IT-NC-G3 Series
Solar Charge Controller

Overview

The IT-NC G3 series is a new generation of high-current MPPT charge and discharge controller. It features load output capability and delivers superior MPPT tracking and conversion efficiency. The series is compatible with various lithium battery types and supports three-stage charging management to extend battery life span. Its exceptional low-power design significantly reduces static consumption, prolonging system standby time.

Comprehensive electronic protection and flexible communication options (WiFi, Bluetooth, 4G, etc.) further enhance system reliability and monitoring capabilities. It is widely used in RVs, boats, industrial monitoring, and small to medium-sized solar power systems.

Features

- Supports 12V/24V/48V systems; Charge/Discharge current: 50A–100A
- All metal die-casting shell, IP43(1)
- Supports two PV inputs(2)
- Max. MPPT tracking efficiency: 99.9%; Max. Conversion efficiency: 98.5%
- Compatible with AGM, Gel, Flooded, LiFePO4 batteries, etc.
- Constant voltage output function: Enables direct load supply with sufficient PV energy
- Communication interface with electrical isolation
  - CAN: Parallel operation of up to 6 devices(with or without batteries)
  - BMS: Ensures reliable lithium battery charge/discharge management (3)
  - RS485: Optional Bluetooth, WiFi, or 4G modules(4)
- Real-time data recording, event logging, and power statistics function
- EMC compliant (CLASS B)

(1)IP32 without terminal cover

(2)IT10415NC G3, IT10415NC G3 BLE, IT10420NC G3 and IT8420NC G3 support two PV inputs

(3)Directly communicates with EPEVER batteries; Requires BMS-LINK module for others (refer to manual)

(4)BLE-suffixed models feature integrated Bluetooth

Technical Specifications

Model	IT5210 NC G3	IT5420 NC G3	IT6415 NC G3 IT6415 NC G3 BLE	IT6420 NC G3	IT7415 NC G3	IT7420 NC G3	IT8420 NC G3	IT10415 NC G3 IT10415 NC G3 BLE	IT10420 NC G3
Electrical Parameters									
Battery Rated Voltage	12/24VDC ~Auto	12/24/48VDC~Auto							
Controller Operating Voltage Range	8–31V	8–62V							
Battery Type	AGM (Default) / Gel / Flooded / User								
Lithium Battery Type	LiFePO4 / Li (NiCoMn)O2 / User								
Rated Charging/Discharging Current	50A		60A		75A		80A	100A	
Rated Charging Power	650W/12V; 1,300W/24V	650W/12V; 1,300W/24V; 2,600W/48V	780W/12V; 1,560W/24V; 3,120W/48V		975W/12V; 1,950W/24V; 3,900W/48V		1,040W/12V; 2,080W/24V; 4,160W/48V	1,300W/12V; 2,600W/24V; 5,200W/48V	
Maximum Charging Power	650W/12V; 1,300W/24V	650W/12V; 1,300W/24V; 2,600W/48V	780W/12V; 1,560W/24V; 3,120W/48V		975W/12V; 1,950W/24V; 3,900W/48V		1,040W/12V; 2,080W/24V; 4,160W/48V	1,300W/12V; 2,600W/24V; 5,200W/48V	
Rated Load Current	50A		60A		75A		80A	100A	
Maximum Load Current	50A		60A		75A		80A	100A	
PV Maximum Open-circuit Voltage	100V (@ lowest temperature); 90V (@ 25°C)	200V (@ lowest temperature); 180V (@ 25°C)	150V (@ lowest temperature) 138V (@ 25°C)	200V (@ lowest temperature) 180V (@ 25°C)	150V (@ lowest temperature) 138V (@ 25°C)	200V (@ lowest temperature) 180V (@ 25°C)	200V (@ lowest temperature) 180V (@ 25°C)	150V (@ lowest temperature) 138V (@ 25°C)	200V (@ lowest temperature) 180V (@ 25°C)
MPPT Operating Voltage Range	(Battery voltage plus 2V, and > 28V) to 72V (@ 25 °C)	(Battery voltage plus 2V, and > 28V) to 144V (@ 25 °C)	(Battery voltage plus 2V, and > 28V)to 108V (@ 25°C)	(Battery voltage plus 2V, and > 28V) to 144V (@ 25 °C)	(Battery voltage plus 2V, and > 28V) to 108V (@ 25 °C)	(Battery voltage plus 2V, and>28V) ~144V (@ 25 °C)		(Battery voltage plus 2V, and > 28V) to 108V (@ 25 °C)	(Battery voltage plus 2V, and > 28V) to 144V (@ 25 °C)
Tracking Efficiency	⩾ 99.5%								
Maximum Conversion Efficiency	98.3%	98.3%	98.6%	98.1%	98.6%	98.1%	98.5%	98.6%	98.5%
Full Load Efficiency	97.1%	97.1%	98.0%	98.0%	98.0%	97.5%	97.5%	98.0%	97.6%
Temperature Compensation Coefficient	-3mV/°C/2V (Default)								
Self-consumption (Enabled Communication)	98mA/12V; 60mA/24V	98mA/12V; 60mA/24V; 46mA/48V	98mA/12V; 60mA/24V; 46mA/48V						
Self-consumption (Disabled Communication)	48mA/12V; 25mA/24V	48mA/12V; 25mA/24V; 14mA/48V	48mA/12V; 25mA/24V; 14mA/48V						
Grounding Type	Common negative grounding								
Dry Contact (Oil Generator / Utility)	Rated value: 5A/30VDC; Maximum value: 0.5A/60VDC								
RS485 Communication Port	5VDC/200mA (RJ45)								
Mechanical Parameters									
Dimension (Length × Width × Height) IP43 (Controller & White Terminal Cover)	307 × 253 ×143mm		320 × 263 ×143mm		320 × 263 ×158mm		352 × 263 ×158 mm	352 × 263 ×158mm	
Dimension (Length × Width × Height) IP32 (Controller Only)	307 × 202 ×134mm		320 × 212 ×134mm		320 × 212 ×149mm		352 × 212 ×149 mm	352 × 212 ×149mm	
Mounting Dimension (Length × Width)	295 × 130mm		308 × 140 mm				340 × 140 mm		
Mounting Hole Size	Φ7mm								
Wiring Terminal	6AWG/16mm^2		2AWG/35mm^2						
Recommended Cable	6AWG/16mm^2				4AWG/25mm^2			2AWG/35mm^2	
Net WeightIP43 (Controller & White Terminal Cover)	5.07kg		5.88kg	5.93kg	6.56kg	6.62kg	7.79kg	7.87kg	7.87kg
Net Weight IP32 (Controller Only)	4.86kg		5.66kg	5.71kg	6.34kg	6.40kg	7.55kg	7.63kg	7.63kg
Environmental Parameters									
Operating Temperature Range	-25°C to +60°C (De rating when temperature is higher than 40°C)								
LCD temperature range	-20°C to +70°C								
Storage Temperature Range	-30°C to +70°C								
Relative Humidity	5%–95% (N.C)								
Altitude	< 5,000M (Derating when altitude is higher than 2,000m)								
Enclosure	Ip43 (Controller & White Terminal Cover); IP32 (Controller Only)								
Pollution Degree	PD2								
Certification									
Safety	EN/IEC62109-1								
EMC	EN61000-6-1 / EN61000-6-3								
FCC	47 CFR Part 15, Subpart B								
ROHS	IEC62321-3-1								