DATASHEET - FRCDM-40/4/03-G/B+



Digital residual current circuit-breaker, 40A, 4p, 300mA, type G/B+

Powering Business Worldwide

FRCDM-40/4/03-G/B+ Part no. Catalog No. 167885

Alternate Catalog

FRCDM-40/4/03-G/B.

EL-Nummer (Norway)

0001664174

Similar to illustration

Delivery program			
Basic function			Residual current circuit-breakers , digital
Number of poles			4 pole
Application			Switchgear for industrial and advanced commercial applications
Rated current	In	Α	40
Rated short-circuit strength	I _{cn}	kA	10
Rated fault current	$I_{\Delta N}$	Α	0.3
Туре			Type G/B+ (ÖVE E 8601)
Tripping		s	Short time-delayed
Product range			FRCdM
Sensitivity			All current sensitive
Impulse withstand current			Surge-proof, 3 kA

Technical data

Contact sequence

Electrical			
Types conform to			VDE 0664-400 ÖVE E 8601
Current test marks			As per inscription
Tripping		s	10 ms delayed
Rated voltage according to IEC/EN 60947-2	U_{n}	V AC	240/415
Rated frequency	f	Hz	50/60
Limit values of the operating voltage			
electronic		V AC	50 - 456
Test circuit		V AC	184 - 440
Rated fault current	$I_{\Delta n}$	mA	300
Sensitivity			All current sensitive
Rated insulation voltage	Ui	V	440
Rated impulse withstand voltage	U _{imp}	kV	4
Rated short-circuit strength	I _{cn}	kA	10
Impulse withstand current			3 kA (8/20 µs) surge-proof
Max. admissible back-up fuse			
Short-circuit	gG/gL	Α	63
Overload	gG/gL	Α	63
Rated making and breaking capacity / Rated residual making and breaking capacity	$I_{m}/I_{\Delta m}$	Α	500
lifespan			
Electrical	Operations		≧ 4000
Mechanical	Operations		≧ 20000
Dry auxiliary contact			

