### **DATASHEET - FRCMM-40/2/003-G/A-NA-110**

Part no. Catalog No.



Residual current circuit breaker (RCCB), 40A, 2p, 30mA, type G/A

FRCMM-40/2/003-G/A-NA-110 167694



Similar to illustration

Delivery program			
Basic function			Residual current circuit-breakers
Number of poles			2 pole
Application			Switchgear for 110-V systems
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	0.03
Туре			Type G/A (ÖVE E 8601)
Tripping		s	Short time-delayed
Product range			FRCmM-NA-110
Sensitivity			Pulse-current sensitive
Impulse withstand current			Surge-proof, 3 kA
Contact sequence			T N H H

# **Technical data**

Tripping

Electrical			
Types conform to			IEC/EN 61008 ÖVE E 8601
Current test marks			As per inscription
Tripping		s	10 ms delay at 50 Hz
Rated voltage according to IEC/EN 60947-2	Un	V AC	110/190
Rated frequency	f	Hz	50/60
Limit values of the operating voltage			
Test circuit		V AC	100 - 121
Rated fault current	$I_{\Delta n}$	mA	30
Sensitivity			Pulse-current sensitive
Rated insulation voltage	Ui	V	440
Rated impulse withstand voltage	U <sub>imp</sub>	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		≧ 10000
Electrical			
Types conform to			UL1053
Current test marks			As per inscription

8 ms delay at 60 Hz

Rated voltage according to UL	$U_{n}$	V AC	208/120 V, 60 Hz
Limit values of the operating voltage			
Test circuit		V AC	94 - 132
Pick-up current		mA	22
Sensitivity			Pulse-current sensitive
Overvoltage-tested		V	530
Rated impulse withstand voltage	$U_{\text{imp}}$	kV	4 (1.2/50µs)
Rated short-circuit strength	I <sub>cn</sub>	kA	5 as per CSA
Max. admissible back-up fuse			
Short-circuit			70 A class J fuse
Overload			The maximum operating current must not exceed the residual current circuit-breaker's rated operational current
Rated making and breaking capacity / Rated residual making and breaking capacity	$I_m/I_{\Delta m}$	Α	500
lifespan			
Electrical	Operations		≧ 4000
Mechanical	Operations		≧ 10000
Mechanical			
Standard front dimension		mm	45
Device height		mm	80
Built-in width		mm	35 (2TE)
Mounting			Quick attachment with 2 latch positions for DIN-rail IEC/EN 60715
Degree of Protection			IP40, IP54 (with moisture-proof enclosure)
Terminals top and bottom			Lift terminals
Terminal protection			Busbar tag shroud to BGV A3, ÖVE-EN 6
Terminal cross-section			
Solid		$\text{mm}^2$	1.5 - 35
Stranded		$mm^2$	2 x 16
Terminal cross-section			M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2)
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
Humidity		%	5 - 95
Pollution degree			2
Mounting position			As required
Contact position indicator			red / green
Trip indication			white / blue

## **Design verification as per IEC/EN 61439**

besign vermoution as per 120/214 01-103			
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	3.9
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	7.8
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 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) (pc/@ss10.01-77-14-29-01 [AAR906014])

Rated voltage         V         110           Rated current         A         40           Rated fault current         mA         30           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         Leakage current type         A           Selective protection         No         Yes           Short-time delayed tripping         Yes           Short-circuit breaking capacity (lcw)         kA         10           Surge current capacity         kA         3           Frequency         Yes         Yes           Additional equipment possible         Yes           With interlocking device         Yes         Yes           Degree of protection (IP)         Yes         Yes           Width in number of modular spacings         P20         Yes           Bull-in depth         mm         70.5           Ambient temperature during operating         "C         25 - 40           Pollution degree         Temperature during operating         Temperature	(ecl@ss10.0.1-27-14-22-01 [AAB906014])		
Rated current         A         40           Rated fault current         mA         30           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         kV         4           Leakage current type         A         DIN reil           Selective protection         No         Yes           Short-circuit breaking capacity (lcw)         kA         10           Surge current capacity         kA         3           Frequency         kA         3           Additional equipment possible         Yes           With interlocking device         Yes           Degree of protection (IP)         IP20           Width in number of modular spacings         IP20           Bull-in depth         mm         70.5           Ambient temperature during operating         "C         25-40           Pollution degree         IP20         25-40           Connectable conductor cross section multi-wired         IP20         25-40	Number of poles		2
Rated fault current         mA         30           Rated insulation voltage Ui         V         440           Rated impulse withstand voltage Uimp         kV         4           Mounting method         IDIN rail           Leakage current type         A         No           Selective protection         No         Yes           Short-circuit breaking capacity (lew)         kA         10           Short-circuit breaking capacity (lew)         kA         3           Surge current capacity         KA         3           Frequency         Ves         Ves           Additional equipment possible         Yes         Yes           With interlocking device         Yes         Yes           Degree of protection (IP)         P20         P20           With in number of modular spacings         mm         70.5           Built-in depth         mm         70.5           Ambient temperature during operating         "C         25 - 40           Connectable conductor cross section multi-wired         "mm" 1.5 - 16	Rated voltage	V	110
Rated insulation voltage Uin Rated inpulse withstand voltage Uinp Mounting method Leakage current type Leakage current type Selective protection Solver-circuit breaking capacity (Icw) Source 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  V	Rated current	Α	40
Rated impulse withstand voltage Uimp Mounting method 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    KV   4   Connectable conductor cross section multi-wired   DIN rail   A	Rated fault current	mA	30
Mounting method Leakage current type Selective protection 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  DIN rail  A  A  A  A  A  A  A  A  A  A  A  A  A	Rated insulation voltage Ui	V	440
Leakage current type Selective protection 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  A Connectable conductor cross section multi-wired  No  No  Yes  Occurrent capacity No  KA  10  Connectable conductor cross section multi-wired  No  No  Yes  Ves  Yes  Pollution degree 2  15 - 16	Rated impulse withstand voltage Uimp	kV	4
Selective protection Short-time delayed tripping Short-circuit breaking capacity (Icw) Short-circuit breaking capacity (Icw) 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 Pollution degree Connectable conductor cross section multi-wired  No Yes So/60 Hz Yes Yes Pollution degree 2 Connectable conductor cross section multi-wired  No Yes Connectable conductor cross section multi-wired  No Xes Connectable conductor cross section multi-wired	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  12  2  2  2  3  4  5  6  7  7  7  7  7  7  7  7  7  7  7  7	Leakage current type		A
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  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  Ambient temperature during operating  Pollution degree  Connectable conductor cross section multi-wired  KA  3  50/60 Hz  Yes  Yes  Pos  Pos  1P20  2  2  2  2  2  2  2  3  4  5  5  6  7  5  6  7  7  7  7  7  7  7  7  7  7  7  7	Short-time delayed tripping		Yes
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  50/60 Hz Yes Yes Yes Protection (IP) IP20 IP20  POLICE POL	Short-circuit breaking capacity (Icw)	kA	10
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  Protection  Protection (IP)  Protection (IP	Surge current capacity	kA	3
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  1P20  2  2  2  2  10.5	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  Pollution  mm 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 2 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	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		2
Pollution degree 2 Connectable conductor cross section multi-wired mm² 1.5 - 16	Built-in depth	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 mm <sup>2</sup> 1.5 - 35	Connectable conductor cross section multi-wired	mm²	1.5 - 16
	Connectable conductor cross section solid-core	mm²	1.5 - 35

# **Dimensions**

