

**Motor Circuit Protectors**  
Cutler-Hammer® series

Reliable, efficient and safe  
motor circuit protection.



**EATON**

*Powering Business Worldwide*



Aerospace



Truck



# Powering business worldwide

## Discover Eaton – a leader in the power management field

Since 1911, when our company began trading as a small truck parts supplier, Eaton® Corporation has come a long way. Today, as a diversified power management company, Eaton has sales of \$11.9 billion USD (FY 2009), employs 70,000 people and has customers in more than 150 countries. Everyday, we help companies across the world to manage power, and do more, while consuming less energy.

Eaton's innovative products, solutions and technologies are designed to help customers to manage power and conserve resources while working more productively, safely and sustainably. Our integrated and diversified business strategy ensures that we remain at the forefront of our industry, decade after decade.

### Aerospace

A leading global supplier to commercial and military aviation and aerospace industries. An extensive technology portfolio includes hydraulic systems, fuel systems, motion control systems, propulsion sub-systems, cockpit controls and displays and fluid health monitoring systems. Our products improve fuel economy, aircraft performance, reliability and safety.

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A leader in the design, manufacture and marketing of complete line of drivetrain systems and components for medium- and heavy-duty commercial vehicles. Under the "Roadranger" brand, Eaton also markets lubricants, safety products and service tools. Eaton's hybrid power systems have earned the company recognition as a global leader in alternative power for commercial vehicles.

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A global leader in electrical control, power distribution, uninterruptible power supply and industrial automation products and services. Our products provide customer-driven PowerChain Management® solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission critical and OEM markets worldwide.



Powering Business Worldwide





Electrical



Automotive



Hydraulics

# Powering business more sustainably

## Sustainability – smaller footprint in the world

The principle of sustainability means meeting the current needs of our own society without compromising the needs or options of future generations. It is a principle, which forms the very core of our design and production philosophy and guides all our activities across the world. Our commitment to reducing our own ecological footprint covers a wide range of green technologies, products and services that help our customers utilise electrical power more efficiently, while improving environmental performance.

Eaton has been recognised throughout the world for its uncompromising business ethics. For example, it was listed as one of the 'World's Most Ethical Companies' on the Ethisphere Institute's annual list for three consecutive years (2007, 2008 and 2009).

## Automotive

A supplier of critical components that reduce emissions and fuel consumption and improve stability and performance of cars, light trucks and commercial vehicles. Principal products include engine valves and valve train components, transmission and engine controls, supercharger, locking and limited slip differentials, cylinder heads, fluid conveyance components, body mouldings and spoilers.

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A worldwide leader in reliable, high-efficiency hydraulic systems and components for use in mobile and industrial applications. Markets include agriculture, construction, mining, forestry, utility, material handling, earth moving, truck and bus, machine tools, moulding, primary metals, automotive, power generation, port machinery and entertainment.



An Eaton Green Solution

Learn more about Eaton Green Solutions at [www.eaton.com/greensolutions](http://www.eaton.com/greensolutions)

When you see this symbol, you know the solution represents an Eaton benchmark for environmental performance.



# Complete coverage of the market – worldwide in all standards

## Local market leader with global competence

Eaton's product series are distinguished by their strong presence in all regions of the world. In markets that adhere to IEC standards, Eaton's Moeller® series is very well established, and in the world of UL/CSA, Eaton is a key player, for example with its Cutler-Hammer® series. Now all customers are benefiting from first-rate engineering and the combined know-how in research and development – no matter which standards they use.

## South Africa

Eaton acquired the CHI Control business through the acquisition of Actom Low Voltage, South Africa in July 2011. In terms of organisation, product and production techniques, CHI Control is being fully integrated into Eaton, adopting the Eaton Business System, a single system covering work processes, tools and tooling. The CHI Control logo is now being replaced by the Eaton logo on product rating and carton labels and associated marketing materials with a phased completion date of 1 July 2013. The CHI Control name and logo remain registered trademarks of Eaton Corporation.



# Motor Circuit Protectors

## Series G

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### Series G Motor Circuit Protectors (MCP)



### Contents

<i>Description</i>	<i>Page</i>
1 Series G Motor Circuit Protectors (MCP)	
1.1 Product Selection Guide and Ordering Information .....	<b>6</b>
1.2 Internal Accessories .....	<b>9</b>
1.3 External Accessories .....	<b>13</b>
1.4 Universal Rotary Handle .....	<b>14</b>
2 Series C Motor Circuit Protectors (MCP)	
2.1 Product Selection Guide and Ordering Information .....	<b>15</b>
2.2 Special Features and Accessories .....	<b>23</b>
2.3 Internal Accessories .....	<b>24</b>
2.4 External Accessories .....	<b>52</b>

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### Series C Motor Circuit Protectors (MCP)



# 1.1

## Motor Circuit Protectors

Series G - Product selection and ordering information

### 1 Product Selection Guide and Ordering Information

#### EG-Frame—480 Vac, 600Y/347 Vac Maximum<sup>Ⓢ</sup>

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number
3	A	0.69–0.91	9	<b>HMCPE003A0C</b>
	B	1.1–1.3	15	
	C	1.6–1.7	21	
	D	2.0–2.2	27	
	E	2.3–2.5	30	
	F	2.6–2.8	33	
7	A	1.5–2.0	21	<b>HMCPE007C0C</b>
	B	2.6–3.1	35	
	C	3.7–3.9	49	
	D	4.8–5.2	63	
	E	5.3–5.7	70	
	F	5.8–6.1	77	
15	A	3.4–4.5	45	<b>HMCPE015E0C</b>
	B	5.7–6.8	75	
	C	8.0–9.1	105	
	D	10.4–11.4	135	
	E	11.5–12.6	150	
	F	12.7–13.0	165	
30	A	3.9–9.1	90	<b>HMCPE030H1C</b>
	B	11.5–13.7	150	
	C	16.1–18.3	210	
	D	20.7–22.9	270	
	E	23.0–25.2	300	
	F	25.3–26.1	330	

#### Notes

- Ⓢ UL listed for use with Eaton Motor Starters.
- Ⓢ Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- Ⓢ For DC applications, actual trip levels are approximately 40% higher than values shown.

### EG-Frame—480 Vac, 600Y/347 Vac Maximum, continued<sup>Ⓢ</sup>

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number
50	A	11.5–15.2	150	<b>HMCPE050K2C</b>
	B	19.2–22.9	250	
	C	26.9–30.6	350	
	D	34.6–38.3	450	
	E	38.4–42.1	500	
	F	42.2–43.5	550	
70	A	16.1–30.6	210	<b>HMCPE070M2C</b>
	B	26.9–32.2	350	
	C	37.6–42.9	490	
	D	48.4–53.7	630	
	E	53.8–59.1	700	
	F	59.2–60.9	770	
100	A	23.0–30.6	300	<b>HMCPE100R3C</b>
	B	38.4–46.0	500	
	C	53.8–61.4	700	
	D	69.2–76.8	900	
	E	76.9–84.5	1000	
	F	84.6–87.0	1100	
100	A	38.4–46.0	500	<b>HMCPE100T3C</b>
	B	57.6–65.2	750	
	C	76.9–84.5	1000	
	D	Ⓢ	1250	
	E	Ⓢ	1375	
	F	Ⓢ	1500	

### JG-Frame—600 Vac Maximum, 250 Vdc Maximum<sup>Ⓢ</sup>

Continuous Amperes	MCP Trip Range (Amperes)	MCP Eaton Part Number
250	500–1000	<b>HMCPJ250D5L</b>
	625–1250	<b>HMCPJ250F5L</b>
	750–1500	<b>HMCPJ250G5L</b>
	875–1750	<b>HMCPJ250J5L</b>
	1000–2000	<b>HMCPJ250K5L</b>
	1125–2250	<b>HMCPJ250L5L</b>
	1250–2500	<b>HMCPJ250W5L</b>

#### Notes

- Ⓢ UL listed for use with Eaton Motor Starters.
- Ⓢ Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- Ⓢ For DC applications, actual trip levels are approximately 40% higher than values shown.
- Ⓢ Settings above  $10 \times I_n$  are for special applications. Where the ampere rating of the disconnecting means cannot be less than 115% of the motor full load ampere rating.

# 1.1

## Motor Circuit Protectors

Series G - Product selection and ordering information

1

### LG-Frame—600 Vac Maximum, 250 Vdc Maximum<sup>Ⓢ</sup>

Continuous Amperes	MCP Trip Range (Amperes)	MCP Eaton Part Number
600	1250–2500	<b>HMCP600L6G</b>
	1500–3000	<b>HMCP600N6G</b>
	1750–3500	<b>HMCP600R6G</b>
	2000–4000	<b>HMCP600X6G</b>
	2250–4500	<b>HMCP600Y6G</b>
	2500–5000	<b>HMCP600P6G</b>
	3000–6000	<b>HMCP600M6G</b>

#### Notes

<sup>Ⓢ</sup> UL listed for use with Eaton Motor Starters.

800 and 1200 ampere, 600 Vac maximum motor circuit protectors are available as Series C HMCP product.



## Internal Accessories

### **Alarm Lockout**

The alarm switches operate when the circuit breaker is tripped by a short circuit or overcurrent, but also when it is tripped by a shunt trip or undervoltage release.

### **Auxiliary Switches**

Auxiliary switches are used for signaling and control purposes. The various functions of the auxiliary switches (changeover) are shown on **Page 10**.

### **Shunt Trips**

The shunt trip is used for remote tripping.

The coil of the shunt trip is rated only for short-time operation.

It is not permissible with the circuit breaker open to apply a continuous opening command to the shunt trip in order to prevent the breaker from closing. This means that interlocking circuits with continuous commands may not be set up with shunt trips.

### **Undervoltage Releases**

The circuit breaker cannot be closed until the undervoltage release is energized. If the release is not energized, the circuit breaker can only perform an idle switching operation.

Frequent idle switching actions should be avoided as they shorten the endurance of the circuit breaker.

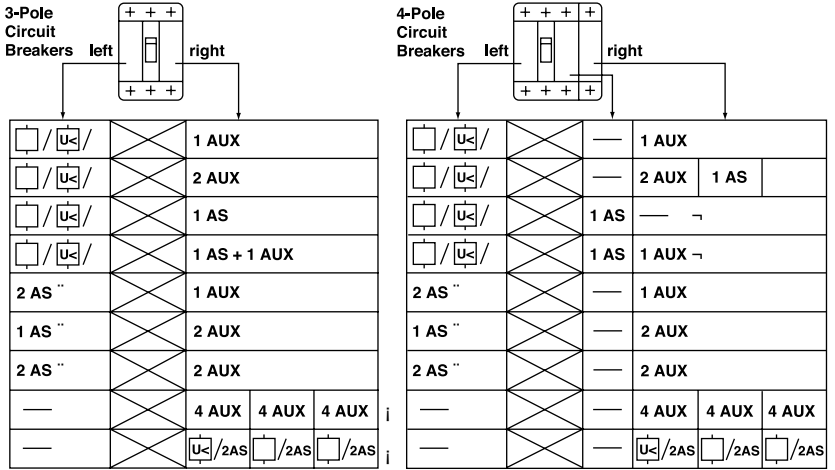
# 1.2

## Motor Circuit Protectors

Series G - Internal accessories

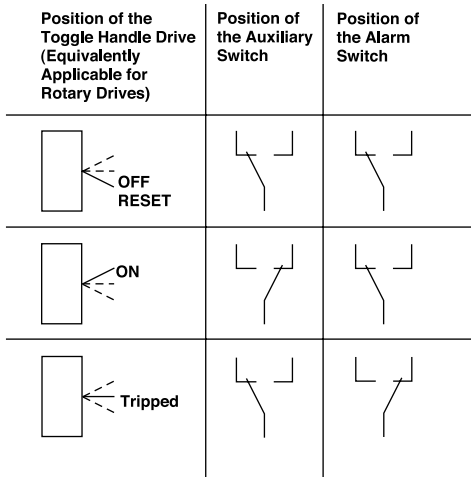
### 1 Accessory Configurations for EG–RG Circuit Breakers

#### Internal Accessory Configurations



- / U<sub>C</sub> / = Shunt Trip or Undervoltage Release
- AUX = Auxiliary Switch
- AS = Alarm Switch
- " = For N-Frame Circuit Breakers Only
- ≠ = For R-Frame Circuit Breakers Only
- ↵ = For N and R-Frame Circuit Breakers Only

#### Contact Making by the Auxiliary and Alarm Switches as a Function of the Switching Position of the Circuit Breaker



Accessories

Field Fit Kit Eaton Part Numbers

Alarm Lockout

Description	Pole Location	Frame		
		EG, JG and LG	NG	RG ①
Make/Break	Left	—	A1L5LPK	—
	Right	ALM1M1BEPK ②	A1L5RPK	A1L6RPK
2 Make/2 Break	Left	—	A2L5LPK	—
	Right	ALM2M2BEPK ②	A2L5RPK	A2L6RPK

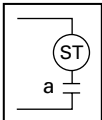
Auxiliary Switch

Description	Pole Location	Frame		
		EG, JG and LG	NG	RG ①
1A, 1B	Left	—	A1X5PK	—
	Right	AUX1A1BPK	A1X5PK	—
2A, 2B	Left	—	A2X5PK	—
	Right	AUX2A2BPK	A2X5PK	A2X6RPK
3A, 3B	Left	—	A3X5LPK	—
	Right	—	A3X5RPK	—
4A, 4B	Left	—	—	—
	Right	—	—	A4X6RPK

Auxiliary Switch/Alarm Lockout

Description	Pole Location	Frame		
		EG, JG and LG	NG	RG ①
—	Left	—	AA115LPK	—
	Right	AUXALRMEPK ③	AA115RPK	—

Shunt Trip—Standard



Shunt Trip—Standard

Description	Pole Location	Frame		
		EG, JG and LG ④	NG	RG ①
48–60 Vac	Left	SNT060CPK	SNT5LP05K	—
	Right	—	—	SNT6P05K
10–240 Vac	Left	SNT120CPK	SNT5LP11K	—
	Right	—	—	SNT6P11K
380–600 Vac	Left	SNT480CPK ⑤	—	—
	Right	—	—	—
220–250 Vdc or 380–440 Vac	—	—	SNT5LP14K	SNT6P14K
480–600 Vac	—	—	SNT5LP18K	SNT6P18K
12 Vdc	Left	SNT012CPK	—	—
	Right	—	—	—
24 Vac/dc	Left	SNT060CPK	SNT5LP03K	—
	Right	—	—	SNT6P03K
48–60 Vdc	Left	SNT060CPK	SNT5LP23K	—
	Right	—	—	SNT6P23K
110–125 Vdc	Left	SNT125DPK	SNT5LP26K	—
	Right	—	—	SNT6P26K

Notes

- ① All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
- ② Part number for JG and LG is ALM1M1BJPK.
- ③ Part number for JG and LG is ALM2M2BJPK.
- ④ Part number for JG and LG is AUXALRMJPK.
- ⑤ LH cavity not available for EG frame with earth leakage module.
- ⑥ 380–600 Vdc, 50/60 Hz.

# 1.2

## Motor Circuit Protectors

Series G - Internal accessories

1

### Shunt Trip—Low Energy

Description	Pole Location	Frame		
		EG, JG and LG <sup>Ⓢ</sup>	NG	RG <sup>Ⓢ</sup>
—	Left	—	LST5LPK	—
	Right	—	—	LST6RPK

### Undervoltage Release Mechanism

Description	Pole Location	Frame		
		EG, JG and LG <sup>Ⓢ</sup>	NG	RG <sup>Ⓢ</sup>
110–127 Vac	Left	UVR120APK	UVH5LP08K	—
	Right	—	—	UVH6RP08K
208–240 Vac	Left	UVR240APK	UVH5LP11K	—
	Right	—	—	UVH6RP11K
24 Vdc	Left	UVR024DPK	UVH5LP21K <sup>Ⓢ</sup>	—
	Right	—	—	UVH6RP21K <sup>Ⓢ</sup>
24 Vac	Left	UVR024APK	UVH5LP21K <sup>Ⓢ</sup>	—
	Right	—	—	UVH6RP21K <sup>Ⓢ</sup>
48–60 Vdc	Left	UVR048DPK	UVH5LP23K	—
	Right	—	—	UVH6RP23K
48–60 Vac	Left	UVR048APK	UVH5LP05K	—
	Right	—	—	UVH6RP05K
120 Vdc	Left	UVR125DPK	UVH5LP26K	—
	Right	—	—	UVH6RP26K
220–250 Vdc	Left	UVR250DPK	UVH5LP28K	—
	Right	—	—	UVH6RP28K
380–500 Vac	Left	UVR480APK	UVH5LP29K	—
	Right	—	—	UVH6RP29K
525–600 Vac	Left	UVR600APK	—	—
	Right	—	—	—
12 Vdc	Left	—	UVH5LP20K	—
	Right	—	—	UVH6RP20K
12 Vac	Left	—	UVH5LP02K	—
	Right	—	—	UVH6RP02K

#### Notes

- Ⓢ All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
- Ⓢ 24 Vdc only use UVH5LP03K (NG) UVH6RP03K (RG) for 24 Vac.
- Ⓢ LH cavity not available for EG frame with earth leakage module.