Mechanical Standard front dimension Device height Built-in width Mounting Degree of Protection Terminal protection Solid Solid Terminal cross-section	240 VAC (resistive load)	Α	0.25
Max. switching voltage DC V 20 Maximum switching current A 2 Min. switching capacity (reference value) I I I (µ, 10 mV DC Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load Operations 30 I	Max. switching duty (resistive load)	W	60
Maximum switching current Min. switching capacity (reference value) lifespan Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Operations 5 x 10 ⁵ Terminal capacity Mechanical Standard front dimension Mechanical Built-in width Mounting Built-in width Built-in width Mounting Built-in width Built-in	Max. switching voltage AC	V	240
Min. switching capacity/reference value) Ifespan Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Operations 5 x 10 5 Terminal capacity Mechanical Sundard front dimension Built-in width Munting Built-in width Built-in width Munting Built-in width Built-in w	Max. switching voltage DC	V	220
If Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load ma* Device height Mothanical Standard front dimension mm 45 Bull-in width Mounting Bull-in width Mounting Begree of Protection Terminals top and bottom Terminals protection Terminal protection Solid Stranded Terminal cross-section Solid Stranded Terminal cross-section Solid Mounting borque of fixing screws Mounting position Mounting position Mounting position indicator Termisplating torque of fixing screws Mounting position indicator Terminal cross-section A sequired Device height Department of fixing screws Mounting position indicator Terminal cross-section A sequired Device height Department of fixing screws Mounting position indicator Terminal cross-section Terminal cross-sect	Maximum switching current	Α	2
Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load Terminal capacity Mechanical Standard front dimension Device height Built-in width Mounting Built-in width Mounting Bure Protection Ereminals top and bottom Terminal protection Terminal cross-section Solid Stranded Terminal cross-section	Min. switching capacity (reference value)		10 μA, 10 mV DC
Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load mm² 0,25 - 1.5	lifespan		
Terminal cross-section Standard from fixing screws Tightening torque of fixing screws	Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load	Operation	n§10 ⁵
Nechanical Standard front dimension Device height Munting Munting Degree of Protection Terminals top and bottom Terminal cross-section Standard Standard Standard Terminal cross-section Solid Stranded Terminal cross-section Terminal cross-section Sulfactors Stranded Terminal cross-section Terminal cross-section Sulfactors Stranded Terminal cross-section Terminal cross-section Terminal cross-section Sulfactors Stranded Terminal cross-section Terminal	Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load	Operation	n§5 x 10 ⁵
Standard front dimension mm 45 Device height mm 80 Built-in width mm 70 (4TE) Mounting proper of Protection	Terminal capacity	mm²	0.25 - 1.5
Device height Built-in width Mounting Degree of Protection Terminal	Mechanical		
Built-in width mounting 0uick attachment with 2 latch positions for DIN-rail IEC/EN 60715 Degree of Protection 1 P40, IP54 (with moisture-proof enclosure) Terminals top and bottom 1 Ferninals top and bottom 1 Ferninal protection 1 Ferninal protection 1 Ferninal protection 1 Ferninal cross-section 2 Ferninal cross-section 3 Ferninal cross-section 3 Ferninal cross-section 4 Ferninal cross-section 5 Ferninal cross-section 5 Ferninal cross-section 6 Ferninal cross-section 7 Ferninal cross-section 8 Ferninal cross-section 8 Ferninal cross-section 8 Ferninal cross-section 9 Ferninals 9	Standard front dimension	mm	45
Mounting Degree of Protection	Device height	mm	80
Degree of Protection Terminals top and bottom Terminal protection Terminal protection Terminal cross-section Solid	Built-in width	mm	70 (4TE)
Terminals top and bottom Terminal protection Terminal protection Solid Solid mm² 1.5 - 35 Stranded mm² 2 × 16 M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) Tightening torque of fixing screws Tightening torque of fixing screws Thickness of busbar material Admissible ambient temperature range Permissible storage and transport temperatures Climatic proofing Mounting position Contact position indicator	Mounting		Quick attachment with 2 latch positions for DIN-rail IEC/EN 60715
Terminal protection Terminal cross-section Solid mm² 1.5 - 35 Stranded mm² 2 x 16 Terminal cross-section M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) Tightening torque of fixing screws N/m 2 - 2 4 Thickness of busbar material Admissible ambient temperature range Permissible storage and transport temperatures Climatic proofing Mounting position Contact position indicator	Degree of Protection		IP40, IP54 (with moisture-proof enclosure)
Terminal cross-section Solid mm² 1.5 - 35 Stranded mm² 2 x 16 M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) Tightening torque of fixing screws N/m Thickness of busbar material Admissible ambient temperature range "C" -25 - +50 Climatic proofing Mounting position Contact position indicator Agents Age	Terminals top and bottom		Twin-purpose terminals
Solid Stranded mm² 1.5 - 35 Stranded mm² 2 x 16 M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) Tightening torque of fixing screws N/m 2 - 2.4 Thickness of busbar material mm 0.8 - 2 Admissible ambient temperature range rec -25 - +50 Climatic proofing Mounting position Contact position indicator	Terminal protection		finger and hand touch safe, DGUV VS3, EN 50274
Stranded mm² 2 x 16 Terminal cross-section M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) Tightening torque of fixing screws N/m 2 - 2.4 Thickness of busbar material mm 0.8 - 2 Admissible ambient temperature range °C -25 - +50 Permissible storage and transport temperatures °C -35 - +60 Climatic proofing Climatic proofing As required Contact position indicator red / green	Terminal cross-section		
Terminal cross-section M5 (with cross-recessed screw as defined in EN ISO 4757-22, Pozidriv PZ2) Tightening torque of fixing screws N/m 2 - 2.4 Admissible ambient temperature range nm 0.8 - 2 Admissible ambient temperature range nm 0.8 - 2 - 25 - +50 Permissible storage and transport temperatures nm 0.8 - 2 - 25 - +50 Permissible storage and transport temperatures nm 0.8 - 2 - 25 - +50 As required nm 0.8 - 2 - 25 - +60 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity according to IEC 60068 - 2 - 25 - 55° C/90 - 95% relative humidity a	Solid	mm ²	1.5 - 35
Tightening torque of fixing screws N/m 2 - 2.4 Thickness of busbar material mm 0.8 - 2 Admissible ambient temperature range °C -25 - +50 Permissible storage and transport temperatures Climatic proofing Mounting position Contact position indicator	Stranded	mm^2	2 x 16
Thickness of busbar material mm 0.8 - 2 Admissible ambient temperature range °C -25 - +50 Permissible storage and transport temperatures °C -35 - +60 Climatic proofing 25-55°C/90-95% relative humidity according to IEC 60068-2 Mounting position Contact position indicator red / green	Terminal cross-section		M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2)
Admissible ambient temperature range C -25 - +50 Permissible storage and transport temperatures C -35 - +60 Climatic proofing Mounting position Contact position indicator C -25 - +50 -25 - +60 25 - 55° C/90 - 95% relative humidity according to IEC 60068-2 As required red / green	Tightening torque of fixing screws	N/m	2 - 2.4
Permissible storage and transport temperatures Climatic proofing Mounting position Contact position indicator	Thickness of busbar material	mm	0.8 - 2
Climatic proofing 25-55°C/90-95% relative humidity according to IEC 60068-2 Mounting position As required Contact position indicator red / green	Admissible ambient temperature range	°C	-25 - +50
Mounting position As required Contact position indicator red / green	Permissible storage and transport temperatures	°C	-35 - +60
Contact position indicator red / green	Climatic proofing		25-55°C/90-95% relative humidity according to IEC 60068-2
	Mounting position		As required
Trip indication white / blue	Contact position indicator		red / green
	Trip indication		white / blue

