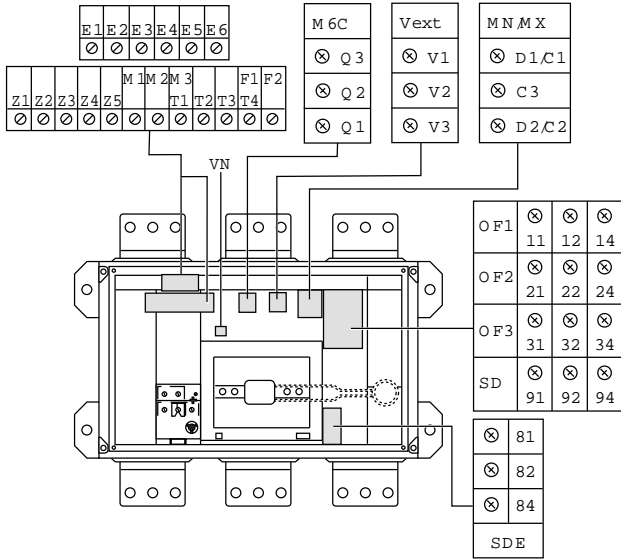
B—Do not remove factory-installed jumper between T1 and T2 unless neutral CT is connected. Do not install jumper between T3 and T4.

C—For proper wiring of neutral CT, refer to Instruction Bulletin 48041-082-01 shipped with it.

D—24 Vdc power supply for trip unit must be separate and isolated from 24 Vdc power supply for communication modules.



## Accessory Control Wiring for R-Frame Circuit Breakers



Trip Unit Type					
Basic	A	P	H	Connector	Description
—	•	•	•	Com: E1-E6	Circuit breaker communication module E1 = +24 Vdc E2 = Common E3 = A/Tx- D0 E4 = B/Tx+ D1 E5 = A/Rx- D0 E6 = B/Rx+ D1
—	•	•	•	Z	Zone-selective interlocking (ZSI) Z1 = ZSI OUT signal Z2 = ZSI OUT Z3 = ZSI IN signal   Z4 = ZSI IN short-time delay Z5 = ZSI IN ground fault
—	•	•	•	T	External neutral sensor
—	•	•	•	F	24 Vdc external power supply
—	—	•	•	Vn	External neutral voltage takeoff
—	—	•	•	V1, V2, V3	External phase voltage takeoff
—	—	•	•	M6C <sup>10</sup> : Q1, Q2, Q3	6 programmable contacts 24 Vdc external power supply required

Connector	Recommended Wire Size
V1, V2, V3, Vn	22–16 AWG (0.3–1.5 mm <sup>2</sup> )
E1–E2	22 AWG (0.3 mm <sup>2</sup> ) MIN shielded pair cable or twisted pair copper wires
T	22 AWG (0.3 mm <sup>2</sup> ) stranded shielded cable
M	Refer to MDGF instructions
E3–E6, Q1, Q2, Q3	22 AWG (0.3 mm <sup>2</sup> ) shielded twisted pairs with drain (Belden 8723 or equal)3
OF, SD, SDE	18–16 AWG (0.8–1.5 mm <sup>2</sup> )
MN, MX	18–14 AWG (0.8–2.5 mm <sup>2</sup> )
F	Size per aux 24 Vdc power supply
Z1–Z5	22–18 AWG (0.3–0.8 mm <sup>2</sup> )

Function	Connector	Description
Auxiliary Contacts	OF	Open/Closed circuit breaker or switch position contacts
	SD	Bell alarm
	SDE	Electrical fault alarm contact
Remote Operation	MN	Undervoltage trip device
	MX	Shunt trip

10. Optional M6C programmable contacts are supplied with flying leads.

# PowerPact R-Frame Control Wiring

## PowerPact R-Frame Shunt Trip (MX1)



Shunt Trip (MX1) and  
Shunt Close (XF)

**Shunt Trip (MX1):** When energized, the shunt trip instantaneously opens the circuit breaker. The shunt trip may be energized continuously or intermittently.

Communication versions of the MX1 are available for direct connection via the circuit breaker communication module (BCM).

Characteristics		Min	Max	
Voltage Ratings (Vn)	Vac 50/60 Hz	24 Vac	17 Vac	26 Vac
		48 Vac	34 Vac	52 Vac
		120 Vac	60 Vac	132 Vac
		240 Vac	168 Vac	264 Vac
		277 Vac	194 Vac	304 Vac
		380 Vac	266 Vac	418 Vac
		480 Vac	336 Vac	528 Vac
	Vdc	12 Vdc	8 Vdc	13 Vdc
		24 Vdc	17 Vdc	26 Vdc
		48 Vdc	34 Vdc	52 Vdc
		125 Vdc	88 Vdc	137 Vdc
		250 Vdc	175 Vdc	275 Vdc
	Operating Threshold		0.7 to 1.1 Vn	
	Power Consumption (VA or W)	Steady-State/ Inrush	4.5/200	
Circuit Breaker Response Time at Vn <sup>11</sup>		50 ms ±10		

## Undervoltage Trip (MN)



Undervoltage Trip (MN)

This function opens the circuit breaker via an electrical order.

