

ACE DIGITAL HOME UPS (I-105) - 300 VA

Features :-

- 1) Microcontroller based digital design.
- 2) Modified Sinewave Output.
- 3) Multiple stage battery charger, charges battery from 140V onwards.
- 4) Charger based on five stage algorithm (Bulk, Boost, Absorption, Float and Reset).
- 5) Selectable charging current **4 amp. / 7 amp.**
- 6) Complete overload and short ckt. protection.
- 7) Automatic overload reset for overload conditions.
- 8) Controlled output Voltage in backup mode.
- 9) Jumper Selectable Inverter/UPS mode.
- 10) Soft start backup mode for cold starting inductive loads.
- 11) Compact design.

Assembly Instructions :-

- 1) Make the transformer as per given design, and assemble according to wiring diagram.
- 2) Do not connect transformer wires to the Heat Sinks, for initial testing.
- 3) Keep the Inverter switch off.
- 4) Now connect the battery. The LED's and buzzer are tested first, and Home UPS enters standby mode. In this mode all LED's are off.
- 5) Switch on the Inverter switch.
- 6) After self diagnostics the backup mode will start working. At this time the Inverter On LED will glow. Check the MOSFET Gate drive (@ 4 to 4.5 Volts).
- 7) Now switch off the Inverter switch, connect the Heat Sinks to Transformer.
- 8) Switch on the Inverter switch, and observe the output voltage. On no-load it should be between 220V and 260 Volts. (with a 1.5uF/440V capacitor at the output).
- 9) Put some load at the output. The overload LED will glow (along with buzzer sound), when the DC side current goes beyond 25 Amp. (at temperature below 40 Deg C)
- 10) The overload will be at 22 Amp. when the Heat Sinks rises to @ 70 Deg. C. Overload adjustment can be done by **changing R24.**
- 11) Battery low LED starts glowing when battery voltage goes below 10.3 Volts.
- 12) The backup mode is switched off when battery voltage falls below 9.5 Volts. (Battery voltage being measured at the Inverter terminals).
- 13) Connect the Home UPS to the Mains Line carefully, observing the correct polarity of Live and Neutral.
- 14) The Home UPS enters Mains mode after a few seconds. The Charging On LED starts blinking, indicating that the charging is on.
The Charging current can be increased by 40% by shorting jumper J2.
The charging current can also be varied by changing the Transformer Tap.
The Full charge voltage is 14.1V (Float at 13.75V), when jumper J1 is shorted.
The Full charge voltage is 13.8V (Float at 13.5V), when jumper J1 is open.
The Jumper Settings come into effect, when AC input is switched Off and then On.
- 15) When battery is being charged the Charger LED is in Blinking mode, and when battery is fully charged the LED glows continuously.
- 16) The Backup mode starts working when input AC voltage falls below 100/180 Volts or goes above 285/265 Volts. (Change over voltage and time depends upon the mode selected (Inverter/UPS).
- 17) The UPS mode can be selected by shorting jumper J3. Inverter mode is selected if J3 is open.
- 18) The inverter goes back to Mains mode when AC input goes above 110/188 Volts or goes below 270/255 Volts.

WIRING SCHEMATIC AND OTHER DETAILS OF HOME UPS MODEL

For MicroController 676 Based Home UPS Kits (Rev 1.05) - 300VA

Transformer Details

INVERTER	CORE SIZE	NO. OF TURNS	WIRE SWG
300 VA	3 No. 2 1/2"	0-347-357-585 Turns 0-26 (Bifilar)	23 SWG 15 SWG

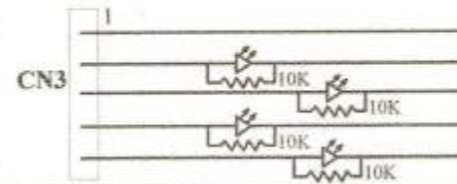
LED CONNECTION DETAILS

Connector CN3

LED On / Blinking

- Pin 1 - LED Common Ground
- Pin 2 - Battery Low LED
- Pin 3 - Charged / Charging LED
- Pin 4 - Overload LED
- Pin 5 - Backup Mode LED

* Connect 10K resistance across all LED's for Jumpers to function properly



Jumper Details (For charging current , mode selection and battery full charge settings)

Jumper J1 (Battery Full Charge)

Short - Full Charge 14.1 Volts
Open - Full Charge 13.8 Volts

Jumper J2 (Charging Current)

