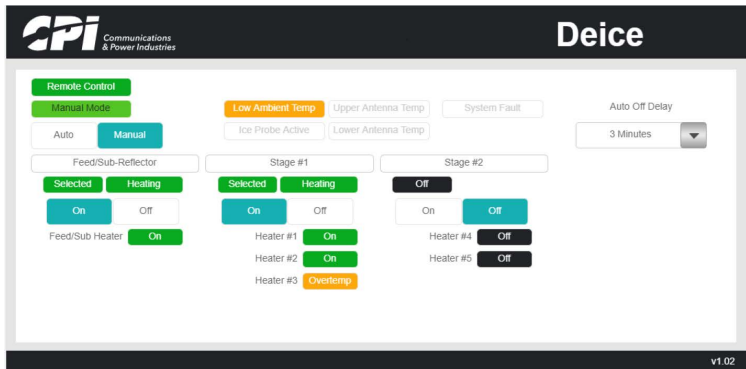


# Gas Automatic Deicing System Model 1241

## Antenna Technologies



### Overview

#### System

The CPI Antenna Technologies Model 1241 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. Gas heating is used for the main reflector to reduce operating cost and minimize electrical loads. Standard configurations are available for CPI antennas ranging from 4.8m to 16.4m, with customizable options for non-standard setups.

The 1241 ADS features a modern Power Control Unit (PCU) that offers control and status monitoring over an Ethernet connection, replacing the venerable 1230 ADS while maintaining identical operational functionality. Key improvements include the elimination of the rack-mounted control unit and associated cross-site control cabling, which increases installation flexibility and improves immunity to electrical ground transients. The software is field-upgradeable via Ethernet, and the system is CE-compliant for EU applications. A standard remote Web GUI simplifies user control with an intuitive modern interface.

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

#### FEATURES:

- Gas deice system for reflector, electric for sub-reflector and feed window
- Reliable rain and snow detection
- Automatic mode lowers operational costs
- Manual mode provides full control
- Configurable, staged heating
- Ethernet for remote monitoring and operation
- Intuitive Web GUI or integrated control by CPI Antenna Control Systems

#### BENEFITS:

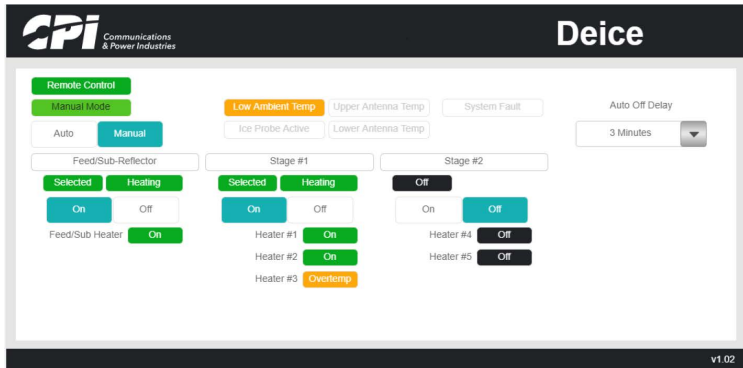
- Standard configurations for CPI antennas
- Easy integration into existing network infrastructure
- Floor stand or wall mounting for flexible installation
- Minimal cross-site cable runs (Ethernet only)
- No separate rack mount control equipment required

#### APPLICATIONS:

- Gas deice for any medium to large aperture earth station antenna equipment
- Mitigating effects of winter weather on critical RF sub-systems
- Electric to Gas conversion from 1230 ADS

| Operational Modes         |                       |                    |                                    |
|---------------------------|-----------------------|--------------------|------------------------------------|
| Modes                     | Sub-Systems           | Heat Stages        | Monitor & Control                  |
| Auto<br>Manual<br>Standby | Reflector             | Stage 1<br>Stage 2 | Web GUI<br>Command Line<br>CPI ACS |
|                           | Feed<br>Sub-reflector | Stage 1            |                                    |

