



# **DUCATI** energia

HISTORY DRIVES THE FUTURE



Since 1926



Power electronic capacitors



## DC 81 series

### High Performance DC Filter Capacitor Small Plastic Box Case

DC 81 Capacitors are the ideal solution as DC filter for power electronic applications requiring high current capability and small size designed for mounting on print circuit board. It provides to customers a modular solution on which to develop and scale their projects. In addition, the construction with internal wound element made with special metallized film, very low internal self-inductance and potted with resin in self-extinguish plastic case give a superior capacitor type with very high stability and reliability performance.

#### Main characteristics:

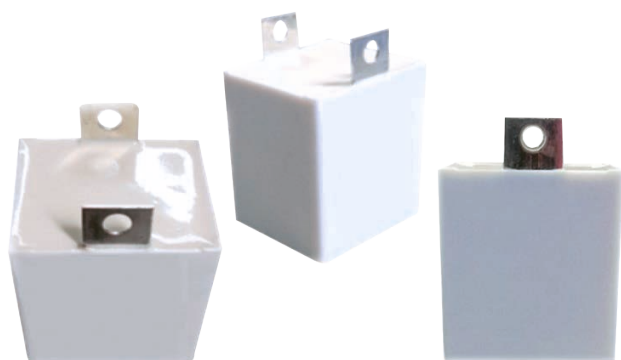
- Self-Healing Metallized Polypropylene Film
- Small size, very low ESL
- Modular solution
- Self-extinguish Plastic Case
- DRY Self-extinguish Resin filling

#### Main applications:

- DC – Link Filtering
- Wind and Solar Power Applications

#### General Characteristics

|                                                             |                                            |
|-------------------------------------------------------------|--------------------------------------------|
| Rated DC voltage (Un)                                       | 700 - 1800                                 |
| Capacitance tolerance                                       | ±10%                                       |
| Maximum effective current (Imax) - continuous               | 40 Arms                                    |
| Series resistance (RS)                                      | 1 – 3.5 mΩ                                 |
| Terminals                                                   | Double flat tag 15x0.8mm with Ø6.2mm holes |
| Film Dielectric type                                        | Self-healing metallized polypropylene film |
| Box container                                               | Self-extinguish plastic                    |
| Mounting                                                    | Any position - Indoor / On PCB             |
| Insulation distance CREEPAGE / CLEARANCE:                   | 38 / 38 mm                                 |
| Self Inductance (ESL)                                       | < 20 nH                                    |
| Working ambient temperature                                 | -25 .. +50 °C                              |
| Operating temperature MIN/ MAX (case)                       | -25 .. +70 °C                              |
| Maximum Hotspot temperature                                 | +85 °C                                     |
| Storage temperature                                         | -40 .. +85 °C                              |
| DC test voltage between terminals                           | 1,5x Un – 10s                              |
| AC test Voltage between terminals and container (to ground) | 2.5kVac 50Hz 60 s                          |
| Life expectancy (@Un / 60°C hot spot)                       | 70.000 h                                   |
| Failure quota                                               | 300 FIT                                    |
| Reference standards                                         | IEC 1071-1/2                               |



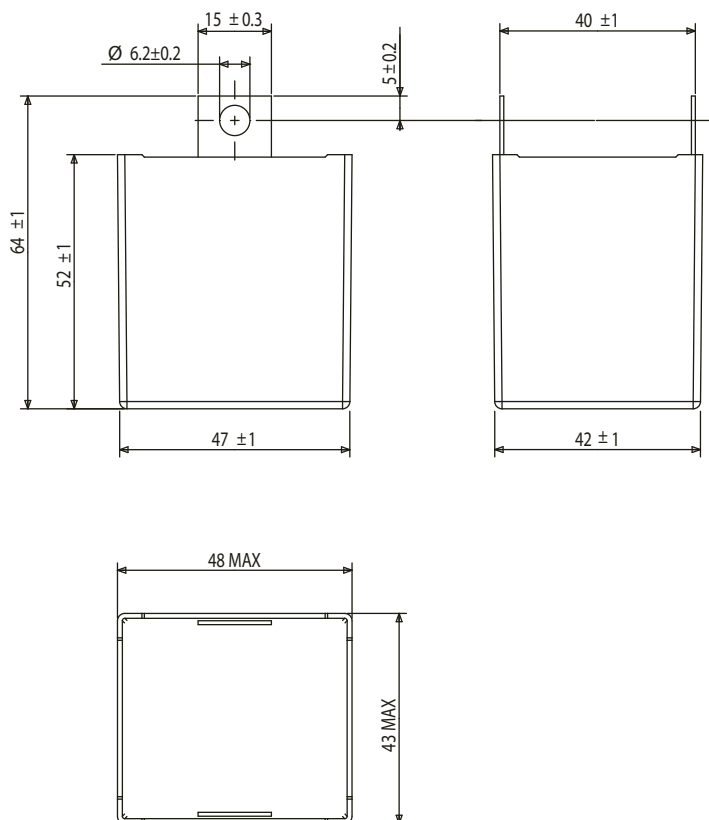


| Capacitance<br>Cn [ $\mu$ F] | DC Rated<br>Voltage<br>Un [V] | Repetitive<br>peak<br>Voltage<br>Up [V] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet.<br>Peak<br>Current<br>Ip [kA] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [m $\Omega$ ] | Self-<br>inductance<br>ESL [nH] | Thermal<br>Resistance<br>R <sub>TH</sub> [ $^{\circ}$ C/W] | Part number<br>416.81. |
|------------------------------|-------------------------------|-----------------------------------------|-----------------------------|---------------------------------------------|--------------------------------------|-----------------------------|------------------------------------------|---------------------------------|------------------------------------------------------------|------------------------|
| 50                           | 700                           | 1200                                    | 1,4                         | 40                                          | 2,5                                  | 3,5                         | 1,30                                     | 15                              | 12,5                                                       | 2095                   |
| 30                           | 900                           | 1500                                    | 1,8                         | 38                                          | 1,5                                  | 2,5                         | 1,60                                     | 15                              | 12,5                                                       | 2595                   |
| 25                           | 1000                          | 1650                                    | 2,0                         | 35                                          | 1,3                                  | 2,3                         | 2,10                                     | 15                              | 12,5                                                       | 3095                   |
| 22                           | 1100                          | 1850                                    | 2,2                         | 35                                          | 1,3                                  | 2,3                         | 2,25                                     | 15                              | 12,5                                                       | 3595                   |
| 16                           | 1250                          | 2100                                    | 2,5                         | 32                                          | 1,1                                  | 2,1                         | 2,60                                     | 15                              | 12,5                                                       | 4095                   |
| 12                           | 1450                          | 2400                                    | 2,9                         | 28                                          | 1,0                                  | 2,0                         | 2,90                                     | 15                              | 12,5                                                       | 4595                   |
| 9                            | 1600                          | 2650                                    | 3,2                         | 25                                          | 0,9                                  | 1,9                         | 3,20                                     | 15                              | 12,5                                                       | 5095                   |
| 7,5                          | 1800                          | 3000                                    | 3,6                         | 25                                          | 0,8                                  | 1,8                         | 3,40                                     | 15                              | 12,5                                                       | 5595                   |

**NOTES:**(Cn) Tolerance standard value:  $\pm 10\%$ . Other tolerance values on request.

(Cn) - (Un) Capacitance and rated voltage standard values, other values on request.

(Rs) Related at 1 KHz.

(R<sub>TH</sub>) Thermal resistance with natural cooling.(Imax) Maximum RMS @ 50  $^{\circ}$ C ambient temperature and working frequency < 40KHz.**Dimensions:**

| Pcs. per box | Box dimensions     |
|--------------|--------------------|
| 32           | mm 195 x 210 x 170 |



## DCH 86 PS series

*Very High Density, Very Low Inductance DC-Link Capacitors -  
Prismatic Plastic Case*

Thanks to the exclusive Ducati Energia High Crystallinity Film DCH 86 PS Prismatic DC-link Capacitors provide leading Capacity Density without any de-rating or limitation, respective to standard makes.

The very high capacity density allows substantial cost reductions due to the reduction of capacitor size and/or number, as well as particularly low inductance values.

The exclusive Ducati Energia metallization profiles guarantee high capacity stability and a controlled, open-circuit condition at the end of DCH 86 PS operational life, while maximizing the current capability.

A special internal construction allows the minimization of field effects, thus guaranteeing real-life low ESL.

