

# 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.



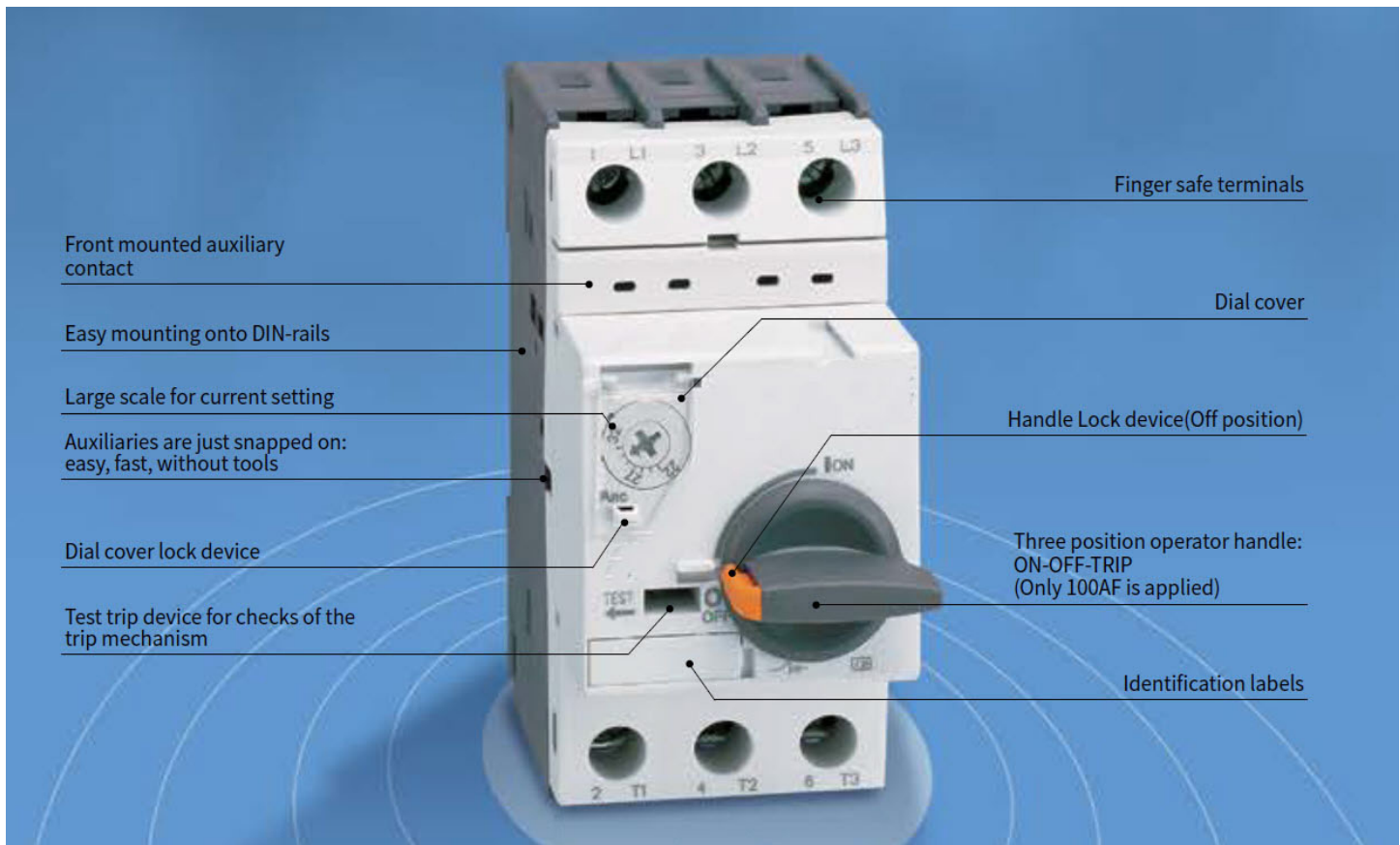
**UL File No. E195426, E531281**  
**Accessories E191059, E195426**

### 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



# IronHorse HMMP Manual Motor Protectors



## 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

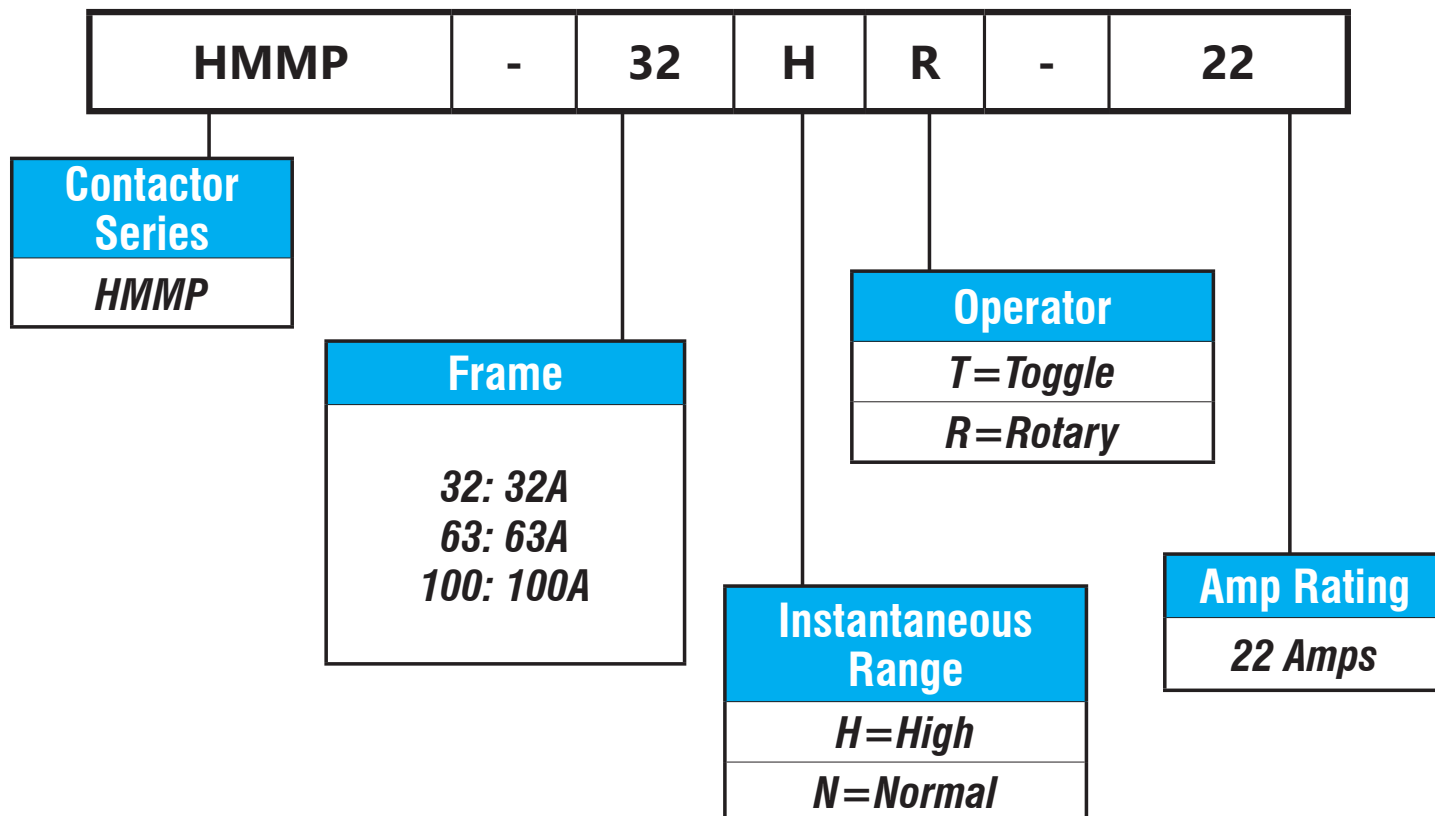


Table intended as reference only and not to create part numbers.

