# DATASHEET - FRCDM-25/4/03-G/B+



Digital residual current circuit-breaker, 25A, 4p, 300mA, type G/B+

Powering Business Worldwide

FRCDM-25/4/03-G/B+ Part no. 167884

Catalog No.

Alternate Catalog

FRCDM-25/4/03-G/B.

0001664166

**EL-Nummer** (Norway)

Similar to illustration

**Delivery program** 

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	25
Rated short-circuit strength	I <sub>cn</sub>	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
Contact sequence			3 5 N 3 3 5 N 3 N 3 N 3 N 3 N 3 N 3 N 3 N 3

### **Technical data** Electrical

Rated switching capacity

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	$U_{i}$	V	440
Rated impulse withstand voltage	$U_{imp}$	kV	4
Rated short-circuit strength	I <sub>cn</sub>	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 (µA, 10 mV DC           Iffeepan         I         I (µA, 10 mV DC         I           Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load         Operations 3.5 x 105         I           Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load         Operations 3.5 x 105         I           Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load         Operations 3.5 x 105         I           Tarminal capacity         mm²         0 25 - 1.5           Mounting         mm²         4 3           Bevice height         mm²         0 10 TE           Mounting         mm²         0 10 TE           Bull-in width         mm²         0 10 TE           Degree of Protection         mm²         0 10 TE         I (with purpose terminals per and bottom         mm²         10 TE         I (with purpose terminals per and hand touch safe, DGUV VS3. EN 50274         I (with purpose terminals per and hand touch safe, DGUV VS3. EN 50274         I (with purpose terminals per and hand touch safe, DGUV VS3. EN 50274         I (with purpose terminals per and hand touch safe, DGUV VS3. EN 50274         I (with purpose terminals per and hand t	Max. switching duty (resistive load)	W	60
Maximum switching current Min. switching apacity (reference value) Iffespan  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 Operators 5 x 10 5  Terminal capacity Mechanical  Standard front dimension Munting Built-in width Mounting Built-in width Built-in width Mounting Built-in width Mounting Built-in width Buil	Max. switching voltage AC	V	240
Min. switching capacity/reference value)  Iffespan  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  Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load  Operations 55 x 10 <sup>5</sup> Terminal capacity  Mechanical  Sundard front dimension  mm 45  Sundard front dimension  mm 70 (4TE)  Mounting  Degree of Protection  Eleminal post bottom  Terminals top and bottom  Terminals cross-section  Solid  Stranded  Terminal cross-section  Terminal cross-sect	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  Terminal capacity  Mochanical  Standard front dimension  Built-in width  Mounting  Built-in width  Mounting  Begree of Protection  Terminals top and bottom  Terminals protection  Terminal cross-section  Solid  Standard  Standard  Terminal cross-section  Solid  Stranded  Terminal cross-section  Stranded  Terminal cross-section  Solid	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 cross-section  Solid  Stranded  Terminal cross-section  Terminal cross-secti	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	1\$ <sub>10</sub> <sup>5</sup>
Mechanical         Standard front dimension       mm       45         Device height       mm       80         Built-in width       mm       70 (4TE)         Mounting       Quick attachment with 2 latch positions for DIN-rail IEC/EN 60715       1 P40, IP54 (with moisture-proof enclosure)         Terminals top and bottom       Twin-purpose terminals         Terminal cross-section       Time and hand touch safe, DGUV VS3, EN 50274         Solid       mm²       1.5 - 35         Stranded       mm²       2 x 16         Terminal cross-section       M5 (with cross-recessed screw as defined in EN ISO 4757-22, Pozidriv PZ2)       1 Tightening torque of fixing screws         Tightening torque of fixing screws       N/m       2 - 24         Thickness of busbar material       mm       0.8 - 2         Admissible ambient temperature range       °C       -25 - 60         Permissible storage and transport temperatures       °C       -35 - 60         Climatic proofing       S-55° C/90-95% relative humidity according to IEC 6008-2         Mounting position       As required         Contact position indicator       red / green	Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load	Operation	<sup>1</sup> \$5 x 10 <sup>5</sup>
Standard front dimension mm 80 Device height midth month month midth midth month month midth month midth month midth month midth month midth midth month midth month midth midth midth month midth midth midth midth midth month midth mid	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  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 - +60  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 - 60  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 - +60  Permissible storage and transport temperatures °C -35 - +60  Climatic proofing Climatic proofing As required 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 temperatures  nc c -25 - +60  Permissible storage and transport temperatures  Climatic proofing  M5 (with cross-recessed screw as defined in EN ISO 4757-22, Pozidriv PZ2)  nm 0.8 - 2  -25 - +60  -25 - +60  -25 - +60  -25 - 55° C/90-95% relative humidity according to IEC 60068-2  Mounting position  As required  Contact position indicator  red / green	Solid	mm <sup>2</sup>	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 - +60  Permissible storage and transport temperatures  Climatic proofing  Mounting position  Contact position indicator	Stranded	$\text{mm}^2$	2 x 16
Thickness of busbar material mm 0.8 - 2  Admissible ambient temperature range °C -25 - +60  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 - +60  Permissible storage and transport temperatures  C -35 - +60  Climatic proofing  Mounting position  Contact position indicator  C -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 - +60
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)

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	25
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	1.15
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	4.6
Static heat dissipation, non-current-dependent	$P_{vs}$	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60
			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.

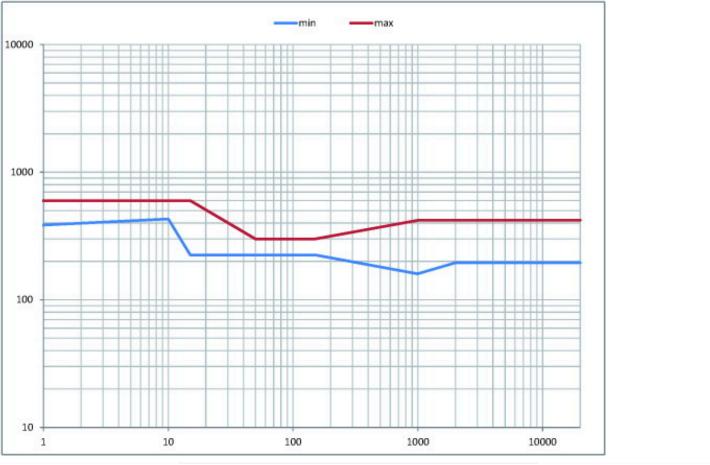
# **Technical data ETIM 7.0**

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)

(ecl@ss10.0.1-27-14-22-01 [AAB906014])			
Number of poles			4
Rated voltage	V	1	415
Rated current	А	١	25
Rated fault current	m	nΑ	300
Rated insulation voltage Ui	V	1	440
Rated impulse withstand voltage Uimp	k۱	·V	4
Mounting method			DIN rail
Leakage current type			B+
Selective protection			No
Short-time delayed tripping			Yes
Short-circuit breaking capacity (Icw)	k.A	Α	10
Surge current capacity	k.A	Α	3
Frequency			50/60 Hz
Additional equipment possible			Yes
With interlocking device			Yes
Degree of protection (IP)			IP20
Width in number of modular spacings			4
Built-in depth	m	nm	70.5
Ambient temperature during operating	°C	С	-25 - 40
Pollution degree			2
Connectable conductor cross section multi-wired	m	nm²	1.5 - 16
Connectable conductor cross section solid-core	m	nm²	1.5 - 35

### **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**

