
# kingpiN™

## AGV Motion Regulator and Control

### Accelerating Autonomous Mobile Robot / AGV Development

kingpiN™ - A versatile, industry proven controller specifically designed for robotic / autonomous vehicle control applications. Supports all vehicle drive configurations and forms the central component of a scalable Guidance Navigation, and Control solution.

A smart controller specifically designed and built for robotic vehicle applications. A built-in pedigree that accelerates robotic vehicle development without compromising the user's ability to stay in control of vehicle functionality.

Ready to use with a range of navigation/localisation technologies and third-party traction and steer motor drives. A truly modular solution, allowing user choice and easy adaptation to application needs.

kingpiN™ can provide position by using the optional onboard and external navigator / localiser solution that can determine a vehicles position by:

- Natural feature/contour
- Reflector constellation
- Surface-based reference marks e.g. RFID, lines, barcodes
- GPS/GNSS

### Applications

Used in vehicle applications including: Mobile Conveyors, Tow Tractors, Pedestrian Tugs, Submarine AGV, Pallet Trucks, Fork Lift Trucks, Floor Cleaning Machines, Autonomous Mobile Pick Carts/Robots, Surface Printing Vehicles.

### Benefits

Reduced development cost, reduced time to market, access to proven state of the art guidance and navigation technologies.

Guidance automation

# Controller Specification

| | |
|---|---|
| **Drive Configurations supported** | |
| Differential | Quad |
| Tricycle | User Specific e.g. Quad differential drive |
| **Options** | |
| Onboard Navigators: | |
| SCENE | • Natural Feature Navigation |
| | • GPS Additional Receiver Required |
| | • GNSS |
| **CPU** | |
| | Intel® Celeron® Processor J1900 (2M Cache, Up to 2.42 GHz SoC, 10W TDP) |
| **BIOS** | |
| | AMI 64 Mbit SPI BIOS |
| **Memory** | |
| | 1x DDR3L 204-pin SO-DIMM, up to 8GB (1066/1333MHz, un-buffered) |
| **Storage** | |
| 1 x mSATA for full-size mini-PCIe socket | 1 x 2.5" SATA 2.0, 1x mSATA (Shared by 1x Mini-PCIe socket) |
| **Graphics** | |
| Integrated Intel® HD Graphics | Two Independent Display |
| **Audio** | |
| Realtek® ALC888S | High Definition Audio |
| **I/O Interface** | |
| 1x DVI-I Connector, Up to 1920 x 1080 | 2x GbE LAN Ports (Support Wake On Lan, Teaming, Jumbo Frame, PXE), RJ45 |
| 4x RS-232/422/485, Auto Flow Control, DB9 | 1x USB 3.0 & 3x USB 2.0 (Type-A) |
| 1x Mic-in and 1x Line-out, Phone Jack 3.5mm | 1x ATX Power On/Off Switch Button |
| 1x AT/ATX Mode Switch | 1x Remote Power On/Off Connector, 2-Pin Terminal Block |
| | 2 x CANbus / CANopen Connection - 9W D-Sub Male Connector |
| **Expansion** | |
| 1x CMI Interface for CMI Modules | 2x Full-size Mini-PCIe (Supports Wireless & I/O Expansion) |
| 1x SIM Socket | 2x Antenna Holes |
| **Diagnostics Ethernet** | |
| Software Upgrade | Remote Software Upgrade and Diagnostics |
| **Electrical** | |
| Operating Voltage | 9~48VDC |
| Power Consumption | Typical 8.3W, Max.15W |
| **Protection** | |
| Reverse Power Input Protection Supported | Over Voltage Protection (OVP) Up to 51V |
| Over Current Protection (OCP) 120V/ 20A | ESD Protection Air Discharge: 8 kV; Contact Discharge: 4 kV (IEC 61000-4-2) |
| **Other Function** | |
| Instant Reboot Technology (0.2 sec) | Watchdog Timer: Software Programmable Supports 1~255 sec. System Reset |
| **Environmental** | |
| Operating Temp | -25°C to 70°C (SSD) with Air Flow IEC60068-2-1, IEC60068-2-2, IEC60068-2-14 |
| Storage temperatures | -40°C to 85°C with air flow |
| Shock | 50 Grms (With SSD According to IEC 60068-2-27, Half Sine, 11ms Duration) |
| Relative Humidity: | 95% RH @ 40°C (Non-Condensing) |
| Vibration | Random: 5 Grms (With SSD According to IEC 60068-2-64, 5~500Hz, 1 hr/axis) |
| **Housing** | |
| Dimensions | (W x D x H): 150 x 105 x 56.02 mm |
| Weight | 0.86 kg |
| **External Navigators** | |
| SCENE | BEACON |
| | SURFACE |
| **2D/3D Laser Scanning Options** | |
| Pepperl & Fuchs R2000 | Sick S300/S3000 |
| Omron 0S32C | Hokuyo UAM-05LP-T301/T301C |
| Others on Request | |
| **Certification** | |
| CE | FCC Class A |

*An award-winning pioneer in guidance, navigation and control technologies, Guidance Automation has over 25 years' experience in developing advanced solutions for the global robotic vehicle market and has thousands of systems in service.*

*Our aim is to consistently meet our clients' needs by offering automated guided vehicle technologies which serve the market need and improve operational performance and efficiency.*

*We are proud to have enabled our clients to automate robotic vehicles, fork lift trucks, floor cleaning equipment and all types of mobile moving systems. These solutions have been applied in a broad range of autonomous transport applications such as airports, warehousing, healthcare, production, bottling plants, printing, retail, marine and more.*

***We are committed to the continuous advancement of innovative and optimal vehicle automation.***

Guidance automation

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