Apricus® Sentinel-B™ Solar Controller
Installation & User Manual

Technical Data

Inputs: 3 temperature sensors (NTC thermistors)
- Controller provided standard with
  - 2 x 2m / 78" low temp sensors (Max 110°C / 230°F)
  - 1 x 2m / 78" high temp sensor (Max 200°C / 395°F)
- Sensor cables may be extended up to 15m using 0.3-0.5mm^2 cable.

Output: 1 relay 4A max output.
Power Supply: 110 – 240V AC, 50-60Hz
Fuse Rating: 8A
Environmental Conditions: 0 - 40°C / 32-104°F; water resistant; suitable for outdoor use; direct strong sunlight should be avoided.

Safety Precautions

Electrostatic Discharge: Care should be taken to avoid exposure of the controller to electrostatic discharges, as this could damage circuitry components.
High Voltage: The controller is high voltage energised and therefore MUST have power supply disconnected when the cover is open, and when servicing consumers connected to the relay.
Authorised Persons: Any work involving supply of high voltage power to the controller may require authorised electrical professionals. Please adhere to local regulations regarding electrical safety.
Lightning Protection: Suitable lightning protection should be incorporated into the electrical system to avoid damage to the controller.
Cable Glands: Ensure all cables running to and from the controller and secured firmly in place by the cable glands, or run through conduit. For the thin sensor cables, it may also be necessary to form a knot behind the gland.
Conduit: Where possible, use PVC conduit to run cables to and from the controller.

