Tenergy 40 NI-MH/NI-CD Cells in series Charger Datasheet

NO.	Item	Unit	Specification	Test Condition
Input Characteristics				
01	Rated AC Input	Vac	100～240VAC 50/60Hz	
	Input Voltage	Vac	90～264VAC	
	Rated Input Current	A	1.05Arms	220Vac input and full load.
	Max. Input Power	W	162W	
Output Characteristics				
02	Rated Output Voltage	Vdc	48V	
	Output Voltage	Vdc	40V DC～68V DC	68V is the open circuit voltage
	Battery Capacity Extend. Number of Cells	-	1.6 Ah～30Ah 40 NiMH/NiCD Cells in Series	
	Charge Current	A	2A±0.2A	
	Trickle Current	A	<0.3A	
	Max. Delivered Power	W	136W	
	Power Indication LED Indications	-	Power ON -- Red Flashing Charging -- Red Fully Charged -- Green Errors – Red Flashing	
	Short-Circuit Protection	-	Yes	
	Max. Temp. Protection	℃	55	
	Efficiency	%	>81%	220Vac Input and Full Load
Charging Supervision and Protection Mechanism				
03	Charger Switch to Trickle: Minus △V Value Or Maximum Cell Voltage Or Max. Cell Temp. Or Max. Cell Temp. Rise Or Safety Timer	 => => => => =>	 3~5 mV/cell 1.56V/cell(NI-MH)1.7V/cell（NI-CD） 55℃ 18℃ 18hours	
	Thermistor	NTC type, 10K and β=3950		
	Other Features	Voltage detection precision is less than 0.2%		
		Detect bad battery and indicate malfunction automatically.		
		Activate the over discharged cells.		
		Current ramp-up way benefits cell capacity and life cycle.		
		The unique test mode guarantees high quality charge process.		

Environment				
04	Operation Temperature.	℃	-10～40	Full load & natural convection.
	Operation Humidity	%RH	<90%RH	Relative humidity, non-condensing.
	Storage Temp.	℃	-30～85	
	Storage Humidity	%RH	<95%RH	Relative humidity, non-condensing.
	Cooling	-	Natural Convection	
	Vibration	-	IEC68-2-6	Non-operating condition.
	Impact	-	IEC68-2-32	Non-operating condition.
Safety & EMC				
05	Max Temp. Rise	℃	< 40 on casing	At any line and full load.
	Safety Standard	-	EN60335-2-29	
	EMC	-	EN55014-1	
	MTBF	hrs	50000hrs	
	ESD	kV	8	
	HI-POT	V	3000/1min.	Testing with Sine wave.

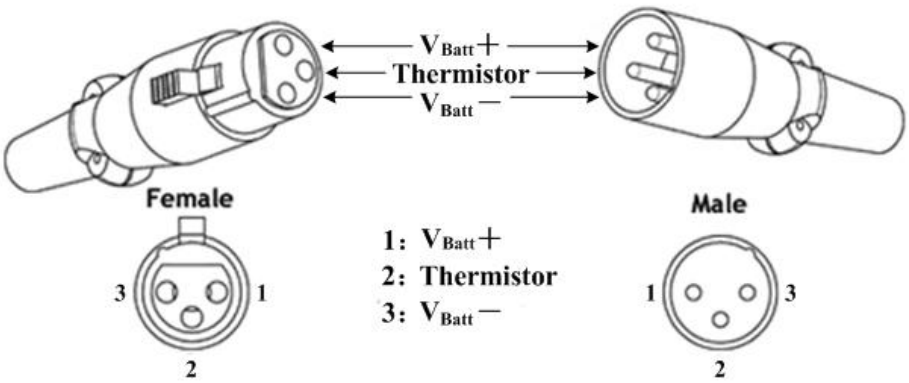
Mechanical	
Dimensions	L/W/H, 148mm/78mm/43mm
Input AC Cable	Awg #18, 1.2m length, UL style.
Output DC Cable	See the below sketch map