# 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             |
|--------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <a href="#">HMMP-32HR-0.16</a> | \$42.00 | IronHorse manual motor protector, rotary, 0.16A, thermal overload, 0.1-0.16A adjustable, 2.1A instantaneous trip rating, 45mm frame.  | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-0.25</a> | \$42.00 | IronHorse manual motor protector, rotary, 0.25A, thermal overload, 0.16-0.25A adjustable, 3.3A instantaneous trip rating, 45mm frame. | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-0.40</a> | \$42.00 | IronHorse manual motor protector, rotary, 0.4A, thermal overload, 0.25-0.4A adjustable, 5.2A instantaneous trip rating, 45mm frame.   | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-0.63</a> | \$42.00 | IronHorse manual motor protector, rotary, 0.63A, thermal overload, 0.4-0.63A adjustable, 8.2A instantaneous trip rating, 45mm frame.  | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-1</a>    | \$42.00 | IronHorse manual motor protector, rotary, 1A, thermal overload, 0.63-1A adjustable, 13A instantaneous trip rating, 45mm frame.        | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-1.6</a>  | \$42.00 | IronHorse manual motor protector, rotary, 1.6A, thermal overload, 1-1.6A adjustable, 20.8A instantaneous trip rating, 45mm frame.     | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-2.5</a>  | \$42.00 | IronHorse manual motor protector, rotary, 2.5A, thermal overload, 1.6-2.5A adjustable, 32.5A instantaneous trip rating, 45mm frame.   | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-4</a>    | \$42.00 | IronHorse manual motor protector, rotary, 4A, thermal overload, 2.5-4A adjustable, 52A instantaneous trip rating, 45mm frame.         | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-6</a>    | \$42.00 | IronHorse manual motor protector, rotary, 6A, thermal overload, 4-6A adjustable, 78A instantaneous trip rating, 45mm frame.           | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-8</a>    | \$42.00 | IronHorse manual motor protector, rotary, 8A, thermal overload, 5-8A adjustable, 104A instantaneous trip rating, 45mm frame.          | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-10</a>   | \$42.00 | IronHorse manual motor protector, rotary, 10A, thermal overload, 6-10A adjustable, 130A instantaneous trip rating, 45mm frame.        | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-13</a>   | \$50.00 | IronHorse manual motor protector, rotary, 13A, thermal overload, 9-13A adjustable, 169A instantaneous trip rating, 45mm frame.        | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-17</a>   | \$50.00 | IronHorse manual motor protector, rotary, 17A, thermal overload, 11-17A adjustable, 221A instantaneous trip rating, 45mm frame.       | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-22</a>   | \$50.00 | IronHorse manual motor protector, rotary, 22A, thermal overload, 14-22A adjustable, 286A instantaneous trip rating, 45mm frame.       | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-26</a>   | \$50.00 | IronHorse manual motor protector, rotary, 26A, thermal overload, 18-26A adjustable, 338A instantaneous trip rating, 45mm frame.       | <a href="#">PDF</a> |
| <a href="#">HMMP-32HR-40</a>   | \$50.00 | IronHorse manual motor protector, rotary, 40A, thermal overload, 28-40A adjustable, 520A instantaneous trip rating, 45mm frame.       | <a href="#">PDF</a> |


**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 |
|---------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------|---------|
| <a href="#"><u>HMMP-63HR-26</u></a>   | \$127.00 | IronHorse manual motor protector, rotary, 26A, thermal overload, 18-26A adjustable, 338A instantaneous trip rating, 55mm frame.    | PDF     |
| <a href="#"><u>HMMP-63HR-32</u></a>   | \$127.00 | IronHorse manual motor protector, rotary, 32A, thermal overload, 22-32A adjustable, 416A instantaneous trip rating, 55mm frame.    | PDF     |
| <a href="#"><u>HMMP-63HR-40</u></a>   | \$127.00 | IronHorse manual motor protector, rotary, 40A, thermal overload, 28-40A adjustable, 520A instantaneous trip rating, 55mm frame.    | PDF     |
| <a href="#"><u>HMMP-63HR-50</u></a>   | \$127.00 | IronHorse manual motor protector, rotary, 50A, thermal overload, 34-50A adjustable, 650A instantaneous trip rating, 55mm frame.    | PDF     |
| <a href="#"><u>HMMP-63HR-63</u></a>   | \$127.00 | IronHorse manual motor protector, rotary, 63A, thermal overload, 45-63A adjustable, 819A instantaneous trip rating, 55mm frame.    | PDF     |
| <a href="#"><u>HMMP-100HR-75</u></a>  | \$233.00 | IronHorse manual motor protector, rotary, 75A, thermal overload, 55-75A adjustable, 975A instantaneous trip rating, 70mm frame.    | PDF     |
| <a href="#"><u>HMMP-100HR-90</u></a>  | \$233.00 | IronHorse manual motor protector, rotary, 90A, thermal overload, 70-90A adjustable, 1170A instantaneous trip rating, 70mm frame.   | PDF     |
| <a href="#"><u>HMMP-100HR-100</u></a> | \$233.00 | IronHorse manual motor protector, rotary, 100A, thermal overload, 80-100A adjustable, 1300A instantaneous trip rating, 70mm frame. | PDF     |



**HMMP-63HR-26**



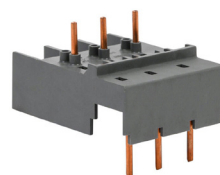
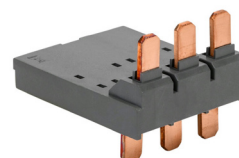
**HMMP-100HR-100**

# IronHorse HMMP Manual Motor Protectors Accessories


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## IronHorse HMMP Series Link Modules Selection Guide

| Part Number                          | Price   | Description                                                                                                           | Drawing                    |
|--------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HMx1-LM22-AC</u></a>  | \$7.75  | IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-9 to HMC-22 contactors with AC coils.    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx1-LM22-DC</u></a>  | \$7.75  | IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-9 to HMC-22 contactors with DC coils.    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx2-LM32-AC</u></a>  | \$8.75  | IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-32 or HMC-40 contactors with AC coils.   | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx2-LM32-DC</u></a>  | \$8.75  | IronHorse link module, for use with HMMP-32H manual motor protectors and HMC-32 or HMC-40 contactors with DC coils.   | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx3-LM63-AC</u></a>  | \$9.25  | IronHorse link module, for use with HMMP-63H manual motor protectors and HMC-50 or HMC-65 contactors with AC coils.   | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx3-LM63-DC</u></a>  | \$9.25  | IronHorse link module, for use with HMMP-63H manual motor protectors and HMC-50 or HMC-65 contactors with DC coils.   | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx4-LM100-AC</u></a> | \$10.00 | IronHorse link module, for use with HMMP-100H manual motor protectors and HMC-75 to HMC-100 contactors with AC coils. | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HMx4-LM100-DC</u></a> | \$10.00 | IronHorse link module, for use with HMMP-100H manual motor protectors and HMC-75 to HMC-100 contactors with DC coils. | <a href="#"><u>PDF</u></a> |


**[HMx1-LM22-AC](#)**

**[HMx2-LM32-AC](#)**

**[HMx3-LM63-AC](#)**

**[HPx1-AUX20-F](#)**

**[HPx1-AUX20-S](#)**

**[HPx1-ALM11-S](#)**

## IronHorse HMMP Series Field Installable Auxiliary Contacts Selection Guide

| Part Number                         | Price                         | Description                                                                                                                                                                                             | Drawing                    |
|-------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPx1-AUX20-F</u></a> | \$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.               | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-AUX11-F</u></a> | \$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.       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-AUX02-F</u></a> | \$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.                 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-AUX20-S</u></a> | <a href="#"><u>\$9.50</u></a> | 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.           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-AUX11-S</u></a> | <a href="#"><u>\$9.50</u></a> | 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. | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-AUX02-S</u></a> | <a href="#"><u>\$9.50</u></a> | 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.           | <a href="#"><u>PDF</u></a> |

## IronHorse HMMP Series Field Installable Alarm Contacts Selection Guide

| Part Number                          | Price   | Description                                                                                                                                                                                                       | Drawing                    |
|--------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPx1-ALM11-S</u></a>  | \$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.               | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx2-ALM11-S</u></a>  | \$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.              | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPx1-MALM11-S</u></a> | \$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. | <a href="#"><u>PDF</u></a> |

# IronHorse HMMP

## Manual Motor Protectors

### Accessories (continued)


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#### IronHorse HMMP Series Field Installable Undervoltage Trip Selection Guide

| Part Number                            | Price   | Description                                                                                                                                                                                       | Drawing                    |
|----------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPX1-UVT-120VAC</u></a> | \$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.         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX1-UVT-480VAC</u></a> | \$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. | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX1-UVT-220VAC</u></a> | \$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.     | <a href="#"><u>PDF</u></a> |


**HPX1-UVT-120VAC**

**HPX1-SHT-120VAC**

#### IronHorse HMMP Series Field Installable Shunt Trip Selection Guide

| Part Number                            | Price   | Description                                                                                                                                                                               | Drawing                    |
|----------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPX1-SHT-120VAC</u></a> | \$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.         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX1-SHT-480VAC</u></a> | \$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. | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX1-SHT-220VAC</u></a> | \$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.     | <a href="#"><u>PDF</u></a> |

#### IronHorse HMMP Series Rotary Handle Selection Guide

| Part Number                            | Price   | Description                                                                                                                                                                                                                                | Drawing                    |
|----------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPX1-EHRN3R-GY1</u></a> | \$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. | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX2-EHRN3R-GY1</u></a> | \$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.              | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX3-EHRN3R-GY1</u></a> | \$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.             | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX1-EHRN3R-GY3</u></a> | \$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.              | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX2-EHRN3R-GY3</u></a> | \$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.              | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>HPX3-EHRN3R-GY3</u></a> | \$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.             | <a href="#"><u>PDF</u></a> |


