GVN Series

High Performance Multi-axis Network Motion Controller

GVN series plugged-in motion controller is a high-performance network motion controller. The product adopts high-performance multi-core processor to realize high-speed motion control, is suitable for industrial applications such as semiconductor and laser processing that have high-speed, and high- precision requirements or automatic equipment and automatic production line with multi-axis applications. GVN provides 3 types of network interface, including high-speed gLink-II Googoltech's trademark Gigabit Ethernet communication protocol, general-purpose gLink-II, and EtherCAT. The high-speed gLink-II interface can realize 8-axis high-performance closed-loop motion control with control cycle of 50us. Embedded with algorithm of position loop, velocity loop, various feed-forward and filter, GVN can implement precisely high-speed control to motors coupled with GSHD series high-performance servo drive. General-purpose gLink-II and EtherCAT interface can provide up to 256-axis motion control and possess multiple functions such as position comparison output, PSO, laser energy control, laser galvo control, and etc. It combines with GSHD servo drives, GNM axis control modules, and GTM modules and is compatible with EtherCAT peripherals, and can be used in various types of automatic equipment and automatic production lines.

GVN series can be widely applied in semiconductor processing, laser processing equipment, PCB milling and drilling equipment, robotic arms, high-end CNC machine tools, wood cutting machines, printing machines, electronic processing equipment, and automatic production lines.

Main Feature

- Provides 4 PCIe interface
- 3 Types of network interface: high-speed gLink-II, general-purpose gLink-II, and EtherCAT
- Control cycle: 50us (high-speed gLink-II), 4ms (general-purpose gLink-II/EtherCAT)
- Supports high-performance closed-loop, force-position, gantry, high precision + contour error control
- Possesses path-planning optimization, look-ahead preprocessing, position comparison output, PSO, laser energy control, galvo control and other functions
- Provides C++, C#, low-code development tool kit, and supports Windows/Linux OS

Technical Specifications

Function	High-performance motion control	General-purpose motion control
Network Interface	gLink-II (high speed)	gLink-II (general-purpose) / EtherCAT
Control cycle (minimum)	50us	4ms
Number of axes	8	256
Maximum number of channels	2	8
Basic functions*1	✓	✓
High-performance closed-loop control	✓	-
High-performance force-position control	✓	-
High-performance gantry	✓	-
Digital input	64 (high speed)	128
Digital output	64 (high speed)	128
5-axis function (supports RTCP)	-	✓

