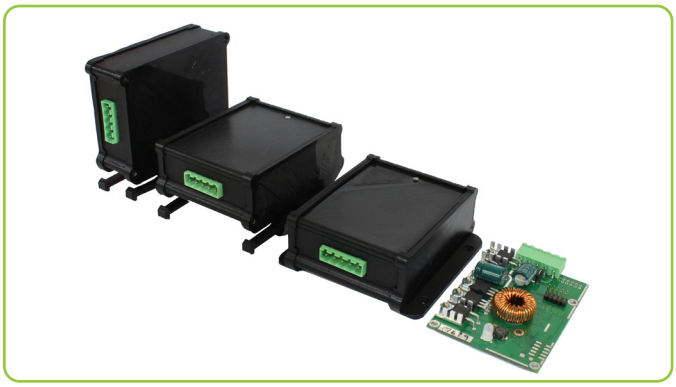
turtle by ENEPOWER

TSB003 Series
Digital Universal Battery Charger

LiIon | LiFePO4 | NiMH | NiCd | SLA | LiPo | LTO

Turtle Charger (100W) - Suits all Rechargeable Chemistries
Customisable Pre-programmed Battery Charger



GENERAL SPECIFICATIONS

Input Voltage	10-75VDC
Output Voltage	0.8V-50V for battery packs up to:
	– 12 cells in series (LiIon / LiPo)
	– 14 cells in series (LiFePO4)
	– 30 cells in series (NiMH / NiCd)
	– 20 cells in series (Lead Acid, LTO)
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 Series offer a wide range of single output DC chargers up to 100 Watts.

The Turtle 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.

Features:

- More than 500 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 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.

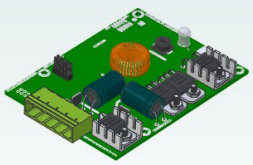
PCB: PCB stand-alone charger with 5 (five) electric isolated screw terminals for panel mounting.

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

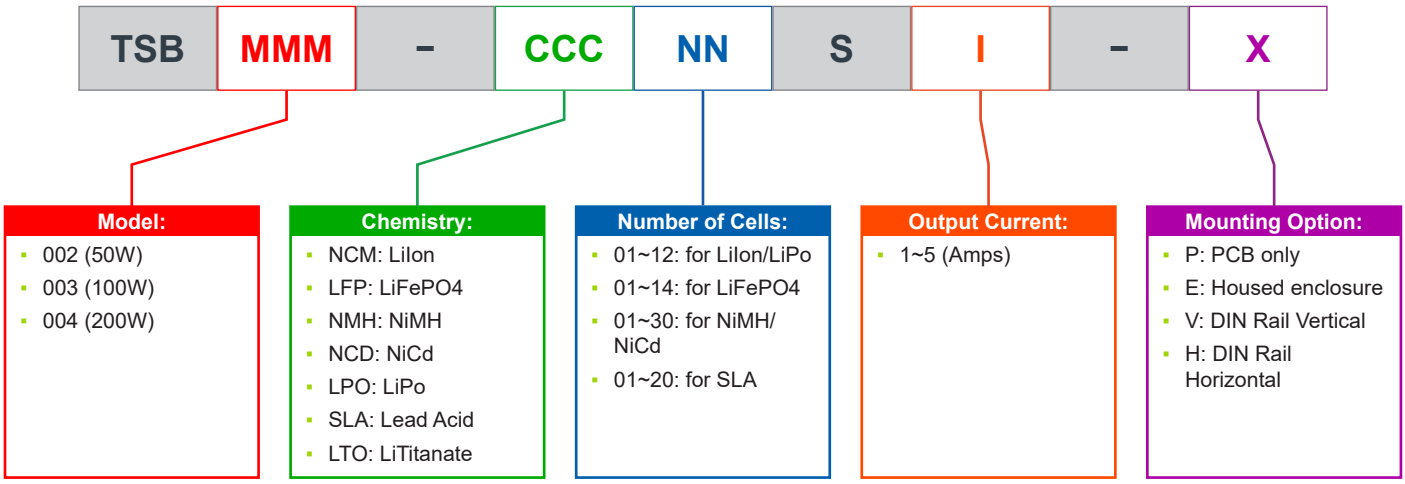


ENCLOSURE

DIN-V

DIN-H

PART NUMBER SELECTION KEY



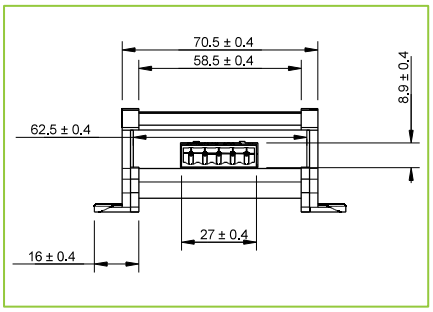
*Termination of choice available.

