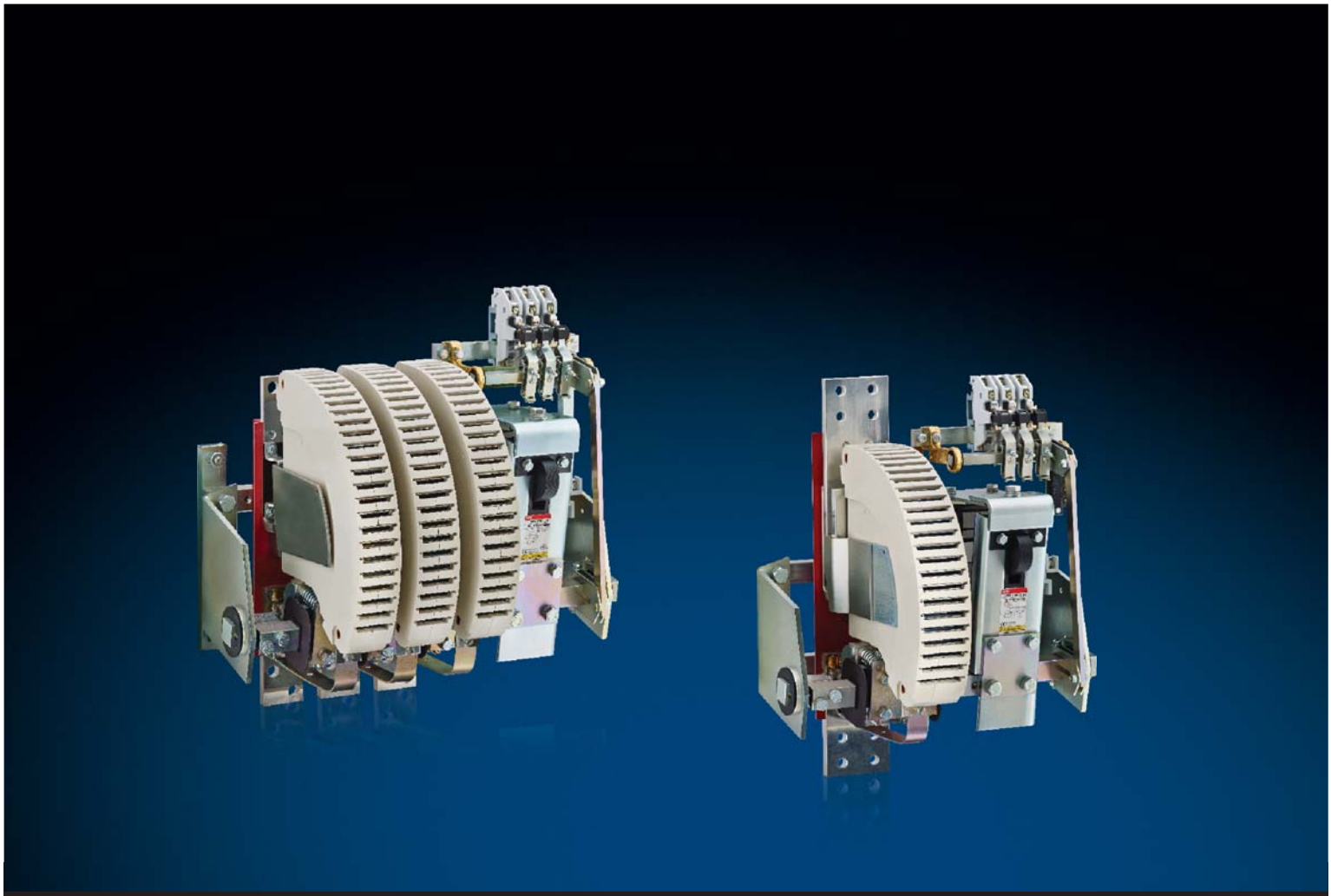


US catalog

# R contactors
## Control of AC and DC power circuits up to 5000 A

Power and productivity
for a better world™

# Motor rated operational powers and currents

The currents given below concern standard three-phase four-pole cage motors (1500 r.p.m. at 50 Hz 1800 r.p.m. at 60 Hz). These values are given for guidance and may vary according to the motor manufacturer and depending on the number of poles.

| IEC | Motor nominal current: standardized values in blue color (according to IEC 60947-4-1 Annex G) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Motor power | 220 V | 230 V | 240 V | 380 V | 400 V | 415 V | 440 V | 500 V | 660 V | 690 V |
| kW | A | A | A | A | A | A | A | A | A | A |
| 0.06 | 0.37 | 0.35 | 0.34 | 0.21 | 0.2 | 0.19 | 0.18 | 0.16 | 0.13 | 0.12 |
| 0.09 | 0.54 | 0.52 | 0.50 | 0.32 | 0.3 | 0.29 | 0.26 | 0.24 | 0.18 | 0.17 |
| 0.12 | 0.73 | 0.7 | 0.67 | 0.46 | 0.44 | 0.42 | 0.39 | 0.32 | 0.24 | 0.23 |
| 0.18 | 1 | 1 | 1 | 0.63 | 0.6 | 0.58 | 0.53 | 0.48 | 0.37 | 0.35 |
| 0.25 | 1.6 | 1.5 | 1.4 | 0.9 | 0.85 | 0.82 | 0.74 | 0.68 | 0.51 | 0.49 |
| 0.37 | 2.0 | 1.9 | 1.8 | 1.2 | 1.1 | 1.1 | 1 | 0.88 | 0.67 | 0.64 |
| 0.55 | 2.7 | 2.6 | 2.5 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 0.91 | 0.87 |
| 0.75 | 3.5 | 3.3 | 3.2 | 2.0 | 1.9 | 1.8 | 1.7 | 1.5 | 1.15 | 1.1 |
| 1.1 | 4.9 | 4.7 | 4.5 | 2.8 | 2.7 | 2.6 | 2.4 | 2.2 | 1.7 | 1.6 |
| 1.5 | 6.6 | 6.3 | 6 | 3.8 | 3.6 | 3.5 | 3.2 | 2.9 | 2.2 | 2.1 |
| 2.2 | 8.9 | 8.5 | 8.1 | 5.2 | 4.9 | 4.7 | 4.3 | 3.9 | 2.9 | 2.8 |
| 3 | 11.8 | 11.3 | 10.8 | 6.8 | 6.5 | 6.3 | 5.7 | 5.2 | 4 | 3.8 |
| 4 | 15.7 | 15 | 14.4 | 8.9 | 8.5 | 8.2 | 7.4 | 6.8 | 5.1 | 4.9 |
| 5.5 | 20.9 | 20 | 19.2 | 12.1 | 11.5 | 11.1 | 10.1 | 9.2 | 7 | 6.7 |
| 7.5 | 28.2 | 27 | 25.9 | 16.3 | 15.5 | 14.9 | 13.6 | 12.4 | 9.3 | 8.9 |
| 11 | 39.7 | 38 | 36.4 | 23.2 | 22 | 21.2 | 19.3 | 17.6 | 13.4 | 12.8 |
| 15 | 53.3 | 51 | 48.9 | 30.5 | 29 | 28 | 25.4 | 23 | 17.8 | 17 |
| 18.5 | 63.8 | 61 | 58.5 | 36.8 | 35 | 33.7 | 30.7 | 28 | 22 | 21 |
| 22 | 75.3 | 72 | 69 | 43.2 | 41 | 39.5 | 35.9 | 33 | 25.1 | 24 |
| 30 | 100 | 96 | 92 | 57.9 | 55 | 53 | 48.2 | 44 | 33.5 | 32 |
| 37 | 120 | 115 | 110 | 69 | 66 | 64 | 58 | 53 | 40.8 | 39 |
| 45 | 146 | 140 | 134 | 84 | 80 | 77 | 70 | 64 | 49.1 | 47 |
| 55 | 177 | 169 | 162 | 102 | 97 | 93 | 85 | 78 | 59.6 | 57 |
| 75 | 240 | 230 | 220 | 139 | 132 | 127 | 116 | 106 | 81 | 77 |
| 90 | 291 | 278 | 266 | 168 | 160 | 154 | 140 | 128 | 97 | 93 |
| 110 | 355 | 340 | 326 | 205 | 195 | 188 | 171 | 156 | 118 | 113 |
| 132 | 418 | 400 | 383 | 242 | 230 | 222 | 202 | 184 | 140 | 134 |
| 160 | 509 | 487 | 467 | 295 | 280 | 270 | 245 | 224 | 169 | 162 |
| 200 | 637 | 609 | 584 | 368 | 350 | 337 | 307 | 280 | 212 | 203 |
| 250 | 782 | 748 | 717 | 453 | 430 | 414 | 377 | 344 | 261 | 250 |
| 315 | 983 | 940 | 901 | 568 | 540 | 520 | 473 | 432 | 327 | 313 |
| 355 | 1109 | 1061 | 1017 | 642 | 610 | 588 | 535 | 488 | 370 | 354 |
| 400 | 1255 | 1200 | 1150 | 726 | 690 | 665 | 605 | 552 | 418 | 400 |
| 500 | 1545 | 1478 | 1416 | 895 | 850 | 819 | 745 | 680 | 515 | 493 |
| 560 | 1727 | 1652 | 1583 | 1000 | 950 | 916 | 832 | 760 | 576 | 551 |
| 630 | 1928 | 1844 | 1767 | 1116 | 1060 | 1022 | 929 | 848 | 643 | 615 |
| 710 | 2164 | 2070 | 1984 | 1253 | 1190 | 1147 | 1043 | 952 | 721 | 690 |
| 800 | 2446 | 2340 | 2243 | 1417 | 1346 | 1297 | 1179 | 1076 | 815 | 780 |
| 900 | 2760 | 2640 | 2530 | 1598 | 1518 | 1463 | 1330 | 1214 | 920 | 880 |
| 1000 | 3042 | 2910 | 2789 | 1761 | 1673 | 1613 | 1466 | 1339 | 1014 | 970 |

| UL / CSA | Motor nominal current: standardized values (according to IEC 60947-4-1 Annex G and UL 508) | | | | |
|---|---|---|---|---|---|
| Motor power | 208 V | 220-240 V | 380-415 V | 440-480 V | 550-600 V |
| hp | A | A | A | A | A |
| 1/2 | 2.4 | 2.2 | 1.3 | 1.1 | 0.9 |
| 3/4 | 3.5 | 3.2 | 1.8 | 1.6 | 1.3 |
| 1 | 4.6 | 4.2 | 2.3 | 2.1 | 1.7 |
| 1-1/2 | 6.6 | 6 | 3.3 | 3 | 2.4 |
| 2 | 7.5 | 6.8 | 4.3 | 3.4 | 2.7 |
| 3 | 10.6 | 9.6 | 6.1 | 4.8 | 3.9 |
| 5 | 16.7 | 15.2 | 9.7 | 7.6 | 6.1 |
| 7-1/2 | 24.2 | 22 | 14 | 11 | 9 |
| 10 | 30.8 | 28 | 18 | 14 | 11 |
| 15 | 46.2 | 42 | 27 | 21 | 17 |
| 20 | 59.4 | 54 | 34 | 27 | 22 |
| 25 | 74.8 | 68 | 44 | 34 | 27 |
| 30 | 88 | 80 | 51 | 40 | 32 |
| 40 | 114 | 104 | 66 | 52 | 41 |
| 50 | 143 | 130 | 83 | 65 | 52 |
| 60 | 169 | 154 | 103 | 77 | 62 |
| 75 | 211 | 192 | 128 | 96 | 77 |
| 100 | 273 | 248 | 165 | 124 | 99 |
| 125 | 343 | 312 | 208 | 156 | 125 |
| 150 | 396 | 360 | 240 | 180 | 144 |
| 200 | 528 | 480 | 320 | 240 | 192 |
| 250 | – | 604 | 403 | 302 | 242 |
| 300 | – | 722 | 482 | 361 | 289 |
| 350 | – | 828 | 560 | 414 | 336 |
| 400 | – | 954 | 636 | 477 | 382 |
| 450 | – | 1030 | – | 515 | 412 |
| 500 | – | 1180 | 786 | 590 | 472 |

# R contactors
## Control of AC and DC power circuits up to 5000 A


Overview 1

Construction characteristics 2

AC circuit switching 3

DC circuit switching 4

Advanced applications 5

General technical data 6

Accessories and spare parts 7

Terminal marking and wiring diagrams 8

Dimensions 9

Terms and definitions 10

Questionnaire 11

Index 12

# R contactors
## Engineered to perform in heavy duty applications

With over 100 years of experience in control, ABB meets AC and DC requirements from 63 A up to 5000 A with R contactor range.

**We offer our application know-how through the R contactor range to perfectly match your utilization requirements, whatever the usage condition and the required configuration. Robustness and reliability bring R contactors technology beyond the limits of other contactors.**

### Secure Operation Reliability

- High making and breaking capacity
- Durability up to 5 million electrical operations
- Easy inspection access and availability of spare parts
- Experienced and proven for years

### Improved Installation Efficiency

- Variable number of poles
- NO, NC or combined main poles configuration
- Main pole for On-load breaking or for coupling
- Magnetic or mechanical latch available

### Increased Application Productivity

- Rated current up to 5000 A
- Rated voltage up to 1000 V AC or 1500 V DC
- IEC AC-1, AC-3, DC-1, DC-3 and DC-5 utilization categories.
- UL general use rated 800 - 2000A at 600VDC
- Mechanical switching frequency up to 1200 cycles per hour

... you can trust

**From standard to tailor-made solution**

– Most commonly used configurations are presented in the R contactor catalog and well documented
– 120V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard
– Other configurations and ratings are available on request

**Engineered to perform in wide variety of applications**

**Industries**

– Iron and steel industries
– Mining
– Cranes
– Induction furnaces

**Power generation**

– Hydroelectric power stations
– Photovoltaic power plants
– Power distribution
– Energy storage

**Infrastructure**

– Power panels
– Pump station
– Rail transportation

# R contactors
## Get the right product



## Conventional applications

### AC circuit switching

**Up to 500 V AC**
**IOR** contactors

**From 500 up to 1000 V AC**
**IOR..MT** contactors

AC-1 Rated operational current up to 5000 A
AC-3 Rated power up to 1500 kW (1520 A - 440 V)

### DC circuit switching

**Up to 1500 V DC with poles in series**
**IOR..CC** contactors

DC-1 Rated operational current up to 5000 A
DC-3 / DC-5 operational current up to 2000 A

## Advanced applications

### N.O./N.C. main poles combination

**AC circuit switching**
**NOR..MT** contactors

**DC circuit switching**
**NOR..CC** contactors

### Power circuit coupling

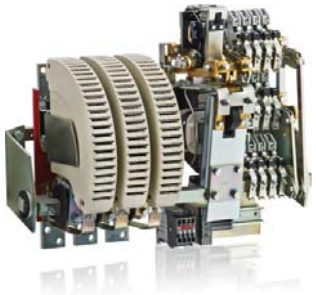
**Up to 1000 V AC / 1500 V DC**
**LOR** couplers

### Slip-ring motor control

**Ue up to 5000 V AC**
**FOR** contactors

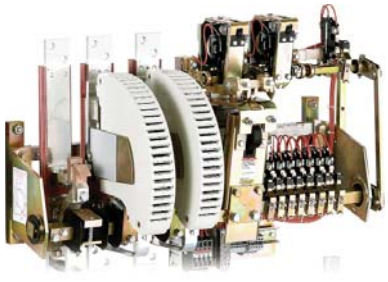
### Energy saving and safety requirements

**Equipped with latching**
**..AMA, ..AME** contactor types



### Alternator field discharge

**Umax 2250 V DC**
**AM-CC-JORE** contactors



# R contactors for AC circuit switching



## Rated operational voltage
## Ue from 500 up to **1000 V AC**



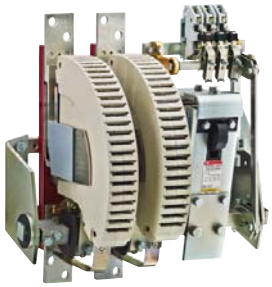
| Contactor type | | | | IORR63..MT | IORR125..MT | IORR200..MT | IORR400..MT | IORR500..MT | IORR800..MT |
|---|---|---|---|---|---|---|---|---|---|
| **Categories** | | **Ue** | | | | | | | |
| **AC-1** | at 40 °C | | **Ie** | 85 A | 170 A | 260 A | 400 A | 550 A | 800 A |
| **AC-3** | | 690 V AC | **Ie** | 85 A | 160 A | 260 A | 400 A | 550 A | 800 A |
| | | 1000 V AC max. | **Ie** | 56 A | 105 A | 180 A | 280 A | 380 A | 580 A |
| **AC-3** | | 690 V AC | **Power** | **80 kW** | **150 kW** | **240 kW** | **400 kW** | **540 kW** | **780 kW** |

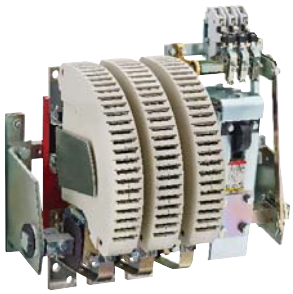
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

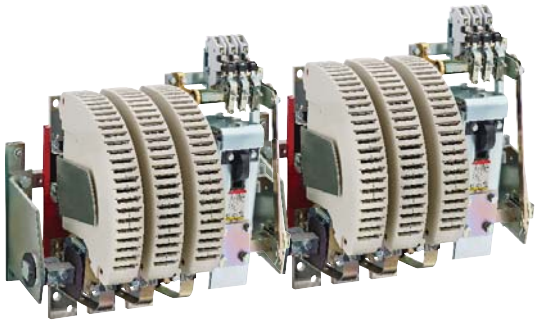
## Rated operational voltage
## Ue up to **500 V AC**

| Contactor type | | | | – | IORR800 |
|---|---|---|---|---|---|
| **Categories** | | **Ue** | | | |
| **AC-1** | at 40 °C | | **Ie** | From 85 A to 550 A, select above IOR..-MT | 900 A |
| **AC-3** | | 380-415-440 V AC | **Ie** | – | 800 A |
| | | 500 V AC max. | **Ie** | – | 800 A |
| **AC-3** | | 400 V AC | **Power** | – | **450 kW** |

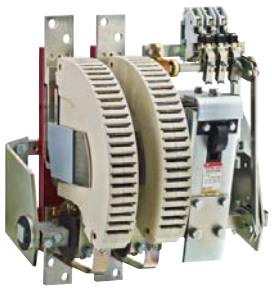
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

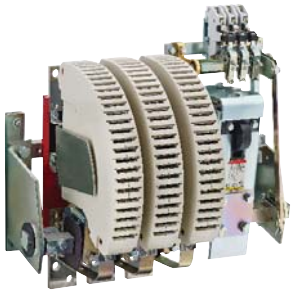


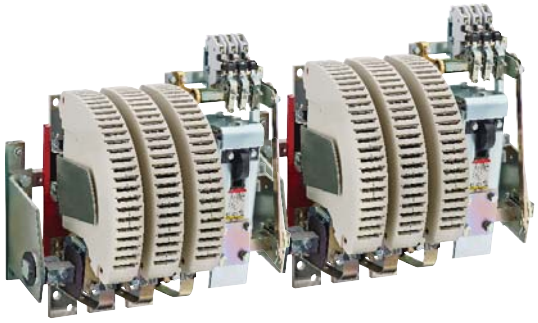




| IORR1400..MT | IORR1700..MT | IORR2100..MT | IORR2500..MT | IORR3200..MT | IORR3800..MT | IORR4500..MT | IORR5100..MT |
|---|---|---|---|---|---|---|---|
| 1250 A | 1650 A | 1850 A | 2200 A | 3000 A | 3500 A | 4000 A | 4500 A |
| 970 A | 1170 A | 1270 A | – | – | – | – | – |
| 610 A | 680 A | 810 A | – | – | – | – | – |
| **1000 kW** | **1200 kW** | **1300 kW** | – | – | – | – | – |







| IORR1000 | IORR1400 | IORR1700 | IORR2100 | IORR2500 | IORR3200 | IORR3800 | IORR4500 | IORR5100 |
|---|---|---|---|---|---|---|---|---|
| 1000 A | 1350 A | 1650 A | 2000 A | 2400 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 800 A | 1080 A | 1260 A | 1520 A | – | – | – | – | – |
| 800 A | 1080 A | 1220 A | 1340 A | – | – | – | – | – |
| **450 kW** | **630 kW** | **750 kW** | **900 kW** | – | – | – | – | – |

# R contactors for DC circuit switching

1

## Rated operational voltage
## Ue up to **1500 V DC**

| Contactor type | | | | IORR63..CC | IORR125..CC | IORR200..CC | IORR400..CC | IORR500..CC |
|---|---|---|---|---|---|---|---|---|
| Number of poles in series | Categories | Ue max. | | | | | | |
| 1 pole | DC-1 | 500 V DC | Ie | 85 A | 170 A | 275 A | 400 A | 550 A |
| | DC-3 / DC-5 | 500 V DC | Ie | 68 A | 125 A | 205 A | 350 A | 500 A |
| 2 poles | DC-1 | 1000 V DC | Ie | 85 A | 170 A | 275 A | 400 A* | 550 A* |
| | DC-3 / DC-5 | 1000 V DC | Ie | 68 A | 125 A | 205 A | 350 A | 500 A |
| 3 poles | DC-1 | 1500 V DC | Ie | 85 A* | 170 A* | 275 A* | 400 A* | 550 A* |
| | DC-3 / DC-5 | 1500 V DC | Ie | 68 A* | 125 A* | 205 A* | 350 A* | 500 A* |

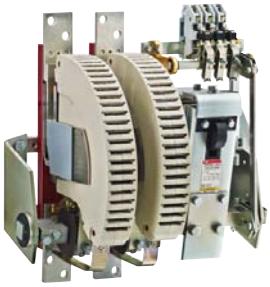
* Ue max. = 1500 V DC, version with increased insulation for 1000 V DC < Ue ≤ 1500 V DC, please consult us.
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

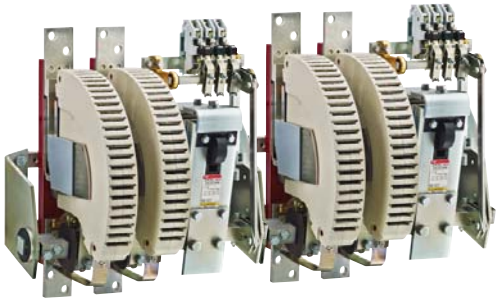
## Contactors
## UL / CSA approved

## Rated operational voltage
## Ue up to **600 V DC**

| Contactor type | | | | IORR800-10-CC-U | IORR1000-10-CC-U | IORR1400-10-CC-U | IORR1700-10-CC-U | IORR2100-10-CC-U |
|---|---|---|---|---|---|---|---|---|
| | | U max. | | | | | | |
| 1 pole | General use | 600 V DC | Ie | 800 A | 1000 A | 1300 A | 1700 A | 2000 A |

*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard





| | IORR800..CC | IORR1000..CC | IORR1400..CC | IORR1700..CC | IORR2100..CC | IORR2500..CC | IORR3200..CC | IORR3800..CC | IORR4500..CC | IORR5100..CC |
|---|---|---|---|---|---|---|---|---|---|---|
| **Ue max.** | | | | | | | | | | |
| 750 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 600 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |
| 1500 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 1000 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |
| 1500 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 1500 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |

# Construction characteristics


**Construction characteristics** 12

Contactors with magnetic latching ..AMA type 14

Contactors with mechanical latching ..AME type 15

Type and order code for R contactors 16

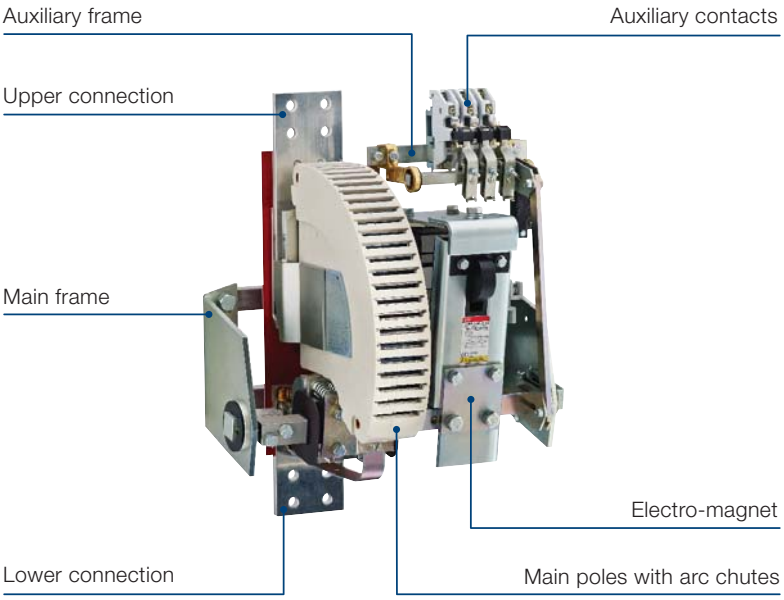
Coil voltage and blowout type 17

**Auxiliary contacts**

Main characteristics 18

# Construction characteristics






## This design offers a great flexibility with standard types as well as special variants

## Flexible design

R contactors are built with a main frame supporting main poles, electro-magnet, auxiliary contacts and feature:

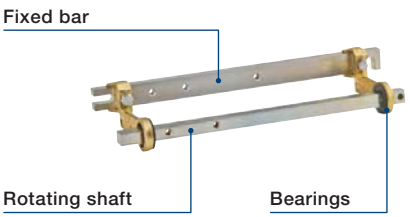
- Variable number of N.O. and N.C. poles, with or without blowout coils
- Large number of N.O. and N.C. auxiliary contacts
- Control circuit for standard and specific voltages
- Mechanical or magnetic latching available.

All parts are easily accessible and removable from the front.

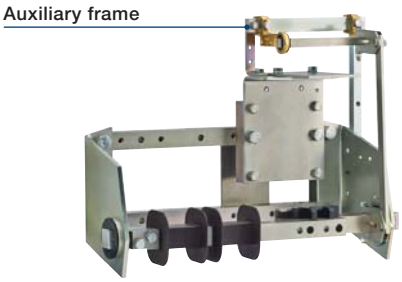
## Main frame

The main frame is designed with a fixed bar and a rotating shaft linked by 2 bearings.
All parts (poles, electro-magnet, auxiliary contacts) are mounted on this frame.

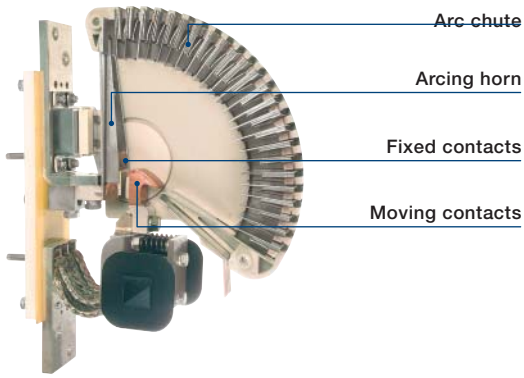
### Small frame for R63 ... R500 contactors




### Large frame for R800 ... R5100 contactors




## Main poles




### Each pole is designed with:

### Fixed and moving contacts

The fixed contacts are mounted on an insulated support screwed onto the fixed bar.

The moving contacts are similarly mounted and move directly with the rotating shaft.

### A blowout coil

The standard blowout coil is rated to carry the total current flowing through the poles.

### Arc chutes

Ensure a rapid extinction of the arcs. Quick and easy removal of the arc chutes allows an easy inspection of the contacts and their replacement if necessary.

### Arcing horn

Assits the elongation and breaking of the electric arc (not applicable to LOR couplers).

# Construction characteristics

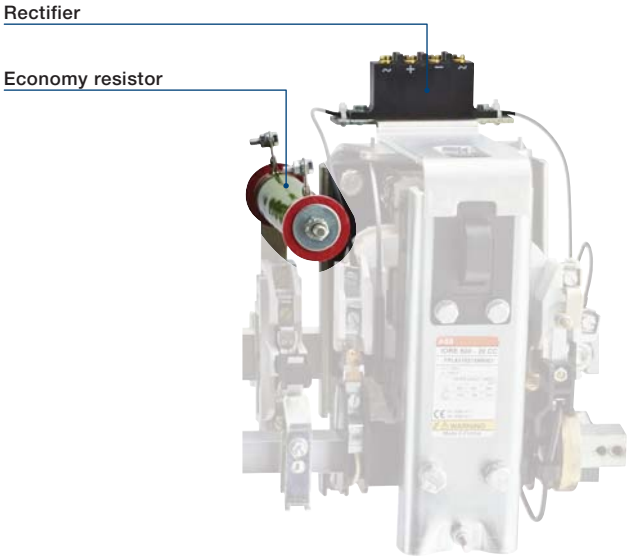


### Low current breaking for DC circuits

**R63 ... R2100 contactors**

If the breaking current is lower than 50 % of the contactor rating, a permanent magnet must be added. Please consult us. Refer to blowout code table in DC circuit switching

## Control circuit




The electro-magnet is built with a magnetic circuit and a coil. It is mounted on the right side or on the frame center, in standard. It can be mounted on the left side on request.

### AC control circuit supply:
### RR electro-magnet

The coil is fed from an AC supply via a rectifier and an economy resistor. The control supply frequency is 50/60 Hz in standard. For others frequencies, please consult us.

### DC control circuit supply (on request):
### RE electro-magnet

The coil is fed from a DC supply via an economy resistor.

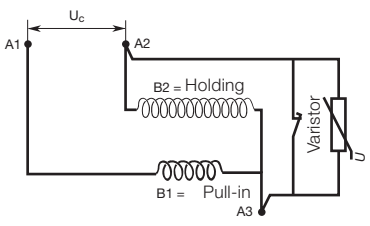
### Latching version
### (see following pages)

Magnetic latching for R63 ... R200
Mechanical latching for R500 ... R5100

## Low consumption coil for R63 ... R500 contactors (on request)

- Up to 6 times less in control power consumption at holding
- Reduced width up to 15 % compared to standard R contactors
- Control voltage available:
  - 24...440 V 50 / 60 Hz
  - 24...250 V DC
- Example of type: IORE63..-LC.

### Principle




A varistor and a lagging contact for holding winding insertion are factory mounted.

Only a part of the winding (B1) is energized at closing. After opening the NC contact, the complete coil (B1 + B2) is used for contactor holding.

# Contactors with magnetic latching ..AMA type



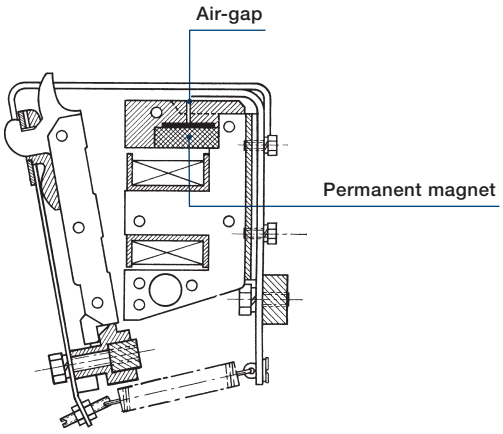
## For R63 ... R200 contactors

### Description

Contactors with magnetic latching are very similar to standard contactor in construction and dimensions. Only the electro-magnet and the coil have a specific design.

**AC operated:** ..RR..AMA
**DC operated:** ..R..AMA

A permanent magnet is mounted in the upper part of the fixed laminated circuit. The double-winding coil is always fed from d.c. supply (from rectifier for IORR..AMA type) and has:
– 1 terminal for "De-latching" + marked "A1" (red)
– 1 terminal for "Latching" + marked "A2" (red)
– 1 common terminal (blue).
Coil windings are only energized at the point of opening and closing of the contactor. 2 NO + 2 NC auxiliary contacts is fitted as standard. For additional auxiliary contact, refer to "Auxiliary contact fitting details".




Electro-magnet of contactors ..AMA

### Applications

– Contactors which remain permanently closed, that allows energy saving
– Installations where the control circuits are fed from batteries and where it's needed to reduce the power consumption
– In case of accidental supply failure, the user knows the state (ON or OFF) of the contactor when the failure occurred
– Contactors which must remain closed for safety reasons, even if the control circuit current decreases
– Contactors in distribution circuits. The contactor is used as an isolating switch
– Protection against accidental failure of the main supply.

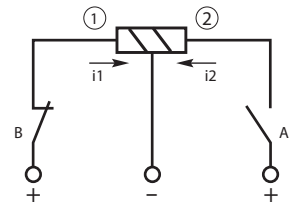
### Operation

**Contactor closing (latching)**
The electro-magnet being open, the coil winding (1) is fed via the contact B with a current i1. The strength and direction of the magnetic field produced in this winding is the same as that produced by the permanent magnet.

**Contactor opening (de-latching)**
The electro-magnet being closed, the coil winding (2) is fed via the contact A with a current i2. The direction of the field produced by current i2, open the contactor.

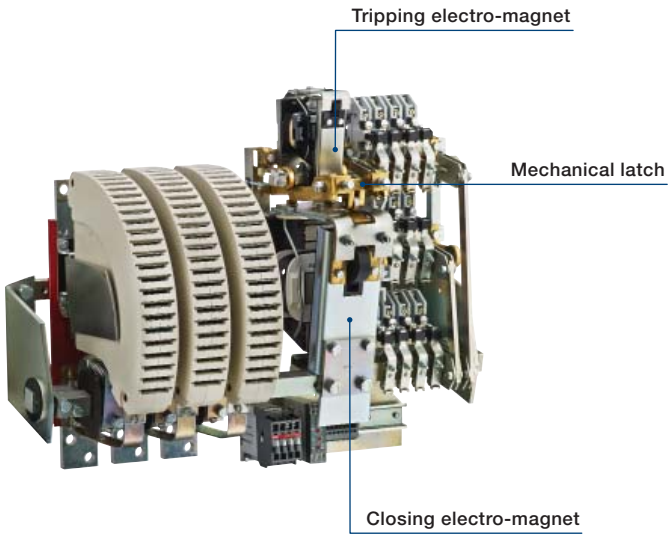
**Contactor opening and closing**
On opening and closing of the contactor, the coil is immediately de-energized by auxiliary contacts B and A mounted on the contactor.

**Mechanical durability**
0.2 millions of operating cycles.




Block diagram

# Contactors with mechanical latching ..AME type




## For R500 ... R5100 contactors

### Description

Contactors with mechanical latching differ from standard contactor by a double electro-magnet (with closing and tripping electro-magnet, electrically separated).

A mechanical latch is mounted above the closing electro-magnet. The tripping electro-magnet releases the mechanical latch.

2 NO + 2 NC auxiiliary contacts are fitted as standard for ..AME types. For additional auxiliary contacts, refer to "Auxiliary contact fitting details.

**AC operated:** ..RR..AME

### Applications

- Contactors which remain permanently closed allows energy saving
- Installations where the control circuits are fed from batteries and where reduction of power consumption is needed
- In case of accidental supply failure, the user knows the state (ON or OFF) of the contactor when the failure occurred
- Contactors which must remain closed for safety reasons, even if the control circuit current decreases
- Contactors in distribution circuits where the contact serves as an isolating switch
- Protection against accidental failure of the main supply.

### Operation

**Contactor closing (latching)**

Once the closing coil is energized, the contactor closes. It remains in this position by the mechanical latch action. The closing coil is de-energized by an electrical interlocking contact.

**Contactor opening (de-latching)**

Once the tripping coil is energized, the mechanical latch is released and the contactor opens.The tripping coil is de-energized by an electrical interlocking contact.

**Mechanical durability**

0.2 millions of operating cycles.

**Variant**

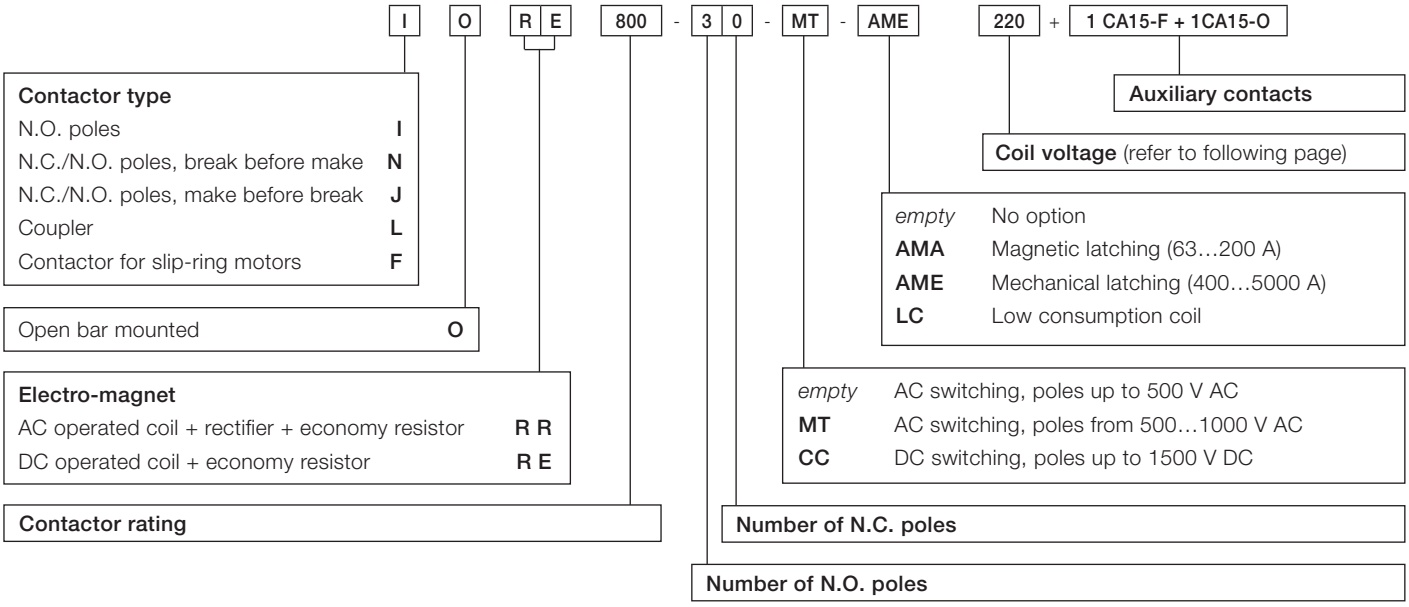
AMF types with 2 tripping coils are available on request.

# Type and order code for R contactors

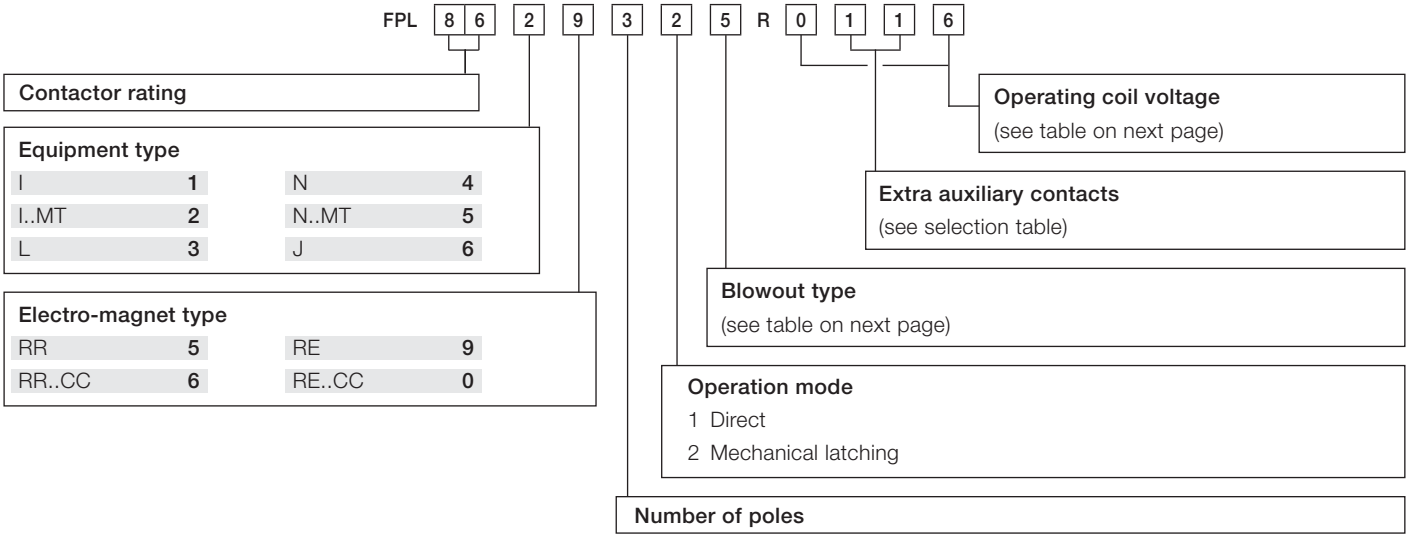


**Example:**
IORE800-30-MT-AME, 220 V DC coil + 1 CA15-F + 1 CA15-O
R contactor with RE electro-magnet and circuit for DC operation via an economy resistor, 800 A rating, 3 N.O. main poles, 0 N.C. main pole, with mechanical latching, 220 V DC coil + 1 extra CA15-F (N.O.) auxiliary contact block + 1 extra CA15-O (N.C.) auxiliary contact (total auxiliary contacts: 1 N.O. + 1 N.C.)

## Type




## Order code




Notes:
– Additional auxiliary contacts can be ordered separately and mounted by the user if the fixed dimension F doesn't increase (see Auxiliary contact fitting details table).
– Order code or contactor rating must be specified when the CA15 auxiliary contact are ordered separately.

# Coil voltage and blowout type
## Selection table



### Blowout code table in DC circuit switching

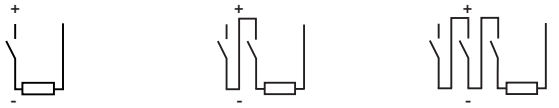
**Standard electromagnetic blowout coil** (bidirectional)
Used to stretch and break the electric arc from contacts gap to the arc chute.
Blowout coil rating according to the operational current.

| Rating | | | | | Code |
|---|---|---|---|---|---|
| 63 A | 125 A | 200 A | 400 A | 500 A | |
| A | A | A | A | A | ☐R |
| 32 | – | – | – | – | **4**R |
| 40 | 170 | 260 | 400 | 550 | **5**R |
| 85 | – | – | – | – | **6**R |

**Permanent magnets blowout** (unidirectional)
If breaking current < 50% of contactor rating, the electromagnetic field remains too weak to blow the arc, therefore permanent magnets must be added.

| Rating | Code |
|---|---|
| from 63 to 2100 A | |
| | ☐R |
| Permanent magnets blowout | **7**R |

Pole polarization with permanent magnet




1-pole 2-pole 3-pole

# Auxiliary contacts
# Main characteristics



## For R63 ... R500 contactors

### CARB, 1-pole auxiliary contact

- 1 N.O. auxiliary contact, generally used for "hold-in"
- Ith = 6 A
- Fitted on the left side.

### CAOVE, 1-pole auxiliary contact

- 1 N.C. auxiliary contact, generally used for electrical interlocking (adjustable)
- Ith = 6 A
- Fitted on the right side.

