WattsNext Battery Management System WN16S100A

- Cost-effective solution for 48V, 100A Lithium chemistry BMS requirements

- Compact design

- Includes on-board current measurement, voltage and current protections, in-built MOSFET switches, cell balancing and pre-charge circuitry.

- Works with all lithium cell chemistries

- Provides internal storage for cell characterization data at various temperatures

- Software tools available to configure a battery pack as required for the end-application

Overview

WattsNext WN16S100A is a smart Battery Management System (BMS) that is fully configurable and supports 48 V battery packs of various types. Through configuration, it can support LFP, NMC as well as LTO cells. It supports a maximum continuous discharge current of 100 Amperes.

With its inbuilt CAN 2.0 interface, the WN16S100A supports wired connectivity to external devices.

Using the onboard USB interface, the various parameters of WN16S100A can be configured.

The WN16S100A is a compact design that packs all the requirements for a BMS, without the need for any external components.

The WN16S100A has advanced, inbuilt algorithms for the accurate tracking of the State-of-Charge (SOC) and State-of-Health (SOH) of the battery pack it is connected to.

These algorithms are based on an accurate model built of the cells used in the battery pack.

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Hardware Parameters

No.	Parameter	Value / Description	Units
1.	No .of cells supported	16 (LFP) 13 (NMC)	nos
2.	Cell Voltage range	-0.2 t0 5.5	Volts
3.	Cell Voltage measurement accuracy, at 25 C	+/- 1	mVolt
4.	Cell Balancing current	100	mAmp
5.	Maximum current, continuous	80	Amp
6.	Peak current, 30 seconds	100	Amp
7.	Current measurement Accuracy, at 100A	+/- 0.85	%
8.	Temperature measurement	2 on-board thermistor (MOSFET & Shunt) 4 external thermistors (battery pack)	nos
9.	Pre-Charge Control	Through onboard 40 Ohm resistor (Time-constant of 200mS for 5mF capacitor)	
10.	Overcurrent and Short-Circuit protection	Yes – through on-board shunt resistor	
11.	CAN support	1 port	
12.	Bluetooth support	Yes	
13.	Active Power Consumption (Max)	1.0	Watt
14.	Standby Power Consumption (Max)	10	mWatt
15.	State-of-Charge (SoC)	Accurate upto 2.6%	
16.	State-of-Health (SoH)		
17.	Dimensions	98 (L) x 64 (W) x 32 (H)	mm

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Electrical Parameters … 1

No.	Parameter		Value	Unit	Remarks
1.	Discharge	Continuous Discharge Current	80	A	
2.	Charge	Charge Current	15-50	A	Settable by the user
3.	Over-charge protection	Over-charge trigger voltage	1.012 to 5.566	V	Settable in steps of 50.6mV
		Over-charge protection time	10 to 6762	mS	Settable in steps of 3.3mS
		Over-charge recovery voltage	100 to 1000	mV	Settable in steps of 50mV. This is the amount by which it should fall below the over-charge trigger voltage.
4.	Balancing	Method	Passive	-	
		Balance trigger voltage	0 – 5000	mV	Settable in steps of 40mV
		Balancing current	100	mA	
5.	Over-discharge protection	Over-discharge trigger voltage	1.012 to 4.048	V	Settable in steps of 50.6mV
		Over-discharge detection time	10 to 6765	S	Settable in steps of 3.3mS
		Over-discharge recovery voltage	100 to 1000	mV	Settable in steps of 50mV. This is the amount by which it should rise above the over-discharge trigger voltage.

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Electrical Parameters … 2

No.	Parameter		Value	Unit	Remarks
6.	Charging Protection	Maximum charging current	13.3 – 100	A	Settable in steps of 6.67A
		Max charging current detection time	10 to 426	mS	Settable in steps of 3.3 mS
7.	Discharge protection	Discharge Trigger Current	80-100A	A	Settable in steps of 6.67A
		Discharge current detection time	10 to 426	mS	Settable in steps of 3.3 mS
8.	Short Circuit (SC) Protection	SC Trigger Event	Config-urable		Short-circuit threshold can be set by the user.
		SC Detection time	200	µs	SC detect time can be set by the user.
		SC protection recovery condition	Multiple methods		The duration of SC recovery is user-settable.
9.	Temperature Protection	Discharge Temperature Protection	-40 to 120	C	Settable in 1 C steps
		Charge Temperature Protection	-40 to 120	C	Settable in 1 C steps
10.	Path Resistance	Resistance of charge/discharge path	< 10	mOhms	
11.	Internal Power Consumption	Operational current	300	mA	Maximum power consumption
		Sleep	0.171	mA	
12.	Temperature	Operational temperature	-40 to 85	C	
		Storage temperature	-40 to 125	C	

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