

SQUARE D® INFORMATION RESOURCES

Local Square D Sales Office:

() _____

Square D Customer Information Center:

1-888-SQUARE D (1-888-778-2733)

The 2008 Pocket Digest still contains Schneider Electric's best selling catalog numbers from a broad range of product lines, as well as an index for quick reference, catalog number logic tables, a weekly planner, a 22-page notepad and "How to Select" information.

www.us.squared.com and www.us.telemecanique.com

— Web sites include:

- e-Catalog (*DigestPlus* Selector) — PDA and electronic versions of the paper-based Digest catalog containing:
 - Product-Related Support Information
 - Technical Library
 - CAD Drawings
 - Product Literature
 - Product Specifications
 - Competitive Cross Reference
 - Product FAQs
 - Alphanumeric Price Search
 - Free Software Downloads
- Distributor and Sales Office Locator Tools

2008 POCKET DIGEST

A guide to frequently needed items. See the Square D Digest for a complete listing of products, specifications and applications.

Highlighted products are typically stocked at your local Small Project Express (SPE) distributor. Flush version trims not available as part of SPE program.

ELECTRICAL DISTRIBUTION

| | |
|---------------------------------|----|
| Load Centers & Circuit Breakers | 4 |
| Switches | 16 |
| Transformers | 19 |
| Wireway | 22 |
| Panelboards | 24 |
| Meter Centers | 30 |

INDUSTRIAL CONTROL

| | |
|-----------------------------------|----|
| Molded Case Circuit Breakers | 33 |
| Contactors & Starters | 40 |
| Indicating Banks and Push Buttons | 51 |
| Limit Switches | 56 |

ELECTRICAL REFERENCE

| | |
|-------------------------|----|
| Conductor Ampacities | 61 |
| Enclosures | 63 |
| Motor Full Load Current | 64 |
| NEMA Size Starters | 68 |
| Transformer Data | 69 |
| Motor Data | 71 |
| Electrical Formulas | 79 |

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SQUARE D

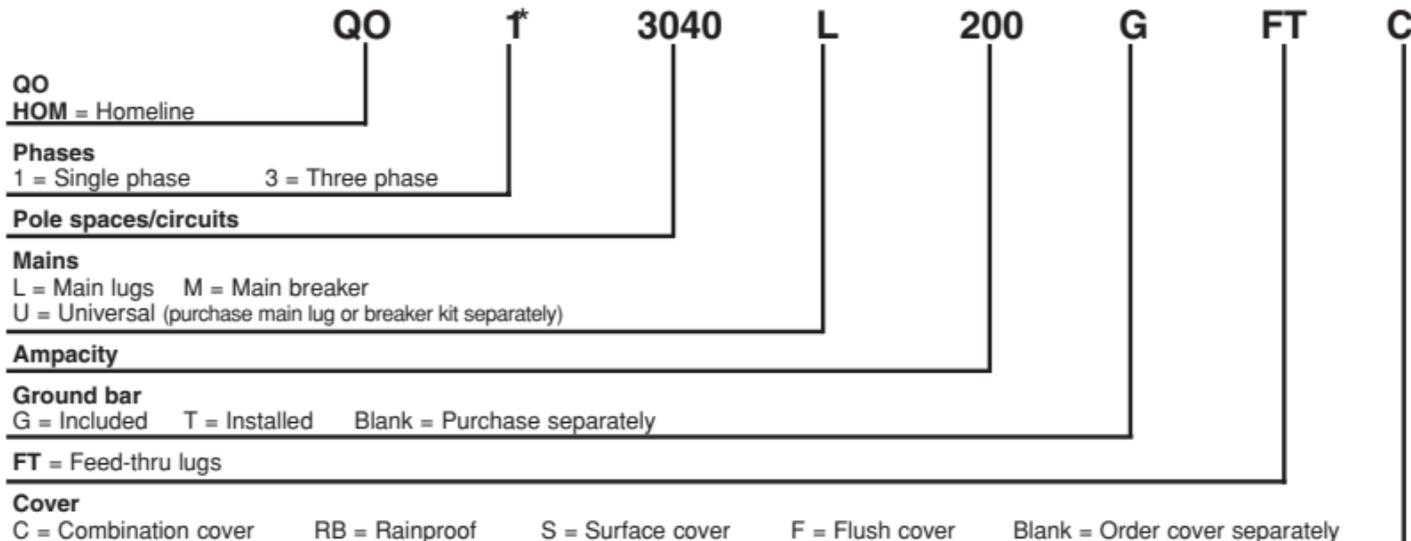


Telemecanique

How to select a load center

1. Select brand (QO® or Homeline®)
2. Select voltage, system (single or three phase), short circuit current rating
3. Select indoor or outdoor enclosure
4. Select main lugs or breaker
5. Select mains ampacity
6. Select number of pole spaces required
7. Select ground bar
8. For QO load centers, select cover, flush or surface
9. Select accessories/options

CATALOG NUMBER DESCRIPTION – See Digest for available products



† *Phase indication for QO load centers only.

QO® SINGLE PHASE LOAD CENTERS - INDOOR MAIN LUGS

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center Catalog Number | Cover Cat. No. F=Flush S=Surface | Ground Bar | |
|------------------------------|---------------|---------------------|----------------------------|--|------------|--------|
| 30 | 2 | 2 | QO2L30S | Included | PK3GTA-1 | |
| 70 | 2 | 4 | QO24L70 (F/S) | | PK4GTA | |
| 100 | 6 | 12 | QO612L100 (F/S) | | Included | PK7GTA |
| | 6 | 12 | QO612L100D (F/S) | | | |
| | 8 | 16 | QO816L100 (F/S) | | | |
| | 8 | 16 | QO816L100D (F/S) | | | |
| | 6 | 12 | QO612L100D (F/S) CU | | | |
| | 8 | 16 | QO816L100D (F/S) CU | | | |
| 125 | 4 | 8 | QO148L125G (F/S) | | Included | |
| Convertible Main Lugs | | | | | | |
| 125 | 12 | 12 | QO112L125G | QOC16U (F/S) | Included | |
| | 12 | 24 | QO11224L125G | QOC16U (F/S) | | |
| | 16 | 16 | QO116L125G | QOC24U (F/S) | | |
| | 16 | 24 | QO11624L125G | QOC24U (F/S) | | |
| | 20 | 20 | QO120L125G | QOC24U (F/S) | | |
| | 20 | 24 | QO12024L125G | QOC24U (F/S) | | |
| | 24 | 24 | QO124L125G | QOC24U (F/S) | | |
| | 32 | 32 | QO132L125G | QOC32U (F) | | |
| 150 | 20 | 30 | QO12030L150G | QOC30U (F/S) | Included | |
| | 24 | 24 | QO124L150G | QOC30U (F/S) | | |
| | 30 | 30 | QO130L150G | QOC30U (F/S) | | |
| 200 | 12 | 12 | QO112L200G | QOC30U (F/S) | Included | |
| | 24 | 36 | QO12436L200TFT | QOC40U (F/S) | | |
| | 30 | 30 | QO130L200G | QOC30U (F/S) | | |
| | 30 | 40 | QO13040L200G | QOC30U (F/S) | | |
| | 40 | 40 | QO140L200G | QOC40U (F/S) | | |
| 225 | 42 | 42 | QO142L225G | QOC42U (F/S) | Included | |

**QO® SINGLE PHASE LOAD CENTERS - INDOOR
CONVERTIBLE MAIN BREAKER**

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center Catalog Number | Cover Cat. No. F=Flush S=Surface | Ground Bar |
|---------------------|----------------------|----------------------------|-----------------------------------|---|-------------------|
| 100 | 12 | 12 | QO112M100 | QOC12U (F/S) | PK9GTA |
| | 16 | 16 | QO116M100 | QOC20U100 (F/S) | PK12GTA |
| | 20 | 20 | QO120M100 | QOC20U100 (F/S) | PK15GTA |
| | 24 | 24 | QO124M100 | QOC24U (F/S) | PK15GTA |
| | 32 | 32 | QO132M100 | QOC32UF | PK18GTA |
| 125 | 24 | 24 | QO124M125 | QOC24U (F/S) | PK15GTA |
| | 32 | 32 | QO132M125 | QOC32UF | PK18GTA |
| 150 | 20 | 30 | QO12030M150 | QOC30U (F/S) | PK18GTA |
| | 24 | 24 | QO124M150 | QOC30U (F/S) | PK15GTA |
| | 30 | 30 | QO130M150 | QOC30U (F/S) | PK18GTA |
| | 32 | 32 | QO132M150 | QOC40U (F/S) | PK18GTA |
| 200 | 20 | 40 | QO12040M200 | QOC30U (F/S) | PK23GTA |
| | 24 | 24 | QO124M200 | QOC30U (F/S) | PK15GTA |
| | 30 | 30 | QO130M200 | QOC30U (F/S) | PK18GTA |
| | 30 | 40 | QO13040M200 | QOC30U (F/S) | PK23GTA |
| | 40 | 40 | QO140M200 | QOC40U (F/S) | PK23GTA |
| | 42 | 42 | QO142M200 | QOC42U (F/S) | PK23GTA |
| 225 | 40 | 40 | QO140M225 | QOC42U (F/S) | PK23GTA |
| | 42 | 42 | QO142M225 | QOC42U (F/S) | PK23GTA |

QO® SINGLE PHASE LOAD CENTERS - OUTDOOR

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center Catalog Number | Ground Bar |
|---|---------------|---------------------|----------------------------|------------|
| Fixed Main Lugs | | | | |
| 40 | 2 | 2 | QO2L40RB | PK3GTA1 |
| 70 | 2 | 4 | QO24L70RB | PK4GTA |
| 100 | 6 | 12 | QO612L100RB | PK7GTA |
| | 6 | 12 | QO612L100TRB | Included |
| | 6 | 12 | QO612L100RBCU | PK7GTA |
| | 8 | 16 | QO816L100RB | |
| | 8 | 16 | QO816L100RBCU | |
| 125 | 4 | 8 | QO148L125GRB | Included |
| Convertible Main Lugs | | | | |
| 125 | 12 | 12 | QO112L125GRB | Included |
| | 12 | 24 | QO11224L125GRB | |
| | 16 | 24 | QO11624L125GRB | |
| | 24 | 24 | QO124L125GRB | |
| 150 | 30 | 30 | QO130L150GRB | |
| 200 | 12 | 12 | QO112L200GRB | |
| | 30 | 30 | QO130L200GRB | |
| | 30 | 40 | QO13040L200GRB | |
| | 40 | 40 | QO140L200GRB | |
| 225 | 42 | 42 | QO142L225GRB | |
| Main Breaker | | | | |
| 100 | 12 | 12 | QO112M100RB | PK9GTA |
| | 16 | 16 | QO116M100RB | PK12GTA |
| | 20 | 20 | QO120M100RB | PK15GTA |
| 125 | 24 | 24 | QO124M125RB | PK15GTA |
| 150 | 20 | 30 | QO12030M150RB | PK18GTA |
| | 30 | 30 | QO130M150RB | |
| 200 | 20 | 40 | QO12040M200RB | PK23GTA |
| | 30 | 30 | QO130M200RB | PK18GTA |
| | 40 | 40 | QO140M200RB | PK23GTA |
| 225 | 42 | 42 | QO142M225RB | PK23GTA |
| Feed Thru Lugs | | | | |
| 125 | 6 | 12 | QO1612M125FTRB | PK12GTA |
| 150 | 8 | 16 | QO1816M150FTRB | PK15GTAL |
| 200 | 8 | 16 | QO1816M200FTRB | |
| Non-Metallic Enclosure-Main Lugs | | | | |
| 60 | 2 | 4 | QO24L60NRNM | Included |

QO® THREE PHASE LOAD CENTERS - INDOOR

| Mains Rating | Branch Spaces | Load Center Catalog Number | Cover Cat. No. F=Flush S=Surface | Ground Bar |
|---|---------------|----------------------------|--|------------|
| Fixed Main Lugs, 65,000A Short Circuit Current Rating | | | | |
| 60 | 3 | QO403L60N (F/S) | Included | PK4GTA |
| 125 | 12 | QO312L125G | QOC16U (F/S) | Included |
| | 20 | QO320L125G | QOC24U (F/S) | |
| | 24 | QO324L125G | QOC24U (F/S) | |
| 200 | 18 | QO318L200G | QOC30U (F/S) | |
| | 30 | QO330L200G | QOC30U (F/S) | |
| 225 | 42 | QO342L225G | QOC42U (F/S) | |
| Convertible Main Breaker, QO3100VH 22,000A Short Current Rating | | | | |
| 100 | 27 | QO327M100 | QOC30U (F/S) | PK15GTA |
| Convertible Main Breaker, QD25,000A Short Circuit Current Rating | | | | |
| 125 | 30 | QO330MQ125 | QOC342MQ (F/S) | PK18GTA |
| 150 | 30 | QO330MQ150 | | PK18GTA |
| | 42 | QO342MQ150 | | PK23GTA |
| 200 | 30 | QO330MQ200 | | PK18GTA |
| | 42 | QO342MQ200 | | PK23GTA |
| 225 | 42 | QO342MQ225 | | PK23GTA |

QO® THREE PHASE LOAD CENTERS - OUTDOOR

| Mains Rating | Branch Spaces | Load Center Catalog Number | Ground Bar |
|---|---------------|----------------------------|------------|
| Fixed Main Lugs, 65,000A Short Circuit Current Rating | | | |
| 60 | 3 | QO403L60NRB | P4GTA |
| 125 | 12 | QO312L125GRB | Included |
| | 20 | QO320L125GRB | |
| 200 | 18 | QO318L200GRB | |
| | 30 | QO330L200GRB | |
| 225 | 42 | QO342L225GRB | |
| Convertible Main Breaker, QO3100VH 22,000A Short Current Rating | | | |
| 100 | 27 | QO327M100RB | PK15GTA |
| Convertible Main Breaker, QD, 25,000A Short Circuit Current Rating | | | |
| 125 | 30 | QO330MQ125RB | PK18GTA |
| 150 | 30 | QO330MQ150RB | |
| 200 | 30 | QO330MQ200RB | |
| | 42 | QO342MQ200RB | PK23GTA |
| 225 | 42 | QO342MQ225RB | |

QO BRANCH CIRCUIT BREAKERS 10,000 AIR

| Ampere Rating | One Pole | Two Pole Common Trip | Three Pole Common Trip |
|---------------|----------|----------------------|------------------------|
| 10 | QO110 | QO210 | QO310 |
| 15 | QO115 | QO215 | QO315 |
| 20 | QO120 | QO220 | QO320 |
| 25 | QO125 | QO225 | QO325 |
| 30 | QO130 | QO230 | QO330 |
| 35 | QO135 | QO235 | QO335 |
| 40 | QO140 | QO240 | QO340 |
| 45 | QO145 | QO245 | QO345 |
| 50 | QO150 | QO250 | QO350 |
| 60 | QO160 | QO260 | QO360 |
| 70 | QO170 | QO270 | QO370 |
| 80 | | QO280 | QO380 |
| 90 | | QO290 | QO390 |
| 100 | | QO2100 | QO3100 |
| 110 | | QO2110 | |
| 125 | | QO2125 | |
| 150 | | QO2150 * | |
| 175 | | QO2175 * | |
| 200 | | QO2200 * | |

* Requires four spaces. Use only in single phase panel rated 150A or greater.

QO® GROUND FAULT CIRCUIT INTERRUPTERS 10,000 AIR

| Ampere Rating | One Pole | Two Pole | Three Pole |
|---------------|----------|-----------|------------|
| 15 | QO115GFI | QO215GFI | |
| 20 | QO120GFI | QO220GFI | |
| 25 | QO125GFI | QO225GFI | |
| 30 | QO130GFI | QO230GFI | |
| 40 | | QO240GFI | |
| 50 | | QO250GFI | |
| 60 | | QO260GFI* | |

For bolt-on breakers, change QO to QOB

* Suitable only for feeding 240 Vac and 208 Vac loads. Does not contain load neutral connection.

QO ARC FAULT CIRCUIT INTERRUPTERS 10,000 AIR

| Ampere Rating | One Pole |
|---------------|------------|
| 15 | QO115AFI |
| 20 | QO120AFI |
| 15 | QO115CAFI* |
| 20 | QO120CAFI* |

* Combination Arc Fault Breakers.

QO TANDEM CIRCUIT BREAKERS

| Ampere Rating | QOT | Replacement for Non-Class CTL |
|---------------|----------|-------------------------------|
| | One Pole | One Pole |
| 15 & 15 | QOT1515 | QO1515 |
| 15 & 20 | QOT1520 | QO1520 |
| 20 & 20 | QOT2020 | QO2020 |

Accessories

Filler Plate
 Handle Tie
 Handle Tie for QOT
 Handle Lock-off
 Padlock Attachment - One Pole, Removable
 Padlock Attachment - One Pole, Fixed, On or Off
 Padlock Attachment - One Pole, Fixed, Off only
 Padlock Attachment - Two & Three Pole, Removable
 Padlock Attachment - Two Pole, Fixed, Off only
 Surgebreaker® Plug-on Secondary Surge Arrester

Cat. No.