**HPX1-EHRN3R-GY1**

**HPX2-EHRN3R-GY3**

#### IronHorse HMMP Series Incoming Power Terminal Block Selection Guide

| Part Number                        | Price   | Description                                                                                                                                                                  | Drawing                    |
|------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <a href="#"><u>HPX1-PTB-MP</u></a> | \$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. | <a href="#"><u>PDF</u></a> |


**HPX1-PTB-MP**

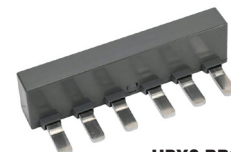
# IronHorse HMMP

## Manual Motor Protectors

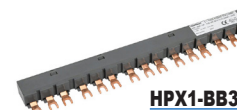
### Accessories (continued)


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| IronHorse HMMP Series Busbar Selection Guide |         |                                                                                                                                                                                       |                     |
|----------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                  | Price   | Description                                                                                                                                                                           | Drawing             |
| <a href="#">HPX1-BB3P-2SP</a>                | \$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. | <a href="#">PDF</a> |
| <a href="#">HPX2-BB3P-2SP</a>                | \$13.50 | IronHorse busbar, 108A, 600 VAC, cut to length not permitted, connects up to 2 HMMP-63H Manual motor protectors without accessories.                                                  | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-3SP</a>                | \$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. | <a href="#">PDF</a> |
| <a href="#">HPX2-BB3P-3SP</a>                | \$18.00 | IronHorse busbar, 108A, 600 VAC, cut to length not permitted, connects up to 3 HMMP-63H Manual motor protectors without accessories.                                                  | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-4SP</a>                | \$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. | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-5SP</a>                | \$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. | <a href="#">PDF</a> |

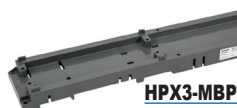

[HPX1-BB3P-2SP](#)

[HPX2-BB3P-2SP](#)

[HPX1-BB3P-3SP](#)

[HPX1-BB3P-4SP](#)

[HPX1-BB3P-5SP](#)

| IronHorse HMMP Series Mounting Plate Selection Guide |         |                                                                                                                                       |                     |
|------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                          | Price   | Description                                                                                                                           | Drawing             |
| <a href="#">HPX1-MBPT</a>                            | \$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.    | <a href="#">PDF</a> |
| <a href="#">HPX2-MBPT</a>                            | \$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.  | <a href="#">PDF</a> |
| <a href="#">HPX3-MBPT</a>                            | \$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. | <a href="#">PDF</a> |


[HPX1-MBPT](#)

[HPX2-MBPT](#)

[HPX3-MBPT](#)

| IronHorse HMMP Series Phase Barrier Selection Guide |        |                                                                                                                                       |                     |
|-----------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                         | Price  | Description                                                                                                                           | Drawing             |
| <a href="#">HPX3-PBR-MP</a>                         | \$4.25 | IronHorse phase barrier, package of 4. For use with HMMP-100H manual motor protectors. Required by UL to increase clearance distance. | <a href="#">PDF</a> |

| IronHorse HMMP Series Busbar Cover Selection Guide |        |                                                                                                 |         |
|----------------------------------------------------|--------|-------------------------------------------------------------------------------------------------|---------|
| Part Number                                        | Price  | Description                                                                                     | Drawing |
| <a href="#">HPX1-TMC-BB</a>                        | \$2.75 | IronHorse busbar cover, for use with unused exposed busbar pins on the HPX1-BB3P busbar system. | N/A     |
| <a href="#">HPX2-TMC-BB</a>                        | \$4.25 | IronHorse busbar cover, for use with unused exposed busbar pins on the HPX2-BB3P busbar system. | N/A     |

| IronHorse HMMP Series Incoming Power Terminal Block Selection Guide |         |                                                                                                                                                                           |                     |
|---------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                                         | Price   | Description                                                                                                                                                               | Drawing             |
| <a href="#">HPX1-PTBE-MP</a>                                        | \$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. | <a href="#">PDF</a> |


[HPX1-TMC-BB](#)

[HPX2-TMC-BB](#)

[HPX1-PTBE-MP](#)

[HPX3-PBR-MP](#)

# IronHorse HMMP

## Manual Motor Protectors


**IRONHORSE®**

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

| Rated Breaking Capacity (kA)    |                                            |                      |     |              |     |              |     |              |     |              |     |
|---------------------------------|--------------------------------------------|----------------------|-----|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| Rated Operational Current $I_e$ | Thermal Release Adjustment Range ( $I_e$ ) | 220V<br>240V<br>230V |     | 415V<br>400V |     | 460V<br>440V |     | 525V<br>500V |     | 690V<br>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


**IRONHORSE®**

### 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<br>240V<br>230V |                 | 415V<br>400V    |                 | 460V<br>440V    |                 | 525V<br>500V    |                 | 690V<br>600V    |                 | 220V<br>240V<br>230V |                 | 415V<br>400V    |                 | 460V<br>440V    |                 | 525V<br>500V    |                 | 690V<br>600V    |                 |
|---------------------------------|--------------------------------------------|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                 |                                            | l <sub>cu</sub>      |                 | l <sub>cs</sub> |                 | l <sub>cu</sub> |                 | l <sub>cs</sub> |                 | l <sub>cu</sub> |                 | l <sub>cu</sub>      |                 | l <sub>cs</sub> |                 | l <sub>cu</sub> |                 | l <sub>cs</sub> |                 | l <sub>cu</sub> |                 |
|                                 |                                            | l <sub>cu</sub>      | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub>      | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> | l <sub>cu</sub> | l <sub>cs</sub> |
| 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

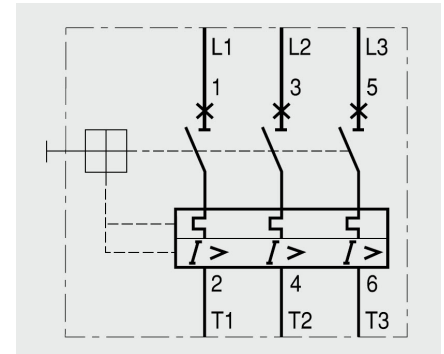
### High Breaking Type


**IRONHORSE®**

**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) |      |      | $I_{cu}$ (kA) | $I_{cs}$ (kA) |
|           |                                     |                                      |                                        | 230V                                       | 400V | 690V | 230V                | 460V | 575V |               |               |
| 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

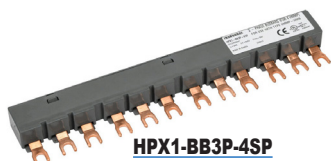
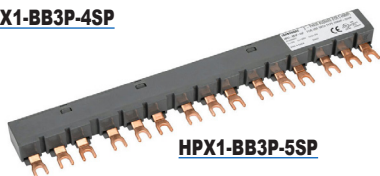

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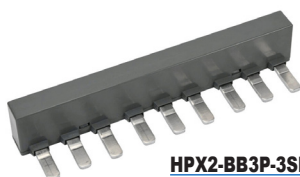
| Type                 | Description                                                                                                                                                                                                                                                                                                             | Connection Diagram |                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|
| HPX1-AUXxx-F         | <b>Auxiliary Switch</b> <ul style="list-style-type: none"> <li>Front mounting</li> <li>2-pole</li> <li>One front mounting module per circuit breaker</li> </ul>                                                                                                                                                         |                    |                                                                                       |
| HPX1-AUXxx-S         | <b>Auxiliary Switch</b> <ul style="list-style-type: none"> <li>Side Mounting on the left</li> <li>2-pole</li> <li>One side mounting module per circuit breaker</li> </ul>                                                                                                                                               |                    |                                                                                       |
| HPX1-ALM<br>HPX2-ALM | <b>Any Trip Alarm Switch</b> <ul style="list-style-type: none"> <li>Operates in case of trip</li> <li>Side mounting on the left</li> <li>2-pole</li> <li>Set ALM first when using with AUXxx-S (HMMP-63 cannot accept AUXxx-S and ALM together)</li> <li>For HMMP-32 and HMMP-63/100, products are separated</li> </ul> |                    |                                                                                       |
| <u>HPX1-MALM11-S</u> | <b>Magnetic Trip Alarm Switch</b> <ul style="list-style-type: none"> <li>Operates in case of short circuit accidents more than 20 times the rated current</li> <li>Side mounting on the left</li> <li>2-pole</li> <li>Set magnetic trip alarm first when using with HPX1-AUXxx-S</li> </ul>                             |                    |                                                                                       |
| HPX1-SHT-xxxxx       | <b>Shunt Release</b> <ul style="list-style-type: none"> <li>Side mounting on the right</li> <li>One side mounting module per circuit breaker</li> <li>Cannot use with HPX1-UVT-xxxx</li> </ul>                                                                                                                          |                    | 110V 50Hz / 120V 60Hz<br>200V 50Hz / 200-220 V 60Hz<br>415-440 V 50Hz / 460-480V 60Hz |
| HPX1-UVT-xxxxx       | <b>Undervoltage Release</b> <ul style="list-style-type: none"> <li>Side mounting on the right</li> <li>One side mounting module per circuit breaker</li> <li>Cannot use with HPX1-SHT-xxxx</li> </ul>                                                                                                                   |                    |                                                                                       |

