

McGraw-Edison®

# CL-5E

## Regulator Control



• E is for "Exceptional"

**COOPER** Power Systems

# Exceptional Features

## Resettable Operation Counters

The main operations counter is now changeable to any value. Plus, the CL-5E features an all-new set of sub-functions that let the user track regulator usage with exceptional precision.

## SOFT ADD-AMP Limits

ADD-AMP limits can now be set with either a function code or limit switches in the position indicator, allowing the user to set the regulator locally (at the control) or remotely (via SCADA). Raise and lower circuits may be set with a minimum setting of +/- 5% regulation each.

## Reverse and Forward Source Voltage Demand

The CL-5E features two new function codes to capture the high, low and present demand metered values for forward (Function Code 29) and reverse (Function Code 37) source voltages.

## Tap to Neutral (Remote Operation)

This new function causes the regulator to tap immediately to the neutral position upon closure of user-supplied contacts.

## Supervisory Switch

A Supervisory On/Off switch located on the front panel allows local control of the regulator, restricting Supervisory activity. With the switch OFF, the system operator need only read the control and determine the status of the Supervisory and Auto/Manual switches.

## Enhancements to the Profiler

Demand parameters have been added to the list of available profiler data.

The complete list now includes:

Load Voltage	Line Frequency	Reverse Compensated Voltage
Source Voltage	Voltage THD	Reverse Load Current
Compensated Voltage	Current THD	Reverse kVA Load
Load Current	Forward Load Voltage	Reverse kW Load
Load Voltage, Primary	Forward Compensated Voltage	Reverse kVAR Load
Source Voltage, Primary	Forward Load Current	Reverse Source Voltage
Percent Regulation	Forward kVA Load	
Power Factor	Forward kW Load	The Profiler Time Interval is now
kVA Load	Forward kVAR Load	settable to 5, 10, 15, 30, 60, 90 or
kW Load	Forward Source Voltage	120 minutes
kVAR Load	Reverse Load Voltage	



## Profile Recorder

The CL-5E provides a profile record of the metering parameters most important to the user. Choose the profile time interval, and the values will be recorded for 120 time slots. Profiler data is retrieved via the data port or the communications channel.



## Security Override

Three levels of security are provided to prevent unauthorized operation. However, any security level may be overridden with the CL-5E.

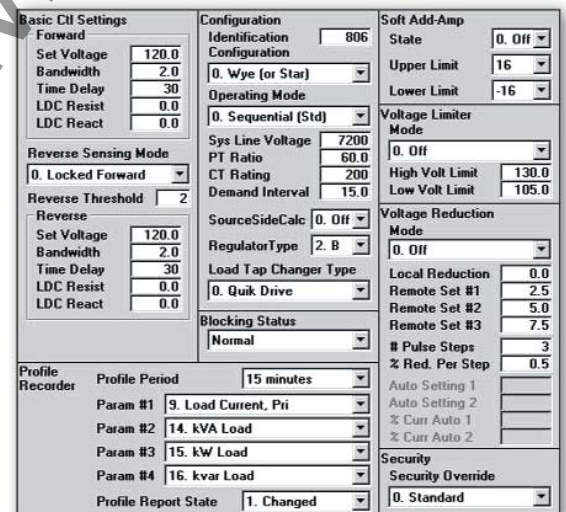
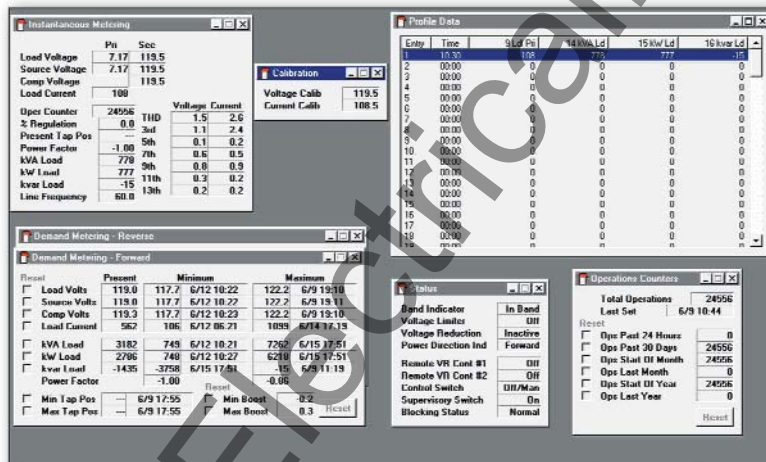
## Digital Communications

The CL-5E has two communications channels: Channel 1 for temporary Data Port communications, and Channel 2 for permanent digital communications. The standard resident communications protocol is Cooper DATA 2179. (A DNP 3 protocol converter board is also available.)