QOFP
 QO1HT
 QOTHT
 HLO1
 QOHPL
 QO1PA
 QO1PAF
 QO1HPL
 QO2PAF
 QO2175SB

HOMELINE® SINGLE PHASE LOAD CENTERS - INDOOR

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center & Cover Catalog Number F = Flush, S = Surface | Ground Bar |
|------------------------------|---------------|---------------------|--|------------|
| Fixed Main Lugs | | | | |
| 70 | 2 | 4 | HOM24L70 (F/S) | PK3GTA1 |
| 100 | 6 | 12 | HOM612L100 (F/S) | PK7GTA |
| 125 | 4 | 8 | HOM48L125GC | Included |
| Convertible Main Lugs | | | | |
| 125 | 8 | 16 | HOM816L125C | PK15GTA |
| | 8 | 16 | HOM816L125TC | Included |
| | 12 | 12 | HOM12L125C | PK15GTA |
| | 12 | 24 | HOM1224L125TC | Included |
| | 16 | 24 | HOM1624L125C | PK15GTA |
| | 20 | 20 | HOM20L125C | |
| | 20 | 24 | HOM2024L125TC | Included |
| | 24 | 24 | HOM24L125TC | |
| 150 | 30 | 30 | HOM30L150C | PK23GTA |
| | 30 | 30 | HOM30L150TC | Included |
| 200 | 16 | 32 | HOM1632L200TC | Included |
| | 16 | 32 | HOM1632L200TCFT | |
| | 20 | 40 | HOM2040L200TC | |
| | 30 | 30 | HOM30L200C | PK23GTA |
| | 30 | 30 | HOM30L200TC | Included |
| | 30 | 40 | HOM3040L200TC | Included |
| | 40 | 40 | HOM40L200C | PK23GTA |
| | 40 | 40 | HOM40L200TC | Included |
| 225 | 42 | 42 | HOM42L225C | PK23GTA |

HOMELINE® SINGLE PHASE LOAD CENTERS - INDOOR

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center & Cover Catalog Number F = Flush, S = Surface | Ground Bar |
|---|---------------|---------------------|--|------------|
| Convertible Main Breaker | | | | |
| 100 | 8 | 16 | HOM816M100C | PK15GTA |
| | 8 | 16 | HOM816M100TC | Included |
| | 12 | 12 | HOM12M100C | PK15GTA |
| | 12 | 24 | HOM1224M100TC | Included |
| | 20 | 20 | HOM20M100C | PK15GTA |
| | 24 | 24 | HOM24M100C | |
| | 30 | 30 | HOM30M100C | PK23GTA |
| 125 | 12 | 24 | HOM1224M125C | PK15GTA |
| | 12 | 24 | HOM1224M125TC | Included |
| | 24 | 24 | HOM24M125C | PK15GTA |
| | 30 | 30 | HOM30M125C | PK23GTA |
| 150 | 16 | 32 | HOM1632M150TC | Included |
| | 20 | 30 | HOM2030M150TC | |
| | 30 | 30 | HOM30M150C | PK23GTA |
| 200 | 12 | 24 | HOM1224M200TC | Included |
| | 16 | 32 | HOM1632M200TC | |
| | 20 | 40 | HOM2040M200C | PK23GTA |
| | 20 | 40 | HOM2040M200TC | Included |
| | 30 | 30 | HOM30M200C | PK23GTA |
| | 30 | 40 | HOM3040M200TC | Included |
| | 40 | 40 | HOM40M200C | PK23GTA |
| 42 | 42 | HOM42M200C | | |
| 225 | 42 | 42 | HOM42M225C | |
| Universal Mains - No Main Circuit Breaker or Main Lugs | | | | |
| 200 | 16 | 32 | HOM1632U200TC | Included |
| | 20 | 40 | HOM2040U200TC | |
| | 30 | 40 | HOM3040U200TC | |

HOMELINE® SINGLE PHASE LOAD CENTERS - OUTDOOR

| Mains Rating | Branch Spaces | Max Branch Circuits | Load Center Catalog Number | Ground Bar |
|---------------------------------|---------------|---------------------|----------------------------|------------|
| Fixed Main Lugs | | | | |
| 70 | 2 | 4 | HOM24L70RB | PK4GTA |
| 100 | 6 | 12 | HOM612L100RB | PK7GTA |
| 125 | 4 | 8 | HOM48L125GRB | Included |
| Convertible Main Lugs | | | | |
| 125 | 8 | 16 | HOM816L125RB | PK15GTA |
| | 12 | 12 | HOM12L125RB | |
| | 12 | 24 | HOM1224L125RB | |
| | 20 | 20 | HOM20L125RB | |
| 200 | 12 | 12 | HOM12L200RB | PK23GTA |
| | 20 | 40 | HOM2040L200RB | |
| | 30 | 30 | HOM30L200RB | |
| | 40 | 40 | HOM40L200RB | |
| Convertible Main Breaker | | | | |
| 100 | 8 | 16 | HOM816M100RB | PK15GTA |
| | 12 | 12 | HOM12M100RB | PK15GTA |
| | 20 | 20 | HOM20M100RB | PK15GTA |
| | 20 | 20 | HOM24M100RB | |
| 125 | 24 | 24 | HOM24M125RB | |
| 150 | 30 | 30 | HOM30M150RB | |
| 200 | 20 | 40 | HOM2040M200RB | PK23GTA |
| | 30 | 30 | HOM30M200RB | |
| | 30 | 40 | HOM3040M200RB | |
| | 40 | 40 | HOM40M200RB | |
| 225 | 16 | 24 | HOM1624M225RB | PK15GTA |
| | 42 | 42 | HOM42M225RB | PK23GTA |
| Feed Thru Lugs | | | | |
| 150 | 8 | 16 | HOM816M150FTRB | PK15GTA-L |
| 200 | 8 | 16 | HOM816M200FTRB | |
| Universal Mains | | | | |
| 200 | 8 | 16 | HOM816U200FTRB | PK15GTA-L |

HOMELINE® BRANCH CIRCUIT BREAKERS 10,000 AIR

| Ampere Rating | One Pole | Two Pole Common Trip |
|---------------|----------|----------------------|
| 15 | HOM115 | HOM215 |
| 20 | HOM120 | HOM220 |
| 25 | HOM125 | HOM225 |
| 30 | HOM130 | HOM230 |
| 35 | | HOM235 |
| 40 | HOM140 | HOM240 |
| 45 | | HOM245 |
| 50 | HOM150 | HOM250 |
| 60 | | HOM260 |
| 70 | | HOM270 |
| 80 | | HOM280 |
| 90 | | HOM290 |
| 100 | | HOM2100 |
| 110 | | HOM2110 |
| 125 | | HOM2125 |
| 150 | | HOM2150BB* |
| 175 | | HOM2175BB* |
| 200 | | HOM2200BB* |

* Requires four spaces. Use only in panel rated 150A or greater.

HOMELINE GROUND FAULT CIRCUIT INTERRUPTERS 10,000 AIR

| Ampere Rating | One Pole | Two Pole |
|---------------|-----------|-----------|
| 15 | HOM115GFI | HOM215GFI |
| 20 | HOM120GFI | HOM220GFI |
| 30 | | HOM230GFI |
| 40 | | HOM240GFI |
| 50 | | HOM250GFI |

HOM ARC FAULT CIRCUIT INTERRUPTERS 10,000 AIR

| Ampere Rating | One Pole |
|---------------|-------------|
| 15 | HOM115AFI |
| 20 | HOM120AFI |
| 15 | HOM115CAFI* |
| 20 | HOM120CAFI* |

* Combination Arc Fault Breakers.

HOMELINE® TANDEM CIRCUIT BREAKERS

| Ampere Rating | One Pole |
|---------------|----------|
| 15 & 15 | HOMT1515 |
| 15 & 20 | HOMT1520 |
| 20 & 20 | HOMT2020 |
| 30 & 15 | HOMT3015 |
| 30 & 20 | HOMT3020 |

HOMELINE QUAD TANDEM CIRCUIT BREAKERS

| Ampere Rating | | Catalog Number |
|---------------|----------|----------------|
| One Pole | Two Pole | |
| (2) 15 | 15 | HOMT1515215 |
| (2) 15 | 20 | HOMT1515220 |
| (2) 15 | 25 | HOMT1515225 |
| (2) 15 | 30 | HOMT1515230 |
| (2) 15 | 40 | HOMT1515240 |
| (2) 15 | 50 | HOMT1515250 |
| (2) 20 | 20 | HOMT2020220 |
| (2) 20 | 25 | HOMT2020225 |
| (2) 20 | 30 | HOMT2020230 |
| (2) 20 | 40 | HOMT2020240 |
| (2) 20 | 50 | HOMT2020250 |

Accessories

Filler Plate
 Handle Tie
 Handle Tie for HOMT
 Padlock Attachment One-Pole
 Padlock Attachment Two-Pole (70A and lower)
 Padlock Attachment Two-Pole (80A and higher)
 Padlock Attachment-Quad
 Surgebreaker® Plug-on Secondary Surge Arrester

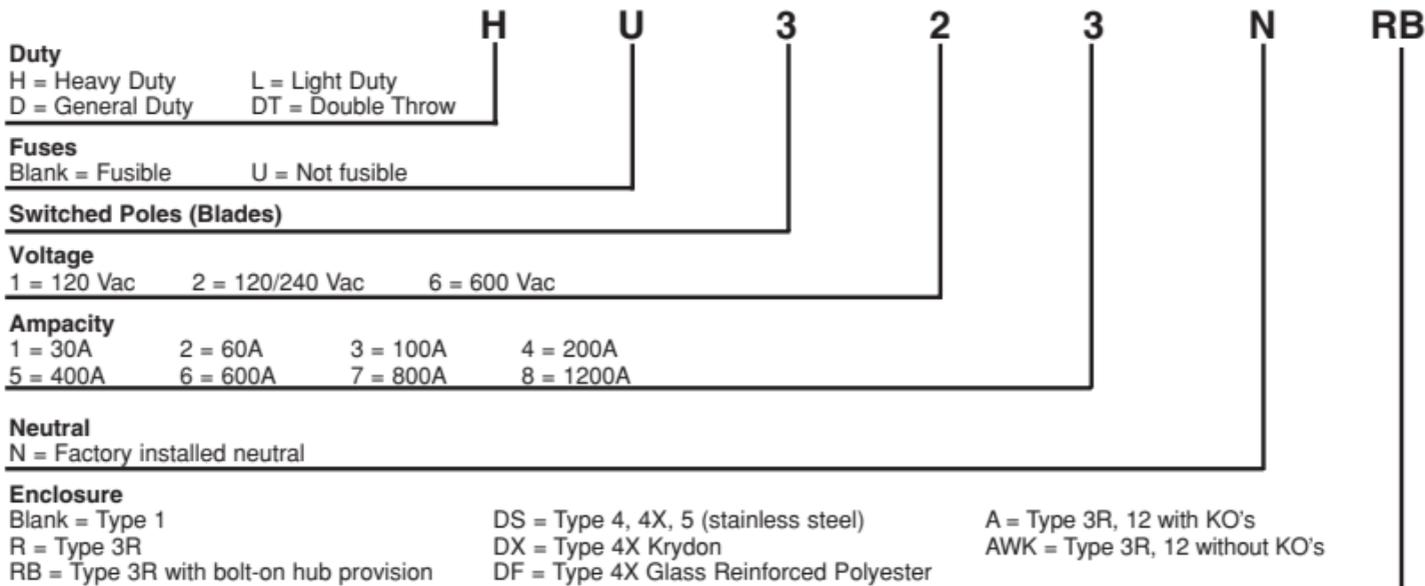
Cat. No.

HOMFP
 HOM1HT
 HOMTHT
 HOM1PA
 HOM2PALA
 HOM2PAHA
 HOMQPA
 HOM2175SB

How to select a safety switch

1. Select duty
2. Select fused or not fused
3. Select voltage
4. Select ampacity
5. Select enclosure
6. Select accessories/options

CATALOG NUMBER DESCRIPTION – See Digest for available products



AIR CONDITIONING DISCONNECTS

| Type 3R Outdoor, 240Vac 2 Wire with ground | | | |
|--|--------------------|---------------------|-----------------|
| Amps | Molded Case Switch | Not Fusible Pullout | Fusible Pullout |
| Metal Enclosure | | | |
| 30 | use 60A | use 60A | FP221R |
| 60 | QO200TR | UFP222R | FP222R |
| | | UFP222RGI* | |
| | | UFP222RD** | |
| Non-Metallic Enclosure | | | |
| 30 | use 60A | use 60A | FP221RNM |
| 60 | QO200TRNM | UFP222RNM | FP222RNM |

*Contains a 20A GFI receptacle

**Contains a 20A duplex receptacle

LIGHT DUTY SWITCH - FUSIBLE

| Type 1 Indoor | | | |
|---------------|-----------|-----------------------------------|--|
| Amps | Fuse | 120Vac 2 Wire 1 Blade, 1S/N | 120/240Vac 3 Wire 2 Blades, 1S/N |
| 30 | Plug | L111N | L211N |
| 30 | Cartridge | | L221N |

GENERAL DUTY SAFETY SWITCHES

| Amps | Type 1 | | Type 3R | |
|---|---------------------------|---------------------------|---------------------------|---------------------------|
| | 3 Wire 2 Blades, 1 S/N | 4 Wire 3 Blades, 1 S/N | 3 Wire 2 Blades, 1 S/N | 4 Wire 3 Blades, 1 S/N |
| Fusible, 240V Max., Single throw | | | | |
| 30 | D221N | D321N | D221NRB | D321NRB |
| 60 | D222N | D322N | D222NRB | D322NRB |
| 100 | D223N | D323N | D223NRB | D323NRB |
| 200 | D224N | D324N | D224NRB | D324NRB |
| Not-Fusible, 240V Max., Single throw | | | | |
| Amps | | 3 Wire 3 Blades | | 3 Wire 3 Blades |
| 30 | | DU321 | | DU321RB |
| 60 | | DU322 | | DU322RB |
| 100 | | DU323 | | DU323RB |
| 200 | | DU324 | | DU324RB |

HEAVY DUTY SAFETY SWITCHES

| Amps | Type 1 | | Type 3R | |
|---|-----------------|-----------------|-----------------|-----------------|
| | 3 Wire | 4 Wire | 3 Wire | 4 Wire |
| | 2 Blades, 1 S/N | 3 Blades, 1 S/N | 2 Blades, 1 S/N | 3 Blades, 1 S/N |
| Fusible, 240V Max., Single throw | | | | |
| 30 | H221N | H321N | H221NRB | H321NRB |
| 60 | H222N | H322N | H222NRB | H322NRB |
| 100 | H223N | H323N | H223NRB | H323NRB |
| 200 | H224N | H324N | H224NRB | H324NRB |
| Fusible, 600V Max., Single throw | | | | |
| Amps | 3 Wire | 4 Wire | 3 Wire | 4 Wire |
| | 3 Blades | 3 Blades, 1 S/N | 3 Blades | 3 Blades, 1 S/N |
| 30 | H361 | H361N | H361RB | H361NRB |
| 60 | H362 | H362N | H362RB | H362NRB |
| 100 | H363 | H363N | H363RB | H363NRB |
| 200 | H364 | H364N | H364RB | H364NRB |
| Not-Fusible, 600V Max., Single throw | | | | |
| Amps | 3 Wire | 4 Wire | 3 Wire | |
| | 3 Blades | 4 Blades | 3 Blades | |
| 30 | HU361 | HU461 | HU361RB | |
| 60 | HU362 | HU462 | HU362RB | |
| 100 | HU363 | HU463 | HU363RB | |
| 200 | HU364 | HU464 | HU364RB | |

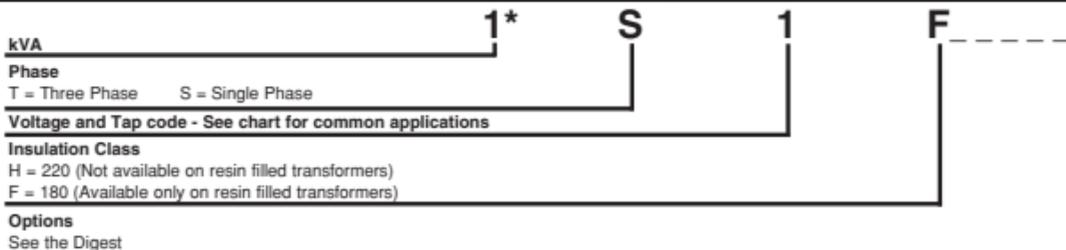
RAINPROOF BOLT-ON HUBS

| Conduit Size | Cat. No. | Conduit Size | Cat. No. |
|--------------|----------|--------------|----------|
| 3/4 | B075 | 2 1/2 | B250 |
| 1 | B100 | 3 | B300 |
| 1 1/4 | B125 | 3 1/2 | B350 |
| 1 1/2 | B150 | 4 | B400 |
| 2 | B200 | Closing Cap | BCAP |

How to select a low voltage transformer

1. Select voltage and system: single phase or three phase
2. Select type (Energy Efficient, General Purpose, Drive Isolation, K-Rated, etc.)
3. Select load kVA
4. Select primary and secondary voltage
5. Select taps required
6. Select temperature rise rating
7. Select enclosure type
8. Select mounting method
9. Select accessories/options

CATALOG NUMBER DESCRIPTION – See Digest for available products



| COMMON SINGLE PHASE VOLTAGE/TAP CODES | | | |
|---------------------------------------|-----------|---------------|------|
| Primary | Secondary | Taps | Code |
| 208 Delta | 208Y/120 | 3 - 5% 1+2- | 211 |
| 208 Delta | 480Y/277 | 3 - 5% 1+2- | 212 |
| 480 Delta | 208Y/120 | 2 - 5% FCBN | 2 |
| 480 Delta | 208Y/120 | 6 - 2.5% 2+4- | 3 |
| 480 Delta | 208Y/120 | 4 - 2.5% 2+2- | 68 |
| 480 | 240 Delta | 2 - 5% FCBN | 151 |
| 480 Delta | 240 Delta | 6 - 2.5% 2+4- | 6 |
| 480 Delta | 240 Delta | 4 - 2.5% 2+2- | 63 |
| 480 Delta | 480Y/277 | 6 - 2.5% 2+4- | 1814 |
| 480 Delta | 480Y/277 | 4 - 2.5% 2+2- | 76 |
| 240 Delta | 208Y/120 | 6 - 2.5% 2+4- | 67 |
| 600 Delta | 208Y/120 | 6 - 2.5% 2+4- | 65 |
| 600 Delta | 208Y/120 | 4 - 2.5% 2+2- | 79 |

| COMMON THREE PHASE VOLTAGE/TAP CODES | | | |
|--------------------------------------|-----------|---------------|------|
| Primary | Secondary | Taps | Code |
| 120x240 | 120/240 | none | 6 |
| 208 | 120/240 | none | 7 |
| 208 | 120/240 | 2 - 5% FCBN | 60 |
| 240x480 | 120/240 | none | 1 |
| 240x480 | 120/240 | 6 - 2.5% 2+4- | 3 |
| 277 | 120/240 | none | 8 |
| 277 | 120/240 | 2 - 5% FCBN | 61 |
| 480 | 120/240 | 2 - 5% FCBN | 40 |
| 600 | 120/240 | none | 51 |
| 600 | 120/240 | 2 - 5% FCBN | 4 |
| 600 | 120/240 | 6 - 2.5% 2+4- | 3534 |

Other Voltages and taps are available through the product selector.
EE meets TP1 efficiency levels. The remaining numbers are for general purpose.

