

# IntelliCAP®

**The intelligent alternative to electromechanical capacitor controls.**



**Now Available with VAR Sensing**

## ENERGYLINE'S INTELLICAP

is specifically engineered for the control of pole-mounted and padmounted switched capacitor banks in electric distribution systems. This reliable, easy to use, and flexible device gives you the benefits of an intelligent, microprocessor-based control for about the same price as an electromechanical capacitor control.

*The IntelliCAP does not require a computer to set up most typical installations.*

For the IntelliCAP with VAR option, EnergyLine offers the inexpensive CS Series Current Sensor. This high performance sensor is easy to install and requires no calibration. (For more details, contact EnergyLine.)

CapSite™, a sophisticated spreadsheet program that helps you find the optimal locations for capacitor banks, is a unique planning resource, available only from EnergyLine.

## AUTOMATIC CONTROL

The IntelliCAP offers a full range of automatic functions:

- ◆ Voltage, Time, Temperature, Time-biased Voltage, and Time-biased

Temperature control strategies in a single unit.

- ◆ Optional VAR and Current control strategies.
- ◆ Voltage override.
- ◆ Automatic calculation of the voltage change due to capacitor bank switching.
- ◆ Automatic adjustments for daylight savings and holidays.
- ◆ Daily limit of automatic switching operations.

## COMPACT SIZE

The IntelliCAP is plug-compatible with electromechanical capacitor controls, available with socket or bracket mounting. The compact enclosure is strong, lightweight, and UV-stable for reliable operation in the harsh environments seen in electric utility applications.

## EASY OPERATION

Rugged faceplate switches make it easy for field personnel to work with the IntelliCAP. You can access the test points and fuse from the faceplate. The manual override switch lets you control the bank state from the faceplate.

The faceplate LCD lets you set up, monitor, and troubleshoot the IntelliCAP without a computer. It scrolls all relevant real-time information and applicable setpoints. Faceplate switches let you

change the setpoints. The DB9 connector on the faceplate provides access to the IntelliCAP's user-friendly software (for DOS or Windows® 95, based on the software for EnergyLine's 1000 Series Capacitor Controls).

## EXTENSIVE DATA LOGGING

The IntelliCAP has extensive data logging capabilities.

- ◆ You can adjust the data logging interval from 1 minute to 60 minutes for 2 days to 120 days of voltage and temperature data.
- ◆ The IntelliCAP logs the time and reason for the last 14 switching events, as well as the voltage (and VAR, if applicable) levels before and after bank switching.
- ◆ The IntelliCAP records the time and date of the last 15 power cycles.
- ◆ You can view the daily minimum and maximum voltages and temperatures, and the number of switching cycles for the last month and since installation.

You can use EnergyLine's CAPVIEW program to simplify data analysis.

## FIELD PROVEN DESIGN

You have the security of EnergyLine's field proven microprocessor-based technology, manufactured in an ISO 9002-certified plant. Thousands of EnergyLine Controls are being used by over 100 utilities.



FLEXIBLE  
INTELLIGENT  
AUTOMATION

EnergyLine Systems, Inc.  
1135 Atlantic Avenue  
Alameda, CA 94501

## FEATURES

### **Low Cost**

Full featured, microprocessor-based Capacitor Control at a price comparable to electromechanical controls.

### **Compact size**

The IntelliCAP has a 6.5" x 6.5" x 4.375" enclosure and weighs approximately 4 lbs. It has a 4-jaw or 6-jaw electric meter base mounting and a latch for a padlock.

### **Faceplate LCD and switches**

The LCD displays all real-time data and key setpoints. You can scroll through the data and change various setpoints with the faceplate switches.

### **Automatic control strategies**

Time, Temperature, Voltage, Time-Biased Voltage, and Time-Biased Temperature are all standard on every IntelliCAP. With the VAR sensing option, Current and VAR are also available. Voltage override is standard with the time, temperature, current, and VAR strategies.

### **Automatic bank voltage change calculation**

The IntelliCAP automatically calculates the bank voltage change due to switching the capacitor bank. It uses this value to prevent unnecessary cycling.

### **Automatic switching cycle limit**

You can specify the number of automatic cycles allowed in one day.

### **Automatic holidays, daylight savings; accurate timeclock**

The IntelliCAP automatically accounts for holidays that occur on specific days and holidays that you define. It also accounts for leap year and daylight savings adjustments.

