IronHorse HMMP Manual Motor Protectors

IRONHORSE®

Overview

The IronHorse line of manual motor protectors includes models rated up to 100A. Applications include motor protection, starter protection, phase failure protection, protection of circuits, and protection of group installations.

They offer a wide range of ambient temperature compensation as well as phase failure protection.

A broad lineup of accessories allows great flexibility in overall system design.

c UL us CE

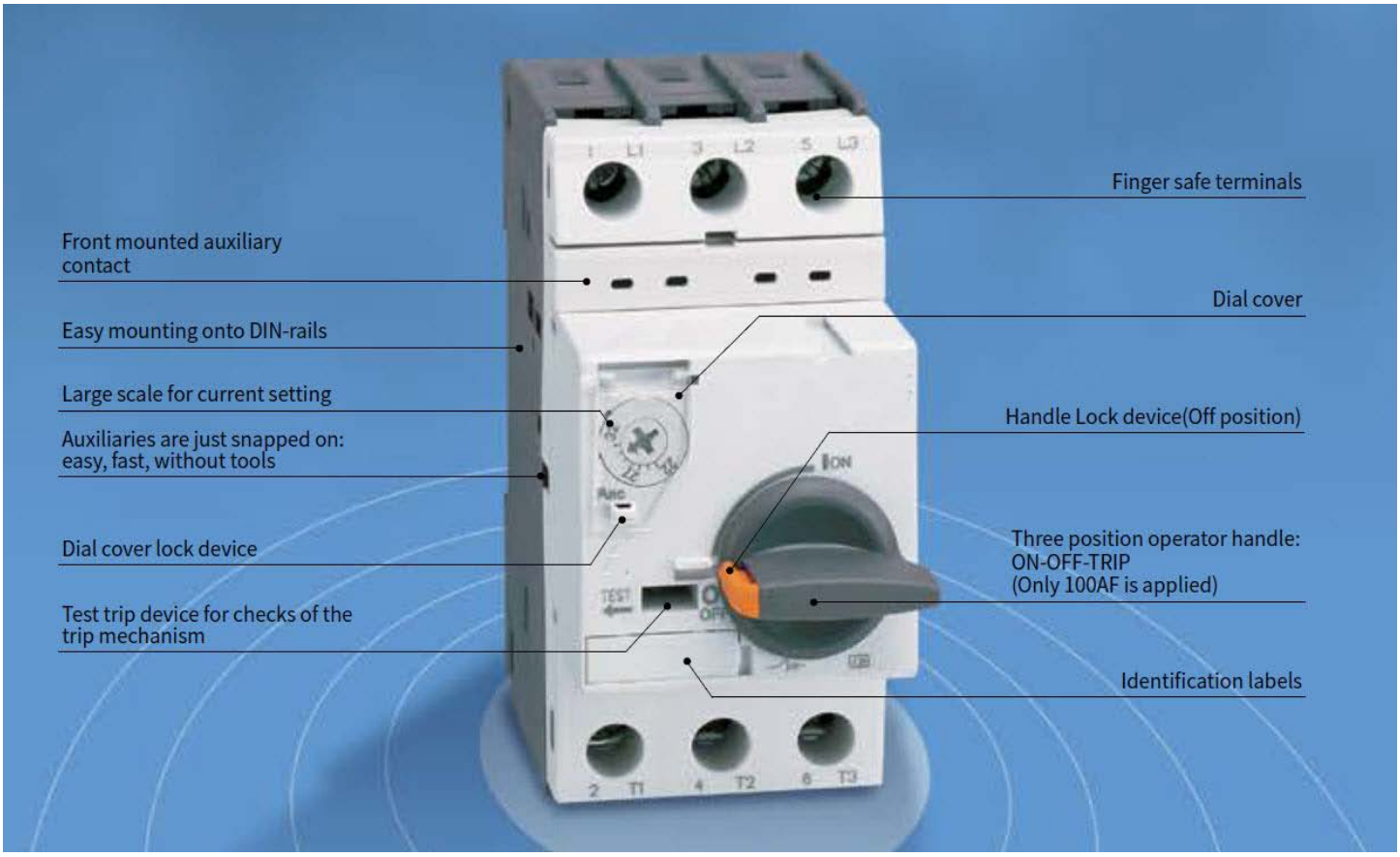
UL File No. E195426, E531281
Accessories E191059, E195426

Features

- Three-position operator (ON-OFF-TRIP)
- Handle locks in the OFF position
- Class 10 overload trip characteristics
- Trip test
- Finger-safe terminals
- DIN rail or screw mounting
- Ready for IE3

Certifications and Compliance

- Complies with specifications in accordance with IEC 60947-2 and IEC 60947-4-1
- UL508 (manual motor controller)
- UL508 (combination motor controller type E starter)
- CSA C22.2 N0. 14
- GB14048



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What is IE3?

Motor is rated from IE1 through IE4 depending on its energy efficiency. IE3 is more efficient compared to IE1- and IE2-rated motors.

Why IE3?

As part of the EU Environmental policy "20/30-20-20" strategy, the EU is committed to achieve the following by 2020.

- Reduce greenhouse gas emissions by up to 30%
- Increase the share of renewable energy to 20% and
- Boost energy efficiency by 20% in general.

The IEC 60034-30 standard specifies IE classes for motors in accordance with the above requirements. Therefore, consumers must comply with the standard when using HMMP products.

- IEC 60034-30-1 standard
- IE1 Standard Efficiency
- IE2 High Efficiency
- IE3 Premium Efficiency
- IE4 Super Premium Efficiency

Selecting HMMP manual motor protectors

To meet the IE3 motor starting current and Inrush current, use of a de-rating table is recommended (13 times the rated current).

Example

Th choose between product A or B:

A : MMP setting scale: 11 to 17A

B : MMP setting scale: 14 to 22A

Rated motor current: 16A

The short-circuit current of MMP A is 221A (17x13), and the short-circuit current of MMP B is 286A (22x13).

When applying the motor's rated current (16A) to MMP A, the multiplier for the short-circuit current is 13.8. When applying the motor's rated current (16A) to MMP B, the multiplier for the short-circuit current is 17.9. If a motor of IE3-grade or above is used here, malfunction can be caused due to higher starting current compared to that of an IE1- or IE2-graded motor. Therefore, MMP B is recommended since it has the higher multiplier of the short-circuit current.

IronHorse HMMP Manual Motor Protectors

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HMMP Series Contactor Catalog Number Sequence

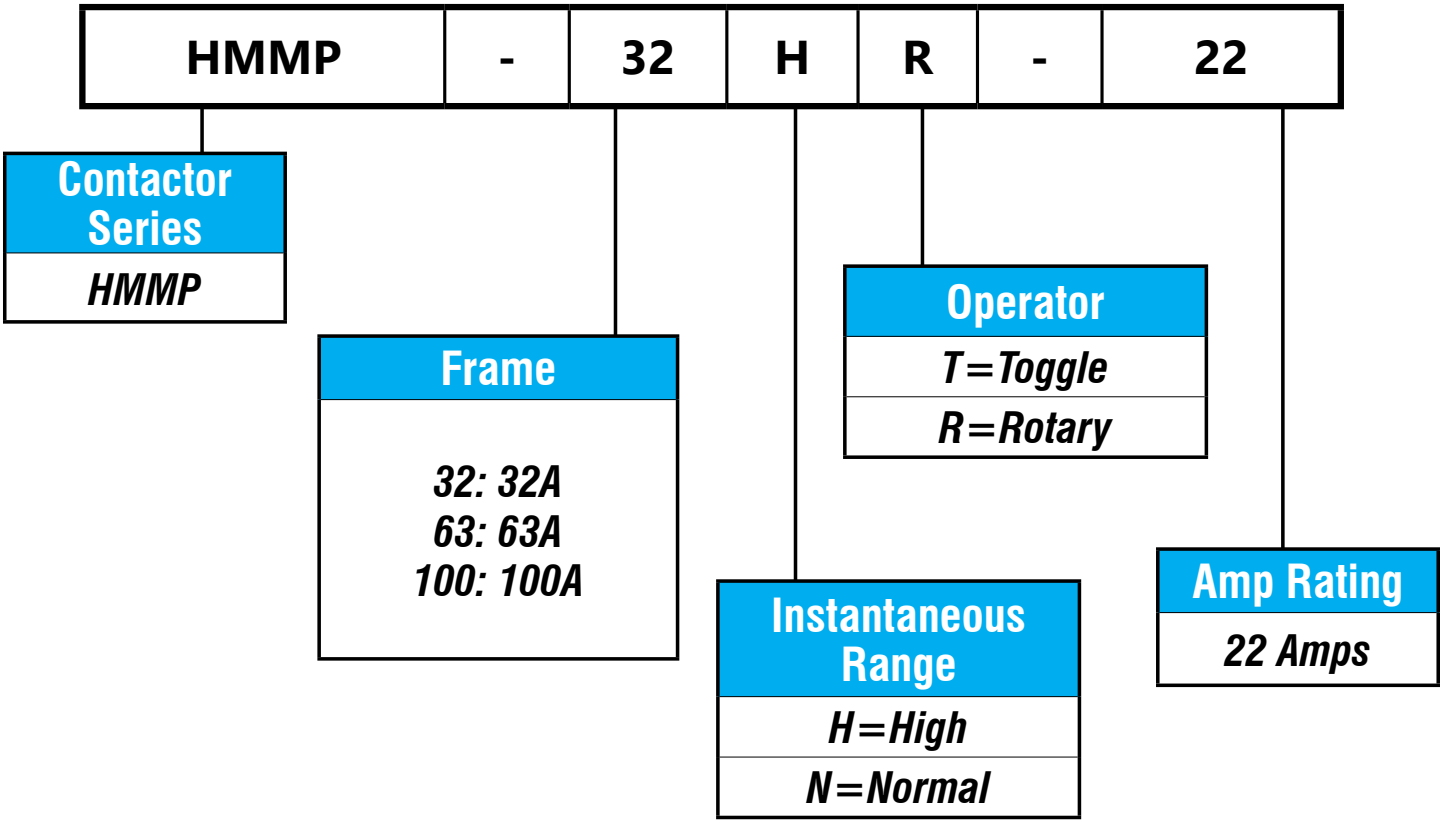

Table intended as reference only and not to create part numbers.

IronHorse HMMP Manual Motor Protectors (HMMP-32)

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IronHorse HMMP Series Three-Pole Manual Motor Protectors (HMMP-32) Selection Guide			
Part Number	***Price***	***Description***	***Drawing***
HMMP-32HR-0.16	$42.00	IronHorse manual motor protector, rotary, 0.16A, thermal overload, 0.1-0.16A adjustable, 2.1A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-0.25	$42.00	IronHorse manual motor protector, rotary, 0.25A, thermal overload, 0.16-0.25A adjustable, 3.3A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-0.40	$42.00	IronHorse manual motor protector, rotary, 0.4A, thermal overload, 0.25-0.4A adjustable, 5.2A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-0.63	$42.00	IronHorse manual motor protector, rotary, 0.63A, thermal overload, 0.4-0.63A adjustable, 8.2A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-1	$42.00	IronHorse manual motor protector, rotary, 1A, thermal overload, 0.63-1A adjustable, 13A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-1.6	$42.00	IronHorse manual motor protector, rotary, 1.6A, thermal overload, 1-1.6A adjustable, 20.8A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-2.5	$42.00	IronHorse manual motor protector, rotary, 2.5A, thermal overload, 1.6-2.5A adjustable, 32.5A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-4	$42.00	IronHorse manual motor protector, rotary, 4A, thermal overload, 2.5-4A adjustable, 52A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-6	$42.00	IronHorse manual motor protector, rotary, 6A, thermal overload, 4-6A adjustable, 78A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-8	$42.00	IronHorse manual motor protector, rotary, 8A, thermal overload, 5-8A adjustable, 104A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-10	$42.00	IronHorse manual motor protector, rotary, 10A, thermal overload, 6-10A adjustable, 130A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-13	$50.00	IronHorse manual motor protector, rotary, 13A, thermal overload, 9-13A adjustable, 169A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-17	$50.00	IronHorse manual motor protector, rotary, 17A, thermal overload, 11-17A adjustable, 221A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-22	$50.00	IronHorse manual motor protector, rotary, 22A, thermal overload, 14-22A adjustable, 286A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-26	$50.00	IronHorse manual motor protector, rotary, 26A, thermal overload, 18 -26A adjustable, 338A instantaneous trip rating, 45mm frame.	PDF
HMMP-32HR-40	$50.00	IronHorse manual motor protector, rotary, 40A, thermal overload, 28-40A adjustable, 520A instantaneous trip rating, 45mm frame.	PDF