# Gas Automatic Deicing System Model 1241



1241 Deice Web GUI

## Operation

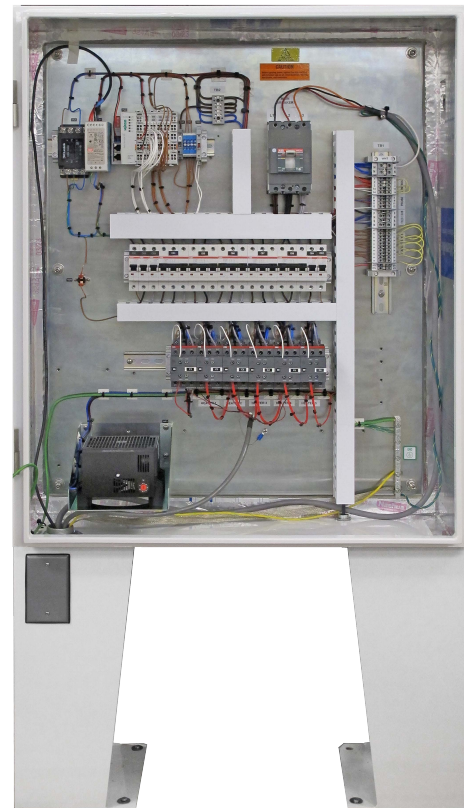
The main reflector is heated using forced air convection. Heated air circulates continuously in a plenum created by the reflector panels and insulating panels attached to the reflector's backup structure. Typically, a low-watt-density heater blanket provides direct conductive heating to the feed assembly. 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.

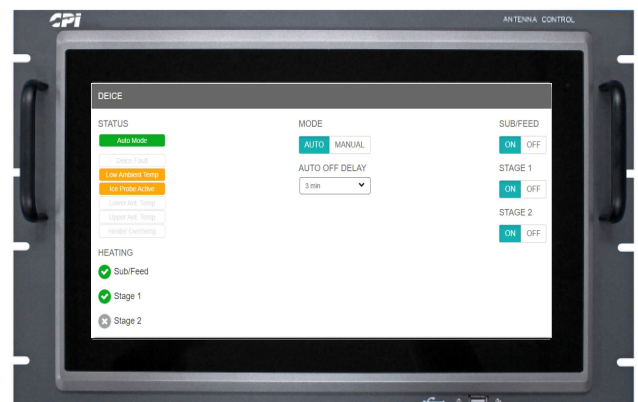
The 1241 ADS Ethernet (fiber optional) interface allows for monitor and control (M&C) capability, supporting both local and remote operations. M&C options include a web-based GUI and command-line interface (CLI). Since the system is also compatible with CPI Antenna Control Systems (e.g. Model 950A) and easily integrates into existing third-party network infrastructure, the 1241 ADS simplifies operations without the need for additional hardware. By removing the need for a separate rack-mounted controller, the system simplifies installation and reduces potential failure points.



## 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, with various mounting configurations. The PCU includes a thermostat-controlled internal heater for cold weather conditions and features a PLC-based controller, enabling headless and/or remote operation over Ethernet.



1241 Deice Control from Model 950A ACS

# Gas Automatic Deicing System Model 1241

## Ice Detector

The 1241 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



Example Integration on CPI 9.2m KxKa

## Typical Heating Equipment

Heavy-duty, fan-forced gas heaters circulate air throughout the reflector cavity. These industrial-grade heaters feature permanently lubricated fan motors with built-in control and safety features. The heat exchanger design completely isolates combustion byproducts, preventing carbon monoxide buildup. The heater enclosures are made from heavy-gauge, coated steel, finished with epoxy paint for durability.

Feed and sub-reflectors are typically electric flexible heating elements and/or small forced air heaters.