### **Extensive data logging**

The IntelliCAP records daily high and low voltages and temperatures, number of switching cycles, power outage information, and current and kVARs (VAR option). You can adjust the data logging interval for 2 to 120 days of data. The Setup software lets you view historical data as graphs which are scaled to show as much detail as possible. CAPVIEW, a program for Excel, simplifies data analysis.

### **User-friendly software interface**

Software is simple and easy to use. Screens are very similar across the entire family of Capacitor Controls.

### **Designed for domestic and international applications**

You can set the nominal voltage to 110, 115, 120, 127, 220, 230, or 240 VAC. The IntelliCAP operates at  $\pm 20\%$  of the nominal voltage, and logs voltages of  $\pm 15\%$  of the nominal voltage. You can also choose the unit of temperature that the IntelliCAP operates on and displays.

## BENEFITS

- ♦ Low initial cost for new installations.
- ♦ Very cost-effective for upgrading existing electromechanical controls.

- ♦ Small size makes installation easier.
- ♦ Unobtrusive on distribution poles.
- ♦ Plug-compatible for retrofit applications.

- ♦ Typical installations require no computer for installation, monitoring, or troubleshooting Control operation.

- ♦ Simplifies inventorying because only one Control is needed.
- ♦ Reduces distribution losses.
- ♦ Better control strategies get the most out of an investment in capacitor banks.

- ♦ Automatically adapts to bank voltage changes due to circuit reconfiguration.
- ♦ Extends switch life by reducing unnecessary bank cycling.

- ♦ Extends capacitor switch life by reducing the number of unnecessary operations.

- ♦ Eliminates problems associated with inaccurate timeclocks and holiday programming.
- ♦ Eliminates periodic maintenance needed for holidays and daylight savings adjustments.

- ♦ Confirms proper operation of the IntelliCAP.
- ♦ Lets you evaluate the effect of capacitors on voltage regulation.
- ♦ Monitors power outage information.
- ♦ Gives the planning department distribution line data to verify distribution models.

- ♦ Reduces time required for training personnel.
- ♦ Lets users work in Windows 95 or DOS.

- ♦ One kind of Control serves utilities around the world.

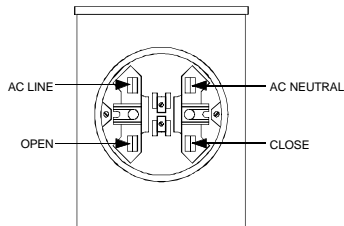
# HOW TO ORDER

Catalog No.	Description
IC-10	IntelliCAP (including high current relays for Joslyn vacuum switches)
IC-50	IntelliCAP with VAR option
CS-15	CS Series Current Sensor, 15 kV
CS-25	CS Series Current Sensor, 25 kV
SA-CB	CapSite Capacitor Bank Placement Program (for Excel 5.0)
SA-CV	CAPVIEW Report Viewing Program (for Excel)
MB-BR	4-jaw Meter Base with Mounting Bracket and Meter Ring
MB-BR6	6-jaw Meter Base with Mounting Bracket and Meter Ring
OP-2	External Optical Isolator Kit

## Wiring Configurations

For other possible configurations, contact EnergyLine.

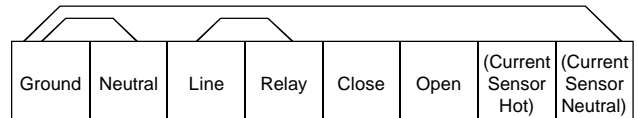
### 4-jaw Meter Base (IC-10):



Part No. IC-10-40

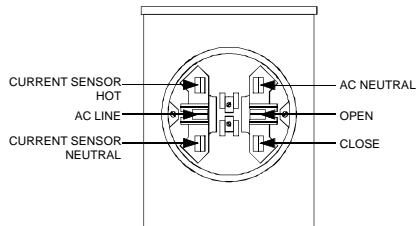
### Bracket (IC-10 or IC-50):

Bracket mounted IntelliCAPs include a terminal strip for customer wiring.