# IronHorse HMMP Manual Motor Protectors Phase Bus System


**IRONHORSE®**

**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

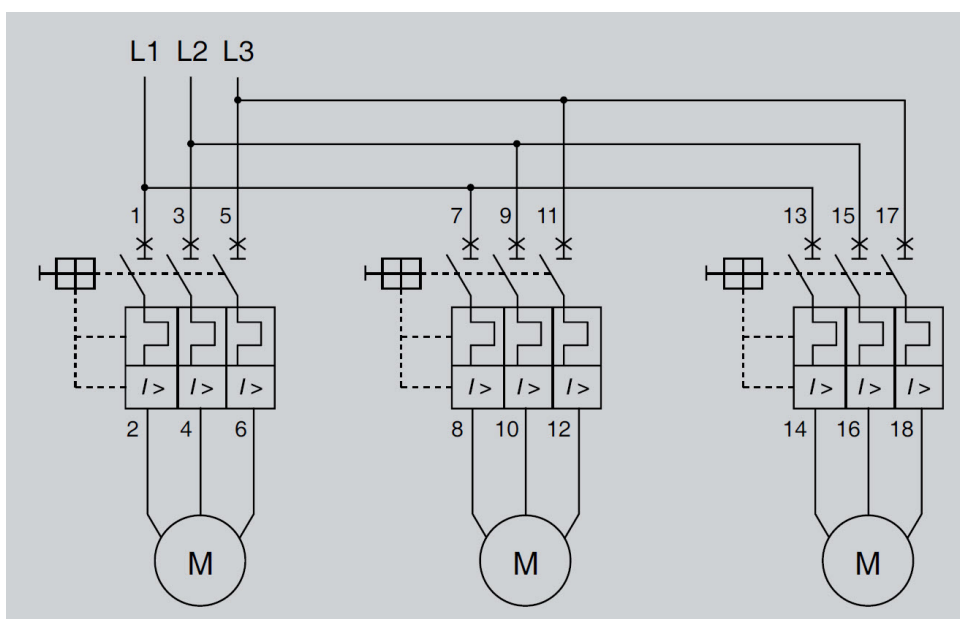
## Phase Bus System Selection Guide

| Part Number                   | Price   | For Use With | Number of Terminals | Rated Current | Drawing             |
|-------------------------------|---------|--------------|---------------------|---------------|---------------------|
| <a href="#">HPX1-BB3P-2SP</a> | \$9.50  | HMMP-32H     | 2                   | 63A           | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-3SP</a> | \$11.50 |              | 3                   |               | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-4SP</a> | \$13.50 |              | 4                   |               | <a href="#">PDF</a> |
| <a href="#">HPX1-BB3P-5SP</a> | \$20.50 |              | 5                   |               | <a href="#">PDF</a> |
| <a href="#">HPX2-BB3P-2SP</a> | \$13.50 | HMMP-63H     | 2                   | 108A          | <a href="#">PDF</a> |
| <a href="#">HPX2-BB3P-3SP</a> | \$18.00 |              | 3                   |               | <a href="#">PDF</a> |

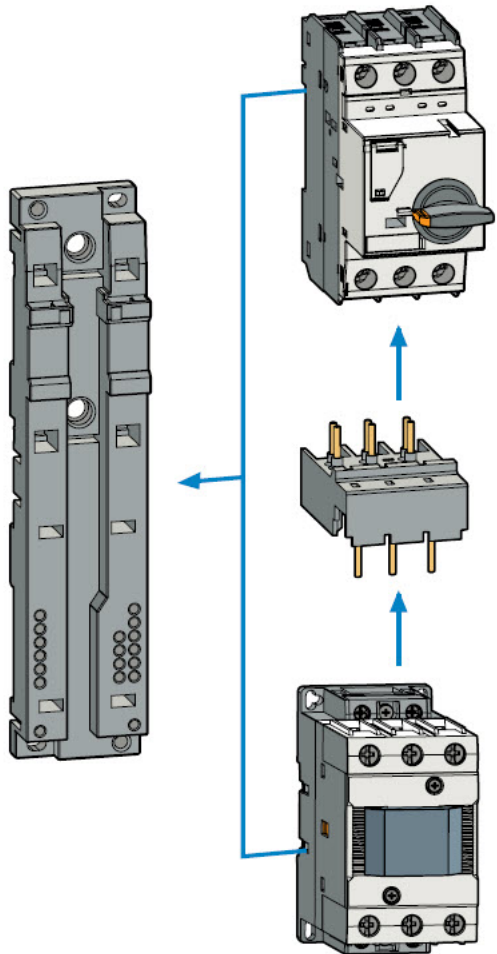
## HPX1-PTB-MP Specifications

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

## Wiring Diagram



# IronHorse HMMP Manual Motor Protectors Direct Adapter and Mounting Unit


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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             |                                         |
| <a href="#">HMX1-LM22-AC</a>                     | \$7.75  | <a href="#">PDF</a> | <a href="#">HPX1-MBPT</a> | \$9.00  | <a href="#">PDF</a> | HMMP-32H + HMC-9 to HMC-22 (AC coil)    |
| <a href="#">HMX1-LM22-DC</a>                     | \$7.75  | <a href="#">PDF</a> |                           |         |                     | HMMP-32H + HMC-9 to HMC-22 (DC coil)    |
| <a href="#">HMX2-LM32-AC</a>                     | \$8.75  | <a href="#">PDF</a> |                           |         |                     | HMMP-32H + HMC-32 to HMC-40 (AC coil)   |
| <a href="#">HMX2-LM32-DC</a>                     | \$8.75  | <a href="#">PDF</a> |                           |         |                     | HMMP-32H + HMC-32 to HMC-40 (DC coil)   |
| <a href="#">HMX3-LM63-AC</a>                     | \$9.25  | <a href="#">PDF</a> | <a href="#">HPX2-MBPT</a> | \$13.50 | <a href="#">PDF</a> | HMMP-63H + HMC-50 to HMC-65 (AC coil)   |
| <a href="#">HMX3-LM63-DC</a>                     | \$9.25  | <a href="#">PDF</a> |                           |         |                     | HMMP-63H + HMC-50 to HMC-65 (DC coil)   |
| <a href="#">HMX4-LM100-AC</a>                    | \$10.00 | <a href="#">PDF</a> | <a href="#">HPX3-MBPT</a> | \$18.00 | <a href="#">PDF</a> | HMMP-100H + HMC-75 to HMC-100 (AC coil) |
| <a href="#">HMX4-LM100-DC</a>                    | \$10.00 | <a href="#">PDF</a> |                           |         |                     | HMMP-100H + HMC-75 to HMC-100 (DC coil) |

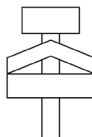
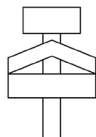
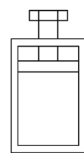
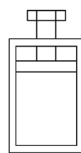
**IronHorse**

# HMMP Manual Motor Protectors

## Technical Information and General Data

**IRONHORSE®**

### Manual Motor Starters Terminals

|                                 |             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|---------------------------------|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Conformity to Standards         |             | IEC60947<br>UL508, UL508 Type E                                                   |                                                                                   |                                                                                     |                                                                                     |
| Approvals                       |             | CE, UL                                                                            |                                                                                   |                                                                                     |                                                                                     |
| Terminal Parts                  |             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| Wire (mm <sup>2</sup> [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<br>Circuit Breaker at<br>Rated Load Operating<br>Temperature<br>(W) | In = 0.16 to 1.6 A: 4.4<br>In = 2.5 to 26 A: 7.4<br>In = 32A: 4.0 | In = 10 to 22 A: 10.2<br>In = 26 to 63 A: 9.7 | In = 17 to 32 A: 15<br>In = 40 to 63 A: 21.8<br>In = 75 to 100 A: 17.8 |

### Manual Motor Starters Environmental

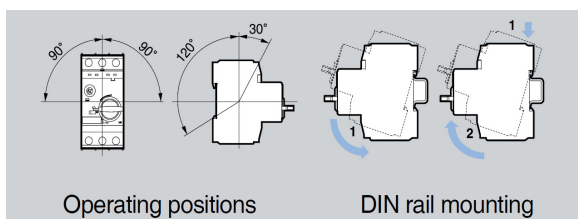
|                                  |                                 |
|----------------------------------|---------------------------------|
| Ambient Air Temperature Storage  | 50°C to +80°C [-58°F to 176°F]  |
| Operation                        | -20°C to +60°C [-4°F to +140°F] |
| Ambient Temperature 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

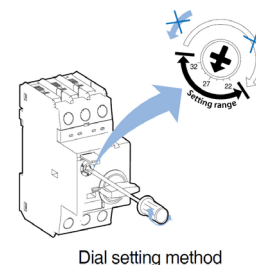
35mm or 75mm DIN rail for HMMP-100H

- 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.