* For 2005 Energy Act compliance, add EE prefix

DRY TYPE TRANSFORMERS

| kVA | Single Phase | | Three Phase |
|-------|--------------|-----------|-------------------|
| | Primary | Secondary | Primary 480 Delta |
| | 240x480V | 120/240V | Sec 208Y/120 |
| 3 | 3S1F | | 3T2F |
| 5 | 5S1F | | |
| 6 | | | 6T2F |
| 7.5 | 7S1F | | |
| 9 | | | 9T2F |
| 10 | 10S1F | | |
| 15 | EE15S3H | | EE15T3H |
| 25 | EE25S3H | | |
| 30 | | | EE30T3H |
| 37.5 | EE37S3H | | |
| 45 | | | EE45T3H |
| 50 | EE50S3H | | |
| 75 | EE75S3H | | EE75T3H |
| 100 | EE100S3H | | |
| 112.5 | | | EE112T3H |
| 150 | | | EE150T3H |

BUCK & BOOST TRANSFORMERS

| kVA | 120x240V Primary 12/24 V Secondary | 120x240V Primary 16/32 V Secondary | 240x480V Primary 24/48 V Secondary |
|------|---|---|---|
| .050 | 50SV43A | 50SV46A | 50SV82A |
| .100 | 100SV43A | 100SV46A | 100SV82A |
| .150 | 150SV43A | 150SV46A | 150SV82A |
| .250 | 250SV43B | 250SV46B | 250SV82B |
| .500 | 500SV43B | 500SV46B | 500SV82B |
| .750 | 750SV43F | 750SV46F | 750SV82F |
| 1.0 | 1S43F | 1S46F | 1S82F |
| 1.5 | 1.5S43F | 1.5S46F | 1.5S82F |
| 2.0 | 2S43F | 2S46F | 2S82F |
| 3.0 | 3S43F | 3S46F | 3S82F |

Try our new on-line Buck and Boost Calculator, quickly providing buck boost transformer selection and wiring connection diagram! visit www.us.squared.com/buckboost

BUCK AND BOOST APPLICATION
208 Volts to 230 Volts or 208 Volts to 240 Volts

| Single Phase | | | |
|------------------------|----------|------------------------|----------|
| 208 - 230 or 230 - 208 | | 208 - 240 or 240 - 208 | |
| Catalog No. | Load kVA | Catalog No. | Load kVA |
| 50SV43A | 0.5 | 50SV46A | 0.37 |
| 100SV43A | 1.0 | 100SV46A | 0.75 |
| 150SV43A | 1.5 | 150SV46A | 1.12 |
| 250SV43B | 2.5 | 250SV46B | 1.88 |
| 500SV43B | 5.0 | 500SV46B | 3.75 |
| 750SV43F | 7.5 | 750SV46F | 5.62 |
| 1S43F | 10 | 1S46F | 7.5 |
| 1.5S43F | 15 | 1.5S46F | 11.25 |
| 2S43F | 20 | 2S46F | 15 |
| 3S43F | 30 | 3S46F | 22.5 |

Wiring Diagram 4

| Three Phase (2 Transformers Rqd.) (3-wire power loads only) | | | |
|--|----------|------------------------|----------|
| 208 - 230 or 230 - 208 | | 208 - 240 or 240 - 208 | |
| Catalog No. | Load kVA | Catalog No. | Load kVA |
| 50SV43A | 0.86 | 50SV46A | 0.64 |
| 100SV43A | 1.72 | 100SV46A | 1.29 |
| 150SV43A | 2.58 | 150SV46A | 1.94 |
| 250SV43B | 4.30 | 250SV46B | 3.23 |
| 500SV43B | 8.60 | 500SV46B | 6.45 |
| 750SV43F | 12.9 | 750SV46F | 9.70 |
| 1S43F | 17.2 | 1S46F | 12.9 |
| 1.5S43F | 25.8 | 1.5S46F | 19.4 |
| 2S43F | 34.3 | 2S46F | 25.8 |
| 3S43F | 51.6 | 3S46F | 38.8 |

Wiring Diagram 6

For wiring diagrams and other voltage combinations refer to publication 7414HO9401 or Buck&Boost Slide Chart 7414SP9901.

Try our new on-line Buck and Boost Calculator, quickly providing buck boost transformer selection and wiring connection diagram!
Visit www.us.squared.com/buckboost

How to select wireway

1. Select type required
2. Select size required
3. Select length required
4. Select fittings required
NEMA 1 only - connectors not supplied, order separately

CATALOG NUMBER DESCRIPTION – See Digest for available products

| | | | | | |
|--|--------------------|----------|--|----------|-----------|
| | LDB | 4 | | | |
| | LJB | 6 | | 5 | CP |
| Type | | | | | |
| LDB = NEMA 1 | | | | | |
| LJB = NEMA 12 Oiltight | | | | | |
| LDRB = Raintight Wireway | | | | | |
| RDB = Raintight Trough | | | | | |
| Size | | | | | |
| 2 = 2.5 x 2.5 6 = 6 x 6 12 = 12 x 12 | | | | | |
| 4 = 4 x 4 8 = 8 x 8 | | | | | |
| Length | | | | | |
| 1, 2, 3, 4, 5, or 10' | | | | | |
| Fittings | | | | | |
| H = Hanger | C = Connector | | | | |
| T = Tee | CP = Closing Plate | | | | |
| 45L = Elbow, 45 | A = Adapter | | | | |
| 90L = Elbow, 90 | R = Reducer | | | | |

**WIDELY USED DEVICES
WIREWAY - NEMA 1**

| Straight Length | 2.5 x 2.5 | 4 x 4 | 6 x 6 | 8 x 8 |
|------------------------|------------------|--------------|--------------|--------------|
| 1 | LDB21 | LDB41 | LDB61 | LDB81 |
| 2 | LDB22 | LDB42 | LDB62 | LDB82 |
| 3 | LDB23 | LDB43 | LDB63 | LDB83 |
| 4 | LDB24 | LDB44 | LDB64 | LDB84 |
| 5 | LDB25 | LDB45 | LDB65 | LDB85 |
| 10 | LDB210 | LDB410 | LDB610 | LDB810 |
| Hanger | LDB2H | LDB4H | LDB6H | LDB88H |
| Tee | LDB2T | LDB4T | LDB6T | LDB88T |
| Elbow 45 | LDB245L | LDB445L | LDB645L | LDB845L |
| Elbow 90 | LDB290L | LDB490L | LDB690L | LDB88L |
| Connector | LDB2C | LDB4C | LDB6C | LDB88C |
| Closing Plate | LDB2CP | LDB4CP | LDB6CP | LDB88E |
| Adaptor | LDB22A | LDB44A | LDB66A | LDB88A |
| Reducer | | LDB42R | LDB64R | LDB86R |

WIREWAY - NEMA 3R TROUGH

| Straight Length | | 4 x 4 | 6 x 6 | 8 x 8 |
|------------------------|--|--------------|--------------|--------------|
| 3 | | RDB43 | RDB63 | RDB83 |
| 5 | | RDB45 | RDB65 | RDB85 |

How to select a panelboard

1. Select voltage, short circuit current rating, and system:
single or three phase
2. Select mains ampacity
3. Select main lugs or main breaker
4. Select number of pole spaces
5. Select copper or aluminum bus
6. Select interior catalog number
7. Select enclosure, select box and trim catalog numbers
8. Select accessories/options

CATALOG NUMBER DESCRIPTION – See Digest for available products

| | NQOD | 4 | 42 | L | 225 | CU | TF |
|---|------|---|----|---|-----|----|----|
| Voltage NQOD = 240V NF = 480Y/277V | | | | | | | |
| Phase/wire No digit = Single phase, 3-wire 4 = Three phase, 4-wire | | | | | | | |
| Pole spaces | | | | | | | |
| Mains L = Main lugs M = Main breaker | | | | | | | |
| Amps NF: 1 = 100/125 2 = 250 4 = 400 6 = 600 | | | | | | | |
| C or CU = Copper bussing 600A Copper only | | | | | | | |
| TF or TFL = Feed-thru lugs | | | | | | | |

NQOD LIGHTING PANELBOARDS - 240V. MAX.

| Mains Rating | Max. No. of Poles | Main Lugs | | | |
|--------------|-------------------|---------------------------------------|-----------|---|-------------------------------------|
| | | Interior Three Phase 4 Wire | Enclosure | | |
| | | | Type 1 | | Type 3R/12 |
| | | | Box | MONO FLAT Front F=Flush S=Surface | Enclosure & Interior Trim Kit |
| 100 | 24 | NQOD424L100* | MH23 | MHC23() | MH23WP |
| 225 | 30 | NQOD430L225* | MH32 | MHC32() | MH32WP |
| | 42 | NQOD442L225* | MH35 | MHC35() | MH35WP |
| | 42 | NQOD442L225TFL | MH41 | MHC41() | MH41WP |
| | 42 | NQOD442L225CUTF | MH41 | MHC41() | MH41WP |
| | 54 | NQOD454L225* | MH41 | MHC41() | MH41WP |
| 400 | 30 | NQOD430L400* | MH50 | MHC50V() | MH50WP** |
| | 42 | NQOD442L400* | MH53 | MHC53V() | MH53WP** |
| | 54 | NQOD454L400* | MH59 | MHC59V() | MH59WP** |
| 600 | 30 | NQOD430L600 *** | MH53 | MHC53V() | MH656WP |
| | 42 | NQOD442L600 *** | MH56 | MHC56V() | MH686WP |
| | 42 | NQOD442L600TFL *** | MH62 | MHC62V() | MH746WP |
| | 54 | NQOD454L600 *** | MH62 | MHC62V() | MH746WP |

* Add CU for copper bus.

** WP Enclosure available only with copper bus.

()Add F/Flush or S/Surface suffix to front catalog number.

*** 600A interior available only with copper bus.

NQOD LIGHTING PANELBOARDS - 240V. MAX.

| Mains Rating | Max. No. of Poles | Main Breaker | | | | |
|--------------|--------------------------------------|--------------------|---|-------------------------------|-----------|------------|
| | | Interior | | Enclosure | | |
| | | Three Phase 4 Wire | Main Breaker Adapter Kit | Type 1 | | Type 3R/12 |
| Box | MONO FLAT Front F=Flush S=Surface | | | Enclosure & Interior Trim Kit | | |
| 100 | 24 | NQOD424M100* | Factory Installed Backfed QOB Main Breaker | MH26 | MHC26() | MH26WP |
| 225 | 30 | NQOD430L225* | NQODQB & desired 3 Pole QB/QD/QG/QJ circuit breaker | MH44 | MHC44() | MH44WP |
| | 42 | NQOD442L225* | | MH50 | MHC50() | MH50WP |
| | 42 | NQOD442L225TFL | | MH56 | MHC56() | MH56WP |
| | 42 | NQOD442L225CUTF | | MH56 | MHC56() | MH56WP |
| | 54 | NQOD454L225* | | MH56 | MHC56() | MH56WP |
| 400 | 30 | NQOD430L400* | NQOD4 & desired 3 Pole LAL/LHL circuit breaker | MH65 | MHC65V() | MH65WP** |
| | 42 | NQOD442L400* | | MH68 | MHC68V() | MH68WP** |
| | 42 | NQOD442L600TFL*** | | MH77 | MHC77V() | MH77WP |
| | 54 | NQOD454L400* | | MH74 | MHC74V() | MH74WP** |

* Add CU for copper bus.

** WP Enclosure available only with copper bus.

*** 600A interior available only with copper bus.

()Add F/Flush or S/Surface suffix to front catalog number.

NF LIGHTING PANELBOARDS - 277V. MAX. THREE PHASE 4 WIRE

| Mains Rating | Max. No. of Poles | Main Lugs | | | |
|-------------------|-------------------|-----------|--------------------|-----------------|---------------------------|
| | | Interior | Enclosure | | |
| | | | Three Phase 4 Wire | Type 1 | |
| | | Box | | MONO FLAT Front | |
| F=Flush S=Surface | | | | | |
| 125 | 18 | NF418L1* | MH26 | NC26() | MH26WP |
| 250 | 30 | NF430L2* | MH38 | NC38() | MH38WP |
| | 42 | NF442L2* | MH44 | NC44() | MH44WP |
| | 54 | NF454L2* | MH50 | NC50() | MH50WP |
| 400 | 30 | NF430L4* | MH50 | NC50V() | MH50WP |
| | 42 | NF442L4* | MH56 | NC56V() | MH56WP |
| | 54 | NF454L4* | MH62 | NC62V() | MH62WP |
| 600 | 30 | NF430L6C | MH50 | NC50V() | WP Factory Assembled Only |
| | 42 | NF442L6C | MH56 | NC56V() | |
| | 54 | NF454L6C | MH62 | NC62V() | |

* Add "C" for copper bus.

() Add F/Flush or S/Surface suffix to front catalog number.

Note: 800A available factory assembled only.

NF LIGHTING PANELBOARDS - 277V. MAX. THREE PHASE 4 WIRE

| Mains Rating | Max. No. of Poles | Main Breaker | | | | |
|--------------|-------------------|--------------------|--|----------------------|--------------------------|----------------------|
| | | Three Phase 4 Wire | | Enclosure | | |
| | | Interior | Main Breaker Adapter Kit | Type 1 | | Type 3R/12 |
| | | | | F=Flush S=Surface | MONO FLAT Front Trim Kit | Enclosure & Interior |
| 100 | 18 | NF418L1* | N100MFI or** N150MH | MH38 | NC38() | MH38WP |
| 125 | 18 | NF418M1* | Includes Backfed EDB Main Breaker | MH32 | NC32() | MH32WP |
| 250 | 30 | NF430L2* | N250MJ & 3 Pole circuit breaker JDL, JGL, JJL or JLL | MH50 | NC50() | MH50WP |
| | 42 | NF442L2* | | MH56 | NC56() | MH56WP |
| | 54 | NF454L2* | | MH62 | NC62() | MH62WP |
| 400 | 30 | NF430L4* | N400M & 3 Pole LAL or LHL Cir.Brkr. | MH62 | NC62V() | MH62WP |
| | 42 | NF442L4* | | MH68 | NC68V() | MH68WP |
| | 54 | NF454L4* | | MH74 | NC74V() | MH74WP |

* Add "C" for copper bus. () Add F/Flush or S/Surface suffix to front catalog number.

Note: 600A available factory assembled only.

** Use N100MFI for FIL main circuit breaker. Use N150MH for HDL, HGL, HJL or HLL (all 100A maximum in this interior).

EDB[†], EGB, EJB BRANCH CIRCUIT BREAKERS

| Ampere Rating | One Pole 277Vac | Two Pole 480/277Vac | Three Pole 480/277Vac |
|---------------|--------------------|------------------------|--------------------------|
| 15 | E(*)B14015 | E(*)B24015 | E(*)B34015 |
| 20 | E(*)B14020 | E(*)B24020 | E(*)B34020 |
| 25 | E(*)B14025 | E(*)B24025 | E(*)B34025 |
| 30 | E(*)B14030 | E(*)B24030 | E(*)B34030 |
| 35 | E(*)B14035 | E(*)B24035 | E(*)B34035 |
| 40 | E(*)B14040 | E(*)B24040 | E(*)B34040 |
| 45 | E(*)B14045 | E(*)B24045 | E(*)B34045 |
| 50 | E(*)B14050 | E(*)B24050 | E(*)B34050 |
| 60 | E(*)B14060 | E(*)B24060 | E(*)B34060 |
| 70 | E(*)B14070 | E(*)B24070 | E(*)B34070 |
| 80 | | E(*)B24080 | E(*)B34080 |
| 90 | | E(*)B24090 | E(*)B34090 |
| 100 | | E(*)B24100 | E(*)B34100 |
| 110 | | E(*)B24110 | E(*)B34110 |
| 125 | | E(*)B24125 | E(*)B34125 |

(*) Complete catalog number with letter for desired interrupting rating shown below.

[†]EDB breakers are most commonly stocked as an SPE product.

INTERRUPTING RATINGS (kA)

| | EDB | EGB | EJB |
|-----------|------------------|------------------|-------------------|
| 120V | 25 | 65 | 100 |
| 240V | 18 (1P only), 25 | 35 (1P only), 65 | 65 (1P only), 100 |
| 480Y/277V | 18 | 35 | 65 |

E-FRAME EPDs (EQUIPMENT PROTECTION DEVICES), 1-POLE, 277 VAC, THERMAL-MAGNETIC WITH 30mA GROUND-FAULT PROTECTION

| Ampere | EDB (18kA) | EGB (35kA) | EJB (65kA) |
|--------|-------------|-------------|-------------|
| 15 | EDB14015EPD | EGB14015EPD | EJB14015EPD |
| 20 | EDB14020EPD | EGB14020EPD | EJB14020EPD |
| 30 | EDB14030EPD | EGB14030EPD | EJB14030EPD |
| 40 | EDB14040EPD | EGB14040EPD | EJB14040EPD |
| 50 | EDB14050EPD | EGB14050EPD | EJB14050EPD |

How to select a meter pak

1. Check local utility requirements
2. Select meter pak device
3. Select service disconnect
4. Select accessories/options

CATALOG NUMBER DESCRIPTION – See Digest for available products

| | | | | | |
|---|-----------|----------|----------|----------|------------|
| | MP | H | 4 | 4 | 125 |
| Device MP = Meter Pak* | | | | | |
| SocketCover/Bypass Style Blank = Ring style, no bypass H = Ringless, horn bypass with 5th jaw L = Ringless, lever bypass R = Ringless, no bypass | | | | | |
| Mains Ampere Rating 2 = 200A 3 = 300A 4 = 400A 5 = 500A 6 = 600A 8 = 800A | | | | | |
| Number of sockets 2, 3, 4, 5, 6 | | | | | |
| Socket Amperage 125 200 225 | | | | | |

* Suitable only for use as service equipment.

METER PAK METER CENTERS

| Amps per Position | No. of Positions | Factory Installed Main Lug Ampacity | Main Bus Ampacity |
|-------------------|------------------|-------------------------------------|-------------------|
| 125 | 2 | 200 | 200 |
| | 3 | 300 | 300 |
| | 4 | 400 | 400 |
| | 5 | 400 Al | 500* |
| | | 500 Cu | |
| | 6 | 400 Al | 600* |
| 500 Cu | | | |
| 200 | 2 | 400 | 400 |
| | 3 | 400 | 400 |
| | 4 | 400 | 600 |
| | 5 | 600 Al, 750 Cu | 800* |
| | 6 | 600 Al, 750 Cu | 800* |
| 225 | 2 | 350 | 350 |
| | 3 | 400 | 400 |
| | 4 | 400 | 400 |

* Use of alternate lug kits required to obtain full rating of main bus ampacity (refer to Digest 174 page 2-6).

METER PAK METER CENTERS (cont.)

| Catalog Number | | | | Circuit Breaker Type | Hub Provision | Semi-Flush Flange Kit |
|----------------|-----------|-------------|--------------|----------------------|---------------|-----------------------|
| Ring Type | Ringless | | | | | |
| | No Bypass | Horn Bypass | Lever Bypass | | | |
| MP22125 | MPR22125 | MPH22125 | | QO, QO-VH, QOH | A/B300* | MPSF12 |
| MP33125 | MPR33125 | MPH33125 | | | A-L* | MPSF14 |
| MP44125 | MPR44125 | MPH44125 | | | | MPSF16 |
| MP55125 | MPR55125 | MPH55125 | | | | |
| MP66125 | MPR66125 | MPH66125 | | | | |
| MP42200 | MPR42200 | MPH42200 | | QOM2-MM, QOM2-MVH | (2) A-L* | MPSF23 |
| MP43200 | MPR43200 | MPH43200 | | | | MPSF24 |
| MP64200 | MPR64200 | MPH64200 | | | | MPSF26 |
| MP85200 | MPR85200 | MPH85200 | | | | |
| MP86200 | MPR86200 | MPH86200 | | | | |
| | | | MPL32225 | QB,QD,QG or QJ | (2) A-L* | N/A |
| | | | MPL53225 | | | |
| | | | MPL64225 | | | |

* Refer to Digest 174 page 2-3 for A and A/L type hubs. B300 is a complete catalog number.