Main characteristics:

- Very High Capacity Density
- Self-Healing Metallized Polypropylene Film
- UL-Approved Construction
- Aluminum Case
- DRY Resin filling
- REAL Low ESL

Main applications:

- DC-Link
- Energy Storage / Pulse Generation



### General Characteristics

|                                                                                                                                |                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| DC Voltage range                                                                                                               | 700÷2500 V                                                                                               |
| Maximum ripple current                                                                                                         | 165 A                                                                                                    |
| Capacitance range                                                                                                              | up to 2100 µF                                                                                            |
| Capacitance tolerance                                                                                                          | ±10%                                                                                                     |
| Thermal resistance natural cooling (RTHc)                                                                                      | 2.60 °C/W                                                                                                |
| Equivalent series inductance (LESR)                                                                                            | < 30 nH                                                                                                  |
| Terminals                                                                                                                      | M8 x 15 internal threads                                                                                 |
| Test voltage                                                                                                                   | $U_{tc} = 4.5 \text{ kVac @ } 50 \text{ Hz } 60 \text{ s}$<br>$U_{tt} = 1.5 \times U_{nDC} 10 \text{ s}$ |
| Climatic Ambient Temperature                                                                                                   | -25 / +45 °C                                                                                             |
| Working temperature ( $\theta_{MIN} - \theta_{MAX}$ )                                                                          | -25 / +85 °C                                                                                             |
| Storage temperature                                                                                                            | -25 / +85 °C                                                                                             |
| Filling                                                                                                                        | Self-extinguishing (UL94 V0) polyurethane resin                                                          |
| Container                                                                                                                      | Self-extinguishing (UL94 V0) plastic box                                                                 |
| Failure quota                                                                                                                  | 50/10E9                                                                                                  |
| Life expectancy                                                                                                                | 100.000 h                                                                                                |
| Maximum altitude                                                                                                               | 100.000 h                                                                                                |
| Maximum altitude                                                                                                               | 2000 m a.s.l.                                                                                            |
| Reference standard                                                                                                             | IEC 1071-1/2 - IEC 1881 - UL 810                                                                         |
| M8 internal thread terminals                                                                                                   | Max 4 Nm                                                                                                 |
| M8 screw terminals                                                                                                             | Max 6 Nm                                                                                                 |
| Fixing slots                                                                                                                   | Max 10 Nm                                                                                                |
| UL - CSA approved (  )                    | File n. E192559                                                                                          |
| In according to fire protection standard  | EN 45545-2                                                                                               |

**Safety system:** These capacitors are designed with a particular type of polypropylene metalized film (PPMd film) that assures an open circuit at the end of life, if the operation is within the specification.

| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [A] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THS</sub> [°C/W] | Weight<br>[kg] | Part number<br>416.86.V. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|--------------------------|
| 2.100                  | 700                           | 1.1                               | 1.2                         | 165                                         | 15.000                           | 28.0                        | < 0.48                          | 2.60                                             | < 4.5          | 109x                     |
| 1.500                  | 850                           | 1.0                               | 1.5                         | 155                                         | 13.800                           | 26.0                        | < 0.50                          | 2.60                                             | < 4.5          | 159x                     |
| 1.150                  | 1100                          | 1.7                               | 2.3                         | 150                                         | 12.000                           | 25.0                        | < 0.55                          | 2.60                                             | < 4.5          | 209x                     |
| 750                    | 1250                          | 1.9                               | 2.625                       | 140                                         | 11.400                           | 23.0                        | < 0.59                          | 2.60                                             | < 4.5          | 259x                     |
| 600                    | 1400                          | 2.1                               | 2.9                         | 130                                         | 11.000                           | 21.5                        | < 0.66                          | 2.60                                             | < 4.5          | 309x                     |
| 500                    | 1600                          | 2.4                               | 3.36                        | 120                                         | 10.640                           | 20.5                        | < 0.73                          | 2.60                                             | < 4.5          | 359x                     |
| 380                    | 1800                          | 2.7                               | 3.8                         | 120                                         | 10.500                           | 19.0                        | < 0.85                          | 2.60                                             | < 4.5          | 409x                     |
| 300                    | 2100                          | 3.2                               | 4.5                         | 110                                         | 9.660                            | 18.5                        | < 0.89                          | 2.60                                             | < 4.5          | 459x                     |
| 230                    | 2500                          | 3.8                               | 4.5                         | 100                                         | 8.200                            | 14.5                        | < 0.98                          | 2.60                                             | < 4.5          | 509x                     |

#### NOTES:

(Cn) Tolerance standard value: ±10%. Other tolerance values on request.  
(Cn) - (Un) Capacitance and rated voltage standard values, other values on request.  
(Up) Maximum peak to peak alternating voltage component on the DC working voltage.  
(Rs) Related at 1 KHz.  
(R<sub>THS</sub>) Thermal resistance AMBIENT - HOT SPOT (air forced cooling system).  
(I<sub>max</sub>) Maximum RMS @ 50 °C ambient temperature.  
(x code) According to mechanical solutions on next page.

#### Insulation spacing

Surface (mm) Air (mm)

37

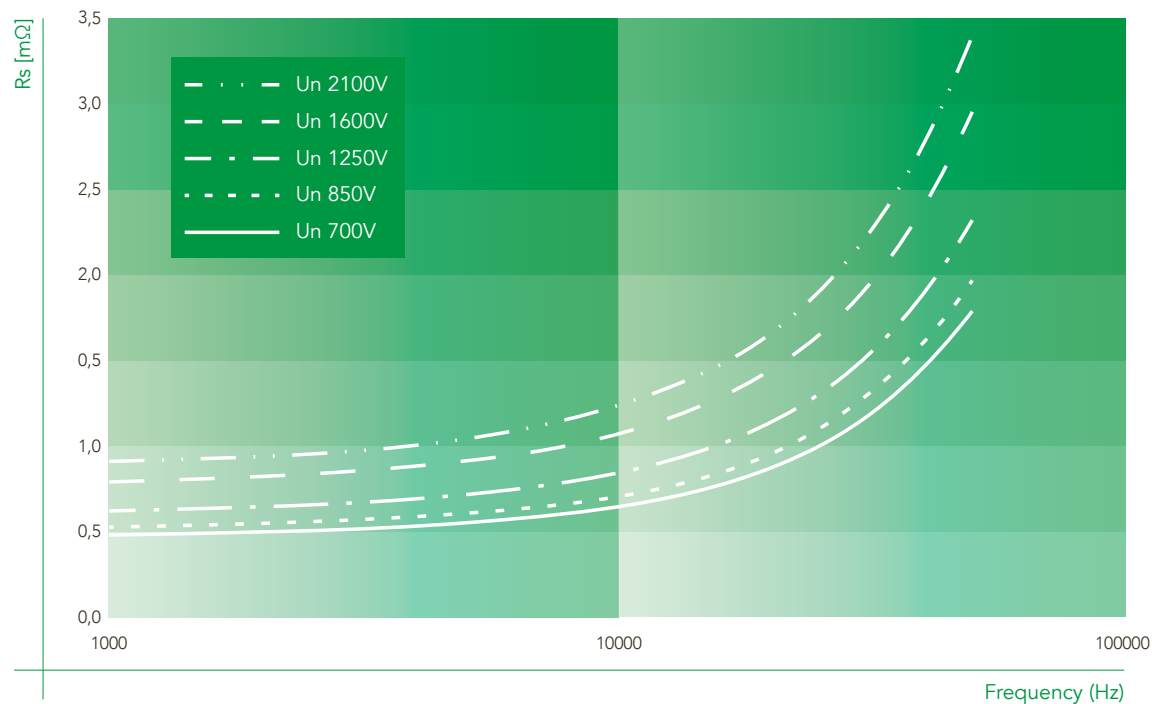
27

#### Box TYPE

Standard box dimensions: mm 195 x 390 x 250

No. pieces per box: 16

#### Typical Series Resistance at 23 °C

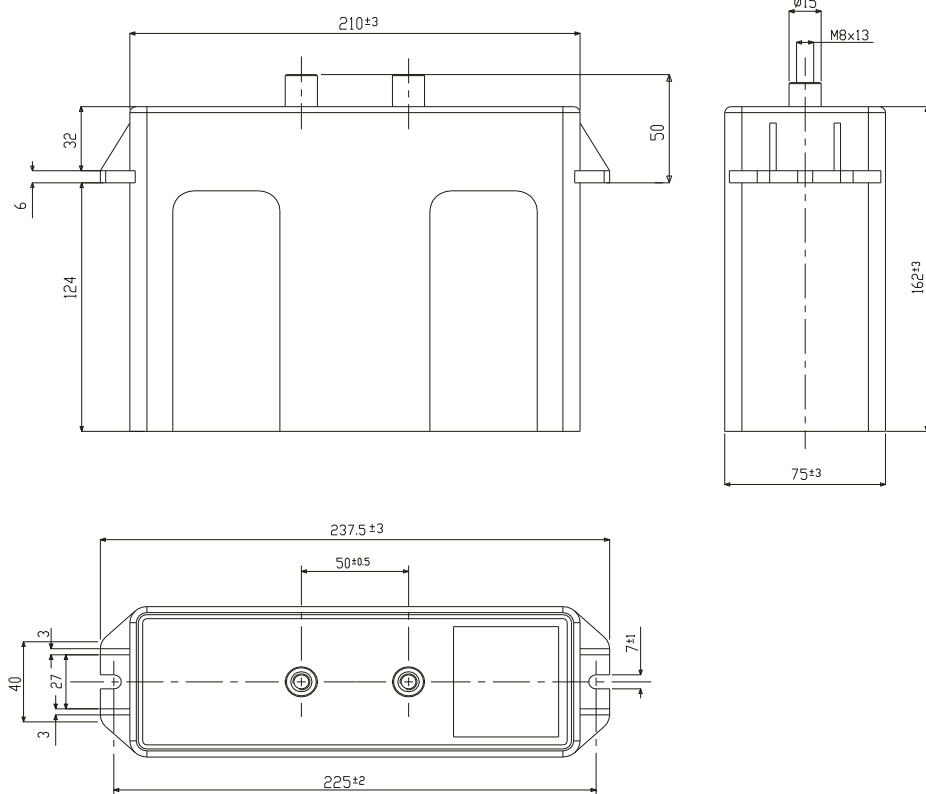




## A SOLUTION

M8 standard terminals solution:

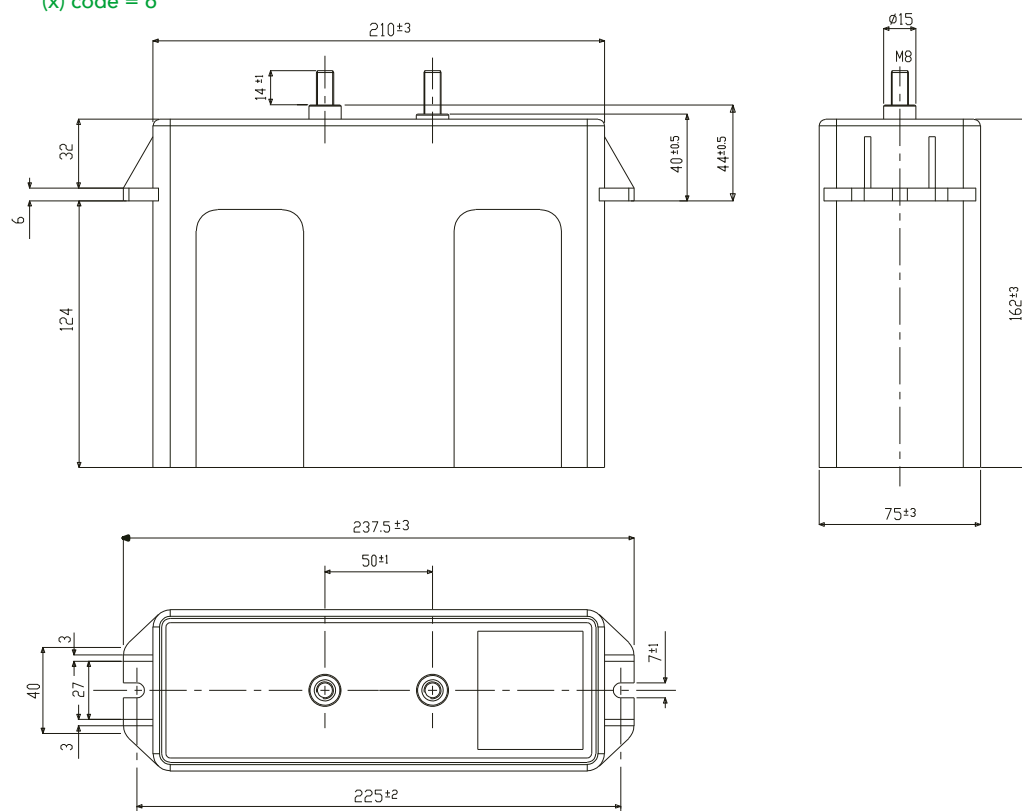
(x) code = 5



## B SOLUTION

Available solution: M8 screw bolt terminals:

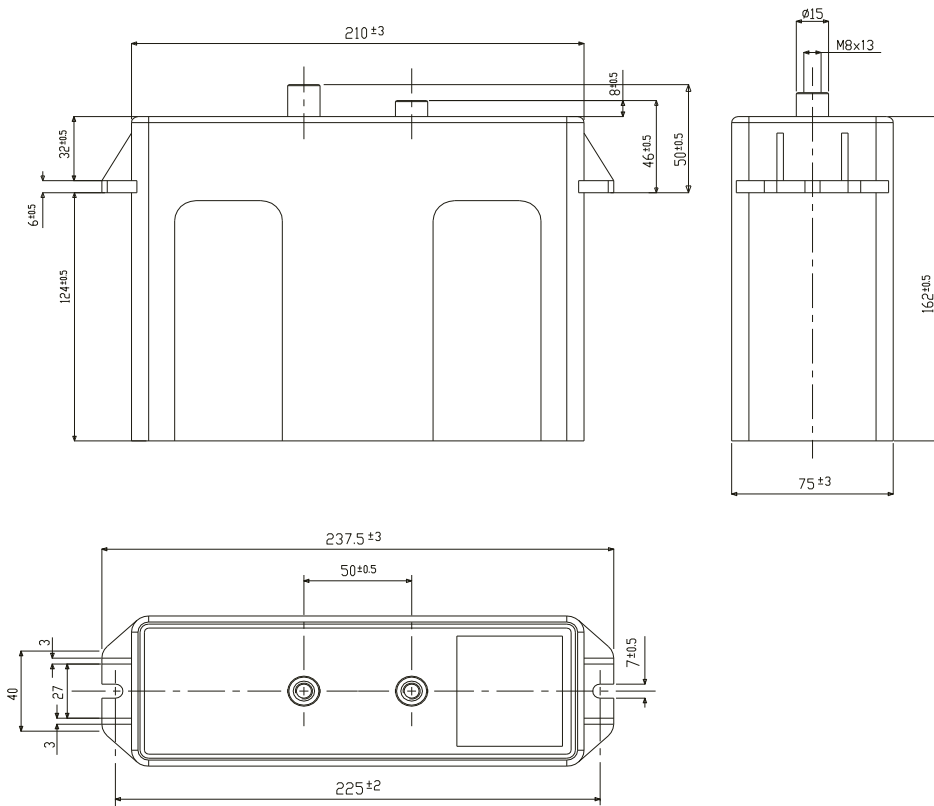
(x) code = 6





## C SOLUTION

Available on request: M8 staggered terminals solution:  
(x) code  $\geq 7$





## DC 86 PS series

*High Density, Very Low Inductance DC-Link Capacitors  
Prismatic Plastic Case*

This rectangular prism Box variant - DC86 PS - is powered by the tried and proven Ducati Energia PPMh technology making it a competitive and reliable solution to all common DC-Link applications.

When coupled with the exclusive Ducati Energia High Crystallinity Film the construction (DCH 86 PS series) provides superior temperature performance with 100khrs life @ HotSpot higher than 85°C. The exclusive Ducati Energia metallization profiles guarantee high capacity stability and a controlled, open-circuit condition at the end of operational life, while maximizing the current capability.

A special internal construction allows the minimization of field effects, thus guaranteeing real-life low ESL.

Main characteristics:

- High Capacity Density
- Self-Healing Metallized Polypropylene Film
- UL-Approved Construction
- V0 Plastic Case
- DRY Resin filling
- REAL Low ESL

Main applications:

- DC-Link
- Energy Storage / Pulse Generation



### General Characteristics

|                                                                                                                                |                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| DC Voltage range                                                                                                               | 550÷2700 V                                                                                               |
| Maximum ripple current                                                                                                         | 165 A                                                                                                    |
| Capacitance range                                                                                                              | up to 2100 µF                                                                                            |
| Capacitance tolerance                                                                                                          | ±10%                                                                                                     |
| Thermal resistance natural cooling ( $R_{THC}$ )                                                                               | 2.60 °C/W                                                                                                |
| Equivalent series inductance (ESL)                                                                                             | < 30 nH                                                                                                  |
| Terminals                                                                                                                      | M8 x 15 internal threads                                                                                 |
| Test voltage                                                                                                                   | $U_{tc} = 4.5 \text{ kVac @ } 50 \text{ Hz } 60 \text{ s}$<br>$U_{tt} = 1.5 \times U_{nDC} 10 \text{ s}$ |
| Working temperature ( $\theta_{MIN} - \theta_{MAX}$ )                                                                          | -25 / +85 °C                                                                                             |
| Storage temperature                                                                                                            | -25 / +85 °C                                                                                             |
| Filling                                                                                                                        | Self-extinguishing (UL94 V0) polyurethane resin                                                          |
| Dielectric                                                                                                                     | Self healing PPMd film                                                                                   |
| Container                                                                                                                      | Self-extinguishing (UL94 V0) plastic box                                                                 |
| Failure quota                                                                                                                  | 50 / 10E9                                                                                                |
| Life expectancy                                                                                                                | 100.000 h (*)                                                                                            |
| Maximum altitude                                                                                                               | 2000 m a.s.l.                                                                                            |
| Reference standard                                                                                                             | IEC 1071-1/2 - IEC 1881 - UL 810                                                                         |
| M6 internal thread terminals                                                                                                   | Max 4 Nm                                                                                                 |
| Fixing slots                                                                                                                   | Max 10 Nm                                                                                                |
| UL - CSA approved (  )                    | File n. E192559                                                                                          |
| In according to fire protection standard  | EN 45545-2                                                                                               |

**Safety system:** These capacitors are designed with a particular type of polypropylene metallized film (PPMd film) that assures an open circuit at the end of life, if the operation is within the specification.

(\*) For details please refer to page 83.





| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [A] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THC</sub> [°C/W] | Weight<br>[kg] | Part number<br>416.86. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|------------------------|
| 2100                   | 550                           | 0.8                               | 1.2                         | 165                                         | 16800                            | 29.5                        | < 0.48                          | 2.60                                             | < 4.5          | 009x                   |
| 1500                   | 700                           | 1.0                               | 1.5                         | 165                                         | 15000                            | 28.0                        | < 0.50                          | 2.60                                             | < 4.5          | 109x                   |
| 1150                   | 850                           | 1.3                               | 1.8                         | 155                                         | 13800                            | 26.0                        | < 0.55                          | 2.60                                             | < 4.5          | 159x                   |
| 750                    | 1100                          | 1.7                               | 2.3                         | 150                                         | 12000                            | 25.0                        | < 0.59                          | 2.60                                             | < 4.5          | 209x                   |
| 600                    | 1250                          | 1.9                               | 2.6                         | 140                                         | 11400                            | 23.0                        | < 0.66                          | 2.60                                             | < 4.5          | 259x                   |
| 500                    | 1400                          | 2.1                               | 2.9                         | 130                                         | 11000                            | 21.5                        | < 0.73                          | 2.60                                             | < 4.5          | 309x                   |
| 380                    | 1600                          | 2.4                               | 3.4                         | 120                                         | 10640                            | 20.5                        | < 0.85                          | 2.60                                             | < 4.5          | 359x                   |
| 300                    | 1800                          | 2.7                               | 3.8                         | 120                                         | 10500                            | 19.0                        | < 0.89                          | 2.60                                             | < 4.5          | 409x                   |
| 230                    | 2100                          | 3.2                               | 4.4                         | 110                                         | 9660                             | 18.5                        | < 0.98                          | 2.60                                             | < 4.5          | 459x                   |
| 120                    | 2700                          | 4.1                               | 5.7                         | 100                                         | 7800                             | 14.5                        | < 1.15                          | 2.60                                             | < 4.5          | 509x                   |

**NOTES:**

(Cn) Tolerance standard value: ±10%. Other tolerance values on request.  
(Cn) - (Un) Capacitance and rated voltage standard values, other values on request.  
(Rs) Related at 1 KHz.  
(R<sub>THS</sub>) Thermal resistance AMBIENT - HOT SPOT (air forced cooling system).  
(I<sub>MAX</sub>) Maximum RMS @ 50 °C ambient temperature.  
(x code) According to mechanical solutions on next page.

