

# Low Voltage Power Capacitors

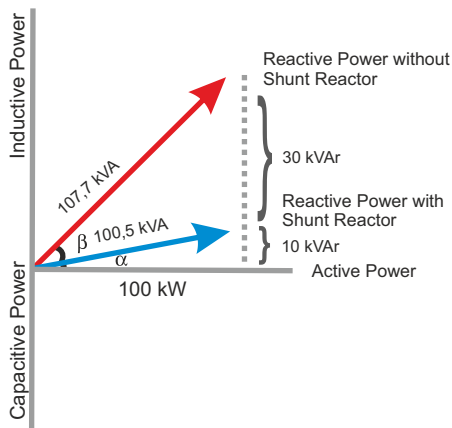
ENT.C Series Capacitors



- Smooth operation under heavy conditions
- Safe operation with over pressure tear-off fuse
- Self-healing ability
- Durable enclosure and compact design
- Operating life of 110.000 hours (130.000 hours in C100 series)



Reactive Power



|                    | Without Capacitor | With Capacitor |
|--------------------|-------------------|----------------|
| Active Power       | 100 kW            | 100 kW         |
| Reactive Power     | 50 kVAr           | 17 kVAr        |
| Apparent Power     | 111,8 kVA         | 101,4 kVA      |
| Power Factor Ratio | 0,894             | 0,986          |

Power Factor Correction



**ENTES ENT.C** series power capacitors are designed for heavy and poor conditions that shorten operating life during operation. The over pressure tear-off fuse prevents capacitors from exploding when their operational life ends or extreme electrical thermal strains occur.

**ENT.C** series capacitors are produced using metalized polypropylene film with self-healing ability.

**ENT.C.100** series capacitors have superior durability with their ability to operate under heavy duty conditions and of 130.000 hours.

Deforming effects occur during the switching of capacitors. The inrush current of the capacitor reduces the operating life of both the switching capacitor and the other capacitors already connected. In order to avoid these negative effects capacitors should be used with capacitor duty contactors.

# Low Voltage Power Capacitors

ENT.CF / CM Series (Single Phase)

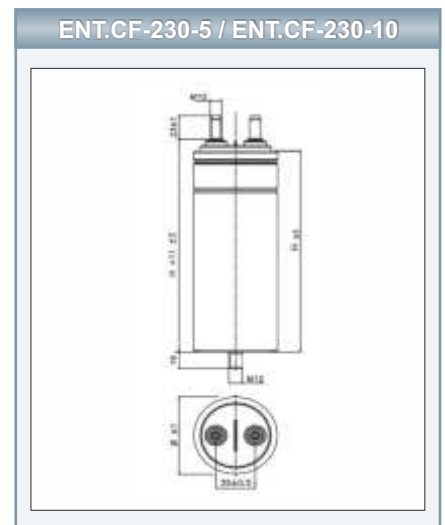
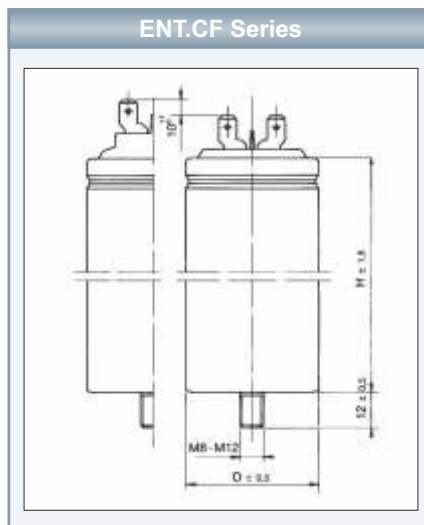
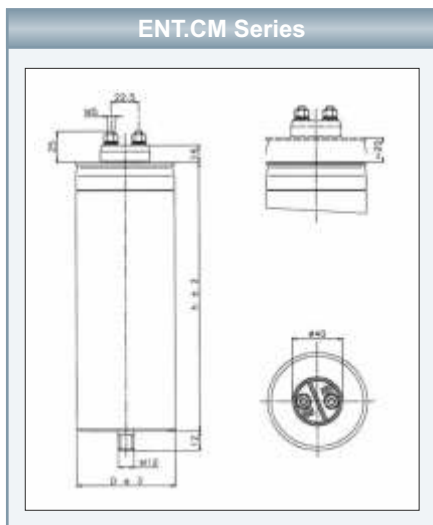
| Models                           | ENT.CF            | ENT.CM            | ENT.C10                   | ENT.CXD           | ENT.C100<br>(cylindrical profile)    | ENT.C100<br>(triangle profile 50kVAr) |
|----------------------------------|-------------------|-------------------|---------------------------|-------------------|--------------------------------------|---------------------------------------|
| Operating Frequency              | 50/60Hz           | 50/60Hz           | 50/60Hz                   | 50/60Hz           | 50/60Hz                              | 50/60Hz                               |
| Capacitance Tolerance            | -5%+10%           | -5%+10%           | -5%+10%                   | -5%+10%           | ±5%                                  | ±5%                                   |
| Dielectric Loss                  | 0,3 W/kVAr        | 0,2 W/kVAr        | 0,3 W/kVAr                | 0,2 W/kVAr        | 0,4 W/kVAr                           | 0,4 W/kVAr                            |
| Altitude                         | 2000 m            | 2000 m            | 2000 m                    | 2000 m            | 2000 m                               | 2000 m                                |
| Test Voltage (Terminal-Terminal) | 2,15 x Un, AC 2 s | 2,15 x Un, AC 2 s | 2,15 x Un, AC 2 s         | 2,15 x Un, AC 2 s | 2,15 x Un, AC 2 s                    | 2,15 x Un, AC 2 sn.                   |
| Test Voltage (Terminal-Case)     | 3 kV, AC 10 s     | 3 kV, AC 10 s     | 3 kV, AC 10 s             | 3 kV, AC 10 s     | 4,6 kV, AC 2 s                       | 6 kV, AC 2 sn.                        |
| Operating Temperature            | -25+55°C          | -25+55°C          | -25+55°C                  | -25+55°C          | -25+55°C                             | -25+55°C                              |
| Max. Overvoltage                 | 1,1xUn            | 1,1xUn            | 1,1xUn                    | 1,1xUn            | 1,1xUn                               | 1,1xUn                                |
| Max. Overload In                 | 2 x In            | 4 x In            | 2 x In                    | 4 x In            | 1,5 x In                             | 1,5 x In                              |
| Max. Inrush Current              | 100 In            | 200 In            | 100 In                    | 200 In            | 300 In                               | 300 In                                |
| Protection Class                 | IP00              | IP00              | IP30                      | IP20              | Figure 1-2: IP00<br>Figure 3-4: IP20 | IP00                                  |
| Discharge Resistance             | External          | External          | Internal, 75V after 3min. |                   | External                             | External, 50V after 60sec             |
| Applied Standards                | IEC 60831-1/2     | IEC 60831-1/2     | IEC 60831-1/2             | IEC 60831-1/2     | IEC 60831-1/2                        | IEC 60831-1/2                         |