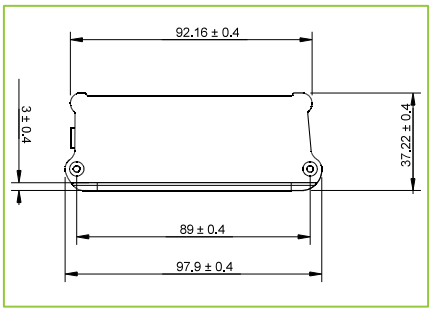
SELECTION TABLE - *Part Number Examples*

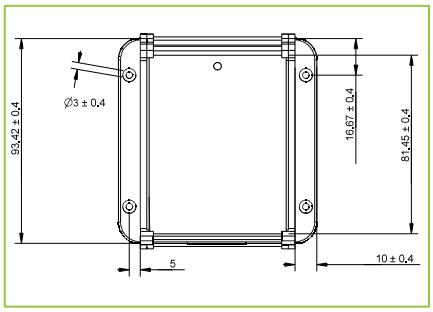
Part Number	Chemistry	Battery Pack Voltage	Input Voltage	Output Current	Mounting Option
TSBMMM-CCCNNSI-X					
TSB003-NCM03S5-V	Li-Ion	11.1VDC (3 cells)	10-75VDC	5A max. (63W)	DIN Rail Vertical
TSB003-NCD30S2-H	NiCd	36VDC (30 cells)	10-75VDC	2A (96W)	DIN Rail Horizontal
TSB003-SLA06S4-P	Lead Acid	12VDC (6 cells)	10-75VDC	4A (56.4W)	PCB only
TSB003-LFP14S2-E	LiFePO4	44.8VDC (14 cells)	10-75VDC	1.95A (100W max)	Housed enclosure

TECHNICAL DIAGRAMS (2D)

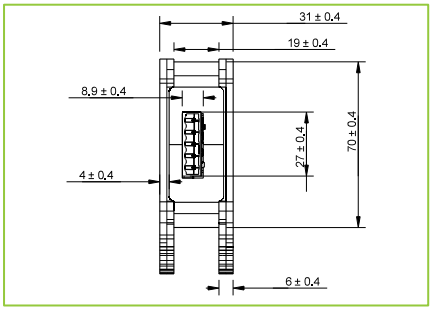
ENCLOSURE

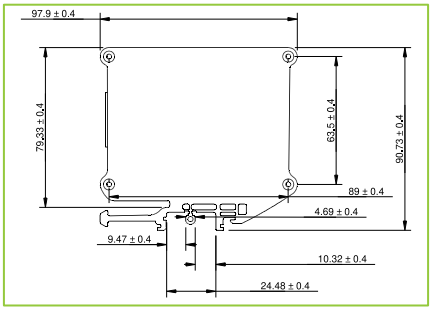


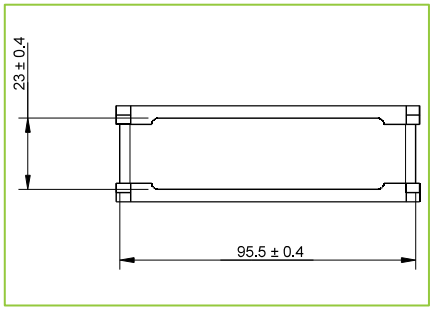




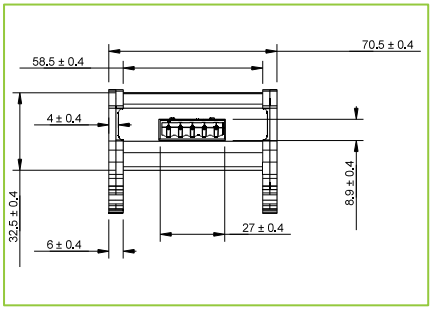
DIN-V

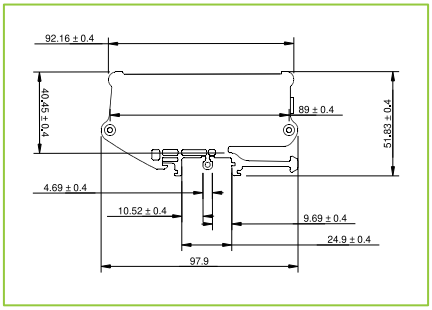


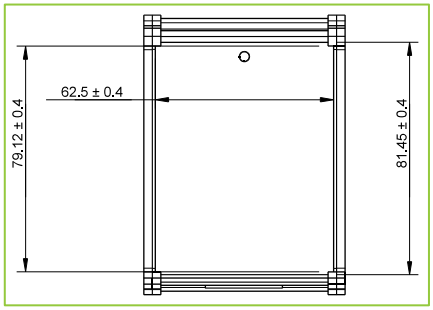




DIN-H







PCB