

ANTI-ICING SYSTEM PERFORMANCE DATA SHEET

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Polar Dynamics Robotics, Inc.

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Classification: Confidential - Technical Documentation

1. SYSTEM OVERVIEW

1. This Anti-Icing System Performance Data Sheet ("Data Sheet") doc

2. The System is designed for continuous operation in temperature-co

2. TECHNICAL SPECIFICATIONS

1. **Primary Components**

-

Thermal Management Unit (TMU-X300)

-

Condensation Prevention System (CPS-2000)

-

Active Surface Treatment Technology (ASTT)

-

Environmental Monitoring Sensors (4x EMS-450)

2. **Power Requirements**

- - 2 -

Operating Voltage: 48V DC

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Peak Power Consumption: 780W

-

Standby Power Draw: 12W

-

Emergency Backup Duration: 45 minutes

3. ****Physical Specifications****

-

Weight: 12.4 kg

-

Dimensions: 680mm x 420mm x 155mm

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Installation Clearance Required: 200mm

3. PERFORMANCE PARAMETERS

1. **Operating Temperature Range**

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Continuous Operation: -40 C to +5 C

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Maximum Temperature Differential: 45 C

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Temperature Ramp Rate: 2 C/minute

2. **Anti-Icing Capabilities**

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Surface Temperature Maintenance: 0.5 C

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Ice Prevention Rating: Class 4 (ISO 12494)

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Maximum Ice Load Resistance: 15 kg/m

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Defrost Cycle Duration: 180 seconds

3. ****Response Times****

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System Activation: <3 seconds

-

Full Operating Temperature: <180 seconds

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Emergency Shutdown: <1 second

4. COMPLIANCE AND CERTIFICATION

1. The System meets or exceeds the following standards:

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UL 1995 (Heating and Cooling Equipment)

-

IEC 60204-1 (Safety of Machinery)

-

ISO 13849-1 (Safety of Control Systems)

-

IP65 Environmental Protection Rating

2. ****Certification Numbers****

-

UL: E475692

- - 6 -

CE: 2024/ROB/1234

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RoHS: PDRI-RH-2024-001

5. OPERATIONAL PARAMETERS

1. **Maintenance Requirements**

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Inspection Interval: 500 operating hours

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Sensor Calibration: Quarterly

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System Firmware Updates: Monthly

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Complete Service Interval: 2,000 operating hours

2. ****Environmental Limitations****

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Maximum Humidity: 95% non-condensing

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Maximum Altitude: 3,000m above sea level

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Air Quality: ISO Class 8 or better

6. PERFORMANCE MONITORING

1. ****Data Collection****

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Temperature Logging Interval: 1 second

- - 8 -

Performance Metrics Storage: 90 days

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Diagnostic Data Points: 24 parameters

-

Real-time Monitoring Capabilities: Yes

2. ****Alert Parameters****

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Temperature Deviation Threshold: 2 C

-

Power Consumption Variance: 10%

-

System Pressure Limits: 2.4-3.2 MPa

7. WARRANTY AND DISCLAIMER

1. This Data Sheet is provided for informational purposes only and does not constitute a warranty.
2. Performance specifications are based on testing under controlled conditions.
3. Polar Dynamics Robotics, Inc. reserves the right to modify these specifications without notice.

8. PROPRIETARY NOTICE

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9. DOCUMENT CONTROL

Approved By: _

Title: Chief Technology Officer

Date: _

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