turtle by ENEPOWER

TSB003-NCM Series
Digital Universal Battery Charger

Lilon | 3.7V-44.4VDC | 5A max. | 100W

Turtle Charger (100W) - LiIon
Pre-programmed Battery Charger for Lithium Ion

GENERAL SPECIFICATIONS

Input Voltage	10-75VDC
Output Voltage	3.7V-50V for battery packs up to: – 12 cells in series (LiIon)
Output Current	5A (Buck) 60W (Boost)
Voltage Accuracy	<1%
Voltage Limit	4.20V ±1% p/cell
Current Accuracy	<5%
Tolerance on Timing	±5%
Temp. Accuracy	Internal: <1°C
	External: <1%, resolution 0.01°C
Dimensions	L80mm x W61mm x H14.5mm (PCB only)
Weight	60 grams (PCB only)
LED PATTERNS - ROUTINE	
Traffic light (red-orange-green):	System reset. Occurs at power on and battery connection.
Slow orange blink:	System waiting. Battery disconnected.
Solid orange:	Constant current phase. (inc. pre-condition if programmed)
Orange with green blink:	Constant voltage phase
Solid green	Charge Complete. Float Charge continues (if programmed)
LED PATTERNS - EXCEPTIONS	
Three red flashes:	Charge suspended. Battery volts too low.
Two red flashes:	Charge suspended. Battery volts too high.
Slow red blinking: (1 flash every 5 sec)	Charge suspended. Battery or PCB too hot (PCB self protected to 75°C)
Fast red blinking:	Thermistor Error. (Needs Power Reset)
Orange blinking: (1 flash every ½ sec)	Timeout. Time limit is customisable on request
Solid red:	Fault. (Needs Power Reset)

DESCRIPTION

The TSB003-NCM Series offer a wide range of single output DC ***LITHIUM ION*** battery chargers up to 100 Watts.

It is custom programmed by our engineers to fit specific design requirements.

Pre-programming includes functions setting, charging current and charging voltage, constant current, constant voltage, pre-conditioning, float charging, charge termination methods and setting. Input and output cabling and connector options for all international markets are available upon request.

Features:

- Choice of 50 different models.
- Wide input voltage range.
- Single voltage output up to 100W.
- Constant current limiting overload.
- Proven field reliability and performance.
- Status LED indicator (NOT available in DIN-V version).
- Chassis and DIN rail mounting options.
- High operating temperature +71°C.

MOUNTING OPTIONS:

Modules available as PCB stand-alone or DIN mounting case. See options below.

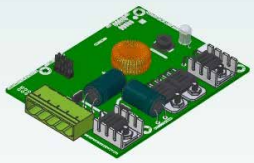
PCB: PCB stand-alone charger with 5 (five) electric isolated screw terminals for panel mounting.

ENCLOSURE: Housed enclosure for environmental protection.

DIN-V: DIN Rail mounting case in vertical format. Suitable for Top hat IEC/EN 60715 and G section rail types.

DIN-H: DIN Rail mounting case in horizontal format. Suitable for Top hat IEC/EN 60715 and G section rail types.

PCB



ENCLOSURE

DIN-V

DIN-H

PART NUMBER SELECTION KEY

TSB	003	–	NCM	NN	S	I	–	X

Number of Cells:
- 01: 3.7V (1 cell)
- up to 12: 44.4V (12 cells)

Output Current:
- 1: 1 Amp
- up to 5: 5 Amps

Mounting Option:
- P: PCB only
- E: Housed enclosure
- V: DIN Rail Vertical
- H: DIN Rail Horizontal

*Termination of choice available.