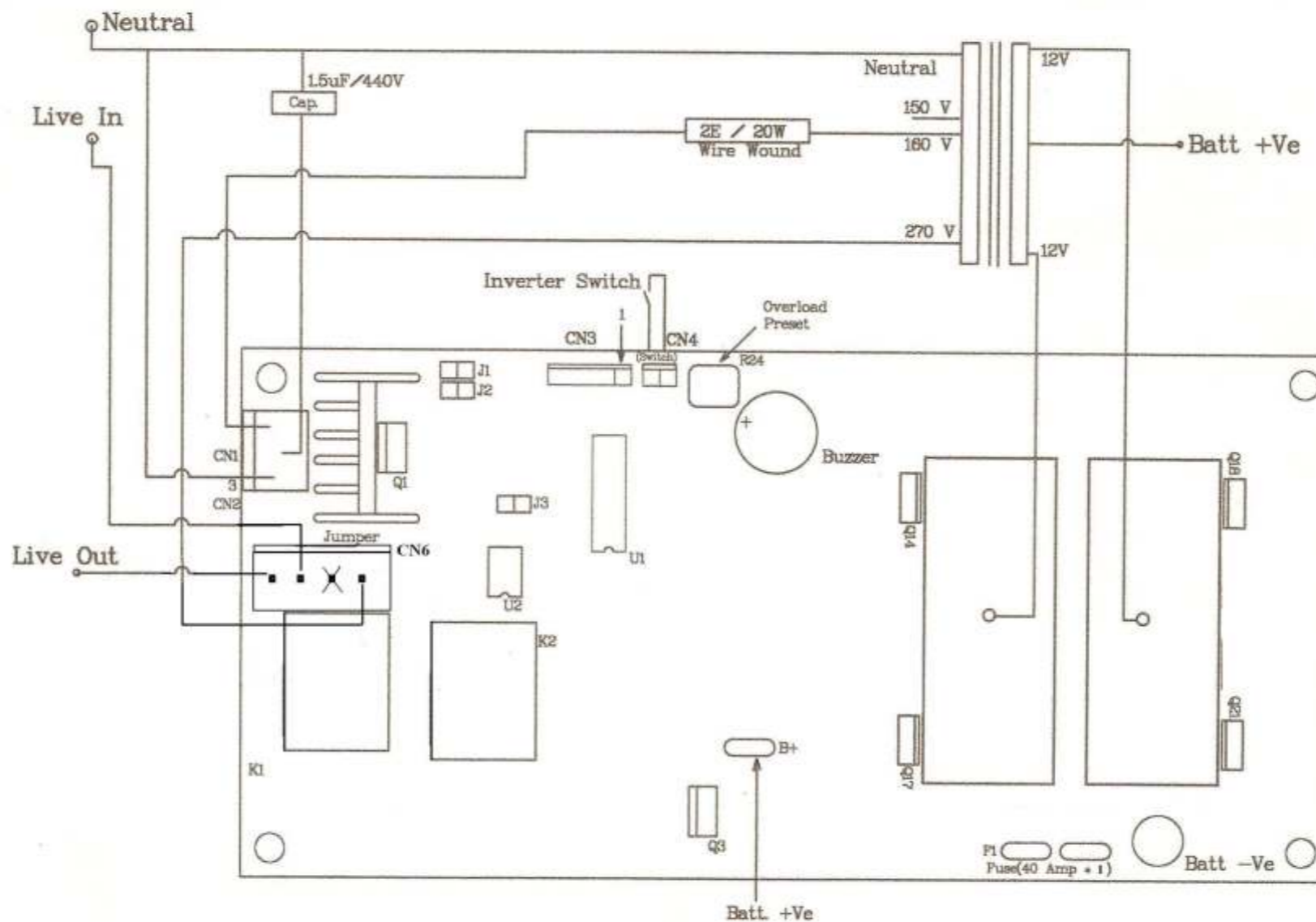
Short - 7 Ampere
Open - 4 Ampere

Jumper J3 (Mode Selection)

Short - UPS Mode
Open - Inverter Mode

Charging current can also be varied by changing transformer tap

INV-676 (Rev 1.05)



- 1) Instead of 1.5uF/440V Cap. at the output, Resistance of 220E/10W in series with 0.1uF/630V Cap. can be used
- 2) No warranty on MOSFETS, IC, SCR and Buzzer

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