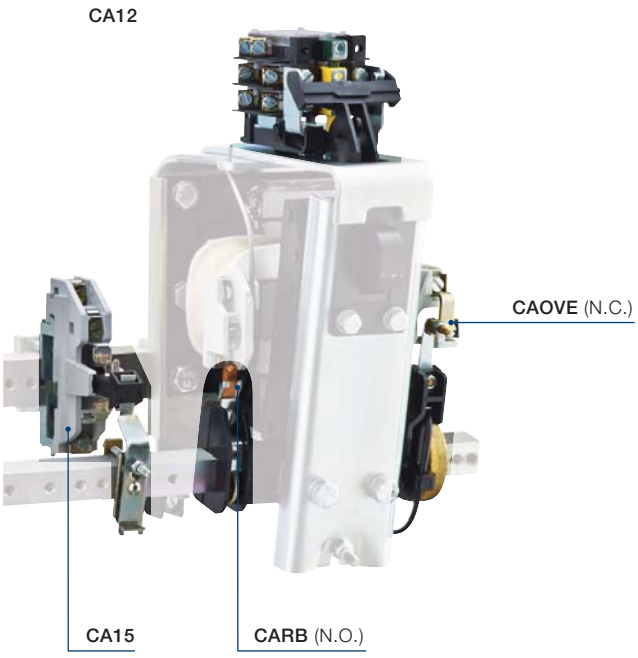
### CA12, 2-pole auxiliary contact blocks

| | |
|---|---|
| CA12-1 | 1 N.O. + 1 N.C. |
| CA12-2 | 2 N.O. |

- Ith = 12 A
- Fitted on the upper part of the electro-magnet.

## For R63 ... R5100 contactors

**Small frame for R63 ... R500 contactors**

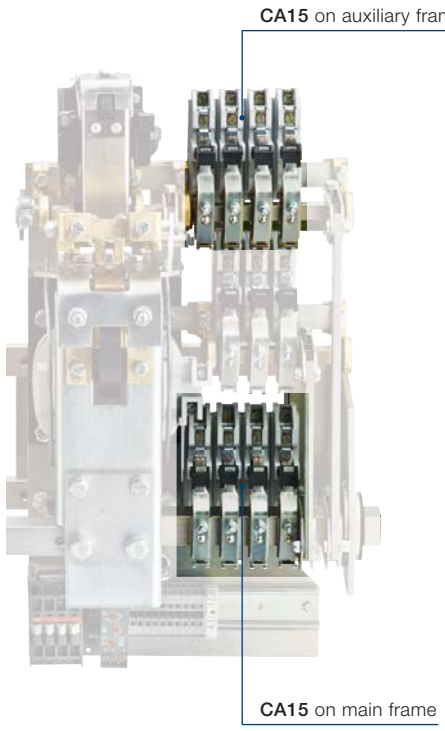



### CA15, 1-pole adjustable auxiliary contacts

| | |
|---|---|
| CA15-F | 1 N.O. |
| CA15-O | 1 N.C. |

- For R63 ... R500 contactors: auxiliary contact is mounted between the main pole and the electro-magnet
- For R800 ... R5100 contactors: auxiliary contact is mounted on the auxiliary frame. If more CA15s are needed, they are mounted on the main frame
- Ith = 15 A.

**Large frame for R800 ... R5100 contactors**



# Auxiliary contacts
# Selection tables



## Extra auxiliary contact code tables

F fixing dimension can change according to the number of CA15 auxiliary contacts. Refer to table below and "Dimensions" section.

| Type<br>**RR, RE** (63...500 A)<br>**R..AMA** (63...200 A) | | | | Code |
|---|---|---|---|---|
| **CA12-1**<br>N.O. + N.C. | **CA12-2**<br>2 x N.O. | **CA15F**<br>N.O. | **CA15O**<br>N.C. | **R_□□_** |
| – | – | – | – | **R_00_** |
| 1 | – | – | – | **R_11_** |
| 1 | – | – | 1 | **R_12_** |
| 1 | – | – | 2 | **R_13_** |
| – | 1 | – | – | **R_20_** |
| 1 | – | 1 | – | **R_21_** |
| 2 | – | – | – | **R_22_** |
| – | 1 | 1 | – | **R_30_** |
| 1 | 1 | – | – | **R_31_** |
| 3 | – | – | – | **R_33_** |
| – | 2 | – | – | **R_40_** |
| 2 | 1 | – | – | **R_42_** |
| 1 | 2 | – | – | **R_51_** |
| – | 3 | – | – | **R_60_** |
| 1 | – | 1 | 1 | **R_61_** |
| 1 | – | 2 | 2 | **R_62_** |
| – | 1 | 1 | 1 | **R_63_** |
| – | 1 | 2 | – | **R_64_** |
| – | 1 | 2 | 2 | **R_65_** |
| – | 1 | 4 | – | **R_66_** |
| – | 1 | 3 | 1 | **R_67_** |

| Type<br>**RR, RE, RR..AME, RE..AME** (≥ 800 A)<br>**RR..AMA** (63...200 A) | | Code |
|---|---|---|
| **CA15F**<br>N.O. | **CA15O**<br>N.C. | **R_□□_** |
| – | – | **R_00_** |
| – | 1 | **R_01_** |
| – | 2 | **R_02_** |
| – | 3 | **R_03_** |
| – | 4 | **R_04_** |
| 1 | – | **R_10_** |
| 1 | 1 | **R_11_** |
| 1 | 2 | **R_12_** |
| 2 | – | **R_20_** |
| 2 | 1 | **R_21_** |
| 2 | 2 | **R_22_** |
| 3 | – | **R_30_** |
| 3 | 1 | **R_31_** |
| 3 | 2 | **R_32_** |
| 3 | 3 | **R_33_** |
| 4 | – | **R_40_** |
| 4 | 1 | **R_41_** |
| 4 | 2 | **R_42_** |
| 4 | 3 | **R_43_** |
| 5 | – | **R_50_** |
| 5 | 1 | **R_51_** |
| 6 | – | **R_60_** |

The above tables indicate the main auxiliary contact combinations. For other combinations, please consult us.

## Auxiliary contact fitting details

| Contactor types | Rating | Auxiliary contacts fitted as standard | | | | Additional auxiliary contacts without increasing dimension **F** (1) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **CA15** | | **CA12** Single block (incl. 2 contacts) | | **CA12** Double block (incl. 4 contacts) |
| | **A** |  | |  | | | | | | |
| IORR<br>IORE | 800…5100 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |
| IORR..MT | 63…500 | 1 CARB | + | 1 CAOVE | | - | | - | + | 1 max. |
| IORR..CC | 800…5100 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |
| IORE..MT | 63…500 | 1 CARB | + | 1 CAOVE | | - | + | 1 max. | + | 1 max. |
| | 800…5100 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |
| IORE..CC | 63…500 | 1 CARB | + | 1 CAOVE | | - | + | 1 max. | + | 1 max. |
| | 800…5100 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |
| IOR..AMA | 63…200 | 1 CARB | | - | | - | + | 1 max. | | - |
| IORR..AMA | 63…200 | 1 CARB | | - | | - | | - | | - |
| IORR..AME | 400…500 | - | | - | | 1 max. | | - | | - |
| IORE..AME | 800…5100 | - | | - | | 5 max. | | - | | - |
| NORR..MT | 63…200 | 1 CARB | + | 1 CAOVE | | - | | - | + | 1 max. |
| NORR..CC | 800 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |
| NORE..MT | 63…200 | 1 CARB | + | 1 CAOVE | | - | + | 1 max. | + | 1 max. |
| NORE..CC | 800 | 1 CA15-F | + | 1 CA15-O | + | 2 max. | | - | | - |

(1) More CA15 auxiliary contacts can be fitted with increasing dimension F. See fixing dimension F in "Dimensions" section.

3

# AC circuit switching


Overview 22

Ordering details

Power circuit up to 500 V AC

IORR AC operated 24

Power circuit up to 1000 V AC

IORR..MT AC operated 25

Power circuit up to 500 V AC, with mechanical latching

IORR..AME AC operated 26

Power circuit up to 1000 V AC, with latching

IORR..MT-AMA AC operated 27

IORR..MT-AME AC operated 27

Technical data 28

Type and order code for R contactors 18

# R contactors for AC circuit switching



## Rated operational voltage
## Ue from 500 up to **1000 V AC**



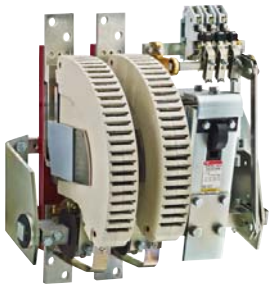
| Contactor type | | | | IORR63..MT | IORR125..MT | IORR200..MT | IORR400..MT | IORR500..MT | IORR800..MT |
|---|---|---|---|---|---|---|---|---|---|
| **Categories** | | **Ue** | | | | | | | |
| **AC-1** | at 40 °C | | **Ie** | 85 A | 170 A | 260 A | 400 A | 550 A | 800 A |
| **AC-3** | | 690 V AC | **Ie** | 85 A | 160 A | 260 A | 400 A | 550 A | 800 A |
| | | 1000 V AC max. | **Ie** | 56 A | 105 A | 180 A | 280 A | 380 A | 580 A |
| **AC-3** | | 690 V AC | **Power** | **80 kW** | **150 kW** | **240 kW** | **400 kW** | **540 kW** | **780 kW** |

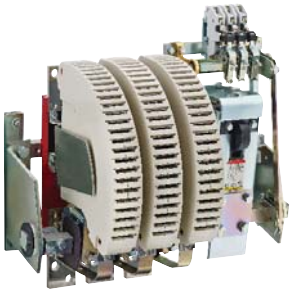
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

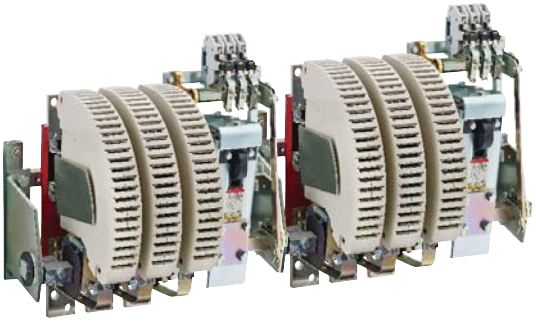
## Rated operational voltage
## Ue up to **500 V AC**

| Contactor type | | | | – | IORR800 |
|---|---|---|---|---|---|
| **Categories** | | **Ue** | | | |
| **AC-1** | at 40 °C | | **Ie** | From 85 A to 550 A, select above IOR..-MT | 900 A |
| **AC-3** | | 380-415-440 V AC | **Ie** | – | 800 A |
| | | 500 V AC max. | **Ie** | – | 800 A |
| **AC-3** | | 400 V AC | **Power** | – | **450 kW** |

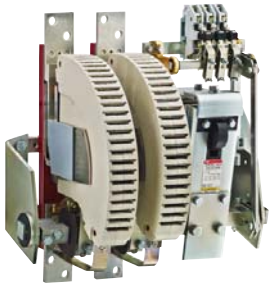
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

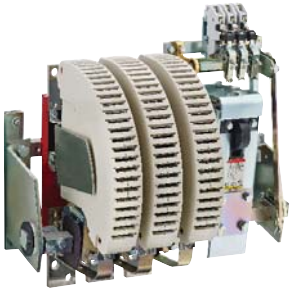


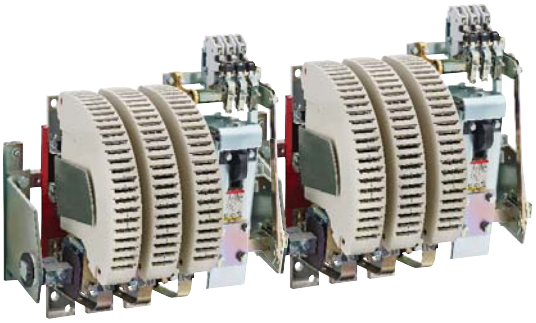




| IORR1400..MT | IORR1700..MT | IORR2100..MT | IORR2500..MT | IORR3200..MT | IORR3800..MT | IORR4500..MT | IORR5100..MT |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| 1250 A | 1650 A | 1850 A | 2200 A | 3000 A | 3500 A | 4000 A | 4500 A |
| 970 A | 1170 A | 1270 A | – | – | – | – | – |
| 610 A | 680 A | 810 A | – | – | – | – | – |
| **1000 kW** | **1200 kW** | **1300 kW** | – | – | – | – | – |

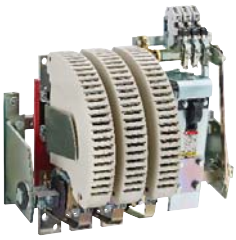






| IORR1000 | IORR1400 | IORR1700 | IORR2100 | IORR2500 | IORR3200 | IORR3800 | IORR4500 | IORR5100 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 1000 A | 1350 A | 1650 A | 2000 A | 2400 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 800 A | 1080 A | 1260 A | 1520 A | – | – | – | – | – |
| 800 A | 1080 A | 1220 A | 1340 A | – | – | – | – | – |
| **450 kW** | **630 kW** | **750 kW** | **900 kW** | – | – | – | – | – |

# IORR contactors
## Power circuit up to 500 V AC
## Control circuit 120V 60Hz




IORR800-30

### Description

IORR contactors are used for controlling AC power circuits up to 500 V AC.

These contactors are designed with:

– variable number of poles according to the application
– control circuit: AC operated
– 2 NO + 2 NC auxiliary contacts available, as standard

### Ordering details

| AC-3 | | | | AC-1 | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | Type | Order code | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated operational power | | | current | | | | | | | | Pkg (1 pce) |
| 380 V 400 V 415 V | 440 V | 500 V | ≤ 440 V | θ ≤ 40 °C | | | | | | | |
| kW | kW | kW | A | A | | V 50/60 Hz | | | | | kg |
| 450 | 500 | 560 | 800 | 900 | 2 | 120V | 2 2 | IORR800-20 | FPL8615215R2113 | | 38 |
| | | | | | 3 | | 2 2 | IORR800-30 | FPL8615315R2113 | | 48 |
| | | | | | 4 | | 2 2 | IORR800-40 | FPL8615415R2113 | | 58 |
| - | - | - | - | 1000 | 2 | 120V | 2 2 | IORR1000-20 | FPL8715215R2113 | | 38 |
| | | | | | 3 | | 2 2 | IORR1000-30 | FPL8715315R2113 | | 48 |
| | | | | | 4 | | 2 2 | IORR1000-40 | FPL8715415R2113 | | 58 |
| 630 | 710 | 800 | 1080 | 1350 | 2 | 120V | 2 2 | IORR1400-20 | FPL6115215R2113 | | 40 |
| | | | | | 3 | | 2 2 | IORR1400-30 | FPL6115315R2113 | | 50 |
| | | | | | 4 | | 2 2 | IORR1400-40 | FPL6115415R2113 | | 63 |
| 750 | 800 | 900 | 1260 | 1650 | 2 | 120V | 2 2 | IORR1700-20 | FPL6215215R2113 | | 44 |
| | | | | | 3 | | 2 2 | IORR1700-30 | FPL6215315R2113 | | 56 |
| | | | | | 4 | | 2 2 | IORR1700-40 | FPL6215415R2113 | | 72 |
| 900 | 1000 | 1000 | 1520 | 2000 | 2 | 120V | 2 2 | IORR2100-20 | FPL6315215R2113 | | 48 |
| | | | | | 3 | | 2 2 | IORR2100-30 | FPL6315315R2113 | | 62 |
| | | | | | 4 | | 2 2 | IORR2100-40 | FPL6315415R2113 | | 78 |
| - | - | - | - | 2400 | 2 | 120V | 2 2 | IORR2500-20 | FPL6715215R2113 | | On |
| | | | | | 3 | | 2 2 | IORR2500-30 | FPL6715315R2113 | | request |
| - | - | - | - | 3200 | 2 | 120V | 2 2 | IORR3200-20 | FPL6515215R2113 | | On |
| | | | | | 3 | | 2 2 | IORR3200-30 | FPL6515315R2113 | | request |
| - | - | - | - | 3800 | 2 | 120V | 2 2 | IORR3800-20 | FPL6615215R2113 | | On |
| | | | | | 3 | | 2 2 | IORR3800-30 | FPL6615001R2113 | | request |
| - | - | - | - | 4500 | 2 | 120V | 2 2 | IORR4500-20 | FPL6815215R2113 | | On |
| | | | | | 3 | | 2 2 | IORR4500-30 | FPL6815001R2113 | | request |
| - | - | - | - | 5000 | 2 | 120V | 2 2 | IORR5100-20 | FPL6915001R2113 | | On |
| | | | | | 3 | | 2 2 | IORR5100-30 | FPL6915002R2113 | | request |

(1) Other control voltages, please contact us.
(2) Other auxiliary contact arrangements, please contact us.

# IORR..MT contactors
## Power circuit up to 1000 V AC
## Control circuit 120V 50/60 Hz


IORR1400-20-MT

### Description

IORR..MT contactors are used for controlling AC power circuits from 500 up to 1000 V AC.

These contactors are designed with:

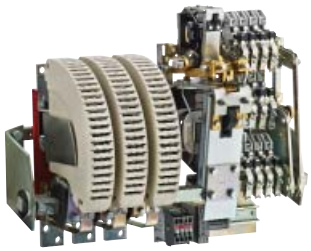
– variable number of poles according to the application
– control circuit: AC operated
– 2 NO + 2 NC auxiliary contacts available, as standard

### Ordering details

| AC-3 | | | AC-1 | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | Type | Order code | | Weight Pkg (1 pce) |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated operational power (3) | | current | | | | | | | | |
| 690 V | 1000 V | ≤ 690 V | θ ≤ 40 °C | | | | | | | |
| kW | kW | A | A | | V 50/60 Hz | | | | | kg |
| 80 | 80 | 85 | 85 | 2 | 120V | 2 2 | IORR63-20-MT | FPL7125216R2113 | | 4.2 |
| | | | | 3 | | 2 2 | IORR63-30-MT | FPL7125386R2113 | | 5.2 |
| | | | | 4 | | 2 2 | IORR63-40-MT | FPL7125416R2113 | | 6.2 |
| 150 | 150 | 160 | 170 | 2 | 120V | 2 2 | IORR125-20-MT | FPL7425215R2113 | | 6.2 |
| | | | | 3 | | 2 2 | IORR125-30-MT | FPL7425315R2113 | | 8.2 |
| | | | | 4 | | 2 2 | IORR125-40-MT | FPL7425415R2113 | | 10.2 |
| 240 | 250 | 260 | 260 | 2 | 120V | 2 2 | IORR200-20-MT | FPL7625215R2113 | | 9.6 |
| | | | | 3 | | 2 2 | IORR200-30-MT | FPL7625315R2113 | | 12.6 |
| | | | | 4 | | 2 2 | IORR200-40-MT | FPL7625415R2113 | | 15.6 |
| 400 | 400 | 400 | 400 | 2 | 120V | 2 2 | IORR400-20-MT | FPL9425215R2113 | | 19.2 |
| | | | | 3 | | 2 2 | IORR400-30-MT | FPL9425315R2113 | | 25 |
| | | | | 4 | | 2 2 | IORR400-40-MT | FPL9425415R2113 | | 30.8 |
| 540 | 550 | 550 | 550 | 2 | 120V | 2 2 | IORR500-20-MT | FPL8325215R2113 | | 19.7 |
| | | | | 3 | | 2 2 | IORR500-30-MT | FPL8325315R2113 | | 25.5 |
| | | | | 4 | | 2 2 | IORR500-40-MT | FPL8325415R2113 | | 31.3 |
| 780 | 850 | 800 | 800 | 2 | 120V | 2 2 | IORR800-20-MT | FPL8625215R2113 | | 40 |
| | | | | 3 | | 2 2 | IORR800-30-MT | FPL8625315R2113 | | 51 |
| | | | | 4 | | 2 2 | IORR800-40-MT | FPL8625415R2113 | | 62 |
| 1000 | 900 | 970 | 1250 | 2 | 120V | 2 2 | IORR1400-20-MT | FPL6125215R2113 | | 42 |
| | | | | 3 | | 2 2 | IORR1400-30-MT | FPL6125315R2113 | | 52 |
| | | | | 4 | | 2 2 | IORR1400-40-MT | FPL6125415R2113 | | 65 |
| 1200 | 1000 | 1170 | 1650 | 2 | 120V | 2 2 | IORR1700-20-MT | FPL6225215R2113 | | 47 |
| | | | | 3 | | 2 2 | IORR1700-30-MT | FPL6225315R2113 | | 61 |
| | | | | 4 | | 2 2 | IORR1700-40-MT | FPL6225415R2113 | | 74 |
| 1300 | 1200 | 1270 | 1850 | 2 | 120V | 2 2 | IORR2100-20-MT | FPL6325215R2113 | | 52 |
| | | | | 3 | | 2 2 | IORR2100-30-MT | FPL6325315R2113 | | 68 |
| | | | | 4 | | 2 2 | IORR2100-40-MT | FPL6325415R2113 | | 82 |
| - | - | - | 2200 | 2 | 120V | 2 2 | IORR2500-20-MT | FPL6725215R2113 | | 71 |
| | | | | 3 | | 2 2 | IORR2500-30-MT | FPL6725315R2113 | | On request |
| | | | | 4 | | 2 2 | IORR2500-40-MT | FPL6725415R2113 | | |
| - | - | - | 3000 | 2 | 120V | 2 2 | IORR3200-20-MT | FPL6525215R2113 | | 83 |
| | | | | 3 | | 2 2 | IORR3200-30-MT | FPL6525315R2113 | | On request |
| - | - | - | 3500 | 2 | 120V | 2 2 | IORR3800-20-MT | FPL6625215R2113 | | 95 |
| | | | | 3 | | 2 2 | IORR3800-30-MT | FPL6625001R2113 | | On request |
| - | - | - | 4000 | 2 | 120V | 2 2 | IORR4500-20-MT | FPL6825215R2113 | | On request |
| | | | | 3 | | 2 2 | IORR4500-30-MT | FPL6825002R2113 | | |
| - | - | - | 4500 | 2 | 120V | 2 2 | IORR5100-20-MT | FPL6925001R2113 | | On request |
| | | | | 3 | | 2 2 | IORR5100-30-MT | FPL6925002R2113 | | |

(1) Other control voltages, please contact us.
(2) Other auxiliary contact arrangements, please contact us.
(3) Power circuit above 1000 V AC, please contact us.

# IORR..AME contactors
## Power circuit up to 500 V AC, with mechanical latching
## Control circuit 120V 50/60 Hz




IORR800-30-AME

### Description

IORR..AME contactors are used for controlling AC power circuits up to 500 V AC.

These contactors are designed with:
- mechanical latching
- variable number of poles according to the application
- control circuit: AC operated
- 2 NO + 2 NC auxiliary contacts available

### Ordering details

| AC-3 Rated operational power 380 V 400 V 415 V kW | 440 V kW | 500 V kW | AC-1 current ≤ 440 V A | θ ≤ 40 °C A | Nb of poles | Rated control circuit voltage Uc (1) V 50/60 Hz | Auxiliary contacts fitted (2) | Type | Order code | | Weight Pkg (1 pce) kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 450 | 500 | 560 | 800 | 900 | 2 | 120V | 2 2 | IORR800-20-AME | FPL8615225R2223 | | 48 |
| | | | | | 3 | | 2 2 | IORR800-30-AME | FPL8615325R2223 | | 58 |
| | | | | | 4 | | 2 2 | IORR800-40-AME | FPL8615425R2223 | | 68 |
| - | - | - | - | 1000 | 2 | 120V | 2 2 | IORR1000-20-AME | FPL8715225R2223 | | 48 |
| | | | | | 3 | | 2 2 | IORR1000-30-AME | FPL8715325R2223 | | 58 |
| | | | | | 4 | | 2 2 | IORR1000-40-AME | FPL8715425R2223 | | 68 |
| 630 | 710 | 800 | 1080 | 1350 | 2 | 120V | 2 2 | IORR1400-20-AME | FPL6115225R2223 | | 50 |
| | | | | | 3 | | 2 2 | IORR1400-30-AME | FPL6115325R2223 | | 60 |
| | | | | | 4 | | 2 2 | IORR1400-40-AME | FPL6115425R2223 | | 73 |
| 750 | 800 | 900 | 1260 | 1650 | 2 | 120V | 2 2 | IORR1700-20-AME | FPL6215225R2223 | | 54 |
| | | | | | 3 | | 2 2 | IORR1700-30-AME | FPL6215325R2223 | | 66 |
| | | | | | 4 | | 2 2 | IORR1700-40-AME | FPL6215425R2223 | | 82 |
| 900 | 1000 | 1000 | 1520 | 2000 | 2 | 120V | 2 2 | IORR2100-20-AME | FPL6315225R2223 | | 58 |
| | | | | | 3 | | 2 2 | IORR2100-30-AME | FPL6315325R2223 | | 72 |
| | | | | | 4 | | 2 2 | IORR2100-40-AME | FPL6315425R2223 | | 88 |
| - | - | - | - | 2400 | 2 | 120V | 2 2 | IORR2500-20-AME | FPL6715225R2223 | | On request |
| | | | | | 3 | | 2 2 | IORR2500-30-AME | FPL6715325R2223 | | |
| - | - | - | - | 3200 | 2 | 120V | 2 2 | IORR3200-20-AME | FPL6515225R2223 | | On request |
| | | | | | 3 | | 2 2 | IORR3200-30-AME | FPL6515325R2223 | | |
| - | - | - | - | 3800 | 2 | 120V | 2 2 | IORR3800-20-AME | FPL6615225R2223 | | On request |
| - | - | - | - | 4500 | 2 | 120V | 2 2 | IORR4500-20-AME | FPL6815225R2223 | | On request |

(1) Other control voltages please consult us.
(2) Other auxiliary contact arrangements, please consult us.

# IORR..MT-AMA and IORR..MT-AME contactors
## Power circuit up to 1000 V AC, with latching
## Control circuit 120V 50/60 Hz


IORR800-30-MT-AME

### Description

IORR..MT-AMA and IORR..MT-AME contactors are used for controlling AC power circuits from 500 up to 1000 V AC.

These contactors are designed with:
- magnetic latching, AMA types
- mechanical latching, AME types
- variable number of poles according to the application
- control circuit: AC operated
- 2 NO + 2 NC auxiliary contact available for AMA version, as standard
- 2 NO + 2 NC auxiliary contacts available for AME version



### Ordering details

| AC-3 Rated operational power (3) 690 V kW | AC-3 Rated operational power (3) 1000 V kW | AC-3 current ≤ 690 V A | AC-1 θ ≤ 40 °C A | Number of poles | Rated control circuit voltage Uc (1) V 50/60 Hz | Auxiliary contacts fitted (2) | Type | Order code | | Weight Pkg (1 pce) kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **Magnetic latching** | | | | | | | | | | |
| 80 | 80 | 85 | 85 | 2 | 120V | 2 2 | IORR63-20-MT-AMA | FPL7125236R2123 | | 3.9 |
| | | | | 3 | | 2 2 | IORR63-30-MT-AMA | FPL7125336R2123 | | 4.9 |
| | | | | 4 | | 2 2 | IORR63-40-MT-AMA | FPL7125436R2123 | | 5.9 |
| 150 | 150 | 160 | 170 | 2 | 120V | 2 2 | IORR125-20-MT-AMA | FPL7425235R2123 | | 5.9 |
| | | | | 3 | | 2 2 | IORR125-30-MT-AMA | FPL7425335R2123 | | 7.9 |
| | | | | 4 | | 2 2 | IORR125-40-MT-AMA | FPL7425435R2123 | | 9.9 |
| 240 | 250 | 260 | 260 | 2 | 120V | 2 2 | IORR200-20-MT-AMA | FPL7625235R2123 | | 9.2 |
| | | | | 3 | | 2 2 | IORR200-30-MT-AMA | FPL7625335R2123 | | 12.2 |
| | | | | 4 | | 2 2 | IORR200-40-MT-AMA | FPL7625435R2123 | | 15.2 |
| **Mechanical latching** | | | | | | | | | | |
| 400 | 400 | 400 | 400 | 2 | 120V | 2 2 | IORR400-20-MT-AME | FPL9425225R2123 | | 24.2 |
| | | | | 3 | | 2 2 | IORR400-30-MT-AME | FPL9425325R2123 | | 30 |
| 540 | 550 | 550 | 550 | 2 | 120V | 2 2 | IORR500-20-MT-AME | FPL8325225R2123 | | 24.2 |
| | | | | 3 | | 2 2 | IORR500-30-MT-AME | FPL8325325R2123 | | 30 |
| 780 | 850 | 800 | 800 | 2 | 120V | 2 2 | IORR800-20-MT-AME | FPL8625225R2123 | | 50 |
| | | | | 3 | | 2 2 | IORR800-30-MT-AME | FPL8625325R2123 | | 61 |
| 1000 | 900 | 970 | 1250 | 2 | 120V | 2 2 | IORR1400-20-MT-AME | FPL6125225R2123 | | 52 |
| | | | | 3 | | 2 2 | IORR1400-30-MT-AME | FPL6125325R2123 | | 62 |
| 1200 | 1000 | 1170 | 1650 | 2 | 120V | 2 2 | IORR1700-20-MT-AME | FPL6225225R2123 | | 57 |
| | | | | 3 | | 2 2 | IORR1700-30-MT-AME | FPL6225325R2123 | | 71 |
| 1300 | 1200 | 1270 | 1850 | 2 | 120V | 2 2 | IORR2100-20-MT-AME | FPL6325225R2123 | | 62 |
| | | | | 3 | | 2 2 | IORR2100-30-MT-AME | FPL6325325R2123 | | 78 |
| - | - | - | 2200 | 2 | 120V | 2 2 | IORR2500-20-MT-AME | FPL6725225R2123 | | On request |
| | | | | 3 | | 2 2 | IORR2500-30-MT-AME | FPL6725325R2123 | | |
| - | - | - | 3000 | 2 | 120V | 2 2 | IORR3200-20-MT-AME | FPL6525225R2123 | | On request |
| | | | | 3 | | 2 2 | IORR3200-30-MT-AME | FPL6525325R2123 | | |
| - | - | - | 3500 | 2 | 120V | 2 2 | IORR3800-20-MT-AME | FPL6625225R2123 | | On request |
| | | | | 3 | | 2 2 | IORR3800-30-MT-AME | FPL6625325R2123 | | |
| - | - | - | 4000 | 2 | 120V | 2 2 | IORR4500-20-MT-AME | FPL6825225R2123 | | On request |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Power circuit above 1000 V AC, please consult us.

# IORR800 … IORR2100 contactors
## Technical data



### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR800 | IORR1000 | IORR1400 | IORR1700 | IORR2100 |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 500 V | | | | |
| **Rated frequency (without derating)** | | 25…60 Hz (for > 60…400 Hz please consult us) | | | | |
| **Number of poles** | | 2…4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 1000 A | 1100 A | 1400 A | 1700 A | 2100 A |
| With conductor cross-sectional area | | 600 mm² | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² |
| **AC-1 Utilization category** | | | | | | |
| For air temperature close to contactor | | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 900 A | 1000 A | 1350 A | 1650 A | 2000 A |
| Ue max. ≤ 500 V, 50/60 Hz | **θ ≤ 55 °C** | 840 A | 930 A | 1180 A | 1450 A | 1750 A |
| | **θ ≤ 70 °C** | 720 A | 800 A | 1000 A | 1250 A | 1500 A |
| With conductor cross-sectional area | | 600 mm² | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² |
| **AC-3 Utilization category** | | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | | |
| M 3~ | **380-415-440 V** | 800 A | - | 1080 A | 1260 A | 1520 A |
| | **500 V** | 800 A | - | 1080 A | 1220 A | 1340 A |
| **Rated operational power AC-3** | | | | | | |
| M 3~ | **380-415 V** | 450 kW | - | 630 kW | 750 kW | 900 kW |
| | **440 V** | 500 kW | - | 710 kW | 800 kW | 1000 kW |
| | **500 V** | 560 kW | - | 800 kW | 900 kW | 1000 kW |
| **Rated making capacity AC-3** | | 10 x Ie AC-3 acc. to IEC 60947-4-1 | | | | |
| **Rated breaking capacity AC-3** | | 8 x Ie AC-3 acc. to IEC 60947-4-1 | | | | |
| **Short-circuit protection device for contactors** | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | |
| Circuit breaker | | 1250 A | 1250 A | 1600 A | 2000 A | 2500 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 9000 A | 11000 A | 13000 A | 15000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 8000 A | 9000 A | 11000 A | 12200 A |
| in free air from a cold state | **30 s** | 4000 A | 4000 A | 5000 A | 6000 A | 7000 A |
| | **1 min** | 3000 A | 3000 A | 3700 A | 4400 A | 5000 A |
| | **15 min** | 1600 A | 1600 A | 2000 A | 2400 A | 2800 A |
| **Maximum breaking capacity** | | | | | | |
| cos ϕ = 0.35 | **at 500 V** | 6400 A | 6400 A | 10000 A | 13500 A | |
| **Maximum making capacity** | | 14000 A | 14000 A | 19000 A | 21000 A | 24000 A |
| **Dynamical withstand of pole** | | 14000 A | 14000 A | 19000 A | 21000 A | 24000 A |
| **Impedance per pole** | | 0.18 mΩ | 0.18 mΩ | 0.10 mΩ | 0.09 mΩ | 0.08 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | | 150 cycles/h | 120 cycles/h | |
| | **AC-3** | 300 cycles/h | - | 150 cycles/h | 120 cycles/h | |
| | **AC-4** | 150 cycles/h | - | - | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 5 millions cycles | | 2 millions cycles | | |
| Max. switching frequency | | 1200 cycles/h | | 600 cycles/h | | |

Note: These characteristics are suitable for IOR..AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR2500 … IORR5100 contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR2500 | IORR3200 | IORR3800 | IORR4500 | IORR5100 |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 500 V | | | | |
| **Rated frequency (without derating)** | | 25…60 Hz (for > 60...400 Hz please consult us) | | | | |
| **Number of poles** | | 2...4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 2500 A | 3200 A | 3800 A | 4500 A | 5000 A |
| With conductor cross-sectional area | | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **AC-1 Utilization category** | | | | | | |
| For air temperature close to contactor | | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 2400 A | 3200 A | 3800 A | 4500 A | 5000 A |
| Ue max. ≤ 500 V, 50/60 Hz | **θ ≤ 55 °C** | 2100 A | 2810 A | 3330 A | 3950 A | 4390 A |
| | **θ ≤ 70 °C** | 1760 A | 2350 A | 2790 A | 3300 A | 3670 A |
| With conductor cross-sectional area | | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **Rated making capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | |
| **Rated breaking capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | |
| **AC-3 Utilization category** | | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | | |
| M 3~ | **380-415-440 V** | Please consult us | | | | |
| | **500 V** | Please consult us | | | | |
| **Short-circuit protection device for contactors** | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | |
| Circuit breaker | | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 20000 A | 21000 A | 24000 A | 28000 A | 30000 A |
| at 40 °C ambient temperature, | **10 s** | 15000 A | 18000 A | 19000 A | 21000 A | 24000 A |
| in free air from a cold state | **30 s** | 8000 A | 10000 A | 11000 A | 12000 A | 13000 A |
| | **1 min** | 6000 A | 7000 A | 7500 A | 8000 A | 9000 A |
| | **15 min** | 3000 A | 4000 A | 4500 A | 5000 A | 5500 A |
| **Maximum making capacity** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Dynamical withstand of pole** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Impedance per pole** | | 0.05 mΩ | 0.045 mΩ | 0.040 mΩ | 0.030 mΩ | 0.027 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 60 cycles/h | | 40 cycles/h | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 2 millions cycles | | 1 million cycles | | |
| Max. switching frequency | | 600 cycles/h | | 300 cycles/h | | |

Note: These characteristics are suitable for IOR..AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR63..MT … IORR500..MT contactors
## Technical data



### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR63..MT | IORR125..MT | IORR200..MT | IORR400..MT | IORR500..MT |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1000 V | | | | |
| **Rated frequency (without de-rating)** | | 25…60 Hz (for > 60...400 Hz please consult us) | | | | |
| **Number of poles** | | 2...4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 85 A | 170 A | 275 A | 400 A | 550 A |
| With conductor cross-sectional area | | 25 mm² | 70 mm² | 150 mm² | 240 mm² | 400 mm² |
| **AC-1 Utilization category** | | | | | | |
| For air temperature close to contactor | | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 85 A | 170 A | 260 A | 400 A | 550 A |
| Ue max. ≤ 1000 V, 50/60 Hz | **θ ≤ 55 °C** | 76 A | 150 A | 230 A | 350 A | 490 A |
| | **θ ≤ 70 °C** | 68 A | 135 A | 205 A | 300 A | 400 A |
| With conductor cross-sectional area | | 25 mm² | 70 mm² | 150 mm² | 240 mm² | 400 mm² |
| **AC-3 Utilization category** | | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | | |
|  | **690 V** | 85 A | 160 A | 260 A | 400 A | 550 A |
| | **1000 V** | 56 A | 105 A | 180 A | 280 A | 380 A |
| **Rated operational power AC-3** | | | | | | |
|  | **690 V** | 80 kW | 150 kW | 240 kW | 400 kW | 540 kW |
| | **1000 V** | 80 kW | 150 kW | 250 kW | 400 kW | 550 kW |
| **Rated making capacity AC-3** | | 10 x Ie AC-3 acc. to IEC 60947-4-1 | | | | |
| **Rated breaking capacity AC-3** | | 8 x Ie AC-3 acc. to IEC 60947-4-1 | | | | |
| **Short-circuit protection device for contactors** | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | |
| Ue ≤ 1000 V AC - gG type fuse | | 100 A | 200 A | 315 A | 500 A | 630 A |
| Ue ≤ 1000 V AC - L type fuse | | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 1150 A | 2250 A | 3800 A | 6000 A | 8400 A |
| at 40 °C ambient temperature, | **10 s** | 680 A | 1280 A | 2080 A | 3200 A | 4400 A |
| in free air from a cold state | **30 s** | 310 A | 680 A | 1040 A | 1600 A | 2200 A |
| | **1 min** | 230 A | 450 A | 730 A | 1200 A | 1680 A |
| | **15 min** | 120 A | 250 A | 390 A | 600 A | 840 A |
| **Maximum breaking capacity** | | | | | | |
| cos ϕ = 0.45 | **at 690 V** | 680 A | 1280 A | 2100 A | 4480 A | 4480 A |
| (cos ϕ = 0.35 for Ie > 100 A) | **at 1000 V** | 450 A | 850 A | 1450 A | 3050 A | 3050 A |
| **Maximum making capacity** | | 1300 A | 2400 A | 4000 A | 7000 A | 9000 A |
| **Dynamical withstand of pole** | | 1400 A | 2500 A | 4500 A | 8000 A | 10000 A |
| **Impedance per pole** | | 1.8 mΩ | 1.20 mΩ | 0.60 mΩ | 0.40 mΩ | 0.35 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | | | | |
| | **AC-3** | 300 cycles/h | | | | |
| | **AC-4** | 150 cycles/h | | | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 5 millions cycles | | | | |
| Max. switching frequency | | 1200 cycles/h | | | | |

Note: These characteristics are suitable for IOR..MT-AMA and IOR..MT-AME contactors with latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR800..MT … IORR2100..MT contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR800..MT | IORR1400..MT | IORR1700..MT | IORR2100..MT |
|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | |
| **Rated operational voltage Ue max.** | | 1000 V | | | |
| **Rated frequency (without derating)** | | 25…60 Hz (for > 60...400 Hz please consult us) | | | |
| **Number of poles** | | 2...4 | | | |
| **Conventional free-air thermal current Ith** | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 800 A | 1300 A | 1700 A | 1850 A |
| With conductor cross-sectional area | | 500 mm² | 1000 mm² | 1500 mm² | 1500 mm² |
| **AC-1 Utilization category** | | | | | |
| For air temperature close to contactor | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 800 A | 1250 A | 1650 A | 1850 A |
| Ue max. ≤ 690 V, 50/60 Hz | **θ ≤ 55 °C** | 740 A | 1100 A | 1450 A | 1620 A |
| | **θ ≤ 70 °C** | 640 A | 900 A | 1250 A | 1400 A |
| **Ie / Rated operational current AC-1** | | | | | |
| Ue max. ≤ 1000 V, 50/60 Hz | **θ ≤ 40 °C** | 800 A | 1220 A | 1360 A | 1620 A |
| With conductor cross-sectional area | | 500 mm² | 1000 mm² | 1500 mm² | 1500 mm² |
| **AC-3 Utilization category** | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | |
| M 3~ | **690 V** | 800 A | 970 A | 1170 A | 1270 A |
| | **1000 V** | 580 A | 610 A | 680 A | 810 A |
| **Rated operational power AC-3** | | | | | |
| M 3~ | **690 V** | 780 kW | 1000 KW | 1200 kW | 1300 kW |
| | **1000 V** | 850 kW | 900 kW | 1000 kW | 1200 kW |
| **Rated making capacity AC-3** | | 10 x Ie AC-3 acc. to IEC 60947-4-1 | | | |
| **Rated breaking capacity AC-3** | | 8 x Ie AC-3 acc. to IEC 60947-4-1 | | | |
| **Short-circuit protection device for contactors** | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | |
| Circuit breaker | | 1250 A | 1600 A | 2000 A | 2500 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A |
| at 40 °C ambient temperature, | **10 s** | 6400 A | 9000 A | 11000 A | 12000 A |
| in free air from a cold state | **30 s** | 3200 A | 5000 A | 6000 A | 7000 A |
| | **1 min** | 2100 A | 3600 A | 4200 A | 4600 A |
| | **15 min** | 1200 A | 1900 A | 2200 A | 2600 A |
| **Maximum breaking capacity** | | | | | |
| cos ϕ = 0.45 | **at 690 V** | 6400 A | 8500 A | 11000 A | |
| (cos ϕ = 0.35 for Ie > 100 A) | **at 1000 V** | 4650 A | 5000 A | 8500 A | |
| **Maximum making capacity** | | 14000 A | 19000 A | 21000 A | 24000 A |
| **Dynamical withstand of pole** | | 14000 A | 19000 A | 21000 A | 24000 A |
| **Impedance per pole** | | 0.28 mΩ | 0.24 mΩ | 0.18 mΩ | 0.17 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | 150 cycles/h | 120 cycles/h | |
| | **AC-3** | 300 cycles/h | 150 cycles/h | 120 cycles/h | |
| **Mechanical durability** | | | | | |
| Number of operating cycles | | 5 millions cycles | 2 millions cycles | | |
| Max. switching frequency | | 1200 cycles/h | 600 cycles/h | | |

Note: These characteristics are suitable for IOR..MT-AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR2500..MT … IORR5100..MT contactors
## Technical data



### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR2500..MT | IORR3200..MT | IORR3800..MT | IORR4500..MT | IORR5100..MT |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 690 V | | | | |
| **Rated frequency (without derating)** | | 25…60 Hz (for > 60...400 Hz please consult us) | | | | |
| **Number of poles** | | 2...4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 2200 A | 3000 A | 3500 A | 4000 A | 4500 A |
| With conductor cross-sectional area | | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **AC-1 Utilization category** | | | | | | |
| For air temperature close to contactor | | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 2200 A | 3000 A | 3500 A | 4000 A | 4500 A |
| Ue max. ≤ 690 V, 50/60 Hz | **θ ≤ 55 °C** | 1930 A | 2630 A | 3070 A | 3510 A | 3950 A |
| | **θ ≤ 70 °C** | 1620 A | 2200 A | 2570 A | 2940 A | 3300 A |
| With conductor cross-sectional area | | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **Rated making capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | |
| **Rated breaking capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | |
| **AC-3 Utilization category** | | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | | |
|  | | | | | | |
| | **690 V** | Please consult us | | | | |
| **Short-circuit protection device for contactors** | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | |
| Circuit breaker | | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 20000 A | 21000 A | 24000 A | 28000 A | 30000 A |
| at 40 °C ambient temperature, | **10 s** | 15000 A | 18000 A | 19000 A | 21000 A | 24000 A |
| in free air from a cold state | **30 s** | 8000 A | 10000 A | 11000 A | 12000 A | 13000 A |
| | **1 min** | 6000 A | 7000 A | 7500 A | 8000 A | 9000 A |
| | **15 min** | 3000 A | 4000 A | 4500 A | 5000 A | 5500 A |
| **Maximum making capacity** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Dynamical withstand of pole** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Impedance per pole** | | 0.12 mΩ | 0.09 mΩ | 0.085 mΩ | 0.06 mΩ | 0.055 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 60 cycles/h | | 40 cycles/h | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 2 millions cycles | | 1 million cycles | | |
| Max. switching frequency | | 600 cycles/h | | 300 cycles/h | | |

Note: These characteristics are suitable for IOR..MT-AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

# Notes

4

# DC circuit switching


Overview 36

Ordering details

**Power circuit up to 1500 V DC**

IORR..CC AC operated **38**

**Power circuit up to 600 V DC acc. to UL / CSA**

IORR..CC-U AC operated **39**

**Power circuit up to 1500 V DC, with latching**

IORR..CC-AMA AC operated **40**

IORR..CC-AME AC operated **40**

Technical data 42

Type and order code for R contactors 18

# R contactors for DC circuit switching

4

## Rated operational voltage
## Ue up to **1500 V DC**

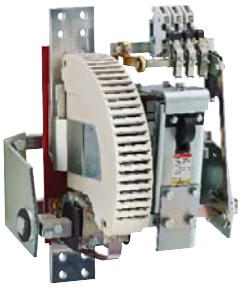
| Contactor type | | | | IORR63..CC | IORR125..CC | IORR200..CC | IORR400..CC | IORR500..CC |
|---|---|---|---|---|---|---|---|---|
| Number of poles in series | Categories | Ue max. | | | | | | |
| 1 pole | DC-1 | 500 V DC | Ie | 85 A | 170 A | 275 A | 400 A | 550 A |
| | DC-3 / DC-5 | 500 V DC | Ie | 68 A | 125 A | 205 A | 350 A | 500 A |
| 2 poles | DC-1 | 1000 V DC | Ie | 85 A | 170 A | 275 A | 400 A* | 550 A* |
| | DC-3 / DC-5 | 1000 V DC | Ie | 68 A | 125 A | 205 A | 350 A | 500 A |
| 3 poles | DC-1 | 1500 V DC | Ie | 85 A* | 170 A* | 275 A* | 400 A* | 550 A* |
| | DC-3 / DC-5 | 1500 V DC | Ie | 68 A* | 125 A* | 205 A* | 350 A* | 500 A* |

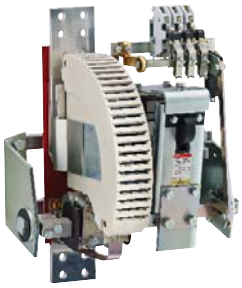
* Ue max. = 1500 V DC, version with increased insulation for 1000 V DC < Ue ≤ 1500 V DC, please consult us.