**Insulation spacing**

Surface (mm)

Air (mm)

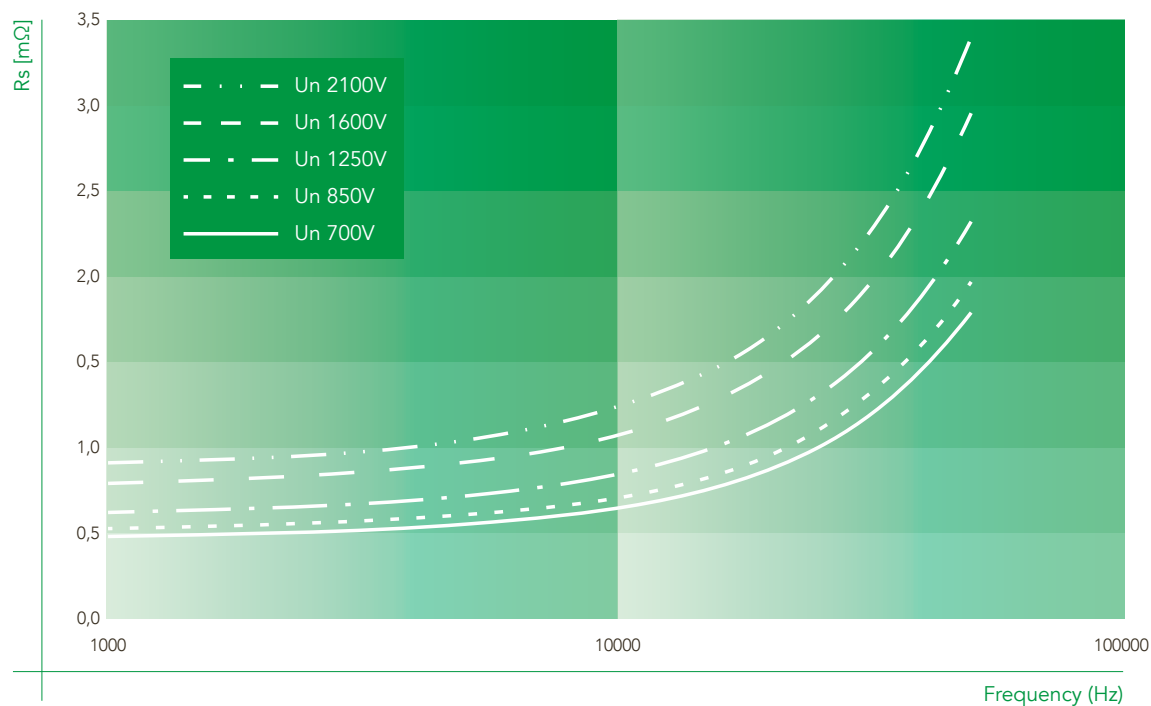
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35

**Box TYPE**

Standard box dimensions: mm 195 x 390 x 250

No. pieces per box: 16

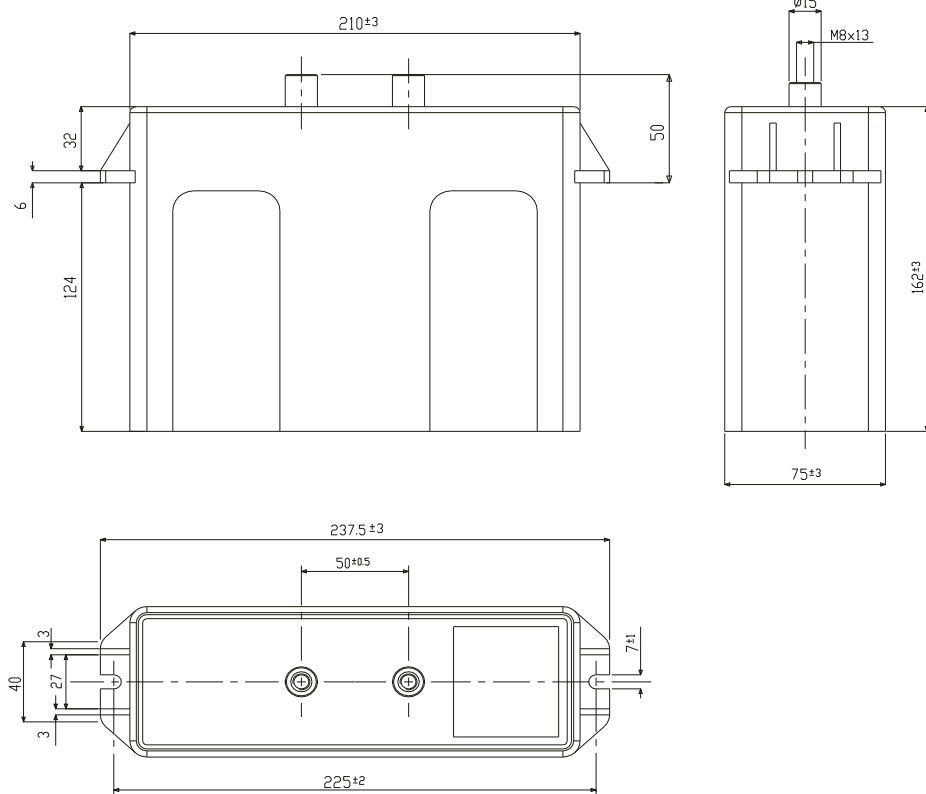
**Typical Series Resistance at 23 °C**



## A SOLUTION

M8 standard terminals solution:

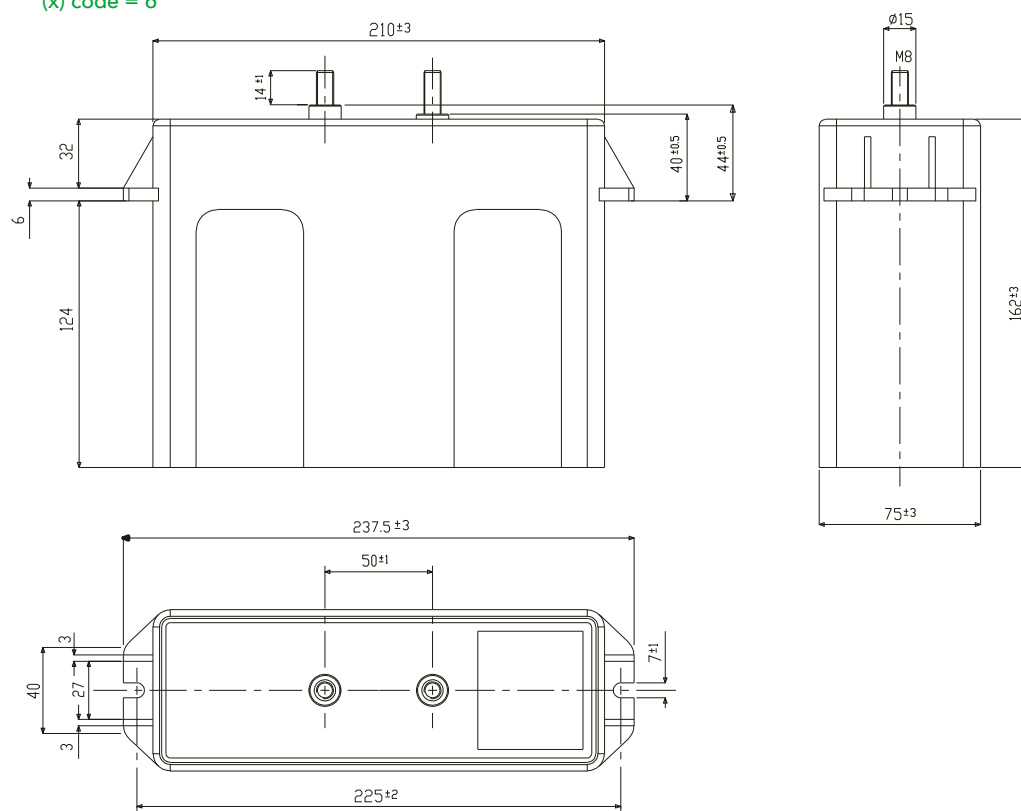
(x) code = 5



## B SOLUTION

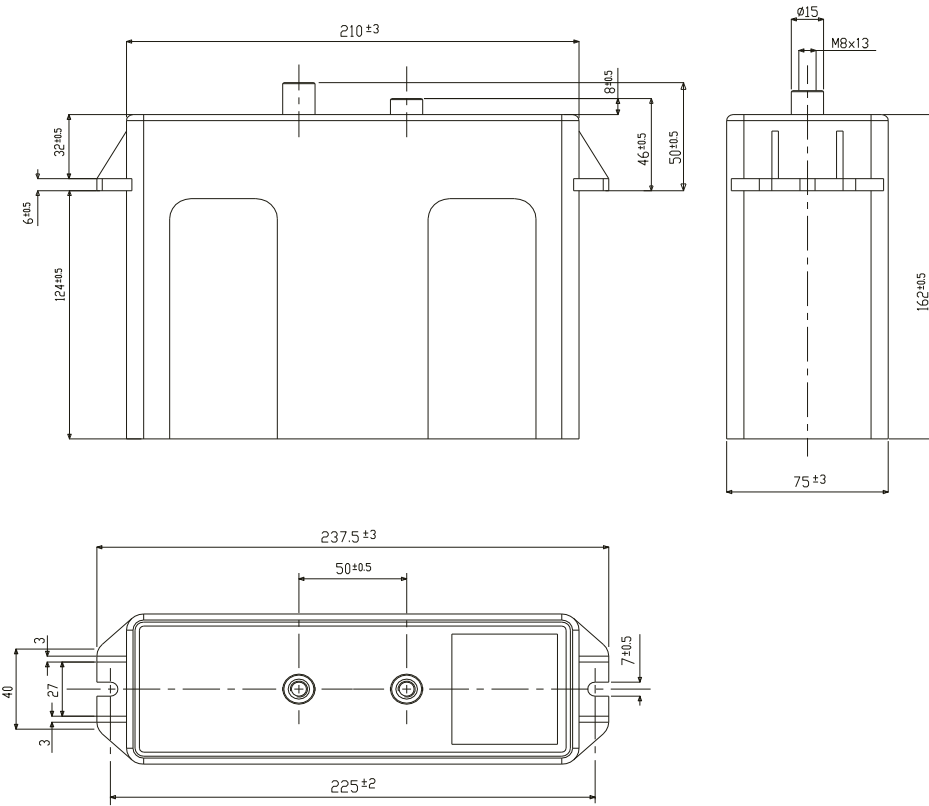
Available solution: M8 screw bolt terminals:

(x) code = 6



## C SOLUTION

Available on request: M8 staggered terminals solution:  
(x) code  $\geq 7$





## DC 86 P series

### High Density, Low Inductance DC-Link Capacitors Prismatic Plastic Case

This very large Prismatic Box variant is particularly convenient for applications requiring very large capacity or high operating voltages; the tried and proven Ducati Energia PPMh technology provides competitive and reliable performances for all common DC-Link applications.

When coupled with the exclusive Ducati Energia High Crystallinity Film the DC 86 P construction provides superior temperature performance with 100khrs life at HotSpot temperature higher than 85 °C or extended life of several hundred thousand hours @70°C HotSpot.

The exclusive Ducati Energia metallization profiles guarantee high capacity stability and a controlled, open-circuit condition at the end of DC 86 P operational life, while maximizing the current capability.

Main characteristics:

- Very High Capacity Density
- Self-Healing Metallized Polypropylene Film
- V0 Plastic Case
- DRY Resin filling
- Low ESL

Main applications:

- DC-Link
- Energy Storage / Pulse Generation



#### General Characteristics

|                                                       |                                                                                                  |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| DC Voltage range                                      | 550÷6800 V                                                                                       |
| Maximum ripple current                                | 300 A                                                                                            |
| Capacitance range                                     | up to 15000 µF                                                                                   |
| Capacitance tolerance                                 | standard: +0%/-15%; others on request                                                            |
| Thermal resistance natural cooling ( $R_{THC}$ )      | 0.52 °C/W                                                                                        |
| Equivalent series inductance (ESL)                    | < 45 nH                                                                                          |
| Terminals                                             | 4 x M6 internal threads per pole or bus-bars                                                     |
| Test voltage                                          | $U_{tc} = 6 \text{ kVac @50 Hz 10 s}$<br>$U_{tt} = 1.5 \times U_{nDC} 10 \text{ s}$              |
| Working temperature ( $\theta_{MIN} - \theta_{MAX}$ ) | -25 / +85 °C                                                                                     |
| Storage temperature                                   | -25 / +85 °C                                                                                     |
| Filling                                               | Self-extinguishing (UL94 V0) polyurethane resin                                                  |
| Dielectric                                            | Self healing PPMd film                                                                           |
| Container                                             | Self-extinguishing (UL94 V0) plastic box                                                         |
| Failure quota                                         | 50 /10E9                                                                                         |
| Life expectancy                                       | 100.000 h (*)                                                                                    |
| Maximum altitude                                      | 2000 m a.s.l.                                                                                    |
| Reference standard                                    | IEC 1071-1/2 - IEC 1881 - UL 810                                                                 |
| M6 internal thread terminals                          | Max 3 Nm                                                                                         |
| Fixing slots                                          | Max 10 Nm                                                                                        |
| In according to fire protection standard              |  EN 45545-2 |

**Safety system:** These capacitors are designed with a particular type of polypropylene metalized film (PPMd film) that assures an open circuit at the end of life, if the operation is within the specification.

(\*) For details please refer to page 83.





| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [A] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THC</sub> [°C/W] | Weight<br>[kg] | Terminal<br>solution<br>A / B | Part n.<br>416.86. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|-------------------------------|--------------------|
| 15000                  | 550                           | 0.8                               | 1.3                         | 300                                         | 34500                            | 45                          | < 0.30                          | 0.52                                             | < 19.0         | A / B                         | 009.x              |
| 11000                  | 650                           | 1.0                               | 1.5                         | 300                                         | 30800                            | 45                          | < 0.30                          | 0.52                                             | < 19.0         | A / B                         | 109.x              |
| 8500                   | 800                           | 1.2                               | 1.8                         | 300                                         | 28050                            | 45                          | < 0.30                          | 0.52                                             | < 19.0         | A / B                         | 159.x              |
| 5600                   | 1000                          | 1.5                               | 2.3                         | 250                                         | 26880                            | 40                          | < 0.45                          | 0.52                                             | < 19.0         | A / B                         | 209.x              |
| 3800                   | 1200                          | 1.8                               | 2.8                         | 250                                         | 22800                            | 40                          | < 0.50                          | 0.52                                             | < 19.0         | A / B                         | 259.x              |
| 2800                   | 1350                          | 2.0                               | 3.1                         | 250                                         | 22400                            | 40                          | < 0.50                          | 0.52                                             | < 19.0         | A / B                         | 309.x              |
| 2100                   | 1600                          | 2.4                               | 3.7                         | 200                                         | 21000                            | 40                          | < 0.65                          | 0.52                                             | < 19.0         | A / B                         | 359.x              |
| 1700                   | 1800                          | 2.7                               | 4.1                         | 200                                         | 20400                            | 40                          | < 0.70                          | 0.52                                             | < 19.0         | A / B                         | 409.x              |
| 1050                   | 2100                          | 3.1                               | 4.8                         | 200                                         | 19950                            | 40                          | < 0.70                          | 0.52                                             | < 19.0         | A / B                         | 459.x              |
| 650                    | 2700                          | 4.0                               | 6.2                         | 200                                         | 19500                            | 35                          | < 0.75                          | 0.52                                             | < 19.0         | A / B                         | 508.x              |
| 500                    | 3200                          | 4.8                               | 7.4                         | 200                                         | 17500                            | 35                          | < 0.75                          | 0.52                                             | < 19.0         | A / B                         | 559.x              |
| 300                    | 3800                          | 5.7                               | 8.7                         | 200                                         | 13500                            | 35                          | < 0.75                          | 0.52                                             | < 19.0         | A / B                         | 609.x              |
| 200                    | 4500                          | 6.7                               | 10.0                        | 150                                         | 13000                            | 30                          | < 1.20                          | 0.52                                             | < 19.0         | A                             | 659.0              |
| 160                    | 5200                          | 7.8                               | 10.0                        | 150                                         | 11200                            | 30                          | < 1.20                          | 0.52                                             | < 19.0         | A                             | 709.0              |
| 120                    | 6000                          | 9.0                               | 10.0                        | 150                                         | 10800                            | 25                          | < 1.40                          | 0.52                                             | < 19.0         | A                             | 759.0              |
| 80                     | 6800                          | 10.0                              | 10.0                        | 120                                         | 9600                             | 20                          | < 1.50                          | 0.52                                             | < 19.0         | A                             | 809.0              |

**NOTES:**

(Cn) Tolerance standard value: -15 ... +0%. Other tolerance values on request.

(Cn) - (Un) Capacitance and rated voltage standard values, other values on request.

(Ur) Maximum peak to peak alternating voltage component on the DC working voltage.