It is made up of:

- Instantaneous trip
- Fixed undervoltage trip (time delayed) or,
- Adjustable undervoltage trip (time delayed)

As shown in the wiring diagram for the remote tripping function below, the delay unit (installed outside the circuit breaker) may be disabled by an emergency off button to obtain non-delayed opening of the circuit breaker.

The undervoltage trip (MN) instantaneously opens the circuit breaker when its supply voltage drops to a value between 35% and 70% of its rated voltage.

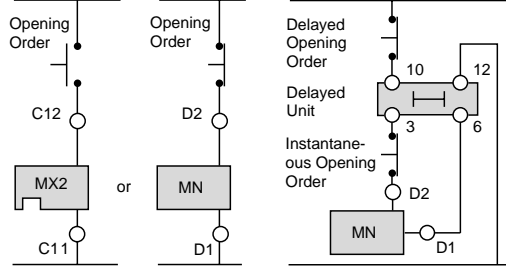
If the undervoltage trip is not energized, it is impossible to close the circuit breaker, either manually or electrically. An attempt to close the circuit breaker produces no movement of the main contacts. Closing is allowed when the supply voltage of the undervoltage trip reaches 85% of rated voltage.

11. Shunt trip (MX1) and shunt close (XF) circuits must be energized for minimum of 200 ms.

### Undervoltage Trip Characteristics

Characteristics	MN		
Voltage Ratings (Vn)	Vac 50/60 Hz	24 Vac	
		48 Vac	
		120 Vac	
		240 Vac	
		277 Vac	
		380 Vac	
		480 Vac	
		Vdc	12 Vdc
			24 Vdc
			48 Vdc
	125 Vdc		
	Power Consumption (VA or W)	Constant/Inrush	4.5/200
		Operating Threshold	Opening
	Closing		0.35 Vn
Circuit Breaker Response Time at Vn		90 ms ±5	

### Wire Diagram for the Remote Tripping Function



## PowerPact R-Frame Time-Delay Module for Undervoltage Trip



To eliminate circuit breaker nuisance tripping during temporary voltage dips (micro-breaks), operation of the undervoltage trip (MN) can be delayed by adding an external time-delay module to the undervoltage trip circuit. Available as adjustable and non-adjustable module.

### Time-Delay Module Characteristics(Continued)

Characteristics				Factory-Installed Cat. No. Suffix	Field-Installable Cat. No.
Voltage Ratings of Time-Delay Module	Adjustable	Vac 50/60 Hz / Vdc	48-60	—	S33680
			100-130	—	S33681
			200-250	—	S33682
			380-480	—	S33683
	Non-Adjustable	Vac 50/60 Hz / Vdc	100-130	—	S33684
			200-250	—	S33685
Operating Threshold		Opening	0.35 to 0.7 Vn		
		Closing	0.85 Vn		
Power Consumption			4.5 VA/W (holding), 200 VA/W (inrush)		
Time-Delay Settings	Adjustable	0.5, 0.9, 1.5, and 3.0 s			
	Non-Adjustable	0.25 s			

## PowerPact R-Frame Indication Contacts

Changeover contacts are used to provide remote circuit breaker status information and can be used for indications, electrical locking, relaying, etc. All the auxiliary contacts are also available in “low-level” versions capable of switching very low loads (for the control of PLCs or electronic circuits).

### Auxiliary Switch (OF):

- remotely indicates the position of the main circuit breaker contacts.
- can be used to operate indicator lights, relays or other accessories.
- circuit breaker can accommodate up to three 1A/1B auxiliary switches.

### Alarm Switch (SD)

- indicates that the circuit breaker has tripped due to:
  - an overload
  - a short circuit
  - an earth-leakage fault
  - operation of a voltage release
  - operation of the “push-to-trip” button
- Returns to de-energized state when the circuit breaker is reset.

### Overcurrent Trip Switch (SDE)

- indicates that the circuit breaker has tripped due to:
  - an overload
  - a short circuit
  - an earth-leakage fault
- Returns to de-energized state when the circuit breaker is reset.