FA 100A Thermal-Magnetic (240V) Molded Case Circuit Breaker

| Ampere Rating | AC Magnetic Trip Settings | | Standard Interrupting Level (10 kA AIR) | Terminal Wire Range |
|--|---------------------------|------|---|---|
| | Hold | Trip | Catalog Number * | |
| 1-Pole, 120 Vac (Not available in I-Line) | | | | |
| 15 | 275 | 600 | FAL12015 | AL50FA #14-#4 AWG Cu or #12-#4 AWG Al |
| 20 | 275 | 600 | FAL12020 | |
| 25 | 275 | 600 | FAL12025 | |
| 30 | 275 | 600 | FAL12030 | |
| 35 | 400 | 850 | FAL12035 | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL12040 | |
| 45 | 400 | 850 | FAL12045 | |
| 50 | 400 | 850 | FAL12050 | |
| 60 | 800 | 1450 | FAL12060 | |
| 70 | 800 | 1450 | FAL12070 | |
| 80 | 800 | 1450 | FAL12080 | |
| 90 | 900 | 1700 | FAL12090 | |
| 100 | 900 | 1700 | FAL12100 | |
| 2-Pole, 240 Vac Unit-mount with Lugs (See footnotes for I-Line) | | | | |
| 15 | 275 | 600 | FAL22015(**) | AL50FA #14-#4 AWG Cu or #12-#4 AWG Al |
| 20 | 275 | 600 | FAL22020(**) | |
| 25 | 275 | 600 | FAL22025(**) | |
| 30 | 275 | 600 | FAL22030(**) | |
| 35 | 400 | 850 | FAL22035(**) | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL22040(**) | |
| 45 | 400 | 850 | FAL22045(**) | |
| 50 | 400 | 850 | FAL22050(**) | |
| 60 | 800 | 1450 | FAL22060(**) | |
| 70 | 800 | 1450 | FAL22070(**) | |
| 80 | 800 | 1450 | FAL22080(**) | |
| 90 | 900 | 1700 | FAL22090(**) | |
| 100 | 900 | 1700 | FAL22100(**) | |
| 3-Pole, 240 Vac Unit-mount with Lugs (See footnotes for I-Line) | | | | |
| 15 | 275 | 600 | FAL32015(***) | AL50FA #14-#4 AWG Cu or #12-#4 AWG Al |
| 20 | 275 | 600 | FAL32020(***) | |
| 25 | 275 | 600 | FAL32025(***) | |
| 30 | 275 | 600 | FAL32030(***) | |
| 35 | 400 | 850 | FAL32035(***) | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL32040(***) | |
| 45 | 400 | 850 | FAL32045(***) | |
| 50 | 400 | 850 | FAL32050(***) | |
| 60 | 800 | 1450 | FAL32060(***) | |
| 70 | 800 | 1450 | FAL32070(***) | |
| 80 | 800 | 1450 | FAL32080(***) | |
| 90 | 900 | 1700 | FAL32090(***) | |
| 100 | 900 | 1700 | FAL32100(***) | |

* Catalog numbers with L in third position are unit mount (Lug/Lug). For I-Line®, replace the L in the third position with an A and add phasing option.

** For 2-Pole I-Line phasing: Replace (**) with AB or AC or BC.

*** For 3-Pole I-Line phasing: Replace (***) with none (ABC) or CBA.

Circuit breaker termination options
(Third character of catalog number)

F = No Lugs

L = Lugs both ends

M = Lugs "ON" end only

P = Lugs "OFF" end only

F-Frame—100 A, Thermal-magnetic (480 Vac) Molded Case Circuit Breaker

| Ampere Rating | AC Magnetic Trip Settings | | Standard Interrupting Level (18 kA AIR) | Terminal Wire Range |
|---------------------------------|---------------------------|------|---|---|
| | Hold | Trip | Catalog Number + | |
| 1-Pole, 277 Vac, 125 Vdc | | | | |
| 15 | 275 | 600 | FAL14015(*) | AL50FA |
| 20 | 275 | 600 | FAL14020(*) | #14-#4 AWG Cu |
| 25 | 275 | 600 | FAL14025(*) | or |
| 30 | 275 | 600 | FAL14030(*) | #12-#4 AWG Al |
| 35 | 400 | 850 | FAL14035 | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL14040 | |
| 45 | 400 | 850 | FAL14045 | |
| 50 | 400 | 850 | FAL14050 | |
| 60 | 800 | 1450 | FAL14060 | |
| 70 | 800 | 1450 | FAL14070 | |
| 80 | 800 | 1450 | FAL14080 | |
| 90 | 900 | 1700 | FAL14090 | |
| 100 | 900 | 1700 | FAL14100 | |
| 2-Pole, 480 Vac, 250 Vdc | | | | |
| 15 | 275 | 600 | FAL24015(**) | AL50FA |
| 20 | 275 | 600 | FAL24020(**) | #14-#4 AWG Cu |
| 25 | 275 | 600 | FAL24025(**) | or |
| 30 | 275 | 600 | FAL24030(**) | #12-#4 AWG Al |
| 35 | 400 | 850 | FAL24035(**) | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL24040(**) | |
| 45 | 400 | 850 | FAL24045(**) | |
| 50 | 400 | 850 | FAL24050(**) | |
| 60 | 800 | 1450 | FAL24060(**) | |
| 70 | 800 | 1450 | FAL24070(**) | |
| 80 | 800 | 1450 | FAL24080(**) | |
| 90 | 900 | 1700 | FAL24090(**) | |
| 100 | 900 | 1700 | FAL24100(**) | |
| 3-Pole, 480 Vac, 250 Vdc | | | | |
| 15 | 275 | 600 | FAL34015(***) | AL50FA |
| 20 | 275 | 600 | FAL34020(***) | #14-#4 AWG Cu |
| 25 | 275 | 600 | FAL34025(***) | or |
| 30 | 275 | 600 | FAL34030(***) | #12-#4 AWG Al |
| 35 | 400 | 850 | FAL34035(***) | AL100FA #14-#1/0 AWG Cu or #12-#1/0 AWG Al |
| 40 | 400 | 850 | FAL34040(***) | |
| 45 | 400 | 850 | FAL34045(***) | |
| 50 | 400 | 850 | FAL34050(***) | |
| 60 | 800 | 1450 | FAL34060(***) | |
| 70 | 800 | 1450 | FAL34070(***) | |
| 80 | 800 | 1450 | FAL34080(***) | |
| 90 | 900 | 1700 | FAL34090(***) | |
| 100 | 900 | 1700 | FAL34100(***) | |

+ Catalog numbers with L in third position are unit mount (Lug/Lug).
For I-Line®, replace the L in the third position with an A and add phasing option.

* For 1-Pole I-Line 15A through 30A, replace FAL with FY.

** For 2-Pole I-Line phasing: Replace (**) with AB or AC or BC.

*** For 3-Pole I-Line phasing: Replace (***) with ABC or CBA.

PowerPact Q-Frame Thermal-Magnetic Molded Case Circuit Breaker (240Vac)

| Current Rating @ 40° C | AC Magnetic Trip Setting | | Interrupting Level (AIR) | | | |
|--|--------------------------|------|--------------------------|----------------|----------------|----------------|
| | | | D | G | J | L |
| | Hold | Trip | Cat No. | Cat No. | Cat No. | Cat No. |
| 2-Pole, 240 Vac Unit-mount with Lugs (See footnotes for I-Line*) | | | | | | |
| 70 | 1000 | 1800 | QBL22070(**) | QDL22070(**) | QGL22070(**) | QJL22070(**) |
| 80 | 1000 | 1800 | QBL22080(**) | QDL22080(**) | QGL22080(**) | QJL22080(**) |
| 90 | 1000 | 1800 | QBL22090(**) | QDL22090(**) | QGL22090(**) | QJL22090(**) |
| 100 | 1200 | 2400 | QBL22100(**) | QDL22100(**) | QGL22100(**) | QJL22100(**) |
| 110 | 1200 | 2400 | QBL22110(**) | QDL22110(**) | QGL22110(**) | QJL22110(**) |
| 125 | 1200 | 2400 | QBL22125(**) | QDL22125(**) | QGL22125(**) | QJL22125(**) |
| 150 | 1200 | 2400 | QBL22150(**) | QDL22150(**) | QGL22150(**) | QJL22150(**) |
| 175 | 1200 | 2400 | QBL22175(**) | QDL22175(**) | QGL22175(**) | QJL22175(**) |
| 200 | 1200 | 2400 | QBL22200(**) | QDL22200(**) | QGL22200(**) | QJL22200(**) |
| 225 | 1200 | 2400 | QBL22225(**) | QDL22225(**) | QGL22225(**) | QJL22225(**) |
| 250 | 1200 | 2400 | QBL22250(****) | QDL22250(****) | QGL22250(****) | QJL22250(****) |
| 3-Pole, 240 Vac Unit-mount with Lugs (See footnotes for I-Line*) | | | | | | |
| 70 | 1000 | 1800 | QBL32070(***) | QDL32070(***) | QGL32070(***) | QJL32070(***) |
| 80 | 1000 | 1800 | QBL32080(***) | QDL32080(***) | QGL32080(***) | QJL32080(***) |
| 90 | 1000 | 1800 | QBL32090(***) | QDL32090(***) | QGL32090(***) | QJL32090(***) |
| 100 | 1200 | 2400 | QBL32100(***) | QDL32100(***) | QGL32100(***) | QJL32100(***) |
| 110 | 1200 | 2400 | QBL32110(***) | QDL32110(***) | QGL32110(***) | QJL32110(***) |
| 125 | 1200 | 2400 | QBL32125(***) | QDL32125(***) | QGL32125(***) | QJL32125(***) |
| 150 | 1200 | 2400 | QBL32150(***) | QDL32150(***) | QGL32150(***) | QJL32150(***) |
| 175 | 1200 | 2400 | QBL32175(***) | QDL32175(***) | QGL32175(***) | QJL32175(***) |
| 200 | 1200 | 2400 | QBL32200(***) | QDL32200(***) | QGL32200(***) | QJL32200(***) |
| 225 | 1200 | 2400 | QBL32225(***) | QDL32225(***) | QGL32225(***) | QJL32225(***) |
| 250 | 1200 | 2400 | QBL32250(****) | QDL32250(****) | QGL32250(****) | QJL32250(****) |

* Catalog numbers with L in third position are unit mount (Lug/Lug).

For I-Line®, replace the L in the third position with an A and add phasing option.

** 2-Pole I-Line phasing: 1 (AB); 2 (AC); 3 (BA); 4 (BC); 5 (CA); 6 (CB).

*** 3-Pole I-Line phasing option: none (ABC); 6 (CBA).

**** I-Line not available in 250A.

250A lugs are suitable for copper conductors only.

Lugs accept (1) #4 AWG–300 kcmil.

Replacement lugs not available for Powerpact Q-frame circuit breakers.

INTERRUPTING RATINGS (kA)

| | QB | QD | QG | QJ |
|-------|----|----|----|------|
| 240 V | 10 | 25 | 65 | 100+ |

+ 3-Pole QJ circuit breakers are rated at 208Y/120 Vac only.

PowerPact H-Frame (150 A) Thermal-magnetic Molded Case Circuit Breakers (600 Vac)

| Current Rating @ 40° C | AC Magnetic Trip Setting | | Interrupting Level (AIR) | | | |
|---------------------------|--------------------------|------|-------------------------------------|---------------|---------------|---------------|
| | | | D | G | J | L |
| | Hold | Trip | Cat No. | Cat No. | Cat No. | Cat No. |
| 2-Pole, 600 Vac 50/60 Hz | | | See footnotes for I-Line Cat. Nos.* | | | |
| 15 | 350 | 750 | HDL26015(**) | HGL26015(**) | HJL26015(**) | HLL26015(**) |
| 20 | 350 | 750 | HDL26020(**) | HGL26020(**) | HJL26020(**) | HLL26020(**) |
| 25 | 350 | 750 | HDL26025(**) | HGL26025(**) | HJL26025(**) | HLL26025(**) |
| 30 | 350 | 750 | HDL26030(**) | HGL26030(**) | HJL26030(**) | HLL26030(**) |
| 35 | 400 | 850 | HDL26035(**) | HGL26035(**) | HJL26035(**) | HLL26035(**) |
| 40 | 400 | 850 | HDL26040(**) | HGL26040(**) | HJL26040(**) | HLL26040(**) |
| 45 | 400 | 850 | HDL26045(**) | HGL26045(**) | HJL26045(**) | HLL26045(**) |
| 50 | 400 | 850 | HDL26050(**) | HGL26050(**) | HJL26050(**) | HLL26050(**) |
| 60 | 800 | 1450 | HDL26060(**) | HGL26060(**) | HJL26060(**) | HLL26060(**) |
| 70 | 800 | 1450 | HDL26070(**) | HGL26070(**) | HJL26070(**) | HLL26070(**) |
| 80 | 800 | 1450 | HDL26080(**) | HGL26080(**) | HJL26080(**) | HLL26080(**) |
| 90 | 800 | 1450 | HDL26090(**) | HGL26090(**) | HJL26090(**) | HLL26090(**) |
| 100 | 900 | 1700 | HDL26100(**) | HGL26100(**) | HJL26100(**) | HLL26100(**) |
| 110 | 900 | 1700 | HDL26110(**) | HGL26110(**) | HJL26110(**) | HLL26110(**) |
| 125 | 900 | 1700 | HDL26125(**) | HGL26125(**) | HJL26125(**) | HLL26125(**) |
| 150 | 900 | 1700 | HDL26150(**) | HGL26150(**) | HJL26150(**) | HLL26150(**) |
| 3-Pole, 600 Vac 50/60 Hz | | | See footnotes for I-Line Cat. Nos.* | | | |
| 15 | 350 | 750 | HDL36015(***) | HGL36015(***) | HJL36015(***) | HLL36015(***) |
| 20 | 350 | 750 | HDL36020(***) | HGL36020(***) | HJL36020(***) | HLL36020(***) |
| 25 | 350 | 750 | HDL36025(***) | HGL36025(***) | HJL36025(***) | HLL36025(***) |
| 30 | 350 | 750 | HDL36030(***) | HGL36030(***) | HJL36030(***) | HLL36030(***) |
| 35 | 400 | 850 | HDL36035(***) | HGL36035(***) | HJL36035(***) | HLL36035(***) |
| 40 | 400 | 850 | HDL36040(***) | HGL36040(***) | HJL36040(***) | HLL36040(***) |
| 45 | 400 | 850 | HDL36045(***) | HGL36045(***) | HJL36045(***) | HLL36045(***) |
| 50 | 400 | 850 | HDL36050(***) | HGL36050(***) | HJL36050(***) | HLL36050(***) |
| 60 | 800 | 1450 | HDL36060(***) | HGL36060(***) | HJL36060(***) | HLL36060(***) |
| 70 | 800 | 1450 | HDL36070(***) | HGL36070(***) | HJL36070(***) | HLL36070(***) |
| 80 | 800 | 1450 | HDL36080(***) | HGL36080(***) | HJL36080(***) | HLL36080(***) |
| 90 | 800 | 1450 | HDL36090(***) | HGL36090(***) | HJL36090(***) | HLL36090(***) |
| 100 | 900 | 1700 | HDL36100(***) | HGL36100(***) | HJL36100(***) | HLL36100(***) |
| 110 | 900 | 1700 | HDL36110(***) | HGL36110(***) | HJL36110(***) | HLL36110(***) |
| 125 | 900 | 1700 | HDL36125(***) | HGL36125(***) | HJL36125(***) | HLL36125(***) |
| 150 | 900 | 1700 | HDL36150(***) | HGL36150(***) | HJL36150(***) | HLL36150(***) |

* Catalog numbers with L in third position are unit mount (Lug/Lug).

For I-Line®, replace the L in the third position with an A and add phasing option.

** 2-Pole I-Line phasing: 1 (AB); 2 (AC); 3 (BA); 4 (BC); 5 (CA); 6 (CB).

*** 3-Pole I-Line phasing: None (ABC); 6 (CBA).

Terminal lugs: AL150HD #14-#3/0 AWG Cu or Al.

INTERRUPTING RATINGS (kA)

| | D | G | J | L |
|--------|----|----|-----|-----|
| 240V | 25 | 65 | 100 | 125 |
| 480VAC | 18 | 35 | 65 | 100 |
| 600VAC | 14 | 18 | 25 | 50 |
| 250Vdc | 20 | 20 | 20 | 20 |
| 500Vdc | 20 | 20 | 20 | 20 |

PowerPact J-Frame (250 A) Thermal-magnetic (600 Vac) Molded Case Circuit Breaker

| Current Rating @ 40° C | AC Magnetic Trip Setting | | Interrupting Level (AIR) | | | |
|---------------------------|--------------------------|------|-------------------------------------|---------------|---------------|---------------|
| | | | D | G | J | L |
| | Low | High | Cat No.* | Cat No.* | Cat No.* | Cat No.* |
| 2-Pole, 600 Vac 50/60 Hz | | | See footnotes for I-Line Cat. Nos.* | | | |
| 150 | 750 | 1500 | JDL26150(**) | JGL26150(**) | JJL26150(**) | JJL26150(**) |
| 175 | 875 | 1750 | JDL26175(**) | JGL26175(**) | JJL26175(**) | JJL26175(**) |
| 200 | 1000 | 2000 | JDL26200(**) | JGL26200(**) | JJL26200(**) | JJL26200(**) |
| 225 | 1125 | 2250 | JDL26225(**) | JGL26225(**) | JJL26225(**) | JJL26225(**) |
| 250 | 1250 | 2500 | JDL26250(**) | JGL26250(**) | JJL26250(**) | JJL26250(**) |
| 3-Pole, 600 Vac 50/60 Hz | | | See footnotes for I-Line Cat. Nos.* | | | |
| 150 | 750 | 1500 | JDL36150(***) | JGL36150(***) | JJL36150(***) | JJL36150(***) |
| 175 | 875 | 1750 | JDL36175(***) | JGL36175(***) | JJL36175(***) | JJL36175(***) |
| 200 | 1000 | 2000 | JDL36200(***) | JGL36200(***) | JJL36200(***) | JJL36200(***) |
| 225 | 1125 | 2250 | JDL36225(***) | JGL36225(***) | JJL36225(***) | JJL36225(***) |
| 250 | 1250 | 2500 | JDL36250(***) | JGL36250(***) | JJL36250(***) | JJL36250(***) |

Standard terminal lugs: AL175JD #3/0 - 350 kcmil Cu or Al.

* Catalog numbers with L in third position are unit mount (Lug/Lug).
For I-Line®, replace the L in the third position with an A and add phasing option.

** 2-Pole I-Line phasing: 1 (AB); 2 (AC); 3 (BA); 4 (BC); 5 (CA); 6 (CB).

*** 3-Pole I-Line phasing option: None (ABC); 6 (CBA).

Terminal lugs: AL150HD #14-#3/0 AWG Cu or Al.

INTERRUPTING RATINGS (kA)

| | D | G | J | L |
|--------|----|----|-----|-----|
| 240V | 25 | 65 | 100 | 125 |
| 480VAC | 18 | 35 | 65 | 100 |
| 600VAC | 14 | 18 | 25 | 50 |
| 250Vdc | 20 | 20 | 20 | 20 |
| 500Vdc | 20 | 20 | 20 | 20 |

H- and J-Frame termination options (third digit in catalog number).