## CM - CF Series

| Product Code    | 80.000 | 110.000 | Qn (kVAr)<br>for 230 VAC | Qn (kVAr)<br>for 400 VAC | C<br>( F ) | In<br>( A ) | Dimensions<br>DxH (mm.) | Box<br>Dimensions | Operating<br>Temperature          | Pcs per<br>Box | Box<br>Weight (kg) |
|-----------------|--------|---------|--------------------------|--------------------------|------------|-------------|-------------------------|-------------------|-----------------------------------|----------------|--------------------|
| ENT.CF-230-0,26 | ●      |         | 0,26                     | 0,8                      | 15         | 1,2         | 40x72                   | 195x390x250       | -40 <sup>0</sup> +70 <sup>0</sup> | 100            | 90                 |
| ENT.CF-400-1,67 | ●      |         | 0,55                     | 1,67                     | 33,2       | 4,2         | 50x122                  | 195x390x200       | -25 <sup>0</sup> +55 <sup>0</sup> | 25             | 25                 |
| ENT.CF-400-2,5  | ●      |         | 0,83                     | 2,5                      | 50         | 6,25        | 55x132                  | 195x390x255       | -25 <sup>0</sup> +55 <sup>0</sup> | 25             | 25                 |
| ENT.CF-400-4,17 | ●      |         | 1,38                     | 4,17                     | 83         | 10,4        | 60x137                  | 195x390x255       | -25 <sup>0</sup> +55 <sup>0</sup> | 25             | 25                 |
| ENT.CM-400-8,33 |        | ●       | 2,76                     | 2,76                     | 165,8      | 20,8        | 65x165                  | 195x390x255       | -25 <sup>0</sup> +55 <sup>0</sup> | 18             | 16                 |
| ENT.CF-230-5    |        | ●       |                          | 5                        | 300        | 20,7        | 75x180                  | 190x285x265       | -40 <sup>0</sup> +70 <sup>0</sup> | 6              | 16                 |
| ENT.CF-230-10   |        | ●       |                          | 10                       | 600        | 43          | 85x280                  | 190x285x375       | -40 <sup>0</sup> +70 <sup>0</sup> | 6              | 6                  |