*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard

## Contactors
## UL / CSA approved

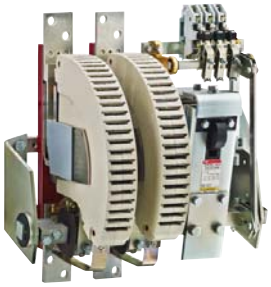
## Rated operational voltage
## Ue up to **600 V DC**

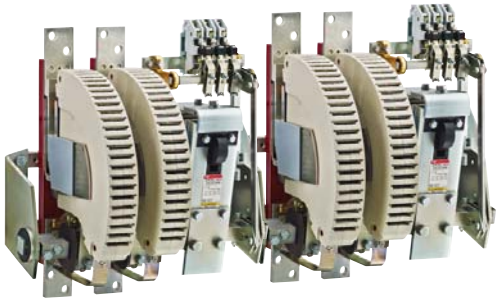




| Contactor type | | | | IORR800-10-CC | IORR1000-10-CC | IORR1400-10-CC | IORR1700-10-CC | IORR2100-10-CC |
|---|---|---|---|---|---|---|---|---|
| | | U max. | | | | | | |
| 1 pole | General use | 600 V DC | Ie | 800 A | 1000 A | 1300 A | 1700 A | 2000 A |

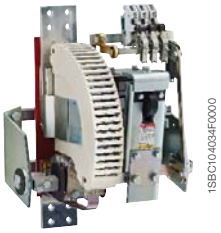
*120 V 60Hz coil and 2 N.O. + 2 N.C. auxiliary contacts as standard





| | IORR800..CC | IORR1000..CC | IORR1400..CC | IORR1700..CC | IORR2100..CC | IORR2500..CC | IORR3200..CC | IORR3800..CC | IORR4500..CC | IORR5100..CC |
|---|---|---|---|---|---|---|---|---|---|---|
| **Ue max.** | | | | | | | | | | |
| 750 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 600 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |
| 1500 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 1000 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |
| 1500 V DC | 800 A | 1000 A | 1250 A | 1600 A | 2000 A | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 1500 V DC | 720 A | 1000 A | 1250 A | 1600 A | 2000 A | On request | On request | On request | On request | On request |

# IORR..CC contactors
## Power circuit up to 1500 V DC
## Control circuit 120V 50/60 Hz




IORR800-10-CC

### Description

IORR..CC contactors are used for controlling DC power circuits up to 1500 V DC.

These contactors are designed with:

– variable number of poles according to the application
– control circuit: AC operated
– 2 NO + 2 NC auxiliary contacts available, as standard

#### Blowout in DC circuit switching

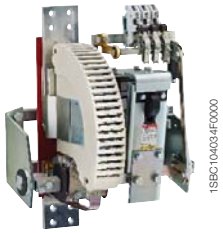
If the breaking current is lower than 50 % of the contactor rating, permanent magnet must be added, see blowout code table.

### Ordering details

| IEC | | | | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | | Type | Order code | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| DC-1 Rated operationnal current | voltage (3) | DC-3 / DC-5 Rated operationnal current | voltage (3) | | | | | | | pkg (1 pce) |
| A | V DC | A | V DC | | V 50/60 Hz | | | | | kg |
| 85 | 500 | 68 | 500 | 1 | 120V | 2 | 2 | IORR63-10-CC | FPL7116116R2113 | 3.2 |
| | 1000 | | 1000 | 2 | | 2 | 2 | IORR63-20-CC | FPL7116216R2113 | 4.2 |
| | 1500 | | 1500 | 3 | | 2 | 2 | IORR63-30-CC | On request | 5.2 |
| 170 | 500 | 125 | 500 | 1 | 120V | 2 | 2 | IORR125-10-CC | FPL7416115R2113 | 4.2 |
| | 1000 | | 1000 | 2 | | 2 | 2 | IORR125-20-CC | FPL7416215R2113 | 6.2 |
| | 1500 | | 1500 | 3 | | 2 | 2 | IORR125-30-CC | On request | 8.2 |
| 275 | 500 | 205 | 500 | 1 | 120V | 2 | 2 | IORR200-10-CC | FPL7616115R2113 | 6.6 |
| | 1000 | | 1000 | 2 | | 2 | 2 | IORR200-20-CC | FPL7616215R2113 | 9.6 |
| | 1500 | | 1500 | 3 | | 2 | 2 | IORR200-30-CC | On request | 12.6 |
| 400 | 500 | 350 | 500 | 1 | 120V | 2 | 2 | IORR400-10-CC | FPL9416115R2113 | 13.9 |
| | 1000 | | 1000 | 2 | | 2 | 2 | IORR400-20-CC | FPL9416215R2113 | 19.7 |
| | 1500 | | 1500 | 3 | | 2 | 2 | IORR400-30-CC | On request | 25.5 |
| 550 | 500 | 500 | 500 | 1 | 120V | 2 | 2 | IORR500-10-CC | FPL8316115R2113 | 13.9 |
| | 1000 | | 1000 | 2 | | 2 | 2 | IORR500-20-CC | FPL8316215R2113 | 19.7 |
| | 1500 | | 1500 | 3 | | 2 | 2 | IORR500-30-CC | On request | 25.5 |
| 800 | 750 | 720 | 600 | 1 | 120V | 2 | 2 | IORR800-10-CC-U | FPL8616195R2113 | 30 |
| | 1500 | | 1000 | 2 | | 2 | 2 | IORR800-20-CC | FPL8616215R2113 | 40 |
| | - | | 1500 | 3 | | 2 | 2 | IORR800-30-CC | FPL8616315R2113 | 51 |
| 1000 | 750 | 1000 | 600 | 1 | 120V | 2 | 2 | IORR1000-10-CC-U | FPL8716195R2113 | 31 |
| | 1500 | | 1000 | 2 | | 2 | 2 | IORR1000-20-CC | FPL8716215R2113 | 42 |
| | - | | 1500 | 3 | | 2 | 2 | IORR1000-30-CC | FPL8716315R2113 | 50 |
| 1250 | 750 | 1250 | 600 | 1 | 120V | 2 | 2 | IORR1400-10-CC-U | FPL6616195R2113 | 32 |
| | 1500 | | 1000 | 2 | | 2 | 2 | IORR1400-20-CC | FPL6116215R2113 | 42 |
| | - | | 1500 | 3 | | 2 | 2 | IORR1400-30-CC | FPL6116315R2113 | 52 |
| 1600 | 750 | 1600 | 600 | 1 | 120V | 2 | 2 | IORR1700-10-CC-U | FPL6216195R2113 | 34 |
| | 1500 | | 1000 | 2 | | 2 | 2 | IORR1700-20-CC | FPL6216215R2113 | 47 |
| | - | | 1500 | 3 | | 2 | 2 | IORR1700-30-CC | FPL6216315R2113 | 61 |
| 2000 | 750 | 2000 | 600 | 1 | 120V | 2 | 2 | IORR2100-10-CC-U | FPL6316195R2113 | 37 |
| | 1500 | | 1000 | 2 | | 2 | 2 | IORR2100-20-CC | FPL6316215R2113 | 52 |
| | - | | 1500 | 3 | | 2 | 2 | IORR2100-30-CC | FPL6316315R2113 | 68 |
| 2300 | 750 | On request | On request | 1 | 120V | 2 | 2 | IORR2500-10-CC | FPL6716115R2113 | 45 |
| | 1500 | | | 2 | | 2 | 2 | IORR2500-20-CC | FPL6716215R2113 | 71 |
| | - | | | 3 | | 2 | 2 | IORR2500-30-CC | FPL6716315R2113 | On request |
| 3200 | 750 | On request | On request | 1 | 120V | 2 | 2 | IORR3200-10-CC | FPL6516115R2113 | 52 |
| | 1500 | | | 2 | | 2 | 2 | IORR3200-20-CC | FPL6516215R2113 | 83 |
| | - | | | 3 | | 2 | 2 | IORR3200-30-CC | FPL6516315R2113 | On request |
| 3800 | 750 | On request | On request | 1 | 120V | 2 | 2 | IORR3800-10-CC | FPL6616115R2113 | 58 |
| | 1500 | | | 2 | | 2 | 2 | IORR3800-20-CC | FPL6616215R2113 | 95 |
| | - | | | 3 | | 2 | 2 | IORR3800-30-CC | FPL6616001R2113 | On request |
| 4500 | 750 | On request | On request | 1 | 120V | 2 | 2 | IORR4500-10-CC | FPL6816115R2113 | On request |
| | 1500 | | | 2 | | 2 | 2 | IORR4500-20-CC | FPL6816215R2113 | |
| | - | | | 3 | | 2 | 2 | IORR4500-30-CC | FPL6816001R2113 | |
| 5000 | 750 | On request | On request | 1 | 120V | 2 | 2 | IORR5100-10-CC | FPL6916115R2113 | On request |
| | 1500 | | | 2 | | 2 | 2 | IORR5100-20-CC | FPL6916002R2113 | |
| | - | | | 3 | | 2 | 2 | IORR5100-30-CC | FPL6916001R2113 | |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Power circuit above 1500 V DC, please consult us.

# IORR..CC-U contactors
## Power circuit up to 600 V DC acc. to UL / CSA
## Control circuit 120V 50/60 Hz




IORR800-10-CC-U

### Description

IORR..CC-U contactors are used for controlling DC power circuits up to 600 V DC.

These contactors are designed with:

– One N.O. Pole
– control circuit: AC operated
– 2 NO + 2 NC auxiliary contacts available, as standard

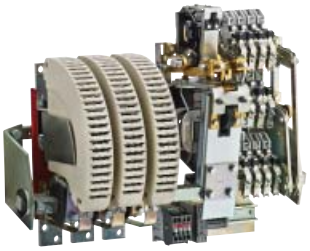
For R800 ... R2100 contactors, if the breaking current is lower than 50 % of the contactor rating, permanent magnet must be added: see blowout code table.

### Ordering details

| UL / CSA<br>General use rating<br>600 V DC | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | | Type | Order code | | Weight<br>pkg<br>(1 pce) |
|---|---|---|---|---|---|---|---|---|
| A | | V 50/60 Hz | | | | | | kg |
| 800 | 1 | 120V | 2 | 2 | IORR800-10-CC-U | FPL8616195R2113 | | 30 |
| 1000 | 1 | 120V | 2 | 2 | IORR1000-10-CC-U | FPL8716195R2113 | | 31 |
| 1300 | 1 | 120V | 2 | 2 | IORR1400-10-CC-U | FPL6116195R2113 | | 32 |
| 1700 | 1 | 120V | 2 | 2 | IORR1700-10-CC-U | FPL6216195R2113 | | 34 |
| 2000 | 1 | 120V | 2 | 2 | IORR2100-10-CC-U | FPL6316195R2113 | | 37 |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.

# IORR..CC-AMA and IORR..CC-AME contactors
## Power circuit up to 1500 V DC, with latching
## Control circuit 120V 50/60 Hz




IORR800-30-CC-AME

### Description

IORR..CC-AMA and IORR..CC-AME contactors are used for controlling DC power circuits up to 1500 V DC.

These contactors are designed with:

- magnetic latching, AMA types
- mechanical latching, AME types
- variable number of poles according to the application
- control circuit: AC operated
- 2 NO + 2 NC auxiliary contact available for AMA version, as standard
- 2 NO + 2 NC auxiliary contacts available for AME version

### Ordering details

| IEC | | | | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | Type | Order code | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| DC-1 Rated operational current | voltage (3) | DC-3 / DC-5 Rated operational current | voltage (3) | | | | | | | pkg (1 pce) |
| A | V DC | A | V DC | | V 50/60 Hz | | | | | kg |
| **Magnetical latching** | | | | | | | | | | |
| 85 | 500 | 68 | 500 | 1 | 120V | 2 2 | IORR63-10-CC-AMA | FPL7116136R2123 | | 2.9 |
| | 1000 | | 1000 | 2 | | 2 2 | IORR63-20-CC-AMA | FPL7116236R2123 | | 3.9 |
| | 1500 | | 1500 | 3 | | 2 2 | IORR63-30-CC-AMA | On request | | 4.9 |
| 170 | 500 | 125 | 500 | 1 | 120V | 2 2 | IORR125-10-CC-AMA | FPL7416135R2123 | | 3.9 |
| | 1000 | | 1000 | 2 | | 2 2 | IORR125-20-CC-AMA | FPL7416235R2123 | | 5.9 |
| | 1500 | | 1500 | 3 | | 2 2 | IORR125-30-CC-AMA | On request | | 7.9 |
| 275 | 500 | 205 | 500 | 1 | 120V | 2 2 | IORR200-10-CC-AMA | FPL7616135R2123 | | 6.2 |
| | 1000 | | 1000 | 2 | | 2 2 | IORR200-20-CC-AMA | FPL7616235R2123 | | 9.2 |
| | 1500 | | 1500 | 3 | | 2 2 | IORR200-30-CC-AMA | On request | | 12.2 |
| **Mechanical latching** | | | | | | | | | | |
| 400 | 500 | 350 | 500 | 1 | 120V | 2 2 | IORR400-10-CC-AME | FPL9416125R2223 | | 18.4 |
| | 1000 | | 1000 | 2 | | 2 2 | IORR400-20-CC-AME | FPL9416225R2223 | | 24.2 |
| | 1500 | | 1500 | 3 | | 2 2 | IORR400-30-CC-AME | FPL9416325R2223 | | 30 |
| 550 | 500 | 500 | 500 | 1 | 120V | 2 2 | IORR500-10-CC-AME | FPL8316125R2223 | | 18.4 |
| | 1000 | | 1000 | 2 | | 2 2 | IORR500-20-CC-AME | FPL8316225R2223 | | 24.2 |
| | 1500 | | 1500 | 3 | | 2 2 | IORR500-30-CC-AME | FPL8316325R2223 | | 30 |
| 800 | 750 | 720 | 600 | 1 | 120V | 2 2 | IORR800-10-CC-AME | FPL8616125R2223 | | 40 |
| | 1500 | | 1000 | 2 | | 2 2 | IORR800-20-CC-AME | FPL8616225R2223 | | 50 |
| | - | | 1500 | 3 | | 2 2 | IORR800-30-CC-AME | FPL8616325R2223 | | 61 |
| 1000 | 750 | 720 | 600 | 1 | 120V | 2 2 | IORR1000-10-CC-AME | FPL8716125R2223 | | 40 |
| | 1500 | | 1000 | 2 | | 2 2 | IORR1000-20-CC-AME | FPL8716225R2223 | | 50 |
| | - | | 1500 | 3 | | 2 2 | IORR1000-30-CC-AME | FPL8716325R2223 | | 61 |
| 1250 | 750 | 720 | 600 | 1 | 120V | 2 2 | IORR1400-10-CC-AME | FPL6116125R2223 | | 42 |
| | 1500 | | 1000 | 2 | | 2 2 | IORR1400-20-CC-AME | FPL6116225R2223 | | 52 |
| | - | | 1500 | 3 | | 2 2 | IORR1400-30-CC-AME | FPL6116325R2223 | | 62 |
| 1600 | 750 | 720 | 600 | 1 | 120V | 2 2 | IORR1700-10-CC-AME | FPL6216125R2223 | | 43 |
| | 1500 | | 1000 | 2 | | 2 2 | IORR1700-20-CC-AME | FPL6216225R2223 | | 57 |
| | - | | 1500 | 3 | | 2 2 | IORR1700-30-CC-AME | FPL6216325R2223 | | 71 |
| 2000 | 750 | 720 | 600 | 1 | 120V | 2 2 | IORR2100-10-CC-AME | FPL6316125R2223 | | 46 |
| | 1500 | | 1000 | 2 | | 2 2 | IORR2100-20-CC-AME | FPL6316225R2223 | | 62 |
| | - | | 1500 | 3 | | 2 2 | IORR2100-30-CC-AME | FPL6316325R2223 | | 78 |
| 2300 | 750 | On request | On request | 1 | 120V | 2 2 | IORR2500-10-CC-AME | FPL6716125R2223 | | On request |
| | 1500 | | | 2 | | 2 2 | IORR2500-20-CC-AME | FPL6716225R2223 | | |
| | - | | | 3 | | 2 2 | IORR2500-30-CC-AME | FPL6716325R2223 | | |
| 3200 | 750 | On request | On request | 1 | 120V | 2 2 | IORR3200-10-CC-AME | FPL6516125R2223 | | On request |
| | 1500 | | | 2 | | 2 2 | IORR3200-20-CC-AME | FPL6516225R2223 | | |
| | - | | | 3 | | 2 2 | IORR3200-30-CC-AME | FPL6516325R2223 | | |
| 3800 | 750 | On request | On request | 1 | 120V | 2 2 | IORR3800-10-CC-AME | FPL6616125R2223 | | On request |
| | 1500 | | | 2 | | 2 2 | IORR3800-20-CC-AME | FPL6616225R2223 | | |
| 4500 | 750 | On request | On request | 1 | 120V | 2 2 | IORR4500-10-CC-AME | FPL6816125R2223 | | On request |
| | 1500 | | | 2 | | 2 2 | IORR4500-20-CC-AME | FPL6816225R2223 | | |
| 5000 | 750 | On request | On request | 1 | 120V | 2 2 | IORR5100-10-CC-AME | FPL6916125R2223 | | On request |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Power circuit above 1500 V DC, please consult us.

# Notes

# IORR63..CC … IORR500..CC contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

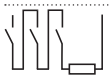
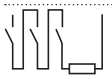
| Contactor types | AC operated | IORR63..CC | IORR125..CC | IORR200..CC | IORR400..CC | IORR500..CC |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1000 V DC (1500 V DC with increased insulation (1)) | | | | |
| **Number of poles** | | 1...4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-1-4, open contactors, θ ≤ 40 °C | | 85 A | 170 A | 275 A | 400 A | 550 A |
| With conductor cross-sectional area | | 25 mm² | 70 mm² | 150 mm² | 240 mm² | 400 mm² |
| **DC-1 Utilization category, L/R ≤ 1 ms** | | | | | | |
| **Ie / Rated operational current DC-1** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 500 V** | 85 A | 170 A | 275 A | 400 A | 550 A |
| 2 poles in series | | | | | | |
| | **≤ 1000 V** | 85 A | 170 A | 275 A | 400 A | 550 A |
| | **≤ 1500 V** (1) | - | - | - | 400 A | 550 A |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 85 A | 170 A | 275 A | 400 A | 550 A |
| **DC-3 Utilization category, L/R ≤ 2 ms** | | | | | | |
| **Ie / Rated operational current DC-3** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 500 V** | 68 A | 125 A | 205 A | 350 A | 500 A |
| 2 poles in series | | | | | | |
| | **≤ 1000 V** | 68 A | 125 A | 205 A | 350 A | 500 A |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 68 A | 125 A | 205 A | 350 A | 500 A |
| **DC-5 Utilization category, L/R ≤ 7.5 ms** | | | | | | |
| **Ie / Rated operational current DC-5** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 500 V** | 68 A | 125 A | 205 A | 350 A | 500 A |
| 2 poles in series | | | | | | |
| | **≤ 1000 V** | 68 A | 125 A | 205 A | 350 A | 500 A |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 68 A | 125 A | 205 A | 350 A | 500 A |
| **Rated short-time withstand current Icw** | **1 s** | 1150 A | 2250 A | 3800 A | 6000 A | 8400 A |
| at 40 °C ambient temperature, | **10 s** | 680 A | 1280 A | 2080 A | 3200 A | 4400 A |
| in free air from a cold state | **30 s** | 310 A | 680 A | 1040 A | 1600 A | 2200 A |
| | **1 min** | 230 A | 450 A | 730 A | 1200 A | 1680 A |
| | **15 min** | 120 A | 250 A | 390 A | 600 A | 840 A |
| **Rated breaking capacity** | | | | | | |
| (L/R ≤ 15 ms) | **1 pole 500 V** | 272 A | 500 A | 820 A | 1400 A | 2000 A |
| | **2 poles 1000 V** | 272 A | 500 A | 820 A | 1400 A | 2000 A |
| | **3 poles 1500 V** | 272 A | 500 A | 820 A | 1400 A | 2000 A |
| **Maximum making capacity** | | 1300 A | 2400 A | 4000 A | 7000 A | 9000 A |
| **Dynamical withstand of pole** | | 1400 A | 2500 A | 4500 A | 8000 A | 10000 A |
| **Impedance per pole** | | 1.8 mΩ | 1.20 mΩ | 0.60 mΩ | 0.40 mΩ | 0.35 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 5 millions cycles | | | | |
| Maximum switching frequency | | 1200 cycles/h | | | | |

(1) Version with increased insulation for 1000 V < Ue < 1500 V, please consult us.

Notes: - The arc switching on DC is more difficult than on AC
- For information, typical time constant values are quoted hereafter: non inductive loads such as resistance furnaces: L/R < 1 ms; inductive loads such as shunt motor: L/R < 2 ms; series motor: L/R < 7.5 ms
- The addition of a resistor in parallel with an inductive winding helps in the elimination of the arcs
- All the poles required for breaking must be connected, in series, between the load and the source polarity not linked to the earth
- Connection of the poles in series by the user, according to the above diagrams. The connection of the poles in series helps in the elimination of the arcs
- These characteristics are suitable for IOR..CC-AMA and IOR..CC-AME contactor latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR800..CC … IORR2100..CC contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR800..CC | IORR1000..CC | IORR1400..CC | IORR1700..CC | IORR2100..CC |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1500 V DC | | | | |
| **Number of poles** | | 1…4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 800 A | 1000 A | 1300 A | 1700 A | 2000 A |
| With conductor cross-sectional area | | 500 mm² | 600 mm² | 1000 mm² | 1500 mm² | 1500 mm² |
| **DC-1 Utilization category, L/R ≤ 1 ms** | | | | | | |
| **Ie / Rated operational current DC-1** | | | | | | |
|  1 pole | **≤ 750 V** | 800 A | 1000 A | 1250 A | 1600 A | 2000 A |
|  2 poles in series | **≤ 1000 V** | 800 A | 1000 A | 1250 A | 1600 A | 2000 A |
| | **≤ 1500 V** | 800 A | 1000 A | 1250 A | 1600 A | 2000 A |
| **DC-3 Utilization category, L/R ≤ 2 ms** | | | | | | |
| **Ie / Rated operational current DC-3** | | | | | | |
|  1 pole | **≤ 600 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
|  2 poles in series | **≤ 1000 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
|  3 poles in series | **≤ 1500 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
| **DC-5 Utilization category, L/R ≤ 7.5 ms** | | | | | | |
| **Ie / Rated operational current DC-5** | | | | | | |
|  1 pole | **≤ 600 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
|  2 poles in series | **≤ 1000 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
|  3 poles in series | **≤ 1500 V** | 720 A | 1000 A | 1250 A | 1600 A | 2000 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 9000 A | 11000 A | 13000 A | 15000 A |
| at 40 °C ambient temperature, | **10 s** | 6400 A | 6400 A | 9000 A | 11000 A | 12000 A |
| in free air from a cold state | **30 s** | 3200 A | 3200 A | 5000 A | 6000 A | 7000 A |
| | **1 min** | 2100 A | 2100 A | 3600 A | 4200 A | 4600 A |
| | **15 min** | 1200 A | 1200 A | 1900 A | 2200 A | 2600 A |
| **Rated breaking capacity** | | | | | | |
| (L/R ≤ 15 ms) | **1 pole 600 V** | 2880 A | 4000 A | 5000 A | 6400 A | 8000 A |
| | **2 poles 1000 V** | 2880 A | 4000 A | 5000 A | 6400 A | 8000 A |
| | **3 poles 1500 V** | 2880 A | 4000 A | 5000 A | 6400 A | 8000 A |
| **Maximum making capacity** | | 14000 A | 14000 A | 19000 A | 21000 A | 24000 A |
| **Dynamical withstand of pole** | | 14000 A | 14000 A | 19000 A | 21000 A | 24000 A |
| **Impedance per pole** | | 0.28 mΩ | 0.24 mΩ | 0.18 mΩ | 0.12 mΩ | 0.10 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | 60 cycles/h | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 5 millions cycles | | 2 millions cycles | | |
| Maximum switching frequency | | 1200 cycles/h | | 600 cycles/h | | |

Notes: - The arc switching on DC is more difficult than on AC
- For information, typical time constant values are quoted hereafter: non inductive loads such as resistance furnaces: L/R < 1 ms; inductive loads such as shunt motor: L/R < 2 ms; series motor: L/R < 7.5 ms
- The addition of a resistor in parallel with an inductive winding helps in the elimination of the arcs
- All the poles required for breaking must be connected, in series, between the load and the source polarity not linked to the earth
- Connection of the poles in series by the user, according to the above diagrams. The connection of the poles in series helps in the elimination of the arcs
- These characteristics are suitable for IOR..CC-AME contactor latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# IORR2500..CC … IORR5100..CC contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | IORR2500..CC | IORR3200..CC | IORR3800..CC | IORR4500..CC | IORR5100..CC |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1500 V DC | | | | |
| **Number of poles** | | 1…4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| With conductor cross-sectional area | | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **DC-1 Utilization category, L/R ≤ 1 ms** | | | | | | |
| **Ie / Rated operational current DC-1** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 750 V** | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| 2 poles in series | | | | | | |
| | **≤ 1000 V** | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| | **≤ 1500 V** | 2300 A | 3200 A | 3800 A | 4500 A | 5000 A |
| **DC-3 Utilization category, L/R ≤ 2 ms** | | | | | | |
| **Ie / Rated operational current DC-3** | | | | | | |
| For voltage up to 1500 V | | Please consult us | | | | |
| **DC-5 Utilization category, L/R ≤ 7.5 ms** | | | | | | |
| **Ie / Rated operational current DC-5** | | | | | | |
| For voltage up to 1500 V | | Please consult us | | | | |
| **Rated short-time withstand current Icw** | **1 s** | 20000 A | 21000 A | 24000 A | 28000 A | 30000 A |
| at 40 °C ambient temperature, | **10 s** | 15000 A | 18000 A | 19000 A | 21000 A | 24000 A |
| in free air from a cold state | **30 s** | 8000 A | 10000 A | 11000 A | 12000 A | 13000 A |
| | **1 min** | 6000 A | 7000 A | 7500 A | 8000 A | 9000 A |
| | **15 min** | 3000 A | 4000 A | 4500 A | 5000 A | 5500 A |
| **Maximum making capacity** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Dynamical withstand of pole** | | 24000 A | 26000 A | 29000 A | 32000 A | 32000 A |
| **Impedance per pole** | | 0.09 mΩ | 0.06 mΩ | 0.05 mΩ | 0.04 mΩ | 0.03 mΩ |
| **Maximum electrical switching frequency** | | 60 cycles/h | | 40 cycles/h | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 2 millions cycles | | 1 million cycles | | |
| Maximum switching frequency | | 600 cycles/h | | 300 cycles/h | | |

Notes: - The arc switching on DC is more difficult than on AC
- For information, typical time constant values are quoted hereafter: non inductive loads such as resistance furnaces: L/R < 1 ms; inductive loads such as shunt motor: L/R < 2 ms; series motor: L/R < 7.5 ms
- The addition of a resistor in parallel with an inductive winding helps in the elimination of the arcs
- All the poles required for breaking must be connected, in series, between the load and the source polarity not linked to the earth
- Connection of the poles in series by the user, according to the above diagrams. The connection of the poles in series helps in the elimination of the arcs
- These characteristics are suitable for IOR..CC-AME contactor latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# Notes

5

# Advanced applications


**N.O. / N.C. main poles combination**

Presentation 48

**Power circuit up to 690 V AC**

NORR, NORR..MT AC operated 49

**Power circuit up to 1500 V DC**

NORR, NORR..CC AC operated 50

Technical data 51

**Power circuit coupling**

Presentation 54

**Power circuit up to 1000 V AC or 1500 V DC**

LORR AC operated 55

Technical data 57

**Slip-ring motor control** 60

**Rotor voltages up to 1500 V AC**

FORR1000 ... FORR3800 AC operated 62

**Rotor voltages up to 2500 V AC**

FORR1000S ... FORR2100S AC operated 63

**Rotor voltages up to 3500 V AC**

FORR1000NSP ... FORR2100NSP AC operated 64

**Rotor voltages up to 4200 V AC**

FORR1000SPE ... FORR2100SPE AC operated 65

**Closed transition star-delta starting of three-phase asynchronous motors** 66

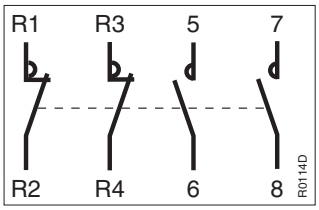
**Field discharge contactors AM-CC-JOR and AMF-CC-JOR** 67

**Autotransformer starters** 68

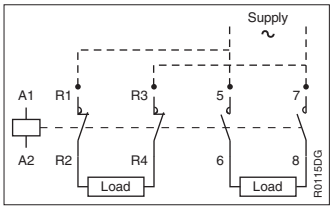
**Type and order code for R contactors** 18

# N.O. / N.C. main poles combination
## NOR contactors

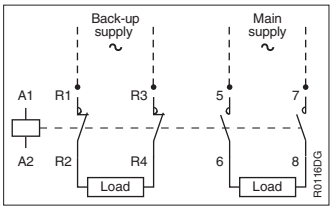
5




2 N.C. poles + 2 N.O. poles




Single supply and 2 separate loads




2 separate supplies and 2 separate loads

### Description

NOR contactors are built with a combination of N.O. and N.C. poles:
- AC switching: NOR..MT up to 690 V AC
- DC switching: NOR..CC up to 1500 V DC in standard.
- For low current breaking, permanent magnet must be added.

2 NO + 2 NC auxiliary contacts are fitted as standard. For additional auxiliary contacts refer to “Auxiliary contact fitting details.”

**Example of use :**

Change-over contactor with 2 N.C. poles + 2 N.O. poles.

**Block diagrams**

These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit including 2 separate loads with a single supply (diagrams on left column).
When the contactor operates there is no mechanical overlapping between the N.O. poles and the N.C. poles: BREAK before MAKE operation.

These contactors are not suitable for a reversing starter or star-delta starter, or for controlling a single load from 2 separate supplies.

### Operation

The N.O. and N.C. poles are set-up without any mechanical overlap:
- as the electro-magnet closes, the N.C. pole(s) BREAK before the N.O. pole(s) MAKE
- as the electro-magnet opens, the N.O. pole(s) BREAK before the N.C. pole(s) MAKE.

The breaking and making capacities of the N.C. poles are identical to those of the N.O. poles.

### Other variants

Please consult us for :
- NOR..AMA and NOR..AME with latching
- JOR types: version with overlapping between N.O. and N.C. main poles.

# NORR, NORE, NORR..MT and NORE..MT contactors
## Power circuit up to 690 V AC
## Control circuit 120V 50/60 Hz


NORR125-02-MT

### Description

NORR..MT and NORE..MT contactors with N.O. and N.C. main poles are used for controlling AC power circuits up to 690 V AC.

NORR400 ... NORR800 and NORE400 ... NORE800 contactors with N.O. and N.C. main poles are used for controlling AC power circuits up to 500 V AC.

These contactors are designed with:

– variable number of poles according to the application
– control circuit: AC or DC operated
– 2 NO + 2 NC auxiliary contacts available, as standard.

### AC operated

| IEC Rated operationnal current θ ≤ 40 °C AC-1 A | voltage (3) V AC | Number of poles (4) | Rated control circuit voltage Uc (1) V 50/60 Hz | Auxiliary contacts fitted (2) | Type | Order code | | Weight pkg (1 pce) kg |
|---|---|---|---|---|---|---|---|---|
| 63 | 690 | 0 2 | 120V | 2 2 | NORR63-02-MT | FPL7155216R2113 | | 4.2 |
| | | 2 1 | | 2 2 | NORR63-21-MT | FPL7155516R2113 | | 3.9 |
| | | 3 1 | | 2 2 | NORR63-31-MT | FPL7155716R2113 | | 4.9 |
| 125 | 690 | 0 2 | 120V | 2 2 | NORR125-02-MT | FPL7455215R2113 | | 6.2 |
| | | 2 1 | | 2 2 | NORR125-21-MT | FPL7455515R2113 | | 8.2 |
| | | 3 1 | | 2 2 | NORR125-31-MT | FPL7455715R2113 | | 9 |
| 200 | 690 | 0 2 | 120V | 2 2 | NORR200-02-MT | FPL7655215R2113 | | 9.6 |
| | | 2 1 | | 2 2 | NORR200-21-MT | FPL7655515R2113 | | 10 |
| | | 3 1 | | 2 2 | NORR200-31-MT | FPL7655715R2113 | | 12.2 |
| 315 | 500 | 0 2 | 120V | 2 2 | NORR400-02 | FPL9445215R2113 | | 12 |
| | | 2 1 | | 2 2 | NORR400-21 | FPL9445515R2113 | | 15 |
| | | 3 1 | | 2 2 | NORR400-31 | FPL9445715R2113 | | 18 |
| 800 | 500 | 0 2 | 120V | 2 2 | NORR800-02 | FPL8645215R2113 | | 38 |
| | | 2 1 | | 2 2 | NORR800-21 | FPL8645515R2113 | | 48 |
| | | 3 1 | | 2 2 | NORR800-31 | FPL8645715R2113 | | 58 |
| | 690 | 0 2 | 120V | 2 2 | NORR800-02-MT | FPL8655215R2113 | | 40 |
| | | 2 1 | | 2 2 | NORR800-21-MT | FPL8655515R2113 | | 51 |
| | | 3 1 | | 2 2 | NORR800-31-MT | FPL8655715R2113 | | 62 |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Power circuit above 690 V AC, please consult us.
(4) Other main pole combinations, please consult us.

# NORR, NORE, NORR..CC and NORE..CC contactors
## Power circuit up to 1500 V DC
## Control circuit 120V 50/60 Hz


NORR125-02-CC

### Description

NORR..CC and NORE..CC contactors with N.O. and N.C. main poles are used for controlling DC power circuits up to 1500 V DC. NORR and NORE400 up to 440 V DC.

These contactors are designed with:

– variable number of poles according to the application
– control circuit: AC or DC operated
– 2 NO + 2 NC auxiliary contacts available, as standard.

### AC operated

| IEC Rated operationnal current DC-1 | DC-3 DC-5 | voltage (3) | | Number of poles (4) | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | Type | Order code | | Weight pkg (1 pce) |
|---|---|---|---|---|---|---|---|---|---|---|
| A | A | V DC | V DC | | V 50/60 Hz | | | | | kg |
| 63 | 63 | - | 500 | 0 1 | 120V | 2 2 | NORR63-01-CC | FPL7146116R2113 | | 3.2 |
| | | - | 1000 | 0 2 | | 2 2 | NORR63-02-CC | FPL7146216R2113 | | 4.2 |
| | | 1000 | 500 | 2 1 | | 2 2 | NORR63-21-CC | FPL7146516R2113 | | 3.9 |
| | | 1000 | 500 | 3 1 | | 2 2 | NORR63-31-CC | FPL7146716R2113 | | 4.9 |
| 125 | 125 | - | 500 | 0 1 | 120V | 2 2 | NORR125-01-CC | FPL7446115R2113 | | 4.2 |
| | | - | 1000 | 0 2 | | 2 2 | NORR125-02-CC | FPL7446215R2113 | | 6.2 |
| | | 1000 | 500 | 2 1 | | 2 2 | NORR125-21-CC | FPL7446515R2113 | | 8.2 |
| | | 1000 | 500 | 3 1 | | 2 2 | NORR125-31-CC | FPL7446715R2113 | | 9 |
| 200 | 200 | - | 500 | 0 1 | 120V | 2 2 | NORR200-01-CC | FPL7646115R2113 | | 6.6 |
| | | - | 1000 | 0 2 | | 2 2 | NORR200-02-CC | FPL7646215R2113 | | 9.6 |
| | | 1000 | 500 | 2 1 | | 2 2 | NORR200-21-CC | FPL7646515R2113 | | 10 |
| | | 1000 | 500 | 3 1 | | 2 2 | NORR200-31-CC | FPL7646715R2113 | | 12.2 |
| 315 | 315 | - | 220 | 0 1 | 120V | 2 2 | NORR400-01 | FPL9445115R2113 | | 9 |
| | | - | 440 | 0 2 | | 2 2 | NORR400-02 | FPL9445215R2113 | | 12 |
| | | 440 | 220 | 2 1 | | 2 2 | NORR400-21 | FPL9445515R2113 | | 15 |
| | | 440 | 220 | 3 1 | | 2 2 | NORR400-31 | FPL9445715R2113 | | 18 |
| 800 | 720 | - | 500 | 0 1 | 120V | 2 2 | NORR800-01-CC | FPL8646115R2113 | | 28.6 |
| | | - | 1000 | 0 2 | | 2 2 | NORR800-02-CC | FPL8646215R2113 | | 40 |
| | | 1000 | 500 | 2 1 | | 2 2 | NORR800-21-CC | FPL8646515R2113 | | 51 |
| | | 1500 | 500 | 3 1 | | 2 2 | NORR800-31-CC | FPL8646715R2113 | | 62 |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Please consult us for power circuit above:
- 1000 V DC for ratings 63…500 A
- 1500 V DC for ratings 800 A.
(4) Other main pole combinations, please consult us.

# NORR63..MT … NORR800..MT contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types | AC operated | NORR63..MT | NORR125..MT | NORR200..MT | NORR800..MT | NORR400 | NORR800 |
|---|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | | |
| **Rated operational voltage Ue max.** | | 690 V | | | | 500 V | |
| **Rated frequency (without de-rating)** | | 25…60 Hz (for > 60...400 Hz please consult us) | | | | | |
| **Number of poles** | | 2…4 | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 63 A | 125 A | 200 A | 800 A | 315 A | 800 A |
| With conductor cross-sectional area | | 16 mm² | 50 mm² | 95 mm² | 500 mm² | 185 mm² | 500 mm² |
| **AC-1 Utilization category** | | | | | | | |
| For air temperature close to contactor | | | | | | | |
| **Ie / Rated operational current AC-1** | **θ ≤ 40 °C** | 63 A | 125 A | 200 A | 800 A | 315 A | 800 A |
| Ue max. ≤ 690 V, 50/60 Hz | **θ ≤ 55 °C** | 56 A | 110 A | 180 A | 710 A | 280 A | 710 A |
| | **θ ≤ 70 °C** | 50 A | 100 A | 160 A | 640 A | 250 A | 640 A |
| With conductor cross-sectional area | | 16 mm² | 50 mm² | 95 mm² | 500 mm² | 185 mm² | 500 mm² |
| **Rated making capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | | |
| **Rated breaking capacity AC-1** | | 1.5 x Ie AC-1 acc. to IEC 60947-4-1 | | | | | |
| **AC-3 Utilization category** | | | | | | | |
| For air temperature close to contactor θ ≤ 55 °C | | | | | | | |
| **Ie / Max. rated operational current AC-3** | | | | | | | |
| M 3~ | **690 V** | Please consult us | | | | | |
| **Short-circuit protection device for contactors** | | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | | |
| Ue ≤ 1000 V AC - gG type fuse | | 80 A | 160 A | 250 A | 1000 A | 630 A | 1000 A |
| Ue ≤ 1000 V AC - L type fuse | | - | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 850 A | 2250 A | 3800 A | 7500 A | 5000 A | 7500 A |
| at 40 °C ambient temperature, | **10 s** | 500 A | 1280 A | 2080 A | 6000 A | 2500 A | 6000 A |
| in free air from a cold state | **30 s** | 250 A | 680 A | 1040 A | 3000 A | 1250 A | 3000 A |
| | **1 min** | 230 A | 450 A | 730 A | 2000 A | 870 A | 2000 A |
| | **15 min** | 120 A | 250 A | 390 A | 1200 A | 460 A | 1200 A |
| **Impedance per pole** | | 1.8 mΩ | 1.20 mΩ | 0.60 mΩ | 0.28 mΩ | 0.40 mΩ | 0.18 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | | | | 300 cycles/h | |
| **Mechanical durability** | | | | | | | |
| Number of operating cycles | | 3 millions cycles | | | 1 million cycles | 3 millions cycles | 1 million cycles |
| Maximum switching frequency | | 1200 cycles/h | | | | 1200 cycles/h | |

Note: These characteristics are suitable for NOR..MT-AMA and NOR..MT-AME contactors with latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# NORR63..CC … NORR800..CC contactors
## Technical data

### Main pole - Utilization characteristics according to IEC

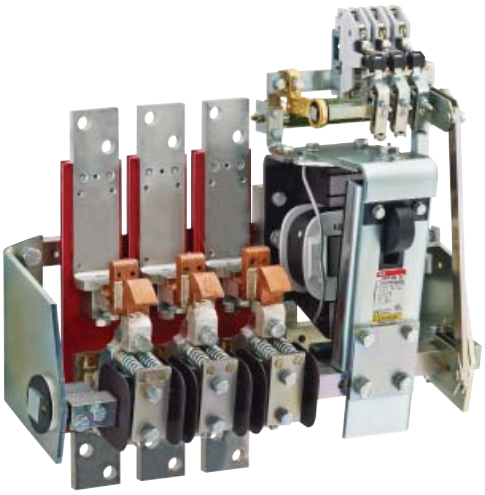
| Contactor types | AC operated | NORR63..CC | NORR125..CC | NORR200..CC | NORR800..CC | NORR400 |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1000 V DC (1500 V DC with increased insulation (1)) | | | | 440 V DC |
| **Number of poles** | | 1…4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C | | 63 A | 125 A | 200 A | 800 A | 315 A |
| With conductor cross-sectional area | | 16 mm² | 50 mm² | 95 mm² | 500 mm² | 185 mm² |
| **DC-1 Utilization category, L/R ≤ 1 ms** | | | | | | |
| **Ie / Rated operational current DC-1** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 220 V** | - | - | - | - | 315 A |
| | **≤ 500 V** | 63 A | 125 A | 200 A | 800 A | - |
| 2 poles in series | **≤ 440 V** | - | - | - | - | 315 A |
| | **≤ 1000 V** | 63 A | 125 A | 200 A | 800 A | - |
| | **≤ 1500 V** | - | - | - | 800 A | - |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 63 A | 125 A | 200 A | 800 A | - |
| **DC-3 Utilization category, L/R ≤ 2 ms** | | | | | | |
| **Ie / Rated operational current DC-3** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 220 V** | - | - | - | - | 315 A |
| | **≤ 500 V** | 63 A | 125 A | 200 A | 720 A | - |
| 2 poles in series | | | | | | |
| | **≤ 440 V** | - | - | - | - | 315 A |
| | **≤ 1000 V** | 63 A | 125 A | 200 A | 720 A | - |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 63 A | 125 A | 200 A | 720 A | - |
| **DC-5 Utilization category, L/R ≤ 7.5 ms** | | | | | | |
| **Ie / Rated operational current DC-5** | | | | | | |
| 1 pole | | | | | | |
| | **≤ 220 V** | - | - | - | - | 315 A |
| | **≤ 500 V** | 63 A | 125 A | 200 A | 720 A | - |
| 2 poles in series | | | | | | |
| | **≤ 440 V** | - | - | - | - | 315 A |
| | **≤ 1000 V** | 63 A | 125 A | 200 A | 720 A | - |
| 3 poles in series | | | | | | |
| | **≤ 1500 V** (1) | 63 A | 125 A | 200 A | 720 A | - |
| **Rated short-time withstand current Icw** | **1 s** | 850 A | 1700 A | 3100 A | 9000 A | 5000 A |
| at 40 °C ambient temperature, | **10 s** | 500 A | 900 A | 1600 A | 6400 A | 2500 A |
| in free air from a cold state | **30 s** | 250 A | 450 A | 800 A | 3200 A | 1250 A |
| | **1 min** | 170 A | 310 A | 560 A | 2100 A | 870 A |
| | **15 min** | 90 A | 180 A | 300 A | 1200 A | 460 A |
| **Rated breaking capacity** | | | | | | |
| (L/R ≤ 15 ms) | **1 pole 500 V** | 252 A | 500 A | 800 A | 2880 A | 1260 A (220 V) |
| | **2 poles 1000 V** | 252 A | 500 A | 800 A | 2880 A | 1260 A (440 V) |
| | **3 poles 1500 V** | 252 A | 500 A | 800 A | 2880 A | - |
| **Impedance per pole** | | 1.8 mΩ | 1.20 mΩ | 0.60 mΩ | 0.18 mΩ | 0.40 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | 120 cycles/h |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 3 millions cycles | | | 1 million cycles | 3 million cycles |
| Maximum switching frequency | | 1200 cycles/h | | | | 1200 cycles/h |

(1) NOR63 ... NOR200: version with increased insulation for 1000 V < Ue < 1500 V, please consult us.