F = No Lugs (includes terminal nut kit)

L = Lugs both ends

M = Lugs "ON" end Terminal Nut Kit "Off" end

P = Lugs "OFF" end Terminal Nut Kit "On" end

N = Plug-in

D = Drawout

S = Rear Connected

Accessories for PowerPact H- and J-Frame

| Factory-Installed Suffix | Description | Kit Catalog No. (s) (Field-Installable) |
|--------------------------|---|--|
| | Optional Connectors | |
| ... | H-Frame Lug #14-3/0 AWG AL or Cu | AL150HD |
| ... | J-Frame Lug #4-4/0 AWG AL or Cu | AL175JD |
| ... | J-Frame Lug #3/0-350 kcmil AL or Cu | AL250JD |
| ... | H-Frame Copper Lugs #14-2/0 AWG Cu | CU150HD |
| ... | J-Frame Copper Lugs #1-300 kcmil | CU250JD |
| ... | H-Frame Terminal Nut Insert Kit (qty 3) | S37444 |
| ... | J-Frame Terminal Nut Insert Kit (qty 3) | S37445 |
| | Optional Electrical Auxiliaries | |
| SK | 24Vac Shunt Trip | S29384 |
| SL | 48Vac Shunt Trip | S29385 |
| SA | 120Vac Shunt Trip | S29386 |
| SD | 208-277Vac Shunt Trip | S29387 |
| SH | 380-480Vac Shunt Trip | S29388 |
| SN | 12Vdc Shunt Trip | S29382 |
| SO | 24Vdc Shunt Trip | S29390 |
| SP | 48Vdc Shunt trip | S29392 |
| UA | 120Vac Undervoltage Release | S29406 |
| UO | 24Vdc Undervoltage Release | S29410 |
| AA | 1A/1B Aux Switch | S29450 |
| AB | 2A/2B Aux Switch | S29450 (2) |
| AA SA | 1A/1B Aux Switch + 120Vac Shunt Trip | S29450 + S29386 |
| AA SD | 1A/1B Aux Switch + 240Vac Shunt Trip | S29450 + S29387 |
| AA SO | 1A/1B Aux Switch + 24Vdc Shunt Trip | S29450 + S29390 |
| AA SA | 1A/1B Aux Switch + 120Vac Shunt Trip | S29450 + S29386 |
| AA SD | 1A/1B Aux Switch + 240Vac Shunt Trip | S29450 + S29387 |
| AA AB SA | 1A/1B Aux Switch + Alarm Switch + 120Vac Shunt Trip | S29450 (2) + S29386 |
| AA AB SD | 1A/1B Aux Switch + Alarm Switch + 240Vac Shunt Trip | S29450 (2) + S29387 |
| AB SO | 2A/2B Aux Switch + 24Vdc Shunt Trip | S29450 (2) + 29390 |
| AA UA | 1A/1B Aux Switch + 120Vac Undervoltage Release | S29450 + S29406 |
| AA UO | 1A/1B Aux Switch + 24Vdc Undervoltage Release | S29450 + S29410 |
| None | Grounded B-Phase Ratings Included in Standard Product | ... |
| SA LC | 120Vac Shunt Trip + Copper Lugs | S29386 + CU150HD or CU250JD |
| SD LC | 240Vac Shunt Trip + Copper Lugs | S29387 + CU150HD or CU250JD |
| SO LC | 24Vdc Shunt Trip + Copper Lugs | S29390 + CU150HD or CU250JD |

**PowerPact D-Frame (600 A) Thermal-magnetic
(600 Vac) Molded Case Circuit Breaker
with STR23SP Electronic Trip Unit**

| Current Rating @ 40° C | Interrupting Level (AIR) | | |
|--|--------------------------|-------------|-------------|
| | G | J | L |
| | Cat No.* | Cat No.* | Cat No.* |
| 3-Pole Cable Connection Unit-Mount | | | |
| 150** | DGL36150E20 | DJL36150E20 | – |
| 250** | DGL36250E20 | DJL36250E20 | – |
| 400** | DGL36400E20 | DJL36400E20 | DLL36400E20 |
| 600 | DGL36600E20 | DJL36600E20 | DLL36600E20 |
| 4-Pole - Adjustable Neutral Protection Setting: Off, 50%, 100% | | | |
| 150** | DGL46150E20 | DJL46150E20 | – |
| 250** | DGL46250E20 | DJL46250E20 | – |
| 400** | DGL46400E20 | DJL46400E20 | DLL46400E20 |
| 600 | DGL46600E20 | – | DLL46600E20 |
| 4-Pole Oversized Neutral Protection - Adjustable Neutral Protection | | | |
| 150 | – | – | – |
| 250 | DGL56250E20 | DJL56250E20 | DLL56250E20 |
| 400 | DGL56400E20 | DJL56400E20 | DLL56400E20 |
| 600 | – | DJL46600E20 | – |

* Catalog numbers with L in third position are unit mount (Lug/Lug).
For Bus Bar connection, replace the L with an F.

** 100% Rated.

INTERRUPTING RATINGS (kA)

| | G | J | L |
|--------|----|-----|-----|
| 240V | 65 | 100 | 125 |
| 480VAC | 35 | 65 | 100 |
| 600VAC | 18 | 25 | 50 |
| 250Vdc | 20 | 20 | 20 |
| 500Vdc | 20 | 20 | 20 |

How to select a NEMA style contactor or starter

- | | | | |
|---|-----------------------------------|---|---|
| 1. Select type of device: contactor or starter | 4. Select motor voltage | 7. Select control voltage (separate, common or control transformer) | 9. Select enclosure style |
| 2. Select number of poles | 5. Select horsepower | 8. Select overload type | 10. Select accessories (push buttons, pilot lights, auxiliary contacts, etc.) |
| 3. Select size | 6. Select motor full load amps | | |

CATALOG NUMBER DESCRIPTION – See Digest for available products

| | | | | | | | |
|--|-------------|----------|----------|----------|----------|------------|------------|
| Class | 8502 | S | B | G | 2 | VO2 | P1S |
| 8502 = NEMA style contactor 8536 = NEMA style starter | | | | | | | |
| Type | | | | | | | |
| NEMA Size | | | | | | | |
| 00 = A 0 = B 1 = C 2 = D 3 = E 4 = F 5 = G 6 = H 7 = J | | | | | | | |
| Enclosure | | | | | | | |
| O = Open type G = NEMA Type 1 W = NEMA Type 4 & 4x A = NEMA 12 Industrial Use | | | | | | | |
| Physical Arrangement | | | | | | | |
| Designates numbers of poles, fuse clip size, etc. Consult Digest for details. | | | | | | | |
| Coil Voltage | | | | | | | |
| VO1 = 24 VO2 = 120 VO3 = 240 VO6 = 480 VO7 = 600 VO8 = 208 V99 = Specify | | | | | | | |
| Forms (Factory Modifications) | | | | | | | |
| See Digest | | | | | | | |

LIGHTING CONTACTORS

Class 8903 Multipole Lighting Contactors

| Contact Ampere Ratings | No. of Poles | Open Type | NEMA Type 1 Enclosure | Voltage Code: | |
|------------------------------|-----------------|------------------|--------------------------|-------------------|------|
| | | | | Volts | Code |
| Electrically Held | | | | | |
| 30 | 2 | 8903LO20_ _ _ | 8903LG20_ _ _ | Add Voltage Code: | |
| | 3 | 8903LO30_ _ _ | 8903LG30_ _ _ | 24 | V01 |
| | 4 | 8903LO40_ _ _ | 8903LG40_ _ _ | 120 | V02 |
| | 6 | 8903LO60_ _ _ | 8903LG60_ _ _ | 208 | V08 |
| | 8 | 8903LO80_ _ _ | 8903LG80_ _ _ | 240 | V03 |
| | 10 | 8903LO1000_ _ _ | 8903LG1000_ _ _ | 277 | V04 |
| | 12 | 8903LO1200_ _ _ | 8903LG1200_ _ _ | 480 | V06 |
| Mechanically Held | | | | | |
| 30 | 2 | 8903LXO20_ _ _ | 8903LXG20_ _ _ | Add Voltage Code: | |
| | 3 | 8903LXO30_ _ _ | 8903LXG30_ _ _ | 24 | V01 |
| | 4 | 8903LXO40_ _ _ | 8903LXG40_ _ _ | 120 | V02 |
| | 6 | 8903LXO60_ _ _ | 8903LXG60_ _ _ | 208 | V08 |
| | 8 | 8903LXO80_ _ _ | 8903LXG80_ _ _ | 240 | V03 |
| | 10 | 8903LXO1000_ _ _ | 8903LXG1000_ _ _ | 277 | V04 |
| | 12 | 8903LXO1200_ _ _ | 8903LXG1200_ _ _ | 480 | V06 |

NEMA CONTACTORS AND STARTERS

For contactors select Class 8502, for starters Class 8536, followed by type:

| NEMA Size | Cont. Current Rating | Motor Volts | Max. H.P. | Coil Volt. | Open Type | NEMA Type 1 Enclosure |
|-----------|----------------------|-------------|-----------|------------|------------------------------|------------------------------|
| 0 | 18 | * | | 120 | ___SBO2V02S | ___SBG2V02S |
| | | 230 | 3 | 240 | ___SBO2V03 | ___SBG2V03 |
| 1 | 27 | * | | 120 | 8502SCO2V02S 8536SCO3V02S | 8502SCG2V02S 8536SCG3V02S |
| | | 200 | 7 1/2 | 208 | 8502SCO2V08 8536SCO3V08 | 8502SCG2V08 8536SCG3V08 |
| | | 230 | 7 1/2 | 240 | 8502SCO2V03 8536SCO3V03 | 8502SCG2V03 8536SCG3V03 |
| | | 460 | 10 | 480 | 8502SCO2V06 8536SCO3V06 | 8502SCG2V06 8536SCG3V06 |
| 2 | 45 | * | | 120 | 8502SDO2V02S 8536SDO1V02S | 8502SDG2V02S 8536SDG1V02S |
| | | 200 | 10 | 208 | 8502SDO2V08 8536SDO1V08 | 8502SDG2V08 8536SDG1V08 |
| | | 230 | 15 | 240 | 8502SDO2V03 8536SDO1V03 | 8502SDG2V03 8536SDG1V03 |
| | | 460 | 25 | 480 | 8502SDO2V06 8536SDO1V06 | 8502SDG2V06 8536SDG1V06 |
| 3 | 90 | * | | 120 | 8502SEO2V02S 8536SEO1V02S | 8502SEG2V02S 8536SEG1V02S |
| | | 200 | 25 | 208 | 8502SEO2V08 8536SEO1V08 | 8502SEG2V08 8536SEG1V08 |
| | | 230 | 30 | 240 | 8502SEO2V03 8536SEO1V03 | 8502SEG2V03 8536SEG1V03 |
| | | 460 | 50 | 480 | 8502SEO2V06 8536SEO1V06 | 8502SEG2V06 8536SEG1V06 |

* 120Volt Polyphase contactors are wired for separate control.

MOTOR LOGIC™ SOLID STATE OVERLOAD RELAY

| CLASS 9065 | | | | | | | |
|--|-------------------------|----------------|--------------|----------------|--------------|------------------|--------------|
| Size | Full Load Current, Amps | Base Unit | | | | Feature Unit | |
| | | Trip Class 10 | | Trip Class 20 | | Trip Class 10/20 | |
| | | Separate Mount | Direct Mount | Separate Mount | Direct Mount | Separate Mount | Direct Mount |
| 0 | 6-18 | SS010 | | SS020 | | SF020 | |
| 1 | 9-27 | SS110 | | SS120 | | SF120 | |
| 2 | 15-45 | SS210 | SR210 | SS220 | SR220 | SF220 | ST220 |
| 3 | 30-90 | SS310 | SR310 | SS320 | SR320 | SF320 | ST320 |
| Add the following form to the starter catalog number to substitute for melting alloy overload relay. | | | | | | | |
| Form | | H10 | | H20 | | H30 | |

**AC MAGNETIC STARTER THERMAL UNITS
SIZE 00-1 STANDARD TRIP**

| Class | Type | Series | Size |
|-------|------|--------|------|
| 8536 | SA | A, B | 00 |
| | SB | A | 0 |
| | SC | A | 1 |

| Motor Full-Load Current (Amp) | | | Thermal Unit Number |
|-------------------------------|-----------|-----------|---------------------|
| 1 T.U. | 2 T.U. | 3 T.U. | |
| 0.29-0.31 | 0.29-0.31 | 0.28-0.30 | B 0.44 |
| 0.32-0.34 | 0.32-0.34 | 0.31-0.34 | B 0.51 |
| 0.35-0.38 | 0.35-0.38 | 0.35-0.37 | B 0.57 |
| 0.39-0.45 | 0.39-0.45 | 0.38-0.44 | B 0.63 |
| 0.46-0.54 | 0.46-0.54 | 0.45-0.53 | B 0.71 |
| 0.55-0.61 | 0.55-0.61 | 0.54-0.59 | B 0.81 |
| 0.62-0.66 | 0.62-0.66 | 0.60-0.64 | B 0.92 |
| 0.67-0.73 | 0.67-0.73 | 0.65-0.72 | B 1.03 |
| 0.74-0.81 | 0.74-0.81 | 0.73-0.80 | B 1.16 |
| 0.82-0.94 | 0.82-0.94 | 0.81-0.90 | B 1.30 |
| 0.95-1.05 | 0.95-1.05 | 0.91-1.03 | B 1.45 |
| 1.06-1.22 | 1.06-1.22 | 1.04-1.14 | B 1.67 |
| 1.23-1.34 | 1.23-1.34 | 1.15-1.27 | B 1.88 |
| 1.35-1.51 | 1.35-1.51 | 1.28-1.43 | B 2.10 |
| 1.52-1.71 | 1.52-1.71 | 1.44-1.62 | B 2.40 |
| 1.72-1.93 | 1.72-1.93 | 1.63-1.77 | B 2.65 |
| 1.94-2.14 | 1.94-2.14 | 1.78-1.97 | B 3.00 |
| 2.15-2.40 | 2.15-2.40 | 1.98-2.32 | B 3.30 |
| 2.41-2.72 | 2.41-2.72 | 2.33-2.51 | B 3.70 |
| 2.73-3.15 | 2.73-3.15 | 2.52-2.99 | B 4.15 |
| 3.16-3.55 | 3.16-3.55 | 3.00-3.42 | B 4.85 |
| 3.56-4.00 | 3.56-4.00 | 3.43-3.75 | B 5.50 |
| 4.01-4.40 | 4.01-4.40 | 3.76-3.98 | B 6.25 |
| 4.41-4.88 | 4.41-4.88 | 3.99-4.48 | B 6.90 |
| 4.89-5.19 | 4.89-5.19 | 4.49-4.93 | B 7.70 |

**AC MAGNETIC STARTER THERMAL UNITS
SIZE 00-1 STANDARD TRIP (CONTINUED)**

| Motor Full-Load Current (Amp) | | | Thermal Unit Number |
|--------------------------------------|-----------|-----------|---------------------------|
| 1 T.U. | 2 T.U. | 3 T.U. | |
| 5.20-5.73 | 5.20-5.73 | 4.94-5.21 | B 8.20 |
| 5.74-6.39 | 5.74-6.39 | 5.22-5.84 | B 9.10 |
| 6.40-7.13 | 6.40-7.13 | 5.85-6.67 | B 10.2 |
| 7.14-7.90 | 7.14-7.90 | 6.68-7.54 | B 11.5 |
| 7.91-8.55 | 7.91-8.55 | 7.55-8.14 | B 12.8 |
| 8.56-9.53 | 8.56-9.53 | 8.15-8.72 | B 14.0 |
| 9.54-10.6 | 9.54-10.6 | 8.73-9.66 | B 15.5 |
| 10.7-11.8 | 10.7-11.8 | 9.67-10.5 | B 17.5 |
| 11.9-13.2 | 11.9-12.0 | 10.6-11.3 | B 19.5 |
| 13.3-14.9 | — | 11.4-12.0 | B 22.0 |
| 15.0-16.6 | — | — | B 25.0 |
| 16.7-18.0 | — | — | B 28.0 |
| Following Selections for Size 1 Only | | | |
| — | 11.9-13.2 | — | B 19.5 |
| — | 13.3-14.9 | 11.4-12.7 | B 22.0 |
| — | 15.0-16.6 | 12.8-14.1 | B 25.0 |
| 16.7-18.9 | 16.7-18.9 | 14.2-15.9 | B 28.0 |
| 19.0-21.2 | 19.0-21.2 | 16.0-17.5 | B 32.0 |
| 21.3-23.0 | 21.3-23.0 | 17.6-19.7 | B 36.0 |
| 23.1-25.5 | 23.1-25.5 | 19.8-21.9 | B 40.0 |
| 25.6-26.0 | 25.6-26.0 | 22.0-24.4 | B 45.0 |
| — | — | 24.5-26.0 | B 50.0 |

**AC MAGNETIC STARTER THERMAL UNITS
SIZE 2 STANDARD TRIP**

| Class | Type | Series | Size |
|-------|------|--------|------|
| 8536 | SD | A | 2 |

| Motor Full-Load Current (Amp) | | Thermal Unit Number |
|-------------------------------|-----------|---------------------|
| 1 or 2 T.U. | 3 T.U. | |
| 3.29-3.74 | 3.18-3.40 | B 4.85 |
| 3.75-4.23 | 3.41-3.76 | B 5.50 |
| 4.24-4.68 | 3.77-4.00 | B 6.25 |
| 4.69-5.22 | 4.01-4.57 | B 6.90 |
| 5.23-5.67 | 4.58-5.03 | B 7.70 |
| 5.68-6.13 | 5.04-5.32 | B 8.20 |
| 6.14-6.91 | 5.33-5.97 | B 9.10 |
| 6.92-7.70 | 5.98-6.88 | B 10.2 |
| 7.71-8.56 | 6.89-7.82 | B 11.5 |
| 8.57-9.39 | 7.83-8.47 | B 12.8 |
| 9.40-10.4 | 8.48-9.15 | B 14.0 |
| 10.5-11.6 | 9.16-10.1 | B 15.5 |
| 11.7-12.9 | 10.2-11.2 | B 17.5 |
| 13.0-14.6 | 11.3-12.0 | B 19.5 |
| 14.7-16.5 | 12.1-13.6 | B 22.0 |
| 16.6-18.5 | 13.7-15.2 | B 25.0 |
| 18.6-21.0 | 15.3-17.1 | B 28.0 |
| 21.1-23.6 | 17.2-19.0 | B 32.0 |
| 23.7-26.3 | 19.1-21.5 | B 36.0 |
| 26.4-29.3 | 21.6-24.1 | B 40.0 |
| 29.4-35.1 | 24.2-27.0 | B 45.0 |
| 35.2-36.1 | 27.1-28.7 | B 50.0 |
| 36.2-39.1 | 28.8-30.4 | B 56.0 |
| 39.2-41.5 | 30.5-32.2 | B 62.0 |
| 41.6-45.0 | 32.3-35.4 | B 70.0 |
| — | 35.5-38.2 | B 79.0 |
| — | 38.3-45.0 | B 88.0 |

