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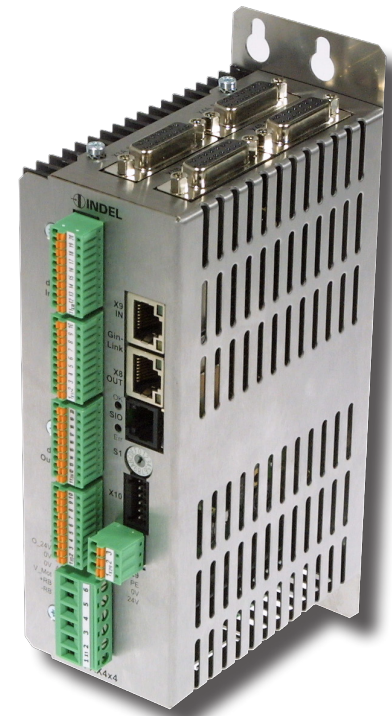
GIN-AX4x4

Universal Motion Board

➡ Up to 32 kHz position loop

➡ 16 digital inputs / outputs

➡ Full-fledged GinLink master with PRO version

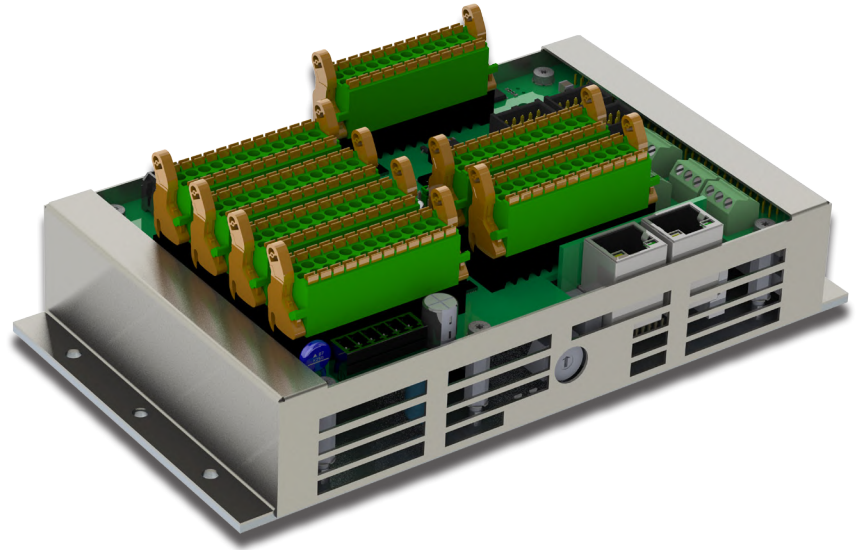| Facts	
Motor voltage	24 to 48 V_{DC}, 60 V_{MAX}
Motor current per axis	Single mode: 5 A_{RMS} Dual mode: 10 A_{RMS}
Control frequency	Up to 32 kHz
Motor types	PM synchronous, stepper, linear, DC
Feedback	4 × SinCos / Increment 2 × EnDat / Hiperface / SSI / BiSS
Digital I/Os	16 × digital inputs 24 V 16 × digital outputs 24 V / 2 A
Speed filter	Luenberger observer
Current filter per axis	4 × Low-pass / Notch
Interfaces	GinLink slave / GinLink master* Gigabit Ethernet RS232
Safety	Overheat, short circuit, overload
CPU	ARM Cortex A9 single-core 800 MHz / ARM Cortex A9 dual-core 800 MHz *
Non-Volatile Memory*	512 KB NVRAM MicroSD card slot
Operating system	Indel real-time OS (INOS)
Dimensions	200 × 56 × 102 mm (h × w × d)

* With PRO option

The compact Indel GIN-AX4x4 is ideally suited for driving up to four motors. It supports all conventional feedback systems. If required, two output stages can be operated in parallel to double the output power.

In addition to the output stages, the motion board features 16 digital inputs and 16 digital outputs.

The GIN-AX4 is also available as a PRO version which is equipped with a dual-core CPU and GinLink master functionality. The additional CPU core perimts the implementation of the whole machine control on the motion board.

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GIN-MAX4x4

Compact Motion Board

➡ Up to 32 kHz position loop

➡ Various analog and digital I/Os

➡ Full-fledged GinLink master with PRO version

Facts	
Motor voltage	24 to 48 V_{DC}, 60 V_{MAX}
Motor current per axis	Single mode: 2.5 A_{RMS}, 5 A_{RMS} peak Dual mode: 5 A_{RMS}, 10 A_{RMS} peak
Control frequency	up to 32 kHz
Motor types	PM synchronous, stepper, linear, DC
Feedback examples	2 × SinCos / Digital-Incremental 2 × EnDat 2.2 / BiSS-C / Digital-Incremental
Digital I/Os	24 × digital inputs 24 V 16 × digital outputs 24 V / 2 A
PWM	3 × outputs 2.5 A
Pulsators	2 × high-resolution outputs
Analog I/Os	14 × analog inputs 4 × analog outputs
Speed filter	Luenberger observer
Current filter per axis	4 × low-pass / notch
Interfaces	GinLink slave / GinLink master* Gigabit Ethernet RS232
CPU	ARM Cortex A9 single-core 800 MHz / ARM Cortex A9 dual-core 800 MHz *
Non-Volatile Memory	8 MByte flash 512 KB NVRAM *
Operating system	Indel real-time OS (INOS)
Dimensions	42 × 182 × 102 mm (h × w × d)