SELECTION TABLE

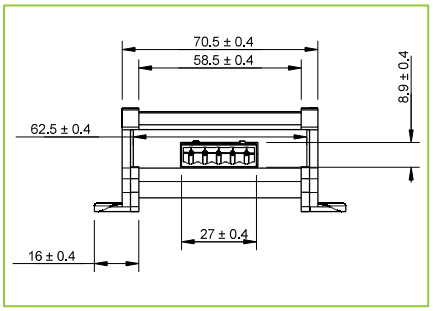
Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB003-NCM01S5	Li-Ion	3.7VDC (1 cell)	10-75VDC	5A max.(21W)	
TSB003-NCM01S4	Li-Ion	3.7VDC (1 cell)	10-75VDC	4A (16.8W)	
TSB003-NCM01S3	Li-Ion	3.7VDC (1 cell)	10-75VDC	3A (12.6W)	
TSB003-NCM01S2	Li-Ion	3.7VDC (1 cell)	10-75VDC	2A (8.4W)	
TSB003-NCM01S1	Li-Ion	3.7VDC (1 cell)	10-75VDC	1A (4.2W)	
TSB003-NCM02S5	Li-Ion	7.4VDC (2 cells)	10-75VDC	5A max.(42W)	
TSB003-NCM02S4	Li-Ion	7.4VDC (2 cells)	10-75VDC	4A (33.6W)	
TSB003-NCM02S3	Li-Ion	7.4VDC (2 cells)	10-75VDC	3A (25.2W)	
TSB003-NCM02S2	Li-Ion	7.4VDC (2 cells)	10-75VDC	2A (16.8W)	
TSB003-NCM02S1	Li-Ion	7.4VDC (2 cells)	10-75VDC	1A (8.4W)	
TSB003-NCM03S5	Li-Ion	11.1VDC (3 cells)	10-75VDC	5A max.(63W)	
TSB003-NCM03S4	Li-Ion	11.1VDC (3 cells)	10-75VDC	4A (50.4W)	
TSB003-NCM03S3	Li-Ion	11.1VDC (3 cells)	10-75VDC	3A (37.8W)	
TSB003-NCM03S2	Li-Ion	11.1VDC (3 cells)	10-75VDC	2A (25.2W)	*Select from options above*
TSB003-NCM03S1	Li-Ion	11.1VDC (3 cells)	10-75VDC	1A (12.6W)	
TSB003-NCM04S5	Li-Ion	14.8VDC (4 cells)	10-75VDC	5A max.(84W)	
TSB003-NCM04S4	Li-Ion	14.8VDC (4 cells)	10-75VDC	4A (67.2W)	
TSB003-NCM04S3	Li-Ion	14.8VDC (4 cells)	10-75VDC	3A (50.4W)	
TSB003-NCM04S2	Li-Ion	14.8VDC (4 cells)	10-75VDC	2A (33.6W)	
TSB003-NCM04S1	Li-Ion	14.8VDC (4 cells)	10-75VDC	1A (16.8W)	
TSB003-NCM05S5	Li-Ion	18.5VDC (5 cells)	10-75VDC	4.76A (100W max.)	
TSB003-NCM05S4	Li-Ion	18.5VDC (5 cells)	10-75VDC	4A (84W)	
TSB003-NCM05S3	Li-Ion	18.5VDC (5 cells)	10-75VDC	3A (63W)	
TSB003-NCM05S2	Li-Ion	18.5VDC (5 cells)	10-75VDC	2A (42W)	
TSB003-NCM05S1	Li-Ion	18.5VDC (5 cells)	10-75VDC	1A (21W)	
TSB003-NCM06S4	Li-Ion	22.2VDC (6 cells)	10-75VDC	3.97A (100W max.)	
TSB003-NCM06S3	Li-Ion	22.2VDC (6 cells)	10-75VDC	3A (75.6W)	
TSB003-NCM06S2	Li-Ion	22.2VDC (6 cells)	10-75VDC	2A (50.4W)	

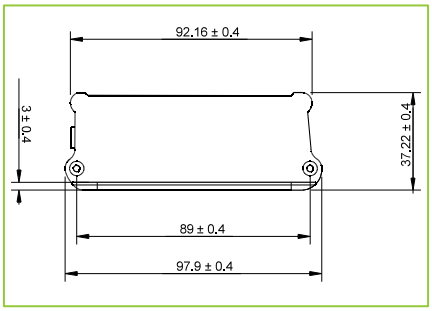
Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB003-NCM06S1	Li-Ion	22.2VDC (6 cells)	10-75VDC	1A (25.2W)	*Select from options above*
TSB003-NCM07S4	Li-Ion	25.9VDC (7 cells)	10-75VDC	3.40A (100W max.)	
TSB003-NCM07S3	Li-Ion	25.9VDC (7 cells)	10-75VDC	3A (88.2W)	
TSB003-NCM07S2	Li-Ion	25.9VDC (7 cells)	10-75VDC	2A (58.8W)	
TSB003-NCM07S1	Li-Ion	25.9VDC (7 cells)	10-75VDC	1A (29.4W)	
TSB003-NCM08S3	Li-Ion	29.6VDC (8 cells)	10-75VDC	2.98A (100W max.)	
TSB003-NCM08S2	Li-Ion	29.6VDC (8 cells)	10-75VDC	2A (67.2W)	
TSB003-NCM08S1	Li-Ion	29.6VDC (8 cells)	10-75VDC	1A (33.6W)	
TSB003-NCM09S3	Li-Ion	33.3VDC (9 cells)	10-75VDC	2.65A (100W max.)	
TSB003-NCM09S2	Li-Ion	33.3VDC (9 cells)	10-75VDC	2A (75.6W)	
TSB003-NCM09S1	Li-Ion	33.3VDC (9 cells)	10-75VDC	1A (37.8W)	
TSB003-NCM10S3	Li-Ion	37VDC (10 cells)	10-75VDC	2.38A (100W max.)	
TSB003-NCM10S2	Li-Ion	37VDC (10 cells)	10-75VDC	2A (84W)	
TSB003-NCM10S1	Li-Ion	37VDC (10 cells)	10-75VDC	1A (42W)	
TSB003-NCM11S3	Li-Ion	40.7VDC (11 cells)	10-75VDC	2.16A (100W max.)	
TSB003-NCM11S2	Li-Ion	40.7VDC (11 cells)	10-75VDC	2A (92.4W)	
TSB003-NCM11S1	Li-Ion	40.7VDC (11 cells)	10-75VDC	1A (46.2W)	
TSB003-NCM12S2	Li-Ion	44.4VDC (12 cells)	10-75VDC	1.98A (100W max.)	
TSB003-NCM12S1	Li-Ion	44.4VDC (12 cells)	10-75VDC	1A (50.4W)	