**AC MAGNETIC STARTER THERMAL UNITS
SIZE 3 STANDARD TRIP**

| Class | Type | Series | Size |
|-------|------|--------|------|
| 8536 | SE | A | 3 |

| Motor Full-Load Current (Amp) | | | Thermal Unit Number |
|-------------------------------|-----------|-----------|---------------------|
| 1 T.U. | 2 T.U. | 3 T.U. | |
| 15.5-16.4 | 14.4-15.3 | 13.6-14.5 | CC 20.9 |
| 16.5-17.6 | 15.4-16.4 | 14.6-15.5 | CC 22.8 |
| 17.7-19.1 | 16.5-18.4 | 15.6-17.4 | CC 24.6 |
| 19.2-20.4 | 18.5-19.6 | 17.5-18.5 | CC 26.3 |
| 20.5-22.1 | 19.7-21.0 | 18.6-19.9 | CC 28.8 |
| 22.2-23.4 | 21.1-22.7 | 20.0-21.5 | CC 31.0 |
| 23.5-25.6 | 22.8-24.2 | 21.6-22.9 | CC 33.3 |
| 25.7-27.3 | 24.3-25.9 | 23.0-24.5 | CC 36.4 |
| 27.4-29.4 | 26.0-27.8 | 24.6-26.3 | CC 39.6 |
| 29.5-31.5 | 27.9-29.8 | 26.4-28.2 | CC 42.7 |
| 31.6-33.7 | 29.9-31.7 | 28.3-30.0 | CC 46.6 |
| 33.8-36.5 | 31.8-34.2 | 30.1-32.3 | CC 50.1 |
| 36.6-39.1 | 34.3-36.9 | 32.4-34.9 | CC 54.5 |
| 39.2-41.7 | 37.0-39.8 | 35.0-37.6 | CC 59.4 |
| 41.8-44.8 | 39.9-42.3 | 37.7-40.0 | CC 64.3 |
| 44.9-48.0 | 42.4-45.3 | 40.1-42.8 | CC 68.5 |
| 48.1-50.7 | 45.4-47.9 | 42.9-45.3 | CC 74.6 |
| 50.8-54.9 | 48.0-51.9 | 45.4-49.1 | CC 81.5 |
| 55.0-59.9 | 52.0-56.5 | 49.2-53.4 | CC 87.7 |
| 60.0-63.3 | 56.6-60.7 | 53.5-57.4 | CC 94.0 |
| 63.4-67.2 | 60.8-64.8 | 57.5-61.3 | CC 103.0 |
| 67.3-72.4 | 64.9-67.1 | 61.4-63.5 | CC 112.0 |
| 72.5-74.9 | 67.2-70.1 | 63.6-66.3 | CC 121.0 |
| 75.0-77.4 | 70.2-72.9 | 66.4-69.0 | CC 132.0 |
| 77.5-80.7 | 73.0-74.9 | 69.1-70.9 | CC 143.0 |
| 80.8-83.1 | 75.0-77.9 | 71.0-73.7 | CC 156.0 |
| 83.2-86.0 | 78.0-80.9 | 73.8-76.5 | CC 167.0 |
| — | 81.0-82.9 | 76.6-78.4 | CC 180.0 |
| — | 83.0-86.0 | 78.5-86.0 | CC 196.0 |

CLASS 2510 HORSEPOWER RATINGS

| Type | No. of Poles | Motor Type AC | Max. Horsepower | | | | DC Rating | | |
|------|--------------|---------------|-----------------|-------|-------|-----|-----------|---------------|-------|
| | | | 115 | 230 | 460 | 575 | 90 | 115 | 230 |
| FO | 1,2 | Single Phase | 1 | | | | | 3/4, 2 P Only | |
| KO1 | 2 | Single Phase | 2 | 2 | 3 | 3 | 1 | 2 | 1 1/2 |
| KO2 | 3 | Three Phase | 2 | 7 1/2 | 10 | 10 | 1 | 2 | 1 1/2 |
| KO5 | 2 | Single Phase | 2 | 3 | 7 1/2 | 10 | 1 | 2 | 1 1/2 |
| KO6 | 3 | Three Phase | 2 | 7 1/2 | 15 | 20 | 1 | 2 | 1 1/2 |

MANUAL STARTERS & SWITCHES

| No. of Poles | Features | Open | NEMA Type 1 Enclosed |
|---|-----------------------------|-----------|----------------------|
| Class 2510, Type F Manual Starter, Fractional H.P., Toggle | | | |
| 1 | Standard | 2510FO1 | 2510FG1 |
| | With Pilot Light | 2510FO1P | 2510FG1P |
| 2 | Standard | 2510FO2 | 2510FG2 |
| | With Pilot Light | 2510FO2P | 2510FG2P |
| Class 2510, Type K Non-Reversing Manual Switch, Toggle | | | |
| 2 | Standard | 2510KO1 | 2510KG1 |
| | With Pilot Light 115Vac | 2510KO1A | 2510KG1A |
| | 230Vac | 2510KO1B | 2510KG1B |
| 2 | Standard | 2510KO5 | 2510KG5 |
| | With Pilot Light 115Vac | 2510KO5A* | 2510KG5A |
| | 230Vac | 2510KO5B | 2510KG5B |
| 3 | Standard | 2510KO2 | 2510KG2 |
| | With Pilot Light 208-277Vac | 2510KO2B* | 2510KG2B* |
| | 440-600Vac | 2510KO2C | 2510KG2C |
| 3 | Standard | 2510KO6 | 2510KG6 |
| | With Pilot Light 208-277Vac | 2510KO6B* | 2510KG6B |
| | 440-600Vac | 2510KO6C | 2510KG6C |

* Factory order

How to select an IEC style contactor

1. Select reversing or non-reversing
2. Select the number of poles
3. Select the type of load and full load voltage (FLA)
4. Select the motor's horsepower and voltage
5. Select the control voltage and frequency of the coil
6. Determine if thermal overload protection is required
7. Select accessories/options

CATALOG NUMBER DESCRIPTION – See IEC Starter Catalog Number 8502CT9901R2/01

| Contactor | LC | 1 | -K | 09 | 10 | G | 6 | |
|--|-------------------------------|-------------------------------|---|----------------------------------|--|----------------------------------|--|----------------------|
| LC = Contactor w/ AC coil LP = Contactor w/ DC coil | | | | | | | | |
| Load/Reversing 1 = Full voltage non-reversing 2 = Full voltage, reversing | | | | | | | | |
| Full Load Amperage K = K-line contactors 6 to 12A D = D-line contactors 9 to 150A | | | F = F-line contactors 185 to 800A | | | | | |
| Contactor Full Load Amperage (FLA) i.e. 09=9 FLA | | | | | | | | |
| 06 18 40 80 185 400 780 09 25 50 115 265 500 800 12 32 65 150 330 630 | | | | | | | | |
| Auxiliary Contacts and/or Power Poles (Required only for K-line Contactors) 10 = 1 N.O. auxiliary contact 01 = 1 N.C. auxiliary contact 11 = 1 N.O. & N.C. auxiliary contact | | | 004 = 4 N.O. power poles, 0 auxiliary contacts 008 = 2 N.O. & 2 N.C. power poles, 0 auxiliary contacts | | | | | |
| K-line contactors offer a choice of power terminations standard | | | | | | | | |
| Coil Voltage* | J = 12V Z = 20V B = 24V | C = 36V D = 42V E = 48V | F = 110V G = 120V = 125V DC = 127V 50 Hz | L = 208V M = 220V P = 230V | U = 240V W = 256V 50 Hz = 277V 60 Hz | Q = 380V V = 400V N = 415V | R = 440V T = 480V S = 500V 50 Hz = 575V 60 Hz | X = 600V Y = 660V |
| AC Frequency* | 5 = 50 Hz | 6 = 60Hz | 7 = Dual frequency | | | | | |
| DC coils: | | D = Standard range | W = Wide range | | | | | |

*Not all Voltage/Frequency combinations are available.

TELEMECANIQUE® IEC STYLE THREE POLE CONTACTORS

| Max. Motor FLA | Motor Voltage | | | | Coil Voltage | Integrated Auxiliary Contacts | | Catalog Number |
|----------------------|---------------------------------|--------|--------|--------|-----------------|----------------------------------|------|-------------------|
| | 200VAC | 220VAC | 460VAC | 575VAC | | N.O. | N.C. | |
| | Max. 3 Phase Horsepower Ratings | | | | | | | |
| 6 | 1.5 | 1.5 | 3 | 3 | 110 VAC | 1 | - | LC1K0610F7 |
| | | | | | | - | 1 | LC1K0601F7 |
| 9 | 2 | 2 | 5 | 7.5 | 120 VAC | 1 | 1 | LC1D09G7 |
| 12 | 3 | 3 | 7.5 | 10 | 120 VAC | 1 | 1 | LC1D12G7 |
| 18 | 5 | 5 | 10 | 15 | 120 VAC | 1 | 1 | LC1D18G7 |
| 25 | 7.5 | 7.5 | 15 | 20 | 120 VAC | 1 | 1 | LC1D25G7 |
| 32 | 10 | 10 | 20 | 30 | 120 VAC | 1 | 1 | LC1D32G7 |
| 40 | 10 | 10 | 30 | 30 | 120 VAC | 1 | 1 | LC1D40G7 |
| 50 | 15 | 15 | 40 | 40 | 120 VAC | 1 | 1 | LC1D50G7 |
| 65 | 20 | 20 | 50 | 50 | 120 VAC | 1 | 1 | LC1D65G7 |
| 80 | 30 | 30 | 60 | 60 | 120 VAC | 1 | 1 | LC1D80G7 |
| 115 | 30 | 40 | 75 | 100 | 120 VAC | - | - | LC1D115G7 |
| 150 | 40 | 50 | 100 | 125 | 120 VAC | - | - | LC1D150G7 |

TELEMECANIQUE® IEC STYLE THREE POLE OVERLOAD RELAYS

| Motor FLA setting range | For direct mounting beneath contactor: | CLASS 10 Catalog Number with single phase sensitivity |
|----------------------------|---|---|
| 0.10 to 0.16 | LC1D09 to D32 | LRD01 |
| 0.16 to 0.25 | | LRD02 |
| 0.25 to 0.40 | | LRD03 |
| 0.40 to 0.63 | | LRD04 |
| 0.63 to 1 | | LRD05 |
| 1 to 1.6 | | LRD06 |
| 1.6 to 2.5 | | LRD07 |
| 2.5 to 4 | | LRD08 |
| 4 to 6 | | LRD10 |
| 5.5 to 8 | | LRD12 |
| 7 to 10 | | LRD14 |
| 9 to 13 | LC1D12 to D32 | LRD16 |
| 12 to 18 | LC1D18 to D32 | LRD21 |
| 16 to 24 | LC1D25 to D32 | LRD22 |
| 23 to 32 | | LRD32 |
| 30 to 38 | LC1D32 | LRD35 |
| 17 to 25 | LC1D40 to D80 | LRD3322 |
| 23 to 32 | | LRD3353 |
| 30 to 40 | | LRD3355 |
| 37 to 50 | LC1D50 to D80 | LRD3357 |
| 48 to 65 | | LRD3359 |
| 55 to 70 | LC1D65 to D80 | LRD3361 |
| 63 to 80 | | LRD3363 |
| 80 to 104 | LCD115 to D150 | LRD4365 |
| 95 to 120 | | LRD4367 |
| 110 to 140 | | LRD4369 |

XVB INDICATING BANKS (Stackable up to 5 units high)

| Description | Color | Cat. No. |
|---------------------------------------|--------|----------|
| Steady Lens (Requires wiring base) | Green | XVBC33 |
| | Red | XVBC34 |
| | Orange | XVBC35 |
| | Blue | XVBC36 |
| | Clear | XVBC37 |
| | Yellow | XVBC38 |

XVB INDICATING BEACONS (not stackable)

| Description | Color | Cat. No. |
|---------------------------|--------|----------|
| Steady Lens & Wiring Base | Green | XVBL33 |
| | Red | XVBL34 |
| | Orange | XVBL35 |
| | Blue | XVBL36 |
| | Clear | XVBL37 |
| | Yellow | XVBL38 |

XVB ACCESSORIES

| Description | Cat. No. |
|--|----------|
| Wiring Base & Cap (for up to 5 lenses) | XVBC21 |
| 4" Mounting Tube | XVBC02 |
| Metal Mounting Base | XVBC11 |
| 1/2" NPT Adaptor | XVBC00 |
| 24VAC/DC 10 Watt Lamp | DL1BLB |
| 120VAC/DC 10 Watt Lamp | DL1BLG |

16MM PUSH BUTTONS

| Description | Color | Catalog Number | |
|---------------------------|--------|----------------------------|----------------|
| | | Operator Only; No Contacts | 1 N.O.; 1 N.C. |
| Flush Head, Spring Return | White | ZB6AA1 | XB6AA15B |
| | Black | ZB6AA2 | XB6AA25B |
| | Green | ZB6AA3 | XB6AA35B |
| | Red | ZB6AA4 | XB6AA45B |
| | Yellow | ZB6AA5 | XB6AA55B |
| | Blue | ZB6AA6 | XB6AA65B |

16MM SELECTOR SWITCHES

| | | | |
|------------------------|--------------|---------|-----------|
| 2 Position, maintained | Black handle | ZB6AD22 | XB6AD225B |
| 3 Position, maintained | Black handle | ZB6AD23 | XB6AD235B |
| 2 Position, maintained | Key | ZB6AGC | XB6AGC5B |
| 3 Position, maintained | Key | ZB6AGH | XB6AGH5B |

16MM CONTACT BLOCK/MOUNTING BASE

| Catalog Number | | |
|----------------|--------|--------|
| 1 N.O.; 1 N.C. | 1 N.O. | 1 N.C. |
| ZB6Z5B | ZB6Z1B | ZB6Z2B |

16MM PILOT LIGHTS

| Description | Color | Cat. Number |
|-------------------|--------|-------------------|
| | | 48-120 volt ac/dc |
| Round Pilot Light | White | XB6AV1BG |
| | Green | XB6AV3BG |
| | Red | XB6AV4BG |
| | Yellow | XB6AV5BG |
| | Blue | XB6AV6BB |

22MM PUSH BUTTONS

| Description | Color | Cat. No. Operator Only No Contacts |
|-------------------------------|-----------------|--|
| Flush Head | Black | ZB4BA2 |
| | Green | ZB4BA3 |
| | Red | ZB4BA4 |
| | 6 Color Inserts | ZB4BA9 |
| Extended Head | Black | ZB4BL2 |
| | Red | ZB4BL4 |
| | Red "STOP" | ZB4BL434 |
| 2 Position Mushroom 40mm | Red | ZB4BT4 |
| Turn-To-Release | Red | ZB4BS54 |
| 22MM SELECTOR SWITCHES | | |
| 2 Position Maintained | Black | ZB4BD2 |
| 3 Position Maintained | Black | ZB4BD3 |

22MM CONTACT BLOCKS & MOUNTING BASE

| Catalog Number | | |
|----------------|----------|----------|
| 1 N.O.; 1 N.C. | 1 N.O. | 1 N.C. |
| ZB4BZ105 | ZB4BZ101 | ZB4BZ102 |

22MM PILOT LIGHTS

| Description | Color | Cat. No. Operator Only |
|-----------------------|-------|---------------------------|
| Standard Pilot Lights | Green | ZB4BV03 |
| | Red | ZB4BV04 |
| | Amber | ZB4BV05 |

22MM PILOT LIGHT MODULES

| Catalog Number | | |
|------------------------------|--------------|----------|
| Description | Light Module | Lamp |
| 24 VAC/DC Direct Supply | ZB4BV6 | DL1CE024 |
| 120 VAC/DC Direct Supply | ZB4BV6 | DL1CE130 |
| 110/120V 50-60Hz Transformer | ZB4BV3 | Included |

30MM PUSH BUTTONS & PILOT LIGHTS

| Description | Color | Catalog Number | |
|-------------------------------------|-------------------------------------|-------------------------------|-------------------|
| | | Operator Only; No Contacts | 1 N.O.; 1 N.C. |
| Full Guard | Universal ** | 9001KR1U | 9001KR1UH13 |
| Extended Guard | Universal ** | 9001KR2U | 9001KR2UH13 |
| No Guard | Universal ** | 9001KR3U | 9001KR3UH13 |
| 2 Position Mushroom | Red | 9001KR9R | 9001KR9RH13 |
| Maintained Push- Maintained Pull | Red - Premarked "Emergency Stop" | 9001KR9R05 | 9001KR9R05H13 |
| SELECTOR SWITCHES | | | |
| 2 Position Maintained | Black | 9001KS11B | 9001KS11BH13 |
| 3 Position Maintained | Black | 9001KS43B | 9001KS43BH13 |
| PILOT LIGHTS | | | |
| Standard Pilot Light | Red | 9001KP1R31 | |
| 120V Transformer | Green | 9001KP1G31 | |

**Universal color inserts include: Black, Blue, Green, Orange, Red, White, Yellow

30MM CONTACT BLOCKS

| Catalog Number | | |
|----------------|---------|---------|
| 1 N.O.; 1 N.C. | 1 N.O. | 1 N.C. |
| 9001KA1 | 9001KA2 | 9001KA3 |

CONTROL STATIONS

| No. of Units | Description | Catalog Number | |
|--------------|----------------------|------------------|-----------------|
| | | 22mm Medium Duty | 30mm Heavy Duty |
| 1 | Start | XALD103 | 9001KYK110 |
| | Stop | XALB114 | 9001KYK13 |
| | E-Stop Mushroom | XALK174 | 9001KYK14 |
| 2 | Start-Stop | XALD211 | 9001KYK218 |
| | Forward-Reverse | XALD221 | 9001KYK24 |
| 3 | Forward-Reverse-Stop | XALD311 | 9001KYK31 |
| | Open-Close-Stop | XALD341 | 9001KYK33 |
| | Up-Down-Stop | XALD321 | 9001KYK32 |

PENDANT CONTROL STATIONS

| No. of Units | Description | Speed | Catalog Number | |
|--------------|-----------------|-------|----------------|-----------|
| | | | Pistol Grip | Hand Held |
| 2 | Up-Down | 1 | | 9001BW72Y |
| | Start-Stop | 1 | | 9001BW75Y |
| | Forward-Reverse | 2 | | 9001BW82Y |

How to select a limit switch

1. Type of Head/Operator?

- Lever Type
- Top Plunger
- One Way Horizontal Roller
- Lever Type with Arm
- Palm Operated
- One Way Vertical Roller
- Side Plunger
- Top Roller Plunger
- Cat Whisker
- Side Roller
- Cross Top Plunger
- Wobble Stick
- Mushroom

2. Lever Direction or Feature?

- CW
- Low Differential CW + CCW
- Adjustable Plunger
- CCW
- Light Operating Torque CW + CCW
- Standard Pretravel CW + CCW
- CW + CW

3. Enclosure Type?

- Standard Plug-In
- Foundry
- Standard Non Plug-In
- Miniature
- Compact
- Mill
- Hazardous Location
- Flush

4. Contact Type?

- Reed
- Slow Break Before Make
- Snap Action
- Slow Make and Break
- Direct Opening (N/O)

