



# Control

The heart of the regulator is a PIC micro-controller, which continuously monitors the battery voltage sense input, temperature sensor, array inputs, load current and array current. Based on the regulation set-points, a three-stage charging scheme (Boost, Equalisation and Float Modes) is used to control the charging of the battery. The battery is protected from over-voltage and under-voltage conditions by High Volts, Low Volts and Load Disconnect Alarms (there are two Load Disconnects, one of which can be used for nonessential load shedding). All Alarms have LED indication and changeover relay contacts available. All the setpoints can be adjusted on-site.

# Versions

Charge Controller	NCC12-2	NCC12-4	NCC12-6	NCC12-8
Number of Array Inputs	2	4	6	8
Total Array Current	60 A	120 A	180 A	240 A
Load 1 Current	25 A	25 A	25 A	25 A
Load 2 Current	25 A	25 A	25 A	25 A
19" Rack Unit Height	4 U	4 U	8 U	8 U

# NCC12 Charge Controllers

# **Main Features**

- Industrial Applications
- 8 x 30 A Array Current (max)
- 2 x 25 A Load Current
- Solid-state Switching
- Micro-processor Control
- Alphanumeric LCD Display
- Field Adjustable set-points
- Available in Painted or Stainless Steel IP66 Enclosure or as a 19"Rack Unit
- Ambient Temperature range -10 °C to +55 °C

# **Specification Highlights**

- System Voltages: 12 V, 24 V, 36 V, 48 V
- System Polarity: Positive or Negative Earth
- Regulation: Three stage series regulation
- High Volts, Low Volts, Load Cut 1, Load Cut 2, Alarms with LED indication and relay contacts
- Battery Protection: Load Disconnect / Reconnect
- Temperature Compensation (External sensor)
- Regulation, Switch, and Alarm Status LED's
- Disable Link (disconnects arrays and load)
- 40 A Array Input MCB's fitted as standard
- 32A Load Output MCB's fitted as standard
- Lightning Protection
- Steel Enclosures have PG21 Glands for Battery, Array and Load cables (13-18mm cable dia.) : PG11 Gland for Battery Sense and Alarm cables (5-10mm cable dia.)
- Rack Units have Display, Keypad and MCB's on front panel, with all cable terminals on rear panel.



## Display

The two line alphanumeric display is the interface between the user and the controller. Using push-button switches, an operator can readily monitor and, where appropriate, vary the controller parameters.

Set-points to change
Boost, Equalisation, Float
High Volts set and reset
Low Volts set and reset
Load Cut 1 & 2 set and reset
Equalisation Time
Temperature Compensation

#### **Manual Control**

Reset Amp Hour Counters Test Alarm Relays Test Load Switches Test Array Switches

# **Array Switches**

The array switch modules are made from high power MOSFETs configured to act as blocking diodes when switched off. The low voltage-drop featured allows a typical maximum current of 30A per array. The array switches are manufactured in dual-array modules and can be extended to a maximum of eight array switches.

#### Options

The charge controllers can be supplied in Painted Steel IP66, Stainless Steel IP66 enclosures or in 19" Rack Units. The Units are supplied as standard with 40A single pole MCB's on each Array Input and 32A single pole MCB's on each Load Output. The units may be supplied with double-pole MCB's if required.

An optional Auxiliary Relay PCB Assembly may be fitted to allow the addition of System Normal and Array Failure Alarm relays and indicators.

An optional RS232 Port PCB Assembly may be fitted to allow RS232 communication to a local PC or modem.

An optional Modem may be fitted to allow interrogation of the NCC12 Charge Controller from a remote PC.

Optional software may be supplied for a remote PC to display and record the Controller data.

## **Ordering Options**

Load	Switches
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The load switch modules are made from high power MOSFETs. The controller is provided with two solid-state load switch modules capable of handling up to 25A each. The trip and reset points of both these switches can be individually set.

## Alarms

Volt-free change-over relay contacts for High Volts, Low Volts, Load 1 Disconnect and Load 2 Disconnect are provided as standard. There is a delay between the activation of the Load Disconnect alarms and the activation of the Load Disconnect Switches. If required, the user can adjust this period.

## Flexibility

The charge controllers will be supplied pre-configured to customer-specified voltage and polarity settings. The System Voltage of the NCC12 Charge Controller may be changed by fitting the appropriate power supply module within the unit. The System Polarity of the NCC12 Charge Controller may be changed by the re-wiring of four internal cable connections.

Product Types	System Voltages	System Polarities	Enclosure Types	Battery Types
NCC12-2	12 V	PE (Posivite Earth / Positive Common)	Painted or Stainless	Three factory
NCC12-4	24 V	NE (Negative Earth / Negative Common)	Steel IP66 Enclosure	defaults plus
NCC12-6	36 V		19" Rack Unit	user specified
NCC12-8	48 V			settings