

OPERATIONS DOCUMENT 400

STANDARD OPERATING PROCEDURES FOR AUTONOMOUS MOBILE ROBOT DEPLOYMENT AND MAINTENANCE

Effective Date: January 1, 2024

Document Version: 4.0

Last Updated: December 15, 2023

1. PURPOSE AND SCOPE

1. This Operations Document 400 ("Document") establishes the binding operational procedures and protocols for the deployment, maintenance, and decommissioning of Polar Dynamics Robotics, Inc. ("Company") autonomous mobile robots ("AMRs") in temperature-controlled environments.
2. This Document applies to all Company personnel involved in AMR operations, including but not limited to field technicians, deployment specialists, maintenance engineers, and operational supervisors.

2. DEFINITIONS

1. "IceNav System" means the Company's proprietary cold-environment navigation and operation platform.
2. "Critical Operating Temperature" means any ambient temperature below -30 C (-22 F).
3. "Deployment Zone" means any customer facility where Company AMRs are installed and operational.
4. "Maintenance Protocol" means the prescribed series of inspection, service, and repair procedures detailed in Section 4.

3. DEPLOYMENT PROCEDURES

1. Pre-Deployment Assessment
 - a) Conduct comprehensive site survey of Deployment Zone
 - b) Document temperature mapping of operational areas
 - c) Verify facility compliance with Company's Technical Specification 200-A

d) Complete Environmental Compatibility Report (Form OPS-103)

2. Installation Requirements

- a) Calibrate IceNav System to facility layout
- b) Install thermal monitoring beacons at prescribed intervals
- c) Configure emergency shutdown protocols
- d) Validate wireless communication infrastructure

3. Testing and Validation

- a) Execute full system diagnostic suite
- b) Perform graduated temperature stress testing
- c) Validate fail-safe mechanisms
- d) Document performance metrics

4. MAINTENANCE PROTOCOLS

1. Scheduled Maintenance

- a) Weekly inspection of thermal management systems
- b) Monthly actuator performance assessment
- c) Quarterly IceNav System calibration
- d) Semi-annual full system overhaul

2. Emergency Maintenance

- a) 24-hour response protocol for critical failures
- b) Remote diagnostic procedures
- c) Emergency part replacement protocol
- d) System recovery procedures

3. Documentation Requirements

- a) Maintenance log entries
- b) Performance deviation reports
- c) Part replacement records
- d) Incident documentation

5. SAFETY AND COMPLIANCE

1. Safety Standards

- a) Compliance with ANSI/RIA R15.06-2012
- b) Adherence to ISO 10218-1:2011
- c) Implementation of EN ISO 13849-1:2015
- d) Maintenance of OSHA compliance

2. Emergency Procedures

- a) Emergency shutdown protocols
- b) Evacuation procedures
- c) Incident reporting requirements
- d) Emergency contact hierarchy

6. QUALITY CONTROL

1. Performance Metrics

- a) Operational uptime requirements
- b) Navigation accuracy standards
- c) Temperature tolerance specifications
- d) Power consumption parameters

2. Quality Assurance

- a) Regular performance audits
- b) Customer satisfaction surveys
- c) System reliability assessments
- d) Compliance verification

7. MODIFICATIONS AND UPDATES

- 1. This Document may be modified only by written authorization from the Company's Chief Robotics Officer or their designee.
- 2. All modifications must be documented and communicated to relevant personnel within 24 hours.

8. CONFIDENTIALITY

- 1. This Document contains proprietary and confidential information of Polar Dynamics Robotics,

Inc. and may not be disclosed to third parties without written authorization.

9. EXECUTION

IN WITNESS WHEREOF, this Operations Document 400 has been executed by the duly authorized representatives of the Company as of the Effective Date.

POLAR DYNAMICS ROBOTICS, INC.

By:

Name: Dr. James Barrett

Title: Chief Robotics Officer

By:

Name: Sarah Nordstrom

Title: Chief Operating Officer

APPROVED:

By:

Name: Katherine Wells

Title: Chief Financial Officer

Date: January 1, 2024