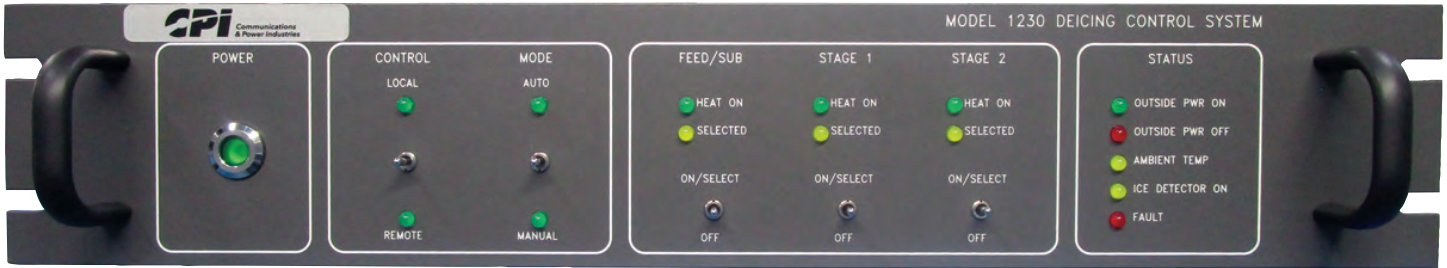


Antenna Technologies



Overview

System

The CPI Antenna Technologies Model 1230 Automatic Deicing System (ADS) is a versatile, efficient solution designed to prevent ice buildup on the main reflector, sub-reflector, and feed window of earth station antennas. Standard configurations are available for CPI antennas ranging from 4.8m to 16.4m, with customizable options for non-standard setups.

The 1230 ADS features a Power Control Unit (PCU) that offers control and status monitoring over a dry contact relay system. The rack-mounted control unit connects to the PCU via associated cross-site control cabling. Reliable relay logic is used to control the PCU, supporting high maintainability. The system is CE-compliant for EU applications.

Automatic, staged control optimizes energy use, helping reduce operational costs. Energy-efficient heaters with quick activation ensures rapid operation during icing events.

For legacy designs seeking a modern upgrade path, see the CPI Model 1240 ADS, which leverages the robust Model 1230 design and adds Ethernet support.

FEATURES:

- Electric forced air deice system for reflector, sub-reflector, and feed window
- Reliable rain and snow detection
- Operates in fully automatic or manual override capacity
- Rack-mounted Local (front panel) or Remote (rear panel) control
- Accepts dry contact closures for remote monitoring and operation

BENEFITS:

- Logical, straight forward controls and indicators
- Simple system operation

APPLICATIONS:

- Electric deice for any medium to large aperture earth station antenna equipment
- Mitigating effects of winter weather on critical RF sub-systems

Operational Modes			
Modes	Sub-Systems	Heat Stages	Monitor & Control
Auto Manual Standby	Reflector	Stage 1 Stage 2	Dry Contact
	Feed Sub-reflector	Stage 1	