Notes: - The arc switching on DC is more difficult than on AC
- For selecting a contactor, it is essential to determine the current, the voltage, an the L/R time constant of the controlled load
- For information, typical time constant values are quoted hereafter: non inductive loads such as resistance furnaces: L/R < 1 ms; inductive loads such as shunt motor: L/R < 2 ms; series motor: L/R < 7.5 ms
- The addition of a resistor in parallel with an inductive winding helps in the elimination of the arcs
- All the poles required for breaking must be connected, in series, between the load and the source polarity not linked to the earth
- Connection of the poles in series by the user, according to the above diagrams. The connection of the poles in series helps in the elimination of the arcs
- These characteristics are suitable for NOR..CC-AMA and NOR..CC-AME contactor latching versions (except for mechanical durability = 0.2 millions of operating cycles).

# Notes

# Power circuit coupling
## LOR couplers



5

### Description

LOR couplers are built without blowout coil and arc chutes. They are not suitable for breaking on-load at voltages above 24 V AC or DC.

– AC switching up to 1000 V AC
– DC switching up to:
  - 1000 V DC for R85 … R550
  - 1500 V DC for R800 … R5100

For other voltages, please consult us.

2 NO + 2 NC auxiliary contacts are fitted as standard. For additional auxiliary contact, refer to "Auxiliary contact fitting details".

**Example of use**

– Automatic short-circuiting of the starting resistances of a slip-ring or DC motors without the possibility of opening on-load
– Electrolytic installations and electro-plating plants
– Induction furnaces (please consult us).

**Other variants:**

Please consult us for:

– LOR couplers with N.C. poles
– LOR..AMA and LOR..AME couplers with latching.

# LORR couplers
## Power circuit up to 1000 V AC or 1500 V DC
## Control circuit 120V 50/60 Hz


LORR550-20

### Description

LORR are used for controlling:

– AC power circuits up to 1000 V AC

– DC power circuits up to:
- 1000 V DC for ratings 85…550 A
- 1500 V DC for ratings 800…5100 A

**They are not suitable for breaking on-load at voltages above 24 V AC or DC.**

These contactors are designed with:

– variable number of poles according to the application

– control circuit: AC operated

– 2 NO + 2 NC auxiliary contacts available, as standard.

### Ordering details

| Conventional thermal current Ith (θ ≤ 40 °C) | Rated operational voltage | | Number of poles | Rated control circuit voltage Uc (1) | Auxiliary contacts fitted (2) | Type | Order code | | Weight pkg (1 pce) |
|---|---|---|---|---|---|---|---|---|---|
| A | V AC | V DC (3) | | V 50/60 Hz | | | | | kg |
| 90 | 1000 | 1000 | 1 | 120V | 2 2 | LORR85-10 | FPL7235110R2113 | | 2.6 |
| | | | 2 | | 2 2 | LORR85-20 | FPL7235210R2113 | | 3 |
| | | | 3 | | 2 2 | LORR85-30 | FPL7235310R2113 | | 3.4 |
| | | | 4 | | 2 2 | LORR85-40 | FPL7235410R2113 | | 3.8 |
| 185 | 1000 | 1000 | 1 | 120V | 2 2 | LORR170-10 | FPL7535110R2113 | | 3.2 |
| | | | 2 | | 2 2 | LORR170-20 | FPL7535210R2113 | | 4.1 |
| | | | 3 | | 2 2 | LORR170-30 | FPL7535310R2113 | | 5 |
| | | | 4 | | 2 2 | LORR170-40 | FPL7535410R2113 | | 5.9 |
| 300 | 1000 | 1000 | 1 | 120V | 2 2 | LORR260-10 | FPL7835110R2113 | | 4.7 |
| | | | 2 | | 2 2 | LORR260-20 | FPL7835210R2113 | | 5.9 |
| | | | 3 | | 2 2 | LORR260-30 | FPL7835310R2113 | | 7.1 |
| | | | 4 | | 2 2 | LORR260-40 | FPL7835410R2113 | | 8.3 |
| 420 | 1000 | 1000 | 1 | 120V | 2 2 | LORR400-10 | FPL9435110R2113 | | 11.4 |
| | | | 2 | | 2 2 | LORR400-20 | FPL9435210R2113 | | 14.7 |
| | | | 3 | | 2 2 | LORR400-30 | FPL9435310R2113 | | 18 |
| | | | 4 | | 2 2 | LORR400-40 | FPL9435410R2113 | | 21.3 |
| 630 | 1000 | 1000 | 1 | 120V | 2 2 | LORR550-10 | FPL8435110R2113 | | 11.4 |
| | | | 2 | | 2 2 | LORR550-20 | FPL8435210R2113 | | 14.7 |
| | | | 3 | | 2 2 | LORR550-30 | FPL8435310R2113 | | 18 |
| | | | 4 | | 2 2 | LORR550-40 | FPL8435410R2113 | | 21.3 |
| 1100 | 1000 | 1000 | 1 | 120V | 2 2 | LORR800-10 | FPL8635110R2113 | | 29 |
| | | 1500 | 2 | | 2 2 | LORR800-20 | FPL8635210R2113 | | 34 |
| | | 1500 | 3 | | 2 2 | LORR800-30 | FPL8635310R2113 | | 42 |
| | | 1500 | 4 | | 2 2 | LORR800-40 | FPL8635410R2113 | | 54 |
| 1400 | 1000 | 1000 | 1 | 120V | 2 2 | LORR1400-10 | FPL6135110R2113 | | 30 |
| | | 1500 | 2 | | 2 2 | LORR1400-20 | FPL6135210R2113 | | 36 |
| | | 1500 | 3 | | 2 2 | LORR1400-30 | FPL6135310R2113 | | 44 |
| | | 1500 | 4 | | 2 2 | LORR1400-40 | FPL6135410R2113 | | 56 |
| 1700 | 1000 | 1000 | 1 | 120V | 2 2 | LORR1700-10 | FPL6235110R2113 | | 34 |
| | | 1500 | 2 | | 2 2 | LORR1700-20 | FPL6235210R2113 | | 42 |
| | | 1500 | 3 | | 2 2 | LORR1700-30 | FPL6235310R2113 | | 50 |
| | | 1500 | 4 | | 2 2 | LORR1700-40 | FPL6235410R2113 | | 66 |
| 2100 | 1000 | 1000 | 1 | 120V | 2 2 | LORR2100-10 | FPL6335110R2113 | | 36 |
| | | 1500 | 2 | | 2 2 | LORR2100-20 | FPL6335210R2113 | | 44 |
| | | 1500 | 3 | | 2 2 | LORR2100-30 | FPL6335310R2113 | | 52 |
| | | 1500 | 4 | | 2 2 | LORR2100-40 | FPL6335410R2113 | | 68 |
| 2500 | 1000 | 1000 | 1 | 120V | 2 2 | LORR2500-10 | FPL6735110R2113 | | On request |
| | | 1500 | 2 | | 2 2 | LORR2500-20 | FPL6735210R2113 | | |
| | | 1500 | 3 | | 2 2 | LORR2500-30 | FPL6735310R2113 | | |
| | | 1500 | 4 | | 2 2 | LORR2500-40 | FPL6735410R2113 | | |
| 3200 | 1000 | 1000 | 1 | 120V | 2 2 | LORR3200-10 | FPL6535110R2113 | | On request |
| | | 1500 | 2 | | 2 2 | LORR3200-20 | FPL6535210R2113 | | |
| | | 1500 | 3 | | 2 2 | LORR3200-30 | FPL6535310R2113 | | |
| | | 1500 | 4 | | 2 2 | LORR3200-40 | FPL6535001R2113 | | |
| 3800 | 1000 | 1000 | 1 | 120V | 2 2 | LORR3800-10 | FPL6635110R2113 | | On request |
| | | 1500 | 2 | | 2 2 | LORR3800-20 | FPL6635210R2113 | | |
| | | 1500 | 3 | | 2 2 | LORR3800-30 | FPL6635002R2113 | | |
| | | 1500 | 4 | | 2 2 | LORR3800-40 | FPL6635003R2113 | | |
| 4500 | 1000 | 1000 | 1 | 120V | 2 2 | LORR4500-10 | FPL6835110R2113 | | On request |
| | | 1500 | 2 | | 2 2 | LORR4500-20 | FPL6835210R2113 | | |
| | | 1500 | 3 | | 2 2 | LORR4500-30 | FPL6835001R2113 | | |
| 5100 | 1000 | 1000 | 1 | 120V | 2 2 | LORR5100-10 | FPL6935110R2113 | | On request |
| | | 1500 | 2 | | 2 2 | LORR5100-20 | FPL6935001R2113 | | |

(1) Other control voltages, please consult us.
(2) Other auxiliary contact arrangements, please consult us.
(3) Please consult us for power circuit above 1000 V AC or 1500 V DC.

# LORR85 ... LORR550 couplers
# Technical data

## Main pole - Utilization characteristics according to IEC

| Couplers types | AC operated | LORR85 | LORR170 | LORR260 | LORR400 | LORR550 |
|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | |
| **Rated operational voltage Ue max.** | | 1000 V | | | | |
| **Rated frequency (without derating)** | | 25…60 Hz (for > 60…400 Hz please contact us) | | | | |
| **Number of poles** | | 1…4 | | | | |
| **Conventional free-air thermal current Ith** | | | | | | |
| acc. to IEC 60947-4-1, open couplers, θ ≤ 40 °C | | 90 A | 185 A | 300 A | 420 A | 630 A |
| With conductor cross-sectional area | | 35 mm² | 95 mm² | 185 mm² | 300 mm² | 400 mm² |
| **AC-1 / DC-1 Utilization category** | | | | | | |
| For air temperature close to couplers | | | | | | |
| **Ie / Rated operational current AC-1 / DC-1** | **θ ≤ 40 °C** | 90 A | 185 A | 300 A | 420 A | 630 A |
| Ue max. ≤ 690 V, 50/60 Hz | **θ ≤ 55 °C** | 82 A | 170 A | 270 A | 370 A | 570 A |
| | **θ ≤ 70 °C** | 72 A | 150 A | 240 A | 330 A | 500 A |
| With conductor cross-sectional area | | 35 mm² | 95 mm² | 185 mm² | 300 mm² | 400 mm² |
| **Rated making capacity AC-1 / DC-1** | **1000 V max.** | 1.5 x Ie / AC-1 or DC-1 acc. to IEC 60947-4-1 | | | | |
| **Rated breaking capacity AC-1 / DC-1** | **24 V max.** | 1.5 x Ie / AC-1 or DC-1 acc. to IEC 60947-4-1 | | | | |
| **Short-circuit protection device for couplers** | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | |
| Ue ≤ 1000 V AC - gG type fuse | | 100 A | 200 A | 315 A | 500 A | 700 A |
| Ue ≤ 1000 V AC - L type fuse | | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 1150 A | 2250 A | 3800 A | 6000 A | 8400 A |
| at 40 °C ambient temperature, | **10 s** | 680 A | 1200 A | 1920 A | 2960 A | 4400 A |
| in free air from a cold state | **30 s** | 310 A | 680 A | 1040 A | 1480 A | 2200 A |
| | **1 min** | 230 A | 450 A | 730 A | 1100 A | 1680 A |
| | **15 min** | 120 A | 250 A | 390 A | 600 A | 840 A |
| **Impedance per pole** | | 1.80 mΩ | 1.20 mΩ | 0.60 mΩ | 0.40 mΩ | 0.35 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | | | | |
| **Mechanical durability** | | | | | | |
| Number of operating cycles | | 5 millions cycles | | | | |
| Maximum switching frequency | | 1200 cycles/h | | | | |

Note: - Technical data applicable for N.O. main poles. For N.C. main poles, please consult us.
- These characteristics are suitable for LOR..AMA and LOR..AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

# LORR800 ... LORR5100 couplers
## Technical data

### Main pole - Utilization characteristics according to IEC

| Couplers types | AC operated | LORR800 | LORR1400 | LORR1700 | LORR2100 | LORR2500 | LORR3200 | LORR3800 | LORR4500 | LORR5100 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Standards** | | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 | | | | | | | | |
| **Rated operational voltage Ue max.** | | 1000 V | | | | | | | | |
| **Rated frequency (without de-rating)** | | 25…60 Hz (for > 60…400 Hz please consult us) | | | | | | | | |
| **Number of poles** | | 1…4 | | | | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | | | | |
| acc. to IEC 60947-4-1, open couplers, θ ≤ 40 °C | | 1100 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A | 4500 A | 5100 A |
| With conductor cross-sectional area | | 800 mm² | 1000 mm² | 1500 mm² | 1500 mm² | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **AC-1 / DC-1 Utilization category** | | | | | | | | | | |
| For air temperature close to couplers | | | | | | | | | | |
| **Ie / Rated operational current AC-1 / DC-1** | **θ ≤ 40 °C** | 1100 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A | 4500 A | 5100 A |
| Ue max. ≤ 690 V, 50/60 Hz | **θ ≤ 55 °C** | 1000 A | 1230 A | 1500 A | 1840 A | 2200 A | 2800 A | 3330 A | 3950 A | 4470 A |
| | **θ ≤ 70 °C** | 900 A | 1030 A | 1250 A | 1540 A | 1830 A | 2350 A | 2780 A | 3300 A | 3740 A |
| With conductor cross-sectional area | | 800 mm² | 1000 mm² | 1500 mm² | 1500 mm² | 2000 mm² | 3000 mm² | 3000 mm² | 4000 mm² | 4000 mm² |
| **Rated making capacity AC-1 / DC-1** | **1000 V max.** | 1.5 x Ie / AC-1 or DC-1 acc. to IEC 60947-4-1 | | | | | | | | |
| **Rated breaking capacity AC-1 / DC-1** | **24 V max.** | 1.5 x Ie / AC-1 or DC-1 acc. to IEC 60947-4-1 | | | | | | | | |
| **Short-circuit protection device for couplers** | | | | | | | | | | |
| without thermal overload relay - Motor protection excluded | | | | | | | | | | |
| Ue ≤ 1000 V AC - Circuit breaker | | 1250 A | 1600 A | 2000 A | 2500 A | - | - | - | - | - |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A | 20000 A | 21000 A | 24000 A | 28000 A | 29000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 9000 A | 11000 A | 12200 A | 15000 A | 18000 A | 19000 A | 21000 A | 22000 A |
| in free air from a cold state | **30 s** | 4000 A | 5000 A | 6000 A | 7000 A | 8000 A | 10000 A | 11000 A | 12000 A | 13000 A |
| | **1 min** | 3000 A | 3700 A | 4400 A | 5000 A | 6000 A | 7000 A | 7500 A | 8000 A | 8500 A |
| | **15 min** | 1600 A | 2000 A | 2400 A | 2800 A | 3000 A | 4000 A | 4500 A | 5000 A | 5500 A |
| **Impedance per pole** | | 0.18 mΩ | 0.10 mΩ | 0.090 mΩ | 0.080 mΩ | 0.05 mΩ | 0.045 mΩ | 0.04 mΩ | 0.03 mΩ | 0.027 mΩ |
| **Maximum electrical switching frequency** | **AC-1** | 300 cycles/h | 150 cycles/h | 120 cycles/h | | 60 cycles/h | | 40 cycles/h | | |
| **Mechanical durability** | | | | | | | | | | |
| Number of operating cycles | | 5 millions cycles | | | | 2 millions cycles | | 1 million cycles | | |
| Maximum switching frequency | | 1200 cycles/h | | | | 600 cycles/h | | 300 cycles/h | | |

Note: - Technical data applicable for N.O. main poles. For N.C. main poles, please consult us.
- These characteristics are suitable for LOR..AME contactor versions (except for mechanical durability = 0.2 millions of operating cycles).

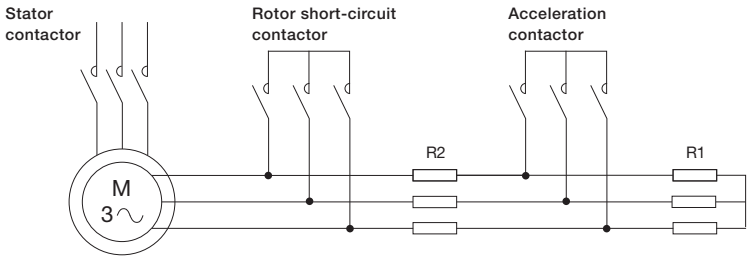
5

# Notes

# Slip-ring motor control
## With rheostats

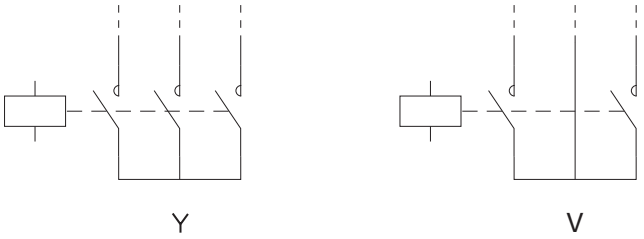
### Application
Three kinds of contactors are used to control three-phase slip-ring motors: the stator contactor, the acceleration contactor(s), and the rotor short-circuit contactor.

**Example of a three-stroke starter (star (Y) connection diagram)**






The starting resistances should be star (Y) or V connected acc. to the following wiring diagrams. Contactors have to be selected accordingly.




### Stator contactor
The standard R contactor selection is based on the motor rated current acc. to the AC-2 utilization category, as well as on the rated operational voltage and the on-load factor.

### Acceleration contactor and rotor short-circuit contactor
FOR contactor selection is based on the contactor rated operational current Ie acc. to the AC-1 utilization category.

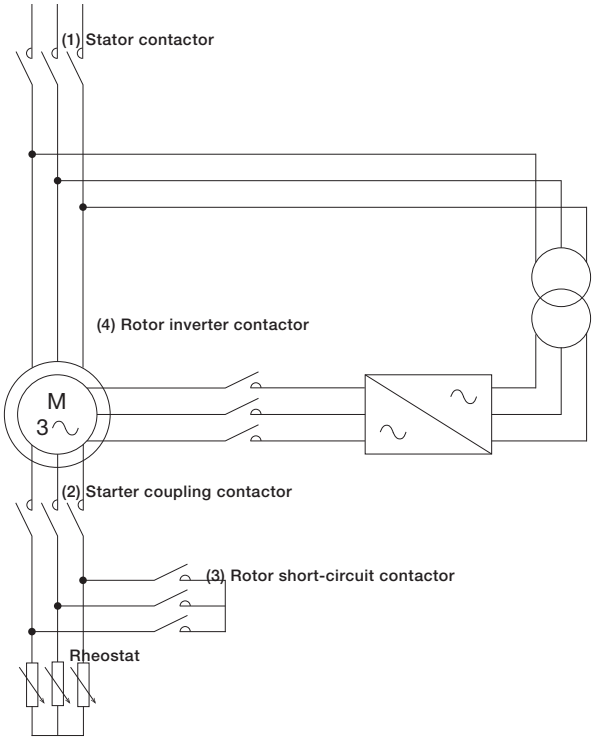
At the time of slip-ring motor starting and as soon as the motor nominal speed is reached, these contactors are used for the short-circuiting of the rotor current limitation starting resistances (e.g. vapor-liquid rheostats).
These contactors are derived from the standard R contactors and are available in 2, 3, 4 or 6-pole versions acc. to the applicable connection diagram required (Y, V).
They can control rotor currents up to 3800 A and rotor voltages up to 4200 V (with increased insulation) acc. to the IEC 60947-4-1 standard requirements. For rotor voltages ≥ 4200 V, please consult us.
Although the breaking of the rotor circuit is normally carried out in "off-load" conditions, the contactors are equipped with blow-out devices and can occasionally break "on-load".
Ordering details, dimensions : please consult us.

The LOR couplers may be used for applications where equipment is breaking in "Off-load" conditions only.

# Slip-ring motor control
## With variable frequency drive



### Application
This variant is used to start a slip-ring motor which will be then controlled by a variable frequency drive.




### Description
A liquid rheostat is used to start and accelerate the motor after closing of the starter coupling contactor (2) and then the stator contactor (1). When the nominal speed is reached, the rotor short-circuit contactor (3) closes.
Then the rotor inverter contactor closes (4) and the starter coupling contactor (2) opens.
The speed of the motor is controlled by the variable frequency drive.

FOR contactors are suitable for starter coupling (2), rotor short-circuiting (3) and rotor inverter (4) contactor.
IOR contactors must be used for stator contactor (1).

# FORR1000 ... FORR3800 contactors
## Rotor voltages up to 1500 V AC

### Main pole - Utilization characteristics according to IEC (Y and V connection diagram)

| Contactor types | AC operated | FORR1000 | FORR1400 | FORR1700 | FORR2100 | FORR2500 | FORR3200 | FORR3800 |
|---|---|---|---|---|---|---|---|---|
| **Rated rotor operational voltage Uer** | | 1500 V | | | | | | |
| **Rated frequency (without de-rating)** | | 0.1...60 Hz (for > 60 Hz consult us) | | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | | |
| acc. to IEC 60947-4-1, θ ≤ 40 °C | | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Rated rotor operational current Ier** | | | | | | | | |
| For air temperature close to contactor | | | | | | | | |
| | **θ ≤ 40 °C** | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| | **θ ≤ 55 °C** | 930 A | 1180 A | 1450 A | 1750 A | 2200 A | 2800 A | 3200 A |
| | **θ ≤ 70 °C** | 800 A | 1000 A | 1250 A | 1500 A | 1830 A | 2350 A | 2780 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Maximum making capacity** | | 14000 A | 19000 A | 21000 A | 24000 A | 24000 A | 26000 A | 29000 A |
| **Maximum breaking capacity at** | | | | | | | | |
| cos ϕ = 0.80 and 1000 V | | 1500 A | 2100 A | 2600 A | 3200 A | 3800 A | 4800 A | 5700 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A | 20000 A | 21000 A | 24000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 9000 A | 11000 A | 12200 A | 15000 A | 18000 A | 19000 A |
| in free air from a cold state | **30 s** | 4000 A | 5000 A | 6000 A | 7000 A | 8000 A | 10000 A | 11000 A |
| | **1 min** | 3000 A | 3700 A | 4400 A | 5000 A | 6000 A | 7000 A | 7500 A |
| | **15 min** | 1600 A | 2000 A | 2400 A | 2800 A | 3000 A | 4000 A | 4500 A |
| **Impedance per pole** | | 0.18 mΩ | 0.10 mΩ | 0.09 mΩ | 0.08 mΩ | 0.05 mΩ | 0.045 mΩ | 0.04 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | | | |
| **Mechanical durability** | | | | | | | | |
| Number of operating cycles | | 5 millions cycles | 2 millions cycles | | | | | |
| Max. switching frequency | | 600 cycles/h | | | | | | |

Note: Altitude ≥ 2000 m, dimension drawings: please consult us.

- Consult us for order codes.

# FORR1000S ... FORR2100S contactors
## Rotor voltages up to 2500 V AC

### Main pole - Utilization characteristics according to IEC (Y and V connection diagram)

| Contactor types | AC operated | FORR1000S | FORR1400S | FORR1700S | FORR2100S | FORR2500S | FORR3200S | FORR3800S |
|---|---|---|---|---|---|---|---|---|
| **Rated rotor operational voltage Uer** | | 2500 V | | | | | | |
| **Rated frequency (without de-rating)** | | 0.1...60 Hz (for > 60 Hz consult us) | | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | | |
| acc. to IEC 60947-4-1, θ ≤ 40 °C | | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Rated rotor operational current Ier** | | | | | | | | |
| For air temperature close to contactor | | | | | | | | |
| | **θ ≤ 40 °C** | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| | **θ ≤ 55 °C** | 930 A | 1180 A | 1450 A | 1750 A | 2200 A | 2800 A | 3200 A |
| | **θ ≤ 70 °C** | 800 A | 1000 A | 1250 A | 1500 A | 1830 A | 2350 A | 2780 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Maximum making capacity** | | 14000 A | 19000 A | 21000 A | 24000 A | 24000 A | 26000 A | 29000 A |
| **Maximum breaking capacity at** | | | | | | | | |
| cos ϕ = 0.80 and 1000 V | | 1500 A | 2100 A | 2600 A | 3200 A | 3800 A | 4800 A | 5700 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A | 20000 A | 21000 A | 24000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 9000 A | 11000 A | 12200 A | 15000 A | 18000 A | 19000 A |
| in free air from a cold state | **30 s** | 4000 A | 5000 A | 6000 A | 7000 A | 8000 A | 10000 A | 11000 A |
| | **1 min** | 3000 A | 3700 A | 4400 A | 5000 A | 6000 A | 7000 A | 7500 A |
| | **15 min** | 1600 A | 2000 A | 2400 A | 2800 A | 3000 A | 4000 A | 4500 A |
| **Impedance per pole** | | 0.18 mΩ | 0.10 mΩ | 0.09 mΩ | 0.08 mΩ | 0.05 mΩ | 0.045 mΩ | 0.04 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | | | |
| **Mechanical durability** | | | | | | | | |
| Number of operating cycles | | 5 millions cycles | 2 millions cycles | | | | | |
| Max. switching frequency | | 600 cycles/h | | | | | | |

Note: Altitude ≥ 2000 m, dimension drawings: please consult us.

- Consult us for order codes.

# FORR1000NSP ... FORR2100NSP contactors
## Rotor voltages up to 3500 V AC

### Main pole - Utilization characteristics according to IEC (Y and V connection diagram)

| Contactor types | AC operated | FORR1000NSP | FORR1400NSP | FORR1700NSP | FORR2100NSP | FORR2500NSP | FORR3200NSP | FORR3800NSP |
|---|---|---|---|---|---|---|---|---|
| **Rated rotor operational voltage Uer** | | 3500 V | | | | | | |
| **Rated frequency (without de-rating)** | | 0.1...60 Hz (for > 60 Hz consult us) | | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | | |
| acc. to IEC 60947-4-1, θ ≤ 40 °C | | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Rated rotor operational current Ier** | | | | | | | | |
| For air temperature close to contactor | | | | | | | | |
| | **θ ≤ 40 °C** | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| | **θ ≤ 55 °C** | 930 A | 1180 A | 1450 A | 1750 A | 2200 A | 2800 A | 3200 A |
| | **θ ≤ 70 °C** | 800 A | 1000 A | 1250 A | 1500 A | 1830 A | 2350 A | 2780 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Maximum making capacity** | | 14000 A | 19000 A | 21000 A | 24000 A | 24000 A | 26000 A | 29000 A |
| **Maximum breaking capacity at** | | | | | | | | |
| cos ϕ = 0.80 and 1000 V | | 1500 A | 2100 A | 2600 A | 3200 A | 3800 A | 4800 A | 5700 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A | 20000 A | 21000 A | 24000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 9000 A | 11000 A | 12200 A | 15000 A | 18000 A | 19000 A |
| in free air from a cold state | **30 s** | 4000 A | 5000 A | 6000 A | 7000 A | 8000 A | 10000 A | 11000 A |
| | **1 min** | 3000 A | 3700 A | 4400 A | 5000 A | 6000 A | 7000 A | 7500 A |
| | **15 min** | 1600 A | 2000 A | 2400 A | 2800 A | 3000 A | 4000 A | 4500 A |
| **Impedance per pole** | | 0.18 mΩ | 0.10 mΩ | 0.09 mΩ | 0.08 mΩ | 0.05 mΩ | 0.045 mΩ | 0.04 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | | | |
| **Mechanical durability** | | | | | | | | |
| Number of operating cycles | | 5 millions cycles | 2 millions cycles | | | | | |
| Max. switching frequency | | 600 cycles/h | | | | | | |

Note: Altitude ≥ 2000 m, dimension drawings: please consult us.

- Consult us for order codes.

# FORR1000SPE … FORR2100SPE contactors
## Rotor voltages up to 4200 V AC

### Main pole - Utilization characteristics according to IEC (Y only connection diagram)

| Contactor types | AC operated | FORR1000SPE | FORR1400SPE | FORR1700SPE | FORR2100SPE | FORR2500SPE | FORR3200SPE | FORR3800SPE |
|---|---|---|---|---|---|---|---|---|
| **Rated rotor operational voltage Uer** | | 4200 V | | | | | | |
| **Rated frequency (without de-rating)** | | 0.1...60 Hz (for > 60 Hz consult us) | | | | | | |
| **Conventional free-air thermal current Ith** | | | | | | | | |
| acc. to IEC 60947-4-1, θ ≤ 40 °C | | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Rated rotor operational current Ier** | | | | | | | | |
| For air temperature close to contactor | | | | | | | | |
| | **θ ≤ 40 °C** | 1000 A | 1400 A | 1700 A | 2100 A | 2500 A | 3200 A | 3800 A |
| | **θ ≤ 55 °C** | 930 A | 1180 A | 1450 A | 1750 A | 2200 A | 2800 A | 3200 A |
| | **θ ≤ 70 °C** | 800 A | 1000 A | 1250 A | 1500 A | 1830 A | 2350 A | 2780 A |
| With conductor cross-sectional area | | 600 mm² | 1000 mm² | 1500 mm² | 2000 mm² | 2000 mm² | 3000 mm² | 3000 mm² |
| **Maximum making capacity** | | 14000 A | 19000 A | 21000 A | 24000 A | 24000 A | 26000 A | 29000 A |
| **Maximum breaking capacity at** | | | | | | | | |
| cos ϕ = 0.80 and 1000 V | | 1500 A | 2100 A | 2600 A | 3200 A | 3800 A | 4800 A | 5700 A |
| **Rated short-time withstand current Icw** | **1 s** | 9000 A | 11000 A | 13000 A | 15000 A | 20000 A | 21000 A | 24000 A |
| at 40 °C ambient temperature, | **10 s** | 8000 A | 9000 A | 11000 A | 12200 A | 15000 A | 18000 A | 19000 A |
| in free air from a cold state | **30 s** | 4000 A | 5000 A | 6000 A | 7000 A | 8000 A | 10000 A | 11000 A |
| | **1 min** | 3000 A | 3700 A | 4400 A | 5000 A | 6000 A | 7000 A | 7500 A |
| | **15 min** | 1600 A | 2000 A | 2400 A | 2800 A | 3000 A | 4000 A | 4500 A |
| **Impedance per pole** | | 0.18 mΩ | 0.10 mΩ | 0.09 mΩ | 0.08 mΩ | 0.05 mΩ | 0.045 mΩ | 0.04 mΩ |
| **Maximum electrical switching frequency** | | 120 cycles/h | | | | | | |
| **Mechanical durability** | | | | | | | | |
| Number of operating cycles | | 5 millions cycles | 2 millions cycles | | | | | |
| Max. switching frequency | | 600 cycles/h | | | | | | |

Note: - Uer > 4200 V AC, please consult us.
- Altitude ≥ 2000 m, dimension drawings: please consult us.

- Consult us for order codes.

# Closed transition star-delta starting of three-phase asynchronous motors
# R contactor selection

## Application

R contactors can be used for closed transition star-delta starting of three-phase asynchronous motors up to 1300 kW.

## Description

This starting method, mainly used for large motor powers, prevents the speed drop during the "star-delta" transition time and maintains the resulting current peak at a relatively low value.

For this purpose the extra **KM4** transition contactor closes first before the **KM2** star contactor opens. When the **KM4** contactor closes, the motor windings are automatically delta connected, via resistances, to compensate the lack of current during the transition time. Thus the motor speed remains basically the same. The final delta connection step is then achieved by the **KM3** delta contactor closing which switches-off the coil supply to the **KM4** transition contactor. As in the basic star-delta starting mode, the closed transition star-delta starting mode is restricted to low resistive torque machines.

It is advisable, especially for big masses of inertia, to observe that the connection is made in acc. to the clockwise or anticlockwise rotation direction, as indicated in the block diagram shown below, in order to prevent damages due to torque throbs.



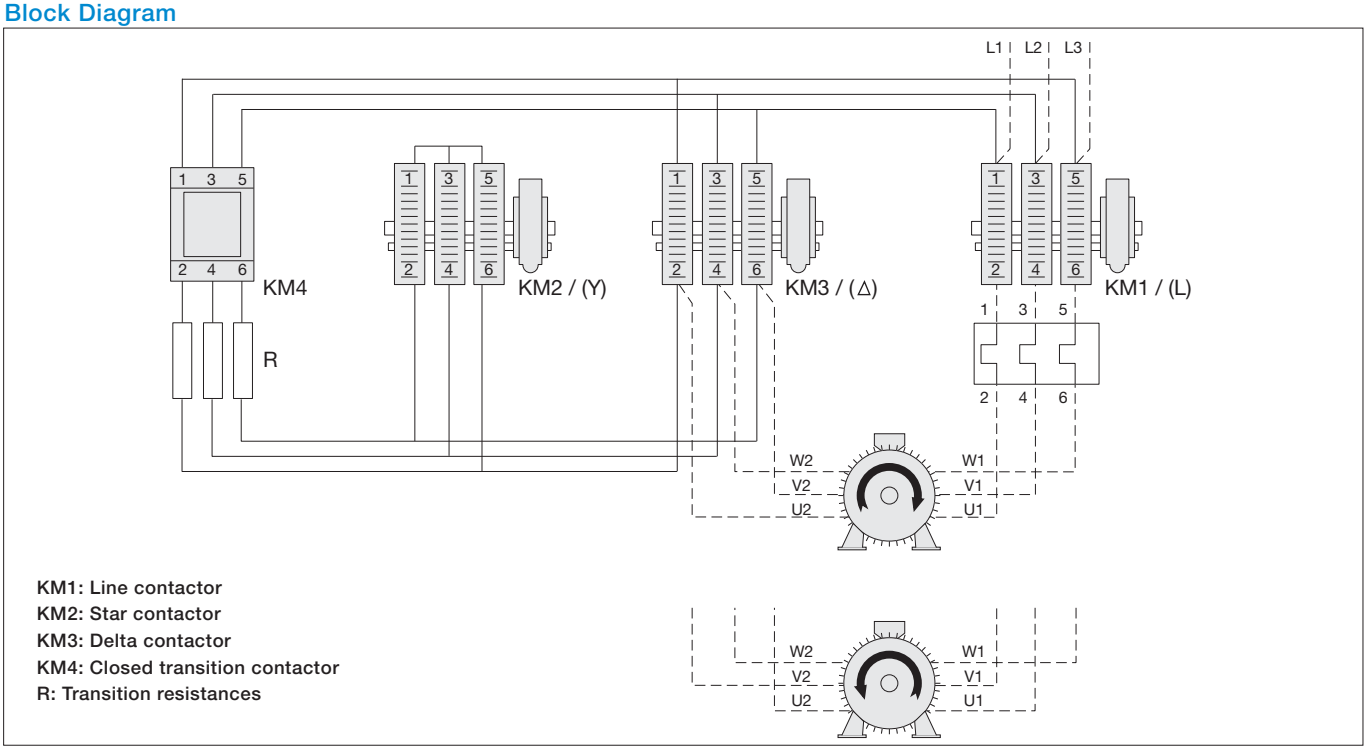
**Equipment sizing**

- **KM1** main contactor and **KM3** delta contactor: rating = 0.58 x In for both contactors
- **KM2** star contactor: compared with a star contactor that would be used for a basic open transition star-delta starter the present **KM2** star contactor has to be over-rated as it is intended to break the star current (0.34 x In) and the transition current too.
- **KM4** transition contactor: the rating is based on the calculation of the short permissible current duration (Icw).
  The value of the current flow is about 1.5 x In and the current flow duration < 100 ms.
  A block type contactor in the AF series can be selected for this step.
- Transition resistances: empiric value, generally as follows, $R\ (\Omega) = \frac{0.4 \times Ue}{In}$

  Watt dissipation values for the transition resistances:

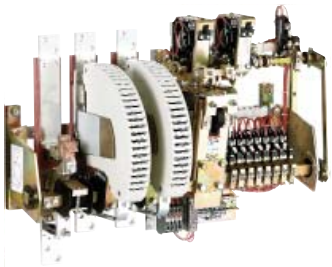
  - for 12 cycles/h max. $P\ (W) = \frac{Ue^2}{1200 \times R}$
  - for 30 cycles/h max. $P\ (W) = \frac{Ue^2}{500 \times R}$

## Block Diagram




**KM1: Line contactor**
**KM2: Star contactor**
**KM3: Delta contactor**
**KM4: Closed transition contactor**
**R: Transition resistances**

# AM-CC-JOR and AMF-CC-JOR field discharge contactors
## Power circuit up to 2250 V DC, R63 ... R4500

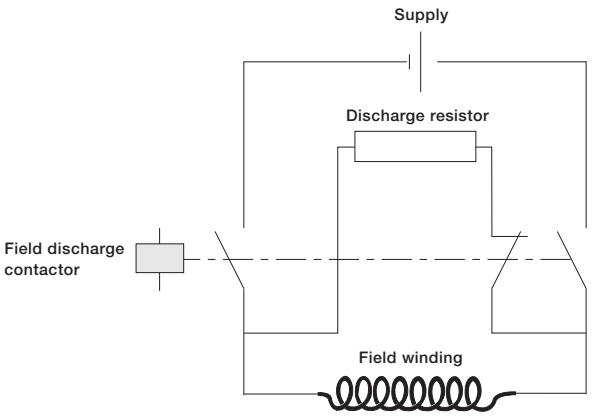


AMF-CC-JORE 800-21



### Application
Field discharge contactors (or field circuit breakers) are used to control the field winding of synchronous machines or exciter machines. In case of disturbances, the contactors ensure a definite disconnection from the supply source and the subsequent discharge of the energy stored in the machine magnetic circuit via a discharge resistor.

### Diagram




### Description
These contactors are designed with:
- 2 or 3 N.O. main poles with blowout devices, suitable for 2250 V DC max. operational voltage and circuit time constant L/R ≤ 15 ms
- 1 N.C. main pole, without blowout device, named "discharge pole" and set MAKE before BREAK with regard to the N.O. main poles.

### Electro-magnet
**AM-CC-JOR** and **AMF-CC-JOR** field discharge contactors are equipped with a latching device:
- magnetic latch for R63 ... R200
- mechanical latch for R550 ... R4500.

AC or DC control circuit.
The **AMF-CC-JOR** type is equipped with 2 tripping coils (double de-latching control).

### Auxiliary contacts
- AM-CC: 5 auxiliary contacts as standard (3 N.O. + 2 N.C.)
- AMF-CC: 4 auxiliary contacts as standard (2 N.O. + 2 N.C.)
- Up to 16 auxiliary contacts max. on request.

# Autotransformer starters

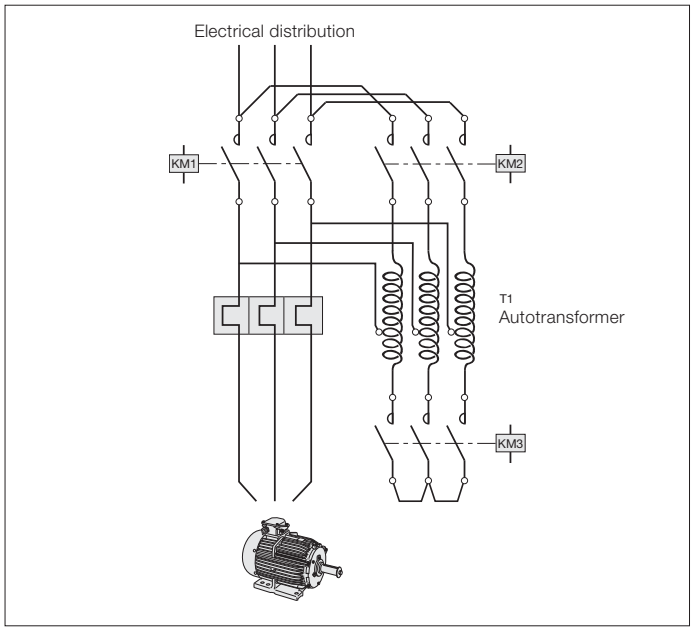
**General**

An autotransformer starter allows to start a squirrel-cage motor with a reduced starting current due to the reduced voltage within the accelerating duration.

At the contrary of the star-delta wiring, this autotransformer starting method needs three wires and three terminals on the motor.

At the starting period, the motor is wired to the auto-transformer taps: the "KM3" star contactor and the "KM2" autotransformer contactor are closed, the motor is under reduced voltage. Consequently, the torque is reduced as the square of the applied voltage. The auto-transformers are generally equipped of three taps at each phase in order to adapt the starting parameters to the field requirements.

When the motor reaches 80...95% of its nominal speed, the star contactor opens. Then, the "KM1" line contactor is making and the autotransformer contactor is opening. This starting process is done without any network interruption.