### External Accessories and Test Kit

#### External Accessories

Description	Fit Type	Frame				
		EG	JG	LG	NG	RG
Non-padlockable handle block	Field	<b>EFHB</b>	—	—	<b>LKD4</b>	—
Padlockable handle block	Field	<b>EFPHB</b>	—	—	—	—
Padlockable handle block off-only	Field	<b>EFPHBOFF</b>	<b>FJPHBOFF</b>	<b>LBHPOFF</b>	—	—
Padlockable handle lock hasp	Field	<b>EFPLK</b>	<b>FJPHL</b>	<b>LPHL</b>	<b>PLK5</b>	<b>HLK6</b>
Padlockable handle lock hasp off-only	Field	<b>EFPHLOFF</b>	<b>FJPHLOFF</b>	<b>LPHLOFF</b>	<b>PLK55OFF</b>	<b>HLK60FF</b>
Kirk key interlock kit <sup>Ⓞ</sup>	Field	—	<b>KYKJG</b>	<b>KYKLG</b>	<b>KYK4</b>	<b>KYK6</b>
Castell key interlock kit <sup>Ⓞ</sup>	Field	—	<b>CTKJG</b>	<b>CTKLG</b>	<b>CTK4</b>	<b>CTK6</b>
Slide bar interlock <sup>Ⓞ</sup>	Field	<b>ESBI</b>	<b>FJSBI</b>	<b>LGSBI</b>	<b>SBK5</b>	—
Walking beam interlock <sup>Ⓞ</sup>	Three-pole	<b>EG3WBI</b>	<b>JG3WBI</b>	<b>LG3WBI</b>	<b>WBL5</b>	<b>WBL6</b>
	Four-pole	<b>EG4WBI</b>	<b>JG4WBI</b>	<b>LG4WBI</b>	<b>WBL5</b>	—
Electrical operator <sup>Ⓞ</sup>	120 Vac	<b>MOPEG240C</b>	<b>MOPJG120C</b>	<b>MOPLG120C</b>	<b>EOP5T07</b>	<b>EOP6T08K</b>
	240 Vac	<b>MOPEG240C</b>	<b>MOPJG240C</b>	<b>MOPLG240C</b>	<b>EOP5T11</b>	<b>EOP6T11K</b>
	24 Vdc	<b>MOPEG48D</b>	<b>MOPJG24D</b>	<b>MOPLG24D</b>	<b>EOP5T21</b>	—
	48 Vdc	<b>MOPEG48D</b>	—	—	<b>EOP5T22</b>	<b>EOP6T21K</b>
	125 Vdc	<b>MOPEG120C</b>	<b>MOPJG120C</b>	<b>MOPLG120C</b>	<b>EOP5T26</b>	—
	220 Vdc	—	<b>MOPJG240C</b>	<b>MOPLG240C</b>	—	—
	250 Vdc	—	<b>MOPJG240C</b>	<b>MOPLG240C</b>	—	—
Plug-in adapters	Three-pole	<b>PAD3E</b>	<b>PAD3J</b>	<b>PAD3L</b>	<b>PAD53</b>	—
	Four-pole	<b>PAD4E</b>	<b>PAD4J</b>	<b>PAD4L</b>	—	—
Rear connecting studs <sup>Ⓞ</sup>	Field	<b>EFRCSDL</b>	<b>FJRCSDL</b>	<b>LRCS3WK (3P)</b>	—	—
		<b>EFRCSDS</b>	<b>FJRCSDS</b>	<b>LRCS4WK (4P)</b>	—	—
		<b>EFRCSWL</b>	<b>FJRCSWL</b>	—	—	—
		<b>EFRCSWS</b>	<b>FJRCSWS</b>	—	—	—

#### Test Kit

Description	Fit Type	Frame				
		EG	JG	LG	NG	RG
Electronic portable test kit	120V	<b>N/A</b>	<b>MTST120V</b>	<b>MTST120V</b>	<b>STK2</b>	<b>STK2</b>
	230V	<b>N/A</b>	<b>MTST230V</b>	<b>MTST230V</b>	—	—

#### Notes

- Ⓞ Provision only.
- Ⓞ Castell bolt mounting hole must be 10 mm.
- Ⓞ Requires two breakers.
- Ⓞ Contact Eaton for availability of operators for EG- and NG-Frames before December 2004.
- Ⓞ D = Imperial threads UL, W = metric threads IEC, L = long studs, S = short studs.

# 1.4

## Motor Circuit Protectors

### Series G - Universal rotary handle

1

#### Universal Rotary

##### Product Description

Eaton's Universal Rotary is suitable for use with Type 1 or 12 enclosure types. All rotary handle mechanisms include a handle "lock off" to prevent turning the breaker ON while in the OFF position, and indicate ON/OFF/Tripped/Reset positions. The Universal Rotary has the added feature of international markings for ON (I) and OFF (O). The Universal Rotary is made of molded material.

The Universal Rotary mechanisms for EG-, JG- and LG-Frame MCCBs can be operated by hand with the door open or "locked off" to prevent operation with the door open.

#### Product Selection

##### Universal Rotary



##### Universal Rotary Through-the-Door Handle Mechanisms

Handle Color	UL Rating	Shaft Length in Inches (mm)	Complete Eaton Part Number <sup>Ⓢ</sup>
<b>EG-Frame</b>			
Black	1, 12	6.00 (152.4)	<b>EHMVD06B</b>
		12.00 (304.8)	<b>EHMVD12B</b>
		24.00 (609.6)	<b>EHMVD24B</b>
Red	1, 12	6.00 (152.4)	<b>EHMVD06R</b>
		12.00 (304.8)	<b>EHMVD12R</b>
		24.00 (609.6)	<b>EHMVD24R</b>
<b>JG-Frame</b>			
Black	1, 12	6.00 (152.4)	<b>FJHMVD06B</b>
		12.00 (304.8)	<b>FJHMVD12B</b>
		24.00 (609.6)	<b>FJHMVD24B</b>
Red	1, 12	6.00 (152.4)	<b>FJHMVD06R</b>
		12.00 (304.8)	<b>FJHMVD12R</b>
		24.00 (609.6)	<b>FJHMVD24R</b>
<b>LG-Frame</b>			
Black	1, 12	6.00 (152.4)	<b>KLHMVD06B</b>
		12.00 (304.8)	<b>KLHMVD12B</b>
		24.00 (609.6)	<b>KLHMVD24B</b>
Red	1, 12	6.00 (152.4)	<b>KLHMVD06R</b>
		12.00 (304.8)	<b>KLHMVD12R</b>
		24.00 (609.6)	<b>KLHMVD24R</b>
<b>NG-Frame</b>			
Black	1	6.00 (152.4)	<b>HMVD5B</b>
		6.00 (152.4)	<b>HMVD5BT<sup>Ⓢ</sup></b>
<b>RG-Frame</b>			
Black	1	9.00 (228.6)	<b>HMVD6B</b>

##### Notes

- <sup>Ⓢ</sup> Complete part number includes handle, mechanism, shaft and mounting hardware.
- <sup>Ⓢ</sup> Same as HMVD5B, except uses T handle.

## Motor Circuit Protectors (MCP)

### Product Description

Designated as Eaton's Types GMCP and HMCP, the instantaneous-only motor circuit protector (MCP) is available in ratings from 3A to 1200A for motor starter sizes 0 through 8.

An innovative design of internal components allows higher MCP-starter combination interrupting ratings. The MCP is marked to permit proper electrical application within the assigned equipment ratings.

### Standards and Certifications

The MCP is designed to comply with the applicable requirements of Underwriters Laboratories Standard UL 489, Canadian Standards Association Standard C22.2 No. 5.1, and International Electrotechnical Commission Recommendations IEC 157-1.

The MCP is a recognized component (UL File E7819) and complies with the applicable requirements of Underwriters Laboratories Standard UL 489. It is also

designed to comply with the applicable requirements of Canadian Standards Association Standard C22.2 No. 5.1, International Electrotechnical Commission Recommendations IEC 157-1, and nameplates bear the CE marking.

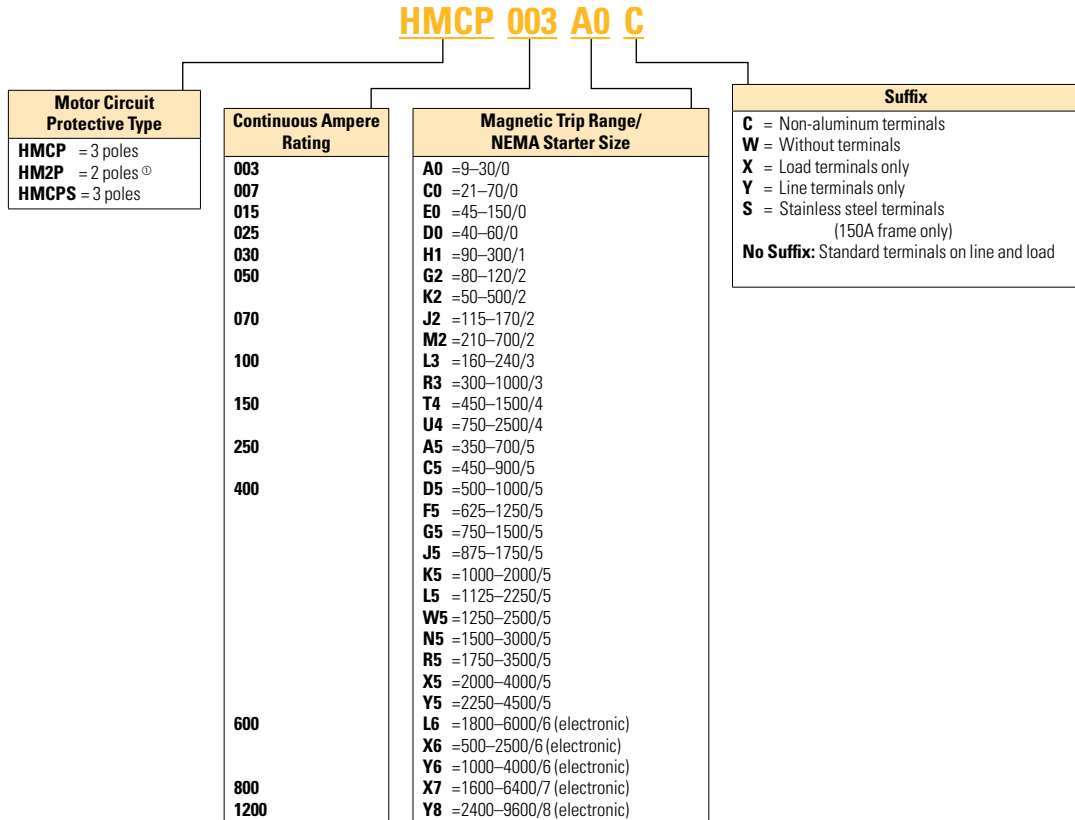


**Note:** Interrupting ratings are dependent on starter it is used with.

### Eaton Part Number Selection

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

### Motor Circuit Protector



**Note**

<sup>Ⓞ</sup> On J- and K-Frame HMCPs only.

# 2.1

## Motor Circuit Protectors

Series C - Product selection guide and ordering information

### F-Frame

#### 600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting <sup>②</sup>	MCP Eaton Part Number
0	3	A	0.69–0.91	9	<b>HMCP003A0C</b>
		B	0.92–1.0	12	
		C	1.1–1.2	15	
		D	1.3–1.5	18	
		E	1.6–1.7	21	
		F	1.8–1.9	24	
		G	2.0–2.2	27	
		H	2.3–2.5	30	
0	7	A	1.5–2.0	21	<b>HMCP007C0C</b>
		B	2.1–2.5	28	
		C	2.6–3.1	35	
		D	3.2–3.6	42	
		E	3.7–3.9	49	
		F	4.3–4.7	56	
		G	4.8–5.2	63	
		H	5.3–5.7	70	
0	15	A	3.4–4.5	45	<b>HMCP015E0C</b>
		B	4.6–5.6	60	
		C	5.7–6.8	75	
		D	6.9–7.9	90	
		E	8.0–9.1	105	
		F	9.2–10.3	120	
		G	10.4–11.4	135	
		H	11.5–12.6	150	
1	30	A	6.9–9.1	90	<b>HMCP030H1C</b>
		B	9.2–11.4	120	
		C	11.5–13.7	150	
		D	13.8–16.0	180	
		E	16.1–18.3	210	
		F	18.4–20.6	240	
		G	20.7–22.9	270	
		H	23.0–25.2	300	
2	50	A	11.5–15.2	150	<b>HMCP050K2C</b>
		B	15.3–19.1	200	
		C	19.2–22.9	250	
		D	23.0–26.8	300	
		E	26.9–30.6	350	
		F	30.7–4.5	400	
		G	34.6–38.3	450	
		H	38.4–42.1	500	

#### 600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting <sup>②</sup>	MCP Eaton Part Number
2	70	A	16.1–21.4	210	<b>HMCP070M2C</b>
		B	21.5–26.8	280	
		C	26.9–32.2	350	
		D	32.3–37.5	420	
		E	37.6–42.9	490	
		F	43.0–48.3	560	
		G	48.4–53.7	630	
		H	53.8–59.1	700	
3	100	A	23.0–30.6	300	<b>HMCP100R3C</b>
		B	30.7–38.3	400	
		C	38.4–46.0	500	
		D	46.1–53.7	600	
		E	53.8–61.4	700	
		F	61.5–69.1	800	
		G	69.2–76.8	900	
		H	76.9–84.5	1000	
4	150	A	34.6–46.0	450	<b>HMCP150T4C</b>
		B	46.1–57.5	600	
		C	57.6–69.1	750	
		D	69.2–80.6	900	
		D	69.2–80.6	900	
		E	80.7–92.2	1050	
		F	92.3–103.7	1200	
		G	103.8–115.2	1350	
H	115.3–126.7	1500			
4	150	A	57.0–75.0	750	<b>HMCP150U4C</b>
		B	76.0–95.0	1000	
		C	96.0–114.0	1250	
		D	115.0–130.7	1500	
		E	③	1750	
		F	③	2000	
		G	③	2250	
		H	③	2500	

#### Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate Cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Settings above 130 amperes are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 3–100A come with line and load steel body terminals, 3T100FB. HMCP 150A come with line and load steel body terminals, 3T150FB.



## Special Low Magnetic Protection Application MCP

### 600 Vac Maximum, 250 Vdc Maximum

Cont. Amps	Cam Setting	MCP Trip Setting <sup>Ⓞ</sup>	MCP Eaton Part Number
25	A	40	<b>HMCP025D0C</b>
	B	43	
	D	49	
	E	52	
	F	55	
	G	58	
	H	60	
	50	A	
B		87	
C		93	
D		98	
E		103	
F		109	
G		115	
H		120	
70	A	115	<b>HMCP070J2C</b>
	B	122	
	C	130	
	D	139	
	E	145	
	F	153	
	G	160	
	H	170	
100	A	160	<b>HMCP100L3C</b>
	B	174	
	C	185	
	D	196	
	E	207	
	F	218	
	G	229	
	H	240	

#### Notes

<sup>Ⓞ</sup> For DC applications, actual trip levels are approximately 40% higher than values shown.

HMCP 25–100A come with line and load steel body terminals, 3T100FB.

# 2.1

## Motor Circuit Protectors

Series C - Product selection guide and ordering information

### MCPs for Application with Motor Starters Equipped with Electronic Overload Relays

2

#### 600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number
0	3	A	0.69–0.91	9	<b>HMCP5003A0C</b>
		B	0.92–1.0	12	
		C	1.1–1.2	15	
		D	1.3–1.5	18	
		E	1.6–1.7	21	
		F	1.8–1.9	24	
		G	2.0–2.2	27	
		H	2.3–2.5	30	
0	7	A	1.5–2.0	21	<b>HMCP5007C0C</b>
		B	2.1–2.5	28	
		C	2.6–3.1	35	
		D	3.2–3.6	42	
		E	3.7–3.9	49	
		F	4.3–4.7	56	
		G	4.8–5.2	63	
		H	5.3–5.7	70	
0	15	A	3.4–4.5	45	<b>HMCP5015E0C</b>
		B	4.6–5.6	60	
		C	5.7–6.8	75	
		D	6.9–7.9	90	
		E	8.0–9.1	105	
		F	9.2–10.3	120	
		G	10.4–11.4	135	
		H	11.5–12.6	150	
1	30	A	6.9–9.1	90	<b>HMCP5030H1C</b>
		B	9.2–11.4	120	
		C	11.5–13.7	150	
		D	13.8–16.0	180	
		E	16.1–18.3	210	
		F	18.4–20.6	240	
		G	20.7–22.9	270	
		H	23.0–25.2	300	
2	50	A	11.5–15.2	150	<b>HMCP5050K2C</b>
		B	15.3–19.1	200	
		C	19.2–22.9	250	
		D	23.0–26.8	300	
		E	26.9–30.6	350	
		F	30.7–34.5	400	
		G	34.6–38.3	450	
		H	38.4–42.1	500	

#### 600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number
3	100	A	23.0–30.6	300	<b>HMCP5100R3C</b>
		B	30.7–38.3	400	
		C	38.4–46.0	500	
		D	46.1–53.7	600	
		E	53.8–61.4	700	
		F	61.5–69.1	800	
		G	69.2–76.8	900	
		H	76.9–84.5	1000	
4	150	A	34.6–46.0	450	<b>HMCP5150T4C</b>
		B	46.1–57.5	600	
		C	57.6–69.1	750	
		D	69.2–80.6	900	
		E	80.7–92.2	1050	
		F	92.3–103.7	1200	
		G	103.8–115.2	1350	
		H	115.3–126.7	1500	
4	150	A	57.0–75.0	750	<b>HMCP5150U4C</b>
		B	76.0–95.0	1000	
		C	96.0–114.0	1250	
		D	115.0–130.7	1500	
		E	<sup>Ⓢ</sup>	1750	
		F	<sup>Ⓢ</sup>	2000	
		G	<sup>Ⓢ</sup>	2250	
		H	<sup>Ⓢ</sup>	2500	

#### Notes

- Ⓢ Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- Ⓢ For DC applications, actual trip levels are approximately 40% higher than values shown.
- Ⓢ Settings above 130A are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 25–100A come with line and load steel body terminals, 3T100FB.

