## **AMR LOCALIZATION SYSTEM TECHNICAL GUIDE**

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Classification: CONFIDENTIAL - PROPRIETARY TECHNOLOGY

#### 1. INTRODUCTION AND SCOPE

1. This Technical Guide ("Guide") describes the proprietary AMR Local

| 2. This Guide is subject to the Confidentiality and Intellectual Property |
|---|
| 2. SYSTEM OVERVIEW  |
| The AMR Localization System comprises:                                    |
| a) Multi-sensor fusion architecture                                       |
| b) Proprietary terrain-mapping algorithms                                 |
| c) Dynamic positioning modules  |
| d) Real-time environmental adaptation protocols                           |
| e) Fleet coordination interface   |
| 2. Core Technology Components:  |
| A diverse and L. DAD, arrays (Mandal NE L. 400)                           |
| Advanced LiDAR arrays (Model NF-L420)                                     |
|   |
|   |
|   |
|   |
|   |

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Depth-sensing processors (NaviCore(TM) DSP)

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Terrain classification engine

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Multi-surface detection system

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Environmental feature extraction module

## 3. TECHNICAL SPECIFICATIONS

1. Sensor Configuration

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Primary LiDAR: 360 horizontal FOV, 30 vertical FOV

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Secondary sensors: 8 depth cameras, 12 proximity sensors

Minimum scanning resolution: 0.5cm at 10m range

Maximum effective range: 25m (optimal conditions)

Processing Capabilities

Real-time processing rate: 120Hz

Localization accuracy: 2cm (standard deviation)

Surface classification latency: <50ms

Maximum supported AMR units per zone: 50

# 4. IMPLEMENTATION REQUIREMENTS

| 1. Environmental Prerequisites                            |
|---|
| -   |
| Minimum lighting: 50 lux                                  |
| -   |
| Operating temperature range: 0 C to 45 C                  |
| -   |
| Maximum humidity: 85% non-condensing                      |
| -   |
| Floor flatness requirement: FF25 or better                |
| 2. Infrastructure Requirements                            |
| Network connectivity: Industrial Ethernet (minimum 1Gbps) |

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Power supply: 24V DC 10%

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Backup power system: UPS with 30-minute runtime

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Server requirements: Detailed in Appendix A

## 5. CALIBRATION AND MAINTENANCE

1. Initial Calibration

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Factory calibration parameters

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On-site calibration procedures

-

| Environmental mapping protocol   |
|----------------------------------|
| -                                |
| Sensor alignment verification    |
|                                  |
| 2. Periodic Maintenance          |
| -                                |
| Daily system checks              |
| -                                |
| Weekly sensor cleaning           |
| -                                |
| Monthly calibration verification |
| -                                |
| Quarterly software updates       |
| ·                                |

**6. SAFETY AND COMPLIANCE** 

| 1. Safety Features             |
|--------------------------------|
| -                              |
| Emergency stop integration     |
| -                              |
| Collision avoidance systems    |
| -                              |
| Fail-safe protocols            |
| -                              |
| Redundant sensing capabilities |
|                                |
| 2. Regulatory Compliance       |
| -                              |
| ISO/TS 15066:2016              |
| -                              |
| EN ISO 13849-1:2015            |

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IEC 61496-1:2020

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ANSI/RIA R15.06-2012

## 7. PERFORMANCE METRICS

1. System Performance

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Positioning accuracy: 5mm

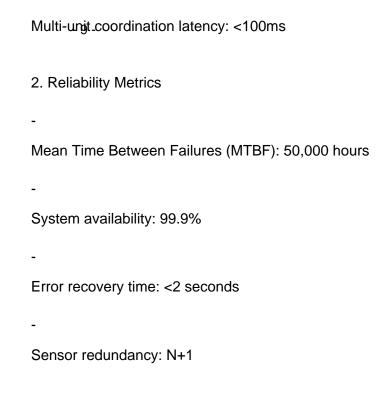
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Update rate: 100Hz

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Maximum tracking speed: 2.5 m/s

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#### 8. CONFIDENTIALITY AND IP PROTECTION

1. All information contained in this Guide constitutes Confidential Information

- 2. No pert\_of this Guide may be reproduced, distributed, or transmitted
- 3. Patents pending: US20230123456, EP21987654

#### 9. WARRANTY AND DISCLAIMER

- 1. This Guide is provided "as is" without any warranties, express or in
- 2. The Company reserves the right to modify system specifications wi

#### **APPENDICES**

Appendix A: Server Requirements Specification

Appendix B: Calibration Procedures

Appendix C: Troubleshooting Guide

| Appendix D: Safety Certification Documentation |
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| DOCUMENT CONTROL                               |
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