Design verification as per IEC/EN 61439

30 VDC (resistive load)

echnical data for design verification			
Rated operational current for specified heat dissipation	In	Α	40
Heat dissipation per pole, current-dependent	P _{vid}	W	1.55
Equipment heat dissipation, current-dependent	P _{vid}	W	6.2
Static heat dissipation, non-current-dependent	P_{vs}	W	0
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	50
			Maximum operating temperature is 60 °C in accordance with the de-rating table
EC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects $$			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.

10.5 Protection against electric shock	Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components	Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections	Is the panel builder's responsibility.
10.8 Connections for external conductors	Is the panel builder's responsibility.
10.9 Insulation properties	
10.9.2 Power-frequency electric strength	Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage	Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material	Is the panel builder's responsibility.
10.10 Temperature rise	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

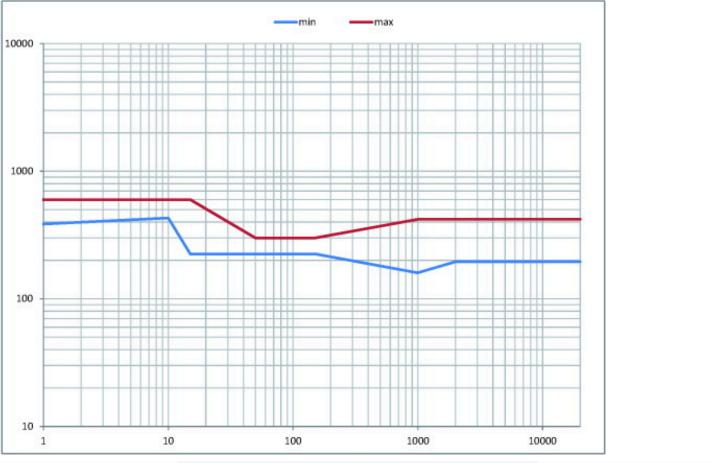
Technical data ETIM 7.0

Circuit breakers and fuses (EG000020) / Residual current circuit breaker (RCCB) (EC000003)

Electric engineering, automation, process control engineering / Electrical installation, device / Residual current protection system / Residual current circuit breaker (RCCB)

Connectable conductor cross section multi-wired Connectable conductor cross section solid-core	mm² mm²	1.5 - 16 1.5 - 35
Pollution degree		2
Ambient temperature during operating	°C	-25 - 40
Built-in depth	mm	70.5
Width in number of modular spacings		4
Degree of protection (IP)		IP20
With interlocking device		Yes
Additional equipment possible		Yes
Frequency		50/60 Hz
Surge current capacity	kA	3
Short-circuit breaking capacity (Icw)	kA	10
Short-time delayed tripping		Yes
Selective protection		No
Leakage current type		B+
Mounting method		DIN rail
Rated impulse withstand voltage Uimp	kV	4
Rated insulation voltage Ui	V	440
Rated fault current	mA	300
Rated current	Α	40
Rated voltage	V	415
Number of poles		4
Number of roles		1

Characteristics



Influence of the ambient temperature to the maximum continuous current (A)

Range	FRCdM type B, Bfq, B+			
	Amperage			
	RCCB	RCCB	RCCB	
Ambient	rating	rating	rating	
temperature	25A	40A	63A	
40°	25	40	63	
45°	25	40	56	
50°	25	40	50	
55°	25	35	45	
60°	25	30	40	

Derating - table FRCdM_B

Dimensions