5. Number of Contacts?

- 1 NO
- 2 NO
- 1 NC
- 2 NC
- 1 NO 1 NC
- 2 NO 2 NC

6. Contact Function?

- Spring Return
- Neutral Position Maintained
- Neutral Position Spring Return
- Two Stage Spring Return
- Maintained

7. Enclosure Type Rating?

8. Maximum Current?

9. Wiring Entry Type

- Conduit 1/2" or Metric
- Cable Type

LIMIT SWITCHES

| Osiswitch® Selection | | |
|-----------------------------|--|--|
| Type | IEC Style Miniature Industrial Limit Switches | Compact Industrial Limit Switches |
| Reference Prefix | XCMD | XCKP |
| Description | Modular miniature enclosed switches, potted and pre-wired with cable | Modular compact enclosed switches |
| Enclosure Material | Metal | Plastic bodies, metal heads |
| Enclosure Rating | Type Rating: 1, 2, 4, 12, 13 IEC IP Rating: IP66, IP67, IP68 | Type Rating: 1, 2, 4, 6, 6P, 12, 13 IEC IP Rating: IP66/67 |
| Approximate Body Dimensions | 1.18 x 1.93 x 63 in. (30 x 15 x 18 mm) | 1.22 x 2.56 x 1.18 in. (31 x 65 x 30 mm) |
| Heads | Linear or Rotary | Linear or Rotary |
| Cabling | Pre-wired cable or M12 connector options available | Modular conduit options |
| Temperature Rating | -13°F – +158°F (-25°C – +70°C) | Same |

LIMIT SWITCHES (continued)

| Osiswitch® Selection | | |
|-----------------------------|---|--|
| Type | Compact Industrial Limit Switches | |
| Reference Prefix | XCKT | XCKD |
| Description | Modular compact wide body enclosed switches with conduit entry on each side | Modular compact enclosed switches |
| Enclosure Material | Plastic bodies, metal heads | Metal |
| Enclosure Rating | Type Rating: 1, 2, 4, 6, 12, 13 IEC IP Rating: IP66/67 | Type Rating: 1, 2, 4, 6, 12, 13 IEC IP Rating: IP66/67 |
| Approximate Body Dimensions | 2.28 x 2.01 x 1.18 in. (58 x 51 x 30 mm) | 1.22 x 2.56 x 1.18 in. (31 x 65 x 30 mm) |
| Heads | Linear or Rotary | Linear or Rotary |
| Cabling | Modular conduit options | Modular conduit options |
| Temperature Rating | -13°F – +158°F (-25°C – +70°C) | Same |

LIMIT SWITCHES—600V

| Max. Volt | Amperes Continuous Current | Description | Enclosure |
|-----------|----------------------------|-----------------------|------------------|
| 600 | 10 | Heavy Duty Oiltight | Type 4/12/13/6P |
| | | | Type 4/12/6P/7/9 |
| | | Heavy Duty Industrial | Type 4/12/13 |
| | 20 | Severe Duty Mill | Type 4/13 |
| | 15 | Basic Snap Switch | Open Snap Sw. |
| | 20 | Severe Duty Mill | Type 4/12/13 |

LIMIT SWITCHES—600V (cont.)

| Contact Configuration | Catalog Number | Type of Operator | Common Lever |
|------------------------------|-----------------------|-------------------------|---------------------|
| SPDT Form Z | 9007C54B2 | Rotary Lever | 9007MA11 |
| DPDT Form ZZ | 9007C62B2 | | |
| DPDT Form ZZ, Neut. | 9007C68T10 | | |
| SPDT Form Z | 9007C52B2 | Cat Whisker | Operator Supplied |
| | 9007C54A2 | | |
| | 9007C54L | Top Roller Plunger | |
| | 9007C54D | | |
| | 9007CR53B2 | | |
| DPDT Form ZZ | 9007AW12 | Rotary Lever | 9007MA11 |
| | 9007AW16 | | |
| SPDT Form Z | L100WS2M1 | Straight Plunger | AA |
| | 9007AO2 | | Operator Supplied |
| | 9007TUB4 | Rotary Lever | 9007B1 |

Table 310.16 Allowable Ampacities of Insulated Conductors Rated 0 Through 2000 Volts, 6 (140°F Through 194°F), Not More Than Three Current-Carrying Conductors in Raceway (Directly Buried), Based on Ambient Temperature of 30°C (86°F)

| Size AWG or kcmil | Temperature Rating of Conductor (See Table 310.13.) | | | | |
|-------------------------|---|--|---|----------------------|--|
| | 60°C (140°F) | 75°C (167°F) | 90°C (194°F) | 60°C (140°F) | 75°C (167°F) |
| | Types TW, UF | Types RHW, THHW, THW, THWN, XHHW, USE, ZW | Types TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2 | Types TW, UF | Types RHW, THHW, THW, THWN, XHHW, USE |
| | COPPER | | | ALUMINUM OR COPPER-C | |
| 18 | – | – | 14 | – | – |
| 16 | – | – | 18 | – | – |
| 14* | 20 | 20 | 25 | – | – |
| 12* | 25 | 25 | 30 | 20 | 20 |
| 10* | 30 | 35 | 40 | 25 | 30 |
| 8 | 40 | 50 | 55 | 30 | 40 |
| 6 | 55 | 65 | 75 | 40 | 50 |
| 4 | 70 | 85 | 95 | 55 | 65 |
| 3 | 85 | 100 | 110 | 65 | 75 |
| 2 | 95 | 115 | 130 | 75 | 90 |
| 1 | 110 | 130 | 150 | 85 | 100 |
| 1/0 | 125 | 150 | 170 | 100 | 120 |
| 2/0 | 145 | 175 | 195 | 115 | 135 |
| 3/0 | 165 | 200 | 225 | 130 | 155 |
| 4/0 | 195 | 230 | 260 | 150 | 180 |
| 250 | 215 | 255 | 290 | 170 | 205 |
| 300 | 240 | 285 | 320 | 190 | 230 |
| 350 | 260 | 310 | 350 | 210 | 250 |
| 400 | 280 | 335 | 380 | 225 | 270 |
| 500 | 320 | 380 | 430 | 260 | 310 |
| 600 | 355 | 420 | 475 | 285 | 340 |
| 700 | 385 | 460 | 520 | 310 | 375 |
| 750 | 400 | 475 | 535 | 320 | 385 |
| 800 | 410 | 490 | 555 | 330 | 395 |
| 900 | 435 | 520 | 585 | 355 | 425 |

| | | | | | |
|------|-----|-----|-----|-----|-----|
| 1000 | 455 | 454 | 615 | 375 | 445 |
| 1250 | 495 | 590 | 665 | 405 | 485 |
| 1500 | 520 | 625 | 705 | 435 | 520 |
| 1750 | 545 | 650 | 735 | 455 | 545 |
| 2000 | 560 | 665 | 750 | 470 | 560 |

CORRECTION FACTORS

| Ambient Temp °C | For ambient temperatures other than 30°C (86°F), multiply the allowable ampacities shown above by factor shown below. | | | | |
|------------------------|--|------|------|------|------|
| 21-25 | 1.08 | 1.05 | 1.04 | 1.08 | 1.05 |
| 26-30 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 31-35 | 0.91 | 0.94 | 0.96 | 0.91 | 0.94 |
| 36-40 | 0.82 | 0.88 | 0.91 | 0.82 | 0.88 |
| 41-45 | 0.71 | 0.82 | 0.87 | 0.71 | 0.82 |
| 46-50 | 0.58 | 0.75 | 0.82 | 0.58 | 0.75 |
| 51-55 | 0.41 | 0.67 | 0.76 | 0.41 | 0.67 |
| 56-60 | – | 0.58 | 0.71 | – | 0.58 |
| 61-70 | – | 0.33 | 0.58 | – | 0.33 |
| 71-80 | – | – | 0.41 | – | – |

*See 240.4(D)

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30.91 Motor Controller Enclosure Types.

Table 430.91 provides the basis for selecting enclosures for use in specific locations other than hazardous (classified) locations. The enclosures are not intended to protect against conditions such as condensation, icing, corrosion, or contamination that may occur within the enclosure or enter via the conduit or unsealed openings. These internal conditions shall require special consideration by the installer and user.

Table 430.91 Motor Controller Enclosure Selection

| For Outdoor Use | | | | | | | |
|--|------------------------|----|----|----|-----|-----|----|
| Provides a Degree of Protection Against the Following Environmental Conditions | Enclosure Type Number* | | | | | | |
| | 3 | 3R | 3S | 3X | 3RX | 3SX | 4 |
| Incidental contact with the enclosed equipment | X | X | X | X | X | X | X |
| Rain, snow, and sleet | X | X | X | X | X | X | X |
| Sleet** | - | - | X | - | - | X | - |
| Windblown dust | X | - | X | X | - | X | X |
| Hosedown | - | - | - | - | - | - | X |
| Corrosive agents | - | - | - | X | X | X | - |
| Temporary submersion | - | - | - | - | - | - | - |
| Prolonged submersion | - | - | - | - | - | - | - |
| For Indoor Use | | | | | | | |
| Provides a Degree of Protection Against the Following Environmental Conditions | Enclosure Type Number* | | | | | | |
| | 1 | 2 | 4 | 4X | 5 | 6 | 6P |
| Incidental contact with the enclosed equipment | X | X | X | X | X | X | X |
| Falling dirt | X | X | X | X | X | X | X |
| Falling liquids and light splashing | - | X | X | X | X | X | X |
| Circulating dust, lint, fibers and flyings | - | - | X | X | - | X | X |
| Settling airborne dust, lint, fibers, and flyings | - | - | X | X | X | X | X |
| Hosedown and splashing water | - | - | X | X | - | X | X |
| Oil and coolant seepage | - | - | - | - | - | - | - |
| Oil or coolant spraying and splashing | - | - | - | - | - | - | - |
| Corrosive agents | - | - | - | X | - | - | X |
| Temporary submersion | - | - | - | - | - | X | X |
| Prolonged submersion | - | - | - | - | - | - | X |

* Enclosure type number shall be marked on the motor controller enclosure.

** Mechanism shall be operable when ice covered.

FPN: The term *raintight* is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 4, 4X, 6, 6P. The term *rainproof* is typically used in conjunction with Enclosure Type 3R, 3RX. The term *watertight* is typically used in conjunction with Enclosure Types 4, 4X, 6, 6P. The term *driptight* is typically used in conjunction with Enclosure Types 2, 5, 12, 12K, 13. The term *dusttight* is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 5, 12, 12K, 13.

**TABLE 430.247
FULL-LOAD CURRENT IN AMPERES,
DIRECT-CURRENT MOTORS**

The following values of full-load currents* are for motors running at base speed.

| HP | Armature Voltage Rating* | | | | | |
|-------|--------------------------|------|------|------|------|------|
| | 90V | 120V | 180V | 240V | 500V | 550V |
| 1/4 | 4.0 | 3.1 | 2.0 | 1.6 | | |
| 1/3 | 5.2 | 4.1 | 2.6 | 2.0 | | |
| 1/2 | 6.8 | 5.4 | 3.4 | 2.7 | | |
| 3/4 | 9.6 | 7.6 | 4.8 | 3.8 | | |
| 1 | 12.2 | 9.5 | 6.1 | 4.7 | | |
| 1 1/2 | | 13.2 | 8.3 | 6.6 | | |
| 2 | | 17 | 10.8 | 8.5 | | |
| 3 | | 25 | 16 | 12.2 | | |
| 5 | | 40 | 27 | 20 | | |
| 7 1/2 | | 58 | | 29 | 13.6 | 12.2 |
| 10 | | 76 | | 38 | 18 | 16 |
| 15 | | | | 55 | 27 | 24 |
| 20 | | | | 72 | 34 | 31 |
| 25 | | | | 89 | 43 | 38 |
| 30 | | | | 106 | 51 | 46 |
| 40 | | | | 140 | 67 | 61 |
| 50 | | | | 173 | 83 | 75 |
| 60 | | | | 206 | 99 | 90 |
| 75 | | | | 255 | 123 | 111 |
| 100 | | | | 341 | 164 | 148 |
| 125 | | | | 425 | 205 | 185 |
| 150 | | | | 506 | 246 | 222 |
| 200 | | | | 675 | 330 | 294 |

*These are average direct-current quantities.

**TABLE 430.248
FULL-LOAD CURRENT IN AMPERES,
SINGLE-PHASE ALTERNATING-CURRENT MOTORS**

The following values of full-load currents are for motors running at usual speeds and motors with normal torque characteristics. Motors built for especially low speeds or high torques may have higher full-load currents, and multispeed motors will have full-load current varying with speed, in which case the nameplate current ratings shall be used.

The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120 and 220 to 240 volts.

| HP | 115V | 200V | 208V | 230V |
|-------|------|------|------|------|
| 1/6 | 4.4 | 2.5 | 2.4 | 2.2 |
| 1/4 | 5.8 | 3.3 | 3.2 | 2.9 |
| 1/3 | 7.2 | 4.1 | 4.0 | 3.6 |
| 1/2 | 9.8 | 5.6 | 5.4 | 4.9 |
| 3/4 | 13.8 | 7.9 | 7.6 | 6.9 |
| 1 | 16 | 9.2 | 8.8 | 8 |
| 1 1/2 | 20 | 11.5 | 11 | 10 |
| 2 | 24 | 13.8 | 13.2 | 12 |
| 3 | 34 | 19.6 | 18.7 | 17 |
| 5 | 56 | 32.2 | 30.8 | 28 |
| 7 1/2 | 80 | 46 | 44 | 40 |
| 10 | 100 | 57.5 | 55 | 50 |

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**TABLE 430.249
FULL-LOAD CURRENT TWO-PHASE
ALTERNATING-CURRENT MOTORS (4-WIRE)**

The following values of full-load current are for motors running at speeds usual for belted motors and motors with normal torque characteristics. Motors built for especially low speeds or high torques may require more running current, and multispeed motors will have full-load current varying with speed, in which case the nameplate current rating shall be used. Current in the common conductor of a 2-phase, 3-wire system will be 1.41 times the value given.

The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120, 220 to 240, 440 to 480, and 550 to 600 volts.

Induction Type Squirrel-Cage and Wound-Rotor Amperes

| HP | 115 Volts | 230 Volts | 460 Volts | 575 Volts | 2300 Volts |
|-------|-----------|-----------|-----------|-----------|------------|
| 1/2 | 4 | 2 | 1 | .8 | |
| 3/4 | 4.8 | 2.4 | 1.2 | 1.0 | |
| 1 | 6.4 | 3.2 | 1.6 | 1.3 | |
| 1 1/2 | 9 | 4.5 | 2.3 | 1.8 | |
| 2 | 11.8 | 5.9 | 3 | 2.4 | |
| 3 | | 8.3 | 4.2 | 3.3 | |
| 5 | | 13.2 | 6.6 | 5.3 | |
| 7 1/2 | | 19 | 9 | 8 | |
| 10 | | 24 | 12 | 10 | |
| 15 | | 36 | 18 | 14 | |
| 20 | | 47 | 23 | 19 | |
| 25 | | 59 | 29 | 24 | |
| 30 | | 69 | 35 | 28 | |
| 40 | | 90 | 45 | 36 | |
| 50 | | 113 | 56 | 45 | |
| 60 | | 133 | 67 | 53 | 14 |
| 75 | | 166 | 83 | 66 | 18 |
| 100 | | 218 | 109 | 87 | 23 |
| 125 | | 270 | 135 | 108 | 28 |
| 150 | | 312 | 156 | 125 | 32 |
| 200 | | 416 | 208 | 167 | 43 |

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TABLE 430.250
FULL-LOAD CURRENT* THREE-PHASE
ALTERNATING-CURRENT MOTORS

The following values of full-load current are typical for motors running at speeds usual for belted motors and motors with normal torque characteristics.

Motors built for low speeds (1200 RPM or less) or high torques may require more running current, and multispeed motors will have full-load current varying with speed. In these cases the nameplate current rating shall be used.

The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120, 220 to 240, 440 to 480, and 550 to 600 volts.

| HP | Induction Type Squirrel-Cage and Wound-Rotor Amperes | | | | | | Synchronous Type Unity Power Factor Amperes | | | | |
|-------|--|------|------|------|------|------|---|------|------|------|-------|
| | 115V | 200V | 208V | 230V | 460V | 575V | 2300V | 230V | 460V | 575V | 2300V |
| 1/2 | 4.4 | 2.5 | 2.4 | 2.2 | 1.1 | 0.9 | | | | | |
| 3/4 | 6.4 | 3.7 | 3.5 | 3.2 | 1.6 | 1.3 | | | | | |
| 1 | 8.4 | 4.8 | 4.6 | 4.2 | 2.1 | 1.7 | | | | | |
| 1 1/2 | 12.0 | 6.9 | 6.6 | 6.0 | 3.0 | 2.4 | | | | | |
| 2 | 13.6 | 7.8 | 7.5 | 6.8 | 3.4 | 2.7 | | | | | |
| 3 | | 11.0 | 10.6 | 9.6 | 4.8 | 3.9 | | | | | |
| 5 | | 17.5 | 16.7 | 15.2 | 7.6 | 6.1 | | | | | |
| 7 1/2 | | 25.3 | 24.2 | 22 | 11 | 9 | | | | | |
| 10 | | 32.2 | 30.8 | 28 | 14 | 11 | | | | | |
| 15 | | 48.3 | 46.2 | 42 | 21 | 17 | | | | | |
| 20 | | 62.1 | 59.4 | 54 | 27 | 22 | | | | | |
| 25 | | 78.2 | 74.8 | 68 | 34 | 27 | | 53 | 26 | 21 | |
| 30 | | 92 | 88 | 80 | 40 | 32 | | 63 | 32 | 26 | |
| 40 | | 120 | 114 | 104 | 52 | 41 | | 83 | 41 | 33 | |
| 50 | | 150 | 143 | 130 | 65 | 52 | | 104 | 52 | 42 | |
| 60 | | 177 | 169 | 154 | 77 | 62 | 16 | 123 | 61 | 49 | 12 |
| 75 | | 221 | 211 | 192 | 96 | 77 | 20 | 155 | 78 | 62 | 15 |
| 100 | | 285 | 273 | 248 | 124 | 99 | 26 | 202 | 101 | 81 | 20 |
| 125 | | 359 | 343 | 312 | 156 | 125 | 31 | 253 | 126 | 101 | 25 |
| 150 | | 414 | 396 | 360 | 180 | 144 | 37 | 302 | 151 | 121 | 30 |
| 200 | | 552 | 528 | 480 | 240 | 192 | 49 | 400 | 201 | 161 | 40 |
| 250 | | | | | 302 | 242 | 60 | | | | |
| 300 | | | | | 361 | 289 | 72 | | | | |
| 350 | | | | | 414 | 336 | 83 | | | | |
| 400 | | | | | 477 | 382 | 95 | | | | |
| 450 | | | | | 515 | 412 | 103 | | | | |
| 500 | | | | | 590 | 472 | 118 | | | | |

*For 90 and 80 percent power factor, the above figures shall be multiplied by 1.1 and 1.25 respectively.