### Electrical Characteristics of the OF/SD/SDE Auxiliary Contacts

Contacts		Standard		Low Level	
Rated thermal current (A)		6		5	
Minimum load		100 mA at 24 V		1 mA at 24 V	
Operational current (A)	Voltage	AC	DC	AC	DC
	24 V	6	6	5	5
	48 V	6	2.5	5	2.5
	110 V	6	0.6	5	0.6
	220/240 V	6	—	5	—
	250 V	—	0.3	5	0.3
	380/440 V	6	—	5	—
	480 V	6	—	5	—
	660/690 V	6	—	—	—

**NOTE:** If the maximum voltage and current is exceeded, the low-level functions of the switch will be lost but the switch will continue to function as a standard switch.

### Catalog Numbers

Description	Standard Min Load = 100 mA with 24 V		Low Level Min Load = 1 mA with 24 V	
	Factory-Installed Cat. No. Suffix	Field-Installable Cat. No.	Factory-Installed Cat. No. Suffix	Field-Installable Cat. No.
1 Auxiliary Switch (OF) 1a1b	AA	S29450	AE	S29452
2 Auxiliary Switch (OF) 1a1b	AB	2x S29450	AF	2x S29452

Description	Standard Min Load = 100 mA with 24 V		Low Level Min Load = 1 mA with 24 V	
	Factory-Installed Cat. No. Suffix	Field-Installable Cat. No.	Factory-Installed Cat. No. Suffix	Field-Installable Cat. No.
3 Auxiliary Switch (OF) 1a1b	AC	3x S29450	AG	3x S29452
Alarm Switch (SD) 1a1b	BC	S29450	BH	S29452
Overcurrent Trip Switch (SDE) 1a1b	BD	S29450	BJ	S29452
Alarm Switch/Overcurrent Trip Switch (SD/SDE) 2a2b	BE	2x S29450	BK <sup>12</sup>	2x S29452

## PowerPact R-Frame Trip Curves

Trip curves are available on the Schneider Electric website:

[http://www.digestplus-us.schneider-electric.com/additional\\_product\\_infos](http://www.digestplus-us.schneider-electric.com/additional_product_infos)

2D CAD Drawings
3D CAD Drawings
Services
Time-Current Curves ▶
White Papers
Product Selector Guides
Software and Firmware

### Time-Current Curves

Circuit Breaker

PowerPact R (240-3000 A)

Subcategory

All

### Results

Micrologic 6.0 A/P/H, In>1200, Adj.Ground-fault Delay Ground-fault I<sup>2</sup>t OFF and ON (613-3)

Micrologic 6.0 A/P/H, 400A<In<1200A, Adjustable Ground-fault Pickup/Delay, Ground-fault I<sup>2</sup>t OFF/ON (613-2)

Micrologic 6.0 A/P/H, In<400A, Adjustable Ground-fault Delay, Ground-fault I<sup>2</sup>t OFF/ON (613-1)

Micrologic 3.0A Trip Unit Characteristic Trip Curve (613-8)

Micrologic 2.0/3.0/5.0/6.0, Std/A/P/H Trip Unit, Instantaneous Override Values (613-10)

Micrologic 5.0/6.0, A/P/H Trip Unit, Characteristic Trip Curve No. (613-7)

Micrologic 5.0/6.0 Std/A/P/H Short-time Pickup and I<sup>2</sup>t ON Delay (613-5)

Micrologic 2.0 Std/A Trip Unit (IEC) (613-9)

Micrologic 3.0 Std/A Trip Unit, Long-time Pickup and Delay (613-6)

ET 1.0I Electronic Trip Unit, Long-time Pickup / Fixed delay Instantaneous Pickup 1.5x-12x (613-12)

Micrologic 5.0/6.0 Std/A/P/H Long-time Pickup and Delay, Short-time Pickup, and I<sup>2</sup>t OFF Delay (613-4)

12. Not available on an electrically-operated P-frame circuit breaker.

# PowerPact R-Frame Accessories

PowerPact R-frame circuit breakers can be used with a variety of internal and external accessories to increase application versatility and meet the demands of modern electrical distribution systems.

Circuit breaker internal accessories are available either factory installed or field installable. They can be installed in accessory compartments behind the circuit breaker accessory cover.

## PowerPact R-Frame Common Accessories

### **Factory-Installed Accessories**

Factory-installed accessories are internally mounted by the factory. Accessories only available factory installed cannot be removed or repaired in the field. Order factory-installed accessories by adding the correct two-letter suffix to the standard circuit breaker catalog number. To build a catalog number, refer to the product selector or contact a field office.

### **Field-Installable Accessories**

Field-installable accessories can be installed or replaced in the field without affecting the circuit breaker ratings. Field-installable accessories are shipped separately from the circuit breakers. Install and wire field-installable accessories according to the instructions supplied with the circuit breaker and particular accessory. Order field-installable accessories by the catalog number found in the *Schneider Electric Digest*.