HMMP-32HR-1

HMMP-100HR-100

IronHorse HMMP Manual Motor Protectors

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IronHorse HMMP Series Three-Pole Contactors (HMMP-63 and HMMP-100) Selection Guide			
Part Number	***Price***	***Description***	***Drawing***
HMMP-63HR-26	$127.00	IronHorse manual motor protector, rotary, 26A, thermal overload, 18-26A adjustable, 338A instantaneous trip rating, 55mm frame.	PDF
HMMP-63HR-32	$127.00	IronHorse manual motor protector, rotary, 32A, thermal overload, 22-32A adjustable, 416A instantaneous trip rating, 55mm frame.	PDF
HMMP-63HR-40	$127.00	IronHorse manual motor protector, rotary, 40A, thermal overload, 28-40A adjustable, 520A instantaneous trip rating, 55mm frame.	PDF
HMMP-63HR-50	$127.00	IronHorse manual motor protector, rotary, 50A, thermal overload, 34-50A adjustable, 650A instantaneous trip rating, 55mm frame.	PDF
HMMP-63HR-63	$127.00	IronHorse manual motor protector, rotary, 63A, thermal overload, 45-63A adjustable, 819A instantaneous trip rating, 55mm frame.	PDF
HMMP-100HR-75	$233.00	IronHorse manual motor protector, rotary, 75A, thermal overload, 55-75A adjustable, 975A instantaneous trip rating, 70mm frame.	PDF
HMMP-100HR-90	$233.00	IronHorse manual motor protector, rotary, 90A, thermal overload, 70-90A adjustable, 1170A instantaneous trip rating, 70mm frame.	PDF
HMMP-100HR-100	$233.00	IronHorse manual motor protector, rotary, 100A, thermal overload, 80-100A adjustable, 1300A instantaneous trip rating, 70mm frame.	PDF

HMMP-63HR-26

HMMP-100HR-100

IronHorse HMMP Manual Motor Protectors Accessories

IronHorse HMMP Series Link Modules Selection Guide

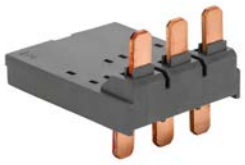
Part Number	Price	Description	Drawing
HMX1-LM22-AC	$7.75	IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-9 to HMC-22 contactors with AC coils.	PDF
HMX1-LM22-DC	$7.75	IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-9 to HMC-22 contactors with DC coils.	PDF
HMX2-LM32-AC	$8.75	IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-32 or HMC-40 contactors with AC coils.	PDF
HMX2-LM32-DC	$8.75	IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-32 or HMC-40 contactors with DC coils.	PDF
HMX3-LM63-AC	$9.25	IronHorse link module, for use with HMMP-63H manual motor protectors and HMC-50 or HMC-65 contactors with AC coils.	PDF
HMX3-LM63-DC	$9.25	IronHorse link module, for use with HMMP-63H manual motor protectors and HMC-50 or HMC-65 contactors with DC coils.	PDF
HMX4-LM100-AC	$10.00	IronHorse link module, for use with HMMP-100H manual motor protectors and HMC-75 to HMC-100 contactors with AC coils.	PDF
HMX4-LM100-DC	$10.00	IronHorse link module, for use with HMMP-100H manual motor protectors and HMC-75 to HMC-100 contactors with DC coils.	PDF

HMX1-LM22-AC

HMX2-LM32-AC

IronHorse HMMP Series Field Installable Auxiliary Contacts Selection Guide

Part Number	Price	Description	Drawing
HPX1-AUX20-F	$8.25	IronHorse field installable auxiliary contact, front mount, (2) N.O. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-AUX11-F	$8.25	IronHorse field installable auxiliary contact, front mount, (1) N.O./(1) N.C. contact(s), 10A @300 VAC/1A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-AUX02-F	$8.25	IronHorse field installable auxiliary contact, front mount, (2) N.C. contact(s), 10A @300 VAC/1A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-AUX20-S	$9.50	IronHorse field installable auxiliary contact, left side mount, (2) N.O. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-AUX11-S	$9.50	IronHorse field installable auxiliary contact, left side mount, (1) N.O./(1) N.C. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-AUX02-S	$9.50	IronHorse field installable auxiliary contact, left side mount, (2) N.C. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF



HMX3-LM63-AC

HPX1-AUX20-F

IronHorse HMMP Series Field Installable Alarm Contacts Selection Guide

Part Number	Price	Description	Drawing
HPX1-ALM11-S	$13.00	IronHorse field installable alarm contact, left side mount, (1) N.O./(1) N.C. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H manual motor manual motor protectors.	PDF
HPX2-ALM11-S	$13.00	IronHorse field installable alarm contact, left side mount, (1) N.O./(1) N.C. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-63H and HMMP-100H manual motor protectors.	PDF
HPX1-MALM11-S	$14.00	IronHorse field installable short circuit alarm contact, left side mount, (1) N.O./(1) N.C. contact(s), 10A @600 VAC/2.5A @ 300 VDC, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF

HPX1-AUX20-S

HPX1-ALM11-S

IronHorse HMMP Manual Motor Protectors Accessories (continued)

IronHorse HMMP Series Field Installable Undervoltage Trip Selection Guide

Part Number	Price	Description	Drawing
HPX1-UVT-120VAC	$20.00	IronHorse field installable undervoltage trip, right side mount, 120 VAC (60Hz)/110 VAC (50Hz) sensing range, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-UVT-480VAC	$20.00	IronHorse field installable undervoltage trip, right side mount, 460-480 VAC (60Hz)/415-440 VAC (50Hz) sensing range, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-UVT-220VAC	$20.00	IronHorse field installable undervoltage trip, right side mount, 200-220 VAC (60Hz)/200 VAC (50Hz) sensing range, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF

HPX1-UVT-120VAC

IronHorse HMMP Series Field Installable Shunt Trip Selection Guide

Part Number	Price	Description	Drawing
HPX1-SHT-120VAC	$20.00	IronHorse field installable shunt trip, right side mount, 120 VAC (60Hz)/110 VAC (50Hz) coil voltage, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-SHT-480VAC	$20.00	IronHorse field installable shunt trip, right side mount, 460-480 VAC (60Hz)/415-440 VAC (50Hz) coil voltage, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF
HPX1-SHT-220VAC	$20.00	IronHorse field installable shunt trip, right side mount, 200-220 VAC (60Hz)/200 VAC (50Hz) coil voltage, screw terminal. For use with HMMP-32H to HMMP-100H manual motor protectors.	PDF

HPX1-SHT-120VAC

IronHorse HMMP Series Rotary Handle Selection Guide

Part Number	Price	Description	Drawing
HPX1-EHRN3R-GY1	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-32H manual motor manual motor protectors. 115mm shaft, operator and mounting screws included.	PDF
HPX2-EHRN3R-GY1	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-63H manual motor protectors. 115mm shaft, operator and mounting screws included.	PDF
HPX3-EHRN3R-GY1	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-100H manual motor protectors. 115mm shaft, operator and mounting screws included.	PDF
HPX1-EHRN3R-GY3	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-32H manual motor protectors. 315mm shaft, operator and mounting screws included.	PDF
HPX2-EHRN3R-GY3	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-63H manual motor protectors. 315mm shaft, operator and mounting screws included.	PDF
HPX3-EHRN3R-GY3	$25.50	IronHorse rotary handle, selector, black, external front mount, 2-position, lockable in ON-OFF, defeatable, NEMA 3R, IP65. For use with HMMP-100H manual motor protectors. 315mm shaft, operator and mounting screws included.	PDF

HPX1-EHRN3R-GY1

HPX2-EHRN3R-GY3

IronHorse HMMP Series Incoming Power Terminal Block Selection Guide

Part Number	Price	Description	Drawing
HPX1-PTB-MP	$12.50	IronHorse incoming power terminal block, 3-pole, 64A, 12-4 AWG. For use with unused exposed busbar pins on the HPX1-BB3P busbar system. For incoming power to busbar system.	PDF

HPX1-PTB-MP

IronHorse HMMP Manual Motor Protectors Accessories (continued)

IronHorse HMMP Series Busbar Selection Guide

Part Number	Price	Description	Drawing
HPX1-BB3P-2SP	$9.50	IronHorse busbar, 64A, 600 VAC, cut to length not permitted, connects up to 2 HMMP-32H Manual motor protectors without accessories. Use HPX1-PTB-MP power terminal to connect feeder.	PDF
HPX2-BB3P-2SP	$13.50	IronHorse busbar, 108A, 600 VAC, cut to length not permitted, connects up to 2 HMMP-63H Manual motor protectors without accessories.	PDF
HPX1-BB3P-3SP	$11.50	IronHorse busbar, 64A, 600 VAC, cut to length not permitted, connects up to 3 HMMP-32H Manual motor protectors without accessories. Use HPX1-PTB-MP power terminal to connect feeder.	PDF
HPX2-BB3P-3SP	$18.00	IronHorse busbar, 108A, 600 VAC, cut to length not permitted, connects up to 3 HMMP-63H Manual motor protectors without accessories.	PDF
HPX1-BB3P-4SP	$13.50	IronHorse busbar, 64A, 600 VAC, cut to length not permitted, connects up to 4 HMMP-32H Manual motor protectors without accessories. Use HPX1-PTB-MP power terminal to connect feeder.	PDF
HPX1-BB3P-5SP	$20.50	IronHorse busbar, 64A, 600 VAC, cut to length not permitted, connects up to 5 HMMP-32H Manual motor protectors without accessories. Use HPX1-PTB-MP power terminal to connect feeder.	PDF

HPX1-BB3P-2SP

HPX2-BB3P-2SP

HPX1-BB3P-3SP

HPX1-BB3P-4SP

HPX1-BB3P-5SP

IronHorse HMMP Series Mounting Plate Selection Guide

Part Number	Price	Description	Drawing
HPX1-MBPT	$9.00	IronHorse mounting plate adapter, for use with HMMP-32H manual motor protector and HMC-9 to HMC-40 contactors with AC or DC coils.	PDF
HPX2-MBPT	$13.50	IronHorse mounting plate adapter, for use with HMMP-63H manual motor protector and HMC-50 and HMC-65 contactors with AC or DC coils.	PDF
HPX3-MBPT	$18.00	IronHorse mounting plate adapter, for use with HMMP-100H manual motor protector and HMC-75 to HMC-100 contactors with AC or DC coils.	PDF

HPX1-MBPT

IronHorse HMMP Series Phase Barrier Selection Guide

Part Number	Price	Description	Drawing
HPX3-PBR-MP	$4.25	IronHorse phase barrier, package of 4. For use with HMMP-100H manual motor protectors. Required by UL to increase clearance distance.	PDF

HPX2-MBPT

IronHorse HMMP Series Busbar Cover Selection Guide

Part Number	Price	Description	Drawing
HPX1-TMC-BB	$2.75	IronHorse busbar cover, for use with unused exposed busbar pins on the HPX1-BB3P busbar system.	N/A
HPX2-TMC-BB	$4.25	IronHorse busbar cover, for use with unused exposed busbar pins on the HPX2-BB3P busbar system.	N/A

HPX3-MBPT

IronHorse HMMP Series Incoming Power Terminal Block Selection Guide

Part Number	Price	Description	Drawing
HPX1-PTBE-MP	$14.50	IronHorse incoming power terminal block, 3-pole, 64A, 12-4 AWG. For use with HMMP-32H manual motor protectors. Required when using a HMMP-32H in a UL Type E application.	PDF