HMCP 3–100A come with line and load steel body terminals, 3T100FB. HMCP 150A come with line and load steel body terminals, 3T150FB.

### J-Frame

#### 600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number <sup>Ⓢ</sup>
4	250	A	27.0–30.7	350	<b>HMCP250A5C</b>
		B	30.8–33.8	400	
		C	33.9–36.9	440	
5	250	D	37.0–40.3	480	
		E	40.4–43.8	525	
		F	43.9–46.9	570	
		G	47.0–50.7	610	
		H	47.0–50.7	660	
		I	47.0–50.7	700	
5	250	A	34.7–38.8	450	<b>HMCP250C5C</b>
		B	38.9–43.4	505	
		C	43.5–47.6	565	
		D	47.7–52.2	620	
		E	52.3–56.5	680	
		F	56.6–60.7	735	
		G	60.8–64.9	790	
		H	65.0–69.2	845	
		I	69.3–73.5	900	
5	250	A	38.5–43.4	500	<b>HMCP250D5C</b>
		B	43.5–48.0	565	
		C	48.1–53.0	625	
		D	53.1–57.6	690	
		E	57.7–62.3	750	
		F	62.4–67.3	810	
		G	67.4–71.9	875	
		H	72.0–76.9	935	
		I	77.0–81.6	1000	
5	250	A	48.1–53.8	625	<b>HMCP250F5C</b>
		B	53.9–59.9	700	
		C	60.0–66.1	780	
		D	66.2–72.3	860	
		E	72.4–78.4	940	
		F	78.5–83.8	1020	
		G	83.9–89.9	1090	
		H	90.0–96.1	1170	
		I	96.2–102.0	1250	
5	250	A	57.7–64.6	750	<b>HMCP250G5C</b>
		B	64.7–71.9	840	
		C	72.0–79.2	935	
		D	79.3–86.5	1030	
		E	86.6–93.8	1125	
		F	93.9–101.1	1220	
		G	101.2–108.4	1315	
		H	108.5–115.3	1410	
		I	115.4–122.4	1500	

#### 600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>Ⓢ</sup>	MCP Trip Setting <sup>Ⓢ</sup>	MCP Eaton Part Number <sup>Ⓢ</sup>
5	250	A	67.4–75.3	875	<b>HMCP250J5C</b>
		B	75.4–83.8	980	
		C	83.9–92.3	1090	
		D	92.4–100.7	1200	
		E	100.8–109.2	1310	
		F	109.3–117.6	1420	
		G	117.7–126.1	1530	
		H	126.2–134.6	1640	
		I	134.7–142.8	1750	
5	250	A	77.0–86.6	1000	<b>HMCP250K5C</b>
		B	86.6–96.1	1125	
		C	96.2–105.7	1250	
		D	105.8–115.3	1375	
		E	115.4–124.9	1500	
		F	125.0–134.6	1625	
		G	134.7–144.2	1750	
		H	144.3–153.8	1875	
		I	153.9–163.3	2000	
5	250	A	86.6–97.3	1125	<b>HMCP250L5C</b>
		B	97.4–108.4	1265	
		C	108.5–118.8	1410	
		D	118.9–129.9	1545	
		E	130.0–140.7	1690	
		F	140.8–151.5	1830	
		G	151.6–162.3	1970	
		H	162.4–173.0	2110	
		I	173.1–183.6	2250	
5	250	A	96.2–108.0	1250	<b>HMCP250W5C</b>
		B	108.1–119.9	1405	
		C	120.0–132.3	1560	
		D	132.4–144.2	1720	
		E	144.3–156.1	1875	
		F	156.2–168.0	2030	
		G	168.1–179.9	2185	
		H	180.0–192.3	2340	
		I	192.4–204.0	2500	

#### Notes

- Ⓢ Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- Ⓢ For DC applications, actual trip levels are approximately 40% higher than values shown.
- Ⓢ Three-pole Eaton part numbers shown. Two-pole Eaton part numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 250A come with line and load steel body terminals, T250KB. (With suffix "C," without "C" comes with TA250KB.)

# 2.1

## Motor Circuit Protectors

Series C - Product selection guide and ordering information

### K-Frame

2

#### 600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting <sup>②</sup>	MCP Eaton Part Number <sup>③</sup>
4	400	A	27.0–30.7	350	<b>HMCP400A5C</b>
		B	30.8–33.8	400	
		C	33.9–36.9	440	
5	400	D	37.0–40.3	480	<b>HMCP400A5C</b>
		E	40.4–43.8	525	
		F	43.9–46.9	570	
		G	47.0–50.7	610	
		H	50.8–53.8	660	
		I	53.9–57.2	700	
5	400	A	38.5–43.4	500	<b>HMCP400D5C</b>
		B	43.5–48.0	565	
		C	48.1–53.0	626	
		D	53.1–57.6	690	
		E	57.7–62.3	750	
		F	62.4–67.3	810	
		G	67.4–71.9	875	
		H	72.0–76.9	935	
		I	77.0–81.6	1000	
5	400	A	48.1–53.8	625	<b>HMCP400F5C</b>
		B	53.9–59.9	700	
		C	60.0–66.1	780	
		D	66.2–72.3	860	
		E	72.4–78.4	940	
		F	78.5–83.8	1020	
		G	83.9–89.9	1090	
		H	90.0–96.1	1170	
		I	96.2–102.0	1250	
5	400	A	57.7–64.6	750	<b>HMCP400G5C</b>
		B	64.7–71.9	840	
		C	72.0–79.2	935	
		D	79.3–86.5	1030	
		E	86.6–93.8	1125	
		F	93.9–101.1	1220	
		G	101.2–108.4	1315	
		H	108.5–115.3	1410	
		I	115.4–122.4	1500	
5	400	A	67.4–75.3	875	<b>HMCP400J5C</b>
		B	75.4–83.8	980	
		C	83.9–92.3	1090	
		D	92.4–100.7	1200	
		E	100.8–109.2	1310	
		F	109.3–117.6	1420	
		G	117.7–126.1	1530	
		H	126.2–134.6	1640	
		I	134.7–142.8	1750	

#### 600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting <sup>②</sup>	MCP Eaton Part Number <sup>③</sup>
5	400	A	77.0–86.5	1000	<b>HMCP400K5C</b>
		B	86.6–96.1	1125	
		C	96.2–105.7	1250	
		D	105.8–115.3	1375	
		E	115.4–124.9	1500	
		F	125.0–134.6	1625	
5	400	A	134.7–144.2	1750	<b>HMCP400L5C</b>
		B	144.3–153.8	1875	
		C	153.9–163.3	2000	
		D	163.4–172.9	2125	
		E	173.0–182.5	2250	
		F	182.6–192.1	2375	
		G	192.2–201.7	2500	
		H	201.8–211.3	2625	
		I	211.4–220.9	2750	
5	400	A	86.6–97.3	1125	<b>HMCP400M5C</b>
		B	97.4–108.4	1265	
		C	108.5–118.8	1410	
		D	118.9–129.9	1545	
		E	130.0–140.7	1690	
		F	140.8–151.5	1830	
		G	151.6–162.3	1970	
		H	162.4–173.0	2110	
		I	173.1–183.6	2250	
5	400	A	96.2–108.0	1250	<b>HMCP400W5C</b>
		B	108.1–119.9	1405	
		C	120.0–132.3	1560	
		D	132.4–144.2	1720	
		E	144.3–156.1	1875	
		F	156.2–168.0	2030	
		G	168.1–179.9	2185	
		H	180.0–192.3	2340	
		I	192.4–204.0	2500	
5	400	A	115.4–129.9	1500	<b>HMCP400N5C</b>
		B	130.0–144.2	1690	
		C	144.3–158.4	1875	
		D	158.5–173.0	2060	
		E	173.1–187.6	2250	
		F	187.7–201.9	2440	
		G	202.0–216.1	2625	
		H	216.2–230.7	2810	
		I	230.8–244.9	3000	

#### Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
- ② For DC applications, actual trip levels are approximately 40% higher than values shown.
- ③ Three-pole Eaton part numbers shown. Two-pole Eaton part numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 400A come with aluminum body terminals, 3TA400K. Eaton part numbers with suffix "C" as shown above come with copper body terminals 3T400K.



### 600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting <sup>②</sup>	MCP Eaton Part Number <sup>③</sup>
5	400	A	134.7–151.5	1750	<b>HMCP400R5C</b>
		B	151.6–168.4	1970	
		C	168.5–185.3	2190	
		D	185.4–201.9	2410	
		E	202.0–218.8	2625	
		F	218.9–235.7	2845	
		G	235.8–252.6	3065	
		H	252.7–269.2	3285	
		I	269.3–285.7	3500	
5	400	A	153.9–173.0	2000	<b>HMCP400X5C</b>
		B	173.1–192.3	2250	
		C	192.4–211.5	2500	
		D	211.6–230.7	2750	
		E	230.8–249.9	3000	
		F	250.0–269.2	3250	
		G	269.3–288.4	3500	
		H	288.5–307.6	3750	
		I	307.7–326.9	4000	
5	400	A	173.1–194.5	2250	<b>HMCP400Y5C</b>
		B	194.6–216.1	2530	
		C	216.2–237.6	2810	
		D	237.7–259.5	3090	
		E	259.6–281.1	3375	
		F	281.2–302.6	3655	
		G	302.7–324.1	3935	
		H	324.2–346.1	4215	
		I	346.2–368.1	4500	

### L-Frame

### 600 Vac Maximum<sup>④</sup>

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) <sup>①</sup>	MCP Trip Setting	MCP Eaton Part Number
6	600	A	138.5–184.5	1800	<b>HMCP600L6W</b>
		B	184.6–230.7	2400	
		C	230.8–276.8	3000	
		D	276.9–323.0	3600	
		E	323.1–369.1	4200	
		F	369.2–415.3	4800	
		G	415.4–461.4	5400	
		H	461.5–507.7	6000	
6	600	A	38.5–46.1	500	<b>HMCP600X6W</b>
		B	46.2–61.4	600	
		C	61.5–76.8	800	
		D	76.9–96.1	1000	
		E	96.2–115.3	1250	
		F	115.4–153.7	1500	
		G	153.8–192.2	2000	
		H	192.3–230.7	2500	
6	600	A	76.9–96.1	1000	<b>HMCP600Y6W</b>
		B	96.2–115.3	1250	
		C	115.4–153.7	1500	
		D	153.8–192.2	2000	
		E	192.3–230.7	2500	
		F	230.8–269.1	3000	
		G	269.2–307.6	3500	
		H	307.7–346.1	4000	

### Notes

- ① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.
  - ② For DC applications, actual trip levels are approximately 40% higher than values shown.
  - ③ Three-pole Eaton part numbers shown. Two-pole Eaton part numbers begin with **HM2P** in place of **HMCP**.
  - ④ Equipped with electronic trip device without "load and line" terminals.
- All HMCP and HM2P 400A come with aluminum body terminals, 3TA400K. Eaton Part numbers with suffix "C" as shown above come with copper body terminals 3T400K.
- All HMCP 600A come without terminals. Aluminium TA700MA1 (per terminal), Copper TA600MA (per terminal).

# 2.1

## Motor Circuit Protectors

Series C - Product selection guide and ordering information

### N-Frame

2

#### 600 Vac Maximum <sup>Ⓢ</sup>

NEMA Starter Size	Cont. Amps	Cam Setting <sup>Ⓢ</sup>	Motor Full Load Current Amperes (FLA) <sup>Ⓢ</sup>	MCP Trip Setting	MCP Eaton Part Number
7	800	A	123.1–184.5	1600	<b>HMCP800X7W</b>
		B	184.6–246.1	2400	
		C	246.2–307.6	3200	
		D	307.7–369.1	4000	
		E	369.2–430.7	4800	
		F	430.8–492.2	5600	
		G	492.3–553.7	6400	
8	1200	A	184.6–276.8	2400	<b>HMCP12Y8W</b>
		B	276.9–369.1	3600	
		C	369.2–461.4	4800	
		D	461.5–553.7	6000	
		E	553.8–646.1	7200	
		F	646.2–738.4	8400	
		G	738.5–830.7	9600	

#### Notes

- <sup>Ⓢ</sup> Equipped with electronic trip device.
- <sup>Ⓢ</sup> Motor FLA ranges are typical. The corresponding trip setting is at 13X the minimum FLA value shown. Where a 13X setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

**Type ELC Current Limiter Attachment (Size 0–4)**

**Product Description**

Eaton’s Type ELC current limiter attachment for the MCP is designed to provide increased interrupting capacity. The combination may be used for the application up to 200,000A symmetrical at 600 Vac, making the MCP suitable for use in network distribution systems or other applications where unusually high fault currents are available. The current limiter connects to the load end of the MCP and is provided with terminals suitable for copper or aluminum conductors. (See table at right.)

Limiters are coordinated with the MCP so that normal fault currents are interrupted automatically by the MCP without any damage to the limiter. Only the rare very high fault is opened by the limiter. Faults that are interrupted by the limiter also magnetically trip the MCP, opening all three poles, preventing single-phase operation.

Each of the three poles of the Type ELC limiter is equipped with an indicator that extends when a fault is interrupted by the limiter.

**Product Selection**

**Type ELC Current Limiter Attachment**



**ELC Current Limiter Attachment**

MCP Rating (Amperes)	Eaton Part Number
3	ELC3003R
7	ELC3007R
15	ELC3015R
30	ELC3030R
50	ELC3050R
100	ELC3100R
150	ELC3150R

**Technical Data and Specifications**

**Type ELC Current Limiter Terminal Wire Sizes <sup>Ⓞ</sup>**

Type ELC Current Limiter Maximum Amperes	Wire Range AWG	Metric (mm <sup>2</sup> )
<b>Standard Aluminum Terminals</b>		
50	14–2	2.5–35
100	1–4/0	50–95
150	1–4/0	50–95
<b>Non-Standard Terminals (Steel)</b>		
50	14–2 <sup>Ⓞ</sup>	2.5–35
100	—	—
150	—	—

**Notes**

<sup>Ⓞ</sup> Terminal wire connectors are UL listed for standard stranded wire sizes as defined in UL 486A or UL 486B.

<sup>Ⓞ</sup> Optional on special order for copper cable only.

All HMCP 800A and 1200A come without terminals. For “load and line” terminals; 800A aluminium TA801MA, 800A copper TA800MA1.

## Internal Accessories

### Product Overview

2

#### Alarm Switch

For remote indication of automatic trip operation. Does not function with manual switching; however, it will operate when either a shunt trip or undervoltage release is operated. A "make" contact closes and a "break" contact opens when the alarm/lockout switch operates. The switch automatically resets when the circuit breaker is reset.

#### Auxiliary Switch

The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded cross bar that contains the moving contact arms. The auxiliary switch is used for remote indication and interlock system verification, and consists of one or two SPDT switches housed in a plug-in module. Each SPDT switch has one "a" and one "b" contact. When the circuit breaker contacts are open, the "a" contact is open and the "b" contact is closed.

#### Auxiliary Switch and Alarm Switch Combination

Each Eaton part number listed in tables on **Pages 28 and 29** includes one auxiliary switch and one alarm switch. In an auxiliary switch ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

#### Shunt Trip

The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain AC rated shunt trips, as noted in the electrical rating table, are suitable for operation at 55 percent of rated voltage.

Select shunt trip part number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

#### Low Energy Shunt Trip

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism.

When a 100 microfarad capacitor charged to 28 Vdc is discharged through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker resets, the shunt trip reset arm is actuated by the circuit breaker handle, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cutoff provisions required in control circuit.

#### Undervoltage Release Mechanism

The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating.

The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever mounted in a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (or OFF) position. With less than pickup voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.

**Note:** Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

#### Accessory Terminal Block (R-Frame)

(For fixed-mounted configuration.)

Internal accessory wiring leads are normally supplied with pigtail leads (18 AWG) that exit from the right side of the circuit breaker. Where specified, fixed-mounted accessory terminal blocks are available. A maximum of one 24-point terminal block can be installed on the right side of the circuit breaker for the internal accessories.

#### PowerNet and Zone Interlock Kits (OPTIM 550 only) K-, L- and N-Frames

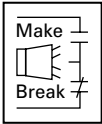
Eaton's PowerNet Communications Kit can be ordered to add PowerNet communications to an existing OPTIM 550 breaker in the field. An 18-inch (457.2 mm) wiring pigtail is routed to the rear of the breaker: two wires for PowerNet and two wires for 24 Vdc (45 mA load). It is recommended that the power supply be an "isolated high quality" unit.