## 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]

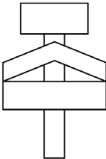
When used outside of the standard air temperature range of  
-5°C to +40°C [23°F to 104°F], adjust calibration by one point.

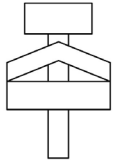
# IronHorse HMMP

## Manual Motor Protectors

### Auxiliaries


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

| Manual Motor Starters Auxiliaries                                                                                  |          |                                                            |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                                                                    |          | Undervoltage Release<br>For Right-Side Mounting (HPX1-UVT) | Shunt Release<br>For Right-Side Mounting (HPX1-SHT)                                  |
| <b>Actuating Voltage</b>                                                                                           | Pull-in  | 0.7 to 1.1 x $U_s$                                         | 0.85 to 1.1 x $U_s$                                                                  |
|                                                                                                                    | Drop-out |                                                            | 0.7 to 0.35 x $U_s$                                                                  |
| <b>Rated Control Voltage</b>                                                                                       | 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                                                |
| <b>Coil Rating</b>                                                                                                 | Pull-in  | 8.5 VA, 6W                                                 | 8.5 VA, 6W                                                                           |
|                                                                                                                    | Hold     | 3VA, 1.2 W                                                 | 3VA, 1.2 W                                                                           |
| <b>Opening Time (ms)</b>                                                                                           |          | –                                                          | 20                                                                                   |
| <b>Weight</b>                                                                                                      |          | 18                                                         | 40                                                                                   |
| Terminal Parts                                                                                                     |          |                                                            |                                                                                      |
| <b>Wire</b> Single-Core, 1 Conductor<br>Single-Core, 2 Conductor<br>Stranded, 1 conductor<br>Stranded, 2 conductor |          |                                                            |  |
|                                                                                                                    |          |                                                            | Pozidriv Size 2<br>0.5-2.5 [20-14]                                                   |
|                                                                                                                    |          |                                                            | 0.5-4 [20-10]                                                                        |
|                                                                                                                    |          |                                                            | 0.75-2.5 [18-14]                                                                     |
| <b>Tightening Torque (N•m [lb•in])</b>                                                                             |          |                                                            | 0.8-1.2 [7-10]                                                                       |

# IronHorse HMMP

## Manual Motor Protectors

## Auxiliaries


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### 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.

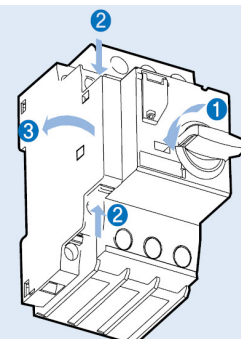
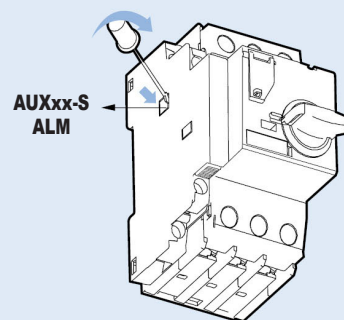
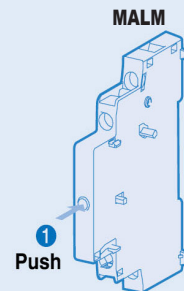
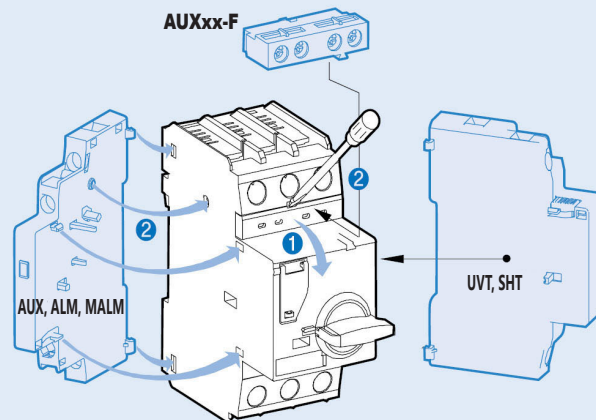
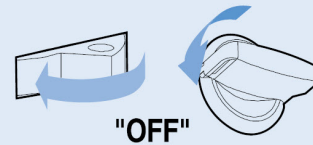
- Push the trip button before installation of MALM.

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


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## 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.

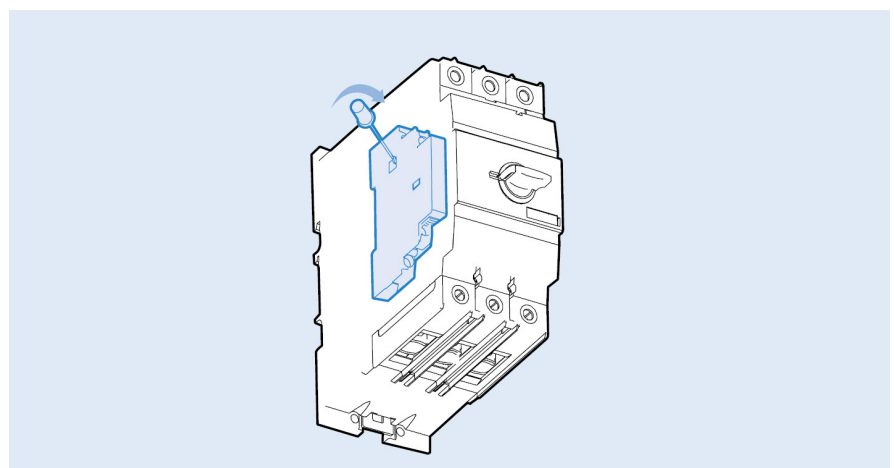
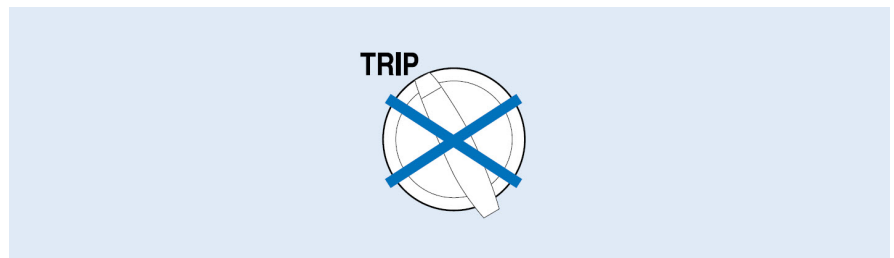
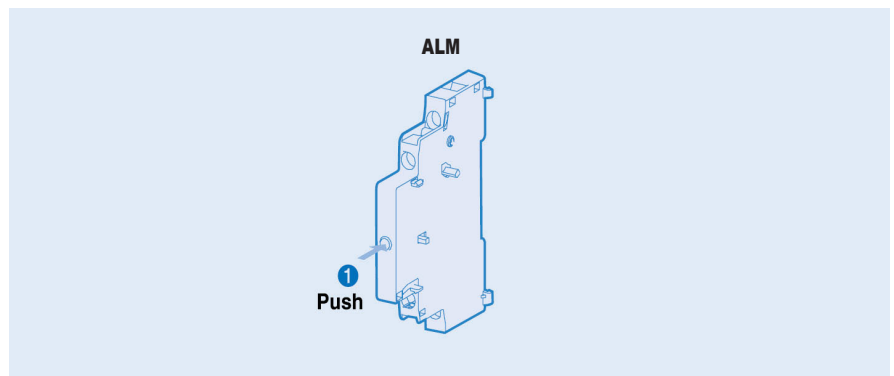
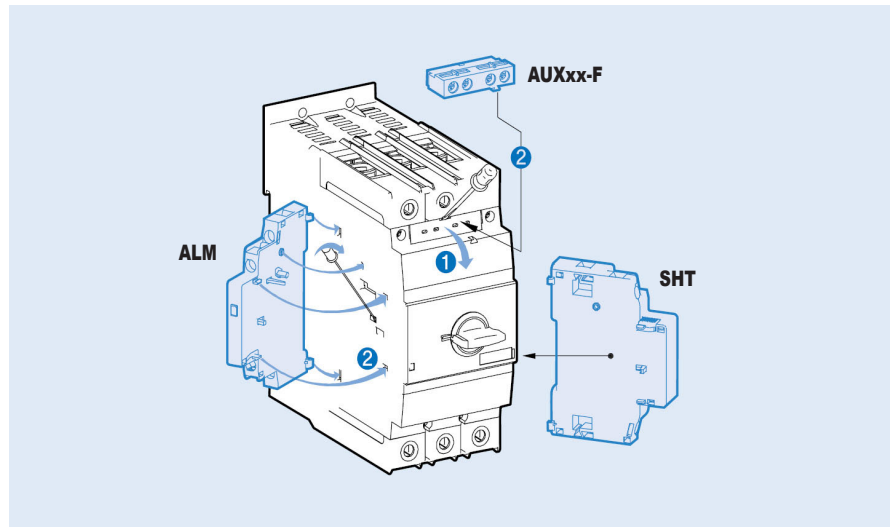
- Remove the indicated part, as shown in the illustration, before installation of AUXxx-F.