HPX1-TMC-BB

HPX2-TMC-BB

HPX1-PTBE-MP

HPX3-PBR-MP

IronHorse HMMP Manual Motor Protectors

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IronHorse HMMP Manual Motor Protectors Specifications		
Frame		***32AF***
Type	Current Adjustable	HMMP-32H
Breaking Capacity		High Breaking
Handle Type		Rotary
Number of Poles		3
Rated Operating Voltage U_e		Up to 690V
Rated Frequency		50/60 Hz
Rated Insulation Voltage U_i		690V
Rated Impulse Voltage U_{imp}		6kV
Utilization Category	***IEC 60947-2 (Breaker)***	Cat. A
	IEC 60947-4 (Motor Starter)	AC3
Mechanical Endurance (Operating)		100,000
Electrical Endurance (Cycles)		100,000
Max Operating Frequency Per Hour (Oper/h)		25
Temperature Compensation (Operation)		-20°C to +60°C [-4°F to 140°F]
Instantaneous Short Circuit Release		13 x I_e max
Overload Protection		✓
Phase Failure Function		✓
Trip Indicating Function		✓
Test Function		✓
Weight (g [oz])		360 [12.7]

Rated Breaking Capacity (kA)											
Rated Operational Current I_e	***Thermal Release Adjustment Range (I_e)***	***220V 240V 230V***		***415V 400V***		***460V 440V***		***525V 500V***		***690V 600V***	
		Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
0.16	0.1 - 0.16	100	100	100	100	100	100	100	100	100	100
0.25	0.16 - 0.25	100	100	100	100	100	100	100	100	100	100
0.4	0.25 - 0.4	100	100	100	100	100	100	100	100	100	100
0.63	0.4 - 0.63	100	100	100	100	100	100	100	100	100	100
1	0.63 - 1	100	100	100	100	100	100	100	100	100	100
1.6	1 - 1.6	100	100	100	100	100	100	100	100	100	100
2.5	1.6 - 2.5	100	100	100	100	100	100	100	100	8	8
4	2.5 - 4	100	100	100	100	100	100	100	100	8	8
6	4 - 6	100	100	100	100	100	100	100	100	6	6
8	5 - 8	100	100	100	100	50	38	50	38	6	6
10	6 - 10	100	100	100	100	50	38	50	38	6	6
13	9 - 13	100	100	100	100	50	38	42	32	6	6
17	11 - 17	100	100	50	38	20	15	10	8	4	4
22	14 - 22	100	100	50	38	25	15	10	8	4	4
26	18 - 26	100	100	50	38	25	15	10	8	4	4
40	28 - 40	100	100	40	30	25	11	8	6	3	3

IronHorse HMMP Manual Motor Protectors

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IronHorse HMMP Manual Motor Protectors Specifications			
Frame		***63AF***	***100AF***
Type	Current Adjustable	HMMP-63H	HMMP-100H
Breaking Capacity		High Breaking	High Breaking
Handle Type		Rotary	Rotary
Number of Poles		3	3
Rated Operating Voltage U_e		Up to 690V	Up to 690V
Rated Frequency		50/60 Hz	50/60 Hz
Rated Insulation Voltage U_i		1000V	1000V
Rated Impulse Voltage U_{imp}		8kV	8kV
Utilization Category	***IEC 60947-2 (Breaker)***	Cat. A	Cat. A
	IEC 60947-4 (Motor Starter)	AC3	AC3
Mechanical Endurance (Operating)		50,000	50,000
Electrical Endurance (Cycles)		25,000	25,000
Max Operating Frequency Per Hour (Oper/h)		25	25
Temperature Compensation (Operation)		-20°C to +60°C [-4°F to 140°F]	-20°C to +60°C [-4°F to 140°F]
Instantaneous Short Circuit Release		13 x I_e max	13 x I_e max
Overload Protection		✓	✓
Phase Failure Function		✓	✓
Trip Indicating Function		✓	✓
Test Function		✓	✓
Weight (g [oz])		1000 [35.3]	2200 [77.6]

Rated Breaking Capacity (kA)

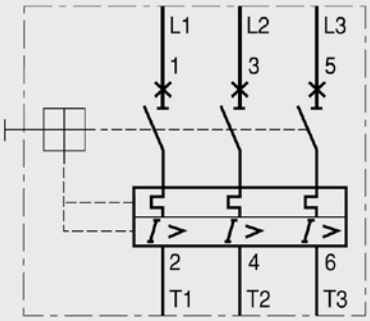
Rated Operational Current I_e	*Thermal Release Adjustment Range (I_e)*	*220V 240V 230V*		*415V 400V*		*460V 440V*		*525V 500V*		*690V 600V*		*220V 240V 230V*		*415V 400V*		*460V 440V*		*525V 500V*		*690V 600V*	
		Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
26	18 - 26	100	100	50	50	35	27	12	9	5	5	–	–	–	–	–	–	–	–	–	–
32	22 - 32	100	100	50	50	35	27	10	8	5	5	–	–	–	–	–	–	–	–	–	–
40	28 - 40	100	100	50	50	35	27	10	8	5	5	–	–	–	–	–	–	–	–	–	–
50	34 - 50	100	100	50	50	35	27	10	8	5	5	–	–	–	–	–	–	–	–	–	–
63	45-63	100	100	50	50	35	27	10	8	5	5	–	–	–	–	–	–	–	–	–	–
75	55 - 75	–	–	–	–	–	–	–	–	–	–	100	100	75	50	50	38	12	9	6	6
90	70 - 90	–	–	–	–	–	–	–	–	–	–	100	100	75	50	50	38	12	9	6	6
100	80 - 100	–	–	–	–	–	–	–	–	–	–	100	100	75	50	50	38	12	9	6	6

IronHorse HMMP Manual Motor Protectors High Breaking Type

HMMP-63HR-40

Features

- Adjustable thermal release
- Magnetic release 13 I_e max
- Trip Class 10 overload protection
- Phase-failure, short circuit, and overload protection



IronHorse HMMP Manual Motor Protectors (High Breaking Type) Specifications

Type	Rated Operational Current I_e (A)	Thermal Release Adjustment Range (A)	Magnetic Release Operating Current (A)	Switching of 3-Phase AC Motors, AC-2, AC-3						400/415 V	
				3-Phase (50/60 Hz) (kW)			3-Phase (60Hz))kW)				
				230V	400V	690V	230V	460V	575V	I_{cu} (kA)	I_{cs} (kA)
HMMP-32H	0.16	0.1 - 0.16	2.1	–	0.02	–	–	–	–	100	100
	0.25	0.16 - 0.25	3.3	0.03	0.06	–	–	–	–	100	100
	0.4	0.25 - 0.4	5.2	0.06	0.09	–	–	–	–	100	100
	0.63	0.4 - 0.63	8.2	0.09	0.12	0.25	–	–	–	100	100
	1	0.63 - 1.0	13	0.12	0.25	0.55	–	0.5	0.5	100	100
	1.6	1.0 - 1.6	20.8	0.25	0.55	1.1	0.33	0.75	1	100	100
	2.5	1.6 - 2.5	32.5	0.37	0.75	1.5	0.5	1.5	1.5	100	100
	4	2.5 - 4.0	52	0.75	1.5	3	1	2	3	100	100
	6	4 - 6	78	1.5	2.2	4	1.5	5	5	100	100
	8	5 - 8	104	1.5	3	5.5	2	5	5	100	100
	10	6 - 10	130	3	4	7.5	3	7.5	10	100	100
	13	9 - 13	169	3	5.5	11	3	7.5	10	100	100
	17	11 - 17	221	4	7.5	11	5	10	15	50	38
	22	14 - 22	286	4	7.5	15	7.5	15	20	50	38
	26	18 - 26	338	5.5	11	18.5	7.5	15	20	50	38
	40	28 - 40	520	7.5	18.5	30	15	30	40	40	30
HMMP-63H	26	18 - 26	338	5.5	11	18.5	10	20	25	50	50
	32	22 - 32	416	7.5	15	22	10	25	30	50	50
	40	28 - 40	520	7.5	18.5	30	15	30	40	50	50
	50	34 - 50	650	11	22	45	15	40	50	50	50
	63	45 - 63	819	15	30	55	20	50	60	50	50
HMMP-100H	75	55 - 75	975	22	37	63	25	60	75	75	50
	90	70 - 90	1170	30	45	75	30	75	100	75	50
	100	80 - 100	1300	30	45	90	40	75	100	75	50

IronHorse HMMP Manual Motor Protectors Accessories

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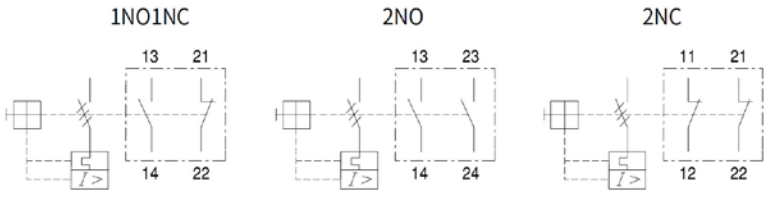
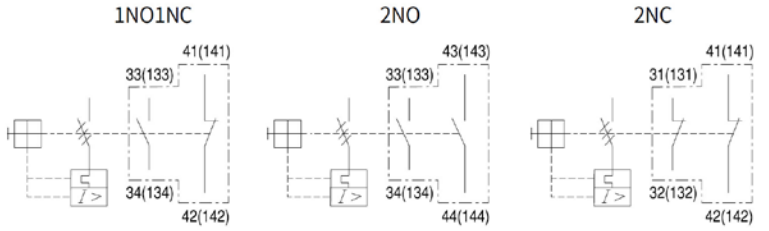
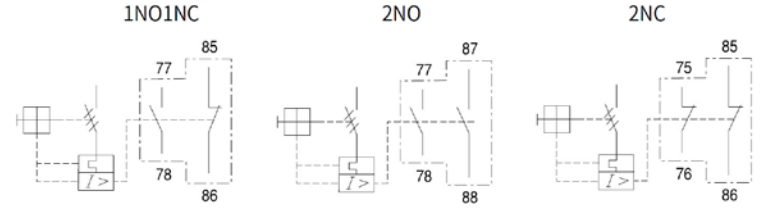
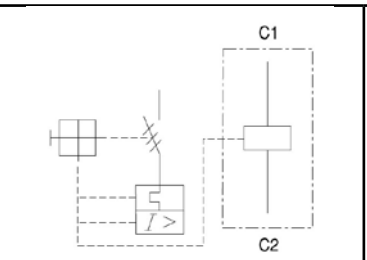
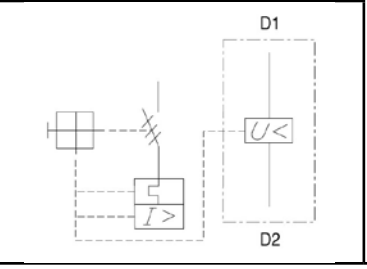
Type	Description	Connection Diagram
HPX1-AUXxx-F	***Auxiliary Switch*** • Front mounting • 2-pole • One front mounting module per circuit breaker	
HPX1-AUXxx-S	***Auxiliary Switch*** • Side Mounting on the left • 2-pole • One side mounting module per circuit breaker	
HPX1-ALM **HPX2-ALM**	***Any Trip Alarm Switch*** • Operates in case of trip • Side mounting on the left • 2-pole • Set ALM first when using with AUXxx-S (HMMP-63 cannot accept AUXxx-S and ALM together) • For HMMP-32 and HMMP-63/100, products are separated	
HPX1-MALM11-S	***Magnetic Trip Alarm Switch*** • Operates in case of short circuit accidents more than 20 times the rated current • Side mounting on the left • 2-pole • Set magnetic trip alarm first when using with HPX1-AUXxx-S	
HPX1-SHT-xxxxx	***Shunt Release*** • Side mounting on the right • One side mounting module per circuit breaker • Cannot use with HPX1-UVT-xxxx	
HPX1-UVT-xxxxx	***Undervoltage Release*** • Side mounting on the right • One side mounting module per circuit breaker • Cannot use with HPX1-SHT-xxxx	

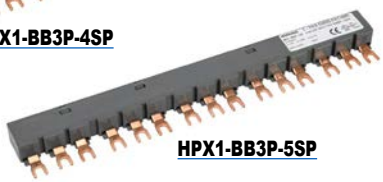
110V 50Hz /120V 60Hz
200V 50Hz / 200-220 V 60Hz
415-440 V 50Hz / 460-480V 60Hz

IronHorse
HMMP Manual Motor Protectors
Phase Bus System

HPX1-BB3P-2SP

HPX1-BB3P-3SP

HPX1-BB3P-4SP



HPX1-BB3P-5SP

HPX2-BB3P-2SP

HPX2-BB3P-3SP

The phase bus allows for a parallel connection with power terminals in the circuit lined up by MMP, simplifying wiring and requiring minimal space.