Product Selection

Alarm Switch

Alarm Switch



F-Frame Alarm Switch ①

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Factory Installation Kit ②		
		Same Side	Rear ③	Opposite Side	Terminal Block Same Side	Pigtail Leads	Terminal Block
		Suffix Number	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
1	Left ④	B01	B02	B03	B04	A1L1LPK	A1L1LTK
	Right	B05	B06	B07	B08	A1L1RPK	A1L1RTK
2	Left ④	B09	B10	—	B11	A2L1LPK	A2L1LTK
	Right	B12	B13	—	B14	A2L1RPK	A2L1RTK
1 (Make only)	Single-pole	B15 ⑤	—	—	—	—	—

F-Frame HMCP Alarm Switch ①

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Factory Installation Kit ②		
		Same Side	Rear ③	Opposite Side	Terminal Block Same Side	Pigtail Leads	Terminal Block
		Suffix Number	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
1	Left ④	B01	B02	B03	B04	MA1L1LPK	MA1L1LTK
	Right	B05	B06	B07	B08	MA1L1RPK	MA1L1RTK
2	Left ④	B09	B10	—	B11	MA2L1LPK	MA2L1LTK
	Right	B12	B13	—	B14	MA2L1RPK	MA2L1RTK

J-Frame and HMCP (J) Alarm Switch

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Field Mounted Field Installation Kits ②		
		Same Side	Rear ③	Opposite Side	Terminal Block Same Side	Pigtail Leads	Terminal Block
		Suffix Number	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
1	Left ④	B01	B02	B03	B04	A1L2LPK	A1L2LTK
	Right	B05	B06	B07	B08	A1L2RPK	A1L2RTK ⑥

Notes

- ① F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.
- ② Includes 24-inch (609.6 mm) external pigtail leads, 18 AWG (16–0.010).
- ③ A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
- ④ Suitable for mounting in right pole only of two- or three-pole breaker.
- ⑤ Not listed with Underwriters Laboratories; for field installation.
- ⑥ Standard pigtail lead exit location.
- ⑦ Standard mounting location.
- ⑧ Factory installation only. Leads exit load end of circuit breaker.
- ⑨ Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
- ⑩ Standard mounting location—leads exit rear of breaker.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

2

### K-Frame and HMCP (K) Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads	Terminal Block
		Eaton Part Number	Eaton Part Number	Eaton Part Number		Eaton Part Number	Eaton Part Number
1	Left <sup>Ⓢ</sup>	B01	B02	B03	B04	A1L3LPK	A1L3LTK
	Right <sup>Ⓢ</sup>	B05	B06	B07	B08	A1L3RPK	A1L3RTK
2	Left <sup>Ⓢ</sup>	B09	B10	—	B11	A2L3LPK	A2L3LTK
	Right <sup>Ⓢ</sup>	B12	B13	—	B14	A2L3RPK	A2L3RTK

### L-, HMCP (L) and (M) Frames and Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads	Terminal Block
		Eaton Part Number	Eaton Part Number	Eaton Part Number		Eaton Part Number	Eaton Part Number
1	Left <sup>Ⓢ</sup>	B01	B02	B03	B04	A1L4LPK	A1L4LTK
	Right	B05	B06	B07	B08	A1L4RPK	A1L4RTK
2	Left <sup>Ⓢ</sup>	B09	B10	—	B11	A2L4LPK	A2L4LTK
	Right	B12	B13	—	B14	A2L4RPK	A2L4RTK

### N-Frame and HMCP (N) Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads	Terminal Block
		Eaton Part Number	Eaton Part Number	Eaton Part Number		Eaton Part Number	Eaton Part Number
1	Left	B01	B02	B03	B04	A1L5LPK	A1L5LTK
	Right <sup>Ⓢ</sup>	B05	B06	B07	B08	A1L5RPK	A1L5RTK
2	Left	B09	B10	—	B11	A2L5LPK	A2L5LTK
	Right <sup>Ⓢ</sup>	B12	B13	—	B14	A2L5RPK	A2L5RTK

### R-Frame Alarm Switch (RH Only)

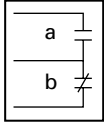
Number of Contacts (Make and Break)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads	Field Mounted Field Installation Kits <sup>Ⓢ</sup>
	Suffix Number <sup>Ⓢ</sup>	Pigtail Leads Eaton Part Number <sup>Ⓢ</sup>
1	B05	A1L6RPK
2	B12	A2L6RPK

#### Notes

- <sup>Ⓢ</sup> Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
- <sup>Ⓢ</sup> Standard mounting location.
- <sup>Ⓢ</sup> Standard mounting location—leads exit rear of breaker.
- <sup>Ⓢ</sup> Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- <sup>Ⓢ</sup> Listed with Underwriters Laboratories for field installation under E64983.
- <sup>Ⓢ</sup> A maximum of three ASL plug-in modules may be installed in a circuit breaker.

Auxiliary Switch

Auxiliary Switch



F-Frame and HMCP (F) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted			Factory Installation Kit <sup>Ⓞ</sup>		
		Connection Type and Location			Terminal Block		Terminal Block
		18-Inch (457.2 mm) Pigtail Leads			Same Side	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Left <sup>Ⓞ</sup>	A01	A02	A03	A04	A1X1PK	A1X1LTK
	Left <sup>Ⓞ</sup>	A15 <sup>Ⓞ</sup>	A16 <sup>Ⓞ</sup>	A17 <sup>Ⓞ</sup>	—	E1X1PK	—
	Right or Neutral <sup>Ⓞ</sup>	A05	A06	A07	A08	A1X1PK	A1X1RTK <sup>Ⓞ</sup>
	Right or Neutral <sup>Ⓞ</sup>	A18 <sup>Ⓞ</sup>	A19 <sup>Ⓞ</sup>	A20 <sup>Ⓞ</sup>	—	—	—
2	Left <sup>Ⓞ</sup>	A09	A10	—	A11	A2X1LPK	A2X1LTK
	Left <sup>Ⓞ</sup>	A21 <sup>Ⓞ</sup>	A22 <sup>Ⓞ</sup>	—	—	E2X1LPK	—
	Right or Neutral <sup>Ⓞ</sup>	A12	A13	—	A14	A2X1RPK	A2X1RTK <sup>Ⓞ</sup>
	Right or Neutral <sup>Ⓞ</sup>	A23 <sup>Ⓞ</sup>	A24 <sup>Ⓞ</sup>	—	—	E2X1RPK	—

F-Frame with Electronic Trip Unit Auxiliary Switch<sup>Ⓞ</sup>

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted			Factory Installation Kit <sup>Ⓞ</sup>		
		Connection Type and Location			Terminal Block		Terminal Block
		18-Inch (457.2 mm) Pigtail Leads			Same Side	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Right	A30	A31	A32	—	A1X1RPKFDE	—

J-Frame and HMCP (J) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted			Field Mounted		
		Connection Type and Location			Terminal Block		Terminal Block
		18-Inch (457.2 mm) Pigtail Leads			Same Side	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Left	A01	A02	A03	A04	A1X2PK	A1X2LTK
	Right <sup>Ⓞ</sup>	A05	A06	A07	A08	A1X2PK	A1X2RTK <sup>Ⓞ</sup>
2	Left	A09	A10	—	A11	A2X2PK	A2X2LTK
	Right <sup>Ⓞ</sup>	A12	A13	—	A14	A2X2PK	A2X2RTK <sup>Ⓞ</sup>

Notes

- Ⓞ Includes 24-inch external pigtail leads, 18 AWG (16–0.010).
- Ⓞ A maximum of two internal accessories may be mounted in a three-pole circuit breaker. Suitable for mounting in right pole only of two- or three-pole breaker.
- Ⓞ Standard pigtail lead exit location.
- Ⓞ Not listed with Underwriters Laboratories; for field installation.
- Ⓞ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>).
- Ⓞ Not for use on F-Frame with electronic trip unit.
- Ⓞ 125 volts (max.), 50/60 Hz switch for use in electronic circuit of 100 micro amperes and 15 Vdc minimum.
- Ⓞ Not for use on four-pole circuit breakers.
- Ⓞ Only for use on three-pole F-Frame breakers with electronic trip unit.
- Ⓞ Listed with Underwriters Laboratories for field installation or interchangeable trip unit breakers under E64983.
- Ⓞ Standard mounting location—leads exit rear of breaker.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### K-Frame and HMCP (K) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Field Mounted Factory Installation Kit <sup>Ⓞ</sup> Pigtail Leads		
					Terminal Block	Terminal Block	
		Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Left	A01	A02	A03	A04	A1X3PK	A1X3LTK
	Right <sup>Ⓞ</sup>	A05	A06	A07	A08	A1X3PK	A1X3RTK <sup>Ⓞ</sup>
2	Left	A09	A10	—	A11	A2X3PK	A2X3LTK
	Right <sup>Ⓞ</sup>	A12	A13	—	A14	A2X3PK	A2X3RTK <sup>Ⓞ</sup>
	Right	A21	A22	—	—	1482D28G10 <sup>Ⓞ</sup>	—
3	Left	A18	—	—	A15	A3X3LPK	A3X3LTK
	Right <sup>Ⓞ</sup>	A17	—	—	A16	A3X3RPK	A3X3RTK <sup>Ⓞ</sup>

### L-, HMCP (L) and (M) Frames and Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Field Mounted Factory Installation Kit <sup>Ⓞ</sup> Pigtail Leads		
					Terminal Block	Terminal Block	
		Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Left	A01	A02	A03	A04	A1X4PK	A1X4LTK
	Right <sup>Ⓞ</sup>	A05	A06	A07	A08	A1X4PK	A1X4RTK <sup>Ⓞ</sup>
2	Left	A09	A10	—	A11	A2X4PK	A2X4LTK
	Right <sup>Ⓞ</sup>	A12	A13	—	A14	A2X4PK	A2X4RTK <sup>Ⓞ</sup>
3	Left	A18	—	—	A15	A3X4PK	A3X4LTK
	Right <sup>Ⓞ</sup>	A17	—	—	A16	A3X4PK	A3X4RTK <sup>Ⓞ</sup>

### N-Frame and HMCP (N) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Field Mounted Factory Installation Kit <sup>Ⓞ</sup> Pigtail Leads		
					Terminal Block	Terminal Block	
		Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Eaton Part Number	Eaton Part Number
1	Left	A01	A02	A03	A04	A1X5PK	A1X5LTK
	Right <sup>Ⓞ</sup>	A05	A06	A07	A08	A1X5PK	A1X5RTK <sup>Ⓞ</sup>
2	Left	A09	A10	—	A11	A2X5PK	A2X5LTK
	Right <sup>Ⓞ</sup>	A12	A13	—	A14	A2X5PK	A2X5RTK <sup>Ⓞ</sup>
3	Left	A18	—	—	A15	A3X5LPK	A3X5LTK
	Right <sup>Ⓞ</sup>	A17	—	—	A16	A3X5RPK	A3X5RTK <sup>Ⓞ</sup>

### R-Frame Auxiliary Switch (RH Only)

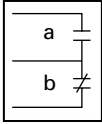
Number of Contacts A and B	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads	Field Mounted Field Installation Kits <sup>Ⓞ</sup> Pigtail Leads
	Suffix Number <sup>Ⓞ</sup>	Eaton Part Number <sup>Ⓞ</sup>
2	A12	A2X6RPK
4	A19	A4X6RPK

#### Notes

- Ⓞ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓞ Standard mounting location—leads exit rear of breaker.
- Ⓞ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- Ⓞ Not for use on four-pole circuit breakers.
- Ⓞ A maximum of two auxiliary switches (any combination of 2a/2b or 4a/4b plug-in modules may be installed in a circuit breaker.
- Ⓞ This option is not field installable.
- Ⓞ Available on the OPTIM 550 only. Communications are not available with this option.

**Auxiliary Switch and Alarm Switch Combination**

**Auxiliary Switch and Alarm Switch Combination**



**F-Frame Auxiliary Switch and Alarm Switch Combination**

Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Factory Installation Kit <sup>Ⓢ</sup>	
	Same Side	Rear <sup>Ⓢ</sup>	Terminal Block Same Side	Pigtail Leads	Terminal Block
	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
Left <sup>Ⓢ</sup>	C01	C02	C03	AAL1LPK	AAL1LTK
Right	C04	C05	C06	AAL1RPK	AAL1RTK <sup>Ⓢ</sup>

**F-Frame HMCP Auxiliary Switch and Alarm Switch Combination**

Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Factory Installation Kit <sup>Ⓢ</sup>	
	Same Side	Rear <sup>Ⓢ</sup>	Terminal Block Same Side	Pigtail Leads	Terminal Block
	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
Left <sup>Ⓢ</sup>	C01	C02	C03	MAAL1LPK	MAAL1LTK
Right	C04	C05	C06	MAAL1RPK	MAAL1RPK

**J-Frame and HMCP (J) Auxiliary Switch and Alarm Switch Combination**

Number of Sets of Contacts (1A and 1B) (1M-1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Terminal Block Same Side	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side	Rear <sup>Ⓢ</sup>	Opposite Side		Pigtail Leads	Terminal Block
		Suffix Number	Suffix Number	Suffix Number		Eaton Part Number	Eaton Part Number
1	Left	C01	C02	—	C03	AAL2LPK	AAL2LTK
	Right <sup>Ⓢ</sup>	C04	C05	—	C06	AAL2RPK	AAL2RTK <sup>Ⓢ</sup>

**K-Frame and HMCP (K) Auxiliary Switch and Alarm Switch Combination**

Number of Sets of Contacts (1A and 1B) (1M-1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Terminal Block Same Side	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side	Rear <sup>Ⓢ</sup>	Opposite Side		Pigtail Leads	Terminal Block
		Suffix Number	Suffix Number	Suffix Number		Eaton Part Number	Eaton Part Number
1	Left	C01	C02	—	C03	AAL3LPK	AAL3LTK
	Right <sup>ⓈⓈ</sup>	C04	C05	—	C06	AAL3RPK <sup>Ⓢ</sup>	AAL3RTK
	Right	C07	C08	—	—	1482D28G09 <sup>ⓈⓈ</sup>	—

**Notes**

- Ⓢ Not listed with Underwriters Laboratories for field installation.
- Ⓢ Standard mounting location.
- Ⓢ Not for use on four-pole circuit breakers
- Ⓢ Listed with Underwriters Laboratories for field installation of interchangeable trip unit breakers under E64983.
- Ⓢ Standard mounting location—leads exit rear of breaker.
- Ⓢ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
- Ⓢ Will not install on OPTIM Trip (RH).
- Ⓢ Available on the OPTIM 550 only. Communications are not available with this option.
- Ⓢ This option is not field installable.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### L-, HMCP (L) and (M) Frames and Auxiliary Switch and Alarm Switch Combination

2

Number of Sets of Contacts	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
1A, 1B and 1 Make/1 Break	Left	C01	C02	—	C03	AA114LPK	AA114LTK
	Right <sup>Ⓢ</sup>	C04	C05	—	C06	AA114RPK	AA114RTK <sup>Ⓢ</sup>
2A, 2B and 1 Make/1 Break	Left	C07	C08	—	C12	AA214LPK	AA214LTK
	Right <sup>Ⓢ</sup>	C10	C11	—	C13	AA214RPK	AA214RTK <sup>Ⓢ</sup>
3A, 3B and 1 Make/1 Break	Left	C14	—	—	—	AA314LPK	—
	Right <sup>Ⓢ</sup>	C15	—	—	—	AA314RPK	—

### N-Frame and HMCP (N) Auxiliary Switch and Alarm Switch Combination

Number of Sets of Contacts	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
		Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
1A, 1B and 1 Make/1 Break	Left	C01	C02	—	C03	AA115LPK	AA115LTK
	Right <sup>Ⓢ</sup>	C04	C05	—	C06	AA115RPK	AA115RTK <sup>Ⓢ</sup>
2A, 2B and 1 Make/1 Break	Left	C07	C08	—	C12	AA215LPK	AA215LTK
	Right <sup>Ⓢ</sup>	C10	C11	—	C13	AA215RPK	AA215RTK <sup>Ⓢ</sup>

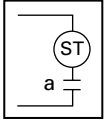
#### Notes

- Ⓢ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓢ Standard mounting location—leads exit rear of breaker.
- Ⓢ Not for use on four-pole circuit breaker.