Plenum Forced Air Heaters and Blowers



Plenum Cycling Thermostats



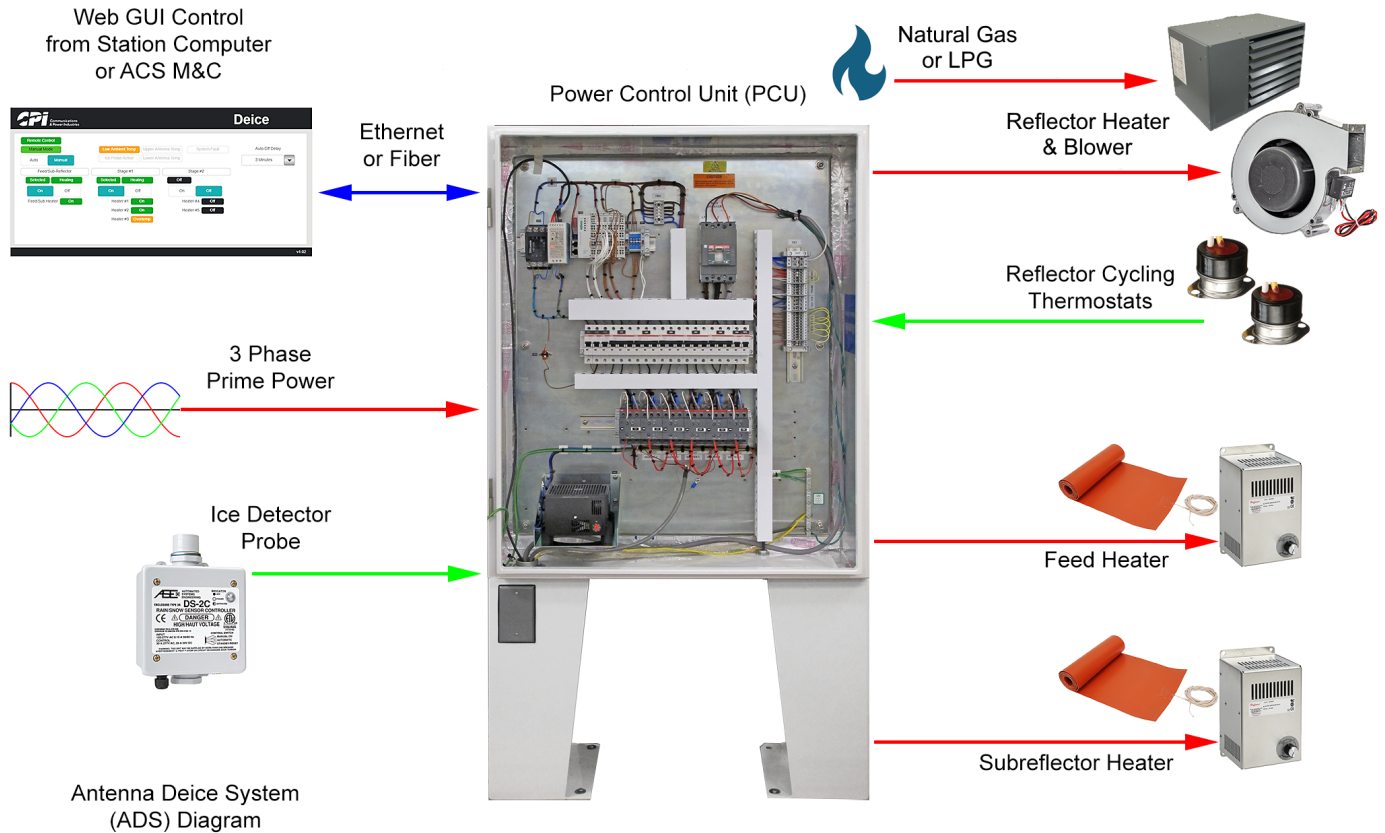
Feed and Sub-reflector Heating



## System Options

- Three-Phase Line Voltage (WYE): 208, 380-415
- Gas Fuel Type: Natural Gas or Liquefied Petroleum Gas (LPG)
- Mounting: Free-standing (standard), Wall-mount
- Communications interface: Ethernet (standard) or fiber optic

# Gas Automatic Deicing System Model 1241



## SPECIFICATIONS (OUTDOOR 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)                                       |
| Weight                | Floor Stand: 150 lbs (68 kg) , Wall Mount: 130 lbs (59 kg)  |
| Operating Temperature | -40 to 50° C  |
| Storage Temperature   | -40 to 70° C  |
| Operating Humidity    | 100% RH, Condensing   |
| Vibration             | 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<br>KVA Antenna Configuration Dependent |
| Gas Fuel Type         | Natural Gas or Liquefied Petroleum Gas (LPG)  |

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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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