- Application Model: HMMP-32, 63
- CE and UL certified
- Safety cover built in
- RoHS compliance

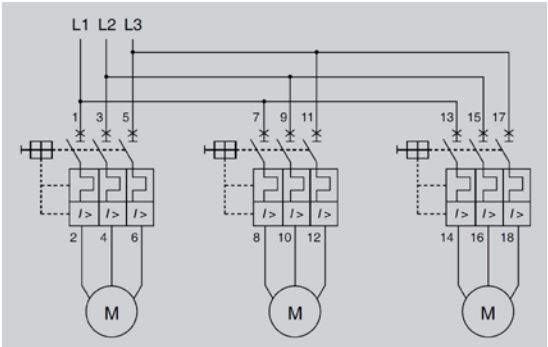
Phase Bus System Selection Guide

Part Number	Price	For Use With	Number of Terminals	Rated Current	Drawing
HPX1-BB3P-2SP	$9.50	HMMP-32H	2	63A	PDF
HPX1-BB3P-3SP	$11.50		3		PDF
HPX1-BB3P-4SP	$13.50		4		PDF
HPX1-BB3P-5SP	$20.50		5		PDF
HPX2-BB3P-2SP	$13.50	HMMP-63H	2	108A	PDF
HPX2-BB3P-3SP	$18.00		3		PDF

HPX1-PTB-MP Specifications

Poles	3P
Mounting Location	Lineside
IP Degree of Protection	IP20 according to IEC 60592
Rated insulation voltage (Ui)	690V according to IEC 60947-1
Rated operational current (Ie)	63A
Terminal torque	1.7 N•m- on screw clamp terminals

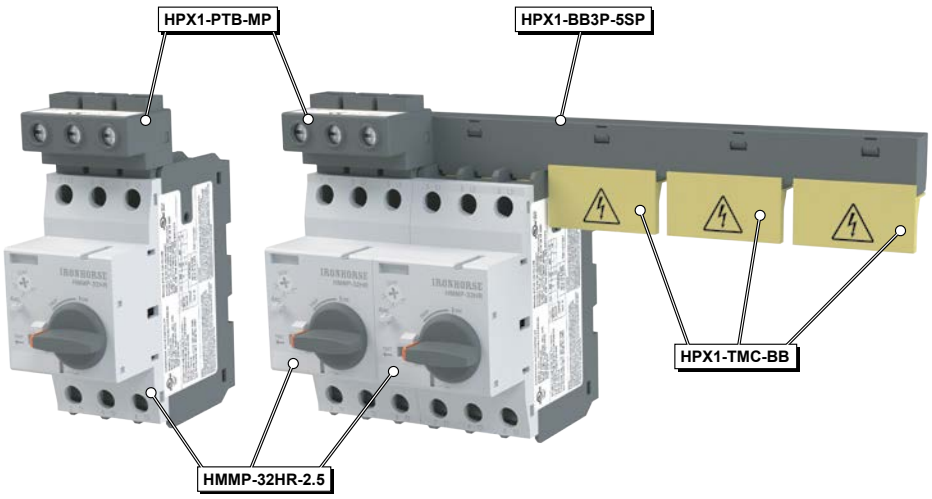
Wiring Diagram



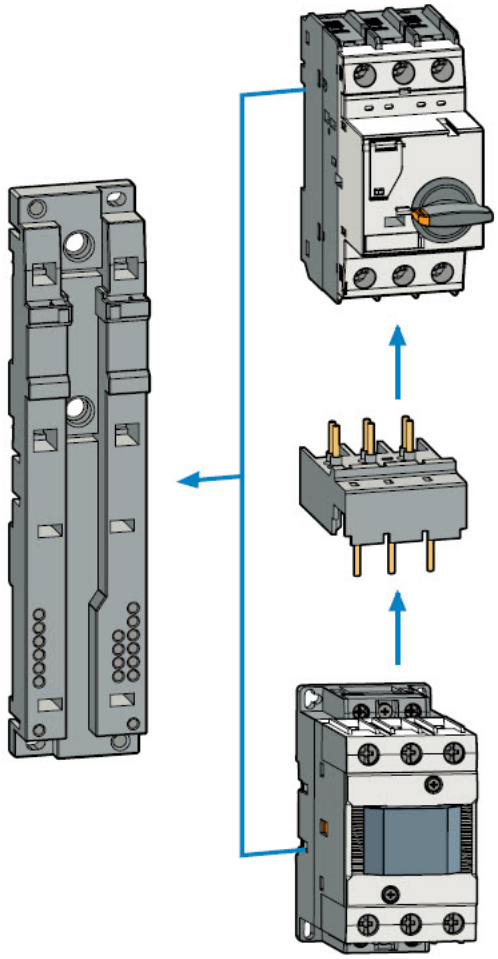
IronHorse Manual Motor Protector with Two Options:

Option 1: MMP with power terminal block

Option 2: MMP with power terminal block and busbar system using busbar cover



IronHorse HMMP Manual Motor Protectors Direct Adapter and Mounting Unit



The direct adapter is used to connect the MMP directly to a contactor.
The mounting unit is used to connect the MMP with a contactor.

Direct Adapter and Mounting Unit Selection Guide

Direct Adapter			Mounting Unit			Combined Devices
Part Number	Price	Drawing	Part number	Price	Drawing	
HMX1-LM22-AC	$7.75	PDF	HPX1-MBPT	$9.00	PDF	HMMP-32H + HMC-9 to HMC-22 (AC coil)
HMX1-LM22-DC	$7.75	PDF				HMMP-32H + HMC-9 to HMC-22 (DC coil)
HMX2-LM32-AC	$8.75	PDF				HMMP-32H + HMC-32 to HMC-40 (AC coil)
HMX2-LM32-DC	$8.75	PDF				HMMP-32H + HMC-32 to HMC-40 (DC coil)
HMX3-LM63-AC	$9.25	PDF	HPX2-MBPT	$13.50	PDF	HMMP-63H + HMC-50 to HMC-65 (AC coil)
HMX3-LM63-DC	$9.25	PDF				HMMP-63H + HMC-50 to HMC-65 (DC coil)
HMX4-LM100-AC	$10.00	PDF	HPX3-MBPT	$18.00	PDF	HMMP-100H + HMC-75 to HMC-100 (AC coil)
HMX4-LM100-DC	$10.00	PDF				HMMP-100H + HMC-75 to HMC-100 (DC coil)

IronHorse
HMMP Manual Motor Protectors
Technical Information and General Data

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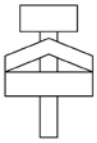
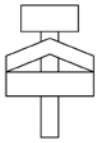
Manual Motor Starters Terminals					
Conformity to Standards		IEC60947 UL508, UL508 Type E			
Approvals		CE, UL			
Terminal Parts					
Wire (mm^2 [AWG])					
Single-Core	1 conductor	1-10 [18-8]	1-10 [18-8]	0.75-35 [18-2]	2.5-70 [12-2/0]
	2 conductor	1-6 [18-10]	1-6 [18-10]	0.75-25 [18-4]	2.5-50 [12-1/0]
Stranded	1 conductor	1-6 [18-10]	1-6 [18-10]	0.75-35 [18-2]	2.5-70 [12-2/0]
	2 conductor	1-6 [18-10]	1-6 [18-10]	0.75-25 [18-4]	2.5-50 [12-1/0]
Flexible	1 conductor	1-6 [18-10]	1-6 [18-10]	0.75-25 [18-4]	2.5-50 [12-1/0]
	2 conductor	0.75-4 [18-10]	0.75-4 [18-10]	0.75-16 [18-6]	2.5-35 [10-2]
Tightening Torque (N•m [lb•in])		0.8-2.5 [7-22]	0.8-2.5 [7-22]	3-4.5 [26-39]	4-6 [35-53]

Manual Motor Starters Power Consumption			
	HMMP-32H	***HMMP-63H***	***HMMP-100H***
Total Power Loss Pv Circuit Breaker at Rated Load Operating Temperature (W)	In = 0.16 to 1.6 A: 4.4 In=2.5 to 26 A: 7.4 In=32A: 4.0	In = 10 to 22 A:10.2 In = 26 to 63 A: 9.7	In = 17 to 32 A: 15 In = 40 to 63 A: 21.8 In = 75 to 100 A: 17.8

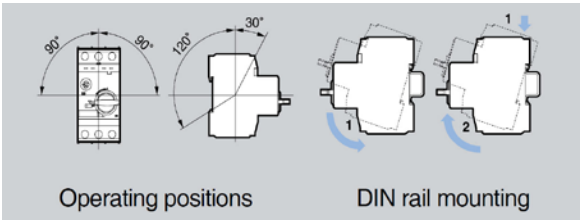
Manual Motor Starters Environmental	
Ambient Air Temperature Storage	50°C to +80°C [-58°F to 176°F]
Operation	-20°C to +60°C [-4°F to +140°F]
Ambient Temperature Compensation	-5°C to +40°C [23°F to 104°F]
Maximum Operating Altitude	2000m [6562 ft]
Protection Degree	IP20
Shock Resistance	25g
Vibration Resistance	5-150 Hz

Mounting

35mm DIN rail for HMMP-32H to HMMP-63H

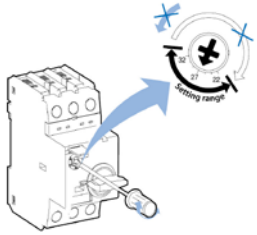
35mm or 75mm DIN rail for HMMP-100H

- Use 15mm depth for 35mm DIN rail



Thermal Adjustments Considerations

- Keep the setting range as shown below.
- Turning the adjustment control counterclockwise out of the setting range may cause damage to the device.



Dial setting method

Calibration by Ambient Air Temperature

A: Set to one point lower	Calibrated automatically	B: Set to one point higher

-20°C [-4°F] -5°C [23°F] +40°C [104°F] +60°C [140°F]

When used outside of the standard air temperature range of -5C to +40C [23F to 104F], adjust calibration by one point.