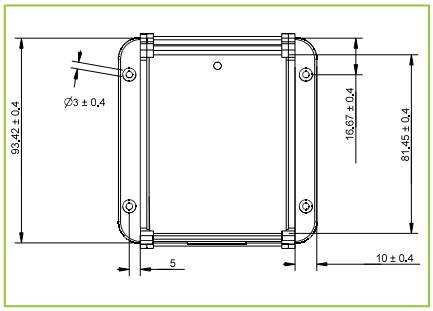
***IMPORTANT:** The Part Number must have the mounting option code (-P, -E, -V, or -H) your project requires.

TECHNICAL DIAGRAMS (2D)

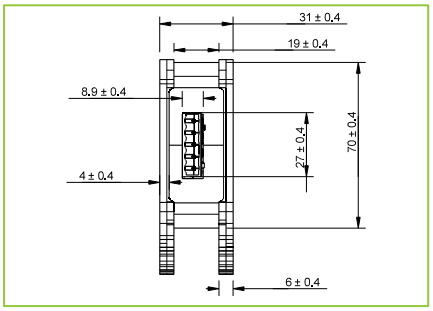
ENCLOSURE

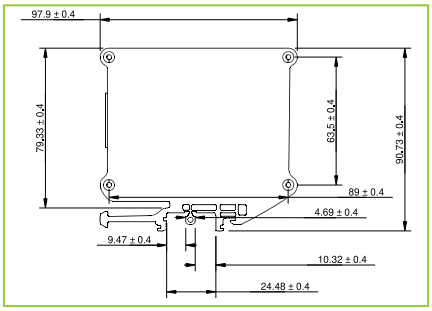


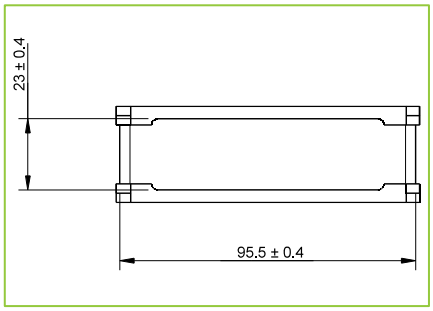




DIN-V

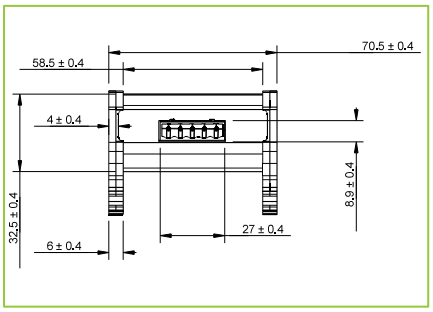


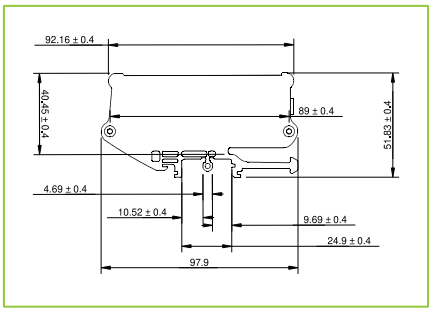


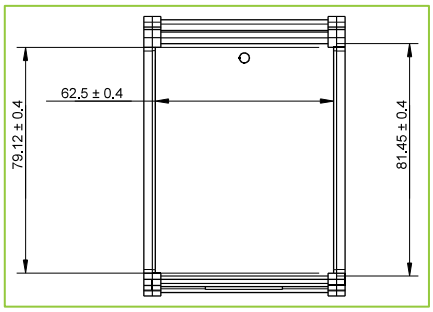


TECHNICAL DIAGRAMS (2D)

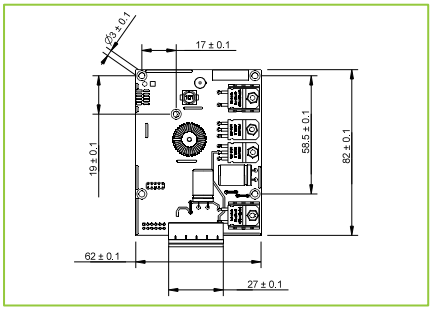
DIN-H

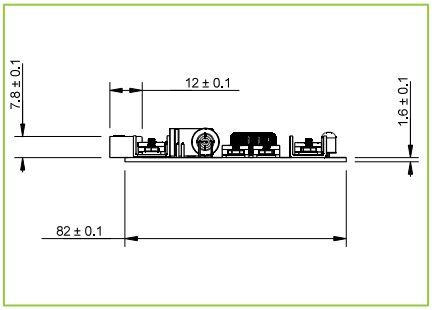






PCB





TERMINAL BLOCK PINOUT