

### R - Frame Circuit Breaker



### Product Description

- R-frame circuit breakers are available as frame (which includes trip unit), rating plug and terminals.
- All R-frame circuit breakers are suitable for reverse feed use.

### Technical Data and Specifications <sup>③</sup>

#### CSA C22.2 No. 5 and UL489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)				Circuit Breaker Type	Page Numbers					
		Volts Ac (50/60 Hz)					Trip Unit Types <sup>①</sup>					
		240	277	480	600		310	510	610	810	910	OPTIM 1050
RD	3, 4	125	—	65	50	RD	R-4	R-7	R-9	R-11	R-13	R-15
CRD <sup>②</sup>	3, 4	125	—	65	50	CRD	R-6	R-8	R-10	R-12	R-14	R-16
RDC	3, 4	200	—	100	65	RDC	R-5	R-7	R-9	R-11	R-13	R-15
CRDC <sup>②</sup>	3, 4	200	—	100	65	CRDC	R-6	R-8	R-10	R-12	R-14	R-16

#### IEC 947-2 Interrupting Capacity Ratings <sup>③</sup>

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)			Circuit Breaker Type	Page Numbers					
		Volts Ac (50/60 Hz)				Trip Unit Types <sup>①</sup>					
		240	415	690		310	510	610	810	910	OPTIM 1050
RD	3, 4				RD	R-4	R-7	R-9	R-11	R-13	R-15
<i>I<sub>cu</sub></i>		135	70	25							
<i>I<sub>cs</sub></i>		100	50	13							
RDC	3, 4				RDC	R-5	R-7	R-9	R-11	R-13	R-15
<i>I<sub>cu</sub></i>		200	100	35							
<i>I<sub>cs</sub></i>		100	50	18							

<sup>①</sup> See page R-2 for Trip Unit Specifications.

<sup>②</sup> 100% Rated breakers.

<sup>③</sup> Utilization Category A circuit breakers.