IronHorse HMMP Manual Motor Protectors Auxiliaries

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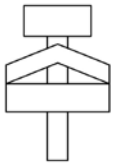
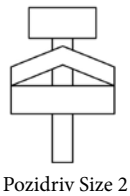
Manual Motor Starters Auxiliaries

			Auxiliary Contacts for Front Mounting (AUXxx-F)		Auxiliary Contacts for Left-Side Mounting (AUXxx-S)		Alarm Switch For Left-Side Mounting (ALM)	
Rated Thermal Current / I_{th}								
At 40°C ambient temperature		A	5		10		10	
At 60°C ambient temperature		A	3		6		6	
Contact Class Coordination According to NEMA (UL / CSA standards)		AC	A600		A600		A600	
		DC	Q300		Q300		Q300	
Back-up Fuses gG, gL		A	16		16		16	
Rated Supply Current	AC15	V	–	240	24	240	24	240
	AC15	A	–	3	6	4	6	4
	DC-13	V	24	220	24	220	24	220
	DC-13	A	1	0.1	2	0.25	2	0.25
Weight		g [oz]	18		30		40	
Terminal Parts								
Wire	Single-Core, 1 Conductor		0.5-2.5 [20-14]		 Pozidriv Size 2 0.5-2.5 [20-14]			
	Single-Core, 2 Conductor		–		0.5-2.5 [20-14]			
	Stranded, 1 conductor		0.5-4 [20-10]		0.5-4 [20-10]			
	Stranded, 2 conductor		0.75-2.5 [18-14]		0.75-2.5 [18-14]			
Tightening Torque		N•m [lb•in]	0.8-1.2 [7-10]		0.8-1.2 [7-10]			

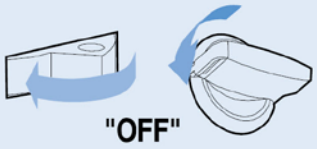
Manual Motor Starters Auxiliaries

		Undervoltage Release For Right-Side Mounting (HPX1-UVT)	Shunt Release For Right-Side Mounting (HPX1-SHT)
Actuating Voltage	Pull-in	0.7 to 1.1 x Us	0.85 to 1.1 x Us
	Drop-out		0.7 to 0.35 x Us
Rated Control Voltage	Min	24V 50Hz / 28V 60Hz	24V 50Hz / 28V 60Hz
	Max	415 to 440 V 50Hz / 460 to 480 V 60Hz	415 to 440 V 50Hz / 460 to 480 V 60Hz
Coil Rating	Pull-in	8.5 VA, 6W	8.5 VA, 6W
	Hold	3VA, 1.2 W	3VA, 1.2 W
Opening Time (ms)		–	20
Weight		18	40
Terminal Parts			
Wire	Single-Core, 1 Conductor	 Pozidriv Size 2 0.5-2.5 [20-14]	
	Single-Core, 2 Conductor	0.5-2.5 [20-14]	
	Stranded, 1 conductor	0.5-4 [20-10]	
	Stranded, 2 conductor	0.75-2.5 [18-14]	
Tightening Torque (N•m [lb•in])		0.8-1.2 [7-10]	

IronHorse HMMP Manual Motor Protectors Auxiliaries

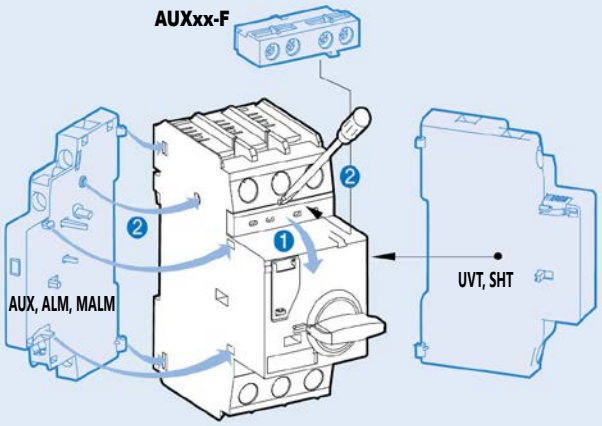
Installation of Auxiliaries

Be sure to turn off the main switch of the MMS before performing any installation or separation.



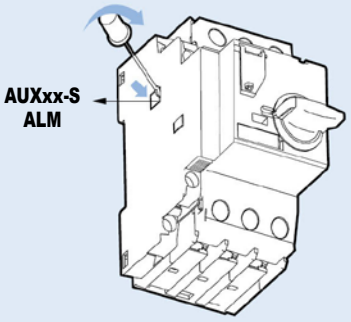
HMMP-32H

- To install AUXxx-F, first remove the cover (1).
- Two AUXxx-S units can be installed together.
- Only one of the UVT or SHT auxiliary units can be mounted on the right side of MMP.
- Do not give the trip signal to SHT for longer than 10 sec.
- Refer to the possible combination chart for the mounting of AUXxx-S. ALM, MALM on left side of MMP.



- Push the trip button before installation of MALM.

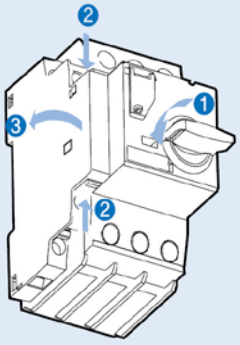
Remove the indicated part, as shown in the illustration at right, before installing the AUXxx-S unit.



Separation of auxiliaries from MMP

- Be sure to turn off the main switch of MMP before performing any installation or separation.
- Gently press the separation button on the side of the auxiliary and pull it.

NOTE: Make sure that you choose the proper version of the ALM unit, as the ALM units used for HMMP-32H and HMMP-63/100H are different.

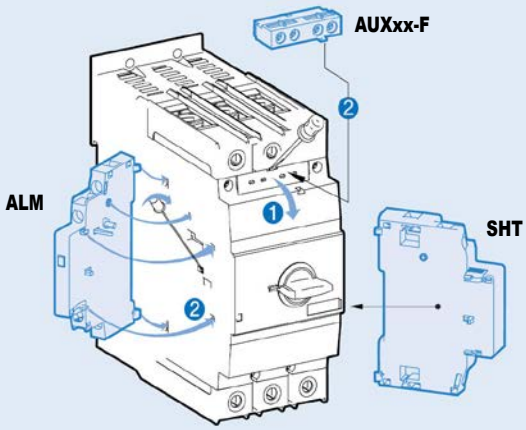


IronHorse HMMP Manual Motor Protectors Auxiliaries

Installation of Auxiliaries, continued

HMMP-63H

- To install AUXxx-F, first remove the cover (1).
- Two LX units can be installed together (only 1 each for HMMP-63H)
- Only one of the UVT or SHT auxiliary units can be mounted on the right side of HMMP.
- Do not give the trip signal to RS for longer than 10 sec.
- Refer to the possible combination chart for the mounting of AUXxx-S, ALM, and MALM on left side of HMMP.
- Push the trip button before installation of ALM.
- Remove the indicated part, as shown in the illustration at right, before installing the AUXxx-S unit.
- Refer to the possible combination chart for the mounting of AUXxx-S, ALM, MALM on left side of MMP.
- Do not use with HPX1-ALM11-S. This unit is only for use with HMMP-32H.



- Push the trip button before installation of ALM.

- Do not install ALM with status set to TRIP on the HMMP-100H.

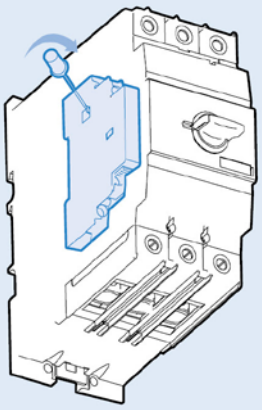
- Remove the indicated part, as shown in the illustration, before installation of AUXxx-F.

Separation of Auxiliaries From MMP

Be sure to turn off the main switch of the MMP before performing any installation or separation.

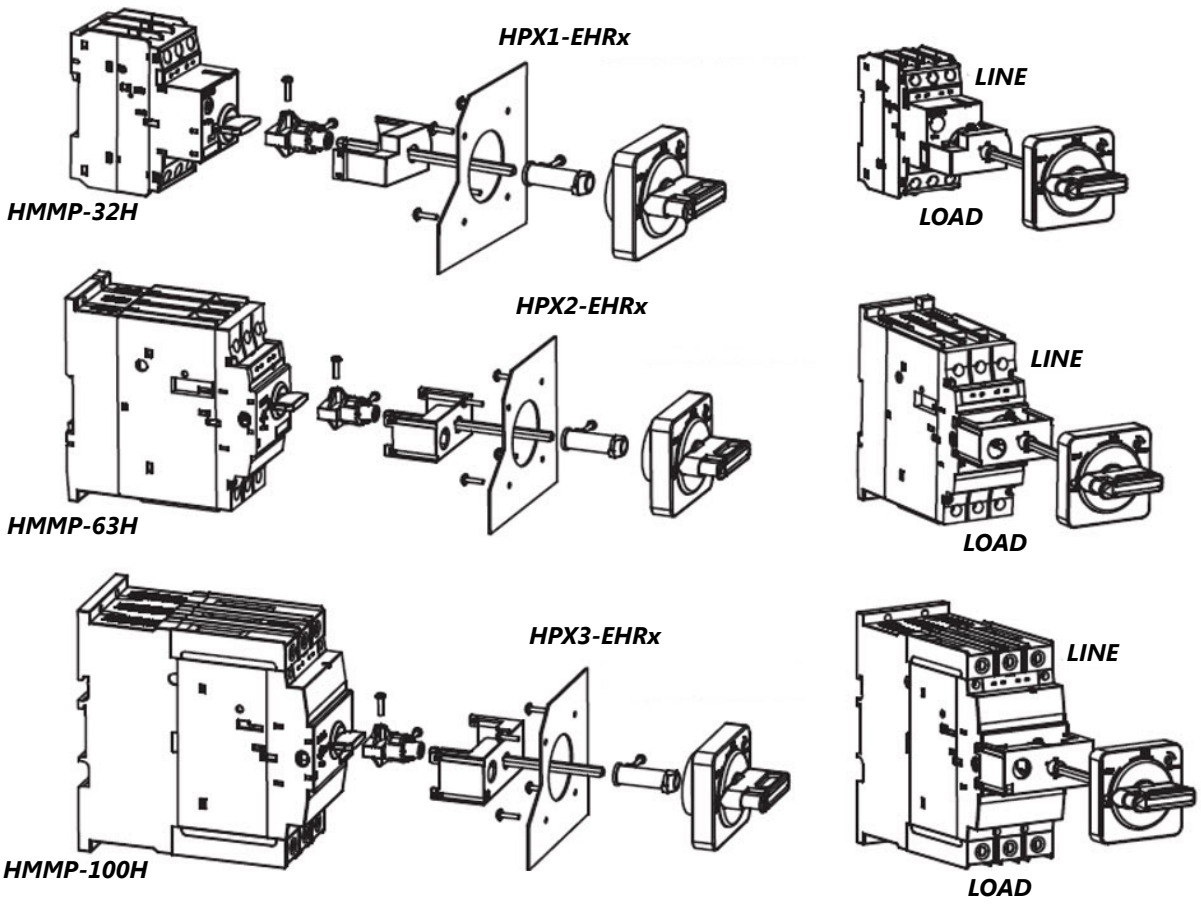
- Gently push the separation button on the side of the auxiliary and pull it.

NOTE: Make sure that you choose the proper version of the ALM unit, as the ALM units used for HMMP-32H and HMMP-63/100H are different.