## 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

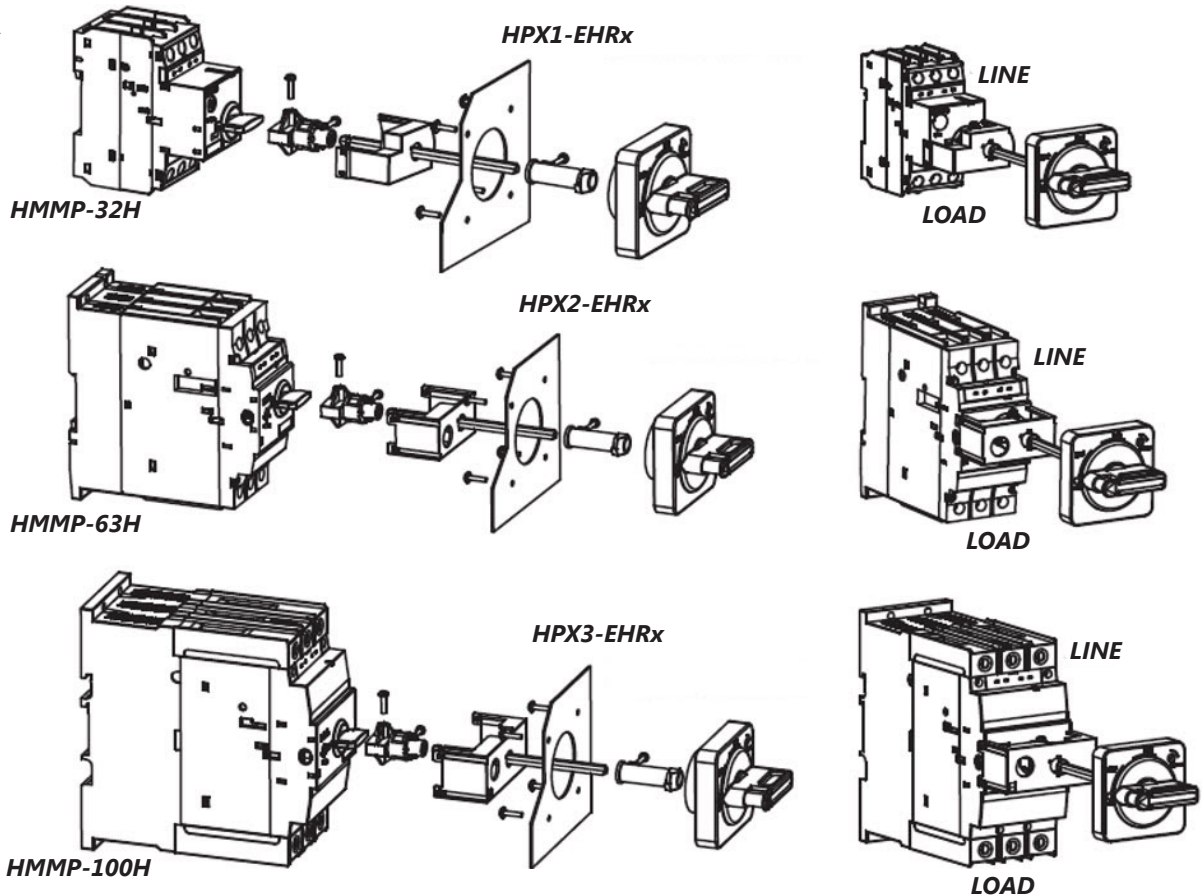
## Manual Motor Protectors

### Auxiliaries


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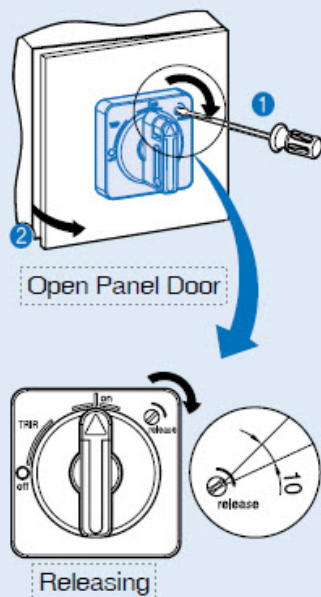
#### HPXx-EHR

#### Overview



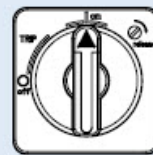
#### Locking Device

When opening the panel door at ON position

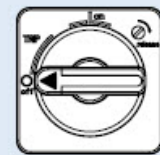


Locking  
Installation at OF, OFF position

1 Setting to regular position through turning the handle



On Position  
(Vertical State)

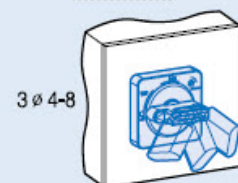


Off Position  
(Horizontal State)

2 Pushing



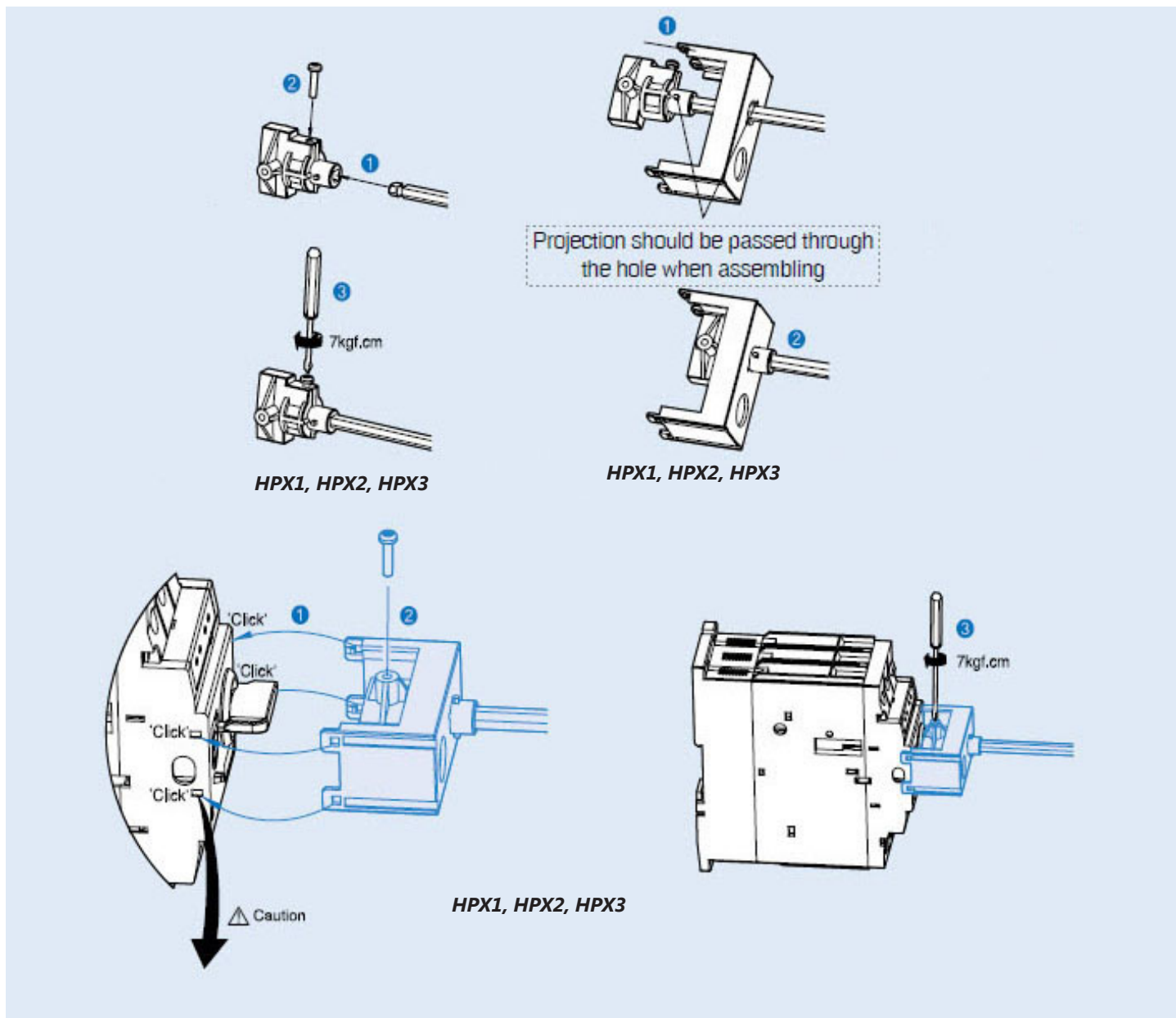
3 Locking



# IronHorse HMMP Manual Motor Protectors Auxiliaries – E-Handle

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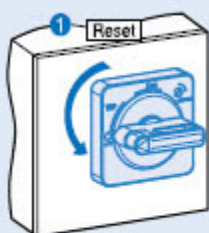
## E-Handle Installation



