### DATASHEET - FRCMM-40/4/03-G/A



### Residual current circuit breaker (RCCB), 40A, 4p, 300mA, type G/A

Powering Business Worldwide

FRCMM-40/4/03-G/A Part no. Catalog No. 170304 Alternate Catalog FRCMM-40/4/03-G/A

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Basic function			Residual current circuit-breakers
Number of poles			4 pole
Application			Switchgear for industrial and advanced commercial applications
Rated current	In	Α	40
Rated short-circuit strength	I <sub>cn</sub>	kA	10 with back-up fuse
Rated fault current	$I_{\Delta N}$	Α	0.3
Туре			Type G/A (ÖVE E 8601)
Tripping		s	Short time-delayed
Product range			FRCmM
Sensitivity			Pulse-current sensitive
Impulse withstand current			Surge-proof, 3 kA
Contact sequence			1 3 5 N H T 2 4 6 N

# **Technical data**

Types conform to			
			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			
Test circuit		V AC	184 - 440
Rated fault current	$I_{\Delta n}$	mA	300
Sensitivity			Pulse-current sensitive
Rated insulation voltage	$U_{i}$	V	440
Rated impulse withstand voltage	$U_{imp}$	kV	4 (1.2/50µs)
Rated short-circuit strength	I <sub>cn</sub>	kA	10 with back-up fuse
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	40
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
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
Degree of Protection			IP40, IP54 (with moisture-proof enclosure)

Terminal protection		Busbar tag shroud to BGV A3, ÖVE-EN 6
Terminal protection		Dusbai tay siii uuu to bay As, OVE-EN O
Terminal cross-section		
Solid	$mm^2$	1.5 - 35
Stranded	mm <sup>2</sup>	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 - +40
Permissible storage and transport temperatures	°C	-35 - +60
Climatic proofing		25-55°C/90-95% relative humidity according to IEC 60068-2
Mounting position		As required
Contact position indicator		red / green
Trip indication		white / blue

## Design verification as per IEC/EN 61439

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Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	40
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	2.2
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	8.8
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	75
			Starting at 40 °C, the max. permissible continuous current decreases by 2.5% for every 1 °C
IEC/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 b observed.
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switch gear must b observed. $\label{eq:constraint}$
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)