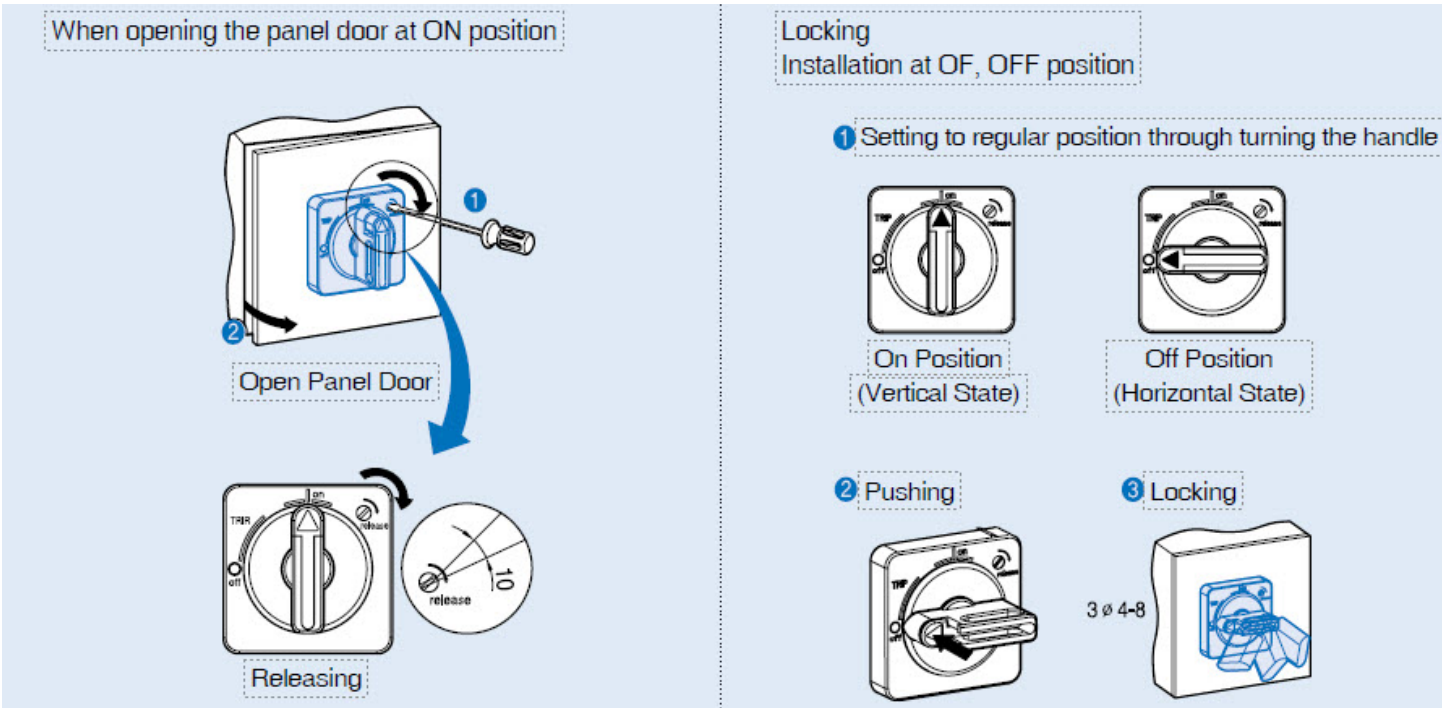


IronHorse HMMP Manual Motor Protectors Auxiliaries

HPXx-EHR Overview

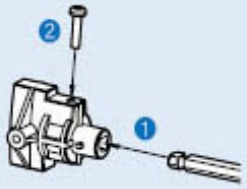


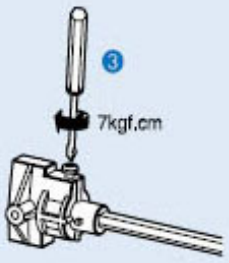
Locking Device



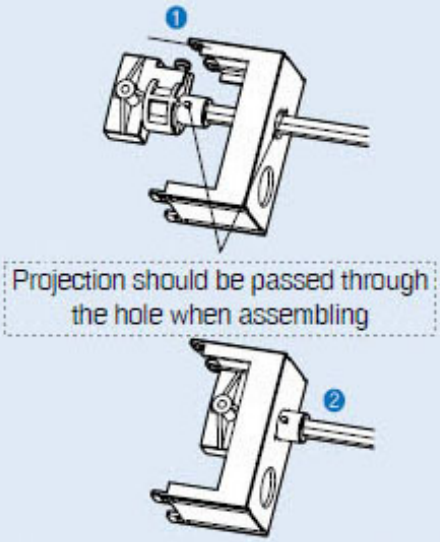
IronHorse
HMMP Manual Motor Protectors
Auxiliaries – E-Handle

E-Handle Installation

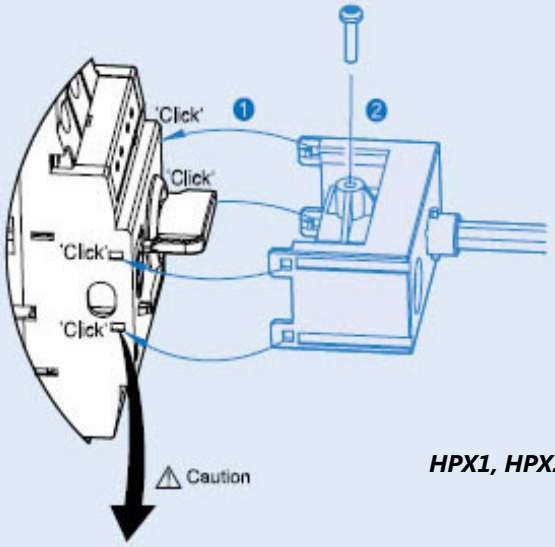


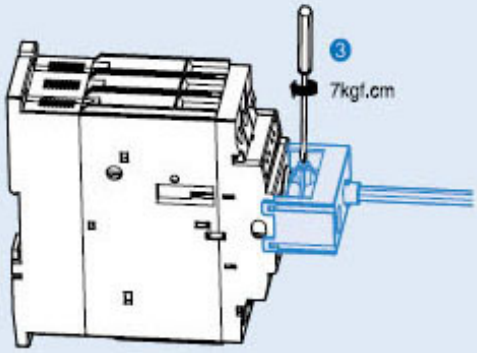


HPX1, HPX2, HPX3



HPX1, HPX2, HPX3





HPX1, HPX2, HPX3

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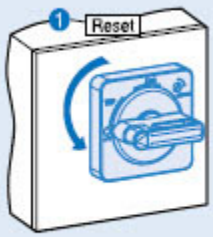
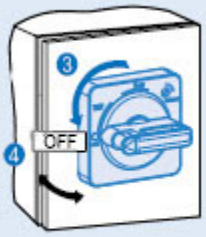
HMMP Manual Motor Protectors
Auxiliaries – E-Handle

E-Handle Installation, continued

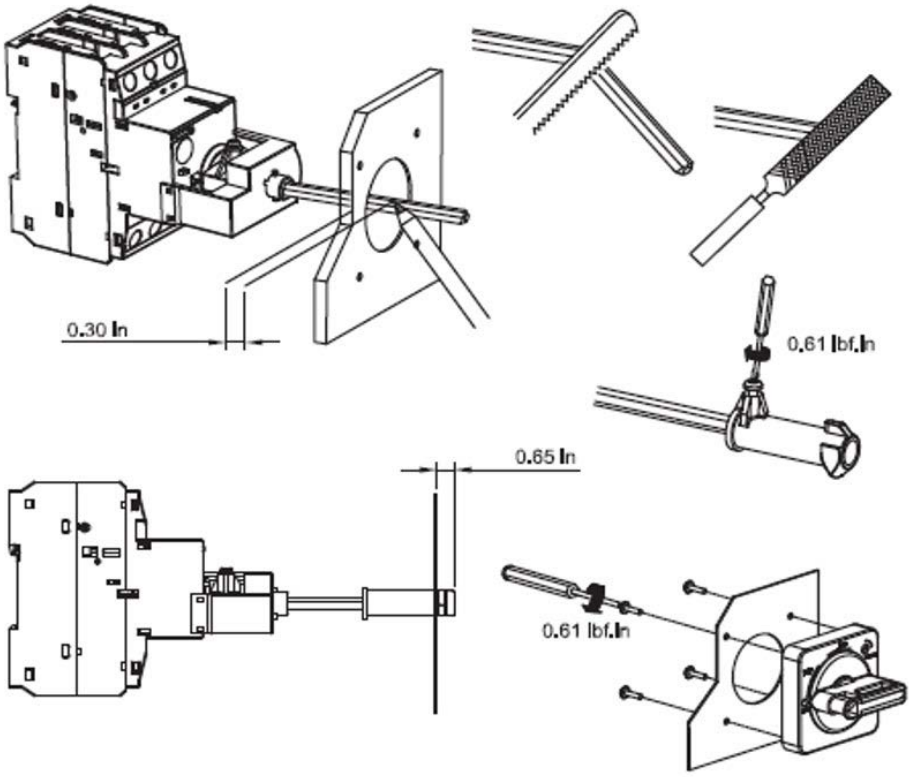


CAUTION
Attempting to open the door while the handle is in the ON or TRIP position can cause damage to the locking knob.

When in the ON position, the panel door cannot be opened.



When in the TRIP position, the panel door cannot be opened. In the OFF position, the panel door can be opened.



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HMMP Manual Motor Protectors

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HMMP-32HR-x High Breaking Type Specifications																	
Rated Operational Current I_e		***0.16***	***0.25***	***0.4***	***0.63***	***1***	***1.6***	***2.5***	***4***	***6***	***8***	***10***	***13***	***17***	***22***	***26***	***40***
Switching of Standard 3-Phase Motors – AC-2, AC-3																	
230/240 V	kW	–	0.03	0.06	0.09	0.12	0.18/0.25	0.37	0.55/0.75	1.1/1.5	1.5	2.2/3	3	3.7/4	4	5.5	7.5
400/415 V	kW	0.02	0.06	0.09	0.12	0.18/0.25	0.37/0.55	0.75	1.1/1.5	2.2	3	3.7/4	5.5	7.5	5	11	18
500V	kW	–	–	–	0.25	0.37	0.55/0.75	1.1	1.5/2.2	3	3.7	4/5.5	7.5	11	11	15	22
690V	kW	–	–	–	0.25	0.37/0.55	0.75/1.1	1.5	2.2/3	3.7/4	5.5	7.5	11	11	15	18.5	30
Back-Up Fuses – gG, gL, only if $I_{CC}>I_{CU}$ (* indicates no back-up fuse required)																	
230/240 V	kA	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
400/415 V	kA	*	*	*	*	*	*	*	*	*	*	*	*	100	125	125	160
440/460 V	kA	*	*	*	*	*	*	*	*	*	80	80	80	80	100	100	125
500V	kA	*	*	*	*	*	*	*	*	*	63	80	80	80	80	80	100
690V	kA	*	*	*	*	*	*	35	40	50	63	63	63	63	63	63	80
Ultimate Short-Circuit Breaking capacity I_{CU}																	
230/240 V	kA	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415 V	kA	100	100	100	100	100	100	100	100	100	100	100	100	50	50	50	40
440/460 V	kA	100	100	100	100	100	100	100	100	100	50	50	50	20	20	20	15
500V	kA	100	100	100	100	100	100	100	100	100	50	50	42	10	10	10	8
690V	kA	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	3
Rated Service Short-Circuit Breaking Capacity I_{CS}																	
230/240 V	kA	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415 V	kA	100	100	100	100	100	100	100	100	100	100	100	100	38	38	38	30
440/460 V	kA	100	100	100	100	100	100	100	100	100	38	38	38	15	15	15	11
500V	kA	100	100	100	100	100	100	100	100	100	38	38	32	8	8	8	6
690V	kA	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	3

**** Short-circuit proof up to 50 or 100 kA. No back-up fuse required.***

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HMMP Manual Motor Protectors

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HMMP-63HR-x High Breaking Type Specifications						
Rated Operational Current I_e		***26***	***32***	***40***	***50***	***63***
Switching of Standard 3-Phase Motors – AC-2, AC-3						
230/240 V	kW	5.5	7.5	7.5	11	15
400/415 V	kW	11	15	18.5	22	30
500V	kW	15	18.5	22	30	37
690V	kW	18.5	22	30	45	55
Back-Up Fuses – gG, gL, only if $I_{CC}>I_{CU}$ (* indicates no back-up fuse required)						
230/240 V	kA	*	*	*	*	*
400/415 V	kA	125	125	160	160	160
440/460 V	kA	125	125	125	125	160
500V	kA	100	100	100	100	100
690V	kA	80	80	80	80	80
Ultimate Short-Circuit Breaking capacity I_{CU}						
230/240 V	kA	100	100	100	100	100
400/415 V	kA	50	50	50	50	50
440/460 V	kA	35	35	35	35	35
500V	kA	12	10	10	10	10
690V	kA	5	5	5	5	5
Rated Service Short-Circuit Breaking Capacity I_{CS}						
230/240 V	kA	100	100	100	100	100
400/415 V	kA	50	50	50	50	50
440/460 V	kA	27	27	27	27	27
500V	kA	9	8	8	8	8
690V	kA	5	5	5	5	5

**** Short-circuit proof up to 50 or 100 kA. No back-up fuse required.***

HMMP-100HR-x High Breaking Type Specifications				
Rated Operational Current I_e		***75***	***90***	***100***
Switching of Standard 3-Phase Motors – AC-2, AC-3				
230/240 V	kW	22	30	30
400/415 V	kW	37	45	45
500V	kW	45	55	63
690V	kW	63	75	90
Back-Up Fuses – gG, gL, only if $I_{CC}>I_{CU}$ (* indicates no back-up fuse required)				
230/240 V	kA	*	*	*
400/415 V	kA	*	*	*
440/460 V	kA	200	200	200
500V	kA	160	160	160
690V	kA	125	160	160
Ultimate Short-Circuit Breaking capacity I_{CU}				
230/240 V	kA	100	100	100
400/415 V	kA	75	75	75
440/460 V	kA	50	50	50
500V	kA	12	12	12
690V	kA	6	6	6
Rated Service Short-Circuit Breaking Capacity I_{CS}				
230/240 V	kA	100	100	100
400/415 V	kA	50	50	50
440/460 V	kA	38	38	38
500V	kA	9	9	9
690V	kA	6	6	6

**** Short-circuit proof up to 50 or 100 kA. No back-up fuse required.***

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HMMP Manual Motor Protectors