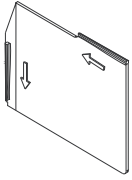
## PowerPact R-Frame Accessory Availability

Accessory (Y = Yes , N = No, N/A = Not Available)	Manually-Operated Circuit Breakers	
	Field Installable	Factory Installed
Shunt Trip (MX)	Y	Y
Undervoltage Trip (MN)	Y	Y
Adjustable Time Delay Module for Undervoltage Trip	Y	N
Auxiliary Switch (OF)	Y	Y
Alarm Switch (SD)	Y	Y
Overcurrent Trip Switch (SDE)	Y	Y
Spring-Charging Motor	N/A	N/A
Trip Unit Replacement Covers	Y	N
Neutral Current Transformer	Y	N
Ground-Fault Interface Module	Y	Y
External Sensor for SGR or MDGF Protection	Y	Y
Sensor Plugs	Y	Y
Rating Plugs	Y	Y
M2C and M6C Programmable Contacts	Y	Y
Circuit Breaker Communication Module	Y	Y
Restraint Interface Module	Y	N
External Power Supply Module	Y	Y
External Battery Backup Module	Y	Y
Hand-Held Test Kit	Y	Y
Full-Function Test Kit	Y	Y
Mechanical Lug	Y	Y
Compression Lug	Y	Y
Terminal Pad	Y	Y
I-Line Jaws	N	Y
Power Distribution Connectors	Y	Y
Control Wire Terminations	Y	Y
Phase Barriers	Y	N
Electric Joint Compound	Y	N
Door-Mounted Operating Mechanism	Y	Y
Rotary Handle	N	Y
Replacement Handles	Y	Y
Long Handle Extension	Y	Y
Accessory Cover Door Escutcheons	Y	N
Padlock Attachment	Y	Y
Keylock	N	Y
Keylock Provision	N	Y
Sub-Feed Lugs	Y	Y



## PowerPact R-Frame External Accessories

### PowerPact R-Frame Phase Barriers



Phase barriers are available for PowerPact R-frame unit-mount circuit breakers.

#### Phase Barriers

Cat. No.	Qty Per Kit
S33998	3

### Electric Joint Compound

I-Line circuit breakers, I-Line busway plug-on units and I-Line panelboards and switchboards are supplied with factory-applied joint compound on the plug-on connectors. The compound is especially formulated for I-Line connections and contributes to the overall performance of the connection.

If the joint compound is removed, it must be reapplied. A two-ounce container of the compound (Cat. No. *PJC7201*) is available.

### PowerPact R-Frame Replacement Handles

Replacement handle assemblies (catalog number S33997) are available for R-frame circuit breakers.

### PowerPact R-Frame Door Escutcheons

Accessory cover door escutcheons (catalog number S33929) are available for all R-frame circuit breakers.

## PowerPact R-Frame Locking Accessories

Field-installable handle padlock attachments are available for manually-operated circuit breakers. These attachments will accommodate three padlocks with a shackle diameter of 3/16–5/16 in. (5–8 mm) and will lock the circuit breaker in the O/OFF position only.

A handle padlock attachment is also available for locking manually-operated circuit breakers in either the I/ON or O/OFF position. This attachment will accommodate three padlocks with a shackle diameter of 3/16–5/16 in. (5–8 mm) and is available as factory or field installation.

Kirk® key interlock brackets are also available for locking circuit breakers in the O/OFF position only.

Circuit breakers with rotary handles come standard with provision for padlocking the handle in the O/OFF position only. Key locks are also available for locking the circuit breaker in the I/ON or O/OFF positions.

Device	Description		Factory-Installed Cat. No. Suffix	Field-Installed Cat. No.
Handle Padlock- ing Device	Removable (Lock Off or On)		—	—
	Removable (Lock Off Only)		—	S33996
	Fixed (Lock Off or On)		YP	S32631
	Fixed (Lock Off Only)		YQ	<i>MPRPAF</i>
Key Locking	Provision Only, Vertical Mount, 1 key interlock including padlock provision, open position only	Kirk	JE1	—
	Provision Only, Horizontal Mount 1 or 2 Locks, R-Frame	Kirk Ronis Profalux	JK JB JD	— — —
	Provision and 1 Lock, Horizontal Mount	Kirk Ronis Profalux	JL JC JF	— — —
	Provision and 2 Locks Keyed Alike, Horizontal Mount	Kirk	JN	—
	Provision and 2 Locks Keyed Differently, Horizontal Mount	Kirk	JP	—