

Battery Cycle Life Testing

Model CN

Automotive
Laboratory and
R&D Test
Equipment



Model CN14-25-12



**Laboratory Equipment for a Wide
Range of Battery Test Applications**



**Testing for 6 and 12 Volt Batteries in
Currents of 25, 50 and 100 Amperes**



**Flexible Network Control with
Bitrode's VisualCN® Lab Client Software
for Windows® 95/98 and Windows NT®**

Bitrode

Battery Cycle Life Testing

Model CN



Model CN5-100-12

Automotive & Commercial Testing

The Model CN is Bitrode's cycle life test equipment for the network based line of battery laboratory instruments. Designed to work with VisualCN Lab Client software, the CN provides standard or fully customized charge, discharge and rest cycles for automotive and industrial batteries. In addition to economical cycle life testing, the Model CN is also useful for reserve capacity and charge acceptance testing with recharge. These circuits can be used to test batteries to BCI, SAE, JIS, DIN, BS and IEC standards.

What Does It Do and How?

Based on linear transistorized current control, the CN is built to customer specifications in current ratings of 25, 50 and 100 amperes. Modules can be configured to test 6 or 12 volt batteries. Circuitry is designed around analog and digital PC control, and is driven by Bitrode's exclusive VisualCN Lab Client Software for Windows 98 and Windows NT. Each CN circuit uses an analog to digital converter for high accuracy; measurement and control are designed to provide accuracy to within $\pm 0.1\%$ of full scale.

CN circuits in a cabinet share a common power supply. Modules of different current ratings can be mixed and matched within a cabinet up to the current rating of the power electronics. In the event of a power outage, battery backed memory on each module protects the control program and data. Testing automatically resumes when power returns, permitting the network to operate unobserved for long periods of time.

LED circuit status indicators are positioned on the front panel indicating power on/off, circuit activity (charge, discharge, rest), and an over temperature warning light. Calibration adjustments and measurement jacks are placed on the front panel for easy access.

Reliable, Modular Construction

The Model CN's modular design and sturdy construction were developed to ensure ease of use, reliability and simple, efficient maintenance.

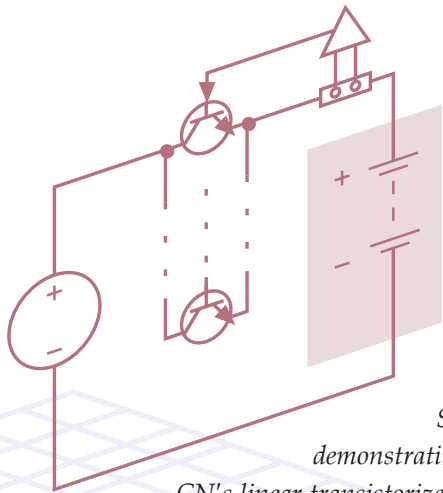
CN circuits are housed in a rugged steel cabinet with a durable paint finish. Multiple circuits are packaged in convenient rollaway cabinets, and single module benchtop units are available as well. With most units, circuits can be removed from the cabinet quickly on sliding rails for ease of maintenance and service. CN modules with the optional quick access front panel design simplify maintenance even further, allowing circuit cards and heatsinks to be quickly serviced without removing the module chassis from the cabinet.

**Economical Test System for
Quality Control and R&D**

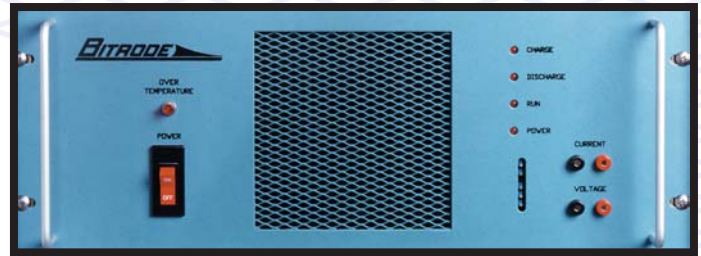
**Circuitry is Designed for High
Reliability and Accuracy**

**Modular Design for Ease of
Maintenance and Service**

**Data Recording, Viewing and
Analysis with VisualCN
Software Control**



Schematic demonstrating Model CN's linear transistorized current control design



Standard module front for 50 ampere, 12 volt module

Optional quick release design; two circuit version shown



Get In And Drive

The Model CN is controlled by Bitrode's VisualCN Lab Client software package. VisualCN, written for Windows 98 and Windows NT, is a complete circuit control and test data reporting solution for Bitrode's network based laboratory equipment.