* With PRO option

The compact design of the GIN-MAX4x4 motion board, which consists of a motion and a distribution board, enables machine designs in the smallest of spaces. Up to four axes can be controlled in a coordinated manner. All conventional motor and encoder systems are supported. If required, two motor output stages can be connected in parallel to double the output power.

In addition to the motors, a wide range of analogue and digital peripherals such as dispensers, solenoid valves, PT100 temperature sensors and buttons can be connected. Furthermore, three PWM outputs are available, which can be used for any resistive and inductive loads such as the illumination of camera systems.

The GIN-MAX4x4 board is also available as PRO version, which is equipped with a dual-core CPU and GinLink master functionality. The additional CPU core makes it possible to implement the complete machine control on the motion board.

GIN-SAC4

Multi Servo Drives

➡ Models with up to four axes

➡ Up to 32 kHz sampling rate

➡ Full-fledged GinLink master with PRO version

Facts	
Motor voltage	Up to 565 V_{DC}
Motor current per axis (Single / Dual)	GIN-SAC4×1: 13 A_{RMS} GIN-SAC4×2: 14.5 A_{RMS} / 29 A_{RMS} GIN-SAC4×3: 10.5 A_{RMS} / 21 A_{RMS} GIN-SAC4×4: 8.5 A_{RMS} / 17 A_{RMS}
Peak motor current per axis	21 A_{RMS} / 42 A_{RMS}
Control frequency	Up to 32 kHz
Motor types	PM synchronous, asynchronous, linear, DC
Feedback per axis	1 × Resolver 1 × SinCos / Incremental 1 × Inkrementalgeber / EnDat / Hiperface / SSI / BiSS
Speed filter	Luenberger observer
Current filter per axis	6 × Low-pass / Notch
Interfaces	GinLink slave / GinLink master* Gigabit Ethernet RS232
Safety	STO according to EN 61800-5-2, EN ISO 13849-1, category 4 PLe
CPU	ARM Cortex A9 single core 800 MHz / ARM Cortex A9 dual core 800 MHz*
Non-Volatile Memory*	512 KB NVRAM MicroSD card slot
Dimenstions	(215 / 279 / 343 / 407) × 130 × 148 mm (h × w × d)

* With PRO option

The Indel GIN-SAC4 series is the flexible solution for high-end, high-performance applications. Models are available from one to four axes. If needed the motor current can be doubled by using two amplifiers in parallel.

The integrated power supply allows direct connection to the 1 or 3 phase power grid.

For each model a PRO version is available which is equipped with a dual core CPU and GinLink master functionality. The additional CPU core perimts the implementation of the whole machine control on the drive.

All models implement the STO (Safe Torque Off) safety function.

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GIN-SAM4

High-Speed Standalone Master

➡ 3 × 1 GBit/s fieldbus master

➡ 2.2 GHz quad core PowerPC

➡ Up to 32 GByte RAM

Facts	
Interfaces	2 × GinLink / 3 × GinLink* 1 × Gigabit-Ethernet 2 × mPCIe 1 × mSATA 2 × USB 2.0 1 × microSD 2 × SIO (RS232 / RS485) 1 × InfoLink*
Interfaces with Hilscher	EtherCAT, PowerLink, Profinet, Profibus, CANopen, ...
CPU	PowerPC QorIQ P50xx 2.2 GHz dual core / 2.2 GHz quad core
Memory	4 GByte SDRAM, DDR3-1600 / 32 GByte SDRAM, DDR3-1600* 2 MByte MRAM / 4 MByte MRAM* 64 MByte Flash
Operating system	Indel-Realtime-OS (INOS)
Display	Bicolor E-Paper*
Motion control	Max. 256 axes Max. 128 kHz position loop
Dimensions	280 × 46 × 129 mm (h × b × t)

* Only on request

The GIN-SAM4 is a high-performance CPU board by Indel.

The powerful master is perfectly suited for high speed applications with complex and high technical requirements.

As a fieldbus master for the Indel GinLink, the GIN-SAM4 controls and coordinates the entire peripheral equipment with a closed-loop bus frequency of up to 128 kHz.

Due to standard interfaces like Gigabit Ethernet, RS232, USB, mPCIe, and mSATA, the SAM4 can be extended with additional modules, such as WLAN, Bluetooth, NFC, GSM/LTE, GPS, graphics cards and SSDs. Thanks to this, the master is ideally equipped for the coming industry 4.0.

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Motion Control