# PDR SOFTWARE DEVELOPMENT KIT MANUAL

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**Polar Dynamics Robotics, Inc.**

**CONFIDENTIAL AND PROPRIETARY**

## 1. INTRODUCTION

1 This Software Development Kit Manual ("SDK Manual") is provided by Polar Dynamics Robotics, Inc. ("PDR") to authorized licensees of the IceNav(TM) Autonomous Navigation Platform SDK.

2 All rights, title, and interest in the SDK and associated documentation remain the exclusive property of PDR. This manual is protected under applicable copyright and trade secret laws.

## 2. DEFINITIONS

1 "SDK" means the IceNav(TM) software development kit, including all APIs, libraries, sample code, documentation, and updates provided by PDR.

2 "Cold Environment Applications" refers to software applications designed to operate PDR autonomous mobile robots in temperature-controlled environments below 0 C.

3 "Licensed Developer" means an individual authorized by Licensee to use the SDK pursuant to a valid PDR Developer License Agreement.

## 3. TECHNICAL REQUIREMENTS

1 Development Environment

- Operating System: Linux (Ubuntu 20.04 LTS or later)
- Programming Language: C++17 or later
- Build System: CMake 3.16+
- Required Libraries: Eigen 3.3+, Boost 1.71+
- GPU Support: NVIDIA CUDA 11.0+

2 Hardware Requirements

- Minimum 16GB RAM
- Intel i7 processor (8th gen or later)

- NVIDIA GPU with 8GB VRAM
- NVMe SSD with 256GB available space

## 4. SDK COMPONENTS

1 Core Libraries

- libIceNav.so - Primary navigation engine
- libThermalCore.so - Thermal management system
- libSensorFusion.so - Sensor data integration
- libPathPlanning.so - Cold-optimized path planning

2 API Modules

- Navigation Control API
- Thermal Compensation API
- Sensor Integration API
- Safety Systems API

## 5. IMPLEMENTATION GUIDELINES

1 Initialization Protocol

```cpp
*IceNav::Initialize(configpath);*
ThermalCore::SetOperatingParameters(-30.0, 5.0);
```

2 Safety Requirements

- Mandatory implementation of emergency stop handlers
- Temperature boundary monitoring
- Obstacle detection validation
- Real-time system health checks

## 6. USAGE RESTRICTIONS

1 Licensed Developers shall not:

- Modify core safety algorithms

- Disable thermal management systems
- Remove PDR copyright notices
- Reverse engineer SDK components
- Share access credentials

2 All Cold Environment Applications must:

- Maintain PDR safety protocols
- Log operational parameters
- Implement prescribed error handling
- Preserve thermal management settings

## 7. SUPPORT AND UPDATES

1 Technical Support

- Access to PDR Developer Portal
- Priority email support
- Quarterly SDK updates
- Security patches as released

2 Documentation

- API Reference Manual
- Implementation Guides
- Sample Applications
- Best Practices Guide

## 8. WARRANTY AND LIABILITY

1 THE SDK IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. PDR DISCLAIMS ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

2 IN NO EVENT SHALL PDR BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE SDK.

## 9. CONFIDENTIALITY

1 Licensed Developers shall maintain strict confidentiality regarding SDK implementation details, security measures, and proprietary algorithms.

2 All documentation, source code, and technical specifications are considered Confidential Information of PDR.

## 10. TERM AND TERMINATION

1 This SDK Manual is effective until superseded by a newer version or termination of the associated Developer License Agreement.

2 Upon termination, Licensed Developers must:

- Cease all SDK usage
- Delete all copies of SDK components
- Return or destroy all documentation
- Certify compliance in writing

## ACKNOWLEDGMENT

The undersigned acknowledges receipt and understanding of this SDK Manual:

**Licensed Developer:**

**Date:**

**License ID: _**

Polar Dynamics Robotics, Inc.

**By: _**

**Title: _**

**Date: _**