### Shunt Trip

#### Shunt Trip



### F-Frame and HMCP (F) Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads <sup>Ⓢ</sup>			Factory Installation Kit <sup>Ⓢ</sup>		
	Same Side	Rear <sup>Ⓢ</sup>	Opposite Side	Terminal Block Same Side	Pigtail Leads	Terminal Block
	Suffix Number	Suffix Number	Suffix Number	Suffix Number	Eaton Part Number	Eaton Part Number
<b>Left-Pole Mounting AC/DC Ratings</b>						
12–24 Vac or Vdc	<b>S01</b>	<b>S02</b>	<b>S03</b>	<b>S04</b>	<b>SNT1LP03K</b>	<b>SNT1LT03K</b>
48–127 Vac or 48–60 Vdc <sup>Ⓢ</sup>	<b>S05</b>	<b>S06</b>	<b>S07</b>	<b>S08</b>	<b>SNT1LP08K</b>	<b>SNT1LT08K</b>
208–380 Vac or 110–127 Vdc	<b>S09</b>	<b>S10</b>	<b>S11</b>	<b>S12</b>	<b>SNT1LP12K</b>	<b>SNT1LT12K</b>
415–600 Vac or 220–250 Vdc	<b>S13</b>	<b>S14</b>	<b>S15</b>	<b>S16</b>	<b>SNT1LP18K</b>	<b>SNT1LT18K</b>
<b>Right- or Neutral-Pole Mounting AC/DC Ratings<sup>Ⓢ</sup></b>						
12–24 Vac or Vdc	<b>S17</b>	<b>S18</b>	<b>S19</b>	<b>S20</b>	<b>SNT1RP03K</b>	<b>SNT1RT03K<sup>Ⓢ</sup></b>
48–127 Vac or 48–60 Vdc <sup>Ⓢ</sup>	<b>S21</b>	<b>S22</b>	<b>S23</b>	<b>S24</b>	<b>SNT1RP08K</b>	<b>SNT1RT08K<sup>Ⓢ</sup></b>
208–380 Vac or 110–127 Vdc	<b>S25</b>	<b>S26</b>	<b>S27</b>	<b>S28</b>	<b>SNT1RP12K</b>	<b>SNT1RT12K<sup>Ⓢ</sup></b>
415–600 Vac or 220–250 Vdc	<b>S29</b>	<b>S30</b>	<b>S31</b>	<b>S32</b>	<b>SNT1RP18K</b>	<b>SNT1RT18K<sup>Ⓢ</sup></b>

#### Notes

- Ⓢ Not listed with Underwriters Laboratories, for field installation.
- Ⓢ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>).
- Ⓢ Standard pigtail lead exit location.
- Ⓢ 120 Vac marked suitable for ground fault protection devices.
- Ⓢ Standard mounting location.
- Ⓢ Not for use on four-pole circuit breakers.

G-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### J-Frame and HMCP (J) Shunt Trip

2

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads	Terminal Block
	Eaton Part Number	Eaton Part Number	Eaton Part Number		Eaton Part Number	Eaton Part Number
<b>Left-Pole Mounting AC/DC Ratings<sup>Ⓢ</sup></b>						
12–24 Vac or Vdc	S41	S42	S43	S44	SNT2P04K	SNT2T04K
48–60 Vac or Vdc	S49	S50	S51	S52	SNT2P06K	SNT2T06K
110–240 Vac or 110–125 Vdc <sup>Ⓢ</sup>	S09	S10	S11	S12	SNT2P11K	SNT2T11K
380–440 Vac or 220–250 Vdc	S13	S14	S15	S16	SNT2P14K	SNT2T14K
480–600 Vac	S17	S18	S19	S20	SNT2P18K	SNT2T18K
<b>Right- or Neutral-Pole Mounting AC/DC Ratings</b>						
12–24 Vac or Vdc	S45	S46	S47	S48	SNT2P04K	SNT2T04K <sup>Ⓢ</sup>
48–60 Vac or Vdc	S53	S54	S55	S56	SNT2P06K	SNT2T06K <sup>Ⓢ</sup>
110–240 Vac or 110–125 Vdc <sup>Ⓢ</sup>	S29	S30	S31	S32	SNT2P11K	SNT2T11K <sup>Ⓢ</sup>
380–440 Vac or 220–250 Vdc	S33	S34	S35	S36	SNT2P14K	SNT2T14K <sup>Ⓢ</sup>
480–600 Vac	S37	S38	S39	S40	SNT2P18K	SNT2T18K <sup>Ⓢ</sup>

### K-Frame and HMCP (K) Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads	Terminal Block
	Eaton Part Number	Eaton Part Number	Eaton Part Number		Eaton Part Number	Eaton Part Number
<b>Left-Pole Mounting AC/DC Ratings<sup>Ⓢ</sup></b>						
12–24 Vac or Vdc	S41	S42	S43	S44	SNT3P04K	SNT3T04K
48–60 Vac or Vdc	S49	S50	S51	S52	SNT3P06K	SNT3T06K
110–240 Vac or 110–125 Vdc <sup>Ⓢ</sup>	S09	S10	S11	S12	SNT3P11K	SNT3T11K
380–440 Vac or 220–250 Vdc	S13	S14	S15	S16	SNT3P14K	SNT3T14K
480–600 Vac	S17	S18	S19	S20	SNT3P18K	SNT3T18K
<b>Right- or Neutral-Pole Mounting AC/DC Ratings<sup>ⓈⓈ</sup></b>						
12–24 Vac or Vdc	S45	S46	S47	S48	SNT3P04K	SNT3T04K <sup>Ⓢ</sup>
48–60 Vac or Vdc	S53	S54	S55	S56	SNT3P06K	SNT3T06K <sup>Ⓢ</sup>
110–240 Vac or 110–125 Vdc <sup>Ⓢ</sup>	S29	S30	S31	S32	SNT3P11K	SNT3T11K <sup>Ⓢ</sup>
380–440 Vac or 220–250 Vdc	S33	S34	S35	S36	SNT3P14K	SNT3T14K <sup>Ⓢ</sup>
480–600 Vac	S37	S38	S39	S40	SNT3P18K	SNT3T18K <sup>Ⓢ</sup>

#### Notes

- Ⓢ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓢ Standard mounting location—leads exit rear of breaker.
- Ⓢ Suitable for use with Class 1 ground fault sensing element.
- Ⓢ Not for use on four-pole circuit breakers.
- Ⓢ For use with KT (thermal-magnetic) trip units only.
- Ⓢ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

### L-, HMCP (L) and (M) Frames and Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓢ</sup>	
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
<b>Left-Pole Mounting AC/DC Ratings<sup>Ⓢ</sup></b>						
12–24 Vac or Vdc	S01	S02	S03	S04	SNT4LP03K	SNT4LT03K
48–60 Vac	S05	S06	S07	S08	SNT4LP05K	SNT4LT05K
48–60 Vdc	S85	S86	S87	—	SNT4LP23K	SNT4LT23K
110–240 Vac	S09	S10	S11	S12	SNT4LP11K	SNT4LT11K
110–125 Vdc	S41	S42	S43	S44	SNT4LP26K	SNT4LT26K
380–440 Vac or 220–250 Vdc	S13	S14	S15	S16	SNT4LP14K	SNT4LT14K
480–600 Vac	S17	S18	S19	S20	SNT4LP18K	SNT4LT18K
<b>Right-Pole Mounting AC/DC Ratings<sup>Ⓢ</sup></b>						
12–24 Vac or Vdc	S21	S22	S23	S24	SNT4RP03K	SNT4RT03K
48–60 Vac	S25	S26	S27	S28	SNT4RP05K	SNT4RT05K
48–60 Vdc	S88	S89	S90	—	SNT4RP23K	SNT4RT23K
110–240 Vac	S29	S30	S31	S32	SNT4RP11K	SNT4RT11K
110–125 Vdc	S45	S46	S47	S48	SNT4RP26K	SNT4RT26K
380–440 Vac or 220–250 Vdc	S33	S34	S35	S36	SNT4RP14K	SNT4RT14K
480–600 Vac	S37	S38	S39	S40	SNT4RP18K	SNT4RT18K

#### Notes

- Ⓢ Listed with Underwriters Laboratories, for field installation under E64983.
- Ⓢ Standard mounting location—leads exit rear of breaker.
- Ⓢ For use with LT (thermal-magnetic) three-pole trip units only.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### N-Frame and HMCP (N) Shunt Trip

2

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits <sup>Ⓞ</sup>	
	Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number		Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
	<b>Left-Pole Mounting AC/DC Ratings<sup>Ⓞ</sup></b>					
9–24 Vac or Vdc	<b>S01</b>	<b>S02</b>	<b>S03</b>	<b>S04</b>	<b>SNT5LP03K</b>	<b>SNT5LT03K</b>
48–60 Vac	<b>S05</b>	<b>S06</b>	<b>S07</b>	<b>S08</b>	<b>SNT5LP05K</b>	<b>SNT5LT05K</b>
110–240 Vac <sup>Ⓞ</sup>	<b>S09</b>	<b>S10</b>	<b>S11</b>	<b>S12</b>	<b>SNT5LP11K</b>	<b>SNT5LT11K</b>
110–125 Vdc	<b>S41</b>	<b>S42</b>	<b>S43</b>	<b>S44</b>	<b>SNT5LP26K</b>	<b>SNT5LT26K</b>
380–440 Vac or 220–250 Vdc	<b>S13</b>	<b>S14</b>	<b>S15</b>	<b>S16</b>	<b>SNT5LP14K</b>	<b>SNT5LT14K</b>
480–600 Vac	<b>S17</b>	<b>S18</b>	<b>S19</b>	<b>S20</b>	<b>SNT5LP18K</b>	<b>SNT5LT18K</b>
48–60 Vdc	<b>S21</b>	<b>S22</b>	<b>S23</b>	<b>S24</b>	<b>SNT5LP23K</b>	<b>SNT5LT23K</b>

### R-Frame Shunt Trip (RH Only)

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads	Field Mounted Field Installation Kits <sup>Ⓞ</sup>
	Suffix Number <sup>Ⓞ</sup>	Pigtail Leads Eaton Part Number <sup>Ⓞ</sup>
24 Vac or Vdc	<b>S21</b>	<b>SNT6P03K</b>
48–60 Vac	<b>S25</b>	<b>SNT6P05K</b>
110–240 Vac	<b>S29</b>	<b>SNT6P11K</b>
380–440 Vac or 220–250 Vdc	<b>S33</b>	<b>SNT6P14K</b>
480–600 Vac	<b>S37</b>	<b>SNT6P18K</b>
48–60 Vdc	<b>S88</b>	<b>SNT6P23K</b>
110–125 Vdc	<b>S45</b>	<b>SNT6P26K</b>

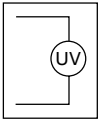
#### Notes

- Ⓞ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓞ Standard mounting location—leads exit rear of breaker.
- Ⓞ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
- Ⓞ A maximum of two shunt trip plug-in modules may be installed in a circuit breaker.

**Low Energy Shunt Trip  
Ordering Information**

Select shunt trip part number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

**Low Energy Shunt Trip**



**F-, J-, K-, L-, M-, N- and R-Frames and HMCPs Low Energy Shunt Trip** <sup>Ⓞ</sup>

Mounting Positions (Pole)	Factory Mounted Connection Type and Location			Field Mounted Field Installation Kits <sup>Ⓞ</sup>		
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block		
	Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
<b>F-Frame</b>						
Left	N01	N02	N03	N04	LST1LPK <sup>Ⓞ</sup>	LST1LTK <sup>Ⓞ</sup>
Right <sup>Ⓞ</sup>	N05	N06	N07	N08	LST1RPK <sup>Ⓞ</sup>	LST1RTK <sup>Ⓞ</sup>
<b>J-Frame</b>						
Left	N01	N02	N03	—	LST2LPK	—
Right <sup>Ⓞ</sup>	N05	N06	N07	—	LST2RPK	—
<b>K-Frame</b>						
Left <sup>Ⓞ</sup>	N01	N02	N03	—	LST3LPK	—
Right <sup>ⓄⓄ</sup>	N05	N06	N07	—	LST3RPK	—
<b>L- and M-Frames</b>						
Left	N01	N02	N03	—	LST4LPK	—
Right	N05	N06	N07	—	LST4RPK	—
<b>N-Frame</b>						
Left <sup>Ⓞ</sup>	N01	N02	N03	—	LST5LPK	—
<b>R-Frame</b>						
Right	N01	—	—	—	LST6RPK	—

**Notes**

- <sup>Ⓞ</sup> Cutoff provisions required in control circuit.
- <sup>Ⓞ</sup> Listed with X Underwriters Laboratories for field installation under E64983.
- <sup>Ⓞ</sup> Standard mounting location—leads exit rear of breaker.
- <sup>Ⓞ</sup> For F-Frame HMCP, add an “M” to beginning of Eaton part number. Field Installation Kit referenced for factory use only, not UL listed for field installation.
- <sup>Ⓞ</sup> For use with thermal-magnetic trip units only.
- <sup>Ⓞ</sup> Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### Undervoltage Release Mechanism

#### Ordering Information

2

Select handle reset undervoltage release mechanism part number for the voltage within the indicated voltage range. Undervoltage release mechanism coils are

designed to be applied at specific AC or DC voltages within the voltage range shown on applicable circuit breaker accessory nameplates.

### F-Frame Factory Mounted (For F-Frame Breaker and F-Frame HMCP) Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	Connection Type and Location			
	18-Inch Pigtail Leads			Terminal Block Same Side Suffix Number
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number	
<b>Left-Pole Mounting AC Ratings</b>				
12 Vac	U01	U02	U03	U04
24 Vac	U05	U06	U07	U08
48 Vac	U37	U38	U39	U40
60 Vac	U97	U98	U99	U100
110–127 Vac	U13	U14	U15	U16
208–240 Vac	U17	U18	U19	U20
380–480 Vac	U21	U22	U23	U24
525–600 Vac	U25	U26	U27	U28
<b>Right-Pole Mounting AC Ratings<sup>ⓈⓈ</sup></b>				
12 Vac	U49	U50	U51	U52
24 Vac	U53	U54	U55	U56
48 Vac	U85	U86	U87	U88
60 Vac	U101	U102	U103	U104
110–127 Vac	U61	U62	U63	U64
208–240 Vac	U65	U66	U67	U68
380–480 Vac	U69	U70	U71	U72
525–600 Vac	U73	U74	U75	U76
<b>Left-Pole Mounting DC Ratings</b>				
12 Vdc	U29	U30	U31	U32
24 Vdc	U33	U34	U35	U36
48 Vdc	U37	U38	U39	U40
60 Vdc	U97	U98	U99	U100
110–127 Vdc	U41	U42	U43	U44
220–250 Vdc	U45	U46	U47	U48
<b>Right-Pole Mounting DC Ratings<sup>ⓈⓈ</sup></b>				
12 Vdc	U77	U78	U79	U80
24 Vdc	U81	U82	U83	U84
48 Vdc	U85	U86	U87	U88
60 Vdc	U101	U102	U103	U104
110–127 Vdc	U89	U90	U91	U92
220–250 Vdc	U93	U94	U95	U96

#### Notes

- Ⓢ Standard pigtail lead exit location.
- Ⓢ Standard mounting location.
- Ⓢ Not for use on right pole of four-pole circuit breaker.

F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

## F-Frame Field Mounted Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	F-Frame Breaker Factory Installation Kits <sup>Ⓞ</sup>		F-Frame Breaker HMCP	
	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
<b>Left-Pole Mounting AC Ratings</b>				
12 Vac	UVH1LP02K	UVH1LT02K	MUVH1LP02K	MUVH1LT02K
24 Vac	UVH1LP03K	UVH1LT03K	MUVH1LP03K	MUVH1LT03K
48 Vac	UVH1LP22K	UVH1LT22K	MUVH1LP22K	MUVH1LT22K
60 Vac	UVH1LP24K	UVH1LT24K	MUVH1LP24K	MUVH1LT24K
110–127 Vac	UVH1LP08K	UVH1LT08K	MUVH1LP08K	MUVH1LT08K
208–240 Vac	UVH1LP11K	UVH1LT11K	MUVH1LP11K	MUVH1LT11K
380–480 Vac	UVH1LP15K	UVH1LT15K	MUVH1LP15K	MUVH1LT15K
525–600 Vac	UVH1LP18K	UVH1LT18K	MUVH1LP18K	MUVH1LT18K
<b>Right-Pole Mounting AC Ratings<sup>ⓄⓈ</sup></b>				
12 Vac	UVH1RP02K	UVH1RT02K	MUVH1RP02K	MUVH1RT02K
24 Vac	UVH1RP03K	UVH1RT03K	MUVH1RP03K	MUVH1RT03K
48 Vac	UVH1RP22K	UVH1RT22K	MUVH1RP22K	MUVH1RT22K
60 Vac	UVH1RP24K	UVH1RT24K	MUVH1RP24K	MUVH1RT24K
110–127 Vac	UVH1RP08K	UVH1RT08K	MUVH1RP08K	MUVH1RT08K
208–240 Vac	UVH1RP11K	UVH1RT11K	MUVH1RP11K	MUVH1RT11K
380–480 Vac	UVH1RP15K	UVH1RT15K	MUVH1RP15K	MUVH1RT15K
525–600 Vac	UVH1RP18K	UVH1RT18K	MUVH1RP18K	MUVH1RT18K
<b>Left-Pole Mounting DC Ratings</b>				
12 Vdc	UVH1LP20K	UVH1LT20K	MUVH1LP20K	MUVH1LT20K
24 Vdc	UVH1LP21K	UVH1LT21K	MUVH1LP21K	MUVH1LT21K
48 Vdc	UVH1LP22K	UVH1LT22K	MUVH1LP22K	MUVH1LT22K
60 Vdc	UVH1LP24K	UVH1LT24K	MUVH1LP24K	MUVH1LT24K
110–127 Vdc	UVH1LP26K	UVH1LT26K	MUVH1LP26K	MUVH1LT26K
220–250 Vdc	UVH1LP28K	UVH1LT28K	MUVH1LP28K	MUVH1LT28K
<b>Right-Pole Mounting DC Ratings<sup>ⓄⓈ</sup></b>				
12 Vdc	UVH1RP20K	UVH1RT20K	MUVH1RP20K	MUVH1RT20K
24 Vdc	UVH1RP21K	UVH1RT21K	MUVH1RP21K	MUVH1RT21K
48 Vdc	UVH1RP22K	UVH1RT22K	MUVH1RP22K	MUVH1RT22K
60 Vdc	UVH1RP22K	UVH1RT22K	MUVH1RP22K	MUVH1RT22K
110–127 Vdc	UVH1RP26K	UVH1RT26K	MUVH1RP26K	MUVH1RT26K
220–250 Vdc	UVH1RP28K	UVH1RT28K	MUVH1RP28K	MUVH1RT28K

### Notes

- Ⓞ Not listed with Underwriters Laboratories, for field installation.
- Ⓢ Standard mounting location.
- Ⓣ Not for use on right pole of four-pole circuit breaker.



# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### J-Frame and HMCP (J) Undervoltage Release Mechanism

2

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted Connection Type and Location			Field Mounted Field Installation Kits <sup>Ⓢ</sup>		
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block <sup>Ⓢ</sup>	Pigtail Leads Eaton Part Number	Terminal Block <sup>Ⓢ</sup> Eaton Part Number
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number		
<b>Left-Pole Mounting AC Ratings<sup>Ⓢ</sup></b>						
12 Vac	U05	U06	U07	U08	UVH2LP02K	UVH2LT02K
24 Vac	U09	U10	U11	U12	UVH2LP03K	UVH2LT03K
48–60 Vac	U13	U14	U15	U16	UVH2LP05K	UVH2LT05K
110–127 Vac	U17	U18	U19	U20	UVH2LP08K	UVH2LT08K
208–240 Vac	U21	U22	U23	U24	UVH2LP11K	UVH2LT11K
380–480 Vac	U25	U26	U27	U28	UVH2LP15K	UVH2LT15K
<b>Right-Pole Mounting AC Ratings<sup>Ⓢ</sup></b>						
12 Vac	U37	U38	U39	U40	UVH2RP02K	UVH2RT02K
24 Vac	U41	U42	U43	U44	UVH2RP03K	UVH2RT03K
48–60 Vac	U45	U46	U47	U48	UVH2RP05K	UVH2RT05K
110–127 Vac	U49	U50	U51	U52	UVH2RP08K	UVH2RT08K
208–240 Vac	U53	U54	U55	U56	UVH2RP11K	UVH2RT11K
380–480 Vac	U57	U58	U59	U60	UVH2RP15K	UVH2RT15K
<b>Left-Pole Mounting DC Ratings<sup>Ⓢ</sup></b>						
12 Vdc	T01	T02	T03	T04	UVH2LP20K	UVH2LT20K
24 Vdc	T05	T06	T07	T08	UVH2LP21K	UVH2LT21K
48–60 Vdc	T09	T10	T11	T12	UVH2LP23K	UVH2LT23K
110–127 Vdc	T13	T14	T15	T16	UVH2LP26K	UVH2LT26K
220–250 Vdc	T17	T18	T19	T20	UVH2LP28K	UVH2LT28K
<b>Right-Pole Mounting DC Ratings<sup>Ⓢ</sup></b>						
12 Vdc	T21	T22	T23	T24	UVH2RP20K	UVH2RT20K
24 Vdc	T25	T26	T27	T28	UVH2RP21K	UVH2RT21K
48–60 Vdc	T29	T30	T31	T32	UVH2RP23K	UVH2RT23K
110–127 Vdc	T33	T34	T35	T36	UVH2RP26K	UVH2RT26K
220–250 Vdc	T37	T38	T39	T40	UVH2RP28K	UVH2RT28K

#### Notes

- Ⓢ For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.
- Ⓢ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓢ Not for use on right pole of four-pole circuit breakers.
- Ⓢ Standard mounting location—leads exit rear of breaker.

**K-Frame and HMCP (K) Undervoltage Release Mechanism**

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted Connection Type and Location				Field Mounted Field Installation Kits <sup>Ⓞ</sup>	
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
	Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number		
<b>Left-Pole Mounting AC Ratings<sup>Ⓞ</sup></b>						
12 Vac	U05	U06	U07	U08	UVH3LP02K	UVH3LT02K
24 Vac	U09	U10	U11	U12	UVH3LP03K	UVH3LT03K
48–60 Vac	U13	U14	U15	U16	UVH3LP05K	UVH3LT05K
110–127 Vac	U17	U18	U19	U20	UVH3LP08K	UVH3LT08K
208–240 Vac	U21	U22	U23	U24	UVH3LP11K	UVH3LT11K
380–480 Vac	U25	U26	U27	U28	UVH3LP15K	UVH3LT15K
<b>Right-Pole Mounting AC Ratings<sup>ⓄⓄⓄ</sup></b>						
12 Vac	U37	U38	U39	U40	UVH3RP02K	UVH3RT02K
24 Vac	U41	U42	U43	U44	UVH3RP03K	UVH3RT03K
48–60 Vac	U45	U46	U47	U48	UVH3RP05K	UVH3RT05K
110–127 Vac	U49	U50	U51	U52	UVH3RP08K	UVH3RT08K
208–240 Vac	U53	U54	U55	U56	UVH3RP11K	UVH3RT11K
380–480 Vac	U57	U58	U59	U60	UVH3RP15K	UVH3RT15K
<b>Left-Pole Mounting DC Ratings<sup>Ⓞ</sup></b>						
12 Vdc	T01	T02	T03	T04	UVH3LP20K	UVH3LT20K
24 Vdc	T05	T06	T07	T08	UVH3LP21K	UVH3LT21K
48–60 Vdc	T09	T10	T11	T12	UVH3LP23K	UVH3LT23K
110–127 Vdc	T13	T14	T15	T16	UVH3LP26K	UVH3LT26K
220–250 Vdc	T17	T18	T19	T20	UVH3LP28K	UVH3LT28K
<b>Right-Pole Mounting DC Ratings<sup>ⓄⓄⓄ</sup></b>						
12 Vdc	T21	T22	T23	T24	UVH3RP20K	UVH3RT20K
24 Vdc	T25	T26	T27	T28	UVH3RP21K	UVH3RT21K
48–60 Vdc	T29	T30	T31	T32	UVH3RP23K	UVH3RT23K
110–127 Vdc	T33	T34	T35	T36	UVH3RP26K	UVH3RT26K
220–250 Vdc	T37	T38	T39	T40	UVH3RP28K	UVH3RT28K

**Notes**

- Ⓞ Listed with Underwriters Laboratories, for field installation under E64983.
- Ⓞ Standard mounting location—leads exit rear of breaker.
- Ⓞ For use with KT (thermal-magnetic) trip units only.
- Ⓞ Not for use on right pole of four-pole circuit breaker.
- Ⓞ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### L-, HMCP (L) and (M)-Frames and Undervoltage Release Mechanism

2

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted Connection Type and Location			Field Mounted Field Installation Kits <sup>Ⓞ</sup>		
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
	Same Side Suffix Number	Rear <sup>Ⓞ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number		
<b>Left-Pole Mounting AC Ratings<sup>Ⓞ</sup></b>						
12 Vac	U05	U06	U07	U08	UVH4LP02K	UVH4LT02K
24 Vac	U09	U10	U11	U12	UVH4LP03K	UVH4LT03K
48–60 Vac	U13	U14	U15	U16	UVH4LP05K	UVH4LT05K
110–127 Vac	U17	U18	U19	U20	UVH4LP08K	UVH4LT08K
208–240 Vac	U21	U22	U23	U24	UVH4LP11K	UVH4LT11K
380–480 Vac	U25	U26	U27	U28	UVH4LP15K	UVH4LT15K
<b>Right-Pole Mounting AC Ratings<sup>ⓄⓄ</sup></b>						
12 Vac	U37	U38	U39	U40	UVH4RP02K	UVH4RT02K
24 Vac	U41	U42	U43	U44	UVH4RP03K	UVH4RT03K
48–60 Vac	U45	U46	U47	U48	UVH4RP05K	UVH4RT05K
110–127 Vac	U49	U50	U51	U52	UVH4RP08K	UVH4RT08K
208–240 Vac	U53	U54	U55	U56	UVH4RP11K	UVH4RT11K
380–480 Vac	U57	U58	U59	U60	UVH4RP15K	UVH4RT15K
<b>Left-Pole Mounting DC Ratings<sup>Ⓞ</sup></b>						
12 Vdc	T01	T02	T03	T04	UVH4LP20K	UVH4LT20K
24 Vdc	T05	T06	T07	T08	UVH4LP21K	UVH4LT21K
48–60 Vdc	T09	T10	T11	T12	UVH4LP23K	UVH4LT23K
110–127 Vdc	T13	T14	T15	T16	UVH4LP26K	UVH4LT26K
220–250 Vdc	T17	T18	T19	T20	UVH4LP28K	UVH4LT28K
<b>Right-Pole Mounting DC Ratings<sup>ⓄⓄ</sup></b>						
12 Vdc	T21	T22	T23	T24	UVH4RP20K	UVH4RT20K
24 Vdc	T25	T26	T27	T28	UVH4RP21K	UVH4RT21K
48–60 Vdc	T29	T30	T31	T32	UVH4RP23K	UVH4RT23K
110–127 Vdc	T33	T34	T35	T36	UVH4RP26K	UVH4RT26K
220–250 Vdc	T37	T38	T39	T40	UVH4RP28K	UVH4RT28K

#### Notes

- Ⓞ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓞ Standard mounting location—leads exit rear of breaker.
- Ⓞ For use with LT (thermal-magnetic) trip units only.
- Ⓞ Not for use on right pole of four-pole circuit breaker.

**N-Frame and HMCP (N) Undervoltage Release Mechanism**

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted Connection Type and Location			Field Mounted Field Installation Kits <sup>Ⓢ</sup>		
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block		
	Same Side Suffix Number	Rear <sup>Ⓢ</sup> Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Pigtail Leads Eaton Part Number	Terminal Block Eaton Part Number
<b>Left-Pole Mounting AC Ratings<sup>Ⓢ</sup></b>						
12 Vac	U05	U06	U07	U08	UVH5LP02K	UVH5LT02K
24 Vac	U09	U10	U11	U12	UVH5LP03K	UVH5LT03K
48–60 Vac	U13	U14	U15	U16	UVH5LP05K	UVH5LT05K
110–127 Vac	U17	U18	U19	U20	UVH5LP08K	UVH5LT08K
208–240 Vac	U21	U22	U23	U24	UVH5LP11K	UVH5LT11K
380–480 Vac	U25	U26	U27	U28	UVH5LP29K	UVH5LT29K
<b>Left-Pole Mounting DC Ratings<sup>Ⓢ</sup></b>						
12 Vdc	T01	T02	T03	T04	UVH5LP20K	UVH5LT20K
24 Vdc	T05	T06	T07	T08	UVH5LP21K	UVH5LT21K
48–60 Vdc	T09	T10	T11	T12	UVH5LP23K	UVH5LT23K
110–127 Vdc	T13	T14	T15	T16	UVH5LP26K	UVH5LT26K
220–250 Vdc	T17	T18	T19	T20	UVH5LP28K	UVH5LT28K

**R-Frame Undervoltage Release Mechanism (RH only)**

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location	Field Mounted Field Installation Kits <sup>Ⓢ</sup>
	18-Inch (457.2 mm) Pigtail Leads Suffix Number <sup>Ⓢ</sup>	Pigtail Leads Eaton Part Number <sup>Ⓢ</sup>
12 Vac	U37	UVH6RP02K
24 Vac	U41	UVH6RP03K
48–60 Vac	U45	UVH6RP05K
110–127 Vac	U49	UVH6RP08K
208–240 Vac	U53	UVH6RP11K
380–500 Vac	U57	UVH6RP29K
12 Vdc	T21	UVH6RP20K
24 Vdc	T25	UVH6RP21K
48–60 Vdc	T29	UVH6RP23K
110–125 Vdc	T33	UVH6RP26K
220–250 Vdc	T37	UVH6RP28K

**Notes**

- Ⓢ Listed with Underwriters Laboratories for field installation under E64983.
- Ⓢ Standard mounting location—leads exit rear of breaker.
- Ⓢ Endurance: 500 electrical operations plus 2500 mechanical operations.
- Ⓢ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>). Leads are orange and brown.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### Technical Data and Specifications

2

#### Alarm Switch

##### F-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
<b>Multi-Pole Circuit Breakers</b>			
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500
<b>Single-Pole Circuit Breakers</b>			
125/250	50/60 Hz	6 <sup>④</sup>	2000
28	DC	3 <sup>⑤</sup>	2000
28	DC	5 <sup>⑥</sup>	2000

##### J-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

##### K-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

##### L- and M-Frames Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

##### N-Frame Electrical Rating Data <sup>①</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

##### R-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

#### Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ② Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ③ Non-inductive load.
- ④ Inductive (L/R = 0.026).
- ⑤ Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ⑥ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>).
- ⑦ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ⑧ Endurance: 3000 electrical operations plus 1000 mechanical operations.
- ⑨ Endurance: 500 electrical operations plus 2500 mechanical operations.
- ⑩ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>). Leads are red, black and blue.

### Auxiliary Switch

#### F-Frame Electrical Rating Data <sup>②③</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
125 <sup>④</sup>	50/60 Hz	1	2500
600	50/60 Hz	6	2500
125	DC	0.50 <sup>④</sup>	2500
250	DC	0.25 <sup>④</sup>	2500

#### J-Frame Electrical Rating Data <sup>②③</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>④</sup>	2500
250	DC	0.25 <sup>④</sup>	2500

#### K-Frame Electrical Rating Data <sup>②③</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>④</sup>	2500
250	DC	0.25 <sup>④</sup>	2500

#### L- and M-Frames Electrical Rating Data <sup>②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>④</sup>	2500
250	DC	0.25 <sup>④</sup>	2500

#### N-Frame Electrical Rating Data <sup>②③</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>④</sup>	2500
250	DC	0.25 <sup>④</sup>	2500

#### R-Frame Electrical Rating Data <sup>②③</sup>

Maximum Voltage	Frequency	Maximum Current Amperes
600	50/60 Hz	6
125	DC	0.50 <sup>④</sup>
250	DC	0.25 <sup>④</sup>

#### Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ② Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>).
- ③ For use in electronic circuit of 100 micro amperes and 15 Vdc minimum.
- ④ Non-inductive load.
- ⑤ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ⑥ Endurance: 3000 electrical operations plus 1000 mechanical operations.
- ⑦ Endurance: 500 electrical operations plus 2500 mechanical operations.
- ⑧ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>). Leads are red, black and blue.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### Auxiliary Switch and Alarm Switch Combination

2

#### F-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2200
250	DC	0.25 <sup>③</sup>	2200

#### J-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

#### K-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

#### L- and M-Frames Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

#### N-Frame Electrical Rating Data <sup>①②</sup>

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 <sup>③</sup>	2500
250	DC	0.25 <sup>③</sup>	2500

#### Notes

- ① Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ② Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>).
- ③ Non-inductive load.
- ④ Endurance: 6000 electrical operations plus 2000 mechanical operations.
- ⑤ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ⑥ Endurance: 3000 electrical operations plus 1000 mechanical operations.



