Turtle Charger (200W) - Suits all Rechargeable Chemistries
Customisable Pre-programmed Battery Charger

GENERAL SPECIFICATIONS

Input Voltage	10-75VDC
Output Voltage	0.8V-70V for battery packs up to:
	– 16 cells in series (LiIon / LiPo)
	– 19 cells in series (LiFePO4)
	– 43 cells in series (NiMH / NiCd)
	– 30 cells in series (Lead Acid)
	– 24 cells in series (LTO)
Output Current	15A max.
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 (PCB)	L115mm x W110mm x H38mm
Weight (PCB)	290g approx.

LED PATTERNS - ROUTINE

Traffic light (green-red)	System reset. Occurs at power on and battery connection.
Slow Green-Red blink	System waiting. Battery disconnected.
Solid Green-Red	Constant current phase. (inc. pre-condition if programmed)
Green-Red with Red 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)
Green-Red blinking (1 flash every ½ sec)	Timeout. Time limit is customisable on request
Solid red	Fault. (Needs Power Reset)

DESCRIPTION

The TSB004 Series offer a wide range of single output DC chargers up to 200 watts.

The Digital Universal Charger is suitable for all rechargeable battery chemistries. 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.

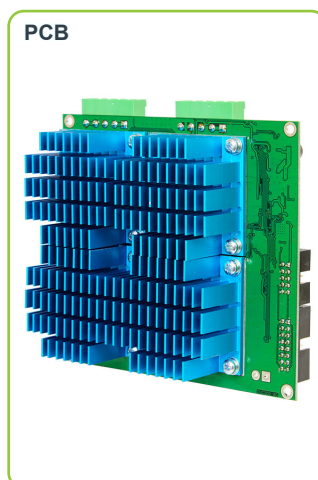Modules available as PCB stand-alone or plastic enclosure. See options below.

Features:

- More than 1500 different models.
- Suitable for most types of rechargable batteries: LiIon, LiPo, LiFePO4, NiMH, NiCd, Lead Acid, LTO.
- Wide input voltage range.
- Single voltage output up to 200W.
- Constant current limiting overload.
- Proven field reliability and performance.
- Status LED indicator.
- High operating temperature +71°C.
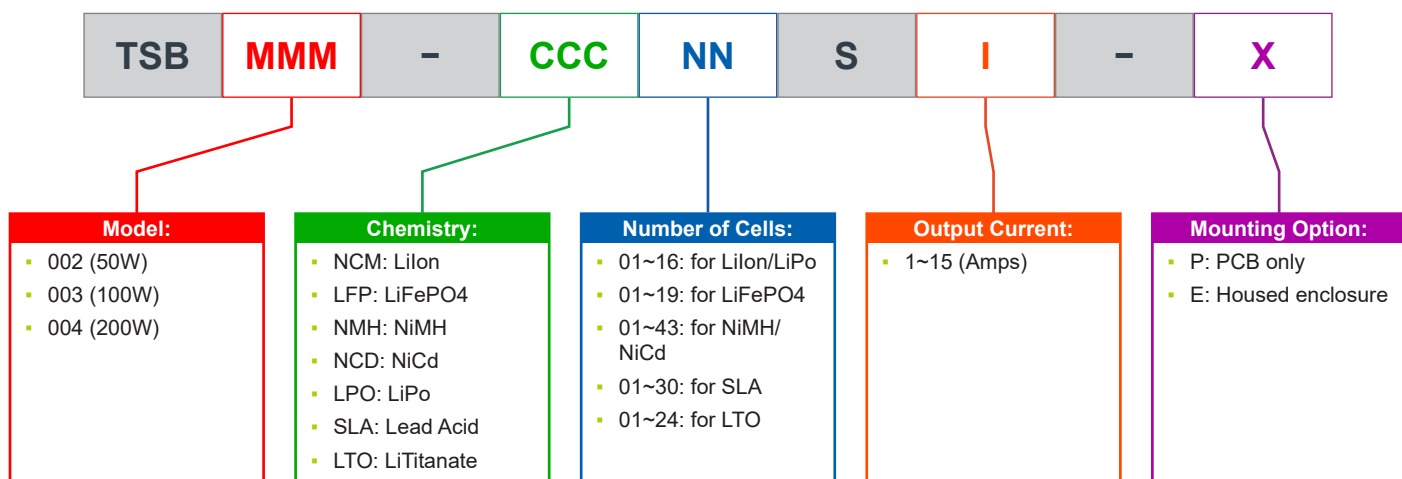
MOUNTING OPTIONS:

Modules available as PCB stand-alone or in a housed enclosure. See options below.

