Solar I²R (Ice Inhibitor & Retardant)
Team 5

Kyle Gerum (LRM)
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• Purpose of Product:
Inhibits the reformation of ice in an ice fishing hole which reduces maintenance time for the users.

• Feature 1:
Battery levels maintained by solar power while in the field.

• Feature 2:
Constant outdoor ambient temperature display.

• Feature 3:
Alternative means of charging available.
  • Residential Power: 102 – 132 VAC, 450 mA Max, 57-63 Hz
  • Car Charger: 10-15 VDC

• Market:
United States, Upper Midwest
EE-595

Key Requirements

• Cost
  • Sales Price: $179.99, Component Cost: $130.00, Assembly & Test Costs: $20.00

• Environment
  • Outdoors
  • Operating Temp Range: -30 to 35 °C
  • Humidity Range: 0 to 100 %

• Power Inputs
  • Lead Acid Battery: 12V, 12 Ah
    • Charging Options
      • Solar Power: 12VDC
      • Residential Power: 102 – 132 VAC, 450 mA Max
      • Car charger: 10-15VDC

• Major Functions
  • On/Off Power switch
  • 7 Segment ambient air temperature display
  • Charging mode switch
  • Pump On/Off switch
  • Battery voltage level LED indicators
  • Temperature sensor
    • Accuracy: ±2 °C
    • Range: -30 to 35 °C
EE-595 Block Diagram

A: Kyle Gerum
B: Tyler Haensgen
C: Brandon Khoury
D: Colin Van Eyck

- Solar Panel
- Auxiliary Power Supply
- AC/DC Converter
- Charge Controller
- Temperature Sensor
- Signal Processing
- Microcontroller
- Pump Driver
- LED Driver
- Pump
- LEDs
- 7 Segment Display
- User Interface

Power
Digital Signal
Analog Signal