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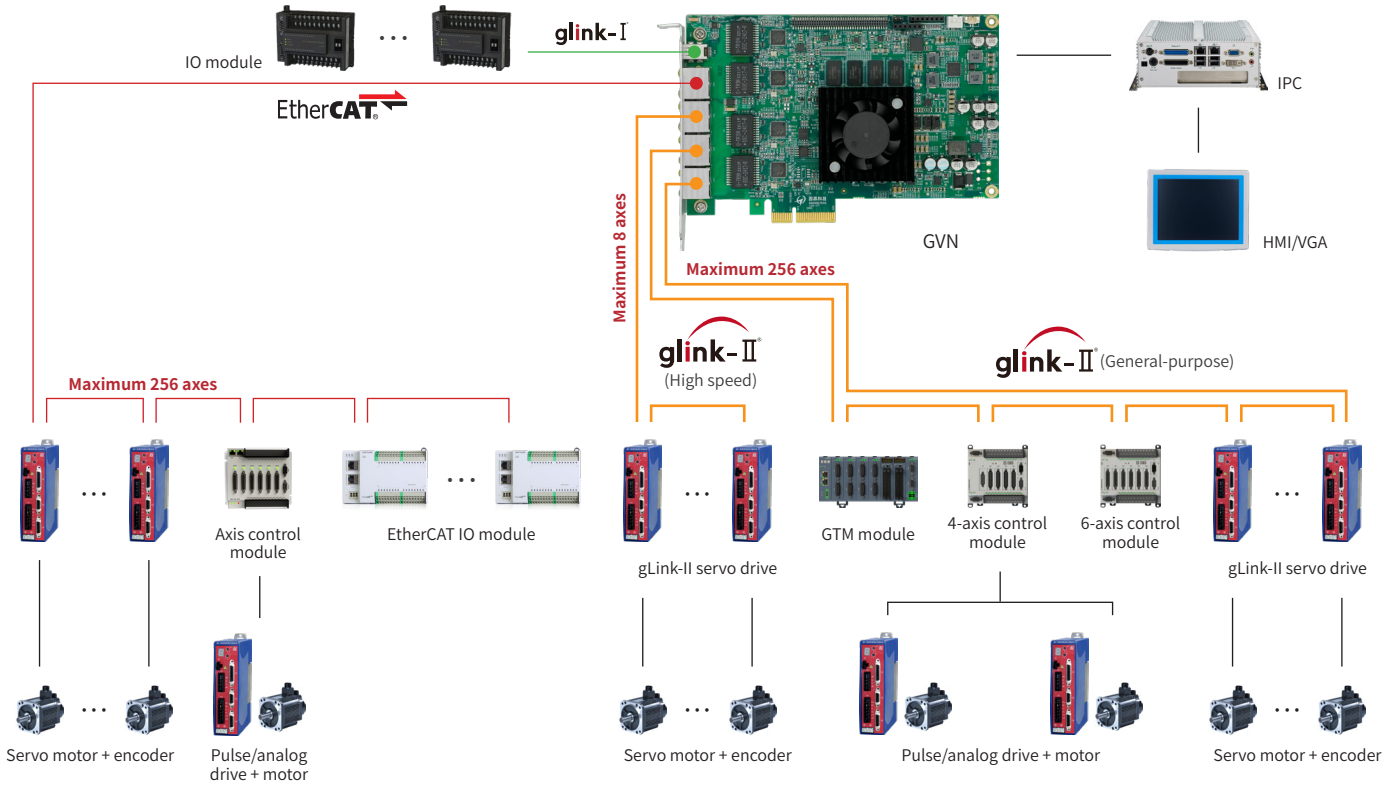
Function	High-performance motion control	General-purpose motion control
Robotic arm function (supports SCARA, Delta, 6R, etc.)	-	✓
Path-planning optimization	✓	✓
Look-ahead preprocessing	1024 segments	1024 segments
Handwheel guidance	-	✓
High-speed command transmission channel	-	✓
Virtual processing	-	✓
High precision + contour error control	✓	✓
Function	High performance motion control	General-purpose motion control
Self-learning	-	✓
Enhanced PSO	-	✓
2D / 3D galvo	-	✓
Infinite vision	-	✓
Conveyor belt tracking (supports 3-axis, robotic arm)	-	✓
High-performance script programming (MP)	-	✓
Instruction stream	-	✓
User encryption	✓	✓
Power failure storage	✓	✓
OS	Windows / Linux	
Programming language	C++, C#, VB.net, LabVIEW, low-code	
Dimension	167x125.3x21.5 (mm)	

*1 Basic functions include motion planning, compensation function, laser and galvo function, position comparison function, PSO function, capture function, homing function, power failure storage function, Event-Task function, Input Shaping function, etc.

System Diagram

Diagram: GVN motion control card plus high speed gLink-II & general type gLink-II & EtherCat communication protocols



Selection Guide

GVN	AA -	BBB -	C(C) -	DD
Control card type GVN: GVN series	Number of high speed gLink-II controlled axis 08: 8 axes	Number of general-purpose controlled axis 016: 16 axes	Function identification (can be ignored if there is nothing in the bracket) G: pulse output, basic function V: pulse and analog output, basic function LT: pulse and analog output, includes enhanced functions and adaptive algorithms	Sequence number

Ordering Guide

1、Standard Motion Control Card

Type	Ordering number	Description
Motion control card	GVN08-016-LT-00	GVN motion control master card, high speed gLink-II supports 8 axes, general-purpose gLink-II supports 16 axes, pulse and analog output, includes enhanced functions and adaptive algorithms