## R-Frame Digitrip Specifications

Trip Unit Type	Digitrip RMS 310		Digitrip RMS 510	Digitrip RMS 610	Digitrip RMS 810	Digitrip RMS 910	Digitrip OPTIM 1050
RMS Sensing	Yes		Yes	Yes	Yes	Yes	Yes
<b>Breaker Type</b>							
Frame	R		R	R	R	R	R
Ampere Range	800A-2500A		800A-2500A	800A-2500A	800A-2500A	800A-2500A	800A-2500A
Interrupting Rating @ 600Vac	50, 65 (kA)		50, 65 (kA)	50, 65 (kA)	50, 65 (kA)	50, 65 (kA)	50, 65 (kA)
<b>Protection</b>							
Ordering Options	LS, LSG	LSI, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LSI(A), LISG
Fixed Rated Plug ( $I_n$ )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Overtemperature Trip	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Long Delay Protection (L)							
Adjustable Rating Plug ( $I_n$ )	Yes	Yes	No	No	No	No	No
Long Delay Pickup	0.5-1.0 ( $I_n$ ) <sup>①</sup>	0.5-1.0 ( $I_n$ ) <sup>①</sup>	0.5-1.0 x ( $I_n$ )	0.5-1.0 x ( $I_n$ )	0.5-1.0 x ( $I_n$ )	0.5-1.0 x ( $I_n$ )	0.4-1.0 x ( $I_n$ )
Long Delay Time $I^2t$	12 Seconds	12 Seconds	2-24 Seconds	2-24 Seconds	2-24 Seconds	2-24 Seconds	2-24 Seconds
Long Delay Time $I^4t$	No	No	No	No	No	No	1-5 Seconds
Long Delay Thermal Memory	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High Load Alarm	No	No	No	0.85 x $I_r$	0.85 x $I_r$	0.85 x $I_r$	0.5-1.0 x $I_r$
<b>Short Delay Protection (S)</b>							
Short Delay Pickup	200-800% x ( $I_n$ ) <sup>②</sup>	200-800% x ( $I_n$ ) <sup>②</sup>	200-600% S1&S2 x ( $I_r$ )	200-600% S1&S2 x ( $I_r$ )	200-600% S1&S2 x ( $I_r$ )	200-600% S1&S2 x ( $I_r$ )	150-800% x ( $I_r$ ) <sup>②③</sup>
Short Delay Time $I^2t$	100 ms	No	100-500 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms
Short Delay Time Flat	No	Inst-300 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms
Short Delay Time Zone Selective Interlocking	No	No	Yes	Yes	Yes	Yes	Yes
<b>Instantaneous Protection (I)</b>							
Instantaneous Pick Up	No	200-800% x ( $I_n$ )	200-600% M1&M2 x ( $I_n$ )	200-600% M1&M2 x ( $I_n$ )	200-600% M1&M2 x ( $I_n$ )	200-600% M1&M2 x ( $I_n$ )	200-800% x ( $I_n$ ) <sup>③</sup>
Discriminator	No	No	Yes <sup>④</sup>	Yes <sup>④</sup>	Yes <sup>④</sup>	Yes <sup>④</sup>	Yes
Instantaneous Override	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Ground Fault Protection (G)</b>							
Ground Fault Alarm <sup>⑤</sup>	No	No	No	No	No	No	25-100% x ( $I_n$ )
Ground Fault Pick Up <sup>⑤</sup>	Varies by Frame	Varies by Frame	25-100% x ( $I_g$ )	25-100% x ( $I_g$ )	25-100% x ( $I_g$ )	25-100% x ( $I_g$ )	25-100% x ( $I_n$ )
Ground Fault Delay $I^2t$	No	No	100-500 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms
Ground Fault Delay Flat	Inst-500 ms	Inst-500 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms	100-500 ms
Ground Fault Zone Selective Interlocking	No	No	Yes	Yes	Yes	Yes	Yes
Ground Fault Thermal Memory	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>System Diagnostics</b>							
Status LEDs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cause of Trip LEDs	No	No	Yes	Yes	Yes	Yes	Yes
Magnitude of Trip Information	No	No	No	Yes	Yes	Yes	Yes
Remote Signal Contacts	Yes <sup>⑦</sup>	Yes <sup>⑦</sup>	No	Yes	Yes	Yes	Yes
<b>System Monitoring</b>							
Digital Display	No	No	No	Yes	Yes	Yes	Yes <sup>⑥</sup>
Current	No	No	No	Yes	Yes	Yes	Yes
Voltage	No	No	No	No	No	Yes	No
Power and Energy	No	No	No	No	Yes	Yes	Yes
Power Quality-Harmonics	No	No	No	No	No	Yes	Yes
Power Factor	No	No	No	No	Yes (Over Eaton PowerNet Only)	Yes	Yes
<b>Communications</b>							
Eaton PowerNet	No	No	No	No	Yes	Yes	Yes
<b>Testing</b>							
Testing Method	Test Set		Integral	Integral	Integral	Integral	OPTIMizer, BIM, Eaton PowerNet

① Adjust by rating plug.

② Except 2500 ampere frame is 200-600%.

③ Varies by frame.

④ LS/LSG only.

⑤ Not to exceed 1200 amperes.

⑥ By OPTIMizer/BIM.

⑦ Optional. Add suffix "R" to Catalogue Number.

BIM = Breaker Interface Module

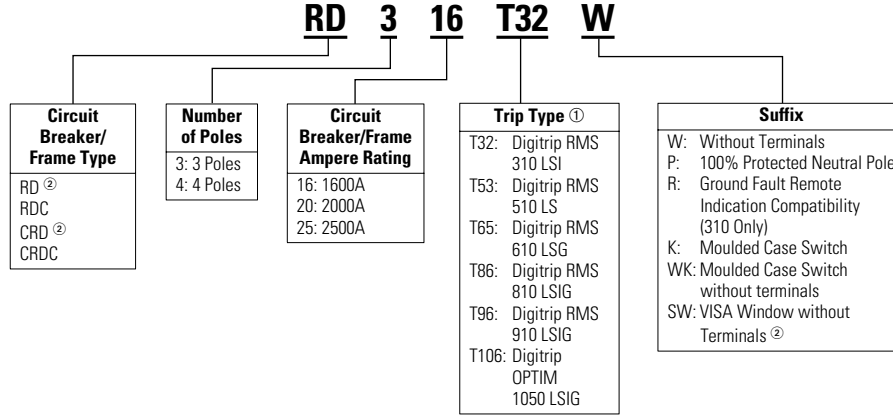
(A) = GF Alarm

 $I_g$  = Sensor Rating $I_n$  = Rating Plug $I_r$  = Long Delay Pickup Setting x  $I_n$

### Catalogue Numbering System

This information is presented only as an aid to understanding catalogue numbers. It is not to be used to build catalogue numbers for circuit breakers or trip units.