Power Factor Correction

## Dimensions



\* To enable the over pressure tear-off fuse operate properly, it is necessary to leave a gap of at least 30 mm above the product and to use flexible wires for connection.

| Screws and Mounting Studs | Screwing Torque |
|---------------------------|-----------------|
| M 5                       | 3 Nm            |
| M 12                      | 11 Nm           |

| Screws and Mounting Studs | Screwing Torque |
|---------------------------|-----------------|
| M 12                      | 11 Nm           |

| Screws and Mounting Studs | Screwing Torque |
|---------------------------|-----------------|
| M 10                      | 6 Nm            |
| M 12                      | 10 Nm           |

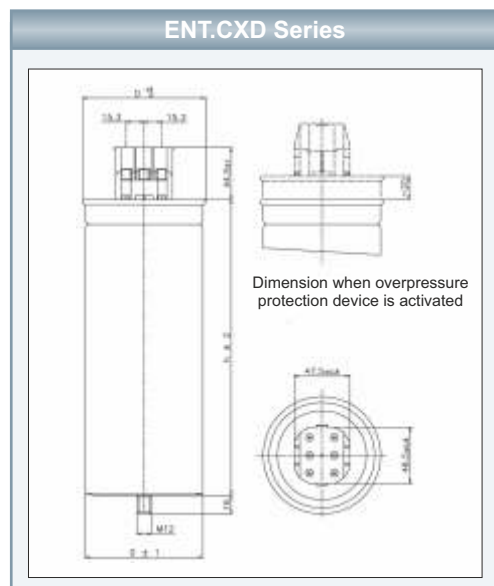
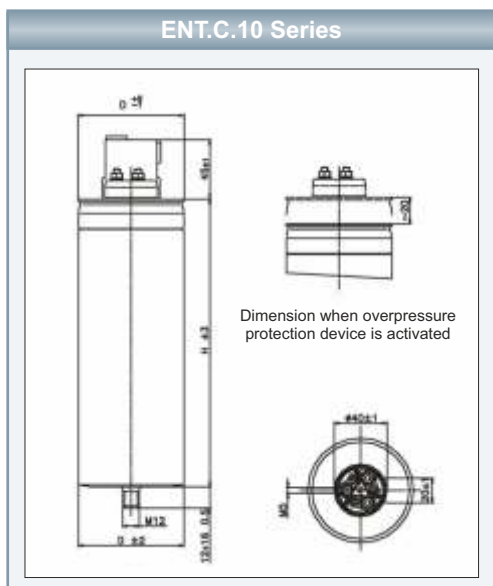
# Low Voltage Power Capacitors

ENT.C10 / CXD Series (Three Phase)

| Product Code    | 110.000 Hours | Qn (kVAr) for 400 VAC | Qn (kVAr) for 450 VAC | C ( F ) | In ( A ) | DxH (mm.) | Box Dimensions (mm) | Operating Temperature | Pcs per Box | Box Weight (kg) |
|-----------------|---------------|-----------------------|-----------------------|---------|----------|-----------|---------------------|-----------------------|-------------|-----------------|
| ENT.C10-400-1   | ●             | 1                     |                       | 3x6,6   | 1,4      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |
| ENT.C10-400-1,5 | ●             | 1,5                   |                       | 3x9,9   | 2,2      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |
| ENT.C10-400-2,5 | ●             | 2,5                   |                       | 3x16,6  | 3,6      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |
| ENT.C10-450-1   | ●             |                       | 1                     | 3x5,2   | 1,3      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |
| ENT.C10-450-1,5 | ●             |                       | 1,5                   | 3x7,9   | 1,9      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |
| ENT.C10-450-2,5 | ●             |                       | 2,5                   | 3x13,1  | 3,2      | 55x165    | 195x390x255         | -25°C+55°C            | 21          | 9               |