Number of poles         4           Rated voltage         V         415           Rated current         A         40           Rated fault current         mA         300           Rated insulation voltage Ui         V         40           Rated impulse withstand voltage Uimp         kV         4           Mounting method         Image: Current type         No           Selective protection         V         4           Short-time delayed tripping         kA         10           Short-circuit breaking capacity (lcw)         kA         10           Storge current capacity         kA         10           Frequency         50/60 Hz           Additional equipment possible         Yes           With interlocking device         Yes           Degree of protection (IP)         Yes           With in number of modular spacings         Yes           Built-in depth         mm         70.5           Ambient temperature during operating         "C"         -25 - 40           Pollution degree         2         -25 - 40           Connectable conductor cross section multi-wired         mm         15 - 16				
Rated voltage         V         415           Rated current         A         40           Rated fault current         mA         300           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         Leakage current type         A         DIN rail           Selective protection         No         Yes           Short-time delayed tripping         KA         10           Story current capacity (low)         KA         3           Surge current capacity         KA         3           Frequency         Ves         50/60 Hz           Additional equipment possible         Yes           With interlocking device         Yes           Degree of protection (IP)         Yes           Width in number of modular spacings         4           Built-in depth         mm         70.5           Ambient temperature during operating         "C         25 - 40           Pollution degree         2         25 - 40           Connectable conductor cross section multi-wired         mm²         1.5 - 16	Electric engineering, automation, process control engineering / Electrical installati (ecl@ss10.0.1-27-14-22-01 [AAB906014])	on, device / Resi	dual curi	rent protection system / Residual current circuit breaker (RCCB)
Rated current         A         40           Rated fault current         mA         300           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         kV         4           Leakage current type         No         A           Selective protection         No         Yes           Short-circuit breaking capacity (lcw)         kA         10           Surge current capacity         kA         3         3           Frequency         kA         3         3           Additional equipment possible         Yes         Yes           With interlocking device         Yes         Yes           Degree of protection (IP)         IP20         IP20           Width in number of modular spacings         IP20         25-40           Built-in depth         IP         7.5         25-40           Ambient temperature during operating         Yes         25-40           Connectable conductor cross section multi-wired         IP         25-40	Number of poles			4
Rated fault current         mA         300           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         Leakage current type         DIN rail           Leakage current type         No         No           Selective protection         No         Yes           Short-time delayed tripping         KA         10           Short-circuit breaking capacity (lew)         KA         3           Surge current capacity         KA         3           Frequency         Yes           Additional equipment possible         Yes           With interlocking device         Yes           Degree of protection (IP)         Yes           Width in number of modular spacings         4           Built-in depth         mm         70.5           Ambient temperature during operating         "C         25 - 40           Pollution degree         2         15 - 16	Rated voltage	,	V	415
Rated insulation voltage Uin Rated impulse withstand voltage Uimp Mounting method Leakage current type Leakage current type Selective protection Short-time delayed tripping Short-circuit breaking capacity (lcw) Short-circuit breaking capacity (lcw) Surge current capacity Frequency Additional equipment possible With interlocking device Degree of protection (IP) Width in number of modular spacings Built-in depth Ambient temperature during operating Connectable conductor cross section multi-wired  V 440  AU  AD  DIN rail  A  A  A  CO  SOBO  NO  SOBO  NO  SOBO  NO  SOBO  NO  SOBO  NO  NO  SOBO  NO  NO  SOBO  NO  NO  NO  NO  NO  NO  NO  NO  NO	Rated current		A	40
Rated impulse withstand voltage Uimp Mounting method Leakage current type Selective protection Short-time delayed tripping Short-circuit breaking capacity (lcw) Surge current capacity Frequency Additional equipment possible With interlocking device With interlocking device Degree of protection (IP) Width in number of modular spacings Built-in depth Ambient temperature during operating Connectable conductor cross section multi-wired    Vel	Rated fault current	1	mA	300
Mounting method Leakage current type Selective protection Short-time delayed tripping Short-eircuit breaking capacity (Icw) Surge current capacity Frequency Additional equipment possible With interlocking device Degree of protection (IP) Width in number of modular spacings Built-in depth Ambient temperature during operating  Minument of modular spacings  Minument	Rated insulation voltage Ui	,	V	440
Leakage current type  Selective protection  Short-time delayed tripping  Short-circuit breaking capacity (lcw)  Surge current capacity  AA  10  Surge current capacity  KAA  3  Strequency  Additional equipment possible  With interlocking device  Degree of protection (IP)  Width in number of modular spacings  Built-in depth  mm  70.5  Anbient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  mm²  1.5 - 16	Rated impulse withstand voltage Uimp		kV	4
Selective protection Short-time delayed tripping Short-circuit breaking capacity (Icw) Surge current capacity Frequency Additional equipment possible With interlocking device Usered of protection (IP) Width in number of modular spacings Built-in depth Ambient temperature during operating Pollution degree Connectable conductor cross section multi-wired  No Yes  No Yes  10  20  4  70  70  70  70  70  70  70  70  70	Mounting method			DIN rail
Short-time delayed tripping Short-circuit breaking capacity (Icw) Surge current capacity Frequency Additional equipment possible With interlocking device Degree of protection (IP) Width in number of modular spacings Built-in depth Ambient temperature during operating Pollution degree Connectable conductor cross section multi-wired  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Y	Leakage current type			A
Short-circuit breaking capacity (Icw)  Surge current capacity  kA  3  Frequency  Additional equipment possible  With interlocking device  Degree of protection (IP)  Width in number of modular spacings  Built-in depth  mm  70.5  Ambient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  kA  10  10  10  10  10  10  10  10  10  1	Selective protection			No
Surge current capacity  kA  50/60 Hz  Additional equipment possible  With interlocking device  Degree of protection (IP)  Width in number of modular spacings  Built-in depth  mm  70.5  Ambient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  kA  3  4  4  70.5  70.	Short-time delayed tripping			Yes
Frequency Additional equipment possible With interlocking device With interlocking device Degree of protection (IP) Width in number of modular spacings With in number of modular spacings With in temperature during operating Pollution degree Connectable conductor cross section multi-wired  50/60 Hz Yes	Short-circuit breaking capacity (Icw)		kA	10
Additional equipment possible  With interlocking device  Degree of protection (IP)  Width in number of modular spacings  Wilthin depth  Ambient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  Yes  Yes  1P20  1P20  1P20  2  2  Connectable conductor cross section multi-wired  mm  70.5  2  Connectable conductor cross section multi-wired  mm²  1.5 - 16	Surge current capacity	I	kA	3
With interlocking device  Degree of protection (IP)  Width in number of modular spacings  Width in number of modular spacings  Width in number of modular spacings  Min	Frequency			50/60 Hz
Degree of protection (IP)  Width in number of modular spacings  Built-in depth  Ambient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  Pollution  IP20  4  70.5  -25 - 40  2  Connectable conductor cross section multi-wired  mm²  1.5 - 16	Additional equipment possible			Yes
Width in number of modular spacings  Built-in depth  mm 70.5  Ambient temperature during operating  °C -25 - 40  Pollution degree  Connectable conductor cross section multi-wired  mm² 1.5 - 16	With interlocking device			Yes
Built-in depth mm 70.5  Ambient temperature during operating °C -25 - 40  Pollution degree 2  Connectable conductor cross section multi-wired mm² 1.5 - 16	Degree of protection (IP)			IP20
Ambient temperature during operating  °C -25 - 40  Pollution degree  2  Connectable conductor cross section multi-wired  mm² 1.5 - 16	Width in number of modular spacings			4
Pollution degree 2 Connectable conductor cross section multi-wired mm² 1.5 - 16	Built-in depth	1	mm	70.5
Connectable conductor cross section multi-wired mm <sup>2</sup> 1.5 - 16	Ambient temperature during operating		°C	-25 - 40
	Pollution degree			2
Connectable conductor cross section solid-core mm² 1.5 - 35	Connectable conductor cross section multi-wired		mm²	1.5 - 16
	Connectable conductor cross section solid-core	1	mm²	1.5 - 35

## **Dimensions**