# IronHorse HMMP Manual Motor Protectors Auxiliaries – E-Handle


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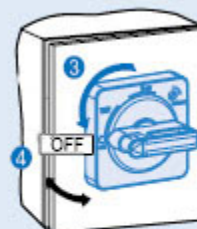
## E-Handle Installation, continued



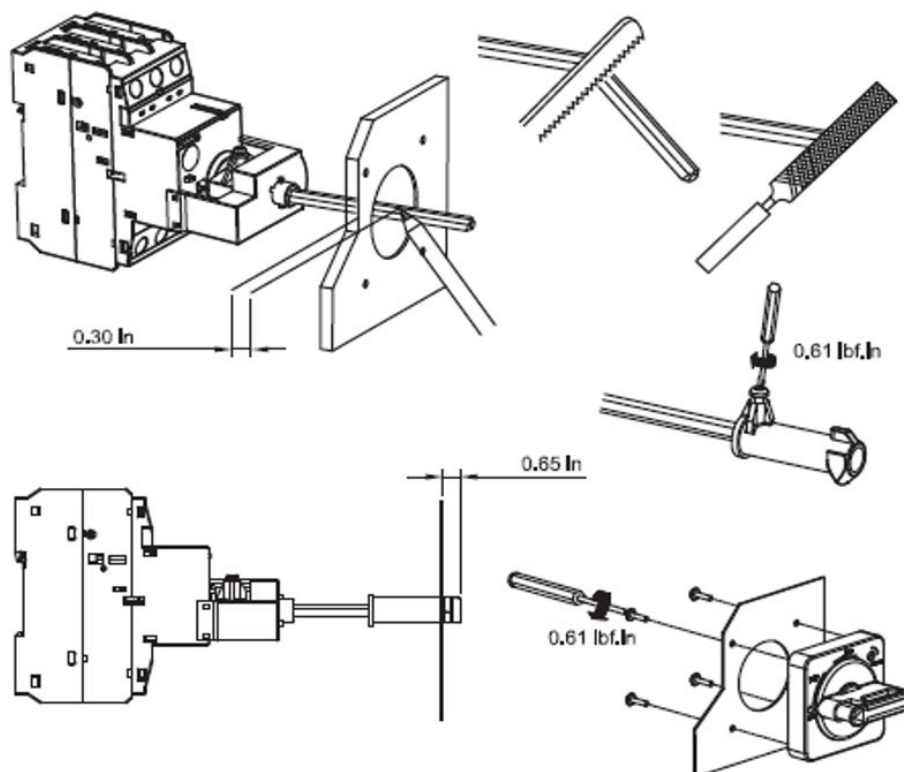
**CAUTION**  
Attempting to open the door while the handle is in the ON or TRIP position can cause damage to the locking knob.



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<br>Operational<br>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.

# IronHorse

## 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  |
| <b>Switching of Standard 3-Phase Motors – AC-2, AC-3</b>                                                      |    |      |      |      |     |     |
| 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  |
| <b>Back-Up Fuses – gG, gL, only if <math>I_{cc} &gt; I_{cu}</math> (* indicates no back-up fuse required)</b> |    |      |      |      |     |     |
| 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  |
| <b>Ultimate Short-Circuit Breaking capacity <math>I_{cu}</math></b>                                           |    |      |      |      |     |     |
| 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   |
| <b>Rated Service Short-Circuit Breaking Capacity <math>I_{cs}</math></b>                                      |    |      |      |      |     |     |
| 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 |
| <b>Switching of Standard 3-Phase Motors – AC-2, AC-3</b>                                                      |    |     |     |     |
| 230/240 V                                                                                                     | kW | 22  | 30  | 30  |
| 400/415 V                                                                                                     | kW | 37  | 45  | 45  |
| 500V                                                                                                          | kW | 45  | 55  | 63  |
| 690V                                                                                                          | kW | 63  | 75  | 90  |
| <b>Back-Up Fuses – gG, gL, only if <math>I_{cc} &gt; I_{cu}</math> (* indicates no back-up fuse required)</b> |    |     |     |     |
| 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 |
| <b>Ultimate Short-Circuit Breaking capacity <math>I_{cu}</math></b>                                           |    |     |     |     |
| 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   |
| <b>Rated Service Short-Circuit Breaking Capacity <math>I_{cs}</math></b>                                      |    |     |     |     |
| 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


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

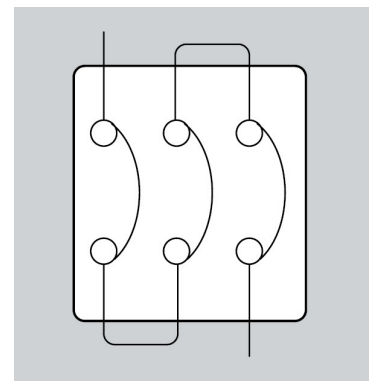
- Group Installation
- Type E Starter

| 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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## HMMP Manual Motor Protectors


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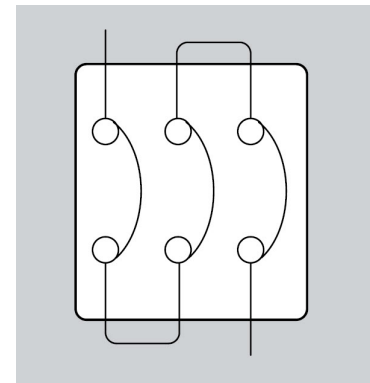
### Manual Motor Controller (UL 508)

| 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  | 65  | 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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## HMMP Manual Motor Protectors


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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<br>AC-3<br>at 400/415 V<br>1500RPM |      | Manual Motor Starter |                                                  |                                          | Contactor |     |
|                                                    |      | Circuit Breaker      | Thermal Overload<br>Release Setting<br>Range (A) | Magnetic Release<br>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

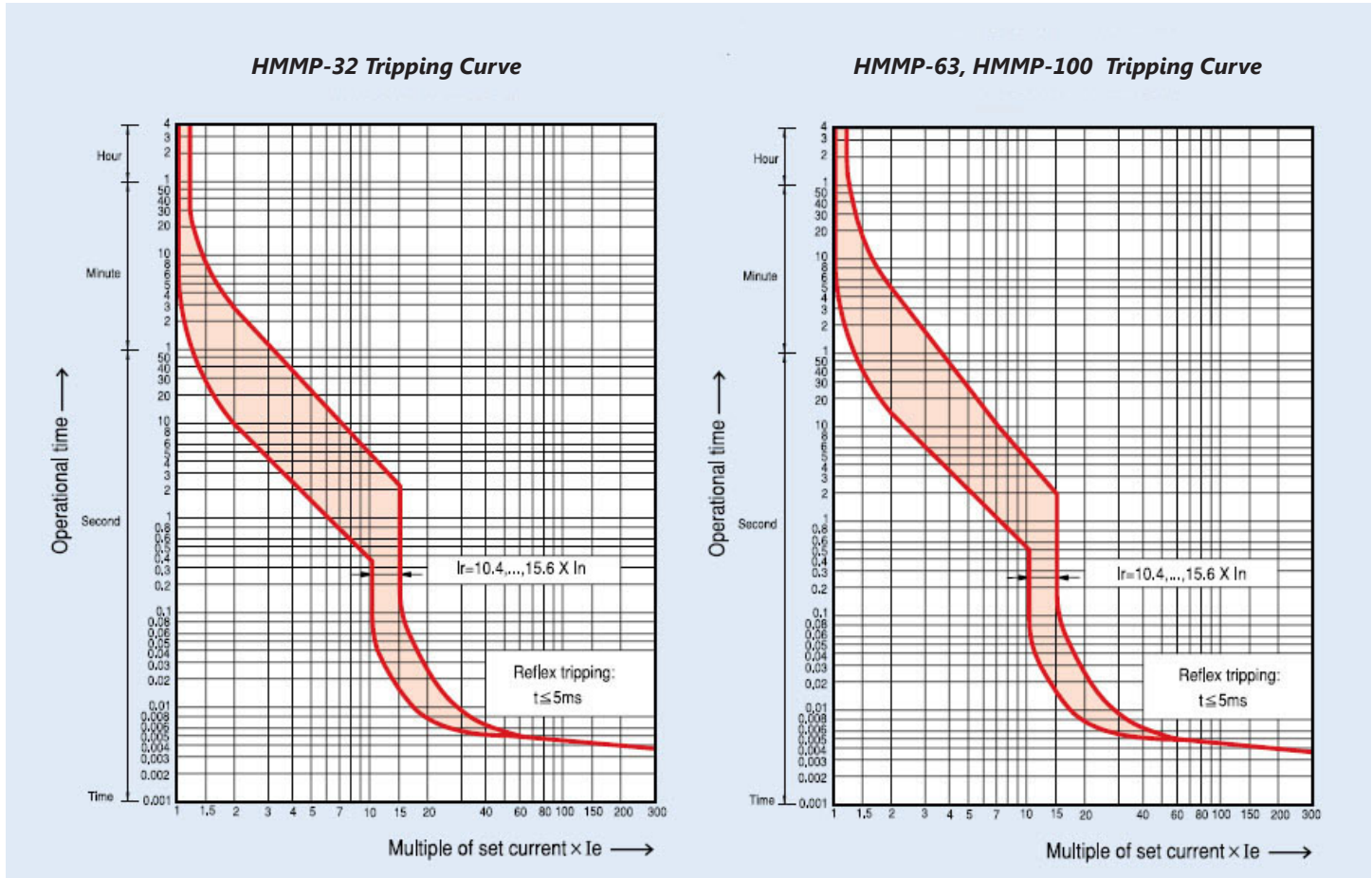
*IronHorse HMMP ready for IE3-rated motors*