# Options and Add-ons

## Data Retrieval

The CL-5E Regulator Control has a data port for connection to data retrieval devices. All of the CL-5E data can be retrieved with the McGraw-Edison Data Reader, which stores up to 25 CL-5E readings. Simply connect a personal computer to the data port via the data port cable and use the CCI Software (see below) to download the database or upload new settings.

A screenshot of the CCI Software configuration window. It is divided into several sections: 'Basic CCI Settings' (Forward, Reverse Sensing Mode, Reverse), 'Configuration' (Identification, Configuration, Operating Mode, Sys Line Voltage, PT Ratio, CT Rating, Demand Interval, SourceSideCalc, RegulatorType, Load Tap Changer Type, Blocking Status), 'Soft Add-Amp' (State, Upper Limit, Lower Limit), 'Voltage Limiter Mode' (Mode, High Volt Limit, Low Volt Limit), 'Voltage Reduction Mode' (Mode, Local Reduction, Remote Set #1, Remote Set #2, Remote Set #3, # Pulse Steps, % Red. Per Step), 'Auto Setting 1', 'Auto Setting 2', 'Security' (Security Override), and 'Profile Recorder' (Profile Period, Param #1, Param #2, Param #3, Param #4, Profile Report State).

## Cooper Control Interface (CCI) Software

This Windows®-based configuration software package lets users communicate via PC with CL-4C or CL-5 series controls through the data port or communications channel: Create control settings, upload settings, download readings, provide output of settings and readings, reset the metering, block automatic operation and operate the tap changer.



**For more information, contact your Cooper Power Systems sales representative**

# CL-2A thru CL-5E Comparison

See how the new CL-5E stacks up against the CL-5D, the former industry standard.

CONTROL FEATURE COMPARISON	CL-2A	CL-4C	CL-5A	CL-5C	CL-5D	CL-5E
<b>Voltage Limiting</b>		▲	●	●	●	●
<b>Metering</b>		▲	●	●	●	●
Time-tagged Demand (Fwd & Rev)			▲	●	●	●
Profile Recorder			▲	●	●	●
Fwd & Rev Source Voltage Demand added						▲
<b>Reverse Power Operation</b>		▲	●	●	●	●
Reverse Operation without IDPT				▲	●	●
Configurable Profile Recorder					▲	●
Co-Generation Mode Redefined					▲	●
Reactive Bi-Directional Mode added					▲	●
Source Voltage Calculator				▲	●	●
<b>Tap Position Tracking</b>			▲	●	●	●
<b>Voltage Reduction</b>		▲	●	●	●	●
Pulse Mode			▲	●	●	●
<b>SCADA (Distribution Automation)</b>						
Discrete Auto Inhibit & Motor Control	●	●	●	●	●	●
Digital Communications Capable		▲	●	●	●	●
Resident Communications Protocol			▲	●	●	●
<b>Data Retrieval (Data Port)</b>		▲	●	●	●	●
<b>Security Override</b>			▲	●	●	●
<b>Quik-Drive Tap Changer Support</b>					▲	●
<b>Line Drop Compensation</b>	●	●	●	●	●	●
Expanded limits +/- 96V					▲	●
<b>Tap To Neutral</b>						▲
<b>SOFT ADD-AMP</b>						▲
<b>Operations Counter</b>						
7 Resettable Operations Counters						▲



= STANDARD FEATURE



= NEW STANDARD FEATURE

# The field-proven quality and reliability you expect, with unexpected new features.

Years ago, McGraw-Edison® set the industry standard for voltage regulator controls when it created the CL-4C. Today, we're again breaking new ground with the CL-5E. It's everything you expect — and more.

## Exceptional Control

Like all of our CL-5 series controls, the CL-5E has full data reader compatibility and a resident communications protocol. We've also made ease-of-use a high priority. By keeping the same method of operation as prior controls, you don't have to learn a whole new control to get started.

## Exceptional Quality

All McGraw-Edison and Cooper Power Systems products are made with the highest quality materials, paints and finishes for years of trouble-free operation — even in harsh conditions — and backed by Cooper's extraordinary service and support system. The CL-5E is no exception. If anything ever does go wrong, you can count on getting the advice and service you need in a hurry.



If you need training, technical support or service, our industry experts are available to help you. You'll get the answers to keep you up and running in a very timely manner.





Cooper Power Systems manufactures a wide range of high-quality medium voltage electrical equipment, components and systems that help bring electric power to homes, industries, businesses and institutions throughout the world. With our strong customer focus, superior products, controls and systems applications expertise, nobody does a better job than Cooper Power Systems of supporting your ability to profitably supply your customer with clean, reliable power.

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