NEMA SIZE STARTERS

| NEMA SIZE | Maximum Horsepower 60 HZ Polyphase Motors* | | |
|--------------|---|-------|--------------|
| | Full Voltage Starting | | |
| | 200V | 230V | 460V 575V |
| 00 | 1 1/2 | 1 1/2 | 2 |
| 0 | 3 | 3 | 5 |
| 1 | 7 1/2 | 7 1/2 | 10 |
| 2 | 10 | 15 | 25 |
| 3 | 25 | 30 | 50 |
| 4 | 40 | 50 | 100 |
| 5 | 75 | 100 | 200 |
| 6 | 150 | 200 | 400 |
| 7 | | 300 | 600 |
| 8 | | 450 | 900 |
| 9 | | 800 | 1600 |

*For non-plugging and non-jogging duty NEMA Standard ICS2-321.

**DRY TYPE TRANSFORMER DATA
SINGLE PHASE TRANSFORMERS**

| KVA Rating | AMPERES | | | |
|----------------------------------|---------|------|------|------|
| | 120V | 240V | 480V | 600V |
| 1 | 8.33 | 4.17 | 2.08 | 1.67 |
| 1.5 | 12.5 | 6.25 | 3.13 | 2.50 |
| 2 | 16.7 | 8.33 | 4.17 | 3.33 |
| 3 | 25.0 | 12.5 | 6.25 | 5.00 |
| 5 | 41.7 | 20.8 | 10.4 | 8.33 |
| 7.5 | 62.5 | 31.3 | 15.6 | 12.5 |
| 10 | 83.3 | 41.7 | 20.8 | 16.7 |
| 15 | 125 | 62.5 | 31.3 | 25.0 |
| 25 | 208 | 104 | 52.1 | 41.7 |
| 37.5 | 313 | 156 | 78.1 | 62.5 |
| 50 | 417 | 208 | 104 | 83.3 |
| 75 | 625 | 313 | 156 | 125 |
| 100 | 833 | 417 | 208 | 167 |
| 167 | 1392 | 696 | 348 | 278 |
| 250 | 2083 | 1042 | 521 | 417 |
| 333 | 2775 | 1388 | 694 | 555 |
| 500 | 4167 | 2083 | 1042 | 833 |
| Note: Voltages are line to line. | | | | |

**DRY TYPE TRANSFORMER DATA
THREE PHASE TRANSFORMERS**

| KVA Rating | AMPERES | | | |
|---------------|---------|------|------|------|
| | 208V | 240V | 480V | 600V |
| 3 | 8.33 | 7.22 | 3.61 | 2.89 |
| 9 | 25.0 | 21.7 | 10.8 | 8.66 |
| 15 | 41.6 | 36.1 | 18.0 | 14.4 |
| 30 | 83.3 | 72.2 | 36.1 | 28.9 |
| 45 | 125 | 108 | 54.1 | 43.3 |
| 75 | 208 | 180 | 90.2 | 72.2 |
| 112.5 | 312 | 271 | 135 | 108 |
| 150 | 416 | 361 | 180 | 144 |
| 225 | 625 | 541 | 271 | 217 |
| 300 | 833 | 722 | 361 | 289 |
| 500 | 1388 | 1203 | 601 | 481 |
| 750 | 2082 | 1804 | 902 | 722 |
| 1000 | 2776 | 2406 | 1203 | 962 |

Note: Voltages are line to line.

THREE PHASE MOTOR DATA

| | | HORSEPOWER | 0.5 | 0.75 |
|------|------|--|-------------|-------------|
| 200V | | Full Load Current (Amps) | 2.5 | 3.7 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H321N | H321N |
| | | Time Delay Fuse Rating (Amps) | 4 | 6.25 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL32015 | FAL32015 |
| | | Magnetic Starter, Class 8536 Type: * | SAG12 | SAG12 |
| | | Melting Alloy Thermal Units | B3.30 | B4.85 |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3600712M | FAL3600712M |
| | | Contactors Catalog Number LC1 * | LC1D09 | LC1D09 |
| | | Overload Relay Catalog Number | LRD07 | LRD08 |
| 230V | | Full Load Current (Amps) | 2.2 | 3.2 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H321N | H321N |
| | | Time Delay Fuse Rating (Amps) | 4 | 5.6 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL32015 | FAL32015 |
| | | Magnetic Starter, Class 8536 Type: * | SAG12 | SAG12 |
| | | Melting Alloy Thermal Units | B3.30 | B4.15 |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3600712M | FAL3600712M |
| | | IEC Contactors Catalog Number LC1 * | LC1D09 | LC1D09 |
| | | IEC Overload Relay Catalog Number | LRD07 | LRD08 |

* Complete catalog number with control voltage code

** LC1D40 to LC1D95

NEMA

IEC

| 24VAC | 120VAC | 240 VAC | 480VAC | 600VAC | 24VDC |
|-------|--------|---------|---------|---------|-------|
| V01 | V02 | V03 | V06 | V07 | - |
| B7 | G7 | U7 | T7/T6** | X7/X6** | BD |

| 1 | 1.5 | 2 | 3 | 5 |
|-------------|-------------|-------------|-------------|-------------|
| 4.8 | 6.9 | 7.8 | 11 | 17.5 |
| 14 | 14 | 14 | 14 | 12 |
| H321N | H321N | H321N | H321N | H321N |
| 8 | 10 | 12 | 17.5 | 25 |
| FAL32015 | FAL32015 | FAL32015 | FAL32020 | FAL32035 |
| SAG12 | SAG12 | SBG2 | SBG2 | SCG3 |
| B6.90 | B10.2 | B11.5 | B15.5 | B28.0 |
| FAL3600712M | FAL3601513M | FAL3601513M | FAL3603015M | FAL3603015M |
| LC1D09 | LC1D09 | LC1D09 | LC1D12 | LC1D18 |
| LRD10 | LRD12 | LRD14 | LRD16 | LRD21 |
| 4.2 | 6 | 6.8 | 9.6 | 15.2 |
| 14 | 14 | 14 | 14 | 14 |
| H321N | H321N | H321N | H321N | H321N |
| 8 | 10 | 10 | 15 | 25 |
| FAL32015 | FAL32015 | FAL32015 | FAL32020 | FAL32030 |
| SAG12 | SAG12 | SBG2 | SBG2 | SCG3 |
| B6.25 | B9.10 | B10.2 | B14. | B25. |
| FAL3600712M | FAL3601513M | FAL3601513M | FAL3603015M | FAL3603015M |
| LC1D09 | LC1D09 | LC1D09 | LC1D12 | LC1D18 |
| LRD10 | LRD12 | LRD12 | LRD16 | LRD21 |

THREE PHASE MOTOR DATA

| | | HORSEPOWER | 7.5 | 10 |
|------|------|--|-------------|-------------|
| 200V | | Full Load Current (Amps) | 25.3 | 32.2 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 10 | 8 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H322N | H322N |
| | | Time Delay Fuse Rating (Amps) | 40 | 50 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL32050 | FAL32060 |
| | | Magnetic Starter, Class 8536 Type: * | SCG3 | SDG1 |
| | | Melting Alloy Thermal Units | B45. | B56. |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3605016M | FAL3605016M |
| | | Contactors Catalog Number LC1 * | LC1D25 | LC1D32 |
| | | Overload Relay Catalog Number | LRD32 | LRD35 |
| 230V | | Full Load Current (Amps) | 22 | 28 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 10 | 10 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H321N | H322N |
| | | Time Delay Fuse Rating (Amps) | 30 | 40 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL32045 | FAL32060 |
| | | Magnetic Starter, Class 8536 Type: * | SCG3 | SDG1 |
| | | Melting Alloy Thermal Units | B36. | B45. |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3605016M | FAL3605016M |
| | | IEC Contactor Catalog Number LC1 * | LC1D25 | LC1D32 |
| | | IEC Overload Relay Catalog Number | LRD22 | LRD32 |

* Complete catalog number with control voltage code

** LC1D40 to LC1D95

NEMA
IEC

| 24VAC | 120VAC | 240 VAC | 480VAC | 600VAC | 24VDC |
|-------|--------|---------|---------|---------|-------|
| V01 | V02 | V03 | V06 | V07 | - |
| B7 | G7 | U7 | T7/T6** | X7/X6** | BD |

| 15 | 20 | 25 | 30 | 40 |
|-------------|-------------|-------------|-------------|-------------|
| 48.3 | 62.1 | 78.2 | 92 | 120 |
| 6 | 4 | 3 | 2 | 1/0 |
| H322N | H323N | H323N | H324N | H324N |
| 60 | 90 | 100 | 125 | 175 |
| FAL32090 | FAL32100 | KAL36110 | KAL36125 | KAL36175 |
| SEG1 | SEG1 | SEG1 | SFG1 | SFG1 |
| CC74.6 | CC94.0 | CC143. | CC143. | CC180. |
| FAL3610018M | FAL3610018M | FAL3615024M | KAL3625025M | KAL3625029M |
| LC1D65 | LC1D65 | LC1D80 | LC1D115 | LC1D150 |
| LRD3357 | LRD3359 | LRD3363 | LRD4365 | LRD4369 |
| 42 | 54 | 68 | 80 | 104 |
| 6 | 4 | 4 | 3 | 1 |
| H322N | H323N | H323N | H323N | H324N |
| 60 | 80 | 100 | 100 | 150 |
| FAL32080 | FAL32090 | FAL32100 | KAL36110 | KAL36150 |
| SDG1 | SEG1 | SEG1 | SEG1 | SFG1 |
| B79. | CC87.7 | CC112 | CC156. | CC167 |
| FAL3610018M | FAL3610018M | FAL3615024M | KAL3625025M | KAL3625029M |
| LC1D50 | LC1D65 | LC1D80 | LC1D80 | LC1D115 |
| LRD3357 | LRD3359 | LRD3363 | LRD3363 | LRD4365 |

THREE PHASE MOTOR DATA

| | | HORSEPOWER | 0.5 | 0.75 |
|------|------|--|-------------|-------------|
| 460V | | Full Load Current (Amps) | 1.1 | 1.6 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H361 | H361 |
| | | Time Delay Fuse Rating (Amps) | 2 | 3.2 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL34015 | FAL34015 |
| | | Magnetic Starter, Class 8536 Type: * | SAG12 | SAG12 |
| | | Melting Alloy Thermal Units | B1.45 | B2.40 |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3600311M | FAL3600311M |
| | | Contactors Catalog Number LC1 * | LC1D09 | LC1D09 |
| | | Overload Relay Catalog Number | LRD06 | LRD07 |
| 575V | | Full Load Current (Amps) | .9 | 1.3 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H361 | H361 |
| | | Time Delay Fuse Rating (Amps) | 1.8 | 2.5 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL36015 | FAL36015 |
| | | Magnetic Starter, Class 8536 Type: * | SAG12 | SAG12 |
| | | Melting Alloy Thermal Units | B1.30 | B1.88 |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3600311M | FAL3600311M |
| | | IEC Contactor Catalog Number LC1 * | LC1D09 | LC1D09 |
| | | IEC Overload Relay Catalog Number | LRD05 | LRD06 |

* Complete catalog number with control voltage code

** LC1D40 to LC1D95

NEMA
IEC

| 24VAC | 120VAC | 240 VAC | 480VAC | 600VAC | 24VDC |
|-------|--------|---------|---------|---------|-------|
| V01 | V02 | V03 | V06 | V07 | - |
| B7 | G7 | U7 | T7/T6** | X7/X6** | BD |

| 1 | 1.5 | 2 | 3 | 5 |
|-------------|-------------|-------------|-------------|-------------|
| 2.1 | 3 | 3.4 | 4.8 | 7.6 |
| 14 | 14 | 14 | 14 | 14 |
| H361 | H361 | H361 | H361 | H361 |
| 4 | 5.6 | 6.25 | 8 | 15 |
| FAL34015 | FAL34015 | FAL34015 | FAL34015 | FAL34015 |
| SAG12 | SAG12 | SAG12 | SBG2 | SBG2 |
| B3.00 | B4.15 | B4.85 | B6.90 | B11.5 |
| FAL3600311M | FAL3600712M | FAL3600712M | FAL3600712M | FAL3601513M |
| LC1D09 | LC1D09 | LC1D09 | LC1D09 | LC1D09 |
| LRD07 | LRD08 | LRD08 | LRD10 | LRD12 |
| 1.7 | 2.4 | 2.7 | 3.9 | 6.1 |
| 14 | 14 | 14 | 14 | 14 |
| H361 | H361 | H361 | H361 | H361 |
| 3.2 | 4 | 5 | 6.25 | 10 |
| FAL36015 | FAL36015 | FAL36015 | FAL36015 | FAL36015 |
| SAG12 | SAG12 | SAG12 | SBG2 | SBG2 |
| B2.40 | B3.30 | B3.70 | B4.85 | B9.10 |
| FAL3600311M | FAL3600712M | FAL3600712M | FAL3600712M | FAL3601513M |
| LC1D09 | LC1D09 | LC1D09 | LC1D09 | LC1D09 |
| LRD07 | LRD07 | LRD08 | LRD08 | LRD12 |

THREE PHASE MOTOR DATA

| | | HORSEPOWER | 7.5 | 10 |
|------|------|--|-------------|-------------|
| 460V | | Full Load Current (Amps) | 11 | 14 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H361 | H361 |
| | | Time Delay Fuse Rating (Amps) | 20 | 20 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL34020 | FAL34025 |
| | | Magnetic Starter, Class 8536 Type: * | SCG3 | SCG3 |
| | | Melting Alloy Thermal Units | B17.5 | B25. |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3601513M | FAL3603015M |
| | | Contactors Catalog Number LC1 * | LC1D12 | LC1D18 |
| | | Overload Relay Catalog Number | LRD16 | LRD21 |
| 575V | | Full Load Current (Amps) | 9 | 11 |
| | | Minimum Wire Size (75 C) THW, THHN-THWN, XHHW (Size) | 14 | 14 |
| | | Fusible Switch, Heavy Duty NEMA 1 Enclosure | H361 | H361 |
| | | Time Delay Fuse Rating (Amps) | 15 | 20 |
| | NEMA | SQUARE D Thermal-Magnetic Circuit Breaker Catalog Number | FAL36015 | FAL36020 |
| | | Magnetic Starter, Class 8536 Type: * | SCG3 | SCG3 |
| | | Melting Alloy Thermal Units | B12.8 | B17.5 |
| | IEC | SQUARE D® MAG-GARD® Circuit Breaker Catalog Number | FAL3601513M | FAL3603015M |
| | | IEC Contactor Catalog Number LC1 * | LC1D09 | LC1D12 |
| | | IEC Overload Relay Catalog Number | LRD14 | LRD16 |

* Complete catalog number with control voltage code

** LC1D40 to LC1D95

NEMA
IEC

| 24VAC | 120VAC | 240 VAC | 480VAC | 600VAC | 24VDC |
|-------|--------|---------|---------|---------|-------|
| V01 | V02 | V03 | V06 | V07 | - |
| B7 | G7 | U7 | T7/T6** | X7/X6** | BD |

| 15 | 20 | 25 | 30 | 40 |
|-------------|-------------|-------------|-------------|-------------|
| 21 | 27 | 34 | 40 | 52 |
| 10 | 10 | 8 | 8 | 6 |
| H361 | H362 | H362 | H362 | H363 |
| 30 | 40 | 50 | 60 | 80 |
| FAL34040 | FAL34060 | FAL34070 | FAL34080 | FAL34090 |
| SDG1 | SDG1 | SDG1 | SEG1 | SEG1 |
| B32. | B45. | B62. | CC59.4 | CC81.5 |
| FAL3603015M | FAL3605016M | FAL3605016M | FAL3610018M | FAL3610018M |
| LC1D25 | LC1D32 | LC1D40 | LC1D40 | LC1D50 |
| LRD22 | LRD32 | LRD3355 | LRD3357 | LRD3359 |
| 17 | 22 | 27 | 32 | 41 |
| 12 | 10 | 10 | 8 | 6 |
| H361 | H361 | H362 | H362 | H362 |
| 25 | 30 | 40 | 50 | 60 |
| FAL36035 | FAL36045 | FAL36060 | FAL36060 | FAL36080 |
| SDG1 | SDG1 | SDG1 | SEG1 | SEG1 |
| B25. | B36. | B45. | CC46.6 | CC64.3 |
| FAL3603015M | FAL3605016M | FAL3605016M | FAL3605016M | FAL3610018M |
| LC1D18 | LC1D25 | LC1D32 | LC1D32 | LC1D50 |
| LRD21 | LRD22 | LRD32 | LRD35 | LRD3357 |

ELECTRICAL FORMULAS

Ohms Law:

$$\text{Ohms} = \text{Volts/Amperes}$$

$$\text{Amperes} = \text{Volts/Ohms}$$

$$\text{Volts} = \text{Amperes} \times \text{Ohms}$$

Power – A.C. Circuits:

$$\text{Power Factor} = \frac{\text{Watts}}{\text{Volts} \times \text{Amperes}}$$

$$\text{Three-Phase Kilowatts} = \frac{\text{Volts} \times \text{Amperes} \times \text{Power Factor} \times 1.732}{1000}$$

$$\text{Three-Phase Volt-Amperes} = \text{Volts} \times \text{Amperes} \times 1.732$$

$$\text{Three-Phase Amperes} = \frac{746 \times \text{Horsepower}}{1.732 \times \text{Volts} \times \text{Efficiency} \times \text{Power Factor}}$$

$$\text{Single-Phase Kilowatts} = \frac{\text{Volts} \times \text{Amperes} \times \text{Power Factor}}{1000}$$

$$\text{Single-Phase Amperes} = \frac{746 \times \text{Horsepower}}{\text{Volts} \times \text{Efficiency} \times \text{Power Factor}}$$

Power – D.C. Circuits:

$$\text{Watts} = \text{Volts} \times \text{Amperes}$$

$$\text{Amperes} = \frac{\text{Watts}}{\text{Volts}}$$

$$\text{Horsepower} = \frac{\text{Volts} \times \text{Amperes} \times \text{Efficiency}}{746}$$

ELECTRICAL FORMULAS

Motor Application Formulas:

$$\text{Torque (lb-ft)} = \frac{\text{Horsepower} \times 5250}{\text{RPM}}$$

$$\text{Shaft Stress (pds per sq inch)} = \frac{\text{HP} \times 321.000}{\text{RPM} \times \text{Shaft Diam.}^3}$$

For Pumps:

$$\text{Horsepower} = \frac{\text{GPM} \times \text{Head in Feet} \times \text{Specific Gravity}}{3960 \times \text{Efficiency of Pump}}$$

For Fans and Blowers:

$$\text{Horsepower} = \frac{\text{CFM} \times \text{Pressure (pounds/sq ft)}}{33000 \times \text{Efficiency}}$$

Speed:

$$\text{Synchronous RPM} = \frac{\text{Hertz} \times 120}{\text{Poles}}$$

$$\text{Percent Slip} = \frac{\text{Synchronous RPM} - \text{Full Load RPM}}{\text{Synchronous RPM}} \times 100$$