HV outdoor capacitor voltage transformers
Robust design and proven performance

The CPB-H is designed for revenue metering and protection in high voltage networks. The high quality, state of the art, automated manufacture of the capacitor elements provides consistent quality to ensure long term reliability and performance. Due to the optimized proportions of the mixed dielectric the capacitor elements are subject to low electrical stresses with high stability under extreme temperature variations.

Why ABB?

**Reliable**
The low voltage stresses within the capacitor elements ensure a safe and reliable product. ABB provides most efficient ferroresonance damping systems available in the market. ABB’s damping technology guarantees a safe and stable elimination of ferroresonance at all frequencies and voltages up to rated voltage factor.

**Accurate**
Good accuracy under all service conditions, independent of variations in temperature, frequency, voltage and burden. Mixed dielectric (polypropylene and paper) in unique proportions, which is far more stable to temperature variations than other mixed dielectrics, and gives the CPB superior accuracy stability.

**Flexible**
CPB is designed and adjusted at factory for the burden and accuracy class according to specifications. ABB’s wide experience and expertise helps find an optimum solution.

**Design Features**
ABB’s Capacitor Voltage Transformers (CVT’s) are intended for connection between phase and ground in networks with grounded neutral. The design corresponds to the requirements of IEC and all national standards based on them. Designs to meet other specific standards and customer unique specifications are also available.

**CPB-H portfolio features**
The portfolio consists of three versions of Capacitor Voltage Dividers (CVDs), light, medium and heavy, combined with Electromagnetic Units (EMU). The EMU is optimized with respect to market requirements for number of windings, burden and performance.

**Capacitor Voltage Divider**
The capacitor voltage divider (CVD) consists of one or more capacitor units, assembled on top of each other, with each unit containing the required number of series-connected, oil-insulated capacitor elements. The units are completely filled with synthetic oil, hermetically sealed with stainless steel bellows and incorporate o-ring seals throughout the design.

The design of the capacitive elements correspond with requirements of revenue metering, with the active component of aluminum foils insulated with polypropylene film and paper and impregnated with PCB free synthetic oil. The synthetic oil has superior and consistent insulating properties when compared to mineral oil. Capacitors manufactured using a mixed dielectric with paper/film and synthetic fluids as insulation have temperature coefficients in the range of 0.01-0.04% / °C. Due to this, the variation in the capacitance with respect to temperature minimal and can be disregarded, making it possible to manufacture CVTs with same temperature stability as an inductive voltage transformer.
Technical data

- **Installation**: Outdoor
- **Design**: Capacitor Type, complies with IEC
- **Insulation**: CVD - Aluminum Foil / paper / polypropylene-film, synthetic oil
- **EMU**: Epoxy - mineral oil
- **Highest Voltage for equipment**: 72-420 kV
- **Voltage Factor (Vf)**: Up to 1.5/30 sec
- **Insulators**: Porcelain/Silicon rubber (SIR)
- **Creepage Distance**: 25 mm/kV & 31 mm/kV
- **Service Conditions**: Porcelain/Silicon rubber (SIR)
- **Ambient Temperature**: -5°C to + 55°C
- **Design altitude**: Maximum 1000 m (Other altitude on request)

**Electromagnetic Unit (EMU)**
The voltage divider and the electromagnetic unit are connected by internal bushings, which are necessary for applications with high accuracy.

The EMU has an intermediate voltage transformer with enameled copper windings and an iron core assembled with high quality magnetic core steel and is epoxy moulded and mounted in a hermetically sealed Mild Steel tank with mineral oil filling.

The primary winding is divided into a main part, and a set of adjustable trimming windings. The nominal intermediate voltage is approximately $20/\sqrt{3}$ kV or $24/\sqrt{3}$ kV depending on the burden requirements.

The EMU incorporates an inductive reactor, connected in series between the voltage divider and the high voltage end of the primary winding, to compensate for the shift in phase angle caused by the capacitive reactance of the CVD. This inductive reactance is tuned individually on each transformer to achieve the required accuracy.

**Climate**
These transformers are designed for, and are installed in widely varying conditions, on every continent worldwide.

### Parameter | Rated System Voltage | 66kV | 132kV | 150kV | 220kV | 400kV
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**Type** | CPB-H | | | | | |
**Rated capacitance in pF** | 4400-13200 | 4400-13200 | 4400 | 4400-8800 | 4400-8800 |
**Rated frequency in Hz** | 50/60 | 50/60 | 50/60 | 50/60 | 110V |
**Rated sec. voltage** | 110V , 110/\sqrt{3}$ V, 100V, 100/\sqrt{3}$ V, etc |
**Rated Burden** | 100VA/300VA/500VA |
**Class of Accuracy** | 0.2/0.5/3P |
**Rated Thermal burden at line to ground vol.** | 1000VA (simultaneously 3 windings) |
**No. of secondary** | 3 (4 on request) |
**Rated voltage factor** | 1.2 continuos & 1.5 for 30 sec |
**Wind Velocity** | 150 km/h |

For more information please contact:

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[www.abb.com](http://www.abb.com)  
[www.abb.com/highvoltage](http://www.abb.com/highvoltage)

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Note: ABB India Limited is continuously working to improve the products. Therefore we reserve the right to change designs, dimensions & data without prior notice.