Cooper Power Systems' CBC-7000 is an economical Capacitor Bank Controller that supports stand-alone functionality in addition to multiple one-way or two-way communication technologies through the use of pluggable SelectComm modules.

CBC-7000 Series Capacitor Bank Controllers

Overview

The CBC-7000 is a flexible, economical Capacitor Bank Controller (CBC) that supports stand-alone functionality, as well as one-way and two-way communications. The CBC-7000 is a modular, universal device capable of being deployed with a variety of communication configurations to meet different application needs.

The CBC-7000 provides additional capability to close or trip banks based on locally-set voltage conditions; however, this may be overridden from the Master Station.

The CBC-7000 is fully supported by the Yukon Master Station software. The Yukon Master Station software can be tied to a SCADA/EMS system to implement closed loop VAR or voltage control. This feature can also be provided by the Yukon Master Station software.

Key Benefits

Each individual CBC-7000 controller can be configured to operate as a traditional stand-alone site controller or a robust, feature-rich communication-enabled controller which includes communications loss failsafe modes and unsolicited alarming of why a control command did not operate. Another key benefit is the pluggable communications modules which integrate seamlessly with the utility network of choice. This truly scalable controller is a staple in maximizing long term return on investment as your system expands and networks evolve.

Data Logging

The CBC-7000 maintains data logs for the following types of information:

- Voltages, trip/close, temperature
- Neutral current and alarm events

All this information can be transmitted back to the Yukon Master Station using two-way communications.

Features

- Local or remote trip-and-close using two 120 VAC 30 ampere relays for capacitor switch control
- Scan two-way controller for status and voltages
- Can operate under SCADA control
- Locally and remotely settable over voltage and under voltage points for trip-and-close
- Locally and remotely settable manual trip, close and reclose delay times for personnel and equipment safety
- Neutral current sensor (optional)
- Temperature sensor (optional)
- Socket mount or surface mount NEMA 4 fiberglass enclosure with latch and sealing provisions
- LCD display provides status, configuration and diagnostics
- On-site service without the need for test equipment
- Internal LED indicators for capacitor bank and communications system status
- Can function as a stand-alone automatic controller with real-time clock

CBC-7000 | Capacitor Bank Monitor and Controller Operation and Maintenance

Remote Control of Capacitor Banks

The remote control capabilities include the ability to easily implement remote switching of either individual or predefined groups of capacitors.

Two-way communications allow remote control commands to be positively acknowledged with a report that includes the status of the relays, the neutral current and the line voltage.

Local Control of Capacitor Banks

A variety of local conditions are monitored and can be used to activate local control actions:

- Local control based on temperature
- Local control based on neutral current
- Local control based on line voltage
- Local control based on a time-of-day schedule
- Any combination of the above local control actions
- Local manual control for maintenance
- Stand-alone control during extended communication failures

120 VAC Line Voltage Monitor

This monitors the 120 VAC source voltage used to power the CBC. Alarm set points for low and high voltage levels are locally or remotely configurable.

In addition, the unit can be remotely configured to report power outages. Power outages are reported only if the optional internal battery is installed.

Neutral Current Sensor

- Indicates normal operation, open circuits and failed operations
- Remotely configurable for a variety of cap bank sizes
- Reports by exception

The neutral current sensor is installed on the neutral lead. A report is sent when a critical “change of state” in the neutral current is measured. The central neutral current can also be used to retry failed operations as well as locking out an unbalanced bank.

Voltage Threshold Reporting

This feature lets you set voltage thresholds, which when exceeded, cause the CBC to transmit a report of the line voltage condition (applicable to two-way communications). You select the threshold values by internally configuring the CBC to the desired voltage set points.

Adaptive Voltage Algorithm

Prevents the execution of a remote control command if the operation will cause an over voltage or under voltage condition.

Operational Delay Timers

The unit can be configured with delay times for trip, close and reclose operations. The delay times give field personnel time to move away from the bank after initiating control and before the switch operates. The operational delay times can be set locally or remotely.

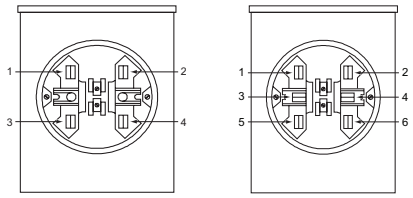
Status/Data LED Indicators

The CBC features LED indicators for bank status and CBC internal data:

Local	Local control mode
Tripped	Switch tripped
OV/UV	Over voltage/under voltage condition
Closed	Switch closed
Power	AC power present
RSSI	Receive Signal Strength Indicator
Receive	Receiving data
Transmit	Transmitting data

Four-Jaw and Six-Jaw Socket Styles

The following graphics and table illustrate the supported four-jaw and six-jaw socket styles:



(view looking into the socket)

Jaw	Style 1	Style 2	Style 3	Style 4	Style 5
1	L	L	CSL	L	L
2	N/COM	N/COM	N	N	N
3	TR	CL	L	CSL	NSL
4	CL	TR	TR	CSH	NSH
5	-	-	CSH	TR	TR
6	-	-	CL	CL	CL

N=Neutral, L=Line, CL=Close, TR=Trip,
CSH=Line Current Signal High, CSL=Line Current Signal Low, NSH=Neutral Current Signal High, NSL=Neutral Current Signal Low

SPECIFICATIONS

One-Way SelectComm Modules

- 900 MHz FLEX Paging - One-way communication via public paging networks directly to the CBC.

Two-Way SelectComm Modules

- Cellular GSM/GPRS
- Cellular CDMA/1xRTT
- Serial DNP 3.0
- Ethernet TCP/IP
- Landis+Gyr Gridstream RF

(All two-way modules support DNP 3.0)

Environment

CBC-7000 Temperature:
-40°F to 185°F (-40°C to 85°C)
Cellular Modules Temperature:
-22°F to 140°F (-30°C to 60°C)
Relative Humidity: 5% to 95% non-condensing

Power Requirements

Voltage: 100 to 135 VAC; 60 Hz
Optional Battery: 12 VDC rechargeable

Power Test

EFT per IEC61000-4-4 at 4kV
100 kHz Ring per IEEEC62.41 at 6 kV (.5 kA) 1.2/50 (8/20) Combination Waveform per IEEEC62.41 at 6 kV (3 kA)

I/O Test

EFT per IEC61000-4-4 at 4 kV
1.2/50 (8/20) Combination Waveform per IEC61000-4-5 at 4 kV (100 A)

Electrostatic Discharge

ESD per IEC61000-4-2 discharge through contact at 8 kV.
ESD per IEC61000-4-2 discharge through air at 15 kV.

Outputs

Two 120 VAC 30 Ampere relays for trip-and-close. Type 1 Form C contacts interlocked and wired as two Form A outputs. 12 VDC coils. Activation times typically set for 30 seconds.

Inputs

Three analog inputs for control or monitoring. Four optional digital inputs for control or monitoring.

Test Points

Four test points for trip, close, line and neutral values.

Housing

The enclosure is available in surface mount, four-jaw or six-jaw socket configurations, offering the following features:

- NEMA 4 rain-tight rating
- Utility seal and padlocking provisions
- Gray fiberglass construction

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