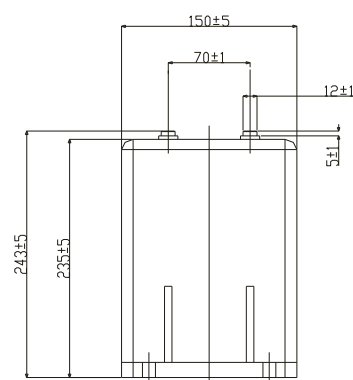
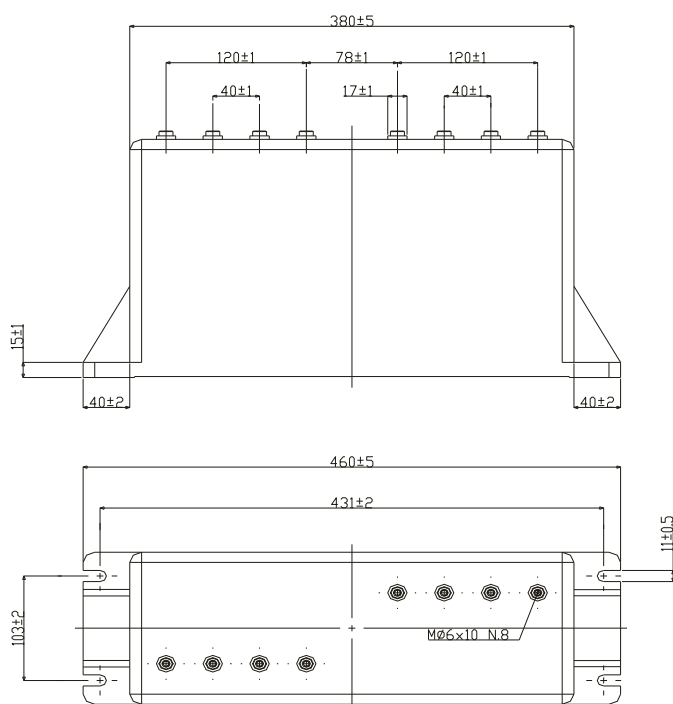
(Rs) Related at 1 KHz.

(R<sub>THC</sub>) Thermal resistance CASE TO AMBIENT in natural cooling environment.

(A/B solut) Due to the clearance distance, B SOLUTION (X code= 1) is available only up to Un= 3800 V (Rated Voltage).

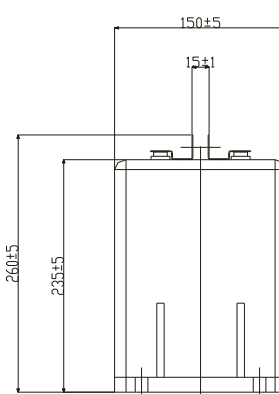
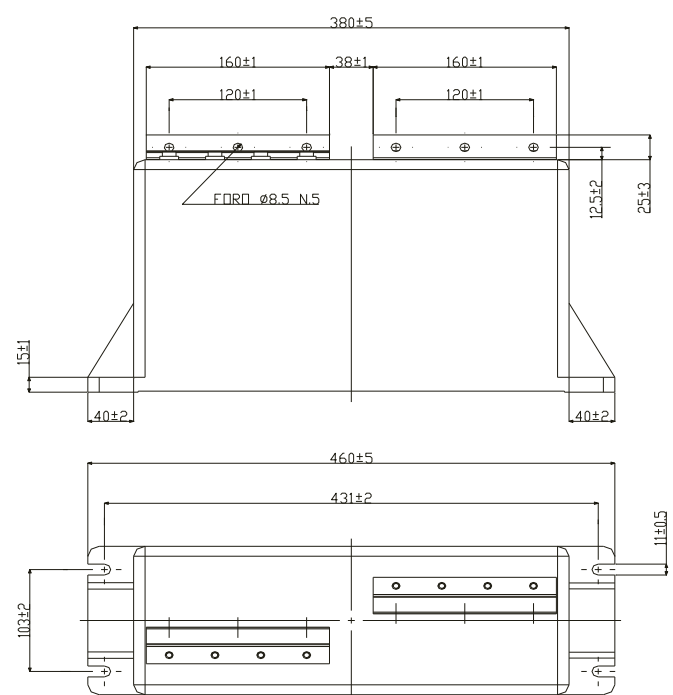
(X code) According to terminal type. A SOLUTION X=0 / B SOLUTION X=1.

|                                |                    |
|--------------------------------|--------------------|
| <b>Box TYPE</b>                |                    |
| <b>Standard box dimensions</b> | mm 477 x 252 x 172 |
| No. pieces x box:              | 1                  |



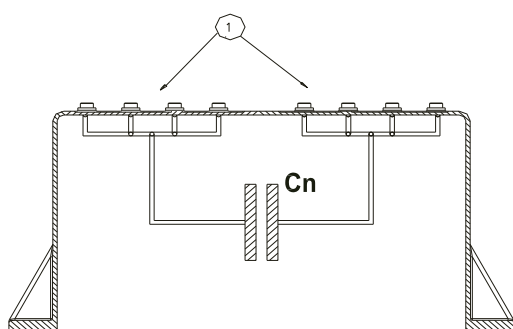
### A SOLUTION

41686.XXX.0  
M6 internal threads



### B SOLUTION

41686.XXX.1  
Bus bar terminals



### NOTES:

For A Solution: please, pay attention to connect all of the four M6 internal thread terminals for each polarity.



## DC 85 B series

### High Density, Low Inductance DC-Link Capacitors

### Cubic Plastic Case

This Cubic Box variant - DC 85 B - is powered by the tried and proven Ducati Energia PPMh technology making it a competitive and reliable solution to all common DC-Link applications.

When coupled with the exclusive Ducati Energia High Crystallinity Film the DC 85 B construction provides superior temperature performance with 100khrs life at HotSpot temperature higher than 85 °C or extended life of several hundred thousand hours @70°C HotSpot. The exclusive Ducati Energia metallization profiles guarantee high capacity stability and a controlled, open-circuit condition at the end of DC 85 B operational life, while maximizing the current capability.

Main characteristics:

- High Capacity Density
- Self-Healing Metallized Polypropylene Film
- V0 Plastic Case
- DRY Resin filling
- Low ESL

Main applications:

- DC-Link
- Energy Storage / Pulse Generation



#### General Characteristics

|                                                                                                                                |                                                 |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| DC Voltage range                                                                                                               | 550÷6000 V                                      |
| Maximum ripple current                                                                                                         | 120 A                                           |
| Capacitance range                                                                                                              | up to 38000 µF                                  |
| Capacitance tolerance                                                                                                          | standard: +0%/-15%; others on request           |
| Series resistance (RS)                                                                                                         | < 5 mΩ                                          |
| Thermal resistance natural cooling (R <sub>THC</sub> )                                                                         | 2.0 °C/W                                        |
| Equivalent series inductance (ESL)                                                                                             | < 30 nH                                         |
| Terminals                                                                                                                      | M10 screw-type bolts                            |
| Test voltage                                                                                                                   | U <sub>tt</sub> = 1.5 x U <sub>n DC</sub> 10 s  |
| Working temperature (θ <sub>MIN</sub> – θ <sub>MAX</sub> )                                                                     | -25 / +85 °C                                    |
| Storage temperature                                                                                                            | -25 / +85 °C                                    |
| Filling                                                                                                                        | Self-extinguishing (UL94 V0) polyurethane resin |
| Dielectric                                                                                                                     | Self healing PPMd film                          |
| Container                                                                                                                      | Self-extinguishing (UL94 V0) plastic box        |
| Failure quota                                                                                                                  | 50 /10E9                                        |
| Life expectancy                                                                                                                | 100.000 h (*)                                   |
| Maximum altitude                                                                                                               | 2000 m a.s.l.                                   |
| Reference standard                                                                                                             | IEC 1071-1/2 - IEC 1881 - UL 810                |
| M10 screw terminals                                                                                                            | Max 10 Nm                                       |
| Fixing slots                                                                                                                   | Max 10 Nm                                       |
| In according to fire protection standard  | EN 45545-2                                      |

**Safety system:** These capacitors are designed with a particular type of polypropylene metalized film (PPMd film) that assures an open circuit at the end of life, if the operation is within the specification.

(\*) For details please refer to page 83.



| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [A] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THC</sub> [°C/W] | Weight<br>[kg] | Terminal<br>solution<br>A / B | Part n.<br>416.85. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|-------------------------------|--------------------|
| 3800                   | 550                           | 0.8                               | 1.2                         | 120                                         | 9800                             | 25                          | < 0.80                          | 1.65                                             | < 5.0          | A / B                         | 001.x              |
| 2800                   | 650                           | 1.0                               | 1.4                         | 120                                         | 9300                             | 25                          | < 0.80                          | 1.65                                             | < 5.0          | A / B                         | 005.x              |
| 2250                   | 750                           | 1.1                               | 1.6                         | 120                                         | 9500                             | 25                          | < 0.80                          | 1.65                                             | < 5.0          | A / B                         | 090.x              |
| 1500                   | 900                           | 1.4                               | 1.9                         | 120                                         | 9500                             | 25                          | < 0.80                          | 1.65                                             | < 5.0          | A / B                         | 190.x              |
| 1200                   | 1100                          | 1.7                               | 2.3                         | 120                                         | 9600                             | 25                          | < 0.80                          | 1.65                                             | < 5.0          | A / B                         | 290.x              |
| 1000                   | 1250                          | 1.9                               | 2.6                         | 120                                         | 9000                             | 20                          | < 0.85                          | 1.65                                             | < 5.0          | A / B                         | 390.x              |
| 800                    | 1350                          | 2.0                               | 2.9                         | 100                                         | 8800                             | 20                          | < 1.20                          | 1.65                                             | < 5.0          | A / B                         | 405.X              |
| 750                    | 1450                          | 2.2                               | 3.0                         | 100                                         | 8500                             | 20                          | < 1.20                          | 1.65                                             | < 5.0          | A / B                         | 490.x              |
| 420                    | 1800                          | 2.7                               | 3.8                         | 100                                         | 8200                             | 15                          | < 1.20                          | 1.65                                             | < 5.0          | A / B                         | 590.x              |
| 280                    | 2200                          | 3.3                               | 4.6                         | 80                                          | 7000                             | 15                          | < 1.80                          | 1.65                                             | < 5.0          | A / B                         | 690.x              |
| 180                    | 2800                          | 4.2                               | 5.8                         | 80                                          | 6300                             | 15                          | < 1.90                          | 1.65                                             | < 5.0          | A / B                         | 790.x              |
| 80                     | 4000                          | 6.0                               | 8.5                         | 60                                          | 4000                             | 10                          | < 3.20                          | 1.65                                             | < 5.0          | A / B                         | 890.x              |
| 50                     | 5000                          | 7.5                               | 10.0                        | 50                                          | 3500                             | 10                          | < 4.60                          | 1.65                                             | < 5.0          | A / B                         | 990.x              |
| 40                     | 5500                          | 8.3                               | 10.0                        | 40                                          | 3200                             | 8                           | < 7.50                          | 1.65                                             | < 5.0          | A / B                         | A90.x              |
| 30                     | 6000                          | 9.0                               | 10.0                        | 35                                          | 2700                             | 8                           | < 8.20                          | 1.65                                             | < 5.0          | A / B                         | B90.x              |

#### NOTES:

(Cn) Tolerance standard value: -15 ... +0%. Other tolerance values on request.

