

# 8BCV-C

# Capacitor Bank Protection IED



**IEC 61850**

## A Complete, Reliable and Economic Solution for most Capacitor Bank Protection and Control Applications

### Protection Functions

<b>50</b>	Instantaneous Phase Overcurrent (2 Units).	<b>27</b>	Three Phase Undervoltage (3 Units).
<b>51</b>	Time Delay Phase Overcurrent (3 Units).	<b>59</b>	Three Phase Overvoltage (3 Units).
<b>50N</b>	Instantaneous Ground Overcurrent (2 Units).	<b>59N</b>	Ground Overvoltage (2 Units).
<b>51N</b>	Time Delay Ground Overcurrent (3 Units).	<b>59C</b>	Compensated Voltage Unbalance.
<b>50Q</b>	Instantaneous Negative Sequence Overcurrent (2 units).	<b>47</b>	Negative Sequence Overvoltage.
<b>51Q</b>	Time Delay Negative Sequence Overcurrent (3 Units).	<b>50/62BF</b>	Breaker Failure.
		<b>46</b>	Open Phase/Broken Conductor (I2/I1).
		<b>60</b>	VT Supervision.

### 59C Compensated voltage unbalance unit - three levels with independent settings

Voltage unbalance protection scheme with a neutral unbalance compensation function that achieves ideal sensitivity and selectivity to protect either grounded or ungrounded shunt capacitor banks according to the guidelines of the IEEE C37.99-2000 *Guide for the Protection of Shunt Capacitor Banks*.

The unbalance scheme utilizes the existing bus PTs and requires only one additional voltage-sensing device in the capacitor bank neutral, providing economic benefits over other schemes.

The **BCV-C** can be applied to externally fused, internally fused and fuseless capacitor banks, being suitable for detecting faults on the individual elements of the capacitor bank.

*The sensitivity provided by the voltage unbalance compensation, the reduced cost of fewer required instrument transformers combined with the system protection and automatic control functions makes the **BCV-C** a complete, reliable, and economic solution for most capacitor bank protection and control applications.*





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## Additional Functions

- Built-in capacitor bank automatic control (using calendar, V, I,  $\cos\phi$ , P or Q).
- Programmable control logic.
- HMI: alphanumeric display, keypad and six programmable buttons for control operations.
- Optional graphical display (available on model "7BCV-C").
- One RS232+USB local port.
- Up to three fiber optic, electrical (RS232/RS485) or Ethernet remote ports.
- One port for CAN Bus protocol communications.
- Two LAN ports (RJ45 or Glass fiber optic MT-RJ) for IEC 61850 comms.
- DNP3, IEC-870-5 and MODBUS Protocols.
- IEC 61850.
- Integrated simulator.
- Trip/close circuit supervision (up to 3 coils).
- Phase sequence selectable (ABC or ACB).
- CB supervision ( $kA^2$ ).
- 4 programmable setting groups.
- Rated current: 1A / 5A.
- Frequency: 50 / 60 Hz.
- 4/16 programmable optical indicators (LEDs).
- Digital inputs: up to 44.
- Digital outputs: up to 22.
- One "in service" output.
- Virtual I/Os (up to 32 digital and 32 analog) for remote IEDs.
- Time synchronization (1 ms): IRIG-B or protocol DNP3/IEC-870-5/SNTP (IEC 61850).
- SOE recorder (400 events) with high resolution (1ms).
- Fault recording capabilities (15 reports).
- Historical metering data logging (168 registers).
- Oscillographic recorder (32 s/c); COMTRADE format.
- Power supply supervision.
- Self-checking supervision.
- New **vercomplus**® Software package.

## Metering

- Phases and ground current values and angles.
- Phases and ground voltage values and angles.
- Unbalance voltage value.
- Phase-to-phase voltage values.
- Positive, negative and zero sequence current values and angles.
- Positive, negative and zero sequence voltage values and angles.
- Active, reactive and apparent power values.
- $\cos\phi$ .
- Frequency value.
- Harmonic values (2<sup>nd</sup> to 8<sup>th</sup>) for phase-A current and voltage.
- Transducer values.