1230 Deice Rack-Mounted Control Unit

Operation

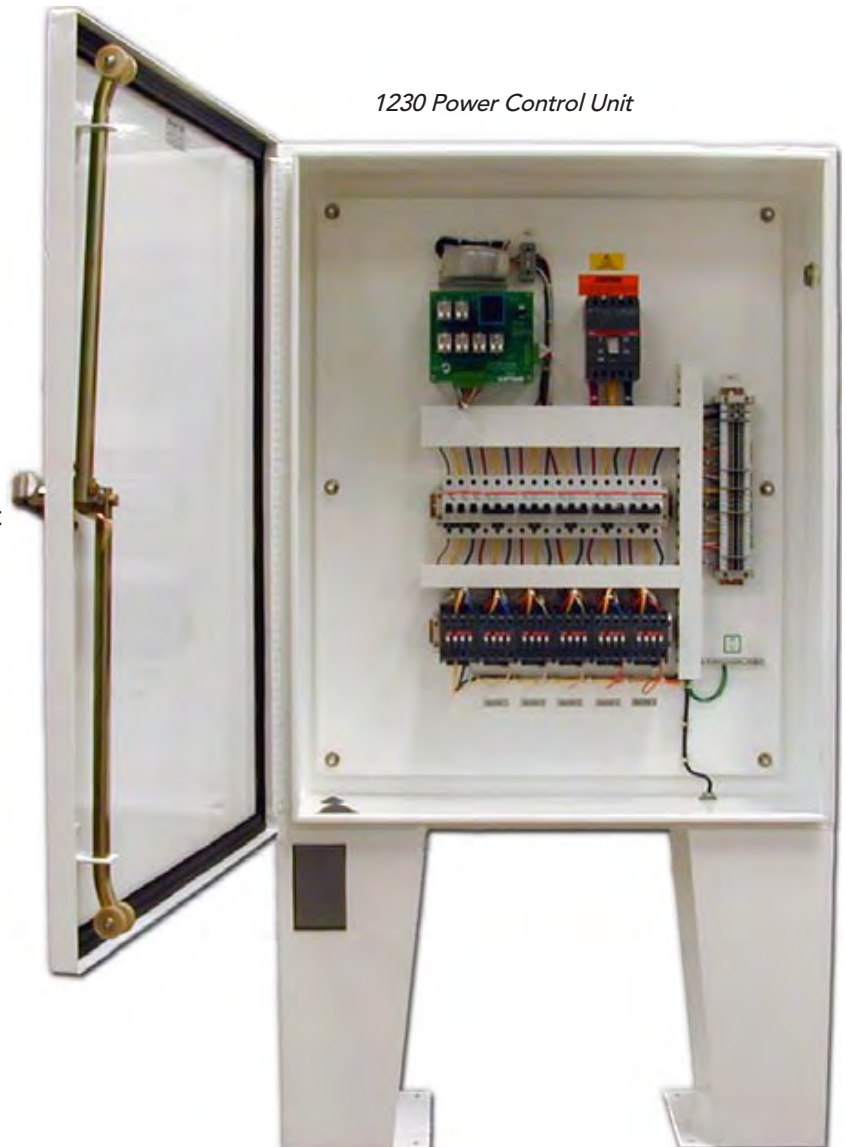
The main reflector is heated using forced air convection. Heated air circulates continuously in a plenum created by the reflector panels and insulating panels attached to the reflector's backup structure. Typically, a low-watt-density heater blanket provides direct conductive heating to the feed assembly. Sub-reflector heating is applied either through embedded heating elements (for fiberglass sub-reflectors) or forced air convection (for metal sub-reflectors).

Heaters are controlled in two groups: one for the main reflector and another for the combined feed and sub-reflector. The system operates in either Manual or Automatic modes. In Automatic mode, the system activates heaters when the ice detector senses freezing conditions and deactivates them after a configurable preset delay once conditions improve. In Manual mode, heating groups can be individually toggled On and Off. The system provides operational status of the ice detector and individual heaters.

The 1230 ADS dry contact interface allows for monitor and control (M&C) capability, supporting both local and remote operations. The rack-mounted unit's relay logic control to the PCU is simple and robust.

Power Control Unit (PCU)

The PCU is typically positioned near the antenna and contains the necessary electrical and mechanical components to manage the heating subsystems. It is housed in a NEMA 4 (IP66 equivalent) aluminum enclosure for weather protection. It includes insulation to meet extended temperature requirements.



1230 Power Control Unit

Ice Detector

The 1230 ADS incorporates a self-contained ice detector to improve reliability and simplify installation. The detector senses icing conditions when moisture and ambient temperatures between 15°F (-9 °C) and 44°F (7°C) are detected. The precipitation sensor, located at the top of the unit, collects frozen and liquid precipitation, while an internal heater melts frozen precipitation for moisture detection. The ambient temperature sensor on the underside of the detector monitors local conditions at the antenna. Both moisture sensitivity and trigger temperatures are adjustable.

The sensor includes a "smart bypass" switch for on-site testing and the ability to adjust operational parameters, ensuring more precise control and efficient site operation.



Ice Detector Probe

Typical Heating Equipment

Heavy-duty, fan-forced electric heaters circulate air throughout the reflector cavity. These industrial-grade heaters feature permanently lubricated fan motors with built-in thermal overload protection. The tubular heating elements are corrosion-resistant and housed in protective, electrically isolated metal sheaths. The heater enclosures are made from heavy-gauge, coated steel, finished with epoxy paint for durability.

Feed and subreflectors are typically flexible heating elements and/or small forced air heaters.



