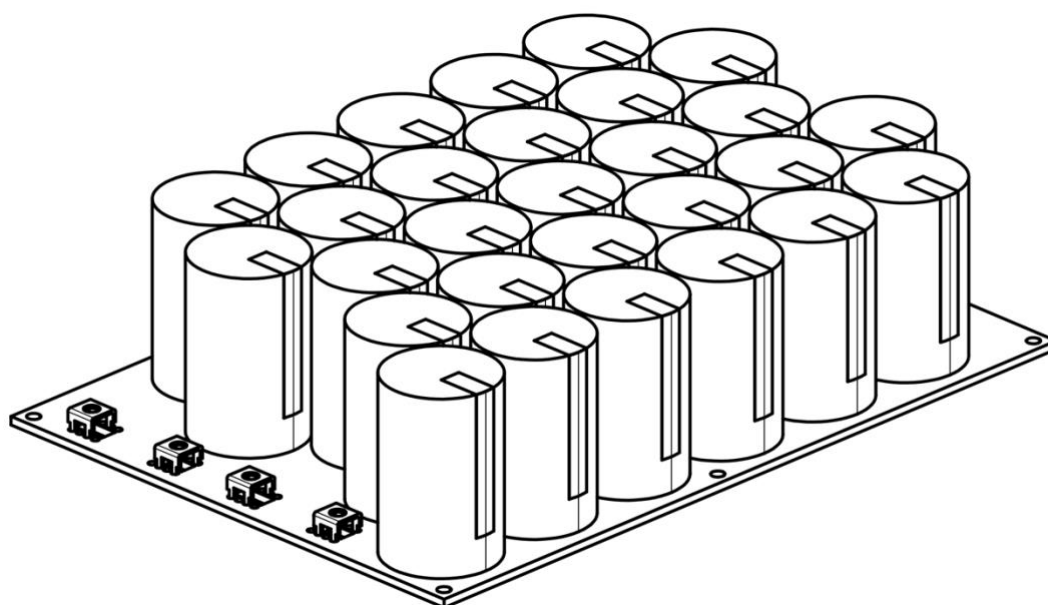


## CB-series capacitor banks

### User manual



**Warning!** This equipment may be dangerous.  
Please read this user manual before starting any operations.

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## Overview / Appearance

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CB is a series of capacitor banks assembled from small electrolytic capacitors. The solution is small, compact and easy to mount compared to its obvious alternative – large electrolytic capacitors.

By default, we offer four different boards from 20mF @ 350V to 3.3mF @ 900V. Other options are available on request (see *How to order?* section and appendixes).



## Cooling

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No active cooling is required for operations with <math><2\text{kW}</math> average power. However, since the board has no overheat protection circuits, we recommend to ensure experimentally that the temperature of the capacitors doesn't exceed the recommended values in real operating regimes and conditions.

## Contents of delivery

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By default, the following items are supplied as standard:

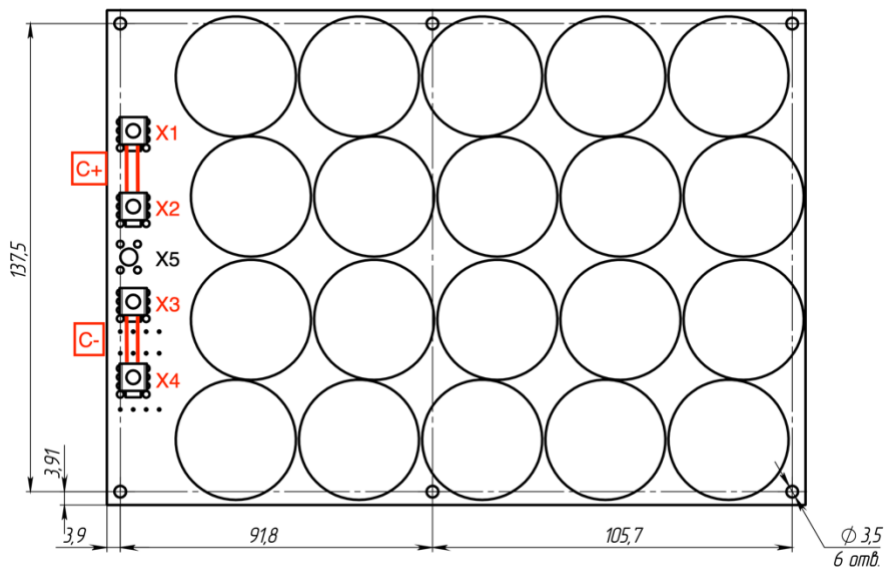
- CB-series capacitor bank – 1pc

## Connectors and interfaces

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### CB-350V-20mF

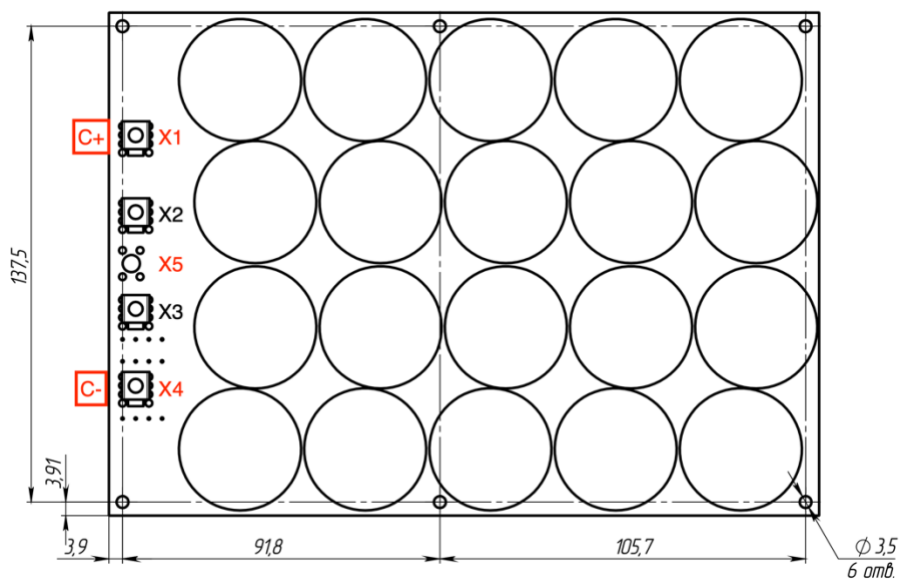
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- X1, X2 – M4 thread – Capacitor bank positive (C+)
- X3, X4 – M4 thread – Capacitor bank negative (C-)
- X5 – Not installed