**Selection table** (Id starting current / In nominal current < 8 - Acceleration time < 20 s - 30 cycles / h max.)

| Motor ratings 50/60 Hz 440 V | Contactors KM1 Line | KM2 Autotransformer taps | | | | KM3 Autotransformer taps | | |
|---|---|---|---|---|---|---|---|---|
| kW | | 90 % | 80 % | 70 % | 60 % | 90 % | 80 % | 60-70 % |
| 500 | IOR..800 | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..400..MT | IOR..200..MT | IOR..400..MT | IOR..500..MT |
| 560 | IOR..1400 | IOR..800 | IOR..500..MT | IOR..500..MT | IOR..400..MT | IOR..200..MT | IOR..400..MT | IOR..500..MT |
| 630 | IOR..1400 | IOR..800 | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..200..MT | IOR..400..MT | IOR..800 |
| 710 | IOR..1400 | IOR..1400 | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..200..MT | IOR..500..MT | IOR..800 |
| 800 | IOR..1700 | IOR..1400 | IOR..800 | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..500..MT | IOR..800 |
| 900 | IOR..2100 | IOR..1700 | IOR..1400..MT | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..800 | IOR..1400 |
| 1000 | IOR..2100 | IOR..1700 | IOR..1400..MT | IOR..800 | IOR..500..MT | IOR..400..MT | IOR..800 | IOR..1400 |

# Advanced applications

Technical data 70

6

# R contactors
## Technical data

| Types | NORR63..MT NORR63..CC | NORR125..MT NORR125..CC | NORR200..MT NORR200..CC | NORR400 | NORR800..MT NORR800..CC NORR800 |
|---|---|---|---|---|---|
| **Magnet system characteristics** | | | | | |
| **Coil operating limits** acc. to IEC 60947-4-1 | At θ ≤ 55 °C 0.85…1.1 x Uc | | | | |
| **AC control voltage 50/60 Hz** | | | | | |
| Rated control circuit voltage Uc | 24…550 V AC | | | | |
| Coil consumption **Average pull-in value** | 290 VA | 460 VA | 410 VA | 540 VA | 610 VA |
| **Average holding value** | 25 VA | 45 VA | 45 VA | 65 VA | 55 VA |
| **Drop-out voltage** | 20…75 % of Uc | | | | |
| **Operating time (average values for Uc)** | | | | | |
| **For N.O. poles of the NORR** | | | | | |
| Between coil energization and N.C. contact opening | 30 ms | 30 ms | 40 ms | 60 ms | 100 ms |
| Between coil de-energization and N.C. contact closing | 20 ms | 20 ms | 20 ms | 50 ms | 55 ms |
| **For N.C. poles of the NORR** | | | | | |
| Between coil energization and N.O. contact closing | 27 ms | 27 ms | 37 ms | 55 ms | 85 ms |
| Between coil de-energization and N.O. contact opening | 23 ms | 23 ms | 23 ms | 28 ms | 60 ms |

6

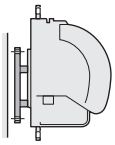
| Types | NORR63..MT NORR63..CC | NORR125..MT NORR125..CC | NORR200..MT NORR200..CC | NORR400 | NORR800..MT NORR800..CC NORR800 |
|---|---|---|---|---|---|
| **Mounting characteristics** | | | | | |
| **Fixing by screws (not supplied)** | 2 X M6 | 2 x M6 | 2 x M8 | 2 x M12 | 4 x M12 |
| **Connecting characteristics** | | | | | |
| **Main terminals** | Terminal plates for lugs or bars | | | | |
| **Connection capacity** (min. ... max.) | | | | | |
| **Main conductors** (poles) | | | | | |
| Terminal plates width | 16 mm | 20 mm | 25 mm | 30 mm | 48 mm |
| Terminal screw (not supplied) | 2 x M6 | 2 x M6 | 2 x M8 | - | - |
| Drilling holes (without thread) | - | - | - | 1 x ø13 mm | 2 x ø13 mm |
| **Auxiliary conductors** (built-in auxiliary terminals + coil terminals) | | | | | |
| Rigid solid **1 or 2 x** | 1...2.5 mm² | | | | |
| Flexible without ferrule **1 or 2 x** | 1...2.5 mm² | | | | |
| Tightening torque | | | | | |
| Coil terminals | 1.5 Nm | | | | |
| Built-in auxiliary terminals | 1.5 Nm | | | | |
| **Screw terminals** | | | | | |
| Main terminals | Screws and bolts | | | | |
| Coil terminals | M4 with cable clamps | | | | |
| Built-in auxiliary terminals | M4 with cable clamps | | | | |

# R contactors
# Technical data

## General technical data

| Contactor types | IOR, LOR, NOR contactors |
|---|---|
| Standards | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 |
| Rated insulation voltage Ui | |
| acc. to IEC 60947-4-1 and EN 60947-4-1 | |
| R63 ... R500 | 1000 V AC or 1000 V DC (1500 V DC with increased insulation) |
| R800 ... R5100 | 1000 V AC or 1500 V DC |
| Rated impulse withstand voltage Uimp. | 8 kV |
| Ambient air temperature close to contactor | |
| Operation | -20...+70 °C |
| Storage | -20...+80 °C |
| Climatic withstand | Standard version for industrial environment and atmospheres |
| Maximum operating altitude (without de-rating) | 2000 m |

## Mounting characteristics and condition for use

| Contactor types | IOR, LOR, NOR contactors |
|---|---|
| Mounting positions | Position 1 (horizontal bar)<br>  <br>Maximum angle of inclination, in any direction : ±22° 30' |
| Mounting distances | See "Dimensions" |

# R contactors
## Technical data

| Types | IORR63..MT<br>IORR63..CC<br>LORR85 | IORR125..MT<br>IORR125..CC<br>LORR170 | IORR200..MT<br>IORR200..CC<br>LORR260 | IORR400..MT<br>IORR400..CC<br>LORR400 | IORR500..MT<br>IORR500..CC<br>LORR550 |
|---|---|---|---|---|---|
| **Magnet system characteristics** | | | | | |
| **Coil operating limits** | | | | | |
| acc. to IEC 60947-4-1 | At θ ≤ 55 °C 0.85…1.1 x Uc | | | | |
| **AC control voltage 50/60 Hz** | | | | | |
| Rated control circuit voltage Uc | 24…550 V AC | | | | |
| Coil consumption **Average pull-in value** | 290 VA | 460 VA | 410 VA | 540 VA | 540 VA |
| Coil consumption **Average holding value** | 25 VA | 45 VA | 45 VA | 65 VA | 65 VA |
| **Drop-out voltage** | 20...75 % of Uc | | | | |
| **Operating time (average values for Uc)** | | | | | |
| Between coil energization and N.O. contact closing | 30 ms | 30 ms | 40 ms | 60 ms | 60 ms |
| Between coil de-energization and N.O. contact opening | 20 ms | 20 ms | 20 ms | 50 ms | 50 ms |



| Types | IORR63..MT<br>IORR63..CC<br>LORR85 | IORR125..MT<br>IORR125..CC<br>LORR170 | IORR200..MT<br>IORR200..CC<br>LORR260 | IORR400..MT<br>IORR400..CC<br>LORR400 | IORR500..MT<br>IORR500..CC<br>LORR550 |
|---|---|---|---|---|---|
| **Mounting characteristics** | | | | | |
| **Fixing by screws (not supplied)** | 2 x M6 | 2 x M6 | 2 x M8 | 2 x M12 | 2 x M12 |

## Connecting characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Main terminals** | Terminal plates for lugs or bars | | | | |
| **Connection capacity** (min. ... max.) | | | | | |
| **Main conductors** (poles) | | | | | |
| Terminal plates width | 16 mm | 20 mm | 25 mm | 30 mm | 30 mm |
| Terminal screw (not supplied) | M6 x 20 | M8 x 20 | M10 x 25 | - | - |
| Drilling holes (without thread) | - | - | - | 1 x ø13 mm | 1 x ø13 mm |
| **Auxiliary conductors** | | | | | |
| (built-in auxiliary terminals + coil terminals) | | | | | |
| Rigid solid **1 or 2 x** | 1...2.5 mm² | | | | |
| Flexible without ferrule **1 or 2 x** | 1...2.5 mm² | | | | |
| Tightening torque | | | | | |
| Coil terminals | 1.5 Nm | | | | |
| Built-in auxiliary terminals | 1.5 Nm | | | | |
| **Screw terminals** | | | | | |
| Main terminals | Screws and bolts | | | | |
| Coil terminals | M4 with cable clamps | | | | |
| Built-in auxiliary terminals | M4 with cable clamps | | | | |

# R contactors
## Technical data

| Types | IORR800<br>LORR800<br>IORR800..MT<br>IORR800..CC | IORR1000<br><br><br>IORR1000..CC<br>FORR1000 | IORR1400<br>LORR1400<br>IORR1400..MT<br>IORR1400..CC<br>FORR1400 | IORR1700<br>LORR1700<br>IORR1700..MT<br>IORR1700..CC<br>FORR1700 | IORR2100<br>LORR2100<br>IORR2100..MT<br>IORR2100..CC<br>FORR2100 |
|---|---|---|---|---|---|

### Magnet system characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **Coil operating limits** | | | | | | |
| acc. to IEC 60947-4-1 | | At θ ≤ 55 °C 0.85…1.1 x Uc | | | | |
| **AC control voltage 50/60 Hz** | | | | | | |
| Rated control circuit voltage Uc | | 24…550 V AC | | | | |
| Coil consumption | **Average pull-in value** | 610 VA | | 2 and 3 poles: 610 VA<br>4 poles: 925 VA | 2...4 poles: 925 VA | |
| | **Average holding value** | 55 VA | | 2 and 3 poles: 55 VA<br>4 poles: 130 VA | 2...4 poles: 130 VA | |
| **Drop-out voltage** | | 20...75 % of Uc | | | | |
| **Operating time (average values for Uc)** | | | | | | |
| Between coil energization and N.O. contact closing | | 100 ms | 100 ms | 100 ms | 90 ms | 90 ms |
| Between coil de-energization and N.O. contact opening | | 55 ms | 55 ms | 55 ms | 40 ms | 30 ms |



| Types | IORR800<br>LORR800<br>IORR800..MT<br>IORR800..CC | IORR1000<br><br><br>IORR1000..CC<br>FORR1000 | IORR1400<br>LORR1400<br>IORR1400..MT<br>IORR1400..CC<br>FORR1400 | IORR1700<br>LORR1700<br>IORR1700..MT<br>IORR1700..CC<br>FORR1700 | IORR2100<br>LORR2100<br>IORR2100..MT<br>IORR2100..CC<br>FORR2100 |
|---|---|---|---|---|---|

### Mounting characteristics

| | |
|---|---|
| **Fixing by screws (not supplied)** | 4 x M12 |

### Connecting characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **Main terminals** | | Terminal plates for lugs or bars | | | | |
| **Connection capacity** (min. ... max.) | | | | | | |
| **Main conductors** (poles) | | | | | | |
| Terminal plates width | | 48 mm | 48 mm | 60 mm | 80 mm | 100 mm |
| Drilling holes (without thread) | | 2 x ø13 mm | 2 x ø13 mm | 2 x ø13 mm | 4 x ø11 mm | 4 x ø11 mm |
| **Auxiliary conductors** | | | | | | |
| (built-in auxiliary terminals + coil terminals) | | | | | | |
| Rigid solid | **1 or 2 x** | 1...2.5 mm² | | | | |
| Flexible without ferrule | **1 or 2 x** | 1...2.5 mm² | | | | |
| Tightening torque | | | | | | |
| Coil terminals | | 1.5 Nm | | | | |
| Built-in auxiliary terminals | | 1.5 Nm | | | | |
| **Screw terminals** | | | | | | |
| Main terminals | | Screws and bolts | | | | |
| Coil terminals | | M4 with cable clamps | | | | |
| Built-in auxiliary terminals | | M4 with cable clamps | | | | |

# R contactors
## Technical data

| Types | IORR2500<br>LORR2500<br>IORR2500..MT<br>IORR2500..CC<br>FORR2500 | IORR3200<br>LORR3200<br>IORR3200..MT<br>IORR3200..CC<br>FORR3200 | IORR3800<br>LORR3800<br>IORR3800..MT<br>IORR3800..CC<br>FORR3800 | IORR4500<br>LORR4500<br>IORR4500..MT<br>IORR4500..CC | IORR5100<br>LORR5100<br>IORR5100..MT<br>IORR5100..CC |
|---|---|---|---|---|---|

### Magnet system characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **Coil operating limits** | | | | | | |
| acc. to IEC 60947-4-1 | | At θ ≤ 55 °C 0.85...1.1 x Uc | | | | |
| **AC control voltage 50/60 Hz** | | | | | | |
| Rated control circuit voltage Uc | | 48...550 V AC | | | | |
| Coil consumption | **Average pull-in value** | 1...4 poles:<br>925 VA | 1...3 poles:<br>925 VA | 1 and 2 poles:<br>925 VA | 1 and 2 poles:<br>925 VA | 1 pole:<br>925 VA |
| | **Average holding value** | 1...4 poles:<br>130 VA | 1...3 poles:<br>130 VA | 1 and 2 poles:<br>130 VA | 1 and 2 poles:<br>130 VA | 1 pole:<br>130 VA |
| **Drop-out voltage** | | 20...75 % of Uc | | | | |
| **Operating time (average values for Uc)** | | | | | | |
| Between coil energization and N.O. contact closing | | - | | | | |
| Between coil de-energization and N.O. contact opening | | - | | | | |

6

| Types | IORR2500<br>LORR2500<br>IORR2500..MT<br>IORR2500..CC<br>FORR2500 | IORR3200<br>LORR3200<br>IORR3200..MT<br>IORR3200..CC<br>FORR3200 | IORR3800<br>LORR3800<br>IORR3800..MT<br>IORR3800..CC<br>FORR3800 | IORR4500<br>LORR4500<br>IORR4500..MT<br>IORR4500..CC | IORR5100<br>LORR5100<br>IORR5100..MT<br>IORR5100..CC |
|---|---|---|---|---|---|

### Mounting characteristics

| | | |
|---|---|---|
| **Fixing by screws (not supplied)** | 4 x M12 | 4 or 6 x M12 |

### Connecting characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| **Main terminals** | | Terminal plates for lugs or bars | | | | |
| **Connection capacity** (min. ... max.) | | | | | | |
| **Main conductors** (poles) | | | | | | |
| Terminal plates width | | 150 mm | 180 mm | 220 mm | 280 mm | 340 mm |
| Drilling holes (without thread) | | 8 x ø9 mm | 8 x ø13 mm | 8 x ø13 mm | 12 x ø11 mm | 14 x ø13 mm |
| **Auxiliary conductors** | | | | | | |
| (built-in auxiliary terminals + coil terminals) | | | | | | |
| Rigid solid | **1 or 2 x** | 1...2.5 mm² | | | | |
| Flexible without ferrule | **1 or 2 x** | 1...2.5 mm² | | | | |
| Tightening torque | | | | | | |
| Coil terminals | | 1.5 Nm | | | | |
| Built-in auxiliary terminals | | 1.5 Nm | | | | |
| **Screw terminals** | | | | | | |
| Main terminals | | Screws and bolts | | | | |
| Coil terminals | | M4 with cable clamps | | | | |
| Built-in auxiliary terminals | | M4 with cable clamps | | | | |

# Notes

7

# Accessories and spare parts


**Auxiliary contacts**

Auxiliary contact blocks CA12 78
Auxiliary contacts CA15 78
Technical data 79

**Main poles**

Contact sets 80
Arcing horns 80
Equipotential connections 81
Arc chutes 81

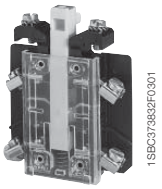
**Control circuits**

Surge suppressors 82
Rectifiers 82
Magnet circuits 82

**Mechanical interlock units** 83

**Mounting feet - Shaft extensions** 84

# Auxiliary contacts




CA12-1

## Auxiliary contact blocks type CA12

### Description

CA12 auxiliary contact blocks 2 or 4-pole are mounted on a support bracket, above the electro-magnet.

The R contactors type R and RE can be equipped with:

– 1 or 2 x 2-pole blocks

– 1 x 2-pole block + 1 x 4-pole blocks.

The R contactors type RR can be equipped with 1 or 2 x 2-pole blocks.

### Ordering details

| For R contactors type R, RE, RR (RC excluded) | Auxiliary contacts | | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|---|---|
| **Auxiliary contact blocks** | | | | | | | |
| 63 ... 550 | 1 | 1 | CA12-1 | FPTN410004R0001 | | 1 | 0.050 |
| | 2 | 0 | CA12-2 | FPTN410005R0001 | | 1 | 0.050 |
| | 2 | 2 | CA12-11 | FPTN410013R0001 | | 1 | 0.090 |
| | 3 | 1 | CA12-12 | FPTN410016R0001 | | 1 | 0.090 |
| | 4 | 0 | CA12-22 | FPTN410012R0001 | | 1 | 0.090 |
| **Support bracket** | | | | | | | |
| 63 ... 260 | | | Support bracket | FPTN410056R0001 | | 1 | 0.060 |
| 315 ... 550 | | | Support bracket | FPTN410056R0002 | | 1 | 0.060 |




CA15-F


CA15-O

## Auxiliary contacts type CA15

### Description

CA15 auxiliary contacts are mounted on a mounting kit, on the frame.

### Ordering details

| For R contactors type R, RE, RR, RC | Auxiliary contacts | | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|---|---|
| **Auxiliary contact with screw terminals** | | | | | | | |
| 63 ... 5100 | 1 | 0 | CA15-F | FPTN410008R0004 | | 1 | 0.070 |
| | 0 | 1 | CA15-O | FPTN410007R0006 | | 1 | 0.070 |
| **Auxiliary contact for railway** | | | | | | | |
| 63 ... 5100 | 1 | 0 | CA15-F | FPTN210382R0003 | | 1 | 0.070 |
| | 0 | 1 | CA15-O | FPTN210382R0004 | | 1 | 0.070 |
| **Mounting kit** | | | | | | | |
| 63 ... 170, 315 ... 550, auxiliary frame ≥ 800 | | | universal mounting kit | FPTN410054R0016 | | 1 | On request |
| 200 ... 260 | | | Mounting kit | FPTN410054R0017 | | 1 | |
| Main frame ≥ 800 | | | Mounting kit | FPTN410213R0006 | | 1 | |

## Special auxiliary contact blocks

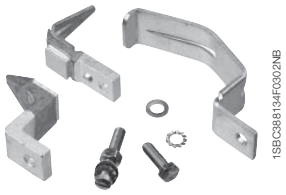
Please contact your local sales organization (order code of R contactor needed).

# Auxiliary contact blocks
## Technical data

### CA auxiliary contact blocks

| Types | | CA12 | CA15 |
|---|---|---|---|
| **Rated operational voltage Ue max.** | | 690 V | |
| **Rated frequency (without de-rating)** | | 25...400 Hz | |
| **Conventional free-air thermal current Ith** | | | |
| acc. to IEC 60947-4-1, open couplers, θ ≤ 40 °C | | 12 A | 15 A |
| **Ie / Rated operational current AC-15** | | | |
| acc. to IEC 60947-5-1 | **24-48 V 50/60 Hz** | 8 A | 10 A |
| | **110-127 V 50/60 Hz** | 8 A | 10 A |
| | **220-240 V 50/60 Hz** | 5 A | 6 A |
| | **380-440 V 50/60 Hz** | 3 A | 3.5 A |
| | **500-600 V 50/60 Hz** | 2 A | 2.5 A |
| **Making capacity** acc. to IEC 60947-5-1 | | 10 x Ie / AC-15 | |
| **Breaking capacity** acc. to IEC 60947-5-1 | | 10 x Ie / AC-15 | |
| **Ie / Rated operational current DC-13** | | | |
| acc. to IEC 60947-5-1 | **24 V DC** | 6 A | |
| | **48 V DC** | 2.8 A | |
| | **72 V DC** | 1 A | |
| | **110-125 V DC** | 0.55 A | |
| | **220-250 V DC** | 0.3 A | |
| **Short-circuit protection device gG type fuse** | | 10 A | 16 A |

# Main poles




## Contacts sets for N.O. or N.C. main poles

### Description

The contact sets include 1 fixed contact, 1 moving contact, 1 arcing horn (according to table below) and screws.

The quantities needed are defined per ratings as follow:

– 1 set per pole for R63….R800, R1000, R1400, R1700, R2100
– 2 sets per pole for R1250, R1500, R2500, R3200, R3800
– 3 sets per pole for R2000, R4500, R5100
– 4 sets per pole for R3150
– 5 sets per pole for R4000.

### Ordering details

| For R contactors type | | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|
| **Contact set with arcing horn** | | | | | |
| IOR, NOR, JOR, FOR | 63, 85 | FPTN410389R0001 | | 1 set | 0.050 |
| | 125, 170 | FPTN410389R0002 | | 1 set | 0.150 |
| | 200, 260 | FPTN410389R0003 | | 1 set | 0.250 |
| | 315, 400 (1), 420 | FPTN410389R0004 | | 1 set | 0.400 |
| | 400 (2), 500, 550, 630 | FPTN410389R0005 | | 1 set | 0.480 |
| **Contact set without arcing horn** | | | | | |
| LOR | 85 | FPTN410390R0001 | | 1 set | 0.040 |
| | 170 | FPTN410390R0002 | | 1 set | 0.090 |
| | 260 | FPTN410390R0003 | | 1 set | 0.180 |
| | 420 | FPTN410390R0004 | | 1 set | 0.250 |
| | 400, 550 | FPTN410390R0005 | | 1 set | 0.470 |
| IOR, NOR, JOR, FOR, LOR | 800, 1000, 1250, 1500, 2000, 3150, 4000 | FPTN410391R0001 | | 1 set | 0.520 |
| | 1400, 2500 | FPTN410503R0001 | | 1 set | 0.520 |
| | 1700, 2100, 3200, 3800, 4500, 5100 | FPTN410506R0001 | | 1 set | 0.830 |

(1) For NOR and JOR types, NC poles
(2) For IOR, NOR and JOR types, NO poles


## Arcing horns for N.O. or N.C. main poles

### Ordering details

| For R contactors type IOR, NOR, JOR, FOR | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|
| 800, 1000, 1250, 1500, 2000, 3150, 4000 | FPTN410446R0001 | | 1 | 0.200 |
| 1400, 2500 | FPTN410446R0001 | | 1 | 0.200 |
| 1700, 2100, 3200, 3800, 4500, 5100 | FPTN410508R0001 | | 1 | 0.280 |

# Main poles


## Equipotential connections

### Description

Equipotential connections must be ordered separately for ratings ≥ 800 A.

### Ordering details

| For R contactors type IOR, NOR, JOR and FOR | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|
| 800 ... 5100 | NO poles | FPTN410176R0006 | | 1 | 0.500 |
| 800 ... 4000 | NC poles | FPTN410176R0007 | | 1 | 0.530 |


## Arc chutes

### Description

De-ion arc chutes replace basic arc chutes except for 315 and 420 A ratings.

### Ordering details

| For R contactors type IOR, NOR, JOR and FOR | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|
| 63, 85 | De-ion arc chute | FPTN401938R0002 | | 1 | 0.470 |
| 125, 170 | De-ion arc chute | FPTN401939R0002 | | 1 | 0.930 |
| 200, 260 | De-ion arc chute | FPTN401940R0002 | | 1 | 1.360 |
| 315, 400 (1),420 | Basic arc chute | FPTN401936R0002 | | 1 | 1.300 |
| 400 (2), 500, 550 | De-ion arc chute | FPTN401941R0002 | | 1 | 3.600 |
| 800, 1000, 1250, 1500, 2000, 3150, 4000 | De-ion arc chute | FPTN410067R0002 | | 1 | 2.570 |
| 1400, 2500 | De-ion arc chute | FPTN410067R0002 | | 1 | 2.570 |
| 1700, 2100, 3200, 3800, 4500, 5100 | De-ion arc chute | FPTN410507R0001 | | 1 | 3.150 |

(1) For NOR and JOR types, NC poles
(2) For IOR, NOR and JOR types, NO poles

## Pressure springs, insulated supports, complete poles and other spare parts

Please contact your local sales organization (order code for R contactor needed).

# Control circuits


## Surge suppressors for contactor coils

### Ordering details

| For R contactors type IOR, NOR , JOR, LOR and FOR | Rated control circuit voltage Uc V | AC | DC | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|---|---|---|
| 63 ... 5100 | 24...60 | ● | – | RV-R1/60 | FPTN410463R6001 | | 1 | 0.050 |
| | 60...133 | ● | – | RV-R1/133 | FPTN410463R6002 | | 1 | 0.050 |
| | 110...250 | ● | – | RV-R1/250 | FPTN410463R6003 | | 1 | 0.050 |
| | 250...440 | ● | – | RV-R1/440 | FPTN410463R6004 | | 1 | 0.050 |
| | 440...660 | ● | – | RV-R1/660 | FPTN410463R6005 | | 1 | 0.050 |

## Rectifiers


### Ordering details

| For R contactors type IORR, NORR, JORR, LORR and FORR | Rated control circuit voltage Uc | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|
| 63 ... 5100 | < 440 V AC | TRE2614501 | | 1 | 0.050 |
| | ≥ 440 V AC | TRE2720806 | | 1 | 0.050 |

## Complete control circuit kit

Including:
- 1 coil
- 1 economy resistor
- 1 surge suppressor
- 1 rectifier

For complete kit, please contact your local sales organization (order code of R contactor needed).

## Magnet circuits

### Ordering details

| For R contactors type IORR, NORR, JORR, LORR, and FORR IORE, NORE, JORE, LORE, and FORE | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|
| 63, 85 | FPTN410437R0001 | | 1 | 1.500 |
| 125, 170 | FPTN410438R0001 | | 1 | 1.500 |
| 200, 260 | FPTN410439R0001 | | 1 | 1.500 |
| 400 ... 630 | FPTN410441R0001 | | 1 | 2.500 |
| ≥ 800 | FPTN410200R0006 | | 1 | 8.000 |

For tripping electro-magnet circuit AME or AM(F)-CC > 800 A: use 63, 85 A electro-magnet circuit.
For IOR and IOR..AMA versions, please consult your local sales organization (order code of R contactor needed).

## Coils, economy resistors and other specific parts

Please contact your local sales organization (order code of R contactor needed).

# Mechanical interlock units


VM

## Description

The VM mechanical interlock units are designed for the interlocking of two R contactors of the same rating. The mounting between 2 contactors of a same rating doesn't affect their fixing centers or their overall dimensions.

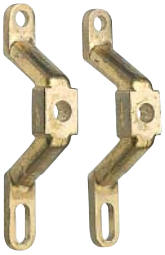
## Ordering details

| For R contactors type IOR, NOR , JOR, LOR and FOR | Rating | Fixing center mm | Type | Order code | | Pkg qty | Weight (1 pce) kg |
|---|---|---|---|---|---|---|---|
| IOR..-CC, IOR..-MT, NOR..-CC, NOR..-MT, LOR | 63 | 220 | VM21/24 | FPL7101403R0001 | | 1 | 0.140 |
| | 125 | 260 | VM25 | FPL7401404R0001 | | 1 | 0.180 |
| | 200 | 320 | VM27 | FPL8001401R0001 | | 1 | 0.260 |
| IOR..-CC, IOR..-MT, NOR..400, LOR | 400 ... 500 | 520 | VM15-SP | FPL8301401R0002 | | 1 | 0.500 |
| IOR..., LOR...800, NOR...800, FOR...1000 | 800 ... 1000 | 520 | VM16 | FPL8601401R0001 | | 1 | 0.600 |
| IOR...-CC, IOR...-MT | 800 ... 1000 | 640 | VM17/18 | FPL8801401R0001 | | 1 | 0.700 |
| IOR, LOR, FOR | 1400, 1700, 2100 | 640 | | | | | |
| IOR...-CC, IOR...-MT | 1400, 1700, 2100 | 680 | VM19 | FPL9001401R0001 | | 1 | 0.800 |

Note: For special versions, please consult us:
- interlocking between contactors with N.O. + N.C. poles or with latching
- interlocking between 2 contactors of different ratings
- interlocking between 3 contactors.

# Mounting feet - Shaft extensions


4NMW1009/1039




01041

7

## Mounting feet

### Description

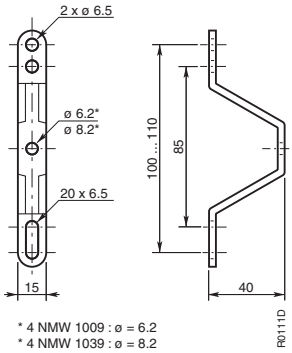
When the contactors are to be fitted on a back plate the mounting feet provide an increased clearance behind the contactor for easier cabling.

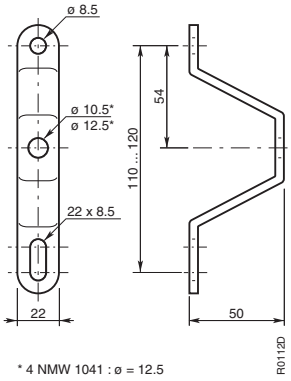
Two pieces are required for one contactor.

### Ordering details

| For R contactors | Drilling for bar fixing Ø | Fixing centres for vertical wall mounting | Type | Order code | | Pkg qty | Weight (2 pce) |
|---|---|---|---|---|---|---|---|
| | mm | mm | | | | | kg |
| 63 ... 170 | 6.2 | 85 / 100...110 | 4NMW1009 | FPL7108201P0001 | | 2 | 0.060 |
| 200, 260 | 8.2 | 85 / 100...110 | 4NMW1039 | FPL7608201P0001 | | 2 | 0.060 |
| 400, 500, 550 | 12.5 | 110...120 | 4NMW1041 | FPL8308201P0001 | | 2 | 0.320 |

### Main dimensions mm




## Shaft extensions

### Description

For 3 or 4 pole reversing or changeover pairs built with two contactors of different ratings, vertically mounted above one another. Fitting on the shaft of the contactor having the smaller frame size.

### Ordering details

| For R contactors | Type | Order code | | Pkg qty | Weight (1 pce) |
|---|---|---|---|---|---|
| | | | | | kg |
| 63 ... 170 | - | FPTN410111R0001 | | 1 | (1) |
| 200 ... 420 | - | FPTN410111R0002 | | 1 | (1) |
| 400, 500, 550 | - | FPTN410111R0003 | | 1 | (1) |

(1) On request.

# Notes

8

# Terminal marking and wiring diagrams


## Terminal marking and positioning

R63 ... R500 **88**

R800 ... R5100 **89**

## Wiring diagrams

**R contactors and couplers**

Control by 2 impulse pushbuttons and hold-in contact **90**

Control by switch **90**

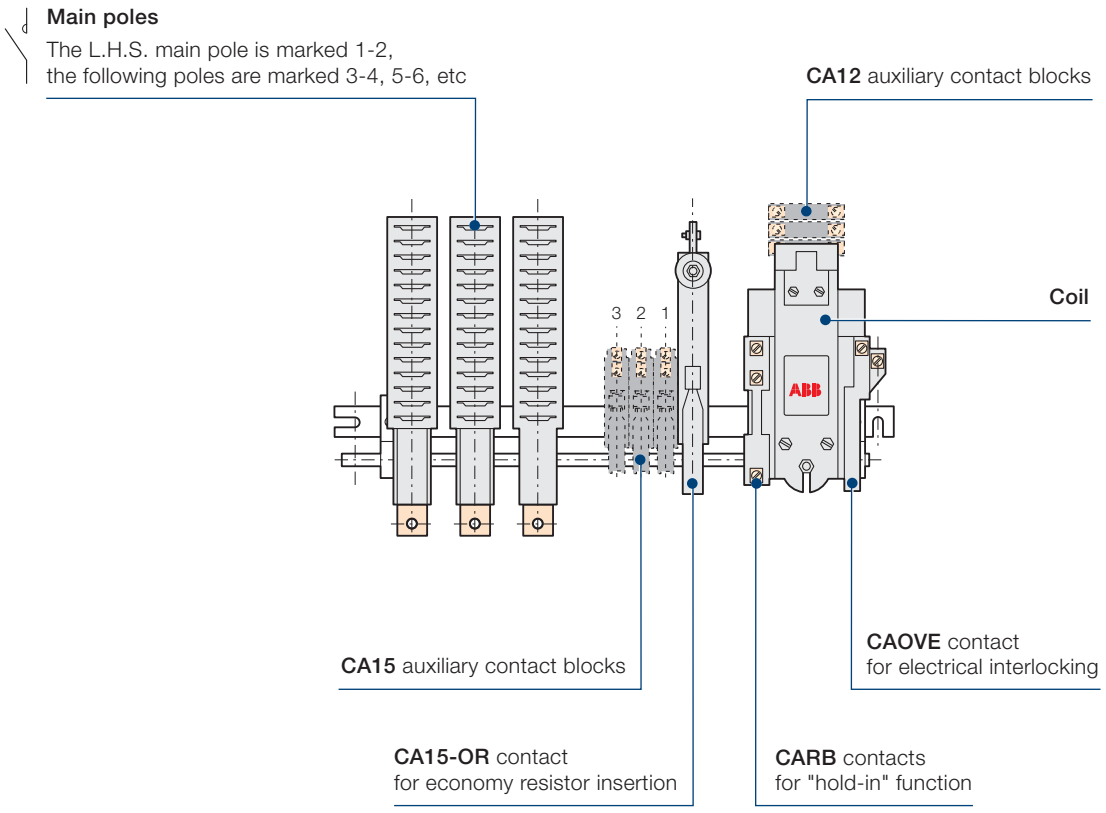
**R magnetically latched contactors - Contactors and couplers**

Control by 2 impulse pushbuttons **91**

Control by switch **92**

# R contactors
## Terminal marking and positioning

**R63 ... R500** (the main poles in variable number)

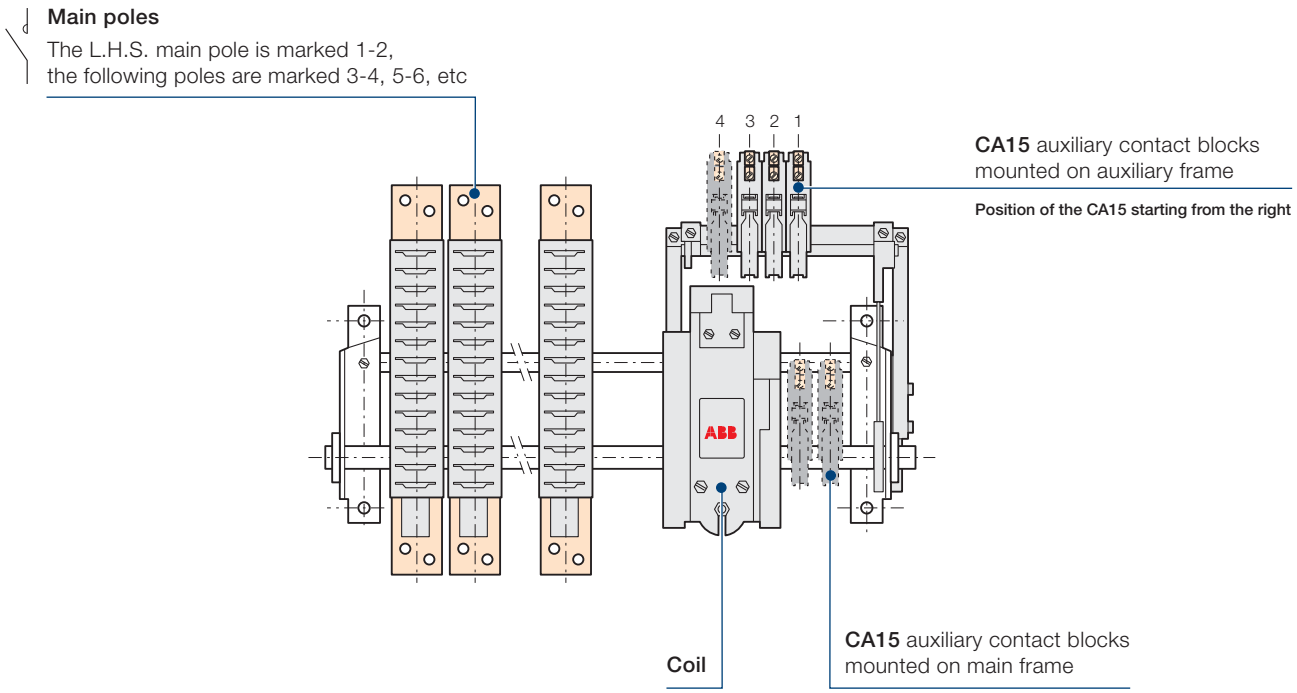



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Main poles** | N.O. main poles are respectively marked 1-2, 3-4, 5-6, 7-8<br>For N.C. main poles the letter R precedes the figures | | | | | | | | |
| **Coil** | AC coil: the terminals are marked A1 and A2<br>DC coil: the terminals are marked A1 (-) and A2 (+) | | | | | | | | |
| **CAOVE contact** | N.C. contact, adjustable, intended for electrical interlocking. Terminal marking: 21-22 | | | | | | | | |
| **CARB contact** | N.O. contact, intended for "hold-in" function. Terminal marking: 13-14 | | | | | | | | |
| **CA15-OR contact** | N.C. contact, factory wired. It is intended for insertion of economy resistor. Terminal marking: 15-16 | | | | | | | | |
| **CA12 auxiliary contacts** | **1 NO + 1 NC** | **2 NO** | **2 NO + 2 NC** | **3 NO + 1 NC** | **4 NO** | **3 NO + 3 NC** | **4 NO + 2 NC** | **5 NO + 1 NC** | **6 NO** |
| Block No 3 | | | | | | 83 71 / 84 72 | 83 73 / 84 74 | 83 73 / 84 74 | 83 73 / 84 74 |
| Block No 2 | | | 63 51 / 64 52 | 63 53 / 64 54 | 63 53 / 64 54 | 63 51 / 64 52 | 63 51 / 64 52 | 63 53 / 64 54 | 63 53 / 64 54 |
| Block No 1 | 43 31 / 44 32 | 43 33 / 44 34 | 43 31 / 44 32 | 43 31 / 44 32 | 43 33 / 44 34 | 43 31 / 44 32 | 43 31 / 44 32 | 43 31 / 44 32 | 43 33 / 44 34 |
| **CA15 extra auxiliary contacts** | **No "n"** | **No 8** | **No 7** | **No 6** | **No 5** | **No 4** | **No 3** | **No 2** | **No 1** |
| CA15-F (N.O.) | ..3 / ..4 | 173 / 174 | 163 / 164 | 153 / 154 | 143 / 144 | 133 / 134 | 123 / 124 | 113 / 114 | 103 / 104 |
| **or** CA15-O (N.C.) | ..1 / ..2 | 171 / 172 | 161 / 162 | 151 / 152 | 141 / 142 | 131 / 132 | 121 / 122 | 111 / 112 | 101 / 102 |

The CA15 auxiliary contacts are fitted from the right on the contactor frame according to this marking.

# R contactors
## Terminal marking and positioning

**R800 ... R5100** (the main poles in variable number, can be distributed on both sides of the electro-magnet)



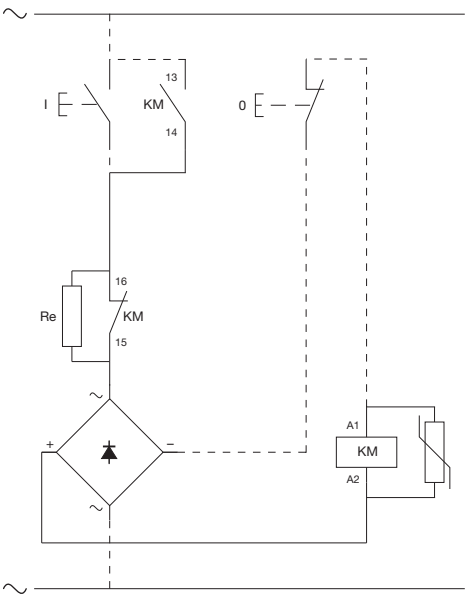

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Main poles** | | N.O. main poles are respectively marked 1-2, 3-4, 5-6, 7-8<br>For N.C. main poles the letter R precedes the figures | | | | | | | |
| **Coil** | | AC coil: the terminals are marked A1 and A2<br>DC coil: the terminals are marked A1 (-) and A2 (+) | | | | | | | |
| **CA15 auxiliary contact** | **No 1** | CA15-O (N.C.) contact intended for electrical interlocking. Terminal marking: 21-22 | | | | | | | |
| | **No 2** | CA15-F (N.O.) contact intended for "hold-in" function. Terminal marking: 13-14 | | | | | | | |
| | **No 3** | CA15-OR (N.C.). This contact is factory wired. It is intended for insertion of economy resistor. Terminal marking: 15-16 | | | | | | | |
| **CA15 extra auxiliary contacts** | **No "n"** | **No 11** | **No 10** | **No 9** | **No 8** | **No 7** | **No 6** | **No 5** | **No 4** |
| CA15-F (N.O.) | ..3 \| ..4 | 173 \| 174 | 163 \| 164 | 153 \| 154 | 143 \| 144 | 133 \| 134 | 123 \| 124 | 113 \| 114 | 103 \| 104 |
| **or** CA15-O (N.C.) | ..1 \| ..2 | 171 \| 172 | 161 \| 162 | 151 \| 152 | 141 \| 142 | 131 \| 132 | 121 \| 122 | 111 \| 112 | 101 \| 102 |

The CA15 auxiliary contacts are fitted from the right, first on the auxiliary frame and next on the main frame of the contactor, according to this marking.

