ROBOT SOFTWARE INSTALLATION PROTOCOL NF-2000 SERIES

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NF-2000 SERIES AUTONOMOUS MOBILE ROBOTS

Document ID: SIP-2024-NF2000-R3

Effective Date: January 15, 2024

1. PURPOSE AND SCOPE

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1. This Software Installation Protocol ("Protocol") establishes the mandatory

2. This Protocol applies to all authorized technicians, system integrators, and

2. DEFINITIONS

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1. "Base Operating System" means the proprietary NaviFloor OS v4.2 or late

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2. "Navigation Stack" means the Company's proprietary terrain-mapping and

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3. "Safety Systems" means all software components related to collision avoid

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4. "Fleet Management Interface" means the software enabling communicatio

3. PRE-INSTALLATION REQUIREMENTS

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1. System Verification

a) Confirm AMR hardware compatibility with NF-2000 Series specifications

b) Verify minimum 2.4GHz processor and 8GB RAM configuration

c) Validate presence of TPM 2.0 security module

d) Ensure battery charge level exceeds 80%

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2. Environmental Conditions

a) Ambient temperature between 15-30°C (59-86°F)

b) Humidity levels below 85% non-condensing

c) Static-free installation environment

d) Stable network connection with minimum 100Mbps bandwidth

4. INSTALLATION SEQUENCE

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1. Base Operating System Installation

a) Load NaviFloor OS boot image from authorized media

b) Execute cryptographic verification of installation package

c) Configure system partitions per Reference Architecture Document RAD-2

d) Install security certificates and encryption keys

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2. Navigation Stack Deployment

a) Install terrain-mapping modules in specified order:

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Surface analysis engine

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LiDAR integration module

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Depth-sensing processor

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Path planning optimizer

b) Configure sensor calibration parameters

c) Initialize mapping database

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3. Safety Systems Integration

a) Install redundant safety monitoring processes

b) Configure emergency stop parameters

c) Calibrate proximity sensors

d) Validate fail-safe mechanisms

5. POST-INSTALLATION VERIFICATION

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1. System Integrity Checks

a) Execute full diagnostic suite

b) Verify all software component versions

c) Validate digital signatures

d) Confirm secure boot sequence

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2. Functional Testing

a) Perform static navigation tests

b) Execute dynamic obstacle avoidance scenarios

c) Validate fleet communication protocols

d) Test emergency stop functionality

6. DOCUMENTATION REQUIREMENTS

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1. Installation Record

a) Software versions installed

b) Installation timestamp and location

c) Technician identification

d) Hardware configuration details

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2. Test Results Documentation

a) System diagnostic reports

b) Calibration certificates

c) Safety system verification results

d) Network connectivity confirmation

7. SECURITY AND COMPLIANCE

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1. All software installations must comply with:

a) ISO/IEC 27001:2013 information security standards

b) Company's Cybersecurity Policy (CSP-2023-V2)

c) Relevant ANSI/RIA R15.06 safety requirements

d) Site-specific security protocols

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2. Data Protection

a) Encrypt all configuration files

b) Secure storage of installation credentials

c) Protection of proprietary algorithms

d) Access control implementation

8. LIABILITY AND WARRANTY

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1. Installation of software by unauthorized personnel voids all warranties and

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2. The Company assumes no liability for damages resulting from unauthorize

9. PROTOCOL MAINTENANCE

1. This Protocol shall be reviewed and updated annually or upon significant s

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2. Revisions require approval from the Chief Technology Officer and Chief I

AUTHORIZATION

This Protocol is authorized and approved by:

Marcus Depth

Chief Technology Officer

NaviFloor Robotics, Inc.

Dr. Elena Kovacs

Chief Research Officer

NaviFloor Robotics, Inc.

Date: January 15, 2024

Document End.