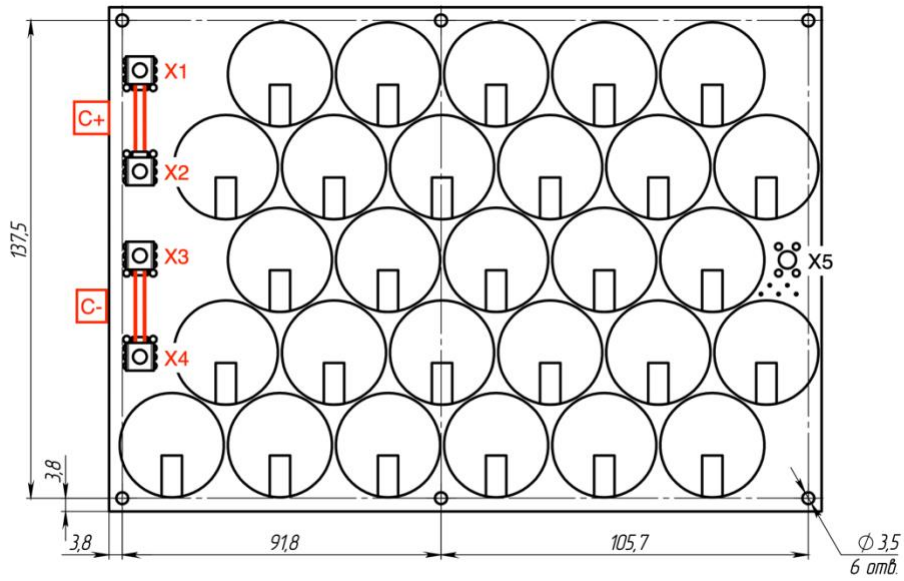
### CB-700V-5mF

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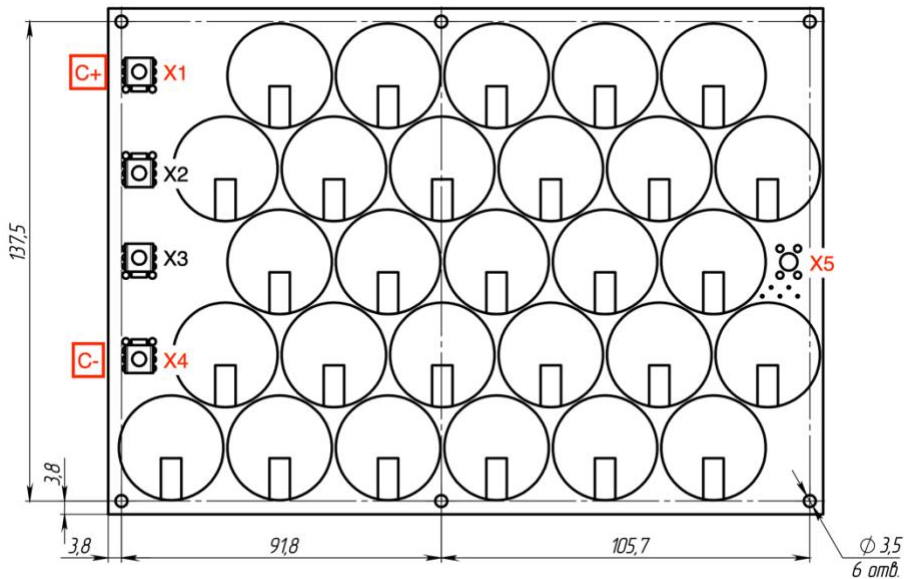
- X1 – M4 thread – Capacitor bank positive (C+)
- X4 – M4 thread – Capacitor bank negative (C-)
- X5 – Installed

### CB-450V-13mF



- X1, X2 – M4 thread – Capacitor bank positive (C+)
- X3, X4 – M4 thread – Capacitor bank negative (C-)
- X5 – Not installed

### CB-900V-3.3mF



- X1 – M4 thread – Capacitor bank positive (C+)
- X4 – M4 thread – Capacitor bank negative (C-)
- X5 – Installed

### MOUNTING: M3 screw (x6)

The board should be mounted using 6pcs M3 screws. Please refer to the dimensional drawings below for their location.

### GROUND: NONE

None of the circuits on the board are grounded. Neither protective ground terminal is on the board. The user should take care about the personnel safety on their own.

## Safety

**Warning! This equipment works under high voltages that can be very dangerous. Be careful in a high-voltage appliances area.**

- During operations all the protective covers must be securely in place and all the electrical connections must be properly attached.
- The boards are designed to be installed inside a properly grounded metal case. It is the customer's responsibility to ensure that personnel are prevented from accidental contacting of the capacitor bank and its high voltage cables. **Casual contact could be fatal!**
- Do not handle the capacitor bank until it has been discharged below safe level. Use an appropriate meter to check for the discharge.
- Do not use the board if it has been damaged by water, chemicals, mechanical or electrical shock.

## Specifications

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### ELECTRICAL

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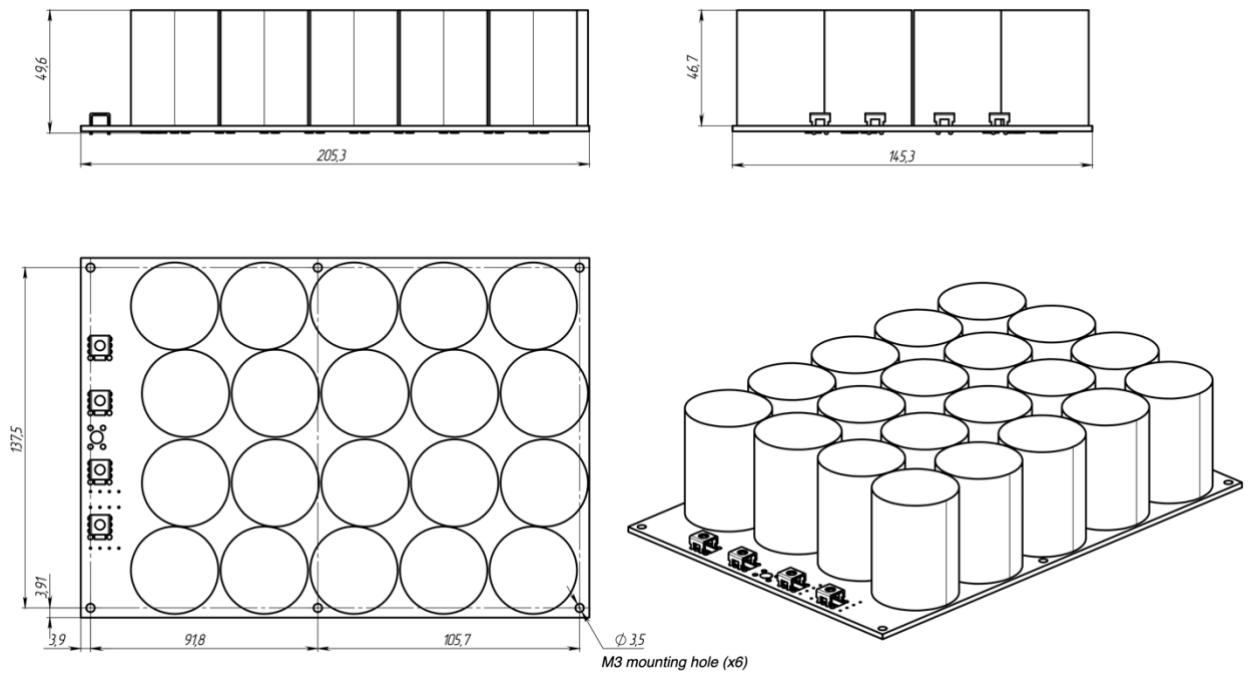
<b>CB-350V-20mF:</b>	
Composition	20pcs small 350V/1000uF capacitors (SAMWHA HJ2V108M35045HA or analogue) connected in parallel
Rated voltage	350V
Nominal capacitance	20mF (20000uF)
<b>CB-700V-5mF:</b>	
Composition	20pcs small 350V/1000uF capacitors (SAMWHA HJ2V108M35045HA or analogue) connected in series and in parallel
Rated voltage	700V
Nominal capacitance	5mF (5000uF)
<b>CB-450V-13mF:</b>	
Composition	28pcs small 450V/470uF capacitors (SAMWHA HJ2W477M30045HA or analogue) connected in parallel
Rated voltage	450V
Nominal capacitance	13mF (13000uF)
<b>CB-900V-3.3mF:</b>	
Composition	28pcs small 450V/470uF capacitors (SAMWHA HJ2W477M30045HA or analogue) connected in series and in parallel
Rated voltage	900V
Nominal capacitance	3.3mF (3300uF)
<b>Features:</b>	