| 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 |

# IronHorse HMMP Manual Motor Protectors


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## Thermal limit on short circuits



### 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.

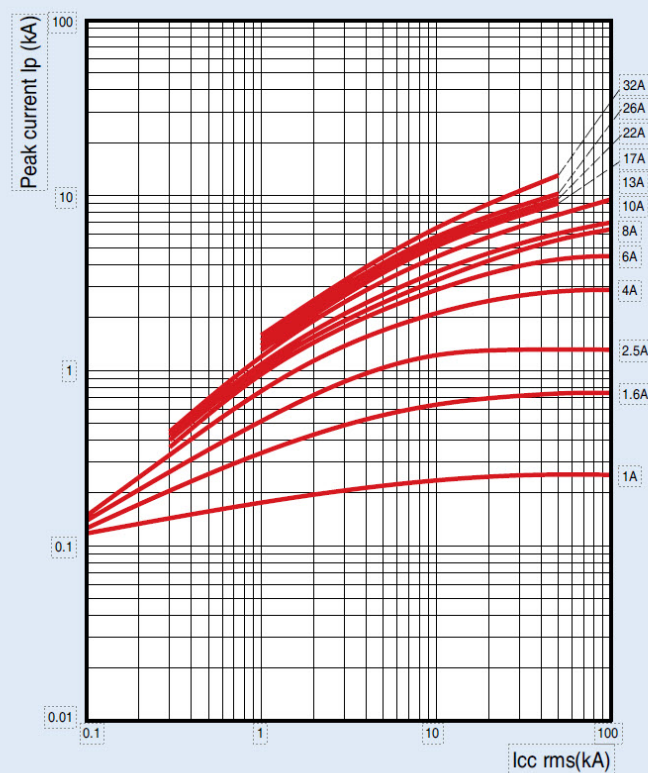
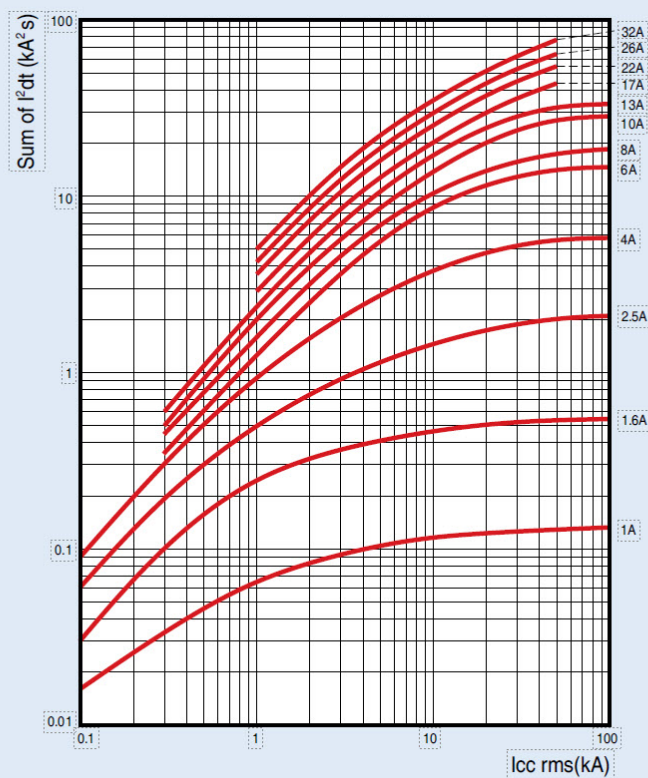
### III. Current setting $I_e$ :

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.

# IronHorse HMMP Manual Motor Protectors


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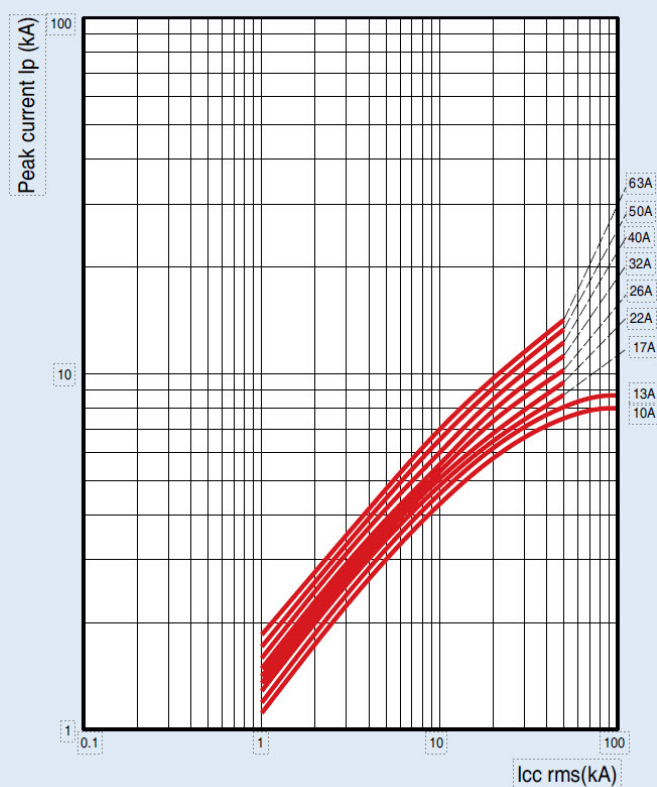
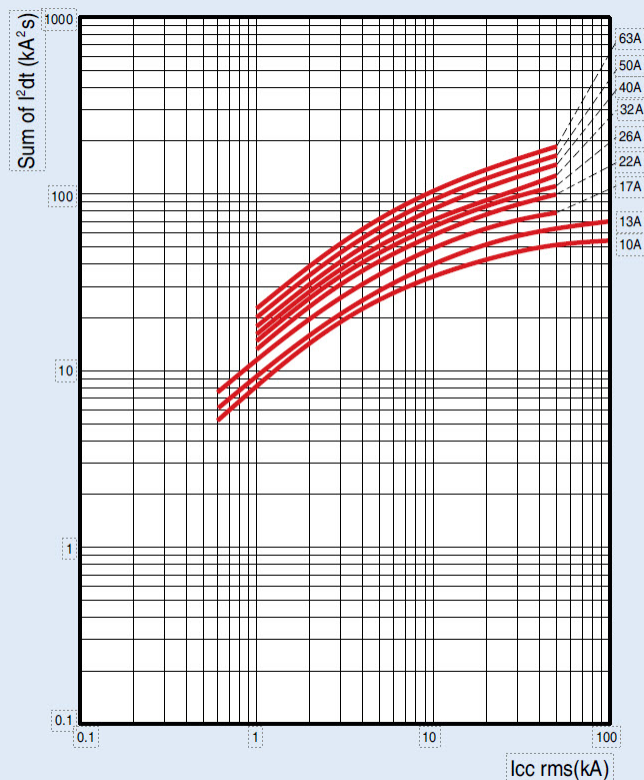
Thermal limit in  $\text{kA}^2\text{s}$  in the magnetic operating zone ( $U_e=415\text{V}$ ) – HMMP-32HR-xx



# IronHorse HMMP Manual Motor Protectors


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



**IronHorse****HMMP Manual Motor Protectors****IRONHORSE®**

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