3 pin connector standard, others on request

Pin 1 Positive

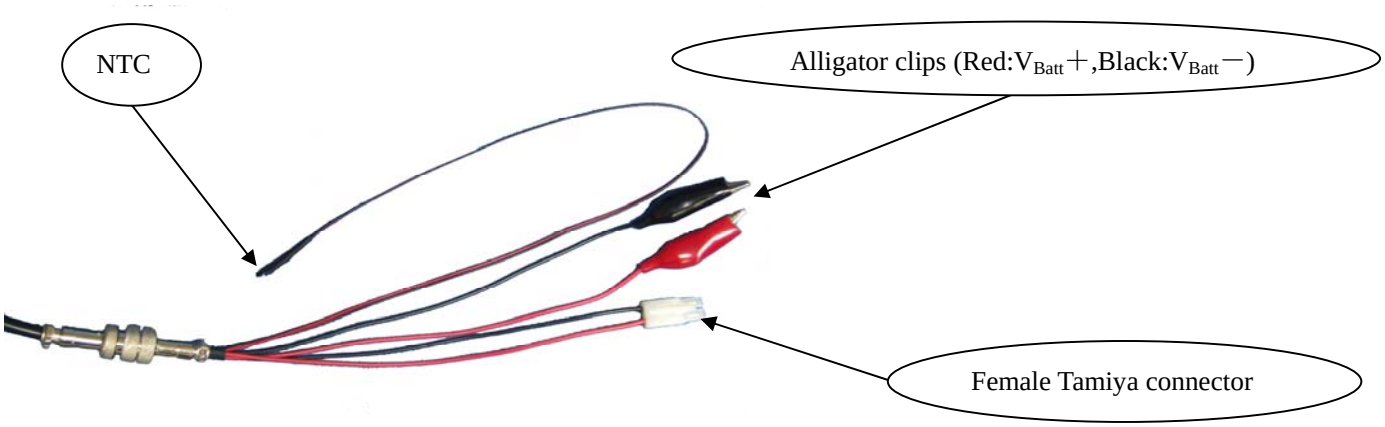
Pin 2 NTC thermistor

Pin 3 Negative



3 Pin plug wiring diagram

Standard Charge Cables, Others on Request



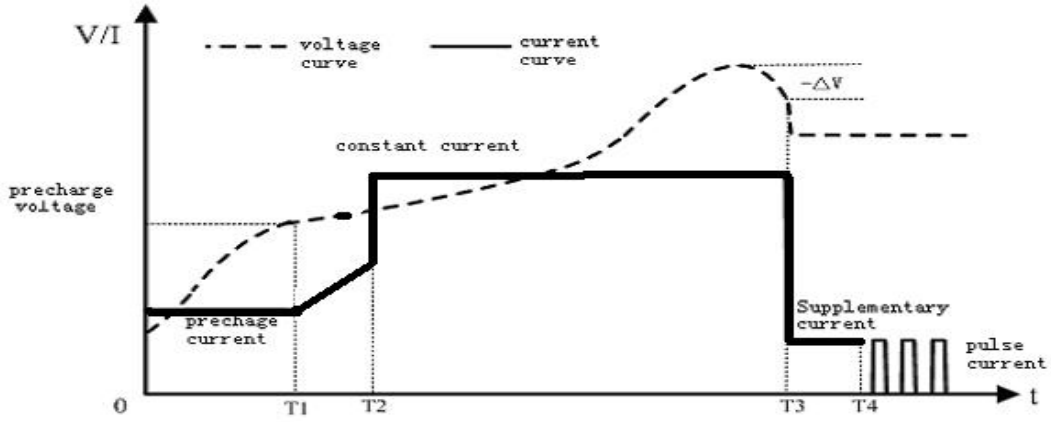
Charge Instruction:

1. Connect the battery to output connector (3 pin Waterproof connector or Tamiya connector or alligator connectors)
2. Make sure the battery polarity is connected properly (Red wire is Positive and Black wire is Negative)
3. Use tape to attach temperature sensor (NTC) firmly to the surface of battery pack
4. Plug the 110V-240V AC power source
5. Upon correctly connecting the battery pack, the LED turns red showing charging on progress
6. LED turns green on when the battery get fully charged or under trickle charge

Cautions:

- Never charge battery packs with lower or higher capacity beyond the designated AH value. Tenergy is not responsible for any damage caused by misusing.

Charging process algorithm (single cell for example)



0-T1:	Wake up stage. When the voltage of the cell is lower than 1.0V±0.1V, the charger will use pre-charge current to charge the battery.
T1-T2:	Current ramp up stage. When the voltage reach to 1.0V±0.1V, charge current will ramp up from wake up current, and at the end of this stage, the current will be set to fast charge value by the MCU.
T2-T3:	Constant current stage. Charge battery with fast charge current, until the condition of -△V voltage, △T（18℃）or Tmax（55℃）occurred, Constant current stage ends.
T3-T4:	Trickle charging stage. The charger will use supplementary current to charge the battery.
T4-:	After the trickle charging stage, the red charging light goes out and the green-light turns on. If the battery has been detected is full-charged, the charger will use pulsed current to charge the battery to balance the loss of battery self-discharge.