Capacitor lifetime rating	>2000h @ 85 °C
Shunting resistors	Yes, ~1MΩ in parallel with each individual capacitor
<b>Operations:</b>	
Max. average power	2kW per board typically
Max. capacitor temperature	<85 °C (max) <65 °C (recommended)
Cooling	Passive (no external fan required)
<b>Environment:</b>	
Operation temperature	+10... +40 °C
Storage temperature	-20 ... +60 °C
Humidity	<90%, non-condensing

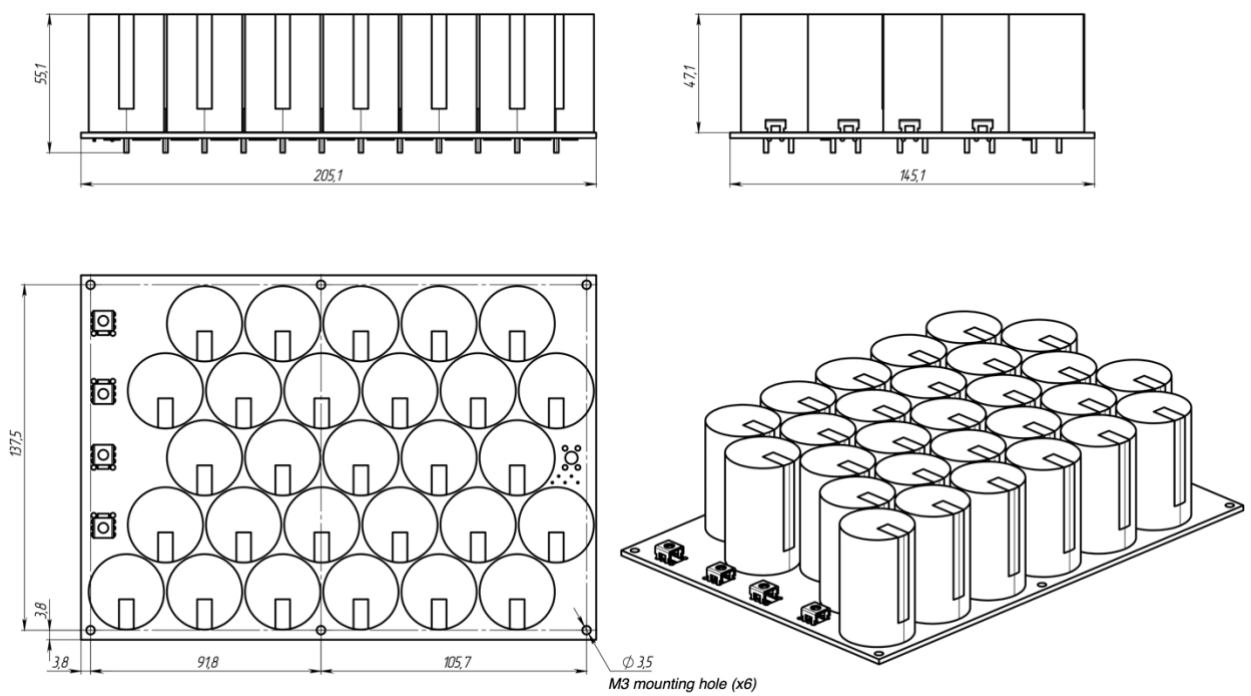
## MECHANICAL

Dimensions	Approx. 205x145x55mm (see also the dimensional drawings below)
Weight	<2kg