#### Circuit Breaker/Frame Catalogue Number



### Dimensions/Weights

Number of Poles	Width	Height	Depth
3	15.5 (394)	16 (406)	9.75 (248)
4	20 (508)	16 (406)	9.75 (248)

Breaker Type	Complete Breaker	
	Number of Poles	
	3	4
<b>1600A</b>		
RD, CRD, RDC, CRDC	102 (46.266)	135 (61.235)
<b>2000A</b>		
RD, RDC	102 (46.266)	135 (61.235)
CRD, CRDC	130 (58.967)	175 (79.378)
<b>2500A</b>		
RD, RDC	135 (61.235)	182 (82.553)

<sup>①</sup> For complete list of available trip types refer to pages R-4 through R-16.

<sup>②</sup> "VISA" option is available. CSA listed only.

**100% Rated Digitrip RMS 310 Electronic Circuit Breakers** ①

The CEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90°C wire is applied at 75°C ampacity. Order as individual components: Breaker Frame (which includes Trip Unit) and Rating Plug.

Maximum Continuous Ampere Rating @ 40°C	Circuit Breaker Frame Only ④				Digitrip RMS 310 Rating Plug Only		
	L-Adjustable Long Delay Pickup (By Adjustable Rating Plug) S – Adjustable Short Delay Pickup with Fixed Short Delay Time (I <sup>2</sup> t Response) for LS and LSG trip unit Independently Adjustable Short Delay Pickup and Short Delay Time (Flat Response) for LSI and LSI <sup>2</sup> G trip unit I-Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G-Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (Flat Response)				Ampere Rating	Fixed Rating Plug	Adjustable Rating Plug
	LS	LSI	LSG ③	LSIG ③			Adjustable Ampere Ratings Catalogue Number
	Catalogue Number						
<b>3-Pole Standard Interrupting Capacity 600 Volt Ac Rated 50 kAIC @ 600 Vac</b>							
1600 ②	CRD316T33W	CRD316T32W	CRD316T35W	CRD316T36W	800	16RES08T	Adjustable Settings are: 800, 1000, 1200, 1600 <b>A16RES16T1</b>
					1000	16RES10T	
					1200	16RES12T	
					1250	16RES125T	
					1400	16RES14T	
					1500	16RES15T	
1600	16RES16T						
2000	CRD320T33W	CRD320T32W	CRD320T35W	CRD320T36W	1000	20RES10T	Adjustable Settings are: 1000, 1200, 1600, 2000 <b>A20RES20T1</b>
					1200	20RES12T	
					1250	20RES125T	
					1400	20RES14T	
					1600	20RES16T	
					2000	20RES20T	
<b>3-Pole High Interrupting Capacity 600 Volt Ac Rated 65 kAIC @ 600 Vac</b>							
1600 ①②	CRDC316T33W	CRDC316T32W	CRDC316T35W	CRDC316T36W	800	16RES08T	Adjustable Settings are: 800, 1000, 1200, 1600 <b>A16RES16T1</b>
					1000	16RES10T	
					1200	16RES12T	
					1250	16RES125T	
					1400	16RES14T	
					1500	16RES15T	
1600	16RES16T						
2000	CRDC320T33W	CRDC320T32W	CRDC320T35W	CRDC320T36W	1000	20RES10T	Adjustable Settings are: 1000, 1200, 1600, 2000 <b>A20RES20T1</b>
					1200	20RES12T	
					1250	20RES125T	
					1400	20RES14T	
					1600	20RES16T	
					2000	20RES20T	

Instruction Leaflet Number 29C107 and 29C713 for Breaker; Number 29C883 for Digitrip 310 Trip Unit

① Includes B2016RDL rear connections. Refer to TD.29.02.T.E for dimensions.

② For SCR application use 2000 ampere frame.

③ Add suffix "R" to breaker catalogue number for ground fault remote indication compatibility, i.e., RD316T35RW

④ When a "VISA" frame is required, add suffix "S" to circuit breaker frame catalogue number, RD and CRD only. i.e. CRD316T33SW