(Cn) - (Un) Capacitance and rated voltage standard values, other values on request.

(Ur) Maximum peak to peak alternating voltage component on the DC working voltage.

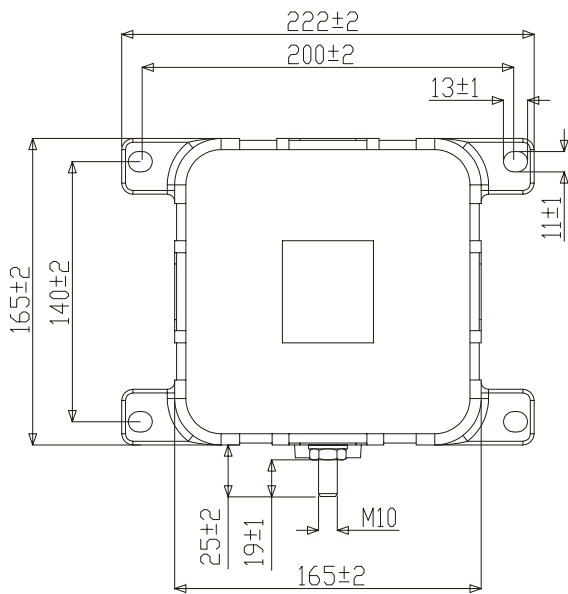
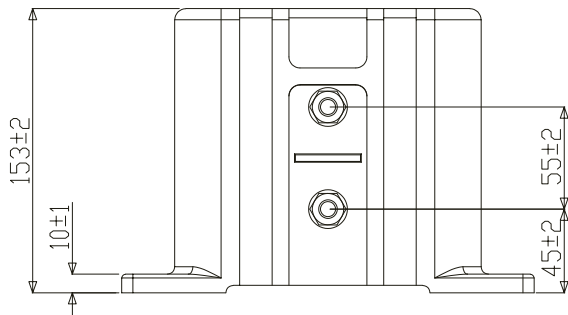
(Rs) Related at 1 KHz.

(R<sub>THC</sub>) Thermal resistance CASE TO AMBIENT in natural cooling environment.

(A/B solut) .X="5" for A SOLUTION (M10 terminals on surface without handles) / .x="6" for B SOLUTION (M10 terminals on handle surface).

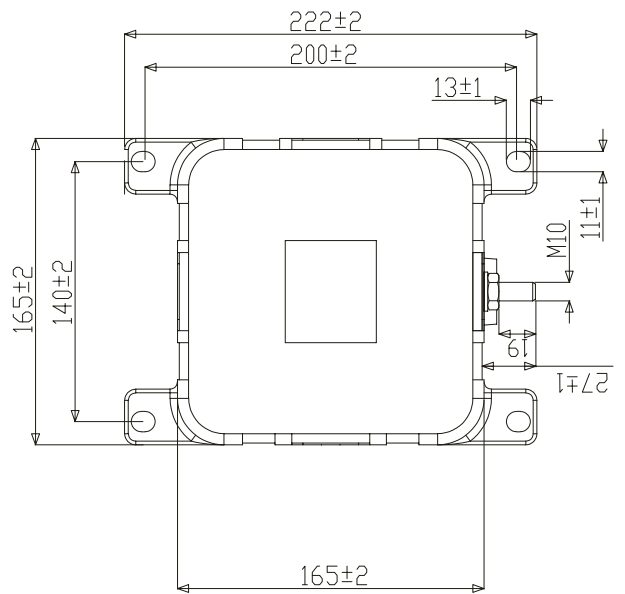
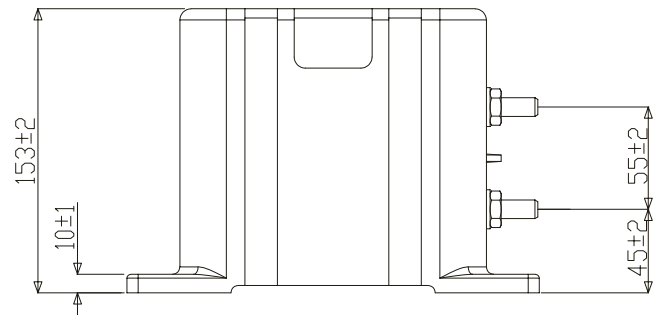
|                                |                    |
|--------------------------------|--------------------|
| <b>Box TYPE</b>                |                    |
| <b>Standard box dimensions</b> | mm 450 x 470 x 220 |
| No. pieces x box:              | 4                  |





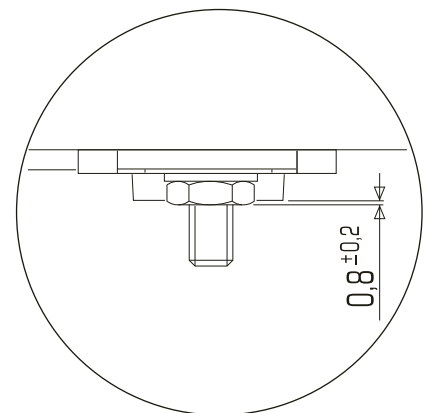
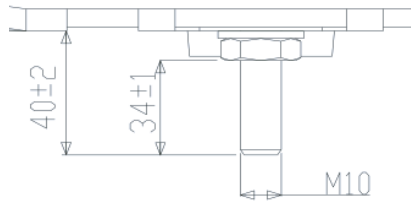
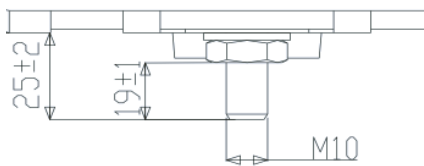
#### A SOLUTION

41685.xxx.5  
M10 terminals on handless surface



#### B SOLUTION

41685.xxx.6  
M10 terminals on handle surface





## DC 83 P and DCH 83 P series

*DC-Link Capacitors, high density and low inductance,  
resin filled in box plastic case*

This rectangular prism Box variant - DC83 P - is powered by the tried and proven Ducati Energia PPMh technology making it a competitive and reliable solution to all common DC-Link applications.

When coupled with the exclusive Ducati Energia High Crystallinity Film the construction (DCH 83 P series) provides superior temperature performance with 100khrs life @ HotSpot higher than 85°C. The exclusive Ducati Energia metallization profiles guarantee high capacity stability and a controlled, open-circuit condition at the end of operational life, while maximizing the current capability.

A special internal construction allows the minimization of field effects, thus guaranteeing real-life low ESL.

Main characteristics:

- High Capacity Density
- Self-Healing Metallized Polypropylene Film
- V0 Plastic Case
- DRY Resin filling
- Low ESL

Main applications:

- DC-Link
- Energy Storage / Pulse Generation



### General Characteristics

|                                                         |                                                                                                  |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| DC Voltage range                                        | 550 - 2350 V                                                                                     |
| Maximum ripple current (Imax)                           | 165 Arms                                                                                         |
| Capacitance range                                       | 0,1 - 2,0 mF                                                                                     |
| Equivalent series inductance (ESL) - typical            | 30 nH                                                                                            |
| Tinned copper terminals                                 | M8x10 internal thread                                                                            |
| Container                                               | Self-extinguishing (UL94 V0) plastic box                                                         |
| Filling                                                 | Self-extinguishing (UL94 V0) Polyurethane resin                                                  |
| Film Dielectric type                                    | PPMDh film (*)                                                                                   |
| Maximum altitude                                        | 2000 m a.s.l.                                                                                    |
| Mounting position                                       | Any position                                                                                     |
| Maximum torque for fixing slots                         | 10Nm                                                                                             |
| Maximum torque for M8 terminals                         | 4 Nm                                                                                             |
| Working ambient temperature                             | -25 .. +50 °C                                                                                    |
| Operating temperature MAX/ MIN (case)                   | -25 .. +85 °C                                                                                    |
| Maximum Hotspot temperature                             | +85 °C                                                                                           |
| Storage temperature                                     | -25 .. +85 °C                                                                                    |
| Humidity category class (DIN 40040)                     | F                                                                                                |
| Life expectancy (@Un / 70°C hot spot)                   | 100.000 h                                                                                        |
| Failure quota                                           | 50FIT                                                                                            |
| Reference standards                                     | IEC 61071-1/2<br>IEC 61881<br>UL810                                                              |
| Material and insulation distance designed according to: | UL 810                                                                                           |
| In according to fire protection standard                |  EN 45545-2 |

Cepage Distance (mm) 45

Clearance Distance (mm) 35

**Safety system:** These capacitors are designed with a particular type of polypropylene metalized film (PPMd film) that assures an open circuit at the end of life, if the operation is within the specification.