Plenum Forced Air Heaters and Blowers



Plenum Cycling Thermostats



Feed and Sub-reflector Heating

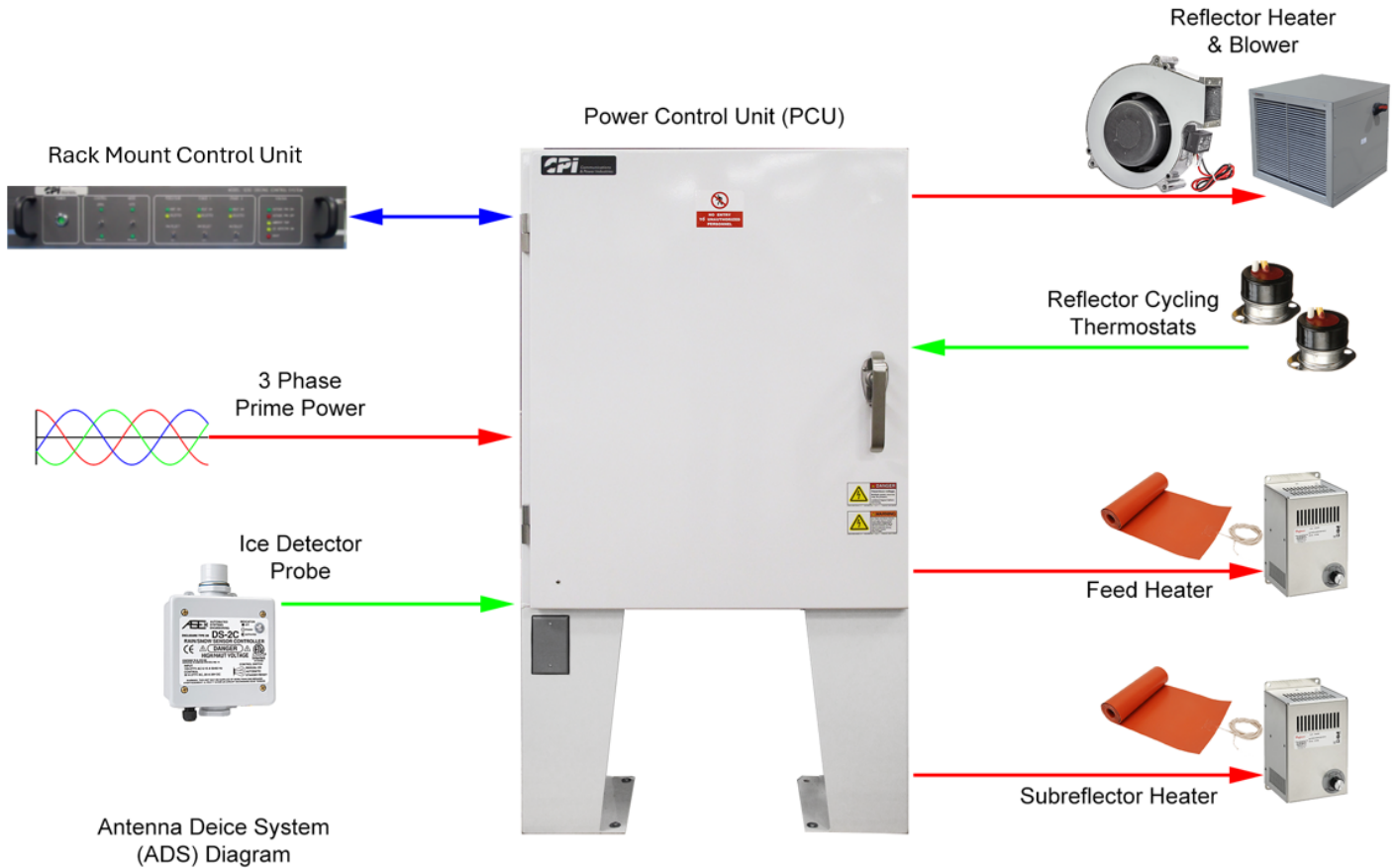


System Options

- Three-Phase Line Voltage (WYE): 208, 380-415

Automatic Deicing System

Model 1230



SPECIFICATIONS	OUTDOOR EQUIPMENT	INDOOR EQUIPMENT
Dimensions	36" H x 30" W x 13" D; 54" H w/legs (914.4mm H x 762mm W x 330.2mm D; 1371.6 mm H w/legs)	3.5" H x 19" W x 19" D (88.9 mm H x 482.6 mm W x 482.6 mm D)
Weight	Floor Stand: 150 lbs (68 kg)	10 lbs (4.6 kg)
Operating Temperature	-40 to 50° C	0 to 50° C
Storage Temperature	-40 to 70° C	-20 to 70° C
Operating Humidity	100% RH, Condensing	90% RH, Non-Condensing
Vibration	Transportation for US Highway and Jet	Transportation for US Highway and Jet
Power	Three-Phase 5-Wire, WYE (3 Phases, Neutral, Ground), 208 VAC~ and 380-415 VAC~, 47-63 Hz KVA Antenna Configuration Dependent	Single-Phase, 100-240 VAC~, 47-63 Hz

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The data should be used for basic information only.
Formal, controlled specifications may be obtained from CPI for use in equipment design.



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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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