VisualCN's client-server architecture gives users control of any Bitrode CN circuit from anywhere on a computer network. Using software controls in a Windows interface, an operator can develop test profiles to meet customer specified guidelines. Up to 99 steps of charge, discharge and rest can be programmed to user specifications. Steps can be controlled with up to 10 limit conditions, chosen from variables such as time, voltage, current, ampere- or watt-hours, temperature, pressure or other customer specified test data.

Tests in progress can be easily monitored with VisualCN; circuit activity is viewable in both tabular and graphic formats. Test data can be sampled in user-specified time increments with data acquisition

available every 1 second; an optional upgrade to 0.1 second acquisition is available. Data can include information regarding voltage, current, or optional cell voltage, temperature monitoring, and pressure. Test data is stored in a Microsoft Access format. This data can be viewed in post-test analysis using



VisualCN's graphing and tabular software or presented to users in an Access report of their own design.

For more information about using VisualCN to command the Model CN (as well as Bitrode's other network based charge and test equipment), contact a Bitrode representative.

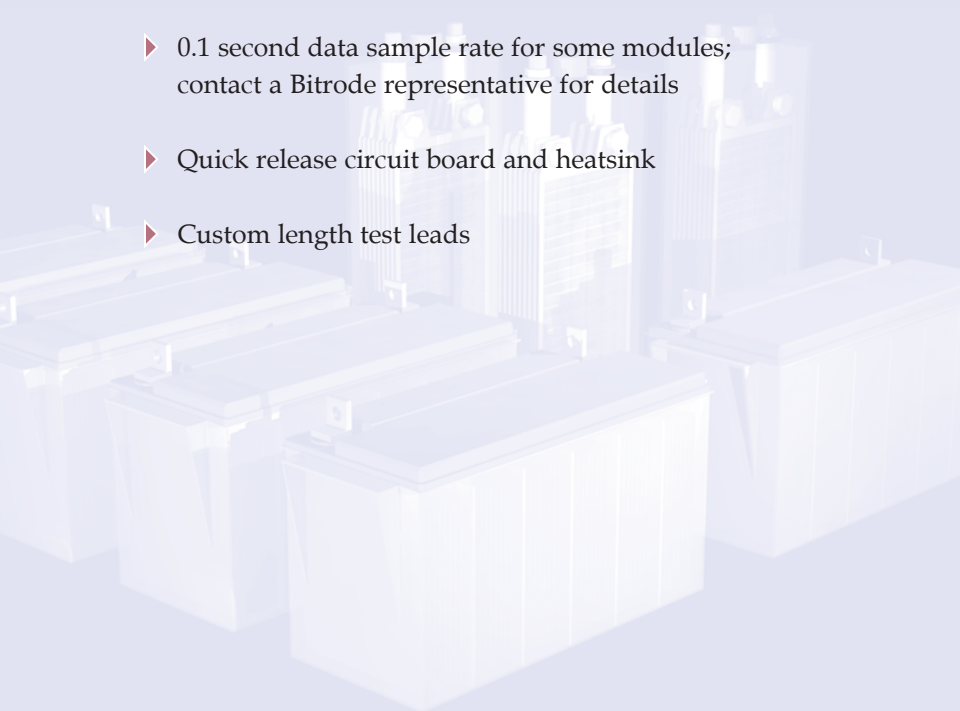
Note the **Features:**

- ▶ Current ratings of 25, 50 or 100 amperes
- ▶ Testing for batteries of 6 or 12 volts
- ▶ Cabinets hold modules containing one or more test circuits
 - ▶ Modules rated at 25, 50, or 100 amperes can be mixed and matched to a cabinet's rated current
- ▶ Charge/discharge accuracy to $\pm 0.1\%$ of full scale current and voltage
- ▶ Full featured, easy to use software on the Windows 98 and Windows NT platforms
- ▶ Network control for hundreds of circuits from a single host computer
- ▶ Up to 99 control program steps, with up to 10 limit conditions per step
- ▶ Graphic data representation and analysis with VisuaLCN's native software, or test data review in customer-designed Microsoft Access format
- ▶ Modular design and sturdy construction
 - ▶ Modules installed on sliding rails for cost effective circuit additions and upgrades to standard cabinets
 - ▶ Modular construction allows efficient maintenance and service
- ▶ 20 ft. (6 meter) test leads with lead bolt-on terminal included with each circuit

Beyond the Basics:

Optional features expand the flexibility of the Model CN in the laboratory. Build the module which fits your laboratory environment with the options listed below. Note: the CN is designed for economical, accurate battery cycle life testing. Additional capabilities beyond the scope of the CN (such as cell voltage monitoring and cell switching) are available on Bitrode's Model LCN systems.

- ▶ Temperature monitoring capability with thermocouple devices
 - ▶ Type J, K, or T for temperatures ranging from -40° to 200°C ($\pm 0.5^\circ$)
- ▶ Specific gravity monitoring
- ▶ 0.1 second data sample rate for some modules; contact a Bitrode representative for details
- ▶ Quick release circuit board and heatsink
- ▶ Custom length test leads





Specifications

Model* **	Maximum Chg/Dchg Current (±0.01A)	Charge Voltage Range (±0.01V)	Discharge Voltage Range ±0.01V	Maximum Chrg/Dchg Power (±0.01W)	Ampere Hour Range	Watt Hour Range
CN14-25-12	25.00	6.00 - 18.00	5.00 - 16.00	450.0	±999.99	±9999.9
CN7-50-12	50.00	6.00 - 18.00	5.00 - 16.00	900.0	±999.99	±9999.9
CN7-50/75-12	50.00/75	6.00 - 18.00	5.00 - 16.00	1350.0	±999.99	±9999.9
CN7-100-12	100.00	6.00 - 18.00	5.00 - 16.00	1800.0	±9999.9	±99999

Power

Model* **	Cabinet Input Amps † 50 or 60 Hz, Three Phase			Weight‡ Lb/Kg†	Measures Dimensions‡ In / Cm		
	240V	380V	480V		H	D	W
CN14-25-12	25	16	13	820 / 372	76/193	23/59	24/61
CN7-50-12	25	16	13	690 / 313	76/193	23/59	24/61
CN7-50/75-12	25	16	13	800 / 362	76/193	23/59	24/61
CN7-100-12	47	30	23	1400 / 454	76/193	28/71	24/61

*If required voltage, current, or number of circuits do not appear in this table, contact Bitrode Corporation; custom product engineering is one of our greatest strengths.

**Module names are interpreted as follows:
CNxx-yy-zz, where xx indicates number of circuits, yy indicates amperage and zz indicates voltage.

†All values are approximate.

‡Weight and dimensions may vary according to design requirements.



All products are subject to change in physical appearance and circuitry which will not alter performance specifications.

Microsoft, Windows 95/98, and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the U.S. and other countries.

© 2000 Bitrode Corporation

BITRODE CORPORATION
1642 Manufacturers Drive
Fenton, Missouri 63026
USA
Tel: (636) 343-6112
Fax: (636) 343-7473
e-mail: sales1@bitrode.com
Web: www.bitrode.com

BITRODE LIMITED
Unit A, 6 Floor
Wing Hing Commercial Bldg.
No. 139 Wing Lok St.
Sheung Wan, Hong Kong
Tel: (852) 2976-0929
Fax: (852) 2976-0927
e-mail: bitrode@ctimail3.com

BITRODE LIMITED
H1 Draycott Business Park
Dursley, Glos., GL11 5DQ
United Kingdom
Tel: (1453) 890039
Fax: (1453) 890017
e-mail: sales@bitrode.co.uk