# R contactors and couplers
# Wiring diagrams

## Control by 2 impulse pushbuttons and hold-in contact

### AC operated

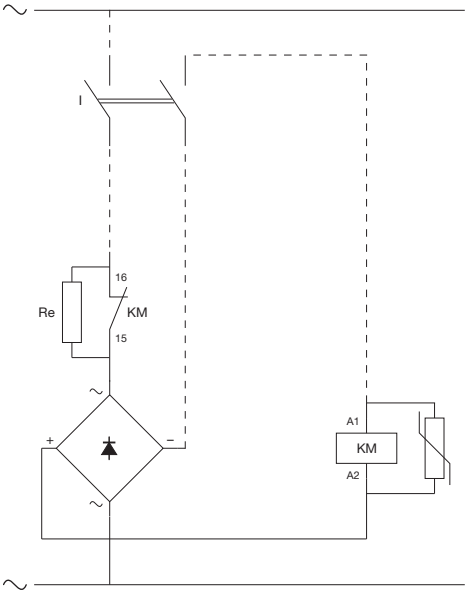



**IORR, IORR-MT, IORR-CC, NORR-MT, NORR-CC, LORR**

8

## Control by switch

### AC operated



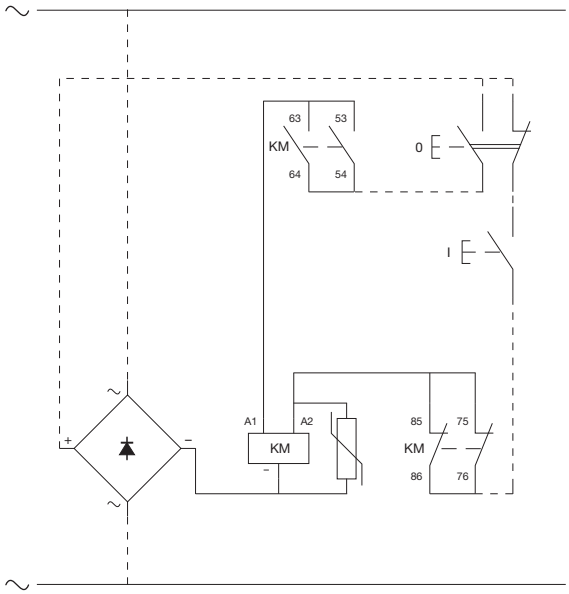

**IORR, IORR-MT, IORR-CC, NORR-MT, NORR-CC, LORR**
Note: remove the factory wired strap 14-16

# R magnetically latched contactors
# Contactors and couplers
# Wiring diagrams

## Control by 2 impulse pushbuttons

### AC operated

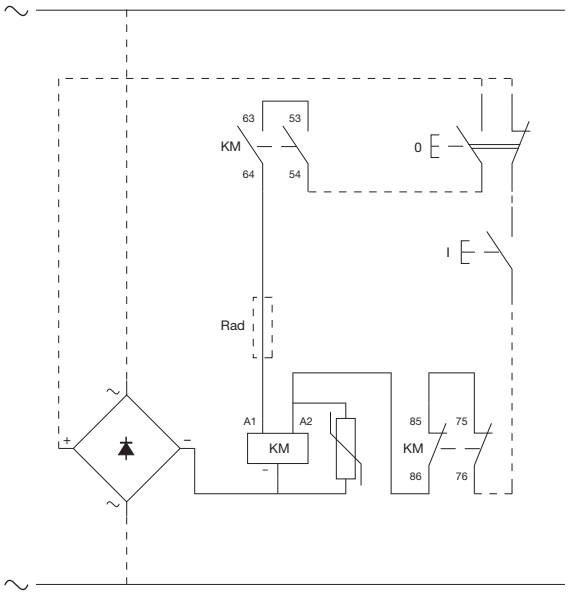
Control voltage Uc ≤ 110 V AC




**IORR-CC-AMA, IORR-MT-AMA, NORR-CC-AMA, NORR-MT-AMA, LORR-AMA**

### AC operated

Control voltage Uc > 110 V AC



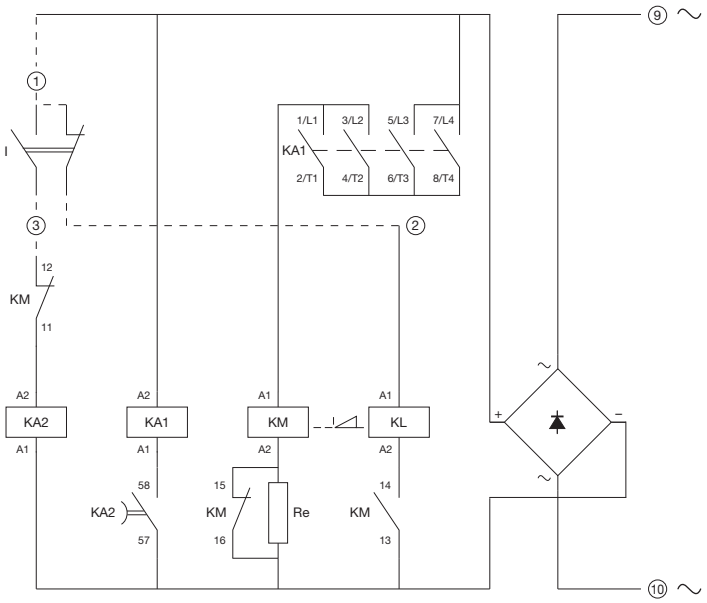

**IORR-CC-AMA, IORR-MT-AMA, NORR-CC-AMA, NORR-MT-AMA, LORR-AMA**

8

# R mechanically latched contactors
# Contactors and couplers
# Wiring diagrams

## Control by switch

### AC operated




**KM** = Closing coil
**KL** = Tripping coil
**KA1** = Contactor relay
**KA2** = Timed contactor relay
**Re** = Economy resistor

Supply between 9 and 10
Closing between 1 and 3
Tripping between 1 and 2

**IORR-AME, IORR-MT-AME, IORR-CC-AME, NORR-CC-AME, NORR-MT-AME, LORR-AME**

# Notes

# Main dimensions


**IORR and LORR types**

R800 … R2100 **96**

R2500 … R5100 **98**

**IORR..MT and IORR..CC types**

R63 … R500 **100**

R800 … R2100 **102**

R2500 … R5100 **104**

**IORR..AME and LORR..AME types**

R800 … R2100 **106**

R2500 … R5100 **108**

**IORR..MT-AMA … IOR..MT-AMA and IORR..CC-AMA … IOR..CC-AMA types**

R63 ... R200 **110**

**IORR..MT-AME and IORR..CC-AME types**

R400 ... R500 **112**

R800 … R2100 **114**

R2500 … R5100 **116**

**NORR..MT and NORR..CC types**

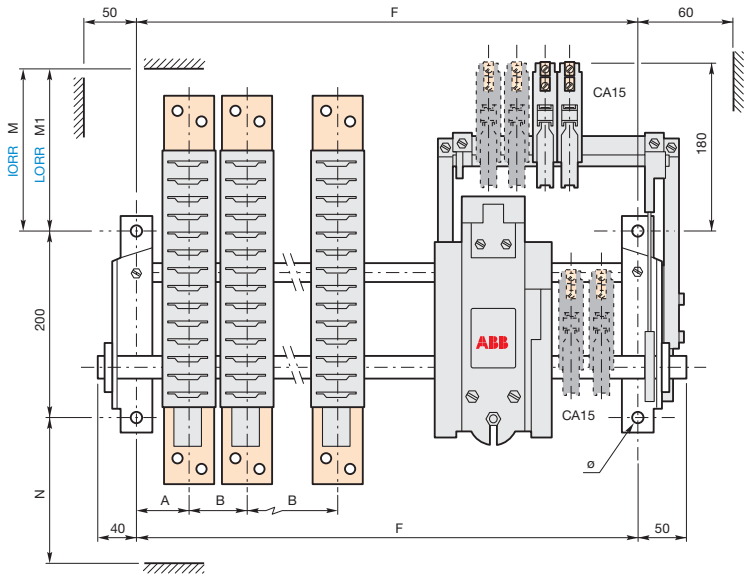
R63 … R200 **118**

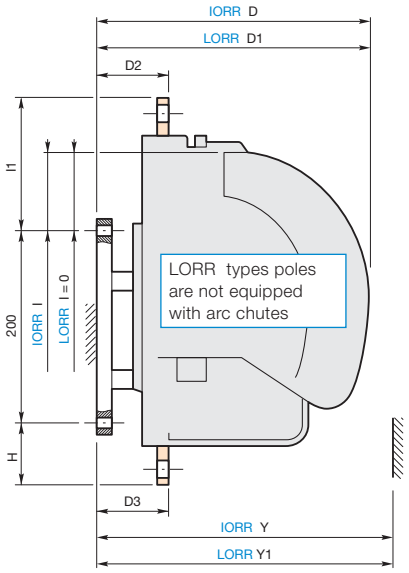
**LORR type**

R85 … R550 **120**

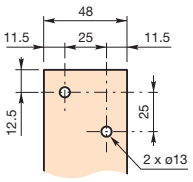
# IORR and LORR types
# R800 … R2100

## Main dimensions mm

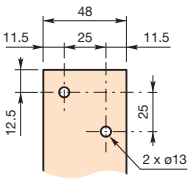


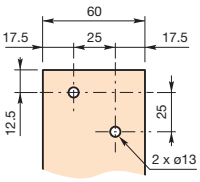

### Terminal plate details



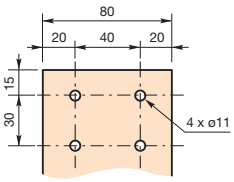

R800



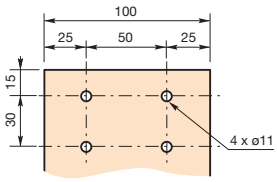

R1000




R1400




R1700




R2100

Terminal plate thickness: top terminal plates = 10 mm, bottom terminal plates = 12 mm

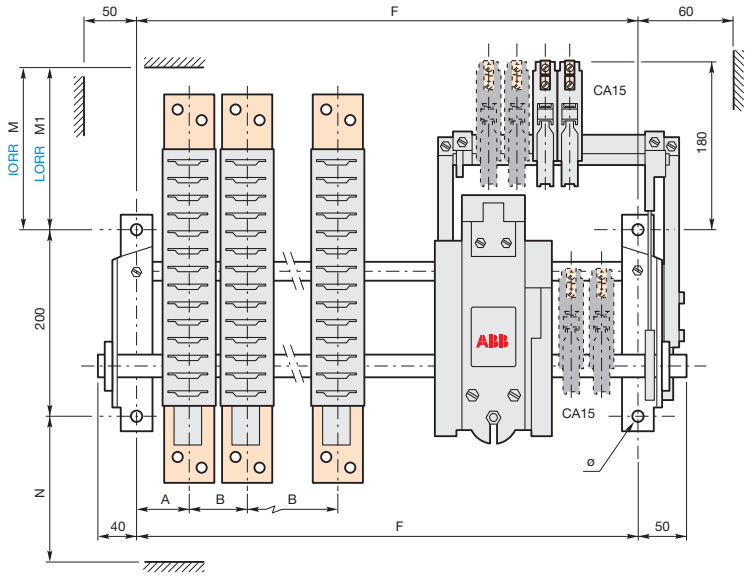
# IORR and LORR types
## R800 ... R2100

| Contactor types | Number of poles | Fixing holes | Fixing dimensions F | Dimensions | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | D | D1 | D2 | D3 | H | I | I1 | M | M1 | N | Y | Y1 |
| R800 | 1 | 4 x ø13 | 245 | 60 | - | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| | 2 | | 345 | 60 | 90 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| | 3 | | 385 | 60 | 70 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| R1000 | 1 | 4 x ø13 | 245 | 60 | - | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| | 2 | | 345 | 60 | 90 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| | 3 | | 385 | 60 | 70 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 158 | 115 | 85 | 345 | 280 |
| R1400 | 1 | 4 x ø13 | 285 | 85 | - | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 228 | 165 | 100 | 400 | 280 |
| | 2 | | 385 | 85 | 110 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 228 | 165 | 100 | 400 | 280 |
| | 3 | | 540 | 85 | 120 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 228 | 165 | 100 | 400 | 280 |
| R1700 | 1 | 4 x ø13 | 300 | 85 | - | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |
| | 2 | | 445 | 85 | 140 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |
| | 3 | | 540 | 85 | 120 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |
| R2100 | 1 | 4 x ø13 | 300 | 85 | - | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |
| | 2 | | 445 | 85 | 140 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |
| | 3 | | 540 | 85 | 120 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 258 | 165 | 125 | 425 | 280 |

Fixing - Dimensions - Clearing distances - Connecting

# IORR and LORR types
# R2500 ... R5100

## **Main dimensions** mm



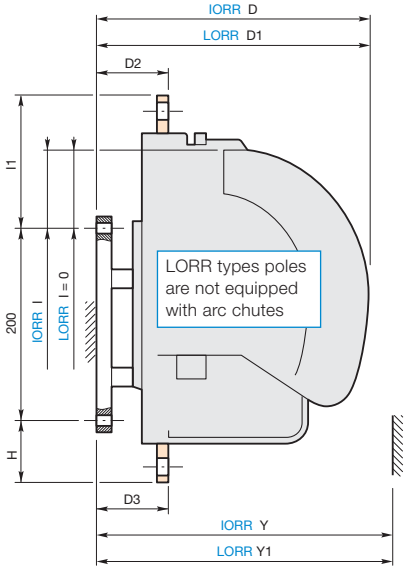




**Fig 1** = right electro-magnet (see table in the following page)

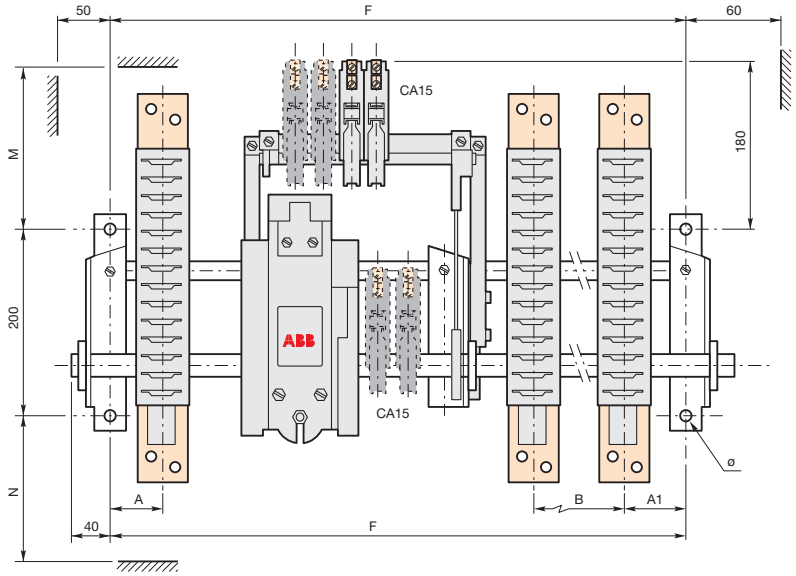
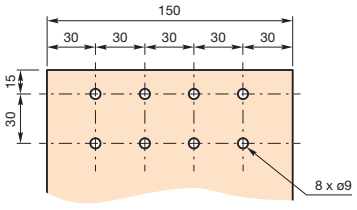
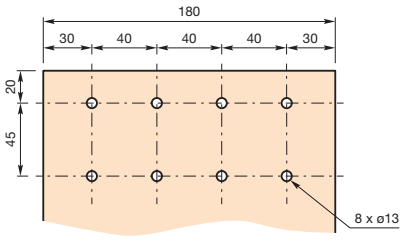


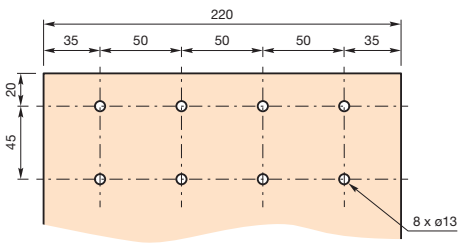

**Fig 2** = central electro-magnet (see table in the following page)




**R2500**




**R3200**



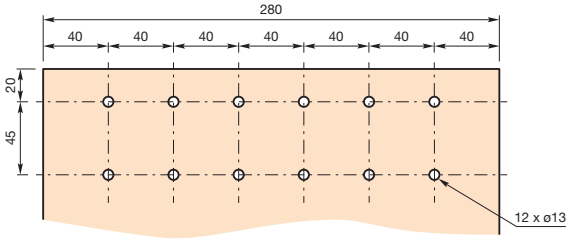

**R3800**

Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

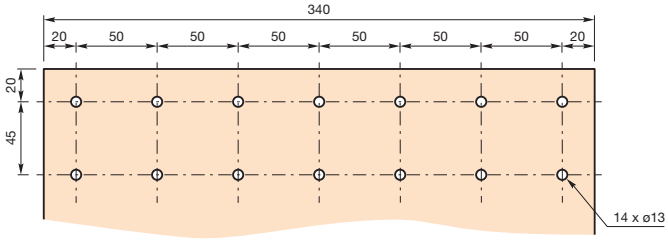
# IORR and LORR types
## R2500 ... R5100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | A1 | B | D | D1 | D2 | D3 | H | I | I1 | M | M1 | N | Y | Y1 | Fig |
| R2500 | 1 | 4 x ø13 | 385 | 130 | - | - | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 1 |
| | 2 | | 635 | 135 | - | 220 | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 1 |
| | 3 | | 950 | 135 | 135 | - | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 2 |
| R3200 | 1 | 4 x ø13 | 445 | 150 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 760 | 135 | 135 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| | 3 | | 950 | 135 | 135 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R3800 | 1 | 4 x ø13 | 445 | 160 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 760 | 145 | 145 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R4500 | 1 | 4 x ø13 | 540 | 185 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 950 | 185 | 180 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R5100 | 1 | 4 x ø13 | 540 | 210 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 465 | 280 | 1 |

Fixing - Dimensions - Clearing distances - Connecting




**R4500**



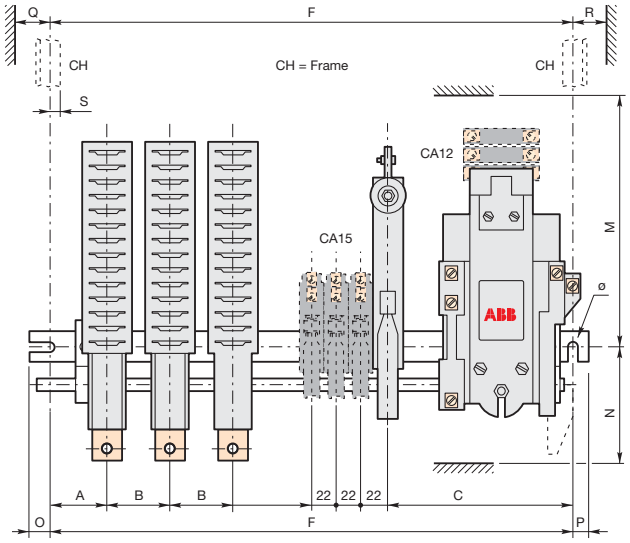

**R5100**

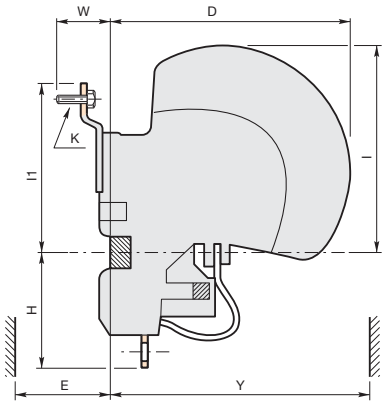
Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

9

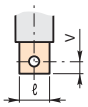
# IORR..MT and IORR..CC types
# R63 … R500

## **Main dimensions** mm




### Terminal plate details




Lower terminal plate


Upper terminal plate

9

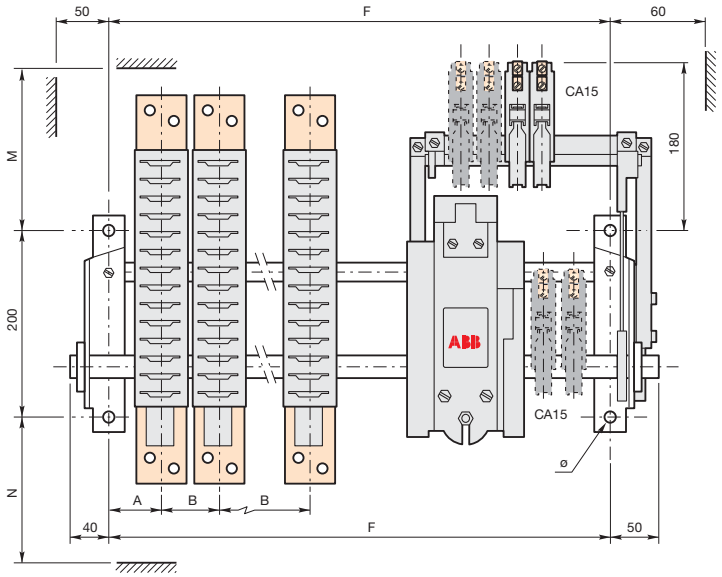
# IORR..MT and IORR..CC types
## R63 … R500

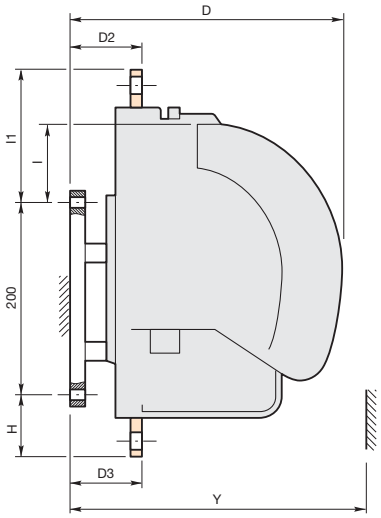
| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | H | I | I1 | K | ℓ | M | N | O | P | Q | R | S | V | W | Y | Z |
| R63 | 1 | 2 x ø7 | 205 | 45 | - | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| | 2 | | 245 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| | 3 | | 285 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| R125 | 1 | 2 x ø7 | 205 | 57 | - | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| | 2 | | 285 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| | 3 | | 345 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| R200 | 1 | 2 x ø9 | 245 | 69 | - | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |
| | 2 | | 345 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |
| | 3 | | 385 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |
| R400 | 1 | 2 x ø13 | 345 | 79 | - | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |
| | 2 | | 445 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |
| | 3 | | 540 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |
| R500 | 1 | 2 x ø13 | 345 | 79 | - | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |
| | 2 | | 445 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |
| | 3 | | 540 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 253 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 290 | 20 |

Fixing - Dimensions - Clearing distances - Connecting

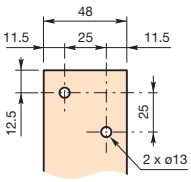
# IORR..MT and IORR..CC types
## R800 … R2100

### Main dimensions mm

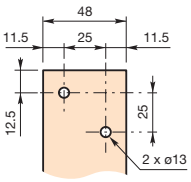


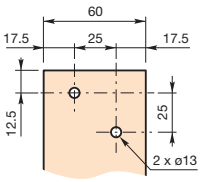

### Terminal plate details



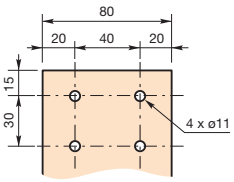

**R800**



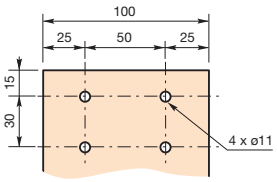

**R1000**




**R1400**




**R1700**




**R2100**

Terminal plate thickness: top terminal plates = 10 mm, bottom terminal plates = 12 mm

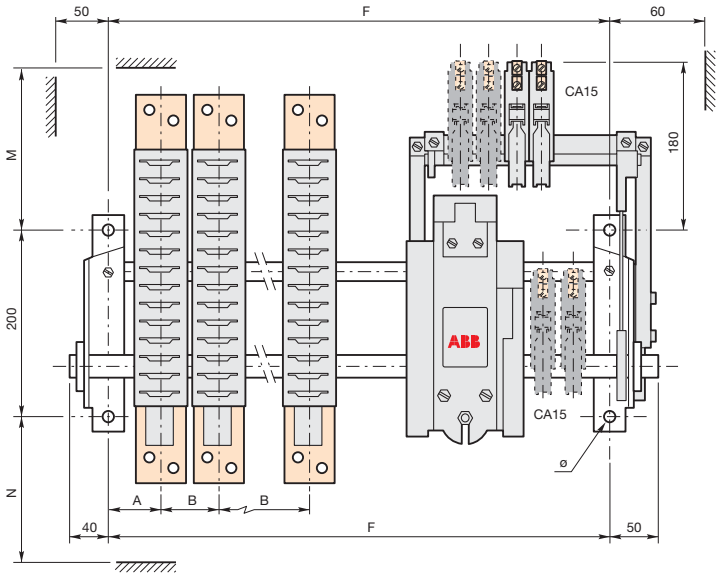
# IORR..MT and IORR..CC types
## R800 … R2100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | D | D2 | D3 | H | I | I1 | M | N | Y |
| R800 | 1 | 4 x ø13 | 245 | 60 | - | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| | 2 | | 345 | 60 | 90 | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| | 3 | | 385 | 60 | 70 | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| R1000 | 1 | 4 x ø13 | 285 | 60 | - | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| | 2 | | 345 | 60 | 90 | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| | 3 | | 445 | 60 | 80 | 325 | 76 | 77 | 70 | 108 | 175 | 195 | 90 | 375 |
| R1400 | 1 | 4 x ø13 | 285 | 80 | - | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| | 2 | | 385 | 80 | 110 | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| | 3 | | 540 | 85 | 120 | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| R1700 | 1 | 4 x ø13 | 300 | 85 | - | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 2 | | 445 | 85 | 140 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 3 | | 540 | 85 | 120 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| R2100 | 1 | 4 x ø13 | 300 | 85 | - | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 2 | | 445 | 85 | 140 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 3 | | 540 | 85 | 120 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |

Fixing - Dimensions - Clearing distances - Connecting

# IORR..MT and IORR..CC types
## R2500 ... R5100

### Main dimensions mm



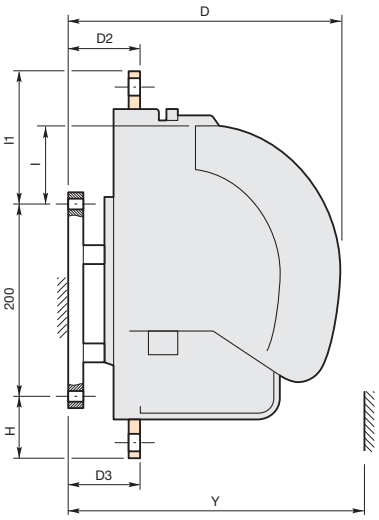




**Fig 1** = right electro-magnet (see table in the following page)

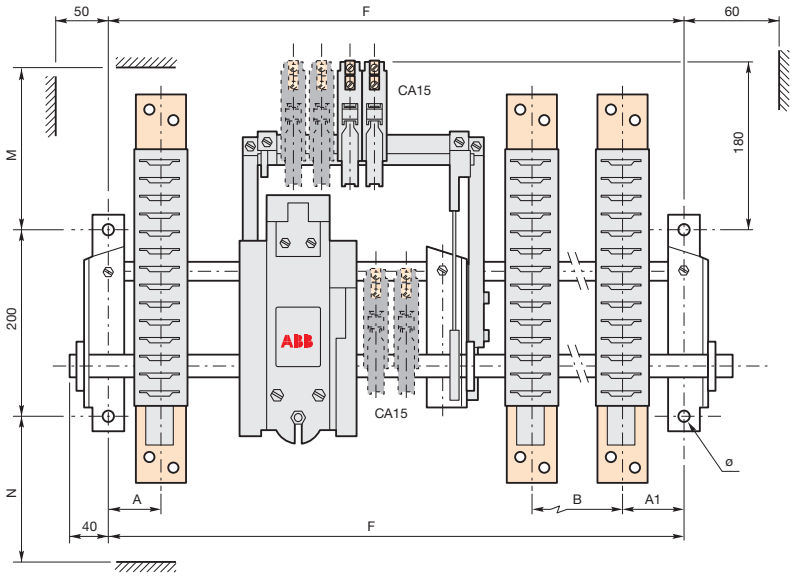
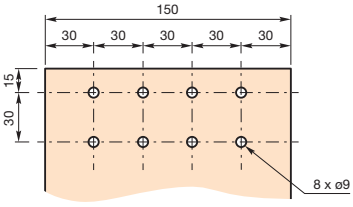
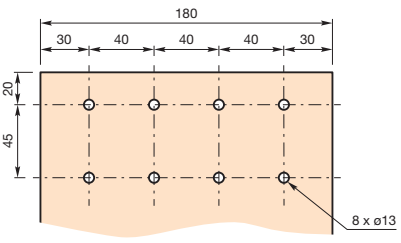


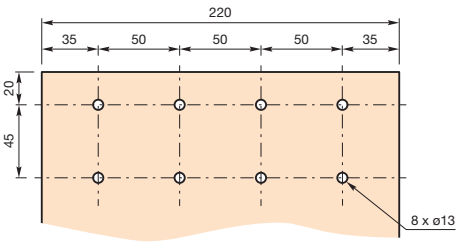

**Fig 2** = central electro-magnet (see table in the following page)




**R2500**




**R3200**



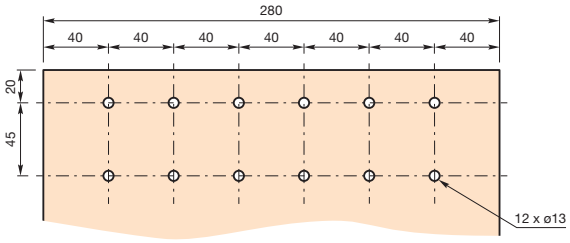

**R3800**

Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

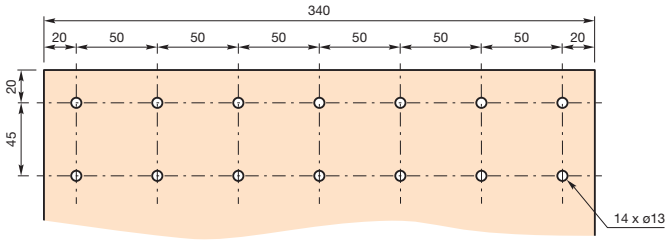
# IORR..MT and IORR..CC types
## R2500 … R5100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | A1 | B | D | D2 | D3 | H | I | I1 | M | N | Y | Fig |
| R2500 | 1 | 4 x ø13 | 385 | 130 | - | - | 325 | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 1 |
| | 2 | | 635 | 135 | - | 220 | 325 | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 1 |
| | 3 | | 950 | 135 | 135 | - | 325 | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 2 |
| R3200 | 1 | 4 x ø13 | 445 | 150 | - | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 760 | 135 | 135 | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| | 3 | | 950 | 135 | 135 | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R3800 | 1 | 4 x ø13 | 445 | 160 | - | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 760 | 145 | 145 | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R4500 | 1 | 4 x ø13 | 540 | 185 | - | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 950 | 185 | 180 | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R5100 | 1 | 4 x ø13 | 540 | 210 | - | - | 325 | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 465 | 1 |

Fixing - Dimensions - Clearing distances - Connecting




**R4500**



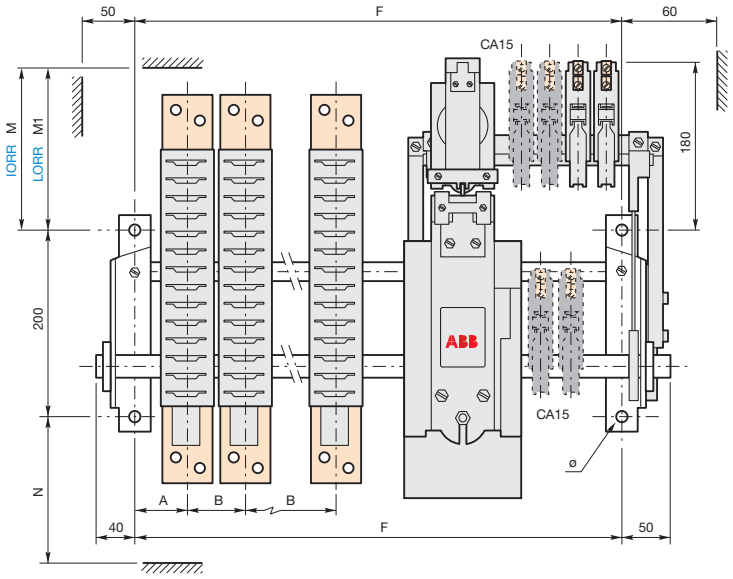

**R5100**

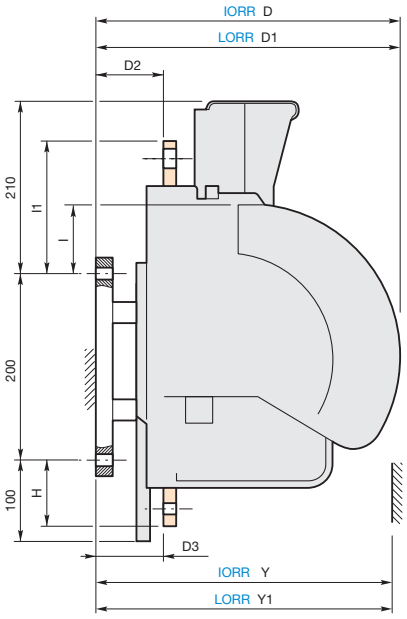
Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

9

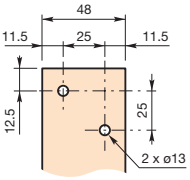
# IORR..AME and LORR..AME types
# R800 … R2100

## Main dimensions mm

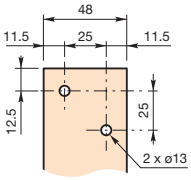


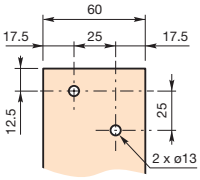

### Terminal plate details



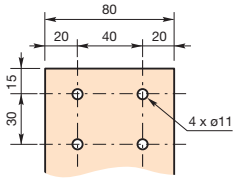

**R800**



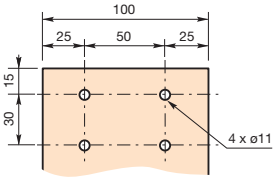

**R1000**




**R1400**




**R1700**




**R2100**

Terminal plate thickness: top terminal plates = 10 mm, bottom terminal plates = 12 mm

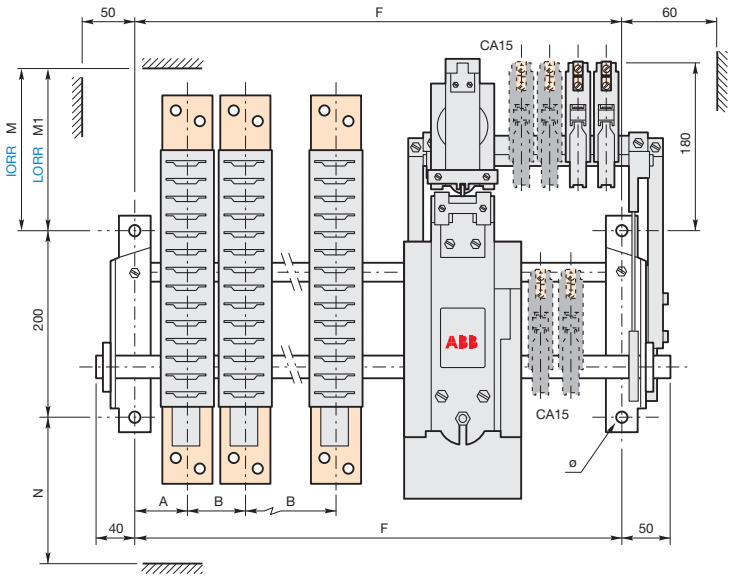
# IORR..AME and LORR..AME types
## R800 … R2100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | D | D1 | D2 | D3 | H | I | I1 | M | M1 | N | Y | Y1 |
| R800 | 1 | 4 x ø13 | 345 | 60 | - | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| | 2 | | 445 | 60 | 90 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| | 3 | | 540 | 60 | 70 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| R1000 | 1 | 4 x ø13 | 345 | 60 | - | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| | 2 | | 445 | 60 | 90 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| | 3 | | 540 | 60 | 70 | 325 | 260 | 75 | 77 | 70 | 108 | 98 | 245 | 245 | 90 | 345 | 280 |
| R1400 | 1 | 4 x ø13 | 385 | 80 | - | 325 | 260 | 76 | 77 | 70 | 108 | 98 | 258 | 245 | 100 | 400 | 280 |
| | 2 | | 540 | 80 | 110 | 325 | 260 | 76 | 77 | 70 | 108 | 98 | 258 | 245 | 100 | 400 | 280 |
| | 3 | | 635 | 85 | 120 | 325 | 260 | 76 | 77 | 70 | 108 | 98 | 258 | 245 | 100 | 400 | 280 |
| R1700 | 1 | 4 x ø13 | 385 | 85 | - | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |
| | 2 | | 540 | 85 | 140 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |
| | 3 | | 635 | 85 | 120 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |
| R2100 | 1 | 4 x ø13 | 385 | 85 | - | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |
| | 2 | | 540 | 85 | 140 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |
| | 3 | | 635 | 85 | 120 | 325 | 260 | 75 | 77 | 84 | 108 | 112 | 288 | 245 | 125 | 425 | 280 |

Fixing - Dimensions - Clearing distances - Connecting

# IORR..AME and LORR..AME types
# R2500 ... R5100

## Main dimensions mm



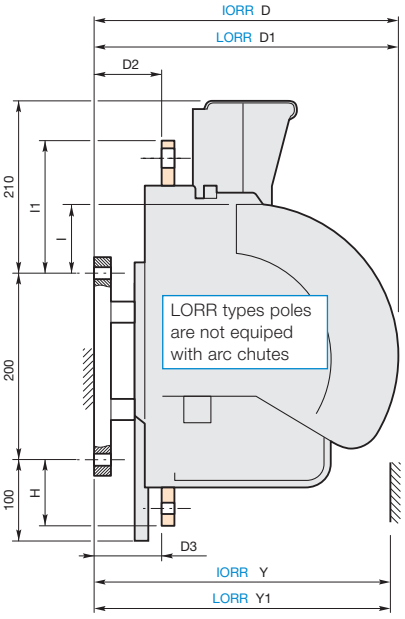




**Fig 1** = right electro-magnet (see table in the following page)

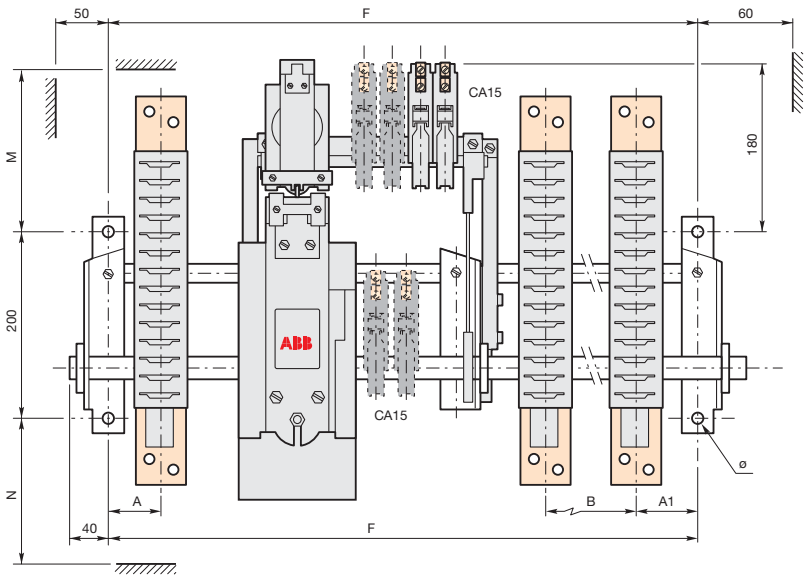
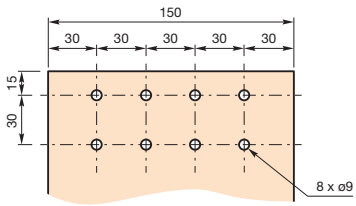
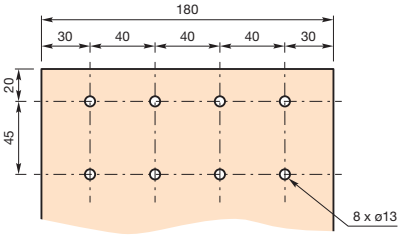


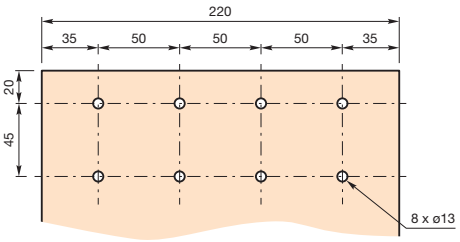

**Fig 2** = central electro-magnet (see table in the following page)




**R2500**




**R3200**



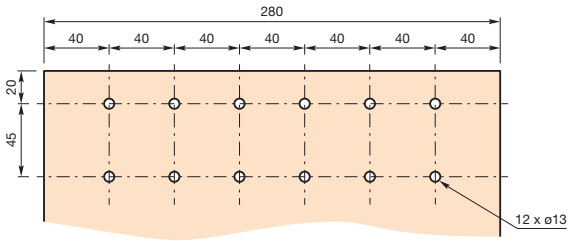

**R3800**

Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

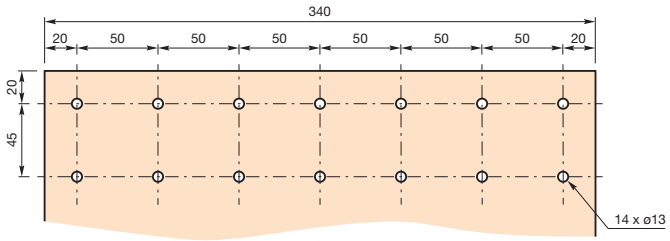
# IORR..AME and LORR..AME types
## R2500 ... R5100

| Contactor types | Number of poles | Fixing holes | Fixing dimensions F | Dimensions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | A1 | B | D | D1 | D2 | D3 | H | I | I1 | M | M1 | N | Y | Y1 | Fig |
| R2500 | 1 | 4 x ø13 | 540 | 130 | - | - | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 1 |
| | 2 | | 685 | 135 | - | 220 | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 1 |
| | 3 | | 1050 | 135 | 135 | - | 325 | 260 | 85 | 87 | 135 | 108 | 161 | 258 | 245 | 152 | 425 | 280 | 2 |
| R3200 | 1 | 4 x ø13 | 540 | 150 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 885 | 135 | 135 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| | 3 | | 1050 | 135 | 135 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R3800 | 1 | 4 x ø13 | 540 | 160 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 885 | 145 | 145 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R4500 | 1 | 4 x ø13 | 635 | 185 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 1 |
| | 2 | | 1050 | 185 | 180 | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 450 | 280 | 2 |
| R5100 | 1 | 4 x ø13 | 635 | 210 | - | - | 325 | 260 | 99 | 87 | 174 | 108 | 202 | 300 | 245 | 215 | 465 | 280 | 1 |

Fixing - Dimensions - Clearing distances - Connecting




**R4500**



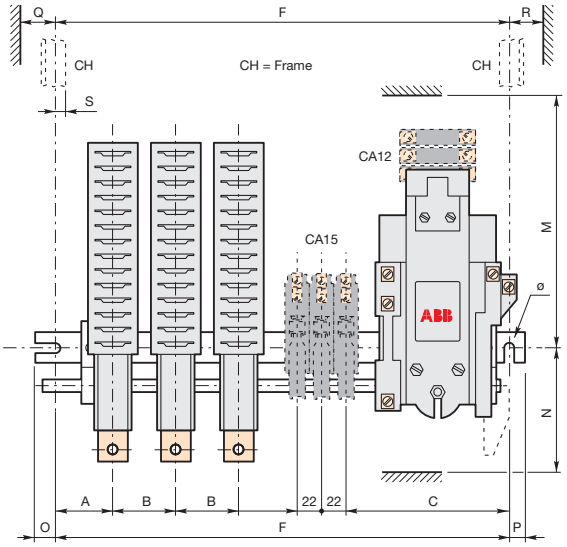

**R5100**

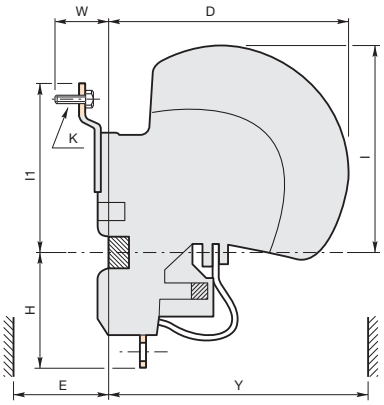
Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

9

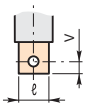
# IORR..MT-AMA … IOR..MT-AMA and IORR..CC-AMA … IOR..CC-AMA types R63 … R200

## Main dimensions mm




### Terminal plate details




Lower terminal plate


Upper terminal plate

9

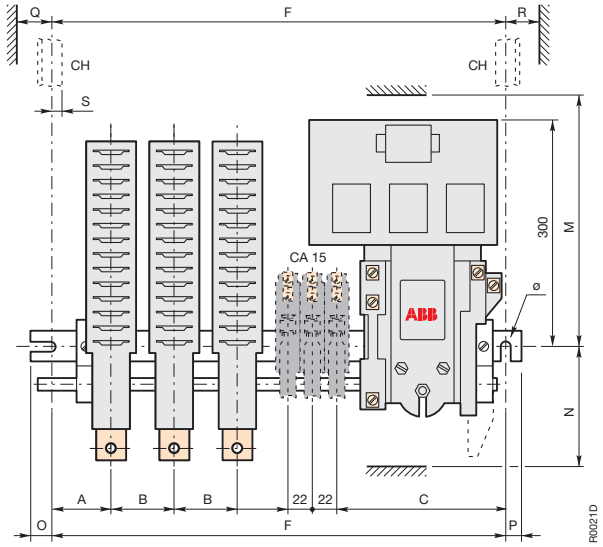
# IORR..MT-AMA … IOR..MT-AMA and IORR..CC-AMA … IOR..CC-AMA types
## R63 … R200