Manual Motor Controller (UL 508, CSA C22.2 as Manual Motor Controllers)

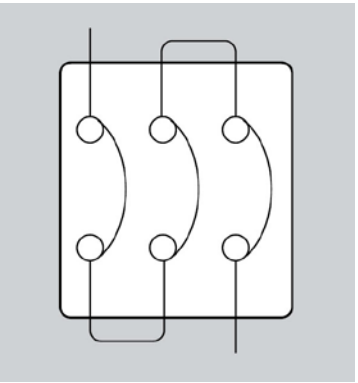
- Group Installation
- Type E Starter

HMMP-32HR-x High Breaking Type Specifications																		
Rated Operational Current I_e			***0.16***	***0.25***	***0.4***	***0.63***	***1***	***1.6***	***2.5***	***4***	***6***	***8***	***10***	***13***	***17***	***22***	***26***	***40***
Maximum Short-Circuit Current	240V	(kA)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	480V	(kA)	65	65	65	65	65	65	65	65	65	65	65	65	30	30	30	30
	600V	(kA)	25	25	25	25	25	25	25	25	25	25	25	25	10	10	10	10
Motor Load, 1-Phase	115V	(HP)	–	–	–	–	–	–	–	1/8	1/4	1/3	1/2	1/2	1	1.5	2	3
	230V	(HP)	–	–	–	–	–	1/10	1/6	1/3	1/2	1	1.5	2	3	3	3	7.5
Motor Load, 3-Phase	200V	(HP)	–	–	–	–	–	–	1/2	3/4	1	2	2	3	3	5	7.5	10
	230V	(HP)	–	–	–	–	–	–	1/2	3/4	1.5	2	3	3	5	7.5	7.5	10
	460V	(HP)	–	–	–	–	–	3/4	1	2	3	5	5	7.5	10	15	15	30
	575V	(HP)	–	–	–	–	1/2	3/4	1.5	3	5	5	7.5	10	15	20	20	30
Maximum Rated Current of Fuse or Breaker	(A)		500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500

HMMP-63HR-x High Breaking Type Specifications							
Rated Operational Current I_e			***26***	***32***	***40***	***50***	***63***
Maximum Short-Circuit Current	240V	(kA)	100	100	100	100	100
	480V	(kA)	50	50	50	50	50
	600V	(kA)	10	10	10	10	10
Motor Load, 1-Phase	115V	(HP)	2	2	3	3	5
	230V	(HP)	3	5	7.5	10	10
Motor Load, 3-Phase	200V	(HP)	7.5	7.5	10	15	20
	230V	(HP)	7.5	10	10	15	20
	460V	(HP)	15	20	30	30	40
	575V	(HP)	20	30	30	40	60
Maximum Rated Current of Fuse or Breaker	(A)		600	600	600	600	600

HMMP-100HR-x High Breaking Type Specifications					
Rated Operational Current I_e			***75***	***90***	***100***
Maximum Short-Circuit Current	240V	(kA)	100	100	100
	480V	(kA)	50	50	50
	600V	(kA)	10	10	10
Motor Load, 1-Phase	115V	(HP)	5	7.5	10
	230V	(HP)	15	20	20
Motor Load, 3-Phase	200V	(HP)	20	25	30
	230V	(HP)	25	30	30
	460V	(HP)	50	60	75
	575V	(HP)	60	75	100
Maximum Rated Current of Fuse or Breaker	(A)		1000	1000	1000

For 1-phase applications, use in series as shown below.



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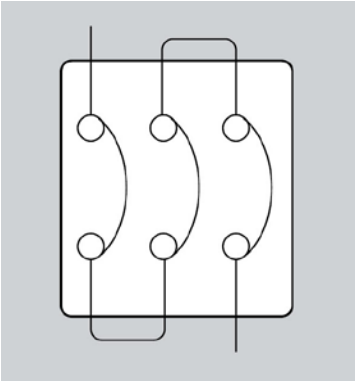
Manual Motor Controller (UL 508)

HMMP-32HR-x Manual Motor Controller (UL 508) Specifications																		
Rated Operational Current I_e			***0.16***	***0.25***	***0.4***	***0.63***	***1***	***1.6***	***2.5***	***4***	***6***	***8***	***10***	***13***	***17***	***22***	***26***	***40***
Maximum Short-Circuit Current	240V	(kA)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	480V	(kA)	65	65	65	65	65	65	65	65	65	65	65	65	30	30	30	30
	600V	(kA)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Motor Load, 1 Phase	115V	(HP)	–	–	–	–	–	–	–	1/8	1/4	1/3	1/2	1/2	1	1.5	2	3
	230V	(HP)	–	–	–	–	–	1/10	1/6	1/3	1/2	1	1.5	2	3	3	3	7.5
Motor Load, 3 Phase	200V	(HP)	–	–	–	–	–	–	1/2	3/4	1	2	2	3	3	5	7.5	10
	230V	(HP)	–	–	–	–	–	–	1/2	3/4	1.5	2	3	3	5	7.5	7.5	10
	460V	(HP)	–	–	–	–	–	3/4	1	2	3	5	5	7.5	10	15	15	30
	575V	(HP)	–	–	–	–	1/2	3/4	1.5	3	5	5	7.5	10	15	20	20	30
Max Fuse Size	(A)		1	1	1	1	3	6	10	15	20	30	40	50	60	80	100	150
Max Breaker Size	(A)		15	15	15	15	15	15	15	15	20	30	40	50	60	80	100	150

HMMP-63HR-x Manual Motor Controller (UL 508) Specifications							
Rated Operational Current I_e			***26***	***32***	***40***	***50***	***63***
Maximum Short-Circuit Current	240V	(kA)	100	100	100	100	100
	480V	(kA)	50	50	50	50	50
	600V	(kA)	10	10	10	10	10
Motor Load, 1 Phase	115V	(HP)	2	2	3	3	5
	230V	(HP)	3	5	7.5	10	10
Motor Load, 3 Phase	200V	(HP)	7.5	7.5	10	15	20
	230V	(HP)	7.5	10	10	15	20
	460V	(HP)	15	20	30	30	40
	575V	(HP)	20	30	30	40	60
Max Fuse Size	(A)		100	125	150	200	250
Max Breaker Size	(A)		100	125	150	200	250

HMMP-100HR-x Manual Motor Controller (UL 508) Specifications					
Rated Operational Current I_e			***75***	***90***	***100***
Maximum Short-Circuit Current	240V	(kA)	100	100	100
	480V	(kA)	50	50	50
	600V	(kA)	10	10	10
Motor Load, 1 Phase	115V	(HP)	5	7.5	10
	230V	(HP)	15	20	20
Motor Load, 3 Phase	200V	(HP)	20	25	30
	230V	(HP)	25	30	30
	460V	(HP)	50	60	75
	575V	(HP)	60	75	100
Max Fuse Size	(A)		300	350	400
Max Breaker Size	(A)		300	350	400

For 1-phase applications, use in series as shown below.



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Type 2 Coordination According to IEC60947-4-1

Short-circuit current I_q: 50kA
Voltage: 400/415 V, 50/60 Hz

Type 2 Coordination According to IEC60947-4-1						
Standard Motors AC-3 at 400/415 V 1500RPM		Manual Motor Starter			Contactor	
		Circuit Breaker	Thermal Overload Release Setting Range (A)	Magnetic Release Response Current (A)	Type	(A)
kW	A					
5.5	11.5	HMMP-32HR-13	9 to 13	169	HMC-22B	22
7.5	15.5	HMMP-32HR-17	11 to 17	221	HMC-22B	22
10	20	HMMP-32HR-22	14 to 22	286	HMC-32A	32
11	22	HMMP-32HR-26	18 to 26	338	HMC-32A	32
18.5	35	HMMP-63HR-40	28 to 40	520	HMC-40A	40
22	41	HMMP-63HR-50	34 to 50	650	HMC-50A	50
30	55	HMMP-63HR-63	45 to 63	819	HMC-65A	65

Definition of Type 2 Coordination According to IEC 60947-4-1

- The contactor or the starter must not endanger persons or systems in the event of a short-circuit.
- The contactor or the starter must be suitable for further use.
- No damage to the overload relay or other parts may occur, with the exception of welding of the contactor or starter contacts, provided that these can be easily separated without significant deformation (such as with a screwdriver).

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HMMP Manual Motor Protectors

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IEC-Rated Motor

IronHorse HMMP ready for IE3-rated motors

Technical Specifications For Use With IE3-rated Motors								
Type	Rated Current (A)	Short-Circuit Current (A)	Current Range (A)			Short-Circuit Current Ratio		
			Min	Mid	Max	Min	Mid	Max
32	0.16	2.1	0.1	0.13	0.16	20.8	16.0	13.0
	0.25	3.3	0.16	0.2	0.25	20.3	16.3	13.0
	0.4	5.2	0.25	0.33	0.4	20.8	15.8	13.0
	0.63	8.2	0.4	0.52	0.63	20.5	15.8	13.0
	1	13.0	0.63	0.81	1	20.6	16.0	13.0
	1.6	20.8	1	1.3	1.6	20.8	16.0	13.0
	2.5	32.5	1.6	2.1	2.5	20.3	15.5	13.0
	4	52	2.5	3.3	4	20.8	115.8	13.0
	6	78	4	5	6	19.5	15.6	13.0
	8	104	5	6.5	8	20.8	16.0	13.0
	10	130	6	8	10	21.7	16.3	13.0
	13	169	9	11	13	18.8	15.4	13.0
	17	221	11	14	17	20.1	15.8	13.0
	22	286	14	18	22	20.4	15.9	13.0
	26	338	18	22	26	18.8	15.4	13.0
	40	520	28	34	40	18.6	15.3	13.0
63	26	338	18	22	26	18.8	15.4	13.0
	32	416	22	27	32	18.9	15.4	13.0
	40	520	28	34	40	18.6	15.3	13.0
	50	650	34	42	50	19.1	15.5	13.0
	63	819	45	54	63	18.2	15.2	13.0
100	75	975	55	65	75	17.7	15.0	13.0
	90	1170	70	80	90	16.7	14.6	13.0
	100	1300	80	90	100	16.3	14.4	13.0

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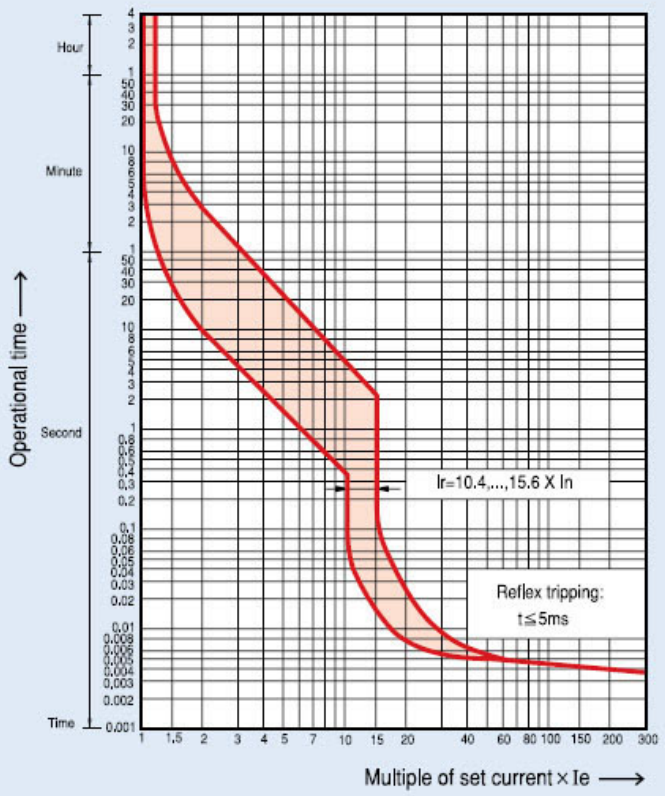
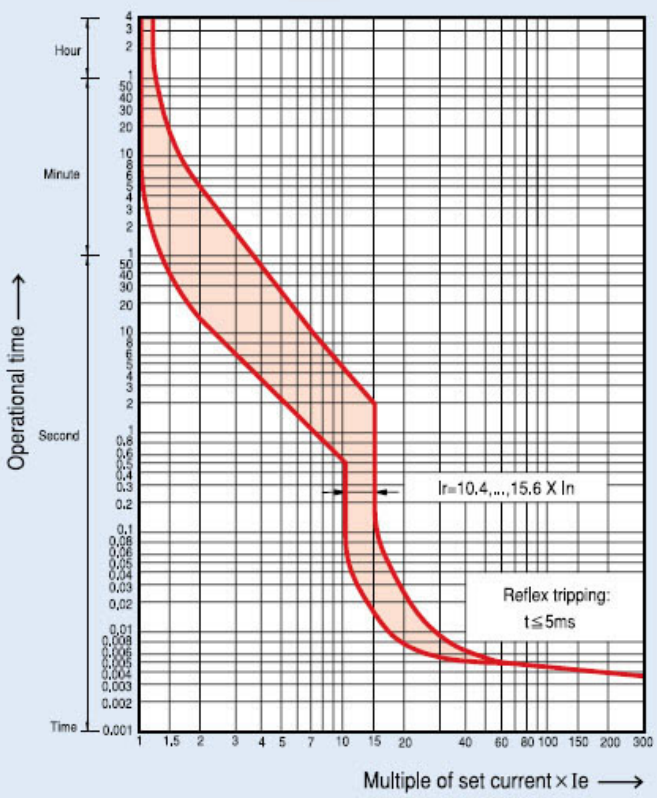
Thermal limit on short circuits

HMMP-32 Tripping Curve



HMMP-63, HMMP-100 Tripping Curve



I. Thermal release trip current :

The adjustable inverse bimetal trip reliability protects motors against overloads.
The curve shows the mean operating current at an ambient temperature of 20°C [68°F] starting from cold. Careful testing and setting ensures effective motor protection even in the case of single-phasing.