| Product Code     | 110.000 Hours | Qn (kVAr) for 400 VAC | Qn (kVAr) for 450 VAC | Qn (kVAr) for 525 VAC | C ( F ) | In ( A ) | DxH (mm.) | Box Dimensions (mm) | Operating Temperature | Pcs per Box | Box Weight (kg) |
|------------------|---------------|-----------------------|-----------------------|-----------------------|---------|----------|-----------|---------------------|-----------------------|-------------|-----------------|
| ENT.CXD-400-5    | ●             | 5                     |                       |                       | 3x33    | 7,2      | 75x165    | 195x390x255         | -25°C+55°C            | 6           | 5,4             |
| ENT.CXD-400-7,5  | ●             | 8                     |                       |                       | 3x49    | 10,8     | 75x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-400-10   | ●             | 10                    |                       |                       | 3x66    | 14,4     | 75x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-400-12,5 | ●             | 13                    |                       |                       | 3x83    | 18       | 85x255    | 185x290x270         | -25°C+55°C            | 6           | 9,6             |
| ENT.CXD-400-15   | ●             | 15                    |                       |                       | 3x100   | 21,7     | 90x255    | 185x290x270         | -25°C+55°C            | 6           | 10,8            |
| ENT.CXD-400-20   | ●             | 20                    |                       |                       | 3x133   | 28,9     | 100x255   | 225x340x225         | -25°C+55°C            | 6           | 13,2            |
| ENT.CXD-400-25   | ●             | 25                    |                       |                       | 3x166   | 36,1     | 116x255   | 330x340x225         | -25°C+55°C            | 4           | 11,9            |
| ENT.CXD-400-30   | ●             | 30                    |                       |                       | 3x199   | 43,3     | 116x290   | 330x340x225         | -25°C+55°C            | 4           | 13,4            |
| ENT.CXD-450-5    | ●             |                       | 5                     |                       | 3x26    | 6,4      | 75x165    | 195x390x255         | -25°C+55°C            | 12          | 5,4             |
| ENT.CXD-450-7,5  | ●             |                       | 7,5                   |                       | 3x39    | 9,6      | 75x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-450-10   | ●             |                       | 10                    |                       | 3x52    | 12,8     | 75x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-450-12,5 | ●             |                       | 12,5                  |                       | 3x66    | 16       | 85x255    | 185x290x270         | -25°C+55°C            | 6           | 9,6             |
| ENT.CXD-450-15   | ●             |                       | 15                    |                       | 3x79    | 19,2     | 90x255    | 185x290x270         | -25°C+55°C            | 6           | 10,8            |
| ENT.CXD-450-20   | ●             |                       | 20                    |                       | 3x104   | 25,7     | 100x255   | 225x340x270         | -25°C+55°C            | 6           | 13,2            |
| ENT.CXD-450-25   | ●             |                       | 25                    |                       | 3x131   | 32,1     | 116x255   | 330x340x225         | -25°C+55°C            | 4           | 11,9            |
| ENT.CXD-450-30   | ●             |                       | 30                    |                       | 3x157   | 38,5     | 116x290   | 330x340x225         | -25°C+55°C            | 4           | 13,4            |
| ENT.CXD-550-2,5  | ●             |                       |                       | 2,3                   | 3x8,5   | 2,6      | 65x165    | 195x390x255         | -25°C+55°C            | 14          | 5,4             |
| ENT.CXD-550-5    | ●             |                       |                       | 4,6                   | 3x17    | 5,2      | 75x165    | 195x390x255         | -25°C+55°C            | 12          | 5,4             |
| ENT.CXD-550-7,5  | ●             |                       |                       | 6,8                   | 3x25    | 7,9      | 75x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-525-10   | ●             |                       |                       | 10                    | 3x38    | 12,1     | 85x255    | 185x290x270         | -25°C+55°C            | 6           | 7,9             |
| ENT.CXD-525-12,5 | ●             |                       |                       | 12,5                  | 3x48    | 15       | 85x255    | 185x290x270         | -25°C+55°C            | 6           | 9,6             |
| ENT.CXD-525-15   | ●             |                       |                       | 15                    | 3x58    | 18,2     | 100x255   | 225x340x270         | -25°C+55°C            | 6           | 10,8            |
| ENT.CXD-525-20   | ●             |                       |                       | 20                    | 3x77    | 24,2     | 116x255   | 330x340x225         | -25°C+55°C            | 6           | 13,2            |
| ENT.CXD-525-25   | ●             |                       |                       | 25                    | 3x96    | 30,2     | 116x255   | 330x340x225         | -25°C+55°C            | 4           | 11,9            |
| ENT.CXD-525-30   | ●             |                       |                       | 30                    | 3x115   | 36,3     | 116x290   | 330x340x225         | -25°C+55°C            | 4           | 13,4            |

Power Factor Correction



\* In order for the overpressure protection device to operate efficiently, a minimum height of 30 mm must be left above the element and flexible leads must be used for connection.

| Screws and Mounting Studs | Screwing Torque |
|---------------------------|-----------------|
| M 5                       | 3 Nm            |
| M 12                      | 11 Nm           |

| Screws and Mounting Studs | Screwing Torque |
|---------------------------|-----------------|
| Screws                    | 1,5 Nm          |
| M 12                      | 11 Nm           |