## DC 83 P

| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [kA] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THS</sub> [°C/W] | Weight<br>[kg] | Part n.<br>416.83. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|-----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|--------------------|
| 1850                   | 550                           | 0.8                               | 1.2                         | 165                                         | 14.8                              | 24                          | < 0.36                          | 3,60                                             | < 3            | 1900               |
| 1500                   | 700                           | 1.0                               | 1.5                         | 165                                         | 16.5                              | 25                          | < 0.38                          | 3,60                                             | < 3            | 2900               |
| 1050                   | 900                           | 1.3                               | 1.9                         | 155                                         | 14.7                              | 23                          | < 0.43                          | 3,60                                             | < 3            | 3900               |
| 700                    | 1100                          | 1.5                               | 2.3                         | 150                                         | 14.0                              | 22                          | < 0.45                          | 3,60                                             | < 3            | 4900               |
| 580                    | 1250                          | 1.8                               | 2.6                         | 145                                         | 14.5                              | 21.5                        | < 0.48                          | 3,60                                             | < 3            | 5900               |
| 460                    | 1400                          | 2.0                               | 2.9                         | 140                                         | 12.9                              | 20.5                        | < 0.52                          | 3,60                                             | < 3            | 6900               |
| 340                    | 1600                          | 2.2                               | 3.4                         | 135                                         | 11.9                              | 18                          | < 0.55                          | 3,60                                             | < 3            | 7900               |
| 240                    | 1800                          | 2.5                               | 3.8                         | 130                                         | 9.6                               | 15                          | < 0.62                          | 3,60                                             | < 3            | 8900               |
| 190                    | 2100                          | 2.9                               | 4.4                         | 120                                         | 8.0                               | 13                          | < 0.68                          | 3,60                                             | < 3            | 9900               |

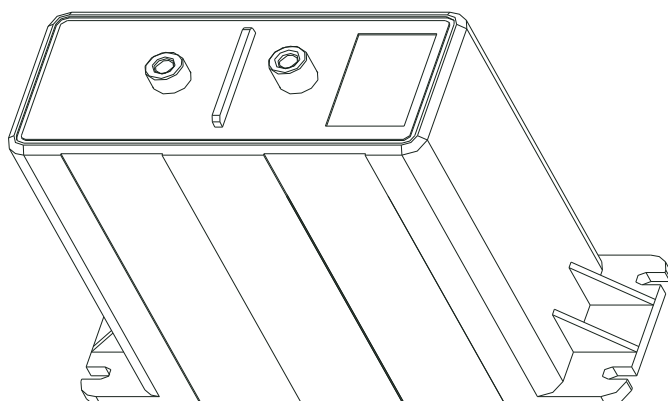
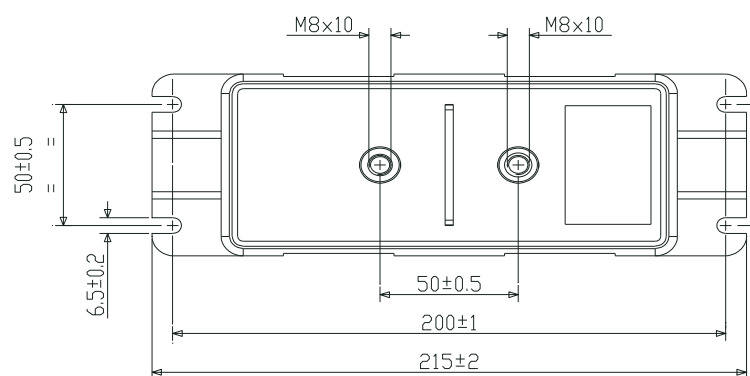
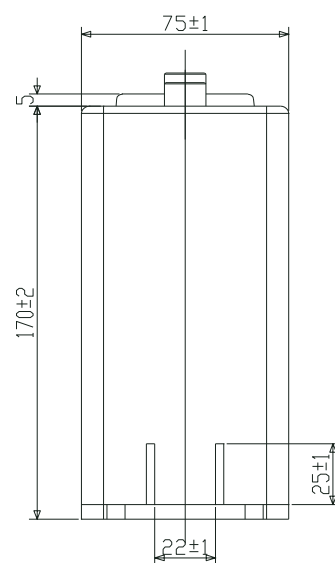
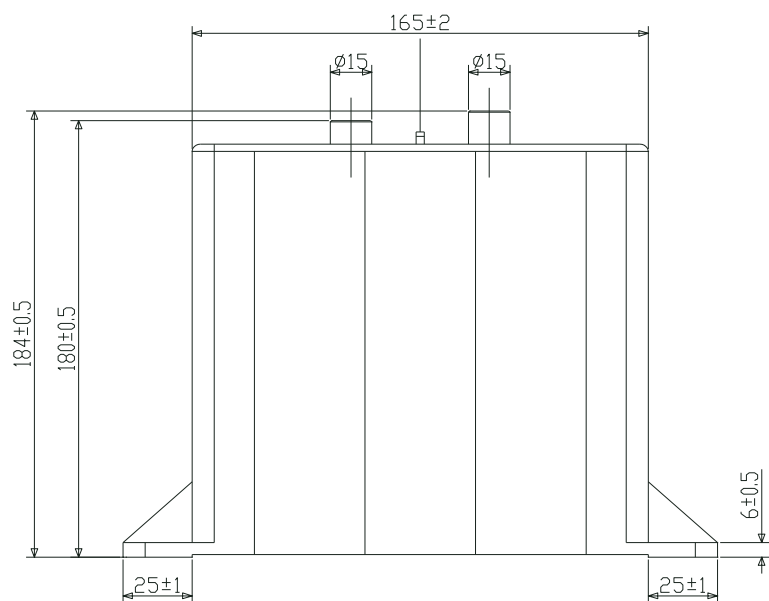
## DCH 83 P

| Capacitance<br>Cn [μF] | Rated DC<br>Voltage<br>Un [V] | Repet. Peak<br>Voltage<br>Up [kV] | Surge<br>Voltage<br>Us [kV] | Max. RMS<br>Current<br>I <sub>MAX</sub> [A] | Repet. Peak<br>Current<br>Ip [kA] | Surge<br>Current<br>Is [kA] | Series<br>Resistance<br>Rs [mΩ] | Thermal<br>Resistance<br>R <sub>THS</sub> [°C/W] | Weight<br>[kg] | Part n.<br>416.83.V. |
|------------------------|-------------------------------|-----------------------------------|-----------------------------|---------------------------------------------|-----------------------------------|-----------------------------|---------------------------------|--------------------------------------------------|----------------|----------------------|
| 1850                   | 650                           | 0.9                               | 1.4                         | 155                                         | 16.7                              | 25                          | < 0.41                          | 3,60                                             | < 3            | 1900                 |
| 1350                   | 850                           | 1.2                               | 1.8                         | 150                                         | 14.9                              | 25                          | < 0.43                          | 3,60                                             | < 3            | 2900                 |
| 1050                   | 1000                          | 1.4                               | 2.1                         | 150                                         | 13.7                              | 22                          | < 0.45                          | 3,60                                             | < 3            | 3900                 |
| 670                    | 1250                          | 1.8                               | 2.6                         | 145                                         | 12.1                              | 19.5                        | < 0.47                          | 3,60                                             | < 3            | 4900                 |
| 550                    | 1400                          | 2.0                               | 2.9                         | 140                                         | 11.0                              | 18                          | < 0.52                          | 3,60                                             | < 3            | 5900                 |
| 460                    | 1550                          | 2.2                               | 3.3                         | 135                                         | 10.6                              | 17                          | < 0.55                          | 3,60                                             | < 3            | 6900                 |
| 340                    | 1800                          | 2.5                               | 3.8                         | 125                                         | 9.5                               | 15                          | < 0.62                          | 3,60                                             | < 3            | 7900                 |
| 240                    | 2100                          | 2.9                               | 4.4                         | 120                                         | 8.4                               | 13                          | < 0.68                          | 3,60                                             | < 3            | 8900                 |
| 190                    | 2350                          | 3.3                               | 4.9                         | 115                                         | 7.6                               | 12                          | < 0.76                          | 3,60                                             | < 3            | 9900                 |

### NOTES:

- (Cn) Tolerance standard value: -15 ... +0%. Other tolerance values on request.  
 (Cn) - (Un) Capacitance and rated voltage standard values, other values on request.  
 (Rs) Related at 1 KHz.  
 (R<sub>THS</sub>) Thermal resistance AMBIENT - HOT SPOT (air forced cooling system).  
 (I<sub>MAX</sub>) Maximum RMS Current @ 50°C ambient temperature.

| Box TYPE                |                    |
|-------------------------|--------------------|
| Standard box dimensions | mm 450 x 470 x 220 |
| No. pieces x box:       | 8                  |





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**DUCATI energia S.p.A.**

Via M.E.Lepido, 182  
40132 Bologna, Italy

☎ +39 051-6411511

📠 +39 051-402040

✉ [info@ducatienergia.com](mailto:info@ducatienergia.com)

**[www.ducatienergia.it](http://www.ducatienergia.it)**



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