II. Magnetic release trip current :

The instantaneous magnetic trip has a fixed operating current setting that corresponds to 13 times the maximum value of the setting range. At a lower setting, it is correspondingly higher.

III. Current setting I_e :

The overload trip corresponds to a thermal overload relay in a motor starter conforming to IEC 947-4-1. If a different value is prescribed (e.g. reduced I_e for a cooling medium having a temperature higher than 40°C [104°F] or a place of installation higher than 2000m [6562ft] above sea level), the setting current is equal to the reduced rated current I_e of the motor.

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HMMP Manual Motor Protectors

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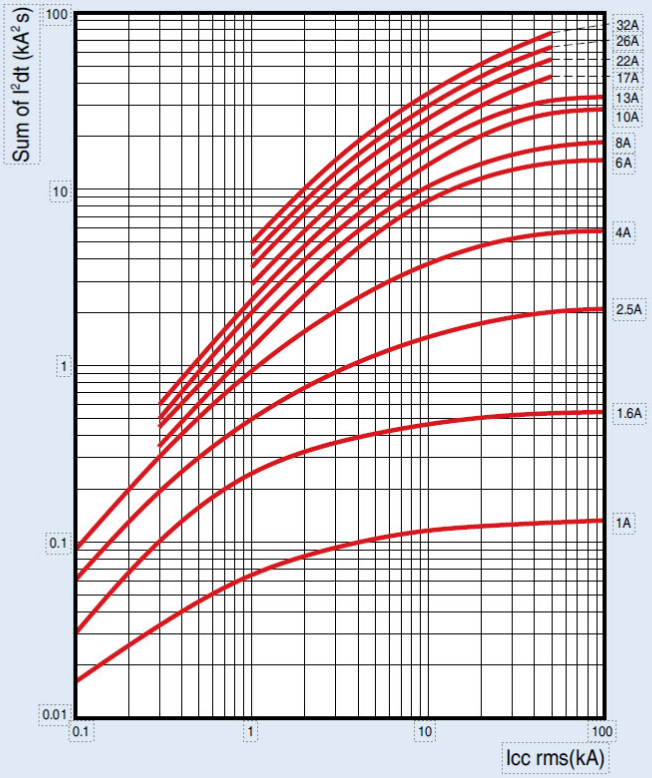
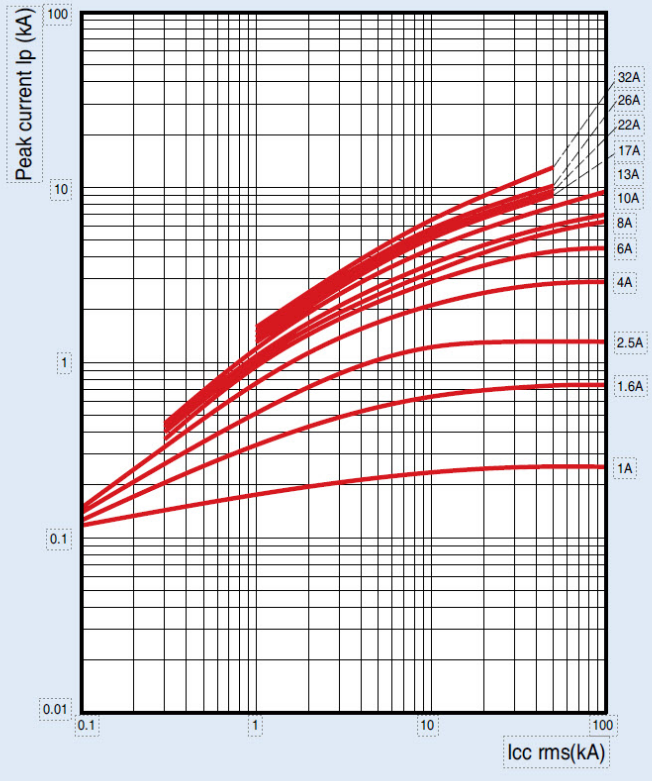
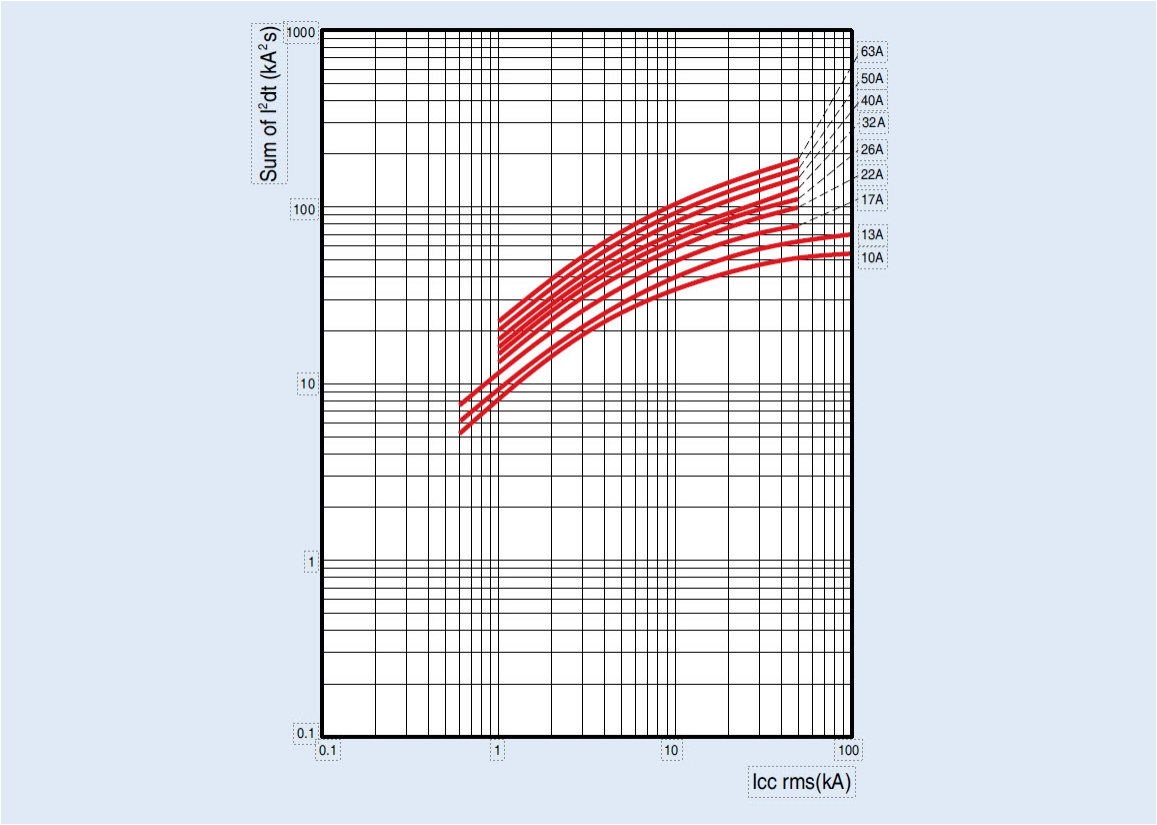
Thermal limit in kA^2s in the magnetic operating zone (U_e=415V) – HMMP-32HR-xx

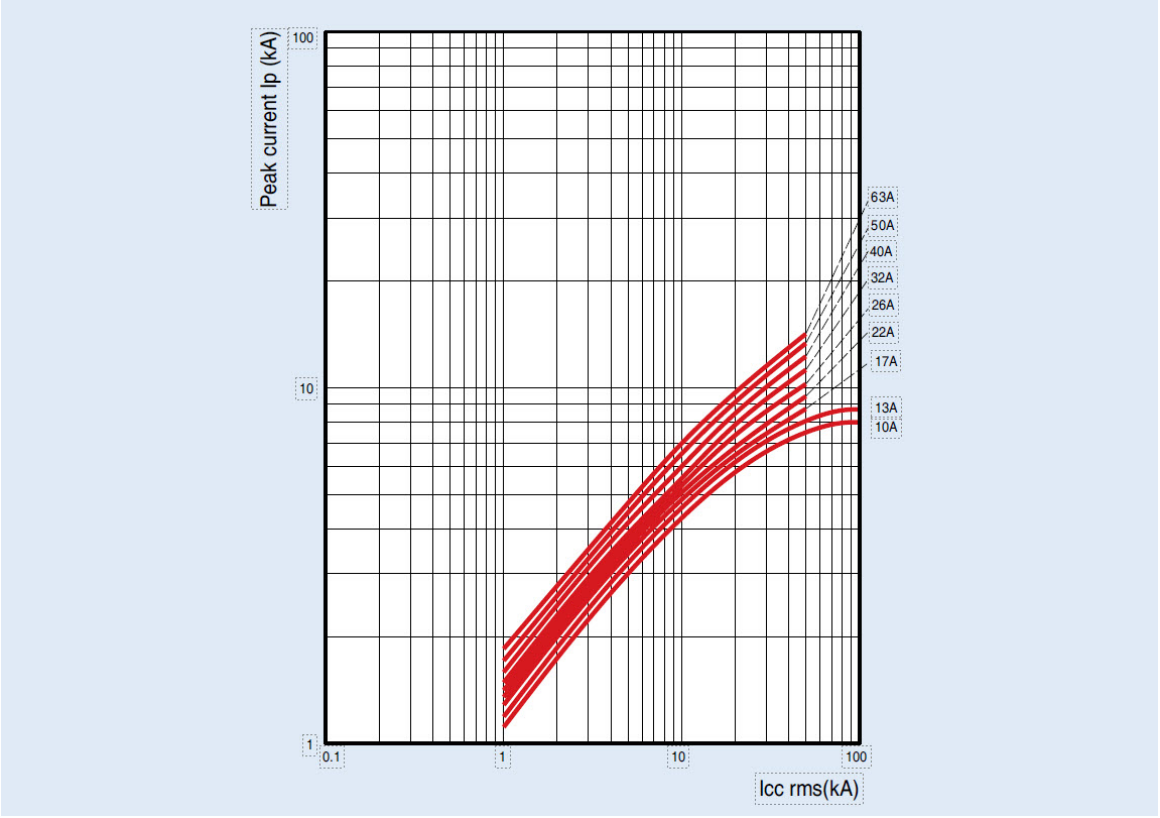




IronHorse
HMMP Manual Motor Protectors

Thermal limit in kA^2s in the magnetic operating zone (U_e=415V) – HMMP-63HR-xx





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Thermal limit in kA^2s in the magnetic operating zone (U_e=415V) – HMMP-100HR-xx