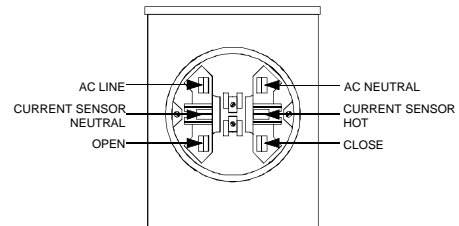


Part No. IC-xx-BP (pole) or IC-xx-BW (wall)

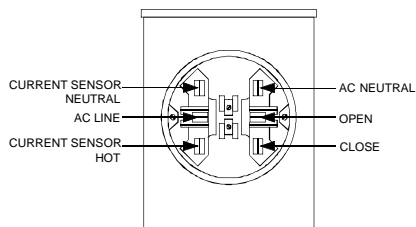
### 6-jaw Meter Base (IC-50):



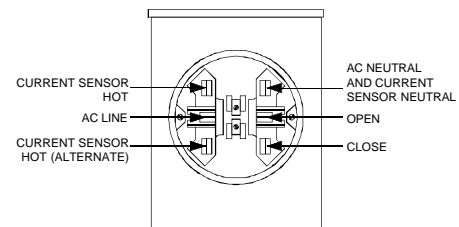
Part No. IC-50-61



Part No. IC-50-62



Part No. IC-50-63



Part No. IC-50-64

# S P E C I F I C A T I O N S

## **Operating Electrical Characteristics**

- ◆ Selectable nominal operating voltage (110 VAC to 240 VAC, 50 or 60 Hz)
- ◆ Operating voltage range: nominal operating voltage  $\pm 20\%$ <sup>1</sup>

## **Electrical Isolation/Protection**

- ◆ Insulation withstand: 2.5 kV RMS
- ◆ Surge withstand: ANSI C37.90a and ANSI C62.41
- ◆ ESD protection: IEC 8000-4-2
- ◆ Radiated emissions: EN55022
- ◆ Radiated susceptibility: 14 kHz to 512 kHz (at 10 V/m); 512 kHz to 10 GHz (at 5 V/m)

## **Fuse**

- ◆ Type MDA-10 with 10,000 A interrupting
- ◆ Spare fuse provided in readily accessible storage clip

## **Faceplate Switches**

- ◆ 40,000 operations

## **Operating Environmental Characteristics**

- ◆ Temperature<sup>2</sup>: -40°C to +70°C
- ◆ Humidity: 5-95% (non-condensing)

## **Sensor Inputs**<sup>3,4</sup>

- ◆ True RMS voltage and phase current sensing
- ◆ Voltage accuracy:  $\pm 0.3\%$  full scale (over temperature range); resolution: 0.15 VAC (110-127 VAC nominal voltages) or 0.3 VAC (220-240 VAC nominal voltages)
- ◆ Temperature accuracy:  $\pm 2^\circ\text{F}$ ; resolution:  $1^\circ\text{F}$ ; range:  $-49^\circ\text{F}$  to  $140^\circ\text{F}$
- ◆ Timeclock (battery backed):  $\pm 10$  minutes/year
- ◆ Current accuracy:  $\pm 0.6\%$  full scale (over temperature range); resolution: 1 amp RMS
- ◆ Phase angle range: 0 to  $360^\circ$
- ◆ Phase angle accuracy:  $\pm 1^\circ$  (at 10% of full scale current); resolution:  $1/8^\circ$

## **Output Contacts (Relays)**

- ◆ Pulsed or latched (1 open, 1 close)
- ◆ Life expectancy: 100,000 operations at rated load
- ◆ Contact rating: 20 Amperes @ 250 VAC, 1 HP 120/250 VAC, 1 Phase<sup>5</sup>

## **Enclosure/Mounting**

- ◆ Non-corrosive, impact resistant, UV-stable fiberglass polyester; latch with 3/8" hole for padlock
- ◆ 6.5" x 6.5" x 4.375", approximately 4 lbs.
- ◆ 4-jaw or 6-jaw electric meter base
- ◆ Modified NEMA 4X

## **Memory/Calendar**

- ◆ Non-volatile, battery-backed RAM – 10 year life in unpowered state (no battery draw when powered at 120 VAC)
- ◆ Perpetual calendar – leap year, daylight savings time, holidays, year 2000 compliant

## **Operations Counter**

- ◆ Provided as a software function, displayed on the LCD and on the Setup software screens

## **Local Communications Port**

- ◆ RS232 DB9 connector

## **Quality**

- ◆ Manufactured in an ISO 9002-certified facility

<sup>1</sup> Software limits voltage logging to  $\pm 15\%$  of the nominal operating voltage.

<sup>2</sup> Operation of LCD to  $-20^\circ\text{C}$ .

<sup>3</sup> This specification applies to the EnergyLine Capacitor Control only. System accuracy depends on sensor manufacturer.

<sup>4</sup> Current and phase angle specifications apply to VAR units only.

<sup>5</sup> Tested to confirm suitability for operating Joslyn VerSaVac™ switches.

Information in this document is subject to change without notice.