PCB: PCB stand-alone charger with electric isolated screw terminals for panel mounting.

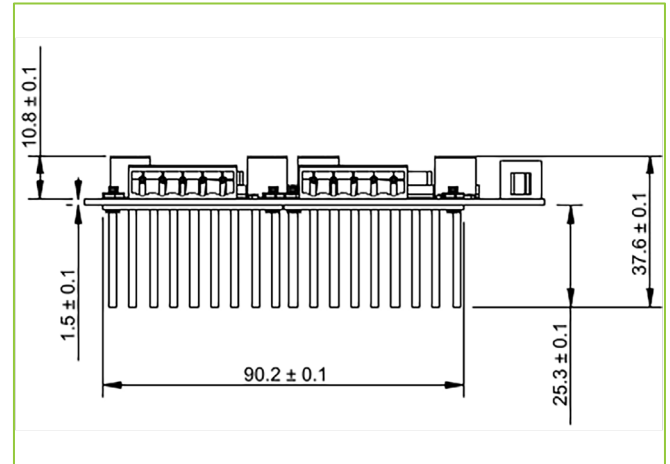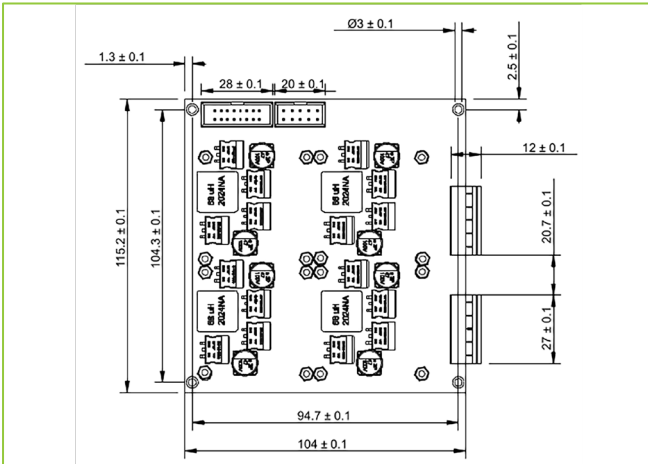**ENCLOSURE:** Housed enclosure for environmental protection.

PCB

ENCLOSURE

by **ENEPOWER**

PART NUMBER SELECTION KEY

TSB	MMM	–	CCC	NN	S	I	–	X

Model:
- 002 (50W)
- 003 (100W)
- 004 (200W)

Chemistry:
- NCM: LiIon
- LFP: LiFePO4
- NMH: NiMH
- NCD: NiCd
- LPO: LiPo
- SLA: Lead Acid
- LTO: LiTitanate

Number of Cells:
- 01~16: for LiIon/LiPo
- 01~19: for LiFePO4
- 01~43: for NiMH/NiCd
- 01~30: for SLA
- 01~24: for LTO

Output Current:
- 1~15 (Amps)

Mounting Option:
- P: PCB only
- E: Housed enclosure

*Termination of choice available.

