

# Intelligent Charger Service Manual

Li-ion battery charging chips mainly IC CHK0501 as the core components, plus a switch-mode stabilized voltage power and a number of external components.

## 1. Li-ion Battery Charging Chip CHK0501

CHK0501's internal circuit is composed of the reference voltage circuit, sampling circuit and short circuit protection circuit and so on. Chart 1 is its pin indication, where PIN 1 is the power negative input; PIN 2 is the LED driver output control; PIN 3 is the power positive input; PIN 4 is the charging tube control output; PIN 5 is the temperature compare input; PIN 6 is the undervoltage compare input; PIN 7 is the battery positive voltage input ; PIN 8 is the current detection input and power negative. (See chart 1)

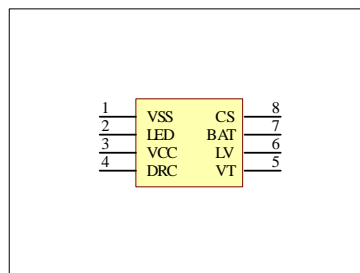


Chart 1 CHK0501's pin

## 2. Charger's Operation Principle

### (1) Switch-mode stabilized voltage power

switch-mode stabilized voltage power is grid JP12 AC voltage directly rectified by D61, D62, D63, D64, filtered into a high-voltage DC, and transformed by the high-frequency transformer TR44 and power switching transistors U52 into low-voltage AC, and then rectified by the D44 low-voltage , filter output DC voltage. If remove diode D12, through the diode D11 and DC Block JK11 connect charger ( adapter).

### (2) Trickle, Constant Current, and Constant Voltage three charging mode

R34, R35, R36, R37, R15, R19, R39 are used to adjust the constant voltage and undervoltage determine voltage, Li-ion battery charging chips CHK0501 change the

charging method of charge tube T11 according to constant voltage and undervoltage determine voltage (trickle, constant current, constant voltage). Adjusting the value of R21, R22 can change the constant charging current.

### (3) Temperature detect and current detect

Set the value of R20, Li-ion battery charging chip CHK0501 decide whether to activate over-temperature protection and battery connect situation according to the voltage value of temperature compare input VT .

Set the value of R18, Li-ion battery charging chip CHK0501 determine whether the Li-ion battery is full according to the voltage value of current detect input CS.

## 3. How to use intelligent charger ?

(1) After charger and intelligent charger is connected, the charger plug in matching city power grid, the intelligent charger indicator light flash one time and go into the pre-charge state mean that the battery can be charged normally; after insert battery pack the red light flash constantly means it is charging .

(2) When the green light flash constantly means the battery pack charging has been completed.

(3) When insert the battery pack and the battery voltage is lower than 6V (can not turn on the radio means less than 6V), the red light flashes, means the battery charger is trickle charging, this procedure will be lasted about 10 minutes; When the red light flash constantly, means charge normally .

(4) When insert the battery pack and the battery voltage is higher than 6V, the red light flashes, please make sure that batteries and intelligent Charger is connected well.

## 3. Parts list

Specification	Usage/function	Package	Bit NO.	Quantity
0.01uF	Capacitor	C130050	C62	1
CH0501	IC	SO-8	U11	1
0R	Resistor	1206	R38	1

100K	Resistor	0805	R20 R11	2
100R	Resistor	R-3518	R45	1
100uF/25V	Electrolytic Capacitor	E-06524S	E12	1
102P	Capacitor	0805	C55	1
102P	Capacitor	CP0603	C13	1
102/400V	Capacitor	PCBCOMPONENT	C52	1
103P	Capacitor	0805	C12 C17	2
104P	Capacitor	0805	C44 C41 C11 C20 C16 C42 C19 C15	8
105P	Capacitor	0805	C32	1
10uF/25V	Electrolytic Capacito	E-05225S	E56	1
10uF/400V	Electrolytic Capacito	E-10245S	E51	1
1K	Resistor	R-3518	R42 R41	2
1K	Resistor	805	R12	1
1N4007	Diode	DIO3	D63 D64 D61 D62	4
1N4148	Diode	DIO3	D12 D11	2
1R2	Resistor	1206	R22 R21	2
200R	Resistor	805	R16 R17	2
220R	Resistor	1206	R31	1
220uF/25V	Electrolytic Capacito	E-06524S	E41	1
22K/1%	Resistor	805	R39 R15	2
2K/1%	Resistor	805	R19	1
330R	Resistor	R-3518	R46 R43	2
360K	Resistor	1206	R51	1
4148	Diode	1206	D15 D14	2
470P	Capacitor	CP0603	C14	1
470uF/25V	Electrolytic Capacito	E-08235S	E43	1
471/1KV	Capacitor	C-6725	C51 C45	2
47K/1%	Resistor	0805	R35 R34 R36 R37	4
4.7K	Resistor	0805	R18	1
5.1V	Diode	0805	D18	1
56R	Resistor	R-3518	R44	1
60UH/1A	Inductor	AXIAL0.15	L41	1
B772	Triode	T-TO126S-2SB772	T11	1
BATT	Battery contact piece	BATTERY4	JP11	1
CR-2		DIP4A	U53	1
DS-208	DC Socket	JK-DS-208	JK11	1
EE13	Voltage Transformer	TR-1	TR44	1
FR107	Diode	DIO3	D51 D57	1
FUSE	Fuse	FUSE-1	F62	1
JP2	AC Socket	JK-2123-2-PP	JP12	1
LED-GR	Bicolor lamp	D-0425	D13	1
SR2100	Diode	D-3435S	D44	1
SS14	Diode	1812	D32	1
TL431	Stabilivolt	U-TO92-78LXX	D42	1
TR-2	Conductor	TR1510	TR62	1
VP22	IC	DIP-8	U52	1

## 4. PC board diagram and schematic diagram