### Shunt Trip

#### F-Frame Electrical Rating Data <sup>(2)(3)</sup>

50/60 Hz			DC		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	6.75	75	12	9	100
24	6.75	300	24	9	400
48	36	92	48	36	100
60	36	140	60	36	160
110	156	480	110	77	55
120	156	570	120	77	66
127	156	640	125	77	71
208	156	180	—	—	—
220	156	200	—	—	—
240	156	240	—	—	—
380	300	610	127	—	72
415	300	130	220	—	110
440	300	330	250	—	140
480	300	380	—	—	—
525	300	450	—	—	—
550	300	530	—	—	—
600	300	590	—	—	—

#### J-Frame Electrical Rating Data <sup>(2)(3)</sup>

50/60 Hz			DC		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	9	31	12	8.4	50
24	9	173	24	8.4	247
48	36	686	48	33.6	1094
60	36	1014	60	33.6	1698
110 <sup>(4)</sup>	60.5	66	110	77	112
120 <sup>(4)</sup>	60.5	84	120	77	138
127 <sup>(4)</sup>	60.5	102	125	77	150
208 <sup>(4)</sup>	60.5	354	—	77	—
220 <sup>(4)</sup>	60.5	396	—	—	—
240 <sup>(4)</sup>	60.5	432	—	—	—
380	285	180	110	154	40
400	285	200	120	154	58
415	285	240	125	154	—
440	285	610	127	154	—
480	360	34	—	—	—
525	360	42	—	—	—
550	360	50	—	—	—
600	360	60	—	—	—

#### K-Frame Electrical Rating Data <sup>(2)(3)</sup>

50/60 Hz			DC		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	9	45	12	8.4	35
24	9	200	24	8.4	170
48	—	830	48	—	710
60	—	1280	60	—	1105
110 <sup>(4)</sup>	60	100	110	77	110
120 <sup>(4)</sup>	60	120	120	77	130
127 <sup>(4)</sup>	60	140	125	77	140
208 <sup>(4)</sup>	60	420	—	—	—
220 <sup>(4)</sup>	60	470	—	—	—
240 <sup>(4)</sup>	60	550	—	—	—
380	285	95	220	154	41
400	285	108	250	154	54
415	285	120	—	154	—
440	285	136	—	154	—
480	360	40	—	—	—
525	360	50	—	—	—
550	360	50	—	—	—
600	360	70	—	—	—

#### Notes

- <sup>(1)</sup> Average unlatching time: 6 milliseconds.
- <sup>(2)</sup> Average circuit breaker contact total opening time: 18 milliseconds.
- <sup>(3)</sup> Endurance: 6000 electrical operations plus 4000 mechanical operations.
- <sup>(4)</sup> Endurance: 6000 electrical operations plus 2000 mechanical operations.
- <sup>(5)</sup> Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
- <sup>(6)</sup> Approximate unlatching time: 6 milliseconds.
- <sup>(7)</sup> Approximate total circuit breaker contact opening time: 8 milliseconds.
- <sup>(8)</sup> Endurance: 5000 electrical operations plus 1000 mechanical operations.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### L- and M-Frame Electrical Rating Data <sup>①②③</sup>

50/60 Hz			DC		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
12	9	45	12	9	35
24	9	200	24	9	170
48	34	830	48	34	710
60	34	1280	60	34	1105
110 <sup>④</sup>	60	100	110	77	110
120 <sup>④</sup>	60	120	120	77	130
127 <sup>④</sup>	60	140	125	77	140
208 <sup>④</sup>	60	420	—	77	—
220 <sup>④</sup>	60	470	—	—	—
240 <sup>④</sup>	60	550	—	—	—
380	266	95	220	154	41
400	266	108	250	—	54
415	266	120	—	—	—
440	266	136	—	—	—
480	336	40	—	—	—
525	336	50	—	—	—
550	336	50	—	—	—
600	336	70	—	—	—

### N-Frame Electrical Rating Data <sup>①②③</sup>

50/60 Hz			DC		
Supply Voltage	Minimum Operating Voltage	VA	Supply Voltage	Minimum Operating Voltage	VA
24	16.8	200	24	16.8	170
48	33.6	830	48	33.6	710
60	33.6	1280	60	33.6	1150
110 <sup>④</sup>	60	100	110	77	110
120 <sup>④</sup>	60	120	120	77	130
127 <sup>④</sup>	60	140	125	77	140
208 <sup>④</sup>	60	420	—	—	—
220 <sup>④</sup>	60	470	—	—	—
240 <sup>④</sup>	60	550	—	—	—
380	266	95	220	154	41
400	266	108	250	—	54
415	266	120	—	—	—
440	266	136	—	—	—
480	336	40	—	—	—
525	336	50	—	—	—
550	336	50	—	—	—
600	336	70	—	—	—

#### Notes

- ① Approximate unlatching time: 6 milliseconds.
- ② Approximate total circuit breaker contact opening time: 18 milliseconds.
- ③ Endurance: 5000 electrical operations plus 1000 mechanical operations.
- ④ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.
- ⑤ Endurance: 3000 electrical operations plus 1000 mechanical operations.

### R-Frame Electrical Rating Data ⓈⓈⓈⓈⓈ

Suffix Number	Application Ratings		Electrical Operating Ratings					VA	One Minute Dielectric Withstand Voltage (V)
	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	$I_p$ (A)	$I_{rms}$ at 0.250s (A)	$I_{rms}$ at 0.033s (A)		
03/03K	24	50/60	24	16.8	36.1	—	25.5	612	1050
	24	DC	24	16.8	36.1	16.5	—	396	1050
05/05K	48-60	50/60	48	34.0	13.1	—	9.2	450	1120
	48-60	50/60	60	34.0	17.2	—	12.2	740	1120
11/11K <sup>Ⓢ</sup>	110-240	50/60	110	60.5	4.2	—	3.0	330	1480
	110-240	50/60	120	60.5	4.5	—	3.2	390	1480
	110-240	50/60	127	60.5	4.6	—	3.3	430	1480
	110-240	50/60	208	60.5	7.9	—	5.6	1170	1480
	110-240	50/60	220	60.5	8.5	—	6.0	1370	1480
	110-240	50/60	240	60.5	8.7	—	6.1	1470	1480
14/14K	380-440	50/60	380	266.0	4.5	—	3.2	1220	1880
	380-440	50/60	415	266.0	5.0	—	3.6	1500	1880
	380-440	50/60	440	266.0	5.3	—	3.7	1640	1880
	220-250	DC	220	154.0	—	2.4	—	530	1500
	220-250	DC	250	154.0	—	2.7	—	680	1500
18/18K	480-600	50/60	480	336.0	0.6	—	0.4	200	2200
	480-600	50/60	525	336.0	0.7	—	0.5	270	2200
	480-600	50/60	550	336.0	0.7	—	0.5	280	2200
	480-600	50/60	600	336.0	0.8	—	0.6	360	2200
23/23K	48-60	DC	48	34.0	—	9.8	—	470	1120
	48-60	DC	60	34.0	—	11.6	—	700	1120
26/26K	110-125	DC	110	77.0	—	3.3	—	370	1250
	110-125	DC	120	77.0	—	3.6	—	440	1250
	110-125	DC	125	77.0	—	3.8	—	480	1250

#### Notes

- Ⓢ Approximate unlatching time of 6 milliseconds.
- Ⓢ Average circuit breaker contact total opening time approximately 62 milliseconds, at rated voltage.
- Ⓢ Endurance: 500 electrical operations and 2500 mechanical operations.
- Ⓢ Shunt trip can be operated up to a maximum of six times per minute.
- Ⓢ Maximum operating voltage—110% of maximum voltage range rating.
- Ⓢ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>). Leads are yellow and white.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### Undervoltage Release Mechanism

2

#### F-Frame Electrical Rating Data <sup>Ⓢ</sup>

50/60 Hz					DC				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Minimum	Maximum	Maximum			Minimum	Maximum	Maximum	
12	4.2	6.3	7.6	1.3	12	4.2	8.4	10.2	2.8
12	4.2	6.3	7.6	2.5	12	4.2	8.4	10.2	2.8
24	8.4	16.8	20.4	1.4	24	8.4	16.8	20.4	1.6
48	21.0	33.6	40.8	1.2	48	21.0	33.6	40.8	1.3
60	21.0	33.6	40.8	1.9	60	21.0	33.6	40.8	2.0
110	44.5	77.0	93.5	1.3	110	44.5	77.0	93.5	1.5
120	44.5	77.0	93.5	1.5	120	44.5	77.0	93.5	1.7
127	44.5	77.0	93.5	1.7	125	44.5	77.0	93.5	1.9
208	84.0	145.6	176.8	2.2	220	87.5	154.0	187.0	2.6
220	84.0	145.6	176.8	2.4	250	87.5	154.0	187.0	3.4
240	84.0	145.6	176.8	2.9	—	—	—	—	—
380	168.0	266.0	323.0	2.9	—	—	—	—	—
415	168.0	266.0	323.0	3.5	—	—	—	—	—
440	168.0	266.0	323.0	3.9	—	—	—	—	—
480	168.0	266.0	323.0	4.6	—	—	—	—	—
525	210.0	367.0	446.0	4.3	—	—	—	—	—
550	210.0	367.0	446.0	4.8	—	—	—	—	—
600	210.0	367.0	446.0	5.8	—	—	—	—	—

#### J-Frame Electrical Rating Data <sup>ⓈⓈ</sup>

50/60 Hz					DC				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Minimum	Maximum	Maximum			Minimum	Maximum	Maximum	
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

#### Notes

- Ⓢ Endurance: 6000 electrical operations plus 4000 mechanical operations.
- ⓈⓈ Endurance: 6000 electrical operations plus 2000 mechanical operations.
- Ⓢ For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.

### K-Frame Electrical Rating Data <sup>Ⓞ</sup>

50/60 Hz					DC				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Minimum	Maximum	Maximum			Minimum	Maximum	Maximum	
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

### L- and M-Frames Electrical Rating Data <sup>Ⓞ</sup>

50/60 Hz					DC				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Minimum	Maximum	Maximum			Minimum	Maximum	Maximum	
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

**Note**

<sup>Ⓞ</sup> Endurance: 5000 electrical operations plus 1000 mechanical operations.

# 2.3

## Motor Circuit Protectors

Series C - Internal accessories

### N-Frame Electrical Rating Data <sup>Ⓞ</sup>

2

50/60 Hz					DC				
Supply Voltage	Dropout Voltage		Pickup Voltage	VA	Supply Voltage	Dropout Voltage		Pickup Voltage	VA
	Minimum	Maximum	Maximum			Minimum	Maximum	Maximum	
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	220	87.5	154.0	187.0	—
240	84.0	145.6	176.8	3.8	250	—	—	—	4.0
380	175.0	266.0	323.0	3.4	—	—	—	—	—
415	175.0	266.0	323.0	4.0	—	—	—	—	—
480	175.0	266.0	323.0	4.6	—	—	—	—	—
500	175.0	266.0	323.0	5.4	—	—	—	—	—

**Note**

<sup>Ⓞ</sup> Endurance: 3000 electrical operations plus 1000 mechanical operations.

### R-Frame AC Undervoltage Release Mechanism (Handle Reset) Ratings <sup>Ⓢ</sup>

Eaton Part Suffix	Application Ratings Voltage (V)	Electrical Operating Ratings			Approximate Operating Time (ms)				Dielectric Withstand Voltage (V) <sup>Ⓢ</sup>	
		Supply Voltage (V)	Dropout Voltage (V)		Pickup Voltage (V) Max.	VA	Minimum UVR Response <sup>Ⓢ</sup>	Initiation Circuit Breaker Contact Separation <sup>Ⓢ</sup>		Maximum Circuit Breaker Contact Opening
			Minimum	Maximum						
02/02K	12	12	4.2	8.4	10.2	2.3	5	46	77	1024
03/03K	24	24	8.4	16.8	20.4	3.1	5	46	77	1048
05/05K	48-60	48	21.0	33.5	40.8	3.4	5	46	77	1120
		60	21.0	33.5	40.8	6.0	5	46	77	1120
08/08K	110-127	110	44.5	77.0	93.5	3.3	5	46	77	1254
		120	44.5	77.0	93.5	3.6	5	46	77	1254
		127	44.5	77.0	93.5	3.8	5	46	77	1254
11/11K	208-240	208	84.0	145.6	176.8	4.2	5	46	77	1480
		220	84.0	145.6	176.8	6.6	5	46	77	1480
		240	84.0	145.6	176.8	7.2	5	46	77	1480
29/29K	380-500	380	168.0	266.0	323.0	3.8	5	46	77	2000
		415	168.0	266.0	323.0	8.3	5	46	77	2000
		440	168.0	266.0	323.0	8.8	5	46	77	2000
		480	168.0	266.0	323.0	9.6	5	46	77	2000
		500	168.0	266.0	323.0	10.0	5	46	77	2000

### R-Frame DC Undervoltage Release Mechanism (Handle Reset) Ratings <sup>Ⓢ</sup>

Eaton Part Suffix	Application Ratings Voltage (V)	Electrical Operating Ratings			Approximate Operating Time (ms)				Dielectric Withstand Voltage (V) <sup>Ⓢ</sup>	
		Supply Voltage (V)	Dropout Voltage (V)		Pickup Voltage (V) Max.	VA	Minimum UVR Response <sup>Ⓢ</sup>	Initiation Circuit Breaker Contact Separation <sup>Ⓢ</sup>		Maximum Circuit Breaker Contact Opening
			Minimum	Maximum						
20/20K	12	12	4.2	8.4	10.2	3.4	5	46	77	1024
21/21K	24	24	8.4	16.8	20.4	4.3	5	46	77	1048
23/23K	48-60	48	21.0	33.5	40.8	4.8	5	46	77	1120
		60	21.0	33.5	40.8	7.2	5	46	77	1120
26/26K	110-127	110	43.8	77.0	93.5	3.3	5	46	77	1250
		120	43.8	77.0	93.5	3.6	5	46	77	1250
		125	43.8	77.0	93.5	3.8	5	46	77	1250
28/28K	220-250	220	87.5	154.0	187.0	6.6	5	46	77	1500
		250	87.5	154.0	187.0	7.5	5	46	77	1500

#### Notes

- Ⓢ Endurance: 500 electrical operations plus 2500 mechanical operations.
- Ⓢ Pigtail wire size: 18 AWG (0.82 mm<sup>2</sup>). Leads are orange and brown.
- Ⓢ UVR will override a momentary voltage dip up to the response time shown.
- Ⓢ Unlatching occurs 1 millisecond before circuit breaker contacts begin to separate.
- Ⓢ For 1 minute.

## External Accessories

### Product Overview

2

#### End Cap Kit

The end cap kit slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The end cap kit is available with English and metric thread sizes. (Field installation only.) Listed per UL File E7819.

#### Keeper Nut

The keeper nut slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The keeper nut is available with English and metric thread sizes. Screws and washers are supplied by customer. (Field installation only.) Listed per UL File E7819.

#### L-, M-, N-Frames

Not required. Terminals are threaded.

#### J-Frame Plug Nut

The plug nut is used in applications where screw-connected ring-type terminals are preferred to connect cables to circuit breaker conductors. The plug nut is press-fit into the opening in the circuit breaker terminal conductor. Screws and washers are supplied by customer.

#### Terminal Adapter

##### Control Wire Terminal Kit

The control wire terminal kit provides a means to tap off control power from a main disconnect, using the provided male end of a quick disconnect.

For use with steel or stainless steel terminals only.

**Note:** Terminal Kits contain one terminal for each pole and one terminal cover.

#### Multiwire Connectors

Eaton's field-installed multiwire connectors for the load side (OFF) end terminals, are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

#### Terminal Shields

Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.)

#### Terminal End Covers

The terminal end covers are designed for use in motor control center applications where, because of confined spaces, line side conductors are normally custom fitted. The molded end covers are made of high dielectric glass-polyester and slide over the line ends of the circuit breaker. Close fitting conductor openings are molded into the end covers. The end cover and circuit breaker case fit together to form terminal compartments that isolate discharged ionizing gases during circuit breaker tripping. Terminal end covers are available with two conductor opening diameters, 0.25-inch (6.4 mm) and 0.41-inch (10.4 mm), and are listed per UL File E7819. (Field installation only.)

#### Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. The barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.) Two per package.

#### Base Mounting Plate

Suitable for mounting six single-pole circuit breakers.

#### DIN Rail Adapter

For use with standard 35 mm DIN rail such as, 35 x 7.5 or 35 x 15 mm per DIN EN50022.

Adapter mounting screws included are for use with two- and three-pole circuit breakers. Adapters for single-pole circuit breakers clip into the base molding.

#### Key Operated Attachment

##### Lock Dog (Non-Padlockable)

##### Non-Padlockable Handle Block

The non-padlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. Listed per UL File E7819. (Field installation only.)

#### Padlockable Handle

##### Padlockable Handle Lock

The device is positioned in the cover opening to prevent handle movement. Will accommodate one 5/16-inch (8 mm) padlock.

#### Snap-on Padlockable Handle Lock Hasp

The snap-on padlockable handle lock allows the handle to be locked in the OFF or ON position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) This device was designed for use on the single-pole circuit breaker, but may be used on one-, two-, three- and four-pole styles. The handle lock snaps onto the escutcheon area of the handle with an optional retaining screw for added secureness. The handle lock will accommodate one padlock with a 1/4-inch (6.4 mm) shackle. Listed per UL File E7819. (Field installation only.)

#### Padlockable Handle Lock Hasp

The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is predrilled on both sides of the operating handle so that the hasp can be mounted on either side of the handle. The hasp will accommodate up to three padlocks with 1/4-inch (6.4 mm) shackles, one per circuit breaker. Listed per UL File E7819. (Field installation only.)



**Cylinder Lock**

The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON.

The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory installation only.)

**Handle Mechanisms**

Handle mechanisms are used to operate molded case circuit breakers, molded case switches and motor circuit protectors. They are available in three basic configurations—flange mounted, through-the-door and direct (close-coupled)—providing safe, dependable operation and ease of installation.

- Flange mounted:
  - Flex Shaft™
  - C371
- Through-the-door:
  - Series C Rotary
  - Universal Rotary
- Direct (close-coupled):
  - Universal Direct
  - Euro IEC
  - G Direct

Handle mechanisms are typically used on enclosed circuit breakers, control panels and motor control centers in many different applications. Eaton has a handle mechanism for virtually any need.

**Through-the-Door Handle Mechanisms**

Eaton's through-the-door handle mechanisms mount on the front of an enclosure or cabinet door and externally operate the circuit breaker via a variable depth shaft or a linear operator (Type MC). Each rotary type handle mechanism includes a handle, base operating mechanism and shaft that can be cut to various lengths.

Series C Rotary and Universal Rotary handle mechanisms are for use with molded case circuit breakers (G, F, J, K, L, MDL), molded case switches and motor circuit protectors.

Series C Rotary and Universal Rotary, are UL listed and meet CSA requirements. Universal Rotary also meets IEC947-1/2 for international compliance. Rotary UL File Number is E64983.

Type 4/4X handles are similar to standard handles except they include an internal neoprene gasket. Type 4/4X handle style number is 6648C22G03. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

**Handle Extension**

Handle extension is not included with J, K, L, M and N-Frame breakers. It must be purchased separately.