2、Optional Module & Accessories

2.1 GTM Module & Connection Cables

Type	Ordering number	Description
Main function module	CBEX-0107-BP101	GTM main board, includes 1 dedicated module slot and 7 function module slots
	CBEX-0103-BP101	GTM main board, includes 1 dedicated module slot and 3 function module slots
	CCE6-0102-PG201	GTM power supply communication module, power communication module, power connector, net ring communication interface
Function module (high speed gLink-II)	CEEX-3232-DTD01	GTM general-purpose digital I/O module, 32 DI + 32 DO, pin connector
	CEEX-1616-DTD01	GTM general-purpose digital I/O module, 16 DI + 16 DO, crimp terminal
	CEEX-3200-DTD01	GTM general-purpose digital I/O module, 32 DI, crimp terminal
	CEEX-1616-HD101	GTM high speed digital I/O module, 16 DI (high speed) + 16 DO (high speed), crimp terminal
Function module (general-purpose gLink-II)	CEEX-0002-AXG01	GTM network module, 2 axes, without axis AO
	CEEX-0002-AXV01	GTM network module, 2 axes, with axis AO
	CEEX-0002-LRS01	GTM position synchronization output module, 2PSO (5V/24V output selectable by slide switch)
	CEEX-0002-N00001	GTM auxiliary encoder module, 2 ENC incremental encoder
	CEEX-2400-DTD01	GTM axis controlled digital I/O module, 8-axis LIMIT±/HOME, plug type crimp terminal
	CEEX-3232-DTD01	GTM general-purpose digital I/O module, 32 DI + 32 DO, pin connector
	CEEX-1616-DTD01	GTM general-purpose digital I/O module, 16 DI + 16 DO, pin connector
	CEEX-0404-A1601	GTM analog I/O module, 4 AI + 4 AO, plug type crimp terminal
	CEEX-1616-HD101	GTM high speed digital I/O module, 16 DI (high speed) +16 DO (high speed), crimp terminal
	CEEX-3200-DTD01	GTM general-purpose digital I/O module, 32 DI, crimp terminal
Optional function module (general-purpose gLink-II)	CEEX-1616-HD101	GTM high speed digital I/O module, 16 DI (high speed) +16 DO (high speed), crimp terminal
	GMSD-0556-ASX01	Single axis synchronized drive module, 50V/5.6A
	GMDD-0422-PSX01	Dual axes synchronized drive module, 40V/2.2A
GTM module connection cable	GN-RJ45-RJ45 0M3/0M5/2M0/5M0	Cat. 5e shielded twisted pair cable, 2 ends RJ45, 0.3m/0.5m/2.0m/5.0m, The length can be selected according to the demand

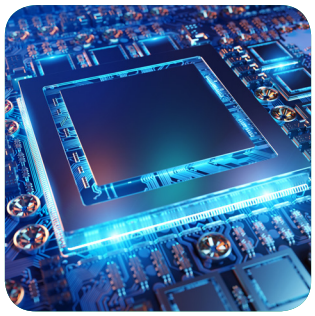
2.2 Axis modules & connection cables

Type	Ordering number	Description
4-axis module	GNM-401-00	Pulse control, with axis analog signal, MPG*1, extension I/O*1, 22 DI, 10 DO
	GNM-401-01	Pulse control, MPG*1, extension I/O*1, 22 DI, 10 DO
	GNM-402-00	Pulse control, dual auxiliary encoders, MPG*1, extension I/O*1, laser interface*1, galvo interface*1, 22 DI, 10 DO
	GNM-403-00	Pulse control, with axis analog signal, MPG*1, extension I/O*1, laser interface*1, galvo interface*1, 22 DI, 10 DO

Type	Ordering number	Description
4-axis module	GNM-403-01	Pulse control, MPG*1, extension I/O*1, laser interface*1, galvo interface*1, 22 DI, 10 DO
6-axis module	GNM-601-00	Pulse control, MPG*1, extension I/O*1, 16 DI, 10 DO
Equal ring network communication cables between the controller and the axis module	GN-RJ45-DB9M-1M0BT/ 1M5BT/3M0BT/5M0BT	RJ45-DB9M gigabit network cable, 1.0m/1.5m/3.0m/5.0m, selectable length based on requirement
Axis module communication cable	GN-DB9M-DB9M-0M3BT/ 1M5BT/3M0BT/5M0BT	DB9M-DB9M gigabit network cable, 0.3m/1.5m/3.0m/5.0m, selectable length based on requirement, 1 for each axis controlled module
2.3 Extension I/O module & Drive communication cables		
Type	**Ordering number**	**Description**
Extension I/O module	HCB5-1616-DTD01	16 DI / 16 DO, input active low, transistor 0.5A sink output
	HCB5-1616-DTS01	16 DI / 16 DO, input active high / low selectable, transistor 0.5A source output
	HCB5-3200-DXX01	32 DI, input active high / low selectable, no output
	HCB5-0604-A1201	6 AI / 6 AO, 12-bit resolution, I/O support single channel multiple measuring ranges selection (0-5V, 0-10V, -5-5V, -10-10V, 0-20mA, 4-20-mA
Extension I/O module	CABLE-DB9M-DB9F-0M302/1M500/3M001/ 5M001/15M001	0.3m, 1.5m, 3m, 5m, 15m, each extension I/O modules comes with 1 cable, other length can be customized according to requirement
Drive communication cable	GN-RJ45-RJ45-0M3YH/ 0M5YH/2M0YH/5M0YH	Cat. 5e shielded twisted pair cable, 2 ends RJ45, 0.3m/0.5m/2.0m/5.0m, length can be selected according to requirement

Applications

CNC



Semiconductor

Robotics

Electronics

Printing

Laser cutting

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