

Universal Battery Charger

The circuit diagram illustrates a Universal Battery Charger designed to charge both Li-Ion and Ni-MH batteries. The system is controlled by a microcontroller (U2, ST72F324L-K2T6) which manages the charging process based on the selected battery type (J1).

Key Components and Connections:

- Power Input:** V_{in} (100V) is connected to the input terminals (X1). The input is protected by a fuse (F1) and a diode (D1). The input voltage is divided by R1 and R2, and the resulting signal is connected to the microcontroller's AIN8 pin.
- Current Sensing:** The charging current is sensed by R4 (100mΩ) and R5 (100mΩ). The sense amplifier (Q2, 2STR1215) outputs a signal to the microcontroller's AIN0 pin.
- Microcontroller (U2):** The microcontroller manages the charging process. It receives input from the battery type selector (J1) and outputs control signals (PWM-1, PWM-2) to the transistors (Q1, Q2). It also interfaces with the LCD display (U3, LM258AD) and the LED indicators (LED1-LED4).
- Battery Selection:** The battery type is selected via J1 (Li-Ion or Ni-MH). The selection is connected to the microcontroller's AIN8 pin.
- Output:** The output voltage (V_{out}) is connected to the output terminals (X2). The output current is monitored by R5 (100mΩ).
- Protection:** The circuit includes a diode (D2) to prevent reverse current flow and a diode (D3) to protect the microcontroller from input voltage spikes.

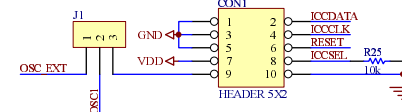
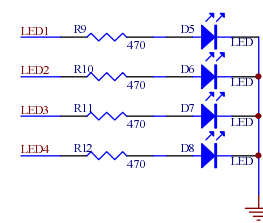
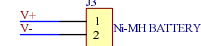
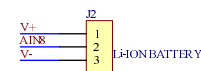
Component Values:

- Resistors: R1=330Ω, R2=100Ω, R3=100k, R4=100mΩ, R5=100mΩ, R6=1k, R7=1k, R8=1k, R9=470Ω, R10=470Ω, R11=470Ω, R12=470Ω, R13=8Ω, R14=10k, R15=10k, R16=4.7k, R17=15k, R18=4.7k, R19=5k, R20=5k, R21=4.7k, R22=3.3k, R23=0.51W, R24=13.32k, R25=10k, R26=470Ω, R27=470Ω.
- Capacitors: C1=470μF, C2=100μF, C3=33pF, C4=33pF, C5=100μF, C6=100μF, C7=100μF, C8=100μF, C9=100μF, C10=100μF.
- Diodes: D1=1N5821, D2=1N5821, D3=1N4148, D4=1N4148, D5=LED1, D6=LED2, D7=LED3, D8=LED4.
- Transistors: Q1=2STR1215, Q2=2STR1215, Q3=2STR1215, Q4=2STR1360, Q5=2STR2215, Q6=2STR1215.
- ICs: U1=KF33BDTR, U2=ST72F324L-K2T6, U3=LM258AD.

Notes:

- The output voltage (V_{out}) is connected to the output terminals (X2).
- The output current is monitored by R5 (100mΩ).
- The circuit is designed to charge both Li-Ion and Ni-MH batteries.
- The microcontroller (U2) manages the charging process.
- The battery type is selected via J1 (Li-Ion or Ni-MH).
- The selection is connected to the microcontroller's AIN8 pin.
- The output voltage (V_{out}) is connected to the output terminals (X2).
- The output current is monitored by R5 (100mΩ).

Size	FCSM No.	DWG No.	Rev
A3		1	
Scale	Sheet 1 of 1		



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	UNIVERSAL_BATT_CHARGER			
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