# 2.4

## Motor Circuit Protectors

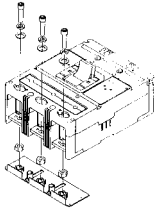
Series C - External accessories

### Product Selection

2

#### Termination Hardware—End Cap Kit

##### End Cap Kit

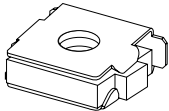


##### End Cap Kit

Thread Type	Thread Size	Eaton Part Number
<b>Two-Pole F-Frame (225A)</b>		
Imperial	10–32	KPEK12
Metric	M–5	KPEKM12
<b>Three-Pole F-Frame (225A)</b>		
Imperial	10–32	KPEK1
Metric	M–5	KPEKM1
<b>Four-Pole F-Frame (225A)</b>		
Imperial	10–32	KPEK14
Metric	M–5	KPEKM14
<b>Three-Pole J-Frame</b>		
Imperial	0.312–18	KPEK2
Metric	M–8	KPEKM2
<b>Four-Pole J-Frame</b>		
Imperial	0.312–18	KPEK24
Metric	M–8	KPEKM24
<b>Three-Pole K-Frame</b>		
Imperial	0.312–18	KPEK3
Metric	M–8	KPEKM3
<b>Four-Pole K-Frame</b>		
Imperial	0.312–18	KPEK34
Metric	M–8	KPEKM34
<b>Three-Pole L-Frame</b>		
Imperial	0.312–18	KPEK4
Metric	M–8	KPEKM4
<b>Four-Pole L-Frame</b>		
Imperial	0.312–18	KPEK44
Metric	M–8	KPEKM44

#### Termination Hardware—Keeper Nut

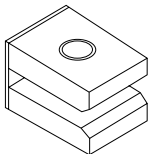
##### F-Frame Keeper Nut



##### F-Frame Keeper Nut

Thread Type	Thread Size	Eaton Part Number Package of 12 (Priced Individually)
Imperial	10–32	KPR1A
Metric	M–5	KPR1AM

##### K-Frame Keeper Nut



##### K-Frame Keeper Nut

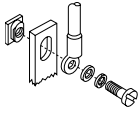
Thread Type	Thread Size	Line/Load End	Eaton Part Number Package of 3
Imperial	0.375–16	Line	KPR3A
		Load	KPR3B
Metric	M–8	Line	KPR3AM
		Load	KPR3BM

**Note**

L-, M-, N-Frames not required. Terminals are threaded.

### Termination Hardware

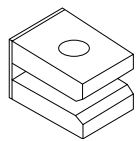
#### J-Frame Plug Nut



#### J-Frame Plug Nut

Thread Type	Thread Size	Eaton Part Number Package of 6
Imperial	0.250-20	PLN2
Metric	M-6	PLN2M

#### K-Frame Terminal Adapter



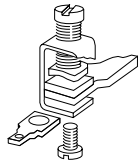
#### K-Frame Terminal Adapter

Line/Load End	Eaton Part Number
Line and load	TAD3

### F-Frame Ordering Information

Terminals must be ordered separately. Priced individually.

#### F-Frame Kit



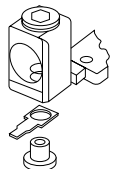
#### F-Frame Control Wire Terminal Kit

Description	Maximum Amperes	Eaton Part Number
Package of 12 control wire terminal tangs.	150	FCWTK
	225	FCWTK225

### J- and K-Frame Ordering Information

Terminals must be ordered separately. Priced individually.

#### J- and K-Frame Kit



#### J- and K-Frame Control Wire Terminal Kit

Description	Eaton Part Number
Package of 12 control wire terminal tangs.	KCWTK

#### L-Frame Control Wire Terminal Kit

AWG Wire Range/Number Conductors	Metric Wire Range mm <sup>2</sup>	Eaton Part Number
Al/Cu (2) 3/0-350 kcmil	95-150	TA602LDCW
Cu (2) 250-350 kcmil	120-250	T602LDCW
Al/Cu (2) 400-500 kcmil	185-240	2TA603LDKCW
Al/Cu (2) 400-500 kcmil	185-240	3TA603LDKCW
Al/Cu (2) 400-500 kcmil	185-240	4TA603LDKCW

#### Notes

- Ⓢ K-Frame terminal adapter for use in replacing LB/DA breakers.
- Ⓢ Not for use with T250KB terminals.
- Ⓢ Individually packed.
- Ⓢ Terminal kits contain one terminal for each pole and one terminal cover.
- Ⓢ Two-pole kit.
- Ⓢ Three-pole kit.
- Ⓢ Four-pole kit.

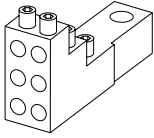
# 2.4

## Motor Circuit Protectors

Series C - External accessories

2

### Multiwire Connectors



### Multiwire Connectors Ordering Information (Package of 3)

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Kit Part Number
<b>G-Frame</b> <sup>Ⓞ</sup>			
100	3	14-2	<b>3TA100G3K</b>
	6	14-6	<b>3TA100G6K</b>
<b>F-Frame</b>			
225	3	14-2	<b>3TA150F3K</b>
	6	14-6	<b>3TA150F6K</b>
<b>J-Frame</b>			
250	3	14-2	<b>3TA250J3K</b>
	6	14-6	<b>3TA250J6K</b>
<b>K-Frame</b>			
400	3	14-2/0	<b>3TA400K3K</b>
	6	14-3	<b>3TA400K6K</b>

### Base Mounting Hardware

#### Ordering Information

Hardware for surface mounting of circuit breakers is supplied only on request. Hardware consists of mounting screws and lockwashers. Order hardware for circuit breaker pole configurations as required.

### Imperial Thread Mounting Hardware

Number of Poles	Description	Type of Mounting	Eaton Part Number
<b>F-Frame</b>			
1	0.164-32 x 3.188-inch pan-head steel screws, lockwashers and clamps	Individual	<b>624B375G01</b>
		Group <sup>Ⓞ</sup>	<b>624B375G02</b>
2	0.164-32 x 1.5-inch pan-head steel screws and lockwashers	Individual	<b>4218B80G01</b>
3, 4	0.164-32 x 1.5-inch pan-head steel screws and lockwashers	Individual	<b>BMH1</b>
<b>J-Frame</b>			
2, 3, 4	0.250-20 x 2.75 inch pan-head steel screws and lockwashers	Individual	<b>BMH2</b>
<b>K-Frame</b>			
2, 3, 4	0.250-20 x 1.5 inch pan-head steel screws and lockwashers	Individual	<b>BMH3</b>
<b>L-Frame</b>			
2, 3, 4	0.250-20 x 1.5 inch filister-head steel screws and lockwashers and flat washers	Individual	<b>BMH4</b>
<b>M-Frame</b>			
2, 3	0.3125-18 x 1.25 inch filister-head steel screws and lockwashers and flat washers	Individual	<b>BMH5</b>
<b>N-Frame</b>			
2, 3, 4	0.3125-18 x 1.25 inch pan-head steel screws and lockwashers	Individual	<b>BMH5</b>
<b>R-Frame</b>			
Supplied by customer			

### Metric Thread Mounting Hardware

Number of Poles	Description	Type of Mounting	Eaton Part Number
<b>F-Frame</b>			
1	M4-0.7 x 80 mm pan-head steel screws, lockwashers, and clamps	Individual	<b>4218B80G09</b>
		Group <sup>Ⓞ</sup>	<b>4218B80G10</b>
2	M4-0.7 x 38 mm pan-head steel screws and lockwashers	Individual	<b>4218B80G11</b>
3, 4	M4-0.7 x 38 mm pan-head steel screws and lockwashers	Individual	<b>BMH1M</b>
<b>J-Frame</b>			
2, 3, 4	M6-0.7 x 70 mm pan-head steel screws and lockwashers	Individual	<b>BMH2M</b>
<b>K-Frame</b>			
2, 3, 4	M6-0.7 x 38 mm pan-head steel screws and lockwashers	Individual	<b>BMH3M</b>
<b>L-Frame</b>			
2, 3	—	Individual	<b>BMH4M</b>
<b>M-Frame</b>			
2, 3	—	Individual	<b>BMH5M</b>
<b>N-Frame</b>			
2, 3	—	Individual	<b>BMH5M</b>
<b>R-Frame</b>			
Supplied by customer			

**Note**

<sup>Ⓞ</sup> One set of hardware for two circuit breakers.

# 2.4

## Motor Circuit Protectors

Series C - External accessories

### Terminal Shields

2

#### F-Frame



#### F-Frame Terminal Shield

Number of Poles	Location	Standard (Package of 10) (Priced Individually) Eaton Part Number	Special—For Use When Electrical Operator is Mounted on Circuit Breaker Eaton Part Number
1	Line	625B229G06	—
2	Line	625B229G07	—
3	Line	625B229G08	4210B95G01
4	Line	625B229G09	4210B95G02

#### J-Frame



#### J-Frame Terminal Shield

Number of Poles	Location	Eaton Part Number (Package of 10)
2,3	Line End	1266C07G01
4	Line End	6631C01G01
2,3	Load End	6641C16G01
4	Load End	6641C16G02

**K-Frame**



**K-Frame Terminal Shield**

Number of Poles	Location	Eaton Part Number (Package of 10)
2, 3	Line	TS33LN
4	Line	TS34LN
3	Load	TS33LD

**L-Frame**



**L-Frame Terminal Shield**

Eaton Part Number (Package of 1)
314C420G05

**M-Frame**



**M-Frame Terminal Shield**

Eaton Part Number (Package of 1)
208B966G01

**N-Frame Terminal Shield**

Eaton Part Number (Package of 1)
NTS3K

**Terminal End Covers**  
**Ordering Information**

The terminal end cover is available for three-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

**F-Frame**



**F-Frame Terminal End Covers**

Conductor Opening Diameter in Inches (mm)	Eaton Part Number
0.25 (6.35 mm)	TEC1
0.41 (10.41 mm)	TEC2

**Interphase Barriers**  
**Ordering Information**

Two per package.

**Interphase Barrier**



**Interphase Barriers**

Frame	Eaton Part Number
F	IPB1
J, K	IPB3
L	IPB4
M	IPB4
N	IPB5

**Non-Padlockable Handle Block**

**Non-Padlockable Handle Block**



**Non-Padlockable Handle Block**

Frame	Eaton Part Number
F	LKD1
J, K	LKD3
L, M, N	LKD4

**Padlockable Handle Lock**

**Padlockable Handle Lock**



**Padlockable Handle Lock**

Frame	Eaton Part Number
G	GPHBOFF
J, K	PHB3

**Snap-On Padlockable Handle Lock Hasp**

**Snap-On Padlockable Handle Lock Hasp**



**Snap-On Padlockable Handle Lock Hasp**

Frame	Eaton Part Number
F	PHL1

**Notes**

- Ⓞ Accepts 0.285 Lock Shank.
- Ⓞ Padlockable in the OFF position only.

# 2.4

## Motor Circuit Protectors

Series C - External accessories

### Padlockable Handle Lock Hasp

2

#### Padlockable Handle Lock Hasp



#### Padlockable Handle Lock Hasp

Description	Eaton Part Number
<b>F-Frame</b>	
Single-pole breakers	<b>PHL1</b>
Two-, three- and four-pole breakers	<b>PLK1</b>
For left side mounting	<b>PLK1LOFF</b>
For right side mounting	<b>PLK1ROFF</b>
<b>J, K-Frames</b>	
Two-, three- and four-pole breakers	<b>PLK3</b>
For left side mounting	<b>PLK3LOFF</b> Ⓞ
For right side mounting	<b>PLK3ROFF</b> Ⓞ
<b>L-Frame (Side Mounted)</b>	
<b>Side Mounted</b>	
Lock ON or OFF	<b>HLK4</b>
Lock OFF only (left-hand mount)	<b>HLK4LOFF</b> Ⓞ
<b>L-Frame (Top Mounted)</b>	
Lock ON or OFF	<b>HLK4S</b>
Lock OFF only	<b>HLK4SOFF</b> Ⓞ
<b>M-Frame</b>	
Lock ON or OFF	<b>HLK4</b>
Lock OFF only (left-hand mount)	<b>HLK4LOFF</b> Ⓞ
<b>M-Frame (Vertical Mounting)</b>	
Lock ON/OFF	<b>HLK4S</b>
Lock OFF only	<b>HLK4SOFF</b>
<b>N-Frame</b>	
Side mounted	<b>PLK5</b>
Top mounted (ON/OFF)	<b>PLK5S</b>
Top mounted (OFF only)	<b>PLK5SOFF</b> Ⓞ
<b>R-Frame</b>	
Lock ON/OFF	<b>HLK6</b>
Lock OFF only	<b>HLK6OFF</b> Ⓞ

### Cylinder Lock

#### Cylinder Lock



#### Cylinder Lock

Frame	Eaton Part Number
F, J, K	Order by description

**Note**

Ⓞ For padlockable handle lock hasp to padlock handle in OFF position only, order either part number.



### Through-the-Door Handle Mechanisms

#### Series C Rotary



#### Series C Rotary Ordering Information

Shaft Length Inches (mm)	Complete Eaton Part Number <sup>①</sup>	Separate Eaton Part Number			Eaton Part Number	
		Standard Handle <sup>②</sup>	Breaker Mechanism <sup>③</sup>	Shaft <sup>④</sup>	IEC IP66 <sup>⑤⑥</sup>	IEC IP66 <sup>⑤⑥</sup>
<b>F-Frame</b>						
6.00 (152.4)	HM1R06	6648C22G25	6648C23G11	4217B37G08	WHM1R06	WHM1R06X
12.00 (304.8)	HM1R12	6648C22G25	6648C23G11	4217B37G05	WHM1R12	WHM1R12X
16.00 (406.4)	HM1R16	6648C22G25	6648C23G11	4217B37G06	WHM1R16	WHM1R16X
24.00 (609.6)	HM1R24	6648C22G25	6648C23G11	4217B37G07	WHM1R24	WHM1R24X
<b>J-Frame</b>						
6.00 (152.4)	HM2R06	6648C22G01	6648C23G21	4217B37G08	WHM2R06	WHM2R06X
12.00 (304.8)	HM2R12	6648C22G01	6648C23G21	4217B37G05	WHM2R12	WHM2R12X
16.00 (406.4)	HM2R16	6648C22G01	6648C23G21	4217B37G06	WHM2R16	WHM2R16X
24.00 (609.6)	HM2R24	6648C22G01	6648C23G21	4217B37G07	WHM2R24	WHM2R24X
<b>K-Frame</b>						
6.00 (152.4)	HM3R06	6648C22G01	6648C23G25	4217B37G08	WHM3R06	WHM3R06X
12.00 (304.8)	HM3R12	6648C22G01	6648C23G25	4217B37G05	WHM3R12	WHM3R12X
16.00 (406.4)	HM3R16	6648C22G01	6648C23G25	4217B37G06	WHM3R16	WHM3R16X
24.00 (609.6)	HM3R24	6648C22G01	6648C23G25	4217B37G07	WHM3R24	WHM3R24X
<b>L- and MDL-Frame</b>						
6.00 (152.4)	HM4R06	6648C22G11	6648C23G19	4217B37G08	WHM4R06	WHM4R06X
12.00 (304.8)	HM4R12	6648C22G11	6648C23G19	4217B37G05	WHM4R12	WHM4R12X
16.00 (406.4)	HM4R16	6648C22G11	6648C23G19	4217B37G06	WHM4R16	WHM4R16X
24.00 (609.6)	HM4R24	6648C22G11	6648C23G19	4217B37G07	WHM4R24	WHM4R24X
<b>MD/MDS</b>						
6.00 (152.4)	HM7R06	6648C22G21	6648C23G17	4217B37G08	—	—
12.00 (304.8)	HM7R12	6648C22G21	6648C23G17	4217B37G05	—	—
16.00 (406.4)	HM7R16	6648C22G21	6648C23G17	4217B37G06	—	—
24.00 (609.6)	HM7R24	6648C22G21	6648C23G17	4217B37G07	—	—
<b>N-Frame</b>						
6.00 (152.4)	HM5R06	6648C22G21	6648C23G08	4217B37G08	WHM5R06	WHM5R06X
12.00 (304.8)	HM5R12	6648C22G21	6648C23G08	4217B37G05	WHM5R12	WHM5R12X
16.00 (406.4)	HM5R16	6648C22G21	6648C23G08	4217B37G06	WHM5R16	WHM5R16X
24.00 (609.6)	HM5R24	6648C22G21	6648C23G08	4217B37G07	WHM5R24	WHM5R24X

#### Notes

- ① Complete Eaton part number includes the standard handle, mechanism, shaft and support brace/bracket.
- ② Handle is designed suitable for NEMA Types 1, 3R and 12 enclosures. Use style number **6648C22G03** for Type 4/4X handle or add **X** Suffix to complete Eaton part number. Handle is cast aluminum.
- ③ Breaker mechanism includes a shaft support bracket and its parts. Shaft is .50-inch (12.7 mm).
- ④ Longer shafts, 16-inch (406.4 mm) and 24-inch (609.6 mm), include an adjustable support extension.
- ⑤ IEC handle mechanism supplied with metric thread mounting hardware.
- ⑥ Complete Eaton part number includes a handle, mechanism and shaft.





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Umgeni Business Park,  
Durban 4098  
Tel: (031) 263 0502  
Fax: (031) 263 0756

**Eaton Industries Manufacturing GmbH**  
**EMEA Headquarters**  
7 Route de la Longeraie  
1110 Morges  
Switzerland

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