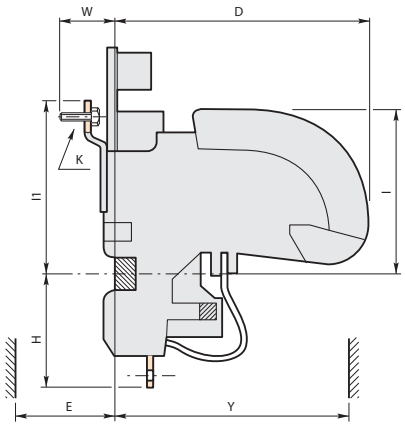
| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | H | I | I1 | K | ℓ | M | N | O | P | Q | R | S | V | W | Y | Z |
| R63 | 1 | 2 x ø7 | 245 | 45 | - | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| | 2 | | 285 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| | 3 | | 345 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 16 | 178 | 8 |
| R125 | 1 | 2 x ø7 | 285 | 57 | - | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| | 2 | | 345 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| | 3 | | 385 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 20 | 183 | 10 |
| R200 | 1 | 2 x ø9 | 345 | 69 | - | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |
| | 2 | | 445 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |
| | 3 | | 540 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 20 | 220 | 12 |

Fixing - Dimensions - Clearing distances - Connecting

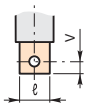
# IORR..MT-AME and IORR..CC-AME types
# R400 … R500

## **Main dimensions** mm




### Terminal plate details




Lower terminal plate


Upper terminal plate

9

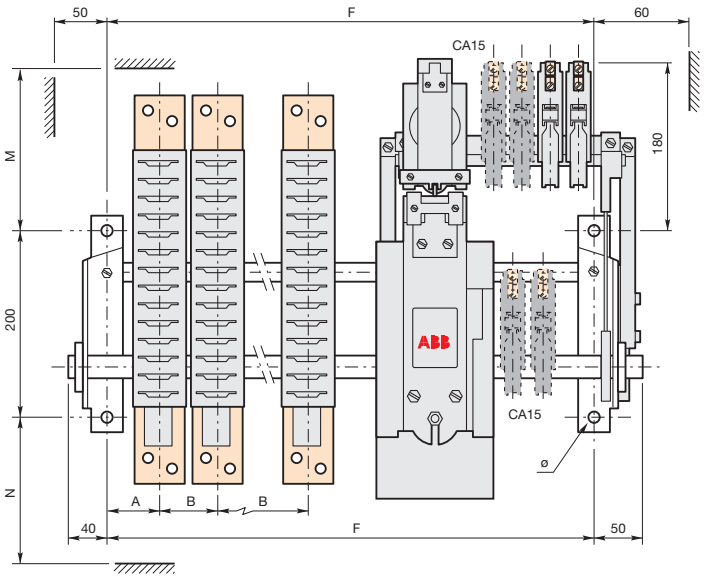
# IORR..MT-AME and IORR..CC-AME types
## R400 … R500

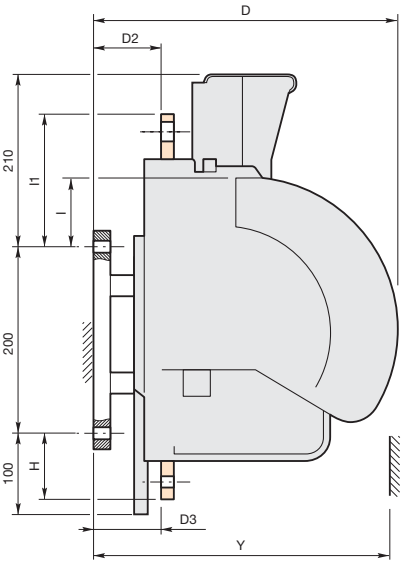
| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | H | I | I1 | K | ℓ | M | N | O | P | Q | R | S | V | W | Y | Z |
| R400 | 1 | 2 x ø13 | 445 | 79 | - | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |
| | 2 | | 540 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |
| | 3 | | 635 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |
| R500 | 1 | 2 x ø13 | 445 | 79 | - | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |
| | 2 | | 540 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |
| | 3 | | 635 | 79 | 80 | 160 | 260 | 100 | 118 | 230 | 195 | ø13 | 30 | 313 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 46 | 335 | 20 |

Fixing - Dimensions - Clearing distances - Connecting

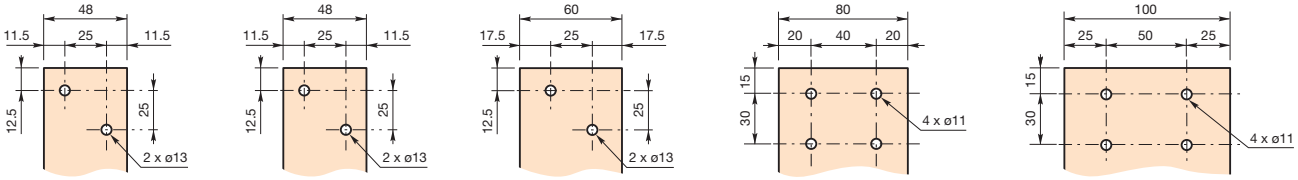
# IORR..MT-AME and IORR..CC-AME types
# R800 … R2100

## Main dimensions mm




### Terminal plate details




**R800** **R1000** **R1400** **R1700** **R2100**

Terminal plate thickness: top terminal plates = 10 mm, bottom terminal plates = 12 mm

# IORR..MT-AME and IORR..CC-AME types
## R800 … R2100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | D | D2 | D3 | H | I | I1 | M | N | Y |
| R800 | 1 | 4 x ø13 | 345 | 60 | - | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| | 2 | | 445 | 60 | 90 | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| | 3 | | 540 | 60 | 70 | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| R1000 | 1 | 4 x ø13 | 345 | 60 | - | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| | 2 | | 445 | 60 | 90 | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| | 3 | | 540 | 60 | 80 | 325 | 76 | 77 | 70 | 108 | 175 | 245 | 90 | 375 |
| R1400 | 1 | 4 x ø13 | 385 | 80 | - | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| | 2 | | 540 | 80 | 100 | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| | 3 | | 635 | 85 | 120 | 325 | 76 | 77 | 70 | 108 | 175 | 258 | 100 | 425 |
| R1700 | 1 | 4 x ø13 | 385 | 85 | - | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 2 | | 540 | 85 | 140 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 3 | | 635 | 85 | 120 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| R2100 | 1 | 4 x ø13 | 385 | 85 | - | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 2 | | 540 | 85 | 140 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |
| | 3 | | 635 | 85 | 120 | 325 | 89 | 77 | 84 | 108 | 189 | 288 | 125 | 450 |

Fixing - Dimensions - Clearing distances - Connecting

# IORR..MT-AME and IORR..CC-AME types
# R2500 ... R5100

## Main dimensions mm

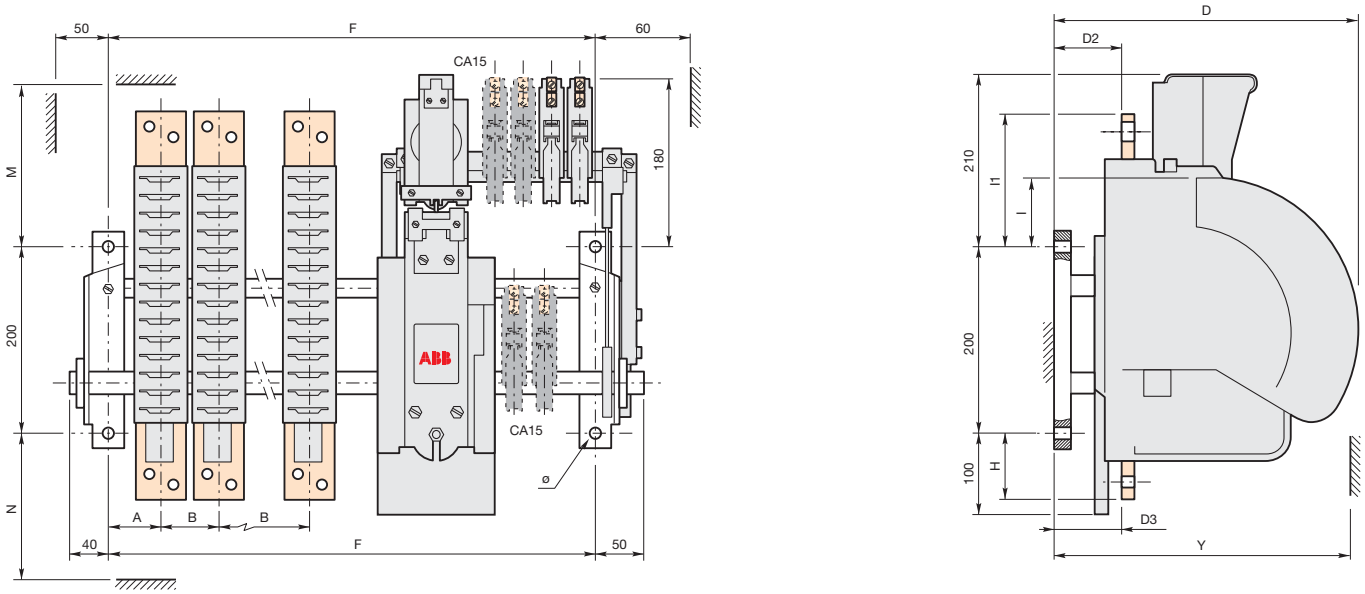



**Fig 1** = right electro-magnet (see table in the following page)

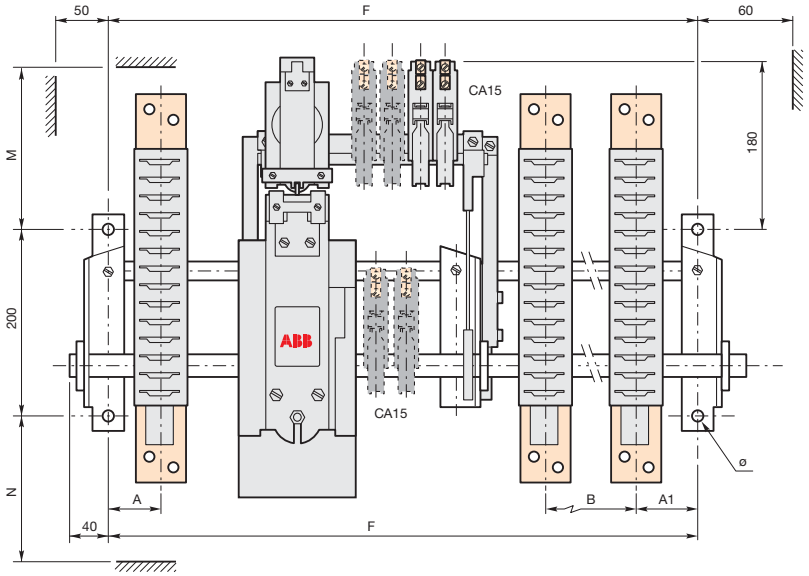
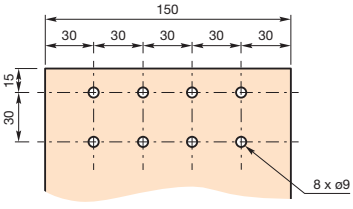
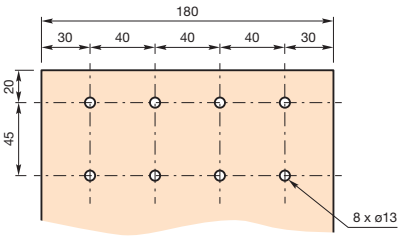


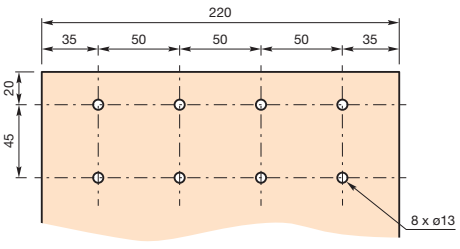

**Fig 2** = central electro-magnet (see table in the following page)




**R2500**




**R3200**



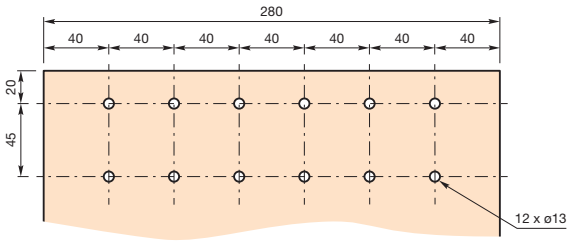

**R3800**

Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

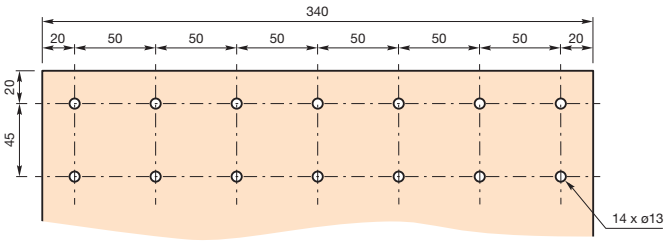
# IORR..MT-AME and IORR..CC-AME types
## R2500 ... R5100

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | A1 | B | D | B1 | D2 | D3 | H | I | I1 | M | N | Y | Fig |
| R2500 | 1 | 4 x ø13 | 540 | 130 | - | - | 325 | - | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 1 |
| | 2 | | 685 | 135 | - | 220 | 325 | - | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 1 |
| | 3 | | 1050 | 135 | 135 | 220 | 325 | - | 85 | 87 | 135 | 108 | 238 | 258 | 152 | 425 | 2 |
| R3200 | 1 | 4 x ø13 | 540 | 150 | - | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 885 | 135 | 135 | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| | 3 | | 1050 | 135 | - | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R3800 | 1 | 4 x ø13 | 540 | 160 | - | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 885 | 145 | 145 | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R4500 | 1 | 4 x ø13 | 635 | 185 | - | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 1 |
| | 2 | | 1050 | 185 | 180 | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 450 | 2 |
| R5100 | 1 | 4 x ø13 | 635 | 210 | - | - | 325 | - | 99 | 87 | 174 | 108 | 279 | 300 | 215 | 465 | 1 |

Fixing - Dimensions - Clearing distances - Connecting




**R4500**

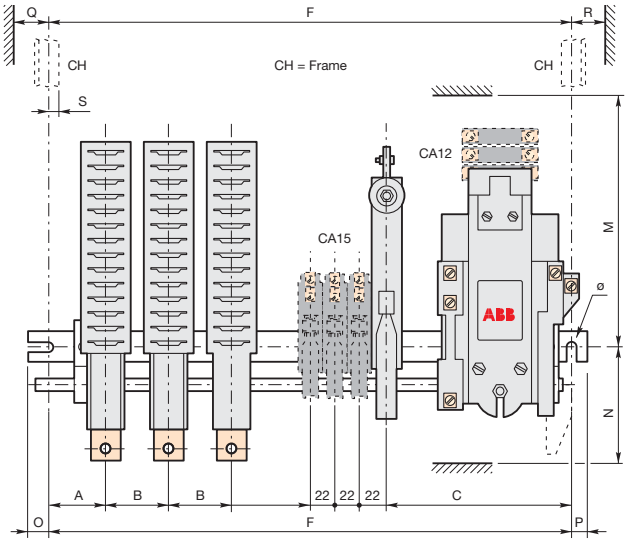


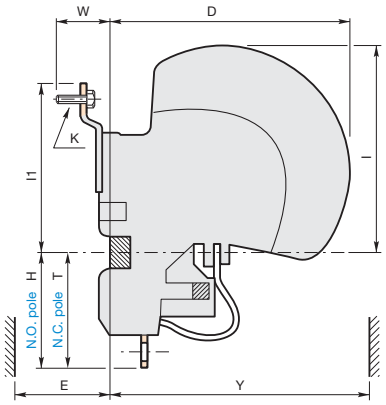

**R5100**

Terminal plate thickness for R2500 ... R5100: top and bottom terminal plates = 10 mm

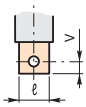
# NORR..MT and NORR..CC types
# R63 … R200

## Main dimensions mm




### Terminal plate details




Lower terminal plate


Upper terminal plate

9

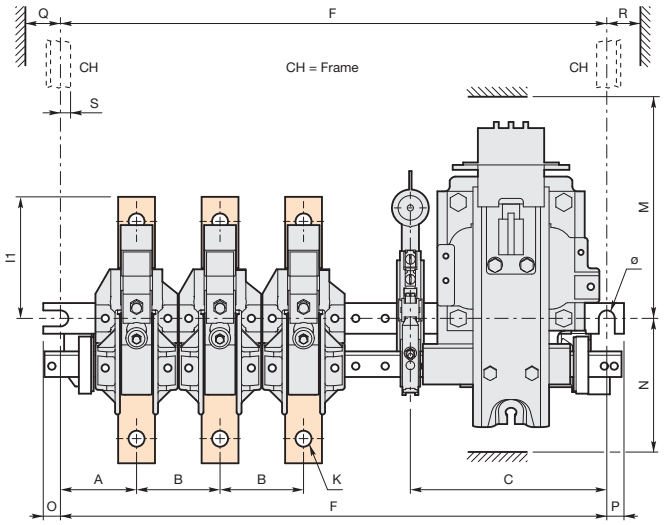
# NORR..MT and NORR..CC types
## R63 … R200

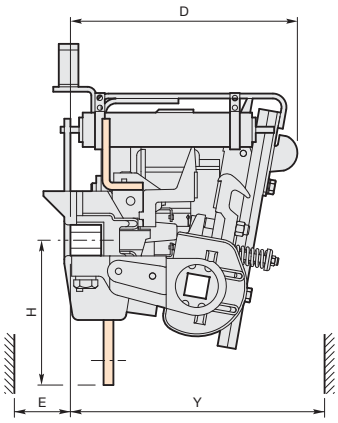
| Contactor types | Number of poles | fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | H | I | I1 | K | ℓ | M | N | O | P | Q | R | S | T | V | W | Y | Z |
| R63 | 1 | 2 x ø7 | 205 | 45 | - | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 111 | 12.5 | 10.5 | 53 | 23 | 15 | 96 | 8 | 16 | 178 | 8 |
| | 2 | | 245 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 111 | 12.5 | 10.5 | 53 | 23 | 15 | 96 | 8 | 16 | 178 | 8 |
| | 3 | | 285 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 111 | 12.5 | 10.5 | 53 | 23 | 15 | 96 | 8 | 16 | 178 | 8 |
| | 4 | | 345 | 45 | 50 | 93 | 148 | 36 | 63 | 114 | 101 | M6 x 20 | 16 | 164 | 111 | 12.5 | 10.5 | 53 | 23 | 15 | 96 | 8 | 16 | 178 | 8 |
| R125 | 1 | 2 x ø7 | 205 | 57 | - | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 126 | 12.5 | 10.5 | 53 | 23 | 15 | 111 | 10 | 20 | 183 | 10 |
| | 2 | | 285 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 126 | 12.5 | 10.5 | 53 | 23 | 15 | 111 | 10 | 20 | 183 | 10 |
| | 3 | | 345 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 126 | 12.5 | 10.5 | 53 | 23 | 15 | 111 | 10 | 20 | 183 | 10 |
| | 4 | | 385 | 57 | 61 | 93 | 153 | 40 | 76 | 138 | 130 | M8 x 20 | 20 | 188 | 126 | 12.5 | 10.5 | 53 | 23 | 15 | 111 | 10 | 20 | 183 | 10 |
| R200 | 1 | 2 x ø9 | 245 | 69 | - | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 143 | 9 | 10 | 53 | 20 | 25 | 125 | 13 | 20 | 220 | 12 |
| | 2 | | 345 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 143 | 9 | 10 | 53 | 20 | 25 | 125 | 13 | 20 | 220 | 12 |
| | 3 | | 385 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 143 | 9 | 10 | 53 | 20 | 25 | 125 | 13 | 20 | 220 | 12 |
| | 4 | | 445 | 69 | 68 | 116 | 190 | 40 | 93 | 140 | 123 | M10 x 25 | 25 | 190 | 143 | 9 | 10 | 53 | 20 | 25 | 125 | 13 | 20 | 220 | 12 |

Fixing - Dimensions - Clearing distances - Connecting

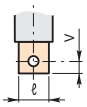
# LORR type
# R85 … R550

## **Main dimensions** mm




### Terminal plate details




Lower
terminal plate


Upper
terminal plate

9

# LORR type
## R85 ... R550

| Contactor types | Number of poles | Fixing holes | Fixing dimension F | Dimensions | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | H | I1 | K | ℓ | M | N | O | P | Q | R | S | V | Y | Z |
| R85 | 1 | 2 x ø7 | 175 | 35 | - | 93 | 110 | 36 | 63 | 101 | M6 x 20 | 16 | 150 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 125 | 8 |
| | 2 | | 205 | 35 | 37 | 93 | 110 | 36 | 63 | 101 | M6 x 20 | 16 | 150 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 125 | 8 |
| | 3 | | 245 | 35 | 37 | 93 | 110 | 36 | 63 | 101 | M6 x 20 | 16 | 150 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 125 | 8 |
| | 4 | | 345 | 35 | 37 | 93 | 110 | 36 | 63 | 101 | M6 x 20 | 16 | 150 | 83 | 12.5 | 10.5 | 53 | 23 | 15 | 8 | 125 | 8 |
| R170 | 1 | 2 x ø7 | 175 | 41 | - | 93 | 110 | 40 | 76 | 130 | M8 x 20 | 20 | 150 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 125 | 10 |
| | 2 | | 245 | 41 | 46 | 93 | 110 | 40 | 76 | 130 | M8 x 20 | 20 | 150 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 125 | 10 |
| | 3 | | 285 | 41 | 46 | 93 | 110 | 40 | 76 | 130 | M8 x 20 | 20 | 150 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 125 | 10 |
| | 4 | | 345 | 41 | 46 | 93 | 110 | 40 | 76 | 130 | M8 x 20 | 20 | 150 | 96 | 12.5 | 10.5 | 53 | 23 | 15 | 10 | 125 | 10 |
| R260 | 1 | 2 x ø9 | 205 | 48 | - | 116 | 130 | 40 | 93 | 123 | M10 x 25 | 25 | 167 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 145 | 12 |
| | 2 | | 285 | 45 | 54.5 | 116 | 130 | 40 | 93 | 123 | M10 x 25 | 25 | 167 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 145 | 12 |
| | 3 | | 345 | 48 | 54.5 | 116 | 130 | 40 | 93 | 123 | M10 x 25 | 25 | 167 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 145 | 12 |
| | 4 | | 385 | 48 | 54.5 | 116 | 130 | 40 | 93 | 123 | M10 x 25 | 25 | 167 | 116 | 9 | 10 | 53 | 20 | 25 | 13 | 145 | 12 |
| R400 | 1 | 2 x ø13 | 345 | 62 | - | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 2 | | 385 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 3 | | 445 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 4 | | 540 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| R550 | 1 | 2 x ø13 | 345 | 62 | - | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 2 | | 385 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 3 | | 445 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |
| | 4 | | 540 | 62 | 68 | 160 | 178 | 100 | 118 | 195 | ø13 | 30 | 142 | 150 | 15 | 14 | 53 | 20 | 20 | 20 | 193 | 20 |

Fixing - Dimensions - Clearing distances - Connecting

# Terms and definition


Specifications, standards and certifying 124

Terms and technical definitions 125

Utilization categories 126

Climatic withstand of devices 128

# Specifications, standards and certifying

## Definitions

ABB low voltage devices are developed and manufactured according to the rules set out in IEC international publications and in EN European specifications.

In most countries, low voltage apparatus is built according to such rules with checking being the responsibility of the manufacturer. The devices are therefore not subject to any further obligation for approval. A test report from our laboratories can be remitted to our customers, on request, for presentation to different qualified local organizations.

## Prescriptions and standards

### International specifications

The International Electrotechnical Commission, IEC, which is part of the International Standards Organization, ISO, publishes IEC publications which act as a basis for the world market.

### European specifications and national specifications

The European Committee for Electrotechnical Standardization (CENELEC), which groups together 18 European countries, publishes EN standards. These European standards differ very little from IEC international standards and have similar numbering.

The same applies for national standards which use, without exception, the same numbering and reproduce the texts of these unified standards in their entirety. Contradicting national standards are withdrawn.

### European directives

The guarantee of the free movement of goods within the European Community means that any regulatory differences between member states have been eliminated. The European directives set up common rules that are included in the legislation of each state while contradictory regulations are canceled.

Three directives are essential:

- Low voltage directive 2006/95/EC concerns electrical equipment from 0 to 1000 V AC and from 75 to 1500 V DC
- This specifies that compliance with the requirements that it sets out is acquired if the equipment conforms to the standards harmonized on a European level: EN 60947-1 and EN 60947-4-1 for contactors
- Machines directive 2006/42/EC for safety specifications of machines and equipment on complete machines. Machines bearing the ce mark comply with these specifications
- Electromagnetic compatibility directive 2004/108/EC which concerns all devices able to create electromagnetic disturbance
- Standard EN 60947-4-1 does not set out any requirement concerning the level of emission or immunity of contactors which do not have any active electronic components. Owing to this fact, compliance with standard EN 60947-4-1 meets the requirements for ce marking, with respect to this directive.



CE Marking :

- must not be confused with a quality label
- is proof of conformity with the European Directives concerning the product
- is part of an administrative procedure and guarantees free movement of the product within the European Community.

### International standards

| | |
|---|---|
| IEC 60947-1 | Low-voltage switchgear and controlgear – Part 1: General rules. |
| IEC 60947-4-1 | Low-voltage switchgear and controlgear – Part 4: Contactors and motor starters. Section 1: Electromechanical contactors and motor starters. |
| IEC 60947-5-1 | Low-voltage switchgear and controlgear – Part 5: Control circuit devices and switching elements. Section 1: Electromechanical control circuit devices. |

### European standards

| | |
|---|---|
| EN 60947-1 | Low-voltage switchgear and controlgear – Part 1: General rules. |
| EN 60947-4-1 | Low-voltage switchgear and controlgear – Part 4: Contactors and motor starters. Section 1: Electromechanical contactors and motor starters. |
| EN 60947-5-1 | Low-voltage switchgear and controlgear – Part 5: Control circuit devices and switching elements. Section 1: Electromechanical control circuit devices. |

# Terms and technical definitions

## Terminology

### Altitude

Characterizes the place of use. It is expressed in meters above sea level.

### Circuits

- Auxiliary circuit:
  All the conductive parts of a contactor designed to be inserted in a different circuit from the main circuit and the contactor control circuits.
- Control circuit:
  All the conductive parts of a contactor (other than the main circuit and the auxiliary circuit) used to control the contactor's closing operation or opening operation or both.
- Main circuit:
  All the conductive parts of a contactor designed to be inserted in the circuit that it controls.

### Rated operational current Ie

Current rated by the manufacturer. It is mainly based on the rated operational voltage Ue, the rated frequency, the utilization category, the rated duty and the type of protective enclosure, if necessary.

### Conventional free air thermal current Ith

Current that the contactor can withstand in free air for a duty time of 8 hours without the temperature rise of its various parts exceeding the maximum values given by the standard.

### Electrical durability

Number of on-load operating cycles that the contactor is able to carry out. It depends on the utilization category.

### Mechanical durability

Number of no-current operating cycles that a contactor is able to carry out.

### Switching frequency

Number of switching cycles per hour.

### Coil operating limits

Expressed in multiples of the nominal control circuit voltage Uc for the upper and lower limits.

### Mounting position

Comply with the manufacturer's instructions.

### Rated breaking or making capacity

Root mean square value (R.M.S.) Of the current that the contactor is able to break or make at a given voltage according to the conditions specified by standards and for a given utilization category.

### Ambient temperature

Air temperature close to the contactor.

### Time

- Time constant :
  Ratio of the inductance to the resistance (L/R = mh/Ω = ms).
- Short-time withstand current Icw:
  Current that the contactor is able to withstand in closed position for a short time interval and in specified conditions.
- Minimum switching time:
  This is the minimum closing or opening order time necessary for the contactor to reach complete closing or opening.
- Closing time:
  Time interval between the beginning of the closing operation and the instant the contacts touch on all the poles.
- Opening time:
  Time interval between the specified starting instant of the opening operation and the instant the arcing contacts separate on all the poles.

### Rated control voltage Uc

Control voltage value for which the control circuit is sized.

### Rated operational voltage Ue

Voltage to which the contactor's utilization characteristics refer. In three-phase it is the phase-to-phase voltage.

### Rated insulation voltage Ui

Reference voltage for dielectric tests and creepage distances.

### Rated impulse withstand voltage Uimp

Peak value of an impulse voltage, having a specified form and polarity, which does not cause breakdown in specific test conditions.

### Shock withstand

Requirement for vehicles, crane drives, installations on board ships and plug-in equipment. The contactors must not change position and the overload relays must not trip.

### Resistance to vibrations

Requirements for vehicles, boats and other means of transport. For the specified vibration amplitude and frequency values the device must remain able to operate.

# Utilization categories

## Standards

IEC publications 60941-1, 60947-4-1 and 60947-5-1 should be referred to on an international level with respect to contactors.

A contactor's duty is characterised by the utilization category together with the rated operational voltage and current indicated.

### Utilization categories for contactors according to IEC 60947-4-1

Alternating current:

- **AC-1** Non-inductive or slightly inductive loads, resistance furnaces
- **AC-2** Slip-ring motors: starting, switching off
- **AC-3** Cage motors: starting, switching off running motors
- **AC-4** Cage motors: starting, plugging, inching
- **AC-5a** Discharge lamp switching
- **AC-5b** Incandescent lamp switching
- **AC-6a** Transformer switching
- **AC-6b** Capacitor bank switching
- **AC-7a** Slightly inductive loads for domestic devices and similar applications
- **AC-7b** Motors for domestic applications
- **AC-8a** Hermetic refrigeration compressor motor control with manual resetting of overload releases
- **AC-8b** Hermetic refrigeration compressor motor control with automatic resetting of overload releases.

Direct current:

- **DC-1** Non inductive or slightly inductive loads, resistance furnaces
- **DC-3** Shunt motors: starting, plugging, inching, dynamic breaking of DC motors
- **DC-5** Series motors: starting, plugging, inching, dynamic breaking of DC motors
- **DC-6** Incandescent lamp switching.

### Utilization categories for the auxiliary contacts according to IEC 60947-5-1

Alternating current:

- **AC-12** Control of resistive loads and static loads with opto-coupler isolation
- **AC-13** Control of static loads with transformer isolation
- **AC-14** Control of weak electromagnetic loads (≤ 72 VA)
- **AC-15** Control of electromagnetic loads (> 72 VA).

Direct current:

- **DC-12** Control of resistive loads and static loads with opto-coupler isolation
- **DC-13** Control of DC electromagnets
- **DC-14** Control of DC electromagnets having economy resistors.

In fact some applications, and the specific criteria characterizing the various loads controlled by contactors, may modify the utilization characteristics of the contactors.

### DC power circuit switching

Arc suppression is more difficult in direct current than in alternating current and this is all the more true the higher the circuit time constant which is why it is necessary to connect several poles in series in order to improve breaking conditions.

### AC high current circuit switching

Possibility of increasing performances by connecting poles in parallel (please consult us).

### Influence of the length of the conductors used in the contactor control circuit

According to the operational voltages and the coil consumption, take line resistances and capacitances into consideration, for the length and the cross-sectional of the conductors.

# Utilization categories

## Making and breaking conditions for utilization categories

| Utilization category | | Durability test conditions | | | | | | Occasional operation | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Making conditions | | | Breaking conditions | | | Making conditions | | | Breaking conditions | | |
| | | I/Ie | U/Ue | Cos. ϕ or L/R (ms) | I/Ie | U/Ue | Cos. ϕ or L/R (ms) | Ic/Ie | Ur/Ue | Cos. ϕ or L/R (ms) | Ic/Ie | Ur/Ue | Cos. ϕ or L/R (ms) |
| **Contactors for AC circuit switching** | | | | | | | | | | | | | |
| AC-1 | | 1 | 1 | 0.95 | 1 | 1 | 0.95 | 1.5 | 1.05 | 0.8 | 1.5 | 1.05 | 0.8 |
| AC-2 | | 2.5 | 1 | 0.65 | 2.5 | 1 | 0.65 | 4 | 1.05 | 0.65 | 4 | 1.05 | 0.65 |
| AC-3 | Ie ≤ 100 A | 6 | 1 | 0.35 | 1 | 0.17 | 0.35 | 10 | 1.05 | 0.45 | 8 | 1.05 | 0.45 |
| | Ie > 100 A | 6 | 1 | 0.35 | 1 | 0.17 | 0.35 | 10 | 1.05 | 0.35 | 8 | 1.05 | 0.35 |
| AC-4 | Ie ≤ 100 A | 6 | 1 | 0.35 | 6 | 1 | 0.35 | 12 | 1.05 | 0.45 | 10 | 1.05 | 0.45 |
| | Ie > 100 A | 6 | 1 | 0.35 | 6 | 1 | 0.35 | 12 | 1.05 | 0.35 | 10 | 1.05 | 0.35 |
| **Contactors for DC circuit switching** | | | | | | | | | | | | | |
| DC-1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1.5 | 1.05 | 1 | 1.5 | 1.05 | 1 |
| DC-3 | | 2.5 | 1 | 2 | 2.5 | 1 | 2 | 4 | 1.05 | 2.5 | 4 | 1.05 | 2.5 |
| DC-5 | | 2.5 | 1 | 7.5 | 2.5 | 1 | 7.5 | 4 | 1.05 | 15 | 4 | 1.05 | 15 |
| **Auxiliary contacts for AC circuit switching** | | | | | | | | | | | | | |
| AC-14 | (≤ 72 VA) | - | - | - | - | - | - | 6 | 1.1 | 0.7 | 6 | 1.1 | 0.7 |
| AC-15 | (> 72 VA) | 10 | 1 | 0.7 | 1 | 1 | 0.4 | 10 | 1.1 | 0.3 | 10 | 1.1 | 0.3 |

**Auxiliary contacts for DC circuit switching**

| Utilization category | Standard operation | | | | | | Occasional operation | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Making conditions | | | Breaking conditions | | | Making conditions | | | Breaking conditions | | |
| | I/Ie | U/Ue | T0.95 | I/Ie | U/Ue | T0.95 | I/Ie | U/Ue | T0.95 | I/Ie | U/Ue | T0.95 |
| DC-13 | 1 | 1 | 6 P (1) | 1 | 1 | 6 P (1) | 1.1 | 1.1 | 6 P (1) | 1.1 | 1.1 | 6 P (1) |
| DC-14 | - | - | - | - | - | - | 10 | 1.1 | 15 ms | 10 | 1.1 | 15 ms |

(1) The value "6 x P" is the result of an empirical relation which is estimated to represent most DC magnetic loads up to the highest limit of P = 50 W (6 x P = 300 ms). It is accepted that loads having drawn energy above 50 W are made up of weaker loads in parallel. As a consequence, the 300 ms value must form the highest limit whatever the value of the power drawn.

Key:
U (I) = applied voltage (current)
Ur = recovery voltage
L/R = test circuit time constant
Ue (Ie) = rated operational voltage (current)
Ic = making and breaking current expressed in DC or in AC like the r.m.s. value of the symmetrical components
T0.95 = time required to reach 95 % of the current in steady-state conditions, expressed in milliseconds

# Climatic withstand of devices

## General

The life time and dependability of devices are mainly influenced by a series of climatic factors which cause their corrosion.

In practice, besides climatic conditions, there are other factors which may damage equipment such as fungi, insects (termites), dust, work site dirt and aggressive environment (salty or sulphurous atmosphere, etc.) which can often only be identified at the place of installation.

The entrance of dust, insects, dirt, etc. in devices may be prevented if the appropriate degree of protection according to IEC 60529 is chosen.

ABB contactors have been used for many years in the most varied countries, with hot and humid climates for example: Brazil, Indonesia, India etc.

Experience has shown that ABB devices can be used in most countries throughout the world.

The climate of the country in which the device is installed is not the determining choice factor.

Account must be taken of:
- the immediate environment of the devices (sheltered, ventilated, temperature)
- the aggressiveness of the immediate atmosphere at the place of installation
- the length and frequency of non operating periods.

In the case of frequent condensation (Ie the formation of steam caused by rapid changes in temperature), heating resistors must be installed in cubicles (100 to 250 W per $m^3$ of enclosure).

The table below gives the cases where heating is necessary.

| Environment | | Operating conditions | Climate | Internal heating of enclosure |
|---|---|---|---|---|
| Inside premises | no running water, no condensation | Continuous or not | All climates | Without |
| | with running water | Continuous | All climates | Without |
| | | Frequent or long stops | Temperate | Without |
| | | | Tropical | With |
| Outside, sheltered | no running water, no condensation | Continuous or not | Temperate | Without |
| | | | Tropical | With |
| Outside or by the seaside | with running water | Continuous | All climates | Without |
| | | Frequent or long stops | Temperate | Without |
| | | | Tropical | With |

The standard R series contactors are suitable for industrial environment and tropical atmospheres.

# Notes

# Questionnaire
# Specification for R contactors

Customer .....
Contact person ..... Date .....
Tel. ..... e-mail .....

ABB .....
Contact person .....
Tel. .....

Quantity ..... Requested delivery date .....
Project / Application .....

## Power circuit

**AC switching**

Application type
☐ AC-1 (resistive load)
☐ AC-3 (direct starting, switching off running motors)
☐ No load breaking
☐ Other .....
Number of poles: N.O. ..... N.C. .....
Rated operational current Ie ..... A
Max. making current ..... A
Max. breaking current ..... A
Rated operational voltage Ue ..... V ..... Hz

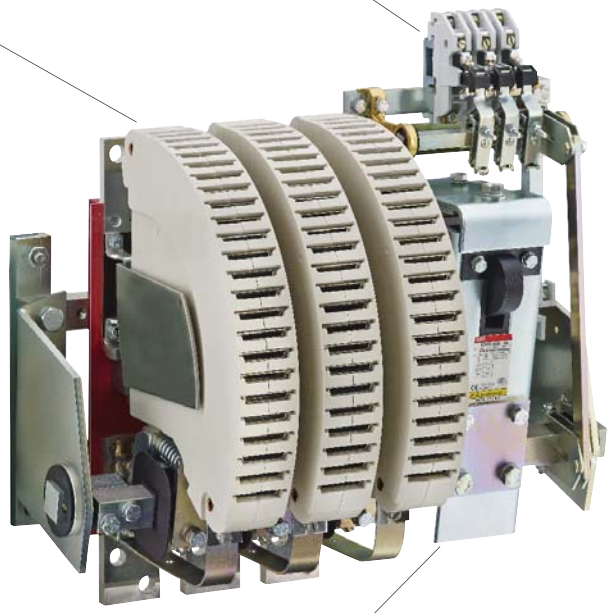
or

**DC switching**

Application type
☐ DC-1 (resistive load)
☐ DC-3 (shunt motors)
☐ DC-5 (series motors)
☐ No load breaking
☐ Other ..... L/R ..... ms
Number of poles: N.O. ..... N.C. .....
Rated operational current Ie ..... A
Making current ..... A
Breaking current min. ..... A max. ..... A
Rated operational voltage Ue ..... V DC

## Auxiliary contacts

Number of N.O. auxiliary contacts .....
Number of N.C. auxiliary contacts .....



## Control circuit (coil)

AC ☐ Voltage ..... V ..... Hz
DC ☐ Voltage ..... V DC

**Options**

☐ Magnetic/Mechanical latching option

## Operating conditions

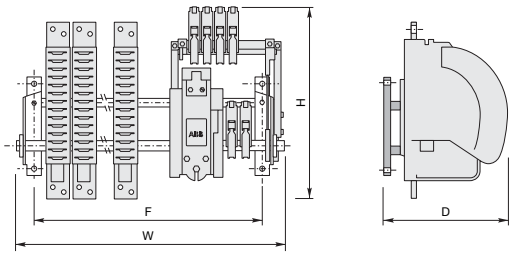
Switching frequency ..... cycles/h
Mech. durability required (millions of operating cycles) .....
Remarks .....

## Accessories .....

Please add any other useful documents for further information e.g. technical specification, drawing, wiring diagram, etc.

## Replacement of an existing contactor

Brand .....
Type .....
Fixing dimension F = ..... mm
Overall dimensions W = ..... mm
H = ..... mm
D = ..... mm




Please photocopy and forward. Questionnaire also available on the ABB Website:
www.abb.com/lowvoltage Section: Our offering Select: Control Products > Contactors > Bar mounted contactors

# Questionnaire
# Specification for R contactors

## Other information / Application type

This document is used to define the contactor specification according to the complete information on the application

Please photocopy and forward. Questionnaire also available on the ABB Website:
www.abb.com/lowvoltage Section: Our offering Select: Control Products > Contactors > Bar mounted contactors

# Index

## Order code classification

| Order code | Type | Page |
|---|---|---|
| FPL6115215R2113 | IORR1400-20 | 24 |
| FPL6115225R2223 | IORR1400-20-AME | 26 |
| FPL6115315R2113 | IORR1400-30 | 24 |
| FPL6115325R2223 | IORR1400-30-AME | 26 |
| FPL6115415R2113 | IORR1400-40 | 24 |
| FPL6115425R2223 | IORR1400-40-AME | 26 |
| FPL6116125R2223 | IORR1400-10-CC-AME | 40 |
| FPL6116195R2113 | IORR1400-10-CC-U | 39 |
| FPL6116215R2113 | IORR1400-20-CC | 38 |
| FPL6116225R2223 | IORR1400-20-CC-AME | 40 |
| FPL6116315R2113 | IORR1400-30-CC | 38 |
| FPL6116325R2223 | IORR1400-30-CC-AME | 40 |
| FPL6125215R2113 | IORR1400-20-MT | 25 |
| FPL6125225R2123 | IORR1400-20-MT-AME | 27 |
| FPL6125315R2113 | IORR1400-30-MT | 25 |
| FPL6125325R2123 | IORR1400-30-MT-AME | 27 |
| FPL6125415R2113 | IORR1400-40-MT | 25 |
| FPL6135110R2113 | LORR1400-10 | 55 |
| FPL6135210R2113 | LORR1400-20 | 55 |
| FPL6135310R2113 | LORR1400-30 | 55 |
| FPL6135410R2113 | LORR1400-40 | 55 |
| FPL6215215R2113 | IORR1700-20 | 24 |
| FPL6215225R2223 | IORR1700-20-AME | 26 |
| FPL6215315R2113 | IORR1700-30 | 24 |
| FPL6215325R2223 | IORR1700-30-AME | 26 |
| FPL6215415R2113 | IORR1700-40 | 24 |
| FPL6215425R2223 | IORR1700-40-AME | 26 |
| FPL6216125R2223 | IORR1700-10-CC-AME | 40 |
| FPL6216195R2113 | IORR1700-10-CC-U | 38 |
| FPL6216195R2113 | IORR1700-10-CC-U | 39 |
| FPL6216215R2113 | IORR1700-20-CC | 38 |
| FPL6216225R2223 | IORR1700-20-CC-AME | 40 |
| FPL6216315R2113 | IORR1700-30-CC | 38 |
| FPL6216325R2223 | IORR1700-30-CC-AME | 40 |
| FPL6225215R2113 | IORR1700-20-MT | 25 |
| FPL6225225R2123 | IORR1700-20-MT-AME | 27 |
| FPL6225315R2113 | IORR1700-30-MT | 25 |
| FPL6225325R2123 | IORR1700-30-MT-AME | 27 |
| FPL6225415R2113 | IORR1700-40-MT | 25 |
| FPL6235110R2113 | LORR1700-10 | 55 |
| FPL6235210R2113 | LORR1700-20 | 55 |
| FPL6235310R2113 | LORR1700-30 | 55 |
| FPL6235410R2113 | LORR1700-40 | 55 |
| FPL6315215R2113 | IORR2100-20 | 24 |
| FPL6315225R2223 | IORR2100-20-AME | 26 |
| FPL6315315R2113 | IORR2100-30 | 24 |
| FPL6315325R2223 | IORR2100-30-AME | 26 |
| FPL6315415R2113 | IORR2100-40 | 24 |
| FPL6315425R2223 | IORR2100-40-AME | 26 |
| FPL6316125R2223 | IORR2100-10-CC-AME | 40 |
| FPL6316195R2113 | IORR2100-10-CC-U | 38 |
| FPL6316195R2113 | IORR2100-10-CC-U | 39 |
| FPL6316215R2113 | IORR2100-20-CC | 38 |
| FPL6316225R2223 | IORR2100-20-CC-AME | 40 |
| FPL6316315R2113 | IORR2100-30-CC | 38 |
| FPL6316325R2223 | IORR2100-30-CC-AME | 40 |
| FPL6325215R2113 | IORR2100-20-MT | 25 |
| FPL6325225R2123 | IORR2100-20-MT-AME | 27 |
| FPL6325315R2113 | IORR2100-30-MT | 25 |
| FPL6325325R2123 | IORR2100-30-MT-AME | 27 |
| FPL6325415R2113 | IORR2100-40-MT | 25 |
| FPL6335110R2113 | LORR2100-10 | 55 |
| FPL6335210R2113 | LORR2100-20 | 55 |
| FPL6335310R2113 | LORR2100-30 | 55 |
| FPL6335410R2113 | LORR2100-40 | 55 |
| FPL6515215R2113 | IORR3200-20 | 24 |
| FPL6515225R2223 | IORR3200-20-AME | 26 |
| FPL6515315R2113 | IORR3200-30 | 24 |
| FPL6515325R2223 | IORR3200-30-AME | 26 |
| FPL6516115R2113 | IORR3200-10-CC | 38 |
| FPL6516125R2223 | IORR3200-10-CC-AME | 40 |
| FPL6516215R2113 | IORR3200-20-CC | 38 |
| FPL6516225R2223 | IORR3200-20-CC-AME | 40 |
| FPL6516315R2113 | IORR3200-30-CC | 38 |
| FPL6516325R2223 | IORR3200-30-CC-AME | 40 |
| FPL6525215R2113 | IORR3200-20-MT | 25 |
| FPL6525225R2123 | IORR3200-20-MT-AME | 27 |
| FPL6525315R2113 | IORR3200-30-MT | 25 |
| FPL6525325R2123 | IORR3200-30-MT-AME | 27 |
| FPL6535001R2113 | LORR3200-40 | 55 |
| FPL6535110R2113 | LORR3200-10 | 55 |
| FPL6535210R2113 | LORR3200-20 | 55 |
| FPL6535310R2113 | LORR3200-30 | 55 |
| FPL6615001R2113 | IORR3800-30 | 24 |
| FPL6615215R2113 | IORR3800-20 | 24 |
| FPL6615225R2223 | IORR3800-20-AME | 26 |
| FPL6616001R2113 | IORR3800-30-CC | 38 |
| FPL6616115R2113 | IORR3800-10-CC | 38 |
| FPL6616125R2223 | IORR3800-10-CC-AME | 40 |
| FPL6616195R2113 | IORR1400-10-CC-U | 38 |
| FPL6616215R2113 | IORR3800-20-CC | 38 |
| FPL6616225R2223 | IORR3800-20-CC-AME | 40 |
| FPL6625001R2113 | IORR3800-30-MT | 25 |
| FPL6625215R2113 | IORR3800-20-MT | 25 |
| FPL6625225R2123 | IORR3800-20-MT-AME | 27 |
| FPL6625325R2123 | IORR3800-30-MT-AME | 27 |
| FPL6635002R2113 | LORR3800-30 | 55 |
| FPL6635003R2113 | LORR3800-40 | 55 |
| FPL6635110R2113 | LORR3800-10 | 55 |
| FPL6635210R2113 | LORR3800-20 | 55 |
| FPL6715215R2113 | IORR2500-20 | 24 |
| FPL6715225R2223 | IORR2500-20-AME | 26 |
| FPL6715315R2113 | IORR2500-30 | 24 |
| FPL6715325R2223 | IORR2500-30-AME | 26 |
| FPL6716115R2113 | IORR2500-10-CC | 38 |
| FPL6716125R2223 | IORR2500-10-CC-AME | 40 |
| FPL6716215R2113 | IORR2500-20-CC | 38 |
| FPL6716225R2223 | IORR2500-20-CC-AME | 40 |
| FPL6716315R2113 | IORR2500-30-CC | 38 |
| FPL6716325R2223 | IORR2500-30-CC-AME | 40 |
| FPL6725215R2113 | IORR2500-20-MT | 25 |
| FPL6725225R2123 | IORR2500-20-MT-AME | 27 |
| FPL6725315R2113 | IORR2500-30-MT | 25 |
| FPL6725325R2123 | IORR2500-30-MT-AME | 27 |
| FPL6725415R2113 | IORR2500-40-MT | 25 |
| FPL6735110R2113 | LORR2500-10 | 55 |
| FPL6735210R2113 | LORR2500-20 | 55 |
| FPL6735310R2113 | LORR2500-30 | 55 |
| FPL6735410R2113 | LORR2500-40 | 55 |
| FPL6815001R2113 | IORR4500-30 | 24 |
| FPL6815215R2113 | IORR4500-20 | 24 |
| FPL6815225R2223 | IORR4500-20-AME | 26 |
| FPL6816001R2113 | IORR4500-30-CC | 38 |
| FPL6816115R2113 | IORR4500-10-CC | 38 |
| FPL6816125R2223 | IORR4500-10-CC-AME | 40 |
| FPL6816215R2113 | IORR4500-20-CC | 38 |
| FPL6816225R2223 | IORR4500-20-CC-AME | 40 |
| FPL6825002R2113 | IORR4500-30-MT | 25 |
| FPL6825215R2113 | IORR4500-20-MT | 25 |
| FPL6825225R2123 | IORR4500-20-MT-AME | 27 |
| FPL6835001R2113 | LORR4500-30 | 55 |
| FPL6835110R2113 | LORR4500-10 | 55 |
| FPL6835210R2113 | LORR4500-20 | 55 |
| FPL6915001R2113 | IORR5100-20 | 24 |
| FPL6915002R2113 | IORR5100-30 | 24 |
| FPL6916001R2113 | IORR5100-30-CC | 38 |
| FPL6916002R2113 | IORR5100-20-CC | 38 |
| FPL6916115R2113 | IORR5100-10-CC | 38 |
| FPL6916125R2223 | IORR5100-10-CC-AME | 40 |
| FPL6925001R2113 | IORR5100-20-MT | 25 |
| FPL6925002R2113 | IORR5100-30-MT | 25 |
| FPL6935001R2113 | LORR5100-20 | 55 |
| FPL6935110R2113 | LORR5100-10 | 55 |
| FPL7101403R0001 | VM21/24 | 83 |
| FPL7108201P0001 | 4NMW1009 | 84 |
| FPL7116116R2113 | IORR63-10-CC | 38 |
| FPL7116136R2123 | IORR63-10-CC-AMA | 40 |
| FPL7116216R2113 | IORR63-20-CC | 38 |
| FPL7116236R2123 | IORR63-20-CC-AMA | 40 |
| FPL7125216R2113 | IORR63-20-MT | 25 |
| FPL7125236R2123 | IORR63-20-MT-AMA | 27 |
| FPL7125336R2123 | IORR63-30-MT-AMA | 27 |
| FPL7125386R2113 | IORR63-30-MT | 25 |
| FPL7125416R2113 | IORR63-40-MT | 25 |
| FPL7125436R2123 | IORR63-40-MT-AMA | 27 |
| FPL7146116R2113 | NORR63-01-CC | 50 |
| FPL7146216R2113 | NORR63-02-CC | 50 |
| FPL7146516R2113 | NORR63-21-CC | 50 |
| FPL7146716R2113 | NORR63-31-CC | 50 |
| FPL7155216R2113 | NORR63-02-MT | 49 |
| FPL7155516R2113 | NORR63-21-MT | 49 |
| FPL7155716R2113 | NORR63-31-MT | 49 |
| FPL7235110R2113 | LORR85-10 | 55 |
| FPL7235210R2113 | LORR85-20 | 55 |
| FPL7235310R2113 | LORR85-30 | 55 |
| FPL7235410R2113 | LORR85-40 | 55 |
| FPL7401404R0001 | VM25 | 83 |
| FPL7416115R2113 | IORR125-10-CC | 38 |
| FPL7416135R2123 | IORR125-10-CC-AMA | 40 |
| FPL7416215R2113 | IORR125-20-CC | 38 |
| FPL7416235R2123 | IORR125-20-CC-AMA | 40 |
| FPL7425215R2113 | IORR125-20-MT | 25 |
| FPL7425235R2123 | IORR125-20-MT-AMA | 27 |
| FPL7425315R2113 | IORR125-30-MT | 25 |
| FPL7425335R2123 | IORR125-30-MT-AMA | 27 |
| FPL7425415R2113 | IORR125-40-MT | 25 |
| FPL7425435R2123 | IORR125-40-MT-AMA | 27 |
| FPL7446115R2113 | NORR125-01-CC | 50 |
| FPL7446215R2113 | NORR125-02-CC | 50 |
| FPL7446515R2113 | NORR125-21-CC | 50 |
| FPL7446715R2113 | NORR125-31-CC | 50 |
| FPL7455215R2113 | NORR125-02-MT | 49 |
| FPL7455515R2113 | NORR125-21-MT | 49 |
| FPL7455715R2113 | NORR125-31-MT | 49 |
| FPL7535110R2113 | LORR170-10 | 55 |
| FPL7535210R2113 | LORR170-20 | 55 |
| FPL7535310R2113 | LORR170-30 | 55 |
| FPL7535410R2113 | LORR170-40 | 55 |
| FPL7608201P0001 | 4NMW1039 | 84 |

# Index

## Order code classification

| Order code | Type | Page |
|---|---|---|
| FPL7616115R2113 | IORR200-10-CC | 38 |
| FPL7616135R2123 | IORR200-10-CC-AMA | 40 |
| FPL7616215R2113 | IORR200-20-CC | 38 |
| FPL7616235R2123 | IORR200-20-CC-AMA | 40 |
| FPL7625215R2113 | IORR200-20-MT | 25 |
| FPL7625235R2123 | IORR200-20-MT-AMA | 27 |
| FPL7625315R2113 | IORR200-30-MT | 25 |
| FPL7625335R2123 | IORR200-30-MT-AMA | 27 |
| FPL7625415R2113 | IORR200-40-MT | 25 |
| FPL7625435R2123 | IORR200-40-MT-AMA | 27 |
| FPL7646115R2113 | NORR200-01-CC | 50 |
| FPL7646215R2113 | NORR200-02-CC | 50 |
| FPL7646515R2113 | NORR200-21-CC | 50 |
| FPL7646715R2113 | NORR200-31-CC | 50 |
| FPL7655215R2113 | NORR200-02-MT | 49 |
| FPL7655515R2113 | NORR200-21-MT | 49 |
| FPL7655715R2113 | NORR200-31-MT | 49 |
| FPL7835110R2113 | LORR260-10 | 55 |
| FPL7835210R2113 | LORR260-20 | 55 |
| FPL7835310R2113 | LORR260-30 | 55 |
| FPL7835410R2113 | LORR260-40 | 55 |
| FPL8001401R0001 | VM27 | 83 |
| FPL8301401R0002 | VM15-SP | 83 |
| FPL8308201P0001 | 4NMW1041 | 84 |
| FPL8316115R2113 | IORR500-10-CC | 38 |
| FPL8316125R2223 | IORR500-10-CC-AME | 40 |
| FPL8316215R2113 | IORR500-20-CC | 38 |
| FPL8316225R2223 | IORR500-20-CC-AME | 40 |
| FPL8316325R2223 | IORR500-30-CC-AME | 40 |
| FPL8325215R2113 | IORR500-20-MT | 25 |
| FPL8325225R2123 | IORR500-20-MT-AME | 27 |
| FPL8325315R2113 | IORR500-30-MT | 25 |
| FPL8325325R2123 | IORR500-30-MT-AME | 27 |
| FPL8325415R2113 | IORR500-40-MT | 25 |
| FPL8435110R2113 | LORR550-10 | 55 |
| FPL8435210R2113 | LORR550-20 | 55 |
| FPL8435310R2113 | LORR550-30 | 55 |
| FPL8435410R2113 | LORR550-40 | 55 |
| FPL8601401R0001 | VM16 | 83 |
| FPL8615215R2113 | IORR800-20 | 24 |
| FPL8615225R2223 | IORR800-20-AME | 26 |
| FPL8615315R2113 | IORR800-30 | 24 |
| FPL8615325R2223 | IORR800-30-AME | 26 |
| FPL8615415R2113 | IORR800-40 | 24 |
| FPL8615425R2223 | IORR800-40-AME | 26 |
| FPL8616125R2223 | IORR800-10-CC-AME | 40 |
| FPL8616195R2113 | IORR800-10-CC-U | 38 |
| FPL8616195R2113 | IORR800-10-CC-U | 39 |
| FPL8616215R2113 | IORR800-20-CC | 38 |
| FPL8616225R2223 | IORR800-20-CC-AME | 40 |
| FPL8616315R2113 | IORR800-30-CC | 38 |
| FPL8616325R2223 | IORR800-30-CC-AME | 40 |
| FPL8625215R2113 | IORR800-20-MT | 25 |
| FPL8625225R2123 | IORR800-20-MT-AME | 27 |
| FPL8625315R2113 | IORR800-30-MT | 25 |
| FPL8625325R2123 | IORR800-30-MT-AME | 27 |
| FPL8625415R2113 | IORR800-40-MT | 25 |
| FPL8635110R2113 | LORR800-10 | 55 |
| FPL8635210R2113 | LORR800-20 | 55 |
| FPL8635310R2113 | LORR800-30 | 55 |
| FPL8635410R2113 | LORR800-40 | 55 |
| FPL8645215R2113 | NORR800-02 | 49 |
| FPL8645515R2113 | NORR800-21 | 49 |
| FPL8645715R2113 | NORR800-31 | 49 |
| FPL8646115R2113 | NORR800-01-CC | 50 |
| FPL8646215R2113 | NORR800-02-CC | 50 |
| FPL8646515R2113 | NORR800-21-CC | 50 |
| FPL8646715R2113 | NORR800-31-CC | 50 |
| FPL8655215R2113 | NORR800-02-MT | 49 |
| FPL8655515R2113 | NORR800-21-MT | 49 |
| FPL8655715R2113 | NORR800-31-MT | 49 |
| FPL8715215R2113 | IORR1000-20 | 24 |
| FPL8715225R2223 | IORR1000-20-AME | 26 |
| FPL8715315R2113 | IORR1000-30 | 24 |
| FPL8715325R2223 | IORR1000-30-AME | 26 |
| FPL8715415R2113 | IORR1000-40 | 24 |
| FPL8715425R2223 | IORR1000-40-AME | 26 |
| FPL8716125R2223 | IORR1000-10-CC-AME | 40 |
| FPL8716195R2113 | IORR1000-10-CC-U | 38 |
| FPL8716195R2113 | IORR1000-10-CC-U | 39 |
| FPL8716215R2113 | IORR1000-20-CC | 38 |
| FPL8716225R2223 | IORR1000-20-CC-AME | 40 |
| FPL8716315R2113 | IORR1000-30-CC | 38 |
| FPL8716325R2223 | IORR1000-30-CC-AME | 40 |
| FPL8801401R0001 | VM17/18 | 83 |
| FPL9001401R0001 | VM19 | 83 |
| FPL9416115R2113 | IORR400-10-CC | 38 |
| FPL9416125R2223 | IORR400-10-CC-AME | 40 |
| FPL9416215R2113 | IORR400-20-CC | 38 |
| FPL9416225R2223 | IORR400-20-CC-AME | 40 |
| FPL9416325R2223 | IORR400-30-CC-AME | 40 |
| FPL9425215R2113 | IORR400-20-MT | 25 |
| FPL9425225R2123 | IORR400-20-MT-AME | 27 |
| FPL9425315R2113 | IORR400-30-MT | 25 |
| FPL9425325R2123 | IORR400-30-MT-AME | 27 |
| FPL9425415R2113 | IORR400-40-MT | 25 |
| FPL9435110R2113 | LORR400-10 | 55 |
| FPL9435210R2113 | LORR400-20 | 55 |
| FPL9435310R2113 | LORR400-30 | 55 |
| FPL9435410R2113 | LORR400-40 | 55 |
| FPL9445115R2113 | NORR400-01 | 50 |
| FPL9445215R2113 | NORR400-02 | 49 |
| FPL9445215R2113 | NORR400-02 | 50 |
| FPL9445515R2113 | NORR400-21 | 49 |
| FPL9445515R2113 | NORR400-21 | 50 |
| FPL9445715R2113 | NORR400-31 | 49 |
| FPL9445715R2113 | NORR400-31 | 50 |
| FPTN210382R0003 | CA15-F | 77 |
| FPTN210382R0004 | CA15-O | 77 |
| FPTN401936R0002 | ARC CHUTE | 81 |
| FPTN401938R0002 | ARC CHUTE | 81 |
| FPTN401939R0002 | ARC CHUTE | 81 |
| FPTN401940R0002 | ARC CHUTE | 81 |
| FPTN401941R0002 | ARC CHUTE | 81 |
| FPTN410004R0001 | CA12-1 | 77 |
| FPTN410005R0001 | CA12-2 | 77 |
| FPTN410007R0006 | CA15-O | 77 |
| FPTN410008R0004 | CA15-F | 77 |
| FPTN410012R0001 | CA12-22 | 77 |
| FPTN410013R0001 | CA12-11 | 77 |
| FPTN410016R0001 | CA12-12 | 77 |
| FPTN410054R0016 | UNIVERSAL MOUNTING KIT | 77 |
| FPTN410054R0017 | MOUNTING KIT | 77 |
| FPTN410056R0001 | CA12-1 SUPPORT BRACKET | 77 |
| FPTN410056R0002 | CA12 SUPPORT BRACKET | 77 |
| FPTN410067R0002 | ARC CHUTE | 81 |
| FPTN410067R0002 | ARC CHUTE | 81 |
| FPTN410111R0001 | SHAFT EXTENSION R63… R170 | 84 |
| FPTN410111R0002 | SHAFT EXTENSION R200… R420 | 84 |
| FPTN410111R0003 | SHAFT EXTENSION R400, 500 550 | 84 |
| FPTN410176R0006 | EQUIPOTENTIAL CONNECTION | 81 |
| FPTN410176R0007 | EQUIPOTENTIAL CONNECTION | 81 |
| FPTN410200R0006 | MAGNET SET FOR MAIN COIL | 82 |
| FPTN410213R0006 | MOUNTING KIT | 77 |
| FPTN410389R0001 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410389R0002 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410389R0003 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410389R0004 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410389R0005 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410390R0001 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410390R0002 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410390R0003 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410390R0004 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410390R0005 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410391R0001 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410437R0001 | MAGNET SET FOR MAIN COIL | 82 |
| FPTN410438R0001 | MAGNET SET FOR MAIN COIL | 82 |
| FPTN410439R0001 | MAGNET SET FOR MAIN COIL | 82 |
| FPTN410441R0001 | MAGNET SET FOR MAIN COIL | 82 |
| FPTN410446R0001 | ARCING HORN | 80 |
| FPTN410446R0001 | ARCING HORN | 80 |
| FPTN410463R6001 | RV-R1/60 | 82 |
| FPTN410463R6002 | RV-R1/133 | 82 |
| FPTN410463R6003 | RV-R1/250 | 82 |
| FPTN410463R6004 | RV-R1/440 | 82 |
| FPTN410463R6005 | RV-R1/660 | 82 |
| FPTN410503R0001 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410506R0001 | CONTACT SET WITH ARCING HORN | 80 |
| FPTN410507R0001 | ARC CHUTE | 81 |
| FPTN410508R0001 | ARCING HORN | 80 |
| TRE2614501 | RECTIFIER BRIDGE | 82 |
| TRE2720806 | RECTIFIER BRIDGE | 82 |
| On request | IORR125-30-CC | 38 |
| On request | IORR125-30-CC-AMA | 40 |
| On request | IORR200-30-CC | 38 |
| On request | IORR200-30-CC-AMA | 40 |
| On request | IORR400-30-CC | 38 |
| On request | IORR500-30-CC | 38 |
| On request | IORR63-30-CC | 38 |
| On request | IORR63-30-CC-AMA | 40 |

# Index

## Type classification


| Type | Order code | Page |
|---|---|---|
| 4NMW1009 | FPL7108201P0001 | 84 |
| 4NMW1039 | FPL7608201P0001 | 84 |
| 4NMW1041 | FPL8308201P0001 | 84 |
| ARC CHUTE | FPTN401938R0002 | 81 |
| ARC CHUTE | FPTN401939R0002 | 81 |
| ARC CHUTE | FPTN401940R0002 | 81 |
| ARC CHUTE | FPTN401936R0002 | 81 |
| ARC CHUTE | FPTN401941R0002 | 81 |
| ARC CHUTE | FPTN410067R0002 | 81 |
| ARC CHUTE | FPTN410067R0002 | 81 |
| ARC CHUTE | FPTN410507R0001 | 81 |
| ARCING HORN | FPTN410446R0001 | 80 |
| ARCING HORN | FPTN410446R0001 | 80 |
| ARCING HORN | FPTN410508R0001 | 80 |
| CA12 SUPPORT BRACKET | FPTN410056R0002 | 77 |
| CA12-1 | FPTN410004R0001 | 77 |
| CA12-1 SUPPORT BRACKET | FPTN410056R0001 | 77 |
| CA12-11 | FPTN410013R0001 | 77 |
| CA12-12 | FPTN410016R0001 | 77 |
| CA12-2 | FPTN410005R0001 | 77 |
| CA12-22 | FPTN410012R0001 | 77 |
| CA15-F | FPTN410008R0004 | 77 |
| CA15-F | FPTN210382R0003 | 77 |
| CA15-O | FPTN410007R0006 | 77 |
| CA15-O | FPTN210382R0004 | 77 |
| CONTACT SET WITH ARCING HORN | FPTN410389R0001 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410389R0002 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410389R0003 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410389R0004 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410389R0005 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410390R0001 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410390R0002 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410390R0003 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410390R0004 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410390R0005 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410391R0001 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410503R0001 | 80 |
| CONTACT SET WITH ARCING HORN | FPTN410506R0001 | 80 |
| EQUIPOTENTIAL CONNECTION | FPTN410176R0006 | 81 |
| EQUIPOTENTIAL CONNECTION | FPTN410176R0007 | 81 |
| IORR1000-10-CC-AME | FPL8716125R2223 | 40 |
| IORR1000-10-CC-U | FPL8716195R2113 | 38 |
| IORR1000-10-CC-U | FPL8716195R2113 | 39 |
| IORR1000-20 | FPL8715215R2113 | 24 |
| IORR1000-20-AME | FPL8715225R2223 | 26 |
| IORR1000-20-CC | FPL8716215R2113 | 38 |
| IORR1000-20-CC-AME | FPL8716225R2223 | 40 |
| IORR1000-30 | FPL8715315R2113 | 24 |
| IORR1000-30-AME | FPL8715325R2223 | 26 |
| IORR1000-30-CC | FPL8716315R2113 | 38 |
| IORR1000-30-CC-AME | FPL8716325R2223 | 40 |
| IORR1000-40 | FPL8715415R2113 | 24 |
| IORR1000-40-AME | FPL8715425R2223 | 26 |
| IORR125-10-CC | FPL7416115R2113 | 38 |
| IORR125-10-CC-AMA | FPL7416135R2123 | 40 |
| IORR125-20-CC | FPL7416215R2113 | 38 |
| IORR125-20-CC-AMA | FPL7416235R2123 | 40 |
| IORR125-20-MT | FPL7425215R2113 | 25 |
| IORR125-20-MT-AMA | FPL7425235R2123 | 27 |
| IORR125-30-CC | On request | 38 |
| IORR125-30-CC-AMA | On request | 40 |
| IORR125-30-MT | FPL7425315R2113 | 25 |
| IORR125-30-MT-AMA | FPL7425335R2123 | 27 |
| IORR125-40-MT | FPL7425415R2113 | 25 |
| IORR125-40-MT-AMA | FPL7425435R2123 | 27 |
| IORR1400-10-CC-AME | FPL6116125R2223 | 40 |
| IORR1400-10-CC-U | FPL6616195R2113 | 38 |
| IORR1400-10-CC-U | FPL6116195R2113 | 39 |
| IORR1400-20 | FPL6115215R2113 | 24 |
| IORR1400-20-AME | FPL6115225R2223 | 26 |
| IORR1400-20-CC | FPL6116215R2113 | 38 |
| IORR1400-20-CC-AME | FPL6116225R2223 | 40 |
| IORR1400-20-MT | FPL6125215R2113 | 25 |
| IORR1400-20-MT-AME | FPL6125225R2123 | 27 |
| IORR1400-30 | FPL6115315R2113 | 24 |
| IORR1400-30-AME | FPL6115325R2223 | 26 |
| IORR1400-30-CC | FPL6116315R2113 | 38 |
| IORR1400-30-CC-AME | FPL6116325R2223 | 40 |
| IORR1400-30-MT | FPL6125315R2113 | 25 |
| IORR1400-30-MT-AME | FPL6125325R2123 | 27 |
| IORR1400-40 | FPL6115415R2113 | 24 |
| IORR1400-40-AME | FPL6115425R2223 | 26 |
| IORR1400-40-MT | FPL6125415R2113 | 25 |
| IORR1700-10-CC-AME | FPL6216125R2223 | 40 |
| IORR1700-10-CC-U | FPL6216195R2113 | 38 |
| IORR1700-10-CC-U | FPL6216195R2113 | 39 |
| IORR1700-20 | FPL6215215R2113 | 24 |
| IORR1700-20-AME | FPL6215225R2223 | 26 |
| IORR1700-20-CC | FPL6216215R2113 | 38 |
| IORR1700-20-CC-AME | FPL6216225R2223 | 40 |
| IORR1700-20-MT | FPL6225215R2113 | 25 |
| IORR1700-20-MT-AME | FPL6225225R2123 | 27 |
| IORR1700-30 | FPL6215315R2113 | 24 |
| IORR1700-30-AME | FPL6215325R2223 | 26 |
| IORR1700-30-CC | FPL6216315R2113 | 38 |
| IORR1700-30-CC-AME | FPL6216325R2223 | 40 |
| IORR1700-30-MT | FPL6225315R2113 | 25 |
| IORR1700-30-MT-AME | FPL6225325R2123 | 27 |
| IORR1700-40 | FPL6215415R2113 | 24 |
| IORR1700-40-AME | FPL6215425R2223 | 26 |
| IORR1700-40-MT | FPL6225415R2113 | 25 |
| IORR200-10-CC | FPL7616115R2113 | 38 |
| IORR200-10-CC-AMA | FPL7616135R2123 | 40 |
| IORR200-20-CC | FPL7616215R2113 | 38 |
| IORR200-20-CC-AMA | FPL7616235R2123 | 40 |
| IORR200-20-MT | FPL7625215R2113 | 25 |
| IORR200-20-MT-AMA | FPL7625235R2123 | 27 |
| IORR200-30-CC | On request | 38 |
| IORR200-30-CC-AMA | On request | 40 |
| IORR200-30-MT | FPL7625315R2113 | 25 |
| IORR200-30-MT-AMA | FPL7625335R2123 | 27 |
| IORR200-40-MT | FPL7625415R2113 | 25 |
| IORR200-40-MT-AMA | FPL7625435R2123 | 27 |
| IORR2100-10-CC-AME | FPL6316125R2223 | 40 |
| IORR2100-10-CC-U | FPL6316195R2113 | 38 |
| IORR2100-10-CC-U | FPL6316195R2113 | 39 |
| IORR2100-20 | FPL6315215R2113 | 24 |
| IORR2100-20-AME | FPL6315225R2223 | 26 |
| IORR2100-20-CC | FPL6316215R2113 | 38 |
| IORR2100-20-CC-AME | FPL6316225R2223 | 40 |
| IORR2100-20-MT | FPL6325215R2113 | 25 |
| IORR2100-20-MT-AME | FPL6325225R2123 | 27 |
| IORR2100-30 | FPL6315315R2113 | 24 |
| IORR2100-30-AME | FPL6315325R2223 | 26 |
| IORR2100-30-CC | FPL6316315R2113 | 38 |
| IORR2100-30-CC-AME | FPL6316325R2223 | 40 |
| IORR2100-30-MT | FPL6325315R2113 | 25 |
| IORR2100-30-MT-AME | FPL6325325R2123 | 27 |
| IORR2100-40 | FPL6315415R2113 | 24 |
| IORR2100-40-AME | FPL6315425R2223 | 26 |
| IORR2100-40-MT | FPL6325415R2113 | 25 |
| IORR2500-10-CC | FPL6716115R2113 | 38 |
| IORR2500-10-CC-AME | FPL6716125R2223 | 40 |
| IORR2500-20 | FPL6715215R2113 | 24 |
| IORR2500-20-AME | FPL6715225R2223 | 26 |
| IORR2500-20-CC | FPL6716215R2113 | 38 |
| IORR2500-20-CC-AME | FPL6716225R2223 | 40 |
| IORR2500-20-MT | FPL6725215R2113 | 25 |
| IORR2500-20-MT-AME | FPL6725225R2123 | 27 |
| IORR2500-30 | FPL6715315R2113 | 24 |
| IORR2500-30-AME | FPL6715325R2223 | 26 |
| IORR2500-30-CC | FPL6716315R2113 | 38 |
| IORR2500-30-CC-AME | FPL6716325R2223 | 40 |
| IORR2500-30-MT | FPL6725315R2113 | 25 |
| IORR2500-30-MT-AME | FPL6725325R2123 | 27 |
| IORR2500-40-MT | FPL6725415R2113 | 25 |
| IORR3200-10-CC | FPL6516115R2113 | 38 |
| IORR3200-10-CC-AME | FPL6516125R2223 | 40 |
| IORR3200-20 | FPL6515215R2113 | 24 |
| IORR3200-20-AME | FPL6515225R2223 | 26 |
| IORR3200-20-CC | FPL6516215R2113 | 38 |
| IORR3200-20-CC-AME | FPL6516225R2223 | 40 |
| IORR3200-20-MT | FPL6525215R2113 | 25 |
| IORR3200-20-MT-AME | FPL6525225R2123 | 27 |
| IORR3200-30 | FPL6515315R2113 | 24 |
| IORR3200-30-AME | FPL6515325R2223 | 26 |
| IORR3200-30-CC | FPL6516315R2113 | 38 |
| IORR3200-30-CC-AME | FPL6516325R2223 | 40 |
| IORR3200-30-MT | FPL6525315R2113 | 25 |
| IORR3200-30-MT-AME | FPL6525325R2123 | 27 |
| IORR3800-10-CC | FPL6616115R2113 | 38 |
| IORR3800-10-CC-AME | FPL6616125R2223 | 40 |
| IORR3800-20 | FPL6615215R2113 | 24 |
| IORR3800-20-AME | FPL6615225R2223 | 26 |
| IORR3800-20-CC | FPL6616215R2113 | 38 |
| IORR3800-20-CC-AME | FPL6616225R2223 | 40 |
| IORR3800-20-MT | FPL6625215R2113 | 25 |
| IORR3800-20-MT-AME | FPL6625225R2123 | 27 |
| IORR3800-30 | FPL6615001R2113 | 24 |
| IORR3800-30-CC | FPL6616001R2113 | 38 |
| IORR3800-30-MT | FPL6625001R2113 | 25 |
| IORR3800-30-MT-AME | FPL6625325R2123 | 27 |
| IORR400-10-CC | FPL9416115R2113 | 38 |
| IORR400-10-CC-AME | FPL9416125R2223 | 40 |
| IORR400-20-CC | FPL9416215R2113 | 38 |
| IORR400-20-CC-AME | FPL9416225R2223 | 40 |
| IORR400-20-MT | FPL9425215R2113 | 25 |
| IORR400-20-MT-AME | FPL9425225R2123 | 27 |
| IORR400-30-CC | On request | 38 |
| IORR400-30-CC-AME | FPL9416325R2223 | 40 |

# Index

## Type classification


| Type | Order code | Page |
|---|---|---|
| IORR400-30-MT | FPL9425315R2113 | 25 |
| IORR400-30-MT-AME | FPL9425325R2123 | 27 |
| IORR400-40-MT | FPL9425415R2113 | 25 |
| IORR4500-10-CC | FPL6816115R2113 | 38 |
| IORR4500-10-CC-AME | FPL6816125R2223 | 40 |
| IORR4500-20 | FPL6815215R2113 | 24 |
| IORR4500-20-AME | FPL6815225R2223 | 26 |
| IORR4500-20-CC | FPL6816215R2113 | 38 |
| IORR4500-20-CC-AME | FPL6816225R2223 | 40 |
| IORR4500-20-MT | FPL6825215R2113 | 25 |
| IORR4500-20-MT-AME | FPL6825225R2123 | 27 |
| IORR4500-30 | FPL6815001R2113 | 24 |
| IORR4500-30-CC | FPL6816001R2113 | 38 |
| IORR4500-30-MT | FPL6825002R2113 | 25 |
| IORR500-10-CC | FPL8316115R2113 | 38 |
| IORR500-10-CC-AME | FPL8316125R2223 | 40 |
| IORR500-20-CC | FPL8316215R2113 | 38 |
| IORR500-20-CC-AME | FPL8316225R2223 | 40 |
| IORR500-20-MT | FPL8325215R2113 | 25 |
| IORR500-20-MT-AME | FPL8325225R2123 | 27 |
| IORR500-30-CC | On request | 38 |
| IORR500-30-CC-AME | FPL8316325R2223 | 40 |
| IORR500-30-MT | FPL8325315R2113 | 25 |
| IORR500-30-MT-AME | FPL8325325R2123 | 27 |
| IORR500-40-MT | FPL8325415R2113 | 25 |
| IORR5100-10-CC | FPL6916115R2113 | 38 |
| IORR5100-10-CC-AME | FPL6916125R2223 | 40 |
| IORR5100-20 | FPL6915001R2113 | 24 |
| IORR5100-20-CC | FPL6916002R2113 | 38 |
| IORR5100-20-MT | FPL6925001R2113 | 25 |
| IORR5100-30 | FPL6915002R2113 | 24 |
| IORR5100-30-CC | FPL6916001R2113 | 38 |
| IORR5100-30-MT | FPL6925002R2113 | 25 |
| IORR63-10-CC | FPL7116116R2113 | 38 |
| IORR63-10-CC-AMA | FPL7116136R2123 | 40 |
| IORR63-20-CC | FPL7116216R2113 | 38 |
| IORR63-20-CC-AMA | FPL7116236R2123 | 40 |
| IORR63-20-MT | FPL7125216R2113 | 25 |
| IORR63-20-MT-AMA | FPL7125236R2123 | 27 |
| IORR63-30-CC | On request | 38 |
| IORR63-30-CC-AMA | On request | 40 |
| IORR63-30-MT | FPL7125386R2113 | 25 |
| IORR63-30-MT-AMA | FPL7125336R2123 | 27 |
| IORR63-40-MT | FPL7125416R2113 | 25 |
| IORR63-40-MT-AMA | FPL7125436R2123 | 27 |
| IORR800-10-CC-AME | FPL8616125R2223 | 40 |
| IORR800-10-CC-U | FPL8616195R2113 | 38 |
| IORR800-10-CC-U | FPL8616195R2113 | 39 |
| IORR800-20 | FPL8615215R2113 | 24 |
| IORR800-20-AME | FPL8615225R2223 | 26 |
| IORR800-20-CC | FPL8616215R2113 | 38 |
| IORR800-20-CC-AME | FPL8616225R2223 | 40 |
| IORR800-20-MT | FPL8625215R2113 | 25 |
| IORR800-20-MT-AME | FPL8625225R2123 | 27 |
| IORR800-30 | FPL8615315R2113 | 24 |
| IORR800-30-AME | FPL8615325R2223 | 26 |
| IORR800-30-CC | FPL8616315R2113 | 38 |
| IORR800-30-CC-AME | FPL8616325R2223 | 40 |
| IORR800-30-MT | FPL8625315R2113 | 25 |
| IORR800-30-MT-AME | FPL8625325R2123 | 27 |
| IORR800-40 | FPL8615415R2113 | 24 |
| IORR800-40-AME | FPL8615425R2223 | 26 |
| IORR800-40-MT | FPL8625415R2113 | 25 |
| LORR1400-10 | FPL6135110R2113 | 55 |
| LORR1400-20 | FPL6135210R2113 | 55 |
| LORR1400-30 | FPL6135310R2113 | 55 |
| LORR1400-40 | FPL6135410R2113 | 55 |
| LORR1700-10 | FPL6235110R2113 | 55 |
| LORR1700-20 | FPL6235210R2113 | 55 |
| LORR1700-30 | FPL6235310R2113 | 55 |
| LORR1700-40 | FPL6235410R2113 | 55 |
| LORR170-10 | FPL7535110R2113 | 55 |
| LORR170-20 | FPL7535210R2113 | 55 |
| LORR170-30 | FPL7535310R2113 | 55 |
| LORR170-40 | FPL7535410R2113 | 55 |
| LORR2100-10 | FPL6335110R2113 | 55 |
| LORR2100-20 | FPL6335210R2113 | 55 |
| LORR2100-30 | FPL6335310R2113 | 55 |
| LORR2100-40 | FPL6335410R2113 | 55 |
| LORR2500-10 | FPL6735110R2113 | 55 |
| LORR2500-20 | FPL6735210R2113 | 55 |
| LORR2500-30 | FPL6735310R2113 | 55 |
| LORR2500-40 | FPL6735410R2113 | 55 |
| LORR260-10 | FPL7835110R2113 | 55 |
| LORR260-20 | FPL7835210R2113 | 55 |
| LORR260-30 | FPL7835310R2113 | 55 |
| LORR260-40 | FPL7835410R2113 | 55 |
| LORR3200-10 | FPL6535110R2113 | 55 |
| LORR3200-20 | FPL6535210R2113 | 55 |
| LORR3200-30 | FPL6535310R2113 | 55 |
| LORR3200-40 | FPL6535001R2113 | 55 |
| LORR3800-10 | FPL6635110R2113 | 55 |
| LORR3800-20 | FPL6635210R2113 | 55 |
| LORR3800-30 | FPL6635002R2113 | 55 |
| LORR3800-40 | FPL6635003R2113 | 55 |
| LORR400-10 | FPL9435110R2113 | 55 |
| LORR400-20 | FPL9435210R2113 | 55 |
| LORR400-30 | FPL9435310R2113 | 55 |
| LORR400-40 | FPL9435410R2113 | 55 |
| LORR4500-10 | FPL6835110R2113 | 55 |
| LORR4500-20 | FPL6835210R2113 | 55 |
| LORR4500-30 | FPL6835001R2113 | 55 |
| LORR5100-10 | FPL6935110R2113 | 55 |
| LORR5100-20 | FPL6935001R2113 | 55 |
| LORR550-10 | FPL8435110R2113 | 55 |
| LORR550-20 | FPL8435210R2113 | 55 |
| LORR550-30 | FPL8435310R2113 | 55 |
| LORR550-40 | FPL8435410R2113 | 55 |
| LORR800-10 | FPL8635110R2113 | 55 |
| LORR800-20 | FPL8635210R2113 | 55 |
| LORR800-30 | FPL8635310R2113 | 55 |
| LORR800-40 | FPL8635410R2113 | 55 |
| LORR85-10 | FPL7235110R2113 | 55 |
| LORR85-20 | FPL7235210R2113 | 55 |
| LORR85-30 | FPL7235310R2113 | 55 |
| LORR85-40 | FPL7235410R2113 | 55 |
| MAGNET SET FOR MAIN COIL | FPTN410437R0001 | 82 |
| MAGNET SET FOR MAIN COIL | FPTN410438R0001 | 82 |
| MAGNET SET FOR MAIN COIL | FPTN410439R0001 | 82 |
| MAGNET SET FOR MAIN COIL | FPTN410441R0001 | 82 |
| MAGNET SET FOR MAIN COIL | FPTN410200R0006 | 82 |
| MOUNTING KIT | FPTN410054R0017 | 77 |
| MOUNTING KIT | FPTN410213R0006 | 77 |
| NORR125-01-CC | FPL7446115R2113 | 50 |
| NORR125-02-CC | FPL7446215R2113 | 50 |
| NORR125-02-MT | FPL7455215R2113 | 49 |
| NORR125-21-CC | FPL7446515R2113 | 50 |
| NORR125-21-MT | FPL7455515R2113 | 49 |
| NORR125-31-CC | FPL7446715R2113 | 50 |
| NORR125-31-MT | FPL7455715R2113 | 49 |
| NORR200-01-CC | FPL7646115R2113 | 50 |
| NORR200-02-CC | FPL7646215R2113 | 50 |
| NORR200-02-MT | FPL7655215R2113 | 49 |
| NORR200-21-CC | FPL7646515R2113 | 50 |
| NORR200-21-MT | FPL7655515R2113 | 49 |
| NORR200-31-CC | FPL7646715R2113 | 50 |
| NORR200-31-MT | FPL7655715R2113 | 49 |
| NORR400-01 | FPL9445115R2113 | 50 |
| NORR400-02 | FPL9445215R2113 | 49 |
| NORR400-02 | FPL9445215R2113 | 50 |
| NORR400-21 | FPL9445515R2113 | 49 |
| NORR400-21 | FPL9445515R2113 | 50 |
| NORR400-31 | FPL9445715R2113 | 49 |
| NORR400-31 | FPL9445715R2113 | 50 |
| NORR63-01-CC | FPL7146116R2113 | 50 |
| NORR63-02-CC | FPL7146216R2113 | 50 |
| NORR63-02-MT | FPL7155216R2113 | 49 |
| NORR63-21-CC | FPL7146516R2113 | 50 |
| NORR63-21-MT | FPL7155516R2113 | 49 |
| NORR63-31-CC | FPL7146716R2113 | 50 |
| NORR63-31-MT | FPL7155716R2113 | 49 |
| NORR800-01-CC | FPL8646115R2113 | 50 |
| NORR800-02 | FPL8645215R2113 | 49 |
| NORR800-02-CC | FPL8646215R2113 | 50 |
| NORR800-02-MT | FPL8655215R2113 | 49 |
| NORR800-21 | FPL8645515R2113 | 49 |
| NORR800-21-CC | FPL8646515R2113 | 50 |
| NORR800-21-MT | FPL8655515R2113 | 49 |
| NORR800-31 | FPL8645715R2113 | 49 |
| NORR800-31-CC | FPL8646715R2113 | 50 |
| NORR800-31-MT | FPL8655715R2113 | 49 |
| RECTIFIER BRIDGE | TRE2614501 | 82 |
| RECTIFIER BRIDGE | TRE2720806 | 82 |
| RV-R1/133 | FPTN410463R6002 | 82 |
| RV-R1/250 | FPTN410463R6003 | 82 |
| RV-R1/440 | FPTN410463R6004 | 82 |
| RV-R1/60 | FPTN410463R6001 | 82 |
| RV-R1/660 | FPTN410463R6005 | 82 |
| SHAFT EXTENSION R200... R420 | FPTN410111R0002 | 84 |
| SHAFT EXTENSION R400, 500 550 | FPTN410111R0003 | 84 |
| SHAFT EXTENSION R63... R170 | FPTN410111R0001 | 84 |
| UNIVERSAL MOUNTING KIT | FPTN410054R0016 | 77 |
| VM15-SP | FPL8301401R0002 | 83 |
| VM16 | FPL8601401R0001 | 83 |
| VM17/18 | FPL8801401R0001 | 83 |
| VM19 | FPL9001401R0001 | 83 |
| VM21/24 | FPL7101403R0001 | 83 |
| VM25 | FPL7401404R0001 | 83 |
| VM27 | FPL8001401R0001 | 83 |

# Notes

# Contact us

**ABB**
Low Voltage Products
8155 T&B Boulevard
Memphis, TN 38125
www.abb.us/lowvoltage

USA Technical Support: 888-385-1221
Customer Service: 888-862-3290
7:00 a.m.-5:30 p.m., CST, Monday-Friday
lvps.support@us.abb.com



1SXU106047C0201 - Printed in US July 2015

R contactors

www.abb.com/lowvoltage

Power and productivity
for a better world™