## Dimensional drawing (CB-350V-20mF and CB-700V-5mF)



## Dimensional drawing (CB-450V-13mF and CB-900V-3.3mF)



## How to order?

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By default, only four modifications listed below are available for ordering:

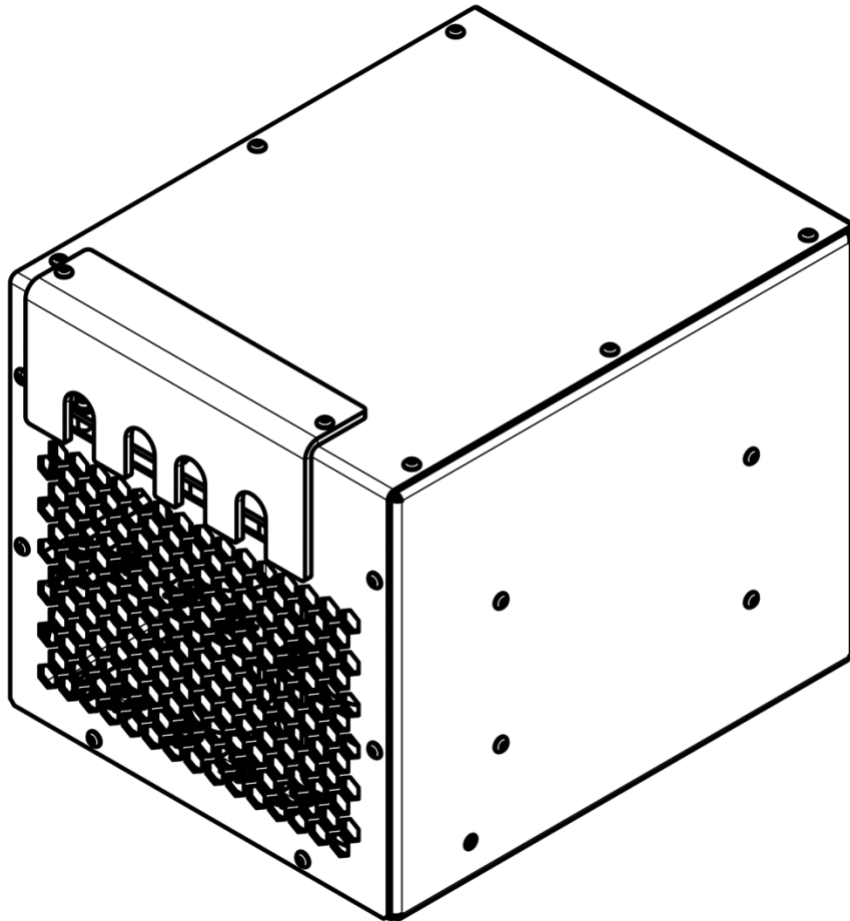
<b>Part number</b>	<b>Parameters</b>
CB-350V-20mF	Maximum voltage 350V, nominal capacitance 20mF (20000uF)
CB-700V-5mF	Maximum voltage 700V, nominal capacitance 5mF (5000uF)
CB-450V-13mF	Maximum voltage 450V, nominal capacitance 13mF (13000uF)
CB-900V-3.3mF	Maximum voltage 900V, nominal capacitance 3.3mF (3300uF)

Other versions including enclosed and 19'' rack mountable modifications (see also the appendixes below) are available on request.

## Appendix 1: CB-BOX – enclosed versions

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Enclosed versions combining a few CB-series boards are available on request. This is a simple, safe and grounded solution.



## Appendix 2: CB-4U – 19’’ rack mounted versions

We also offer CB-4U capacitor bank modules combining 8pcs CB-series banks in one enclosure, as well as quick discharge circuits.



Four standard models are listed below, other models are possible on request.

<b>Part number</b>	<b>Parameters</b>
CB-4U-350V-160mF	Maximum voltage 350V, nominal capacitance 160mF (160000uF)
CB-4U-700V-40mF	Maximum voltage 700V, nominal capacitance 40mF (40000uF)
CB-4U-450V-105mF	Maximum voltage 450V, nominal capacitance 105mF (105000uF)
CB-4U-900V-26mF	Maximum voltage 900V, nominal capacitance 26mF (26000uF)