SELECTION TABLE - *Part Number Examples*

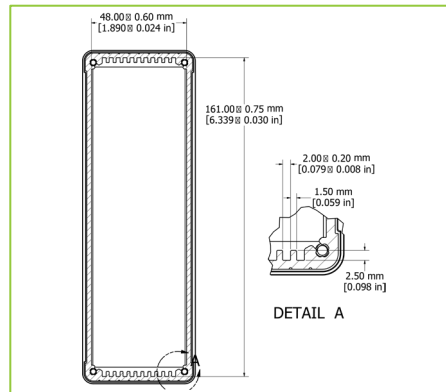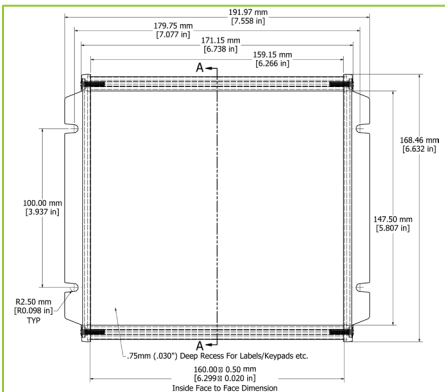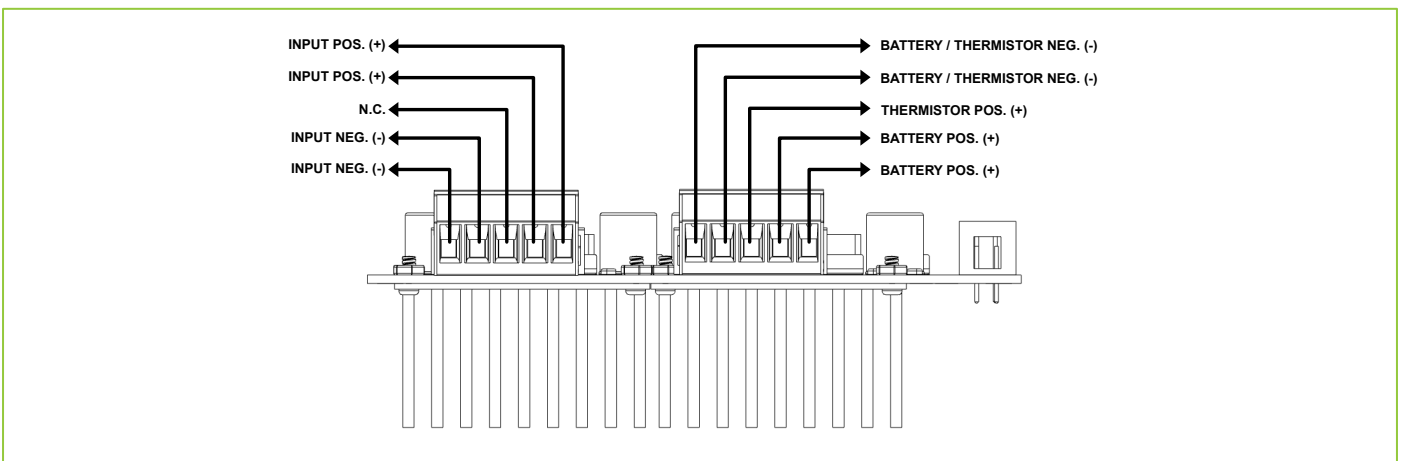| Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSB**MMM**-**CCC****NN****S****I**-**X**					
TSB004-NCM03S15-P	Li-Ion	11.1VDC (3 cells)	10-75VDC	15A max. (189W)	PCB only
TSB004-NCD9S11-E	NiCd	10.8VDC (9 cells)	10-75VDC	11A (153.45W)	Housed enclosure
TSB004-SLA10S8-P	Lead Acid	20VDC (10 cells)	10-75VDC	8A (180W)	PCB only
TSB004-LFP4S14-E	LiFePO4	12.8VDC (4 cells)	10-75VDC	13.7A (200W max)	Housed enclosure

TECHNICAL DIAGRAMS (2D)

PCB

ENCLOSURE

PINOUT

INPUT POS. (+)
INPUT POS. (+)
N.C.
INPUT NEG. (-)
INPUT NEG. (-)

BATTERY / THERMISTOR NEG. (-)
BATTERY / THERMISTOR NEG. (-)
THERMISTOR POS. (+)
BATTERY POS. (+)
BATTERY POS. (+)