# Low Voltage Power Capacitors

ENT.C100 Series (Three Phase)

## C100 Series

| Product Code      | 130.000 Hour | Qn (kVAr) for 400 VAC | Alternative Operating Voltage | C (F)   | In (A) | DxH (mm.) | Box Dimensions (mm) | Operating Temperature | Pcs per Box | Box Weight (kg) | Figure No |
|-------------------|--------------|-----------------------|-------------------------------|---------|--------|-----------|---------------------|-----------------------|-------------|-----------------|-----------|
| ENT.C100-400-2,5  | ●            | 2,5                   | 400-440 VAC                   | 3x16,6  | 3,6    | 64x190    | 195x390x255         | -25°C+55°C            | 9           | 7,1             | 1         |
| ENT.C100-400-4    | ●            | 4                     | 400-440 VAC                   | 3x25    | 5,8    | 64x190    | 195x390x255         | -25°C+55°C            | 9           | 7,1             | 1         |
| ENT.C100-400-5    | ●            | 5                     | 400-440 VAC                   | 3x33,2  | 7,2    | 64x190    | 195x390x255         | -25°C+55°C            | 9           | 7,1             | 1         |
| ENT.C100-400-7,5  | ●            | 7,5                   | 400-440 VAC                   | 3x45    | 10,8   | 64x190    | 195x390x255         | -25°C+55°C            | 9           | 7,1             | 1         |
| ENT.C100-400-10   | ●            | 10                    | 400-440-525-690 VAC           | 3x54,8  | 14,4   | 64x265    | 195x390x255         | -25°C+55°C            | 9           | 9,4             | 1         |
| ENT.C100-400-12,5 | ●            | 12,5                  | 400-415-440 VAC               | 3x82,9  | 18     | 64x265    | 195x390x255         | -25°C+55°C            | 9           | 9,4             | 1         |
| ENT.C100-440-20   | ●            | 20                    | 400-440 VAC                   | 3x132,6 | 28,8   | 84x265    | 195x390x255         | -25°C+55°C            | 4           | 7,6             | 2         |
| ENT.C100-440-25   | ●            | 25                    | 400-415-440-460 VAC           | 3x165,8 | 36,1   | 85x265    | 195x390x255         | -25°C+55°C            | 4           | 7               | 2         |
| ENT.C100-440-30   | ●            | 30                    | 400-415-440-460 VAC           | 3x198,9 | 43,3   | 116x190   | 195x390x255         | -25°C+55°C            | 4           | 9               | 2         |
| ENT.C100-440-50   | ●            | 50                    | 400-415-440-460 VAC           | 3x331,6 | 72,2   | 172x210   | 195x390x255         | -25°C+55°C            | 1           | 5               | 5         |

## Dimensions

Figure 1

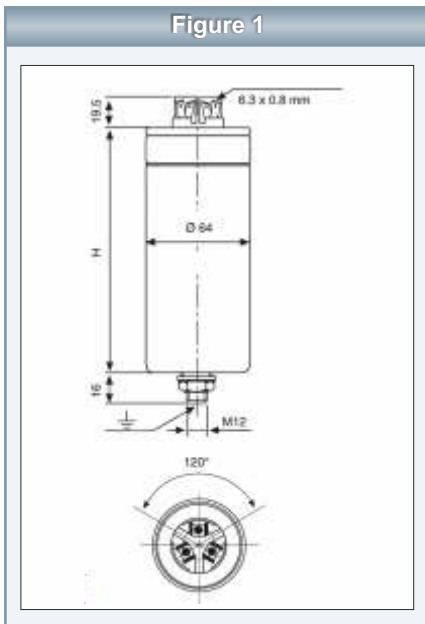


Figure 2

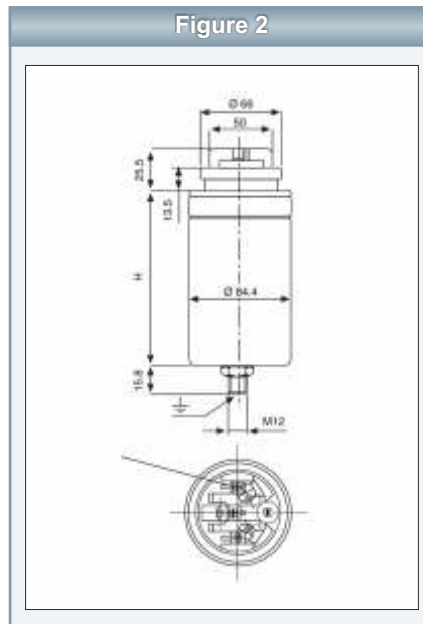


Figure 3