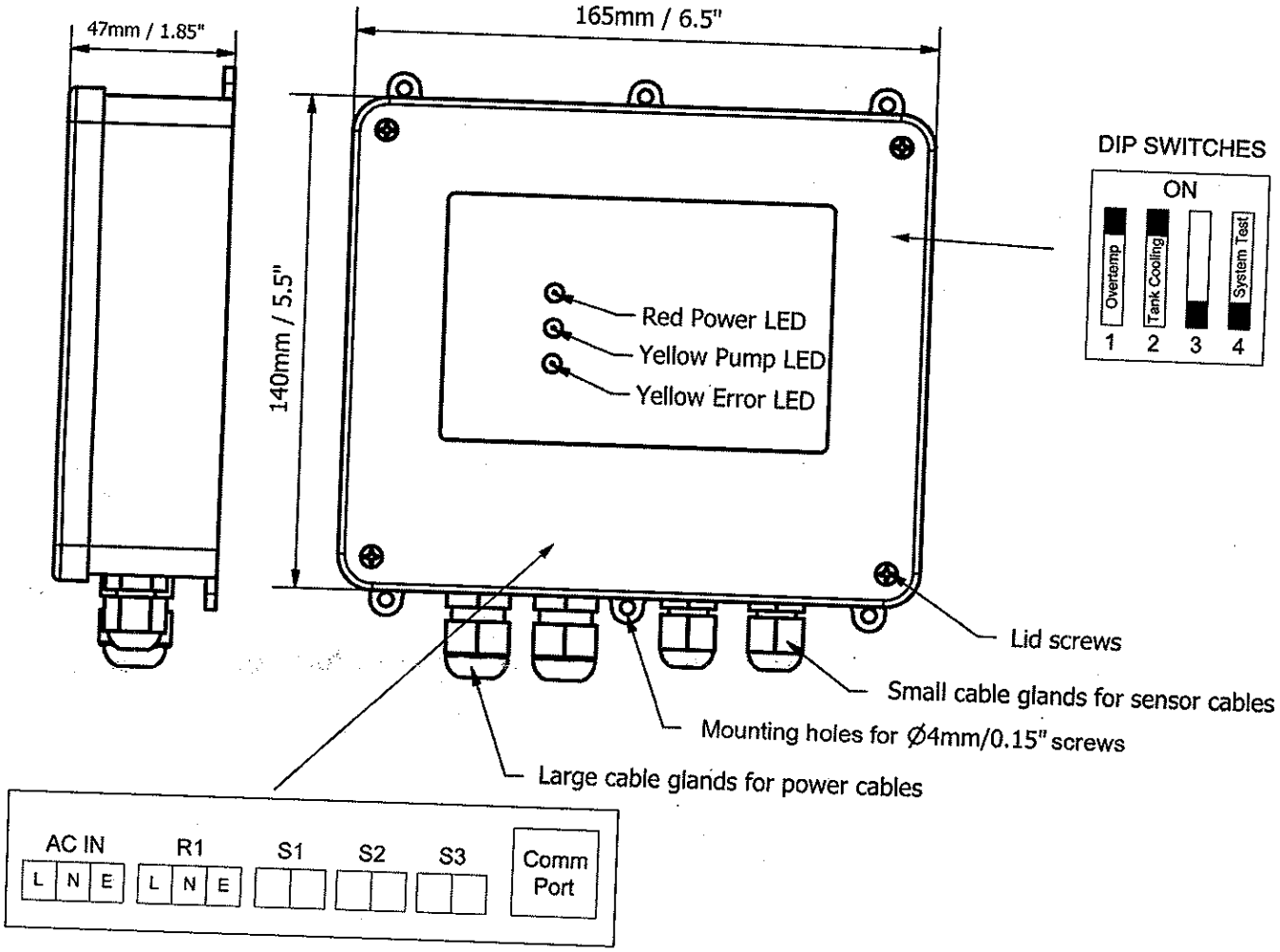
Installation

Sensor Connection
- S1 = Solar collector (twisted high temp cable)
- S2 = Bottom of tank (low temp cable)
- S3 = Top of tank (low temp cable)

Sensors may be extended up to 15m / 50' using 0.3-0.5mm^2 cable. Any connections must be soldered, insulated with electrical tape and protected against water ingress.

Power Supply
- 110-240V AV, 50-60Hz
- Power supply must include an earth, which should be directly connected to the pump earth (not through the controller). The controller circuit board should not be earthed.
- Power cable must be able to safely supply 6A

Consumer Power Supply (Relay)
- 1 relay, rated to 4A (@100V = 440Watts, @ 220V = 880 Watts)
- Relay provides power to solar circulation pump



Functions Overview

F1 - Minimum Operating Temperature
IF S1 > 30°C/86°F then calculate Delta-T

F2 - Delta-T
IF S1 > S2 by ≥ 4°C/7°F then R1 ON
IF S1 > S2 ≤2°C / 3.6°F then R1 OFF

F3 - Freeze Protection
IF S1 ≤2°C/35.6°F then R1 ON
IF S2 ≥5°C/41°F then R1 OFF

F4 - Overheat Protection
IF S3 ≥75°C/168°F then R1 OFF
This feature is turned ON by default, but can be turned OFF by moving dip switch 1 to the OFF position (see figure 1).

F5 - Tank Cooling Function
IF S2 > 45°C/114°F & S1 < S2 by ≥3°C/5.5°F then R1 ON
This feature is turned ON by default, but can be turned OFF by moving dip switch 2 to the OFF position (see figure 1).

Error Reporting

E1 = Overheat (Error Details: *IF S3 > 85°C/186°F*)
E2 = Freezing (Error Details: *IF S1 < 0°C/32°F*)
E3 = S1 failure (poor connection, damaged cable or faulty sensor)
E4 = S2 failure (poor connection, damaged cable or faulty sensor)
E5 = S3 failure (poor connection, damaged cable or faulty sensor)

Installation Record Form

End User Instructions:
After installation, the Installation Officer should complete this form and leave with you for your records. Please keep in a safe place as this provides proof of installation date, and who completed the installation.

Installation Date:

Installation Officer's Name:

Controller Serial Code:

Controller Software Version:

City, State & Country:

Signed by End User: Date:

Signed by